

# GENERAL CATALOGUE



*Look Ahead!*

## MOTION CONTROL SYSTEMS

# GENERAL CATALOGUE



# INDEX

**700+**  
OVERALL  
PART-NUMBERS  
AVAILABLE

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# Introducing R.T.A. Group



Founded in 1976 in Pavia (Italy), today R.T.A. is a leading player in the industrial automation industry, with a wide and constantly expanding product and solution portfolio.



## WHO WE ARE

THE PERFECT PARTNER FOR MOTION CONTROL AND COOLING SOLUTIONS FOR ANY KIND OF AUTOMATIC MACHINERY.



## HOW WE RANK

WE ARE N.1 INDEPENDENT GROUP IN EUROPE IN THE STEPPING MOTOR DRIVES SEGMENT (SOURCE: IHS MARKIT).



## WHAT WE HAVE ACHIEVED

OVER 1 MLN DRIVES SOLD WORLDWIDE SINCE 1976.

## Our DNA

- 45+ years experience
- Robust industrial footprint
- High quality and reliability production
- Online and on-site technical support
- Continuous technological Innovation
- Internationalization



## *Look Ahead!*

OUR PAYOFF MEANS WE CHASE CHANGE AND WE BELIEVE IN TECHNOLOGY, INNOVATION AND PEOPLE.

# R.T.A. in the world



**R.T.A. ITALY - HEADQUARTERS**

FOUNDING YEAR: 1976  
TOTAL HEADCOUNT: 60

**R.T.A. DEUTSCHLAND**

FOUNDING YEAR: 2001  
TOTAL HEADCOUNT: 7

**R.T.A. IBERICA**

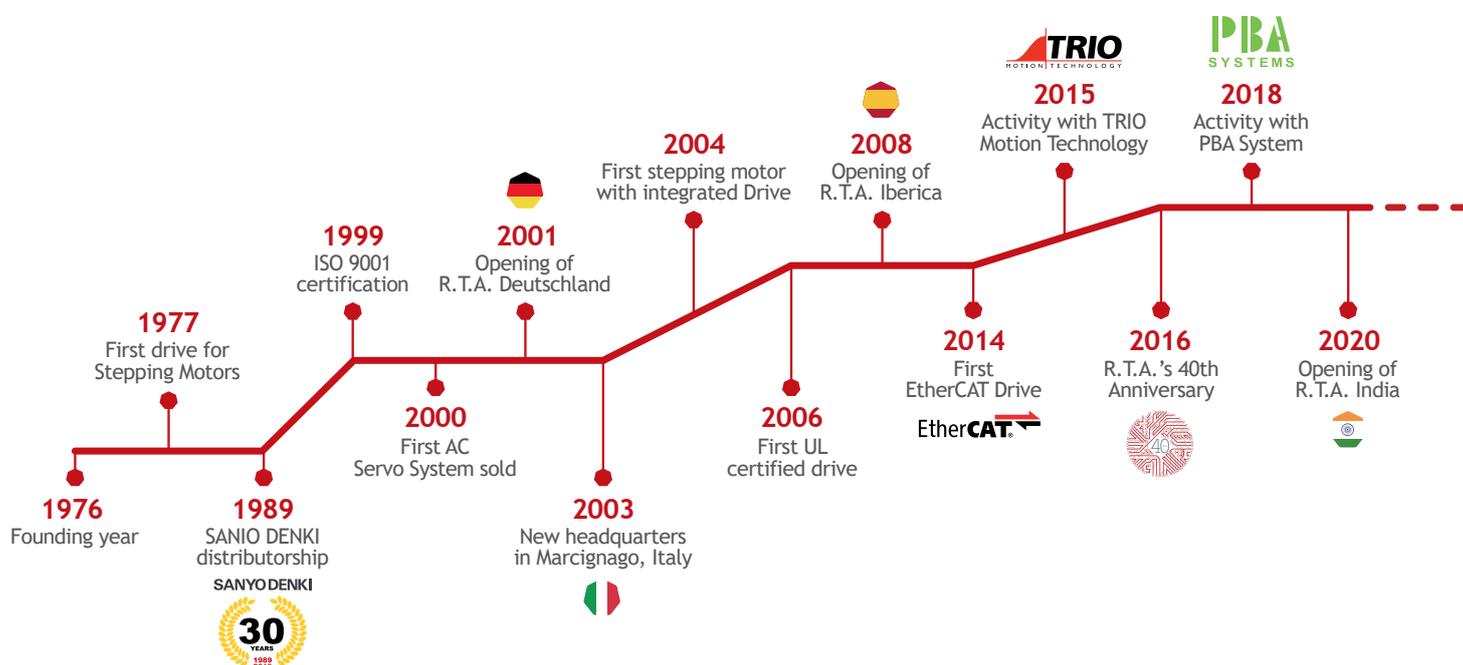
FOUNDING YEAR: 2008  
TOTAL HEADCOUNT: 3

**R.T.A. INDIA**

FOUNDING YEAR: 2020  
TOTAL HEADCOUNT: 1

# R.T.A. corporate milestones

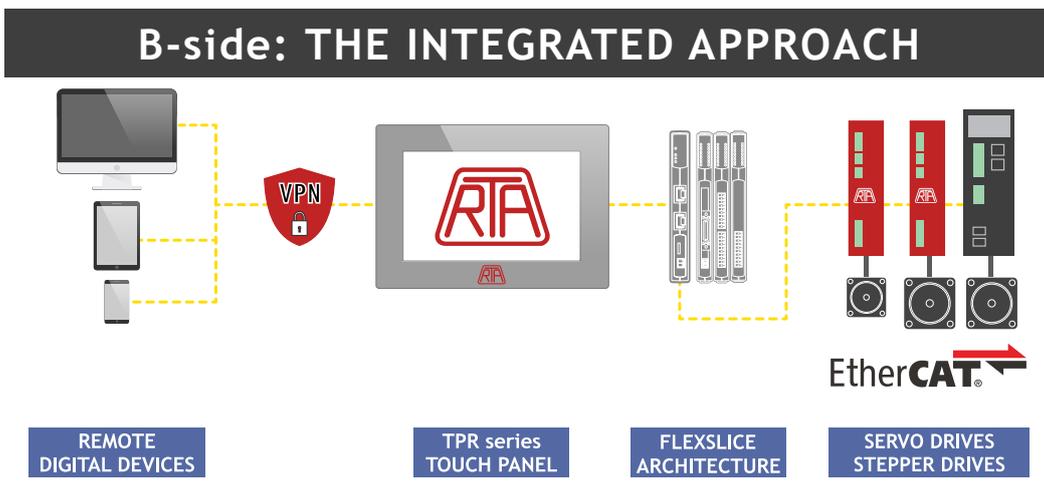
RESEARCH, INNOVATION AND GROWTH



# ⬡ A double-sided company: Production & Integration



- In-house design of stepping motor drives since 1976.
- Strong industrial footprint: 100% MADE IN ITALY, with constant attention to quality and reliability.
- Robust and easy-to-use products, even in harsh environments.



- A fully integrated mechatronic package for virtually any industrial application.
- A team of highly experienced software engineers exclusively dedicated to software development projects.

## ○ Certified reliability



**2 YEARS**  
OF WORLDWIDE RECOGNIZED WARRANTY



**COMPUTERIZED TESTING LINE**  
EVERY DRIVE IS TESTED TWICE BY TWO  
DIFFERENT OPERATORS



**ISO 9001-2015**  
CERTIFIED QUALITY SYSTEM SINCE 1999



**CUSTOMER SUPPORT**  
EXCELLENT PRE- AND POST-SALE SERVICE



## ○ One distinguishing feature of R.T.A.



20 years after installation we still grant the availability of our products.

# R.T.A. goes digital and social



## CORPORATE WEBSITE

The general catalogue digital edition is also available at [www.rta.it](http://www.rta.it), R.T.A. corporate website always updated with the latest news.

[www.rta.it](http://www.rta.it)



SCAN THE CODE



## E-STORE

250+ products including Stepping Motor Drives, Stepping Motors, Gearboxes, Cooling Fans and nearly 100 spare parts and discontinued products.

[www.rta-store.com](http://www.rta-store.com)



SCAN THE CODE



## DOWNLOAD AREA

Hardware and software manuals, ESI files and 3D drawings can be easily downloaded at [download.rta.it](http://download.rta.it)

[download.rta.it](http://download.rta.it)



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## YOUTUBE CHANNEL

Corporate and promotional videos, technical demos and the recording of R.T.A. tech talk, providing highly-technological explanations and solutions



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## LINKEDIN PAGE

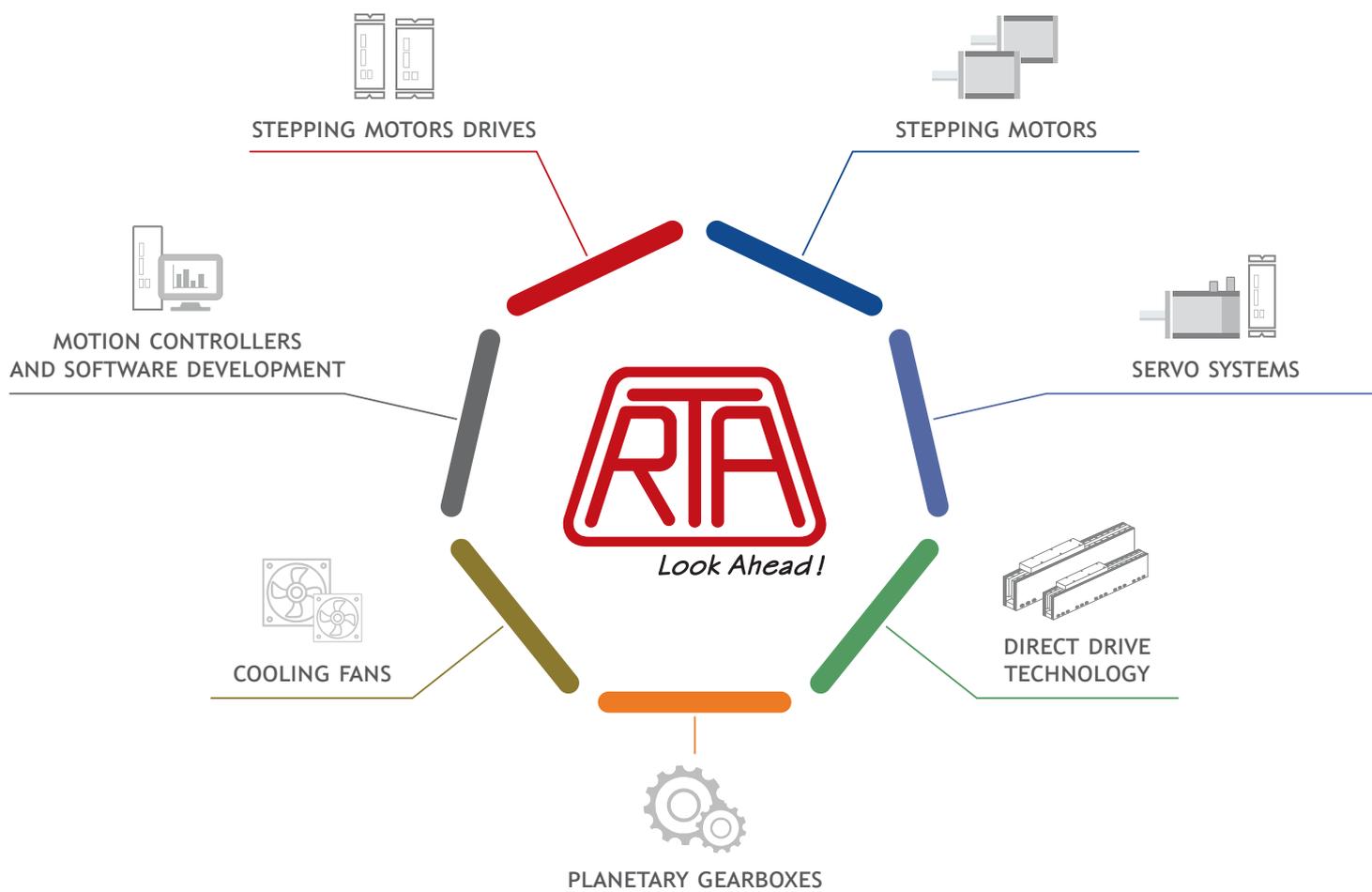
Follow R.T.A. on LinkedIn for the latest news and updates.



SCAN THE CODE

# One partner for multiple integrated solutions

7 PRODUCT LINES



DEEP, CONSOLIDATED **CROSS-SECTIONAL** KNOW-HOW.

STATE OF THE ART **CUSTOMER SUPPORT** IN EVERY PHASE OF THE PROJECT.

**HIGH END SERVICE** COMBINED WITH **QUICK DELIVERY** FROM STOCK OF ALL PRODUCT LINES.





## MOTION CONTROLLERS





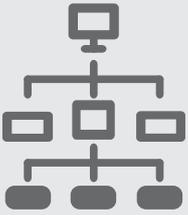
# MOTION CONTROLLERS



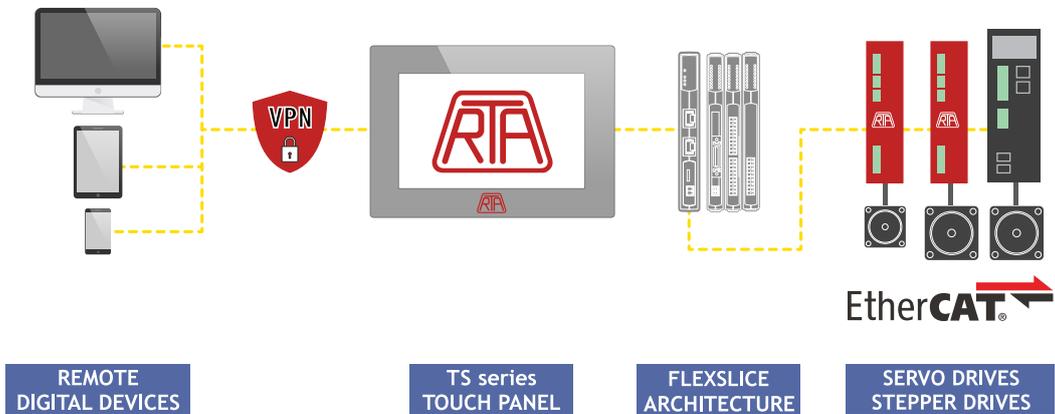
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# The architecture

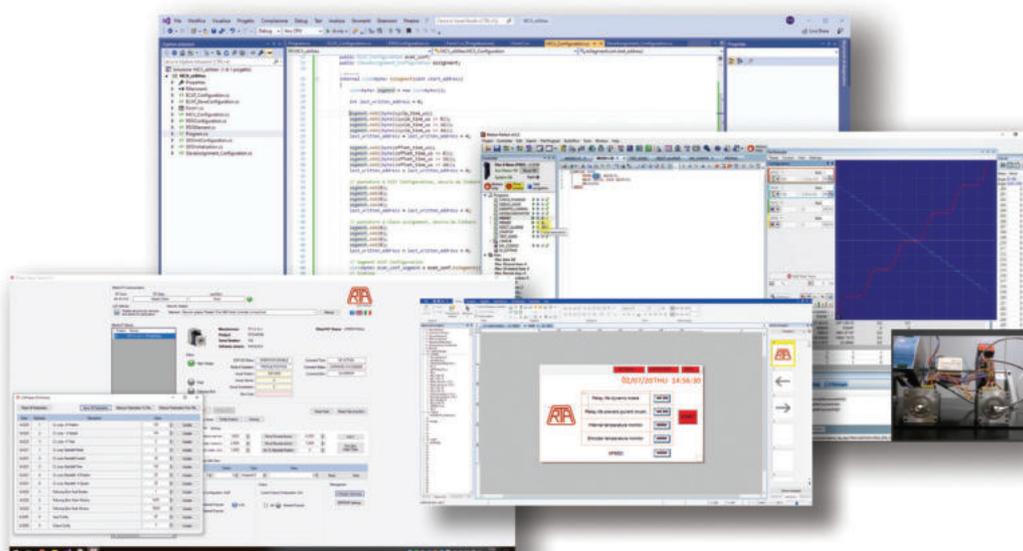


R.T.A. architecture is a flexible solution for a wide range of motion control applications in most industrial fields. It's an articulated system allowing the programming, functioning and monitoring of up to 128 axes of stepper, servo and linear motors (64 real and 64 virtual), based on the most common protocols. Products and technologies are fully compatible and scalable and they can be easily remotely monitored through VPN.



# Software development

- At R.T.A. we have a team of software engineers fully dedicated to software development projects.
- We can offer A-to-Z or partial software design, working closely with the customer's technicians in every phase of the project.
- FREE Windows-based programming interface for setup, diagnostic and configuration activities and a comprehensive motion library.
- Online and on-site fast and qualified technical assistance.



## Products and solutions

### EtherCAT MOTION CONTROLLERS



Drive of up to 128 axes via EtherCAT real-time field bus  
 TrioBASIC and IEC61131-3 programming languages.  
 Precise calculation thanks to powerful dual- and quad-core processors.  
 Multitasking programming language and free Windows-based development environment.  
 Built-In Ethernet port, allowing programming, connection with HMI, and data transferring with the rest of the world, using the most common protocols.

**EtherCAT**

### PULSE TRAIN & ANALOG MOTION CONTROLLERS



Linear, circular, helicoidal and spherical interpolation.  
 3, 5 or 8 multi-function channels.  
 TrioBASIC and IEC61131-3 programming languages.  
 Multitasking programming language and free Windows-based development environment.  
 Built-In Ethernet port, allowing programming, connection with HMI, and transferring data with the rest of the world, using the most common protocols.

**PULSE TRAIN**  
**ANALOG INPUT**  
**ANALOG OUTPUT**

## HMI - TS SERIES



Three standard models in two sizes.  
 Free Windows based developing program.  
 Free remote control (VPN) enabling the operator to easily connect and monitor the "on the field" HMI through a safely protected VPN connection.

**Easy integration with all R.T.A. products**

## ANALOG & DIGITAL I/Os



A selection of digital and analogue I/O terminals and motion modules designed for precise positioning of stepper and servo motors, that perfectly fit in a complex system, that can be placed remotely from the master if needed.

Available modules: Power Connect, Thermocouple, RTD, Load Cell, 16 IN/out PnP, 2 Servo Axes, 8 Analog I/O

## CAN I/O

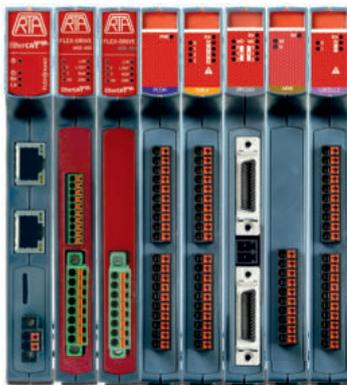


Digital and analogue I/O expansion modules provide a simple and scalable I/O system based on CANopen protocol.

- Power Supply: 24 VDC
- Up to 256 distributed input/output channels



## FLEXSLICE ARCHITECTURE MAIN FEATURES:



- Scalable and expandable system
- Easy parameter configuration
- Up to 6 drives in a row
- Up to 128 axes controlled  
(64 real and 64 virtual)
- DIN-rail mounted

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MOTION CONTROLLERS

# ETHERCAT MOTION CONTROLLERS & FLEXSLICE ARCHITECTURE





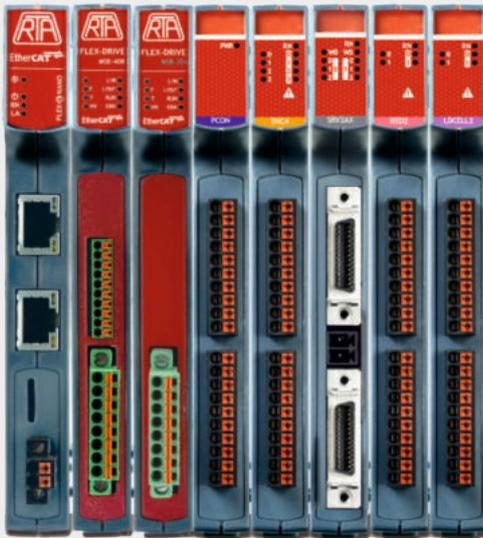
# FLEX-6 NANO *Integrated EtherCAT<sup>®</sup> Controller*

## INTRODUCTION

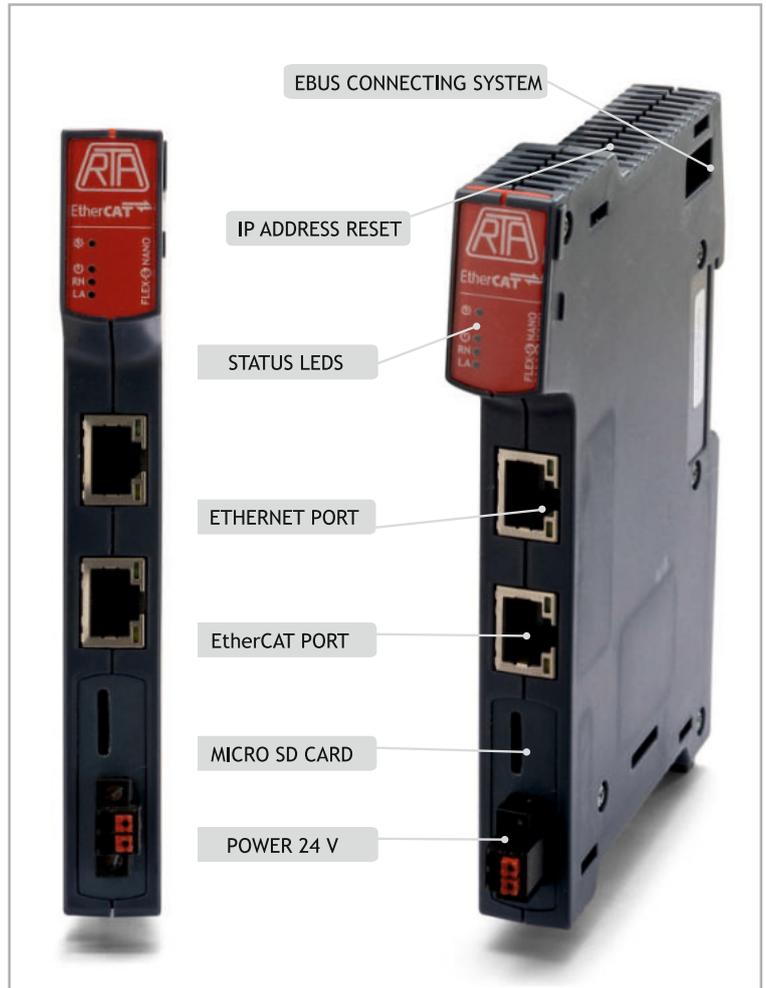
Flex-6 Nano is a powerful, flexible and compact DIN-rail mounted motion coordinator, controlling up to 64 stepper and servo axis.

Flex-6 Nano can be used as a stand-alone controller or it can easily «plug» straight into the EtherCAT Flexslice Architecture, including servo and stepper drives and I/O modules.

## THE FLEXSLICE ARCHITECTURE



*NO NEED FOR EtherCAT COUPLER*



## HIGHLIGHTS

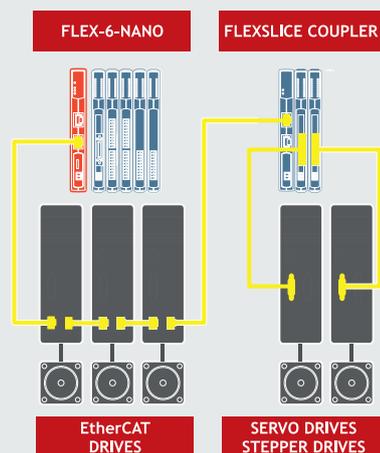
- Dual core 1GHZ Arm Processor
- 2 - 64 stepper and servo axis
- Built in EBus Coupler
- Cycle Time as low as 125us
- Ethercat Protocol to Individual modules using the Ebus System.
- Easy parameter configuration
- Remote placement of the modules from the master if needed.
- DIN-rail mounted

EtherCAT<sup>®</sup>

**POWERFUL**  
**COMPACT**  
**VERSATILE**

## SPECIFICATIONS

- Multitasking Operating System
- Comprehensive Motion Library
- TrioBasic Motion Language
- IEC61131-3 Programming
- HMI Support
- Robotic Functions 
- Multi-protocol Communications Support



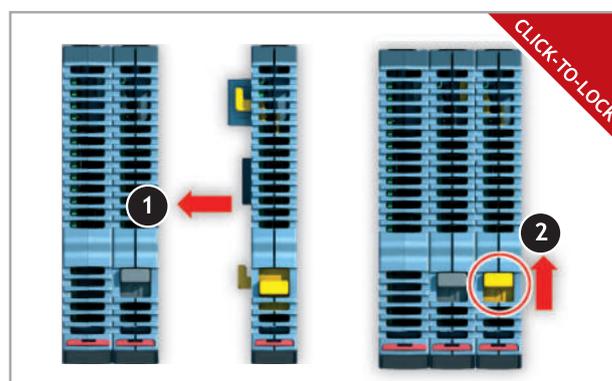
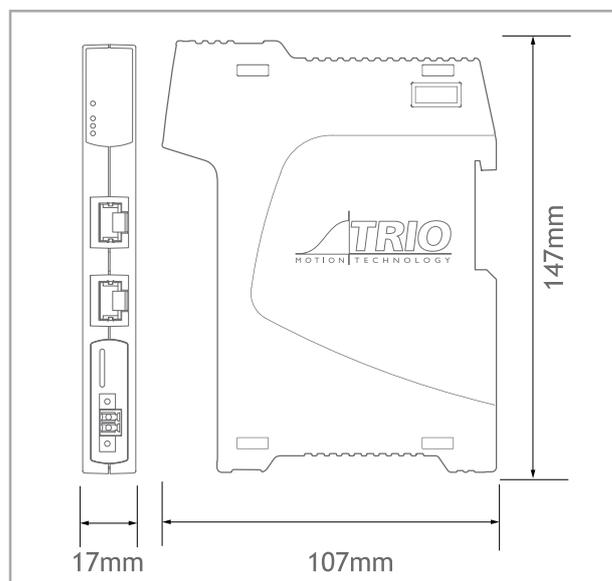
**EtherCAT** 

## TECHNICAL FEATURES

- Dual core 1 GHZ Arm Processor.
- 1 Gbit DDR3 Memory.
- 1 Gbit Fast Serial Flash Memory to store data.
- Built-in Long Time Retention RTC.
- Built-in Ethercat coupler for direct access to Flexslice modules.
- Completely field programmable with *Motion Perfect*.
- Bus cycle time synchronised with *Motion Coordinator* Servo Period.
- EtherCAT protocol remains intact down to individual modules using the EBUS system.
- I/O functions tightly synchronised to motion using EtherCAT distributed clock.
- Practical Push-In connector options.
- RoHS and UL approved.



## MECHANICAL DIMENSIONS



# Flexslice Architecture **EtherCAT**

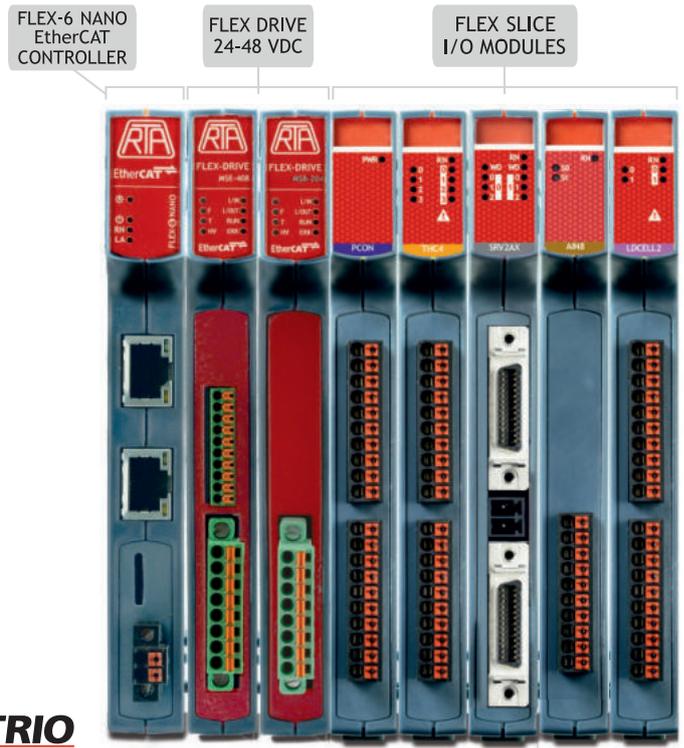
## INTRODUCTION

Flexslice architecture is a flexible solution for a wide range of motion control applications in most industrial fields. It is an articulated system allowing the complete process of programming, functioning and monitoring of up to 128 axes of stepper, servo and linear motors, based on the most common protocols.

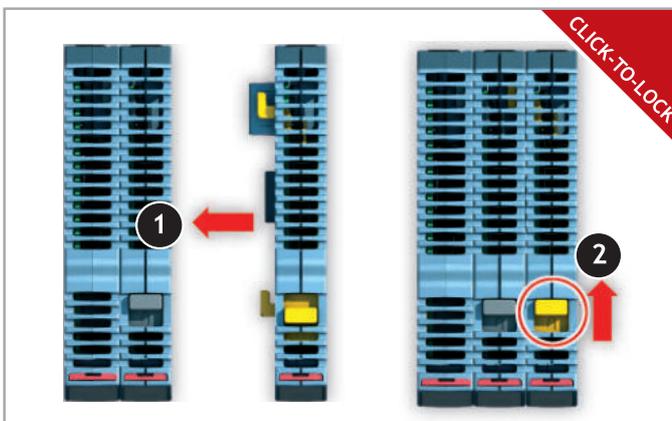
It is an intelligent system originally designed by TRIO Motion Technologies, where R.T.A. EtherCAT drives fit perfectly, developing a powerful and ultra-compact solution.

## HIGHLIGHTS

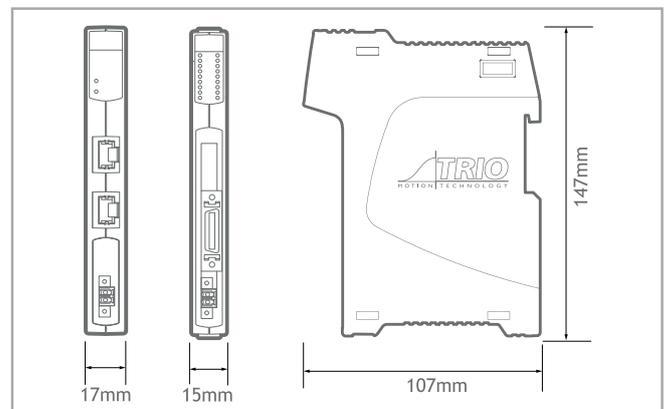
- Scalable and expandable system
- Easy parameter configuration
- Perfect matching with R.T.A. Flex-Drive EtherCAT stepping motor drive.
- Power supply:
  - for controller and Coupler: 24 VDC
  - for Flex-Drive: 24-48 VDC
  - for all Modules: via internal EBus
- Up to 128 axes controlled
- EtherCAT cycle times down to 125  $\mu$ s
- Wide selection of digital and analog I/O modules designed for precise positioning of stepper and servo motors.
- Secure remote monitoring through VPN
- DIN-rail mounted



## FAST & EASY ASSEMBLY



## MECHANICAL DIMENSIONS



## LOGIC MODULES



### Flex-6 Nano EtherCAT Motion Coordinator

- EBus output current: 2500 mA
- Power supply requirement: 24 VDC
- EtherCAT Connection: RJ45
- Protocol: EtherCAT Master
- Cycle Time as Low as 125us
- Modes of Operation: CSP, CSV and CST
- Communication: Modbus/TCP



### P366: EtherCAT Coupler

- EBus output current: 2500 mA
- Power supply requirement: 24 VDC
- EtherCAT Connection: RJ45
- Protocol: EtherCAT Slave
- Data rate 100 Mbit/s
- Network Cable: CAT 6

## POWER MODULES



### RTA Flex-Drive EtherCAT MSE 408 Model

- EBus module current consumption: 350 mA max + Encoder (85 mA max)
- Power supply requirement: 24-48 VDC
- $I_{NP}$  (Peak value): 4 A
- Sensor Feedback: ENCODER or OPEN LOOP



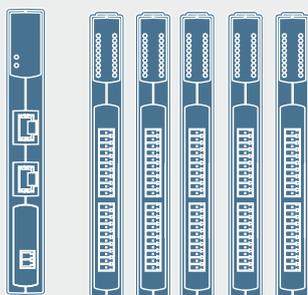
### RTA Flex-Drive EtherCAT MSB 204 Model

- EBus module current consumption: 350 mA max
- Power supply requirement: 24-48 VDC
- $I_{NP}$  (Peak value): 2.5 A
- Sensor Feedback: OPEN LOOP

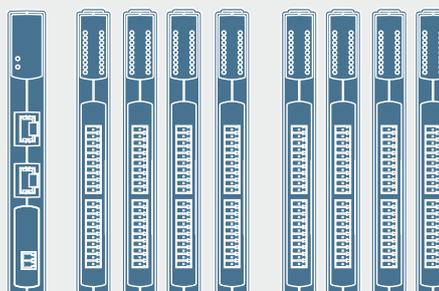
The configuration of a Flex-Drive Architecture can be defined considering that the **total sum** of the **EBus current consumption** of every included module should be lower than the Ebus output current of Flex-6-Nano Motion Coordinator or P366 EtherCAT coupler (**2500 mA**).

## SOME EXAMPLES OF FLEXSLICE ARCHITECTURES

**1 FLEX-6 NANO or 1 COUPLER**  
**+ UP TO 5 FLEX-DRIVE MSE 408**



**1 FLEX-6 NANO or 1 COUPLER**  
**+ UP TO 4 FLEX-DRIVE MSE 408**  
**+ 4 DIGITAL I/Os or 2 ANALOG I/Os**



*Please refer to R.T.A. Technical support in case of doubts about specific layouts.*

# FLEX-DRIVE Series Drives

## EtherCAT®

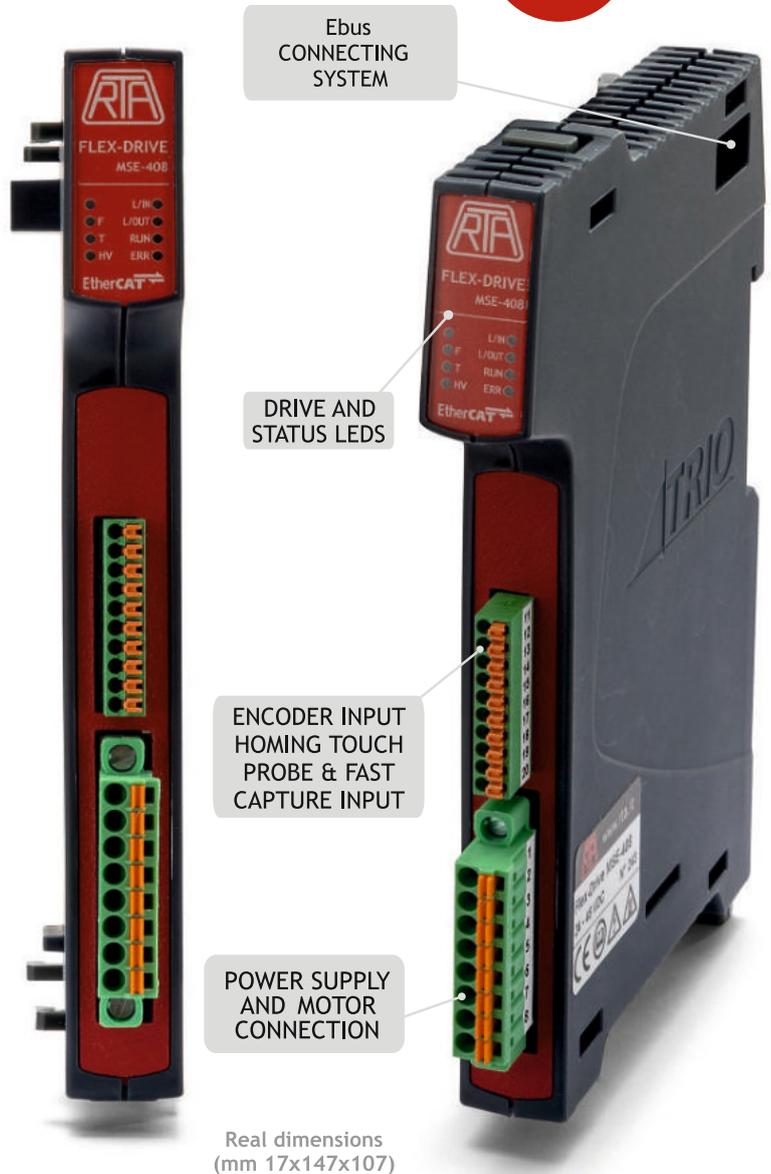
### INTRODUCTION

- FLEX-DRIVE allows connection with any stepper motor up to Nema 24 (60 mm) with or without encoder feedback, supporting PP, CSP, CSV and Homing mode of operation.
- MSE 408 model is equipped with one configurable fast capture input, suitable for Touch Probe, proximity or free use.
- Easy setup: no need of programming software, all settings are made through EtherCAT network.
- Separated power supply for logic circuit and motor power.

### MAIN EtherCAT® FEATURES

- Modes of operation: PP, PV, Homing, CSP and CSV.
- Wide range of motor phase current setting and motor current overboost (120%).
- Different variety of HOMING operation modes.
- Encoder feedback and support of different resolution.
- Touch Probe function available.
- Limit switches management.
- Auto-sync function available featuring a closed loop positioning.

3rd  
FIRMWARE  
GENERATION



Please refer to [download.rta.it](http://download.rta.it) for technical specifications



FLEX-DRIVE



SCAN THE QR CODES TO WATCH TWO VIDEOS ON FLEX-DRIVE AND AUTO-SYNC FUNCTION

AUTO-SYNC



# Flexslice Modules

## P362: Power Connect



The P362 Flexslice Power Connect provides a solution for simple and convenient wiring of 3 wire sensor power and return wires. The pins of the 2 x single-row push-in connectors are joined together to form 2 isolated banks of commoned connections. With 0V connected to the lower connector and 24V to the upper connector, the LED gives an indication that power is on.

- EBus Module current consumption: 0mA
- Power supply requirement: 24V (+/-20%) DC
- Max connector current: 4A

## P367: Thermocouple



The P367 Flexslice Thermocouple module has 4 thermocouple inputs, each digitised to a resolution of 16 bit. The 4 thermocouple inputs are brought out to a single row push-in connector. A second single row push-in connector has 4 relay outputs for control of a heater or other switched load.

- EBus Module current consumption: 160mA max
- Power supply: via the EBUS
- Number of Inputs: 4
- Thermocouple types: J, K, T, E
- Resolution: 16 bit
- Number of Outputs: 4
- Output type: Normally open (NO)
- Load type: Resistive, inductive and capacitive
- Max. Output Voltage: 24V
- Max Output Current: 100mA

## P368: RTD Module



The P368 Flexslice RTD module has 4 resistance temperature detector (RTD) inputs, each digitised to a resolution of 16 bit. The 4 RTD inputs are brought out to a single row push-in connector. A second single row push-in connector has 4 relay outputs for control of a heater or other switched load.

- EBus Module current consumption: 160mA max
- Power supply: via the EBUS
- Number of Inputs: 4
- RTD types Resolution: 16 bit
- Number of Outputs: 4
- Output type: Normally open (NO)
- Load type Resistive, inductive and capacitive
- Max. Output Voltage: 24V
- Max Output Current: 100mA

## P369: Load Cell Module



The P369 Flexslice Load Cell module has 2 load cell inputs, each digitised to a resolution of 16 bit. The 2 load cell inputs are brought out to a single row push-in connector. A second single row push-in connector has 4 relay outputs for control of a switched load.

- EBus Module current consumption: 160mA max
- Power supply: via the EBUS
- Number of Inputs: 2
- Load Cell types: 4 wire
- Resolution: 16 bit
- Number of Outputs: 4
- Output type: Normally open (NO)
- Load type Resistive, inductive and capacitive
- Max. Output Voltage: 24V
- Max Output Current: 100mA

## P371: 16-OUT PnP



The P371 digital output Flexslice connects the binary control signals from the *Motion Coordinator* to the machine's output devices at 24V DC. All 16 outputs are current sourcing (PNP) type and have electrical isolation. Outputs and power connection are via 2 x single-row push-in connectors. The Flexslice module indicates the output signal states via LEDs.

- EBus Module current consumption: 110mA max
- Power supply: via the EBUS
- Power supply requirement: 24V (+/-20%) DC
- Number of Digital Outputs: 16 (2 banks of 8)
- Load type: Resistive, inductive and capacitive
- "ON" time: 110us (10% to 90%)
- "OFF" time 210us (90% to 10%)
- Max. Output current: 0.5A per channel
- Max. Output current: 4A per bank of 8
- Short-Circuit Protection: 1.4A typ per output
- Over voltage Protection: Yes
- Reverse Voltage Protection: Yes

## P372: 16-IN PnP



The P372 digital input Flexslice connects 24V DC signals from devices on the machine to the binary control registers in the *Motion Coordinator*. All 16 inputs are current sinking (PNP) type and have electrical isolation. Inputs and power connection are via 2 x single-row push-in connectors. The Flexslice module indicates the input signal states via LEDs.

- EBus Module current consumption: 110mA max
- Power supply: via the EBUS
- Power supply requirement: 24V (+/-20%) DC
- Number of Digital Inputs: 16 (2banks of 8)
- Load type: Resistive, inductive and capacitive
- "ON" Voltage Threshold: 11.2V typ
- "OFF" Voltage Threshold: 10.2V typ
- Input current: 3.5mA typ
- Input filter Cut-off (RC network): 18KHz

## P374: Analog 2 Servo Axes



The P374 Flexslice Analogue 2 Servo Axes module allows up to 2 servo motors, connected to a control system. It supports incrementale encoder inputs. If configured for stepper/pulse output an axis can be pulse+direction or quadrature simulated encoder output. Each MDR connector supports all the signals for full closed loop control of a servo axis.

- EBus Module current consumption: 180mA max
- Power Supply: via the EBUS
- Power Supply 24V (+/-20%) DC @ 100mA
- Max Axes: 2 (software configurable)
- Max Enc Rate: 8M Edges/s encoder count
- Max Step Rate: 8MHz pulse count
- Step/Pulse Width: Wave
- Enc/Step Input/Output: RS422
- DAC Voltage Output: 2 x 12bit +/-10V
- Registration inputs: 4 x 24V Isolated PNP
- WDOG Output: 2 x Normally open (NO)
- WDOG Max. Output Voltage: 24V
- WDOG Max Output Current: 100mA
- Field Programmable: Yes

## P378: 8 Analog outputs



The P378 Flexslice 8 Analogue Output module has eight programmable voltage range output terminals, each digitised to a resolution of 12 bit. The 8 single ended outputs have a common 0V potential and are brought out to a single push-in connector.

- EBus Module current consumption: 200mA max
- Power Supply: via the EBUS
- Signal voltage: -10...+10V; 0...+10V
- Signal current: +/-5mA max
- Resolution: 12 bit
- Output impedance: 16 ohm
- Number of Analogue Outputs: 8

## P379: 8 Analog inputs



The P379 Flexslice 8 Analogue Input module has eight programmable voltage range input terminals, each digitised to a resolution of 12 bit. The 8 single ended inputs have a common 0V potential and are brought out to a single row push-in connector.

- EBus Module current consumption: 160mA max
- Power Supply: via the EBUS
- Signal voltage: -10...+10V; 0...+10V
- Signal current: 0...20 mA
- Resolution: 12 bit
- Overvoltage protection: ±25V
- Number of Inputs: 8

Please refer to R.T.A. Technical Support for architectures layouts and Flexslice modules features.

# MC6N-ECAT Master

## INTRODUCTION

The MC6N is a high performance Motion Coordinator which perfectly dialogues with the R.T.A. motion control solution (servos and steppers).

## HIGHLIGHTS

- High performance motion coordinator for remote servo and stepper drives via EtherCAT bus.
- EtherCAT drives can be connected and driven in cyclic synchronous position, speed or torque modes.
- 1 GHz dual core processor controlling up to 64 axes (twice as the previous model MC4N).
- Same simple programming as the traditional analog and step/dir axes, with the possibility to set up drives and process alarms over the EtherCAT bus.
- Ideal for high axes count machines or robotic applications.

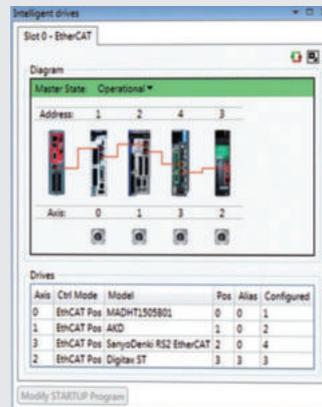


1st GENERATION	Vs	2nd GENERATION
MC4N		MC6N
<ul style="list-style-type: none"> <li>■ 532 Mhz ARM11</li> <li>■ up to 32 axis</li> <li>■ Execution time: 35 lines/ms</li> <li>■ 350 mA power consumption</li> <li>■ Maximum retentive variables: 4096</li> </ul>		<ul style="list-style-type: none"> <li>■ 1GHz dual core ARM Cortex-A7 processor</li> <li>■ up to 64 axis</li> <li>■ Execution time: 102 lines m/s</li> <li>■ 180 mA power consumption</li> <li>■ Maximum retentive variables: 16384</li> </ul>

## EASY PROGRAMMING SYSTEM

The built-in Ethernet port allows programming and connection of common PLC and HMI protocols.

Standard IEC 61131-3 languages available, allowing a fully functional PLC programming system.

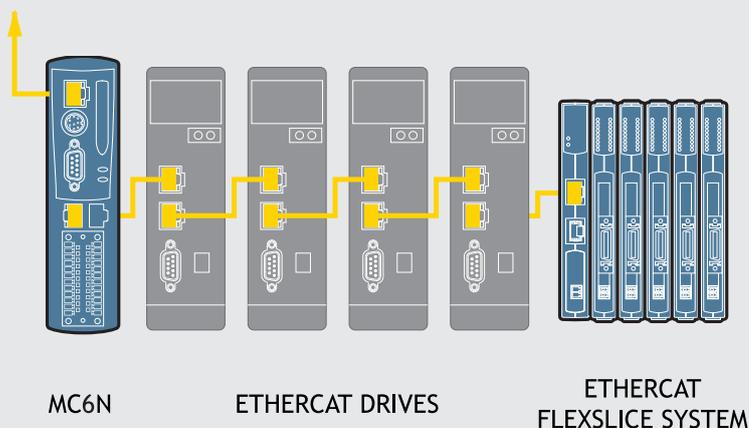


## SPECIFICATIONS

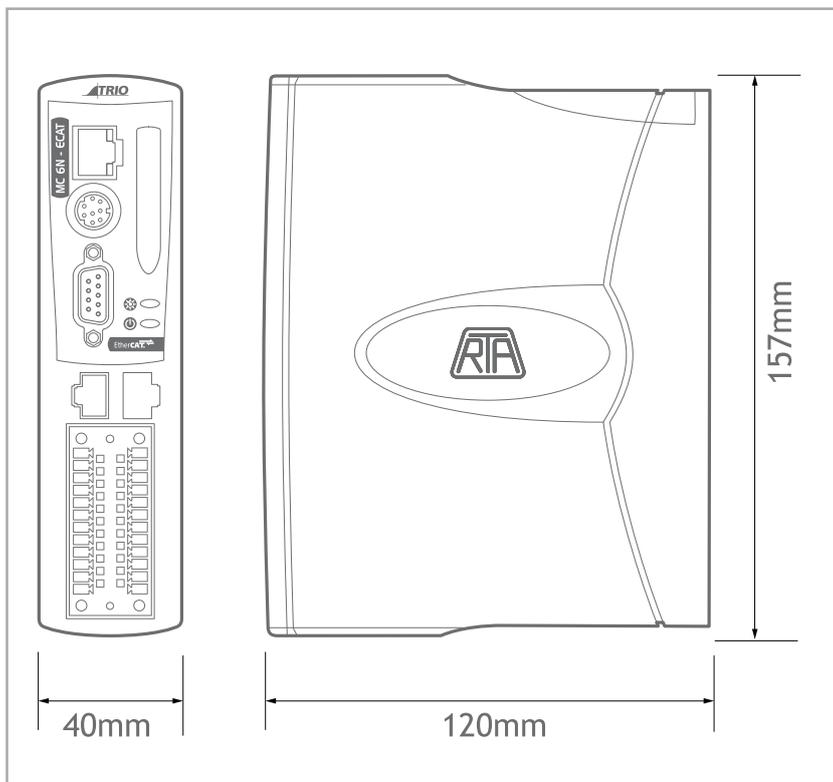
- Up to 64 EtherCAT digital drive virtual axis
- Multitasking operating system
- Up to 1024 EtherCAT I/O
- Ethercat cycle times down to 125 µsec.
- Linear, circular, helical and spherical interpolation
- EnDAT and SSI absolute encoder supported
- Ethernet-IP / Modbus TCP / Trio Activex / HMI Uniplay / UDP / Ethernet interface built-in
- Metal backplate for maximum noiselessness
- Robotic transformations
- High speed registration inputs
- SD memory card slot
- CANopen I/O expansions
- RoHS and UL approved

FACTORY ETHERNET  
COMMS eg: MODBUS-TCP

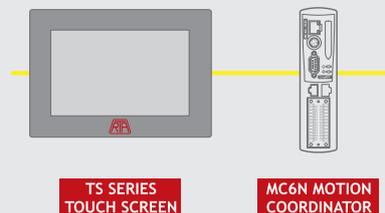
EtherCAT®



## MECHANICAL DIMENSIONS



### TS SERIES TOUCH SCREEN COMPATIBILITY



Easy interaction with R.T.A.'s TS series touch screens.

### MAXIMUM VERSATILITY

Built-in support for digital drives and I/Os of most brands on the market.



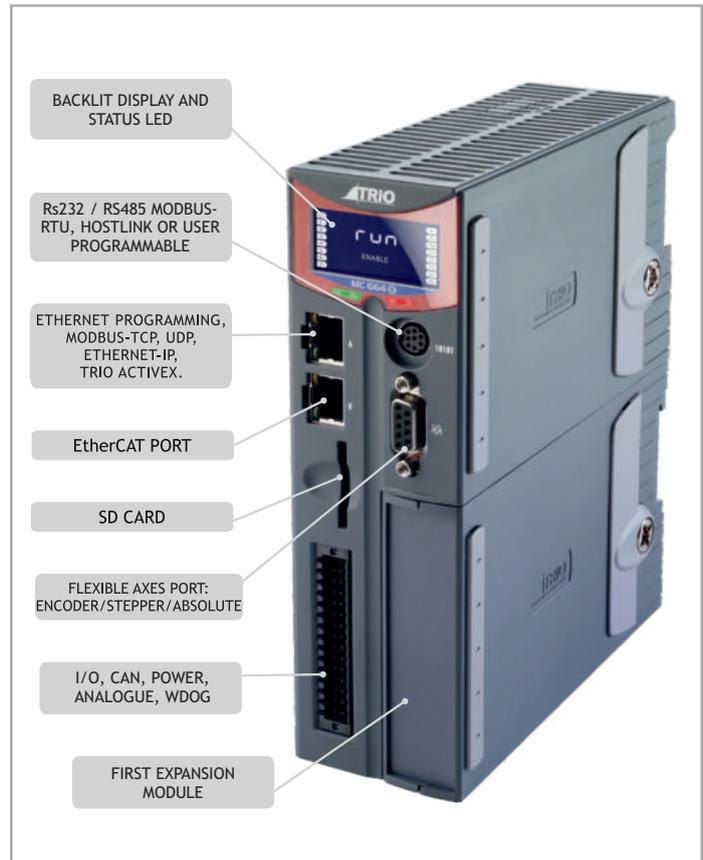
# MC664X *Quad Core 128 Axis EtherCAT<sup>®</sup> Coordinator*

## INTRODUCTION

The MC664X is a very performing flexible EtherCAT Motion Coordinator which perfectly fits the R.T.A. EtherCAT motion control solution (servos and steppers).

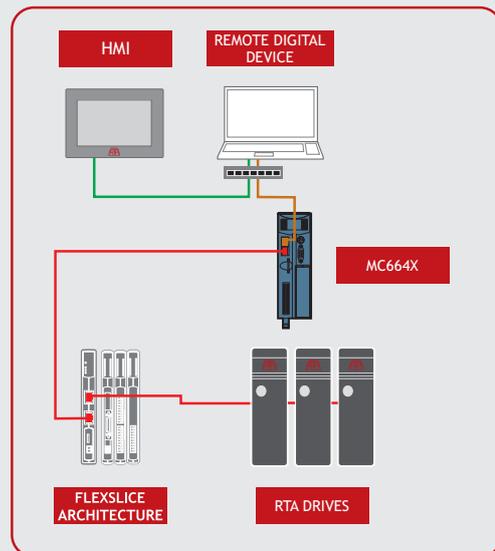
## HIGHLIGHTS

- High performance Motion Coordinator for driving servo and stepper drives via EtherCAT bus.
- Able to manage up to 128 axes (64 stepper/servo and 64 virtual), 1024 digital inputs and outputs and 32 analogue inputs and analog outputs.
- Precise 64 bit Motion Calculations with Quad Core Cortex A9 1GHz Processor for multiple simultaneous robotic transformations.
- Ideal for ultra-precise axes count machines or robotic applications.
- Expansions modules available for managing step & dir analogue signals and encoder feedback.



## SPECIFICATIONS

- Multitasking Operating System
- Comprehensive Motion Library
- TrioBasic Motion Language
- IEC61131-3 Programming
- TS SERIES HMI Support
- Robotic Functions (licensed separately)
- Multi-protocol Communications Support

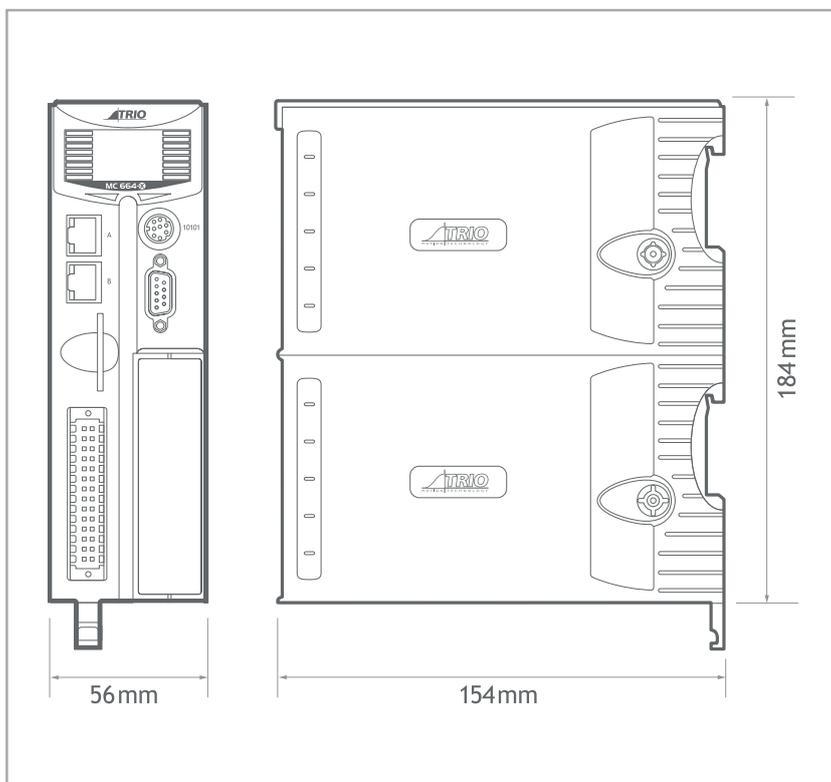


## TECHNICAL FEATURES

- Up to 128 Axes - Stepper / Servo Axes
- Precise 64 bit Motion calculations with Quad Core Cortex A9 1GHz Processor
- Dedicated communications Core
- Built-in EtherCAT port
- Built-in Ethernet interface / Ethernet-IP / Modbus TCP
- Anybus-CC module for flexible factory comms including Profinet/Profibus, Sercos II, SLM and RTEX
- Multi-tasking TRIO BASIC programming
- SD memory card slot
- CANopen I/O expansion
- Backlit LCD display



## MECHANICAL DIMENSIONS





MOTION CONTROLLERS

# PULSE TRAIN & ANALOG INPUT MOTION CONTROLLERS



# MC 403 / MC 405 *Flexible Motion Coordinators*

## INTRODUCTION

MC 403 and MC 405 are high specification and flexible Motion Coordinators which perfectly fits the traditional R.T.A. motion control solution.

Both models offer maximum flexibility for advanced application in industrial automation, where high performance in interpolated motion is required.

## MAIN FEATURES

- Linear, circular, helical and spherical interpolation.
- Virtual axes flexible cam shapes, and linked motion.
- Precise 64 bit Motion Calculator ARM11 processor with VFP.
- Multi-tasking TRIO BASIC programming.
- Text file handing.
- Robotic transformations.
- Micro SD Memory Card slot.
- CANopen I/O expansions available.
- RoHS and UL approved.

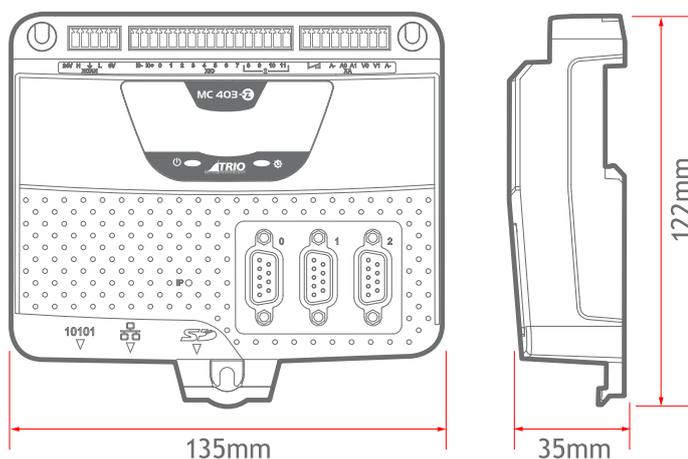


## TECNICAL FEATURES

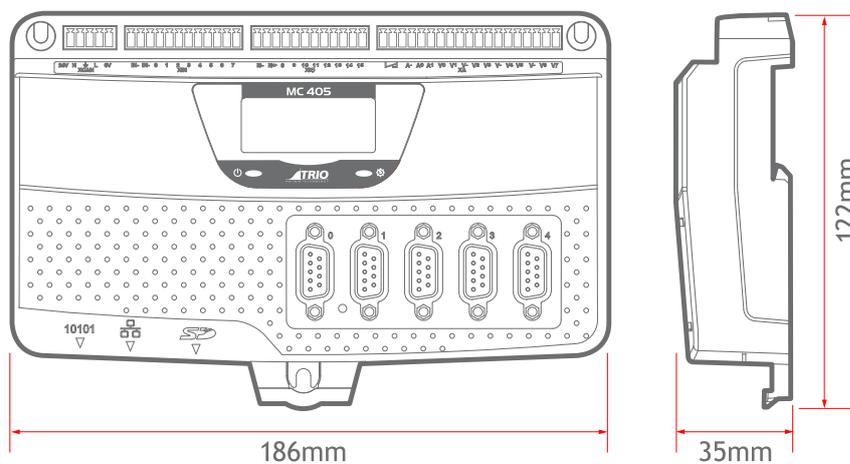
SPECIFICATIONS	MC 403	MC 405
PULSE TRAIN/AXIS	3	5
SERVO AXIS	2	4
DRIVE COMMUNICATION LOOP	125 - 2000 $\mu$ s	
BUILT-IN INTERFACES	Ethernet Interface / Ethernet-IP / Modbus TCP	
SUPPORTED ENCODER	EnDat Line Driver ABZ SSI Absolute	
PROGRAMMING LANGUAGE	TRIO BASIC and IEC 61131-3	

## MECHANICAL DIMENSIONS

MC 403



MC 405



MOTION CONTROLLERS  
CAN I/O MODULES



# CAN 16-IN / OUT digital

## INTRODUCTION

The Trio CAN16 Input/Output module offers a compact DIN rail mounted I/O expansion capability for motion coordinators.

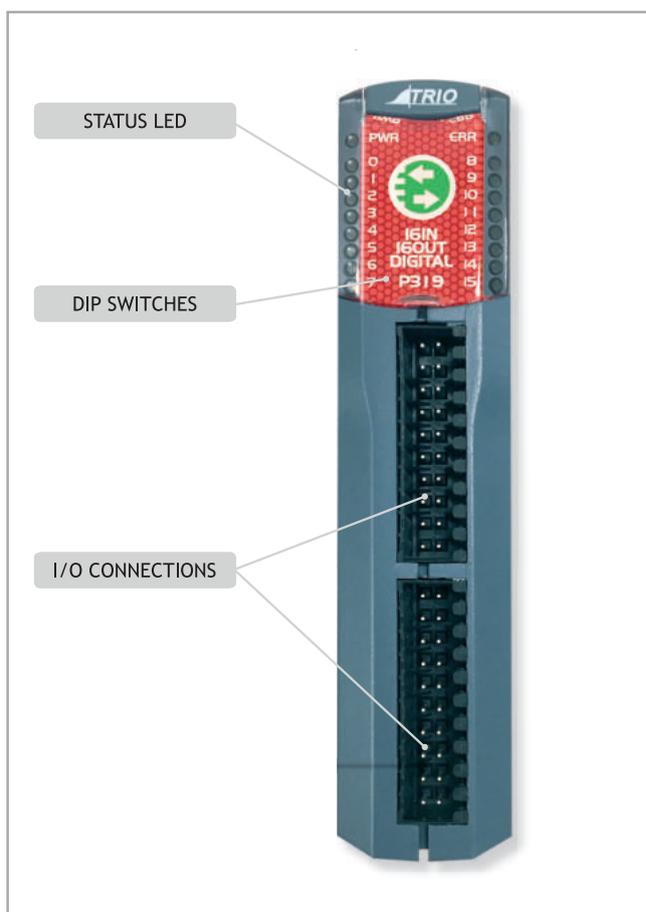
It can provide up to 256 distributed bi-directional I/O channels at 24 VDC level.

This module can be mixed on the same bus, with other types in the CAN I/O range, reducing considerably the machine wiring.

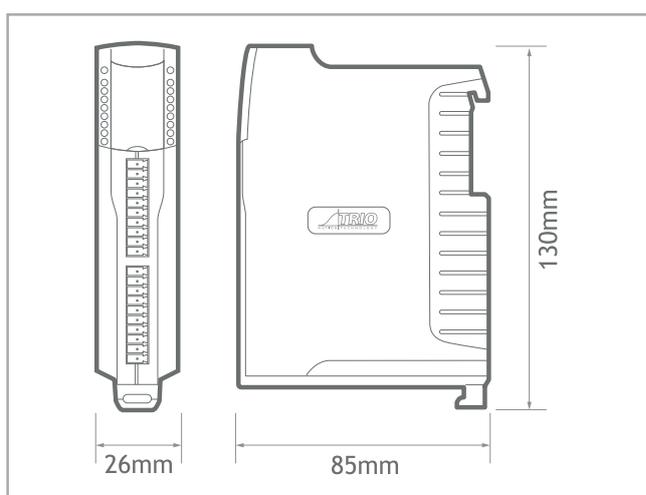


## MAIN FEATURES

<b>Inputs</b>	16 x 24V input channels with 2500V isolation
<b>Outputs</b>	16 x 24V sourcing (PNP) output channels
<b>Configuration</b>	2 x 8 bi-directional input/output channels
<b>Protection</b>	Outputs are overcurrent and over temperature rated
<b>Indicators</b>	Individual status LEDs
<b>Address settings</b>	Via DIP switches
<b>Power supply</b>	24 V / 1,5 W
<b>Mounting</b>	DIN rail mount
<b>Size</b>	26 mm wide x 85 mm deep x 130 mm high
<b>Weight</b>	168 g
<b>CAN</b>	500 kHz, up to 256 expansion output channels
<b>EMC</b>	EN61000-6-2 (2005) Industrial Noise Immunity EN61000-6-4 (2007) Industrial Noise Emissions
<b>CAN protocol</b>	TrioCAN I/O / CANopen Ds401
<b>Compliances</b>	UL and RoHS



## MECHANICAL DIMENSIONS





MOTION CONTROLLERS

**HMI - TS SERIES**



# TS series TOUCH SCREEN - HMI

## MAIN SPECIFICATIONS

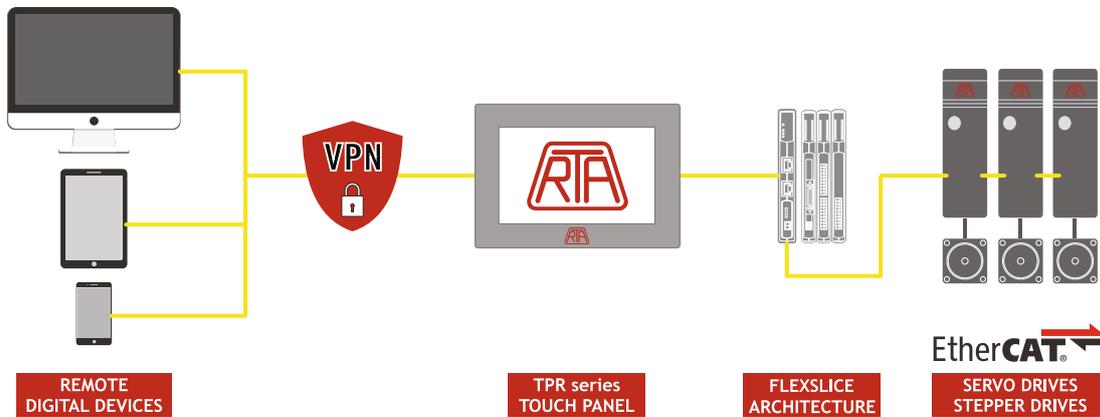
- Three models in two sizes
- Free developer tools
- Free remote control (VPN)
- Easy integration with R.T.A. products
- R.T.A. support team



MODEL		TS-07-IP-0	TS-07-IE-R	TS-10-XE-R
SOFTWARE FEATURES	EMAIL		■	■
	VNC VIEWER - VNC SERVER		■	■
	PLC TAG EMBEDDED IN PROJECT	■	■	■
	CIRCULAR TREND DISPLAY		■	■
	COMBO BUTTON		■	■
	MEDIA PLAYER			■
	MQTT(PUBLISHER / SUBSCRIBER)		■	■
	OPERATION LOG		■	■
	OPC UA CLIENT		■	■
	PICTURE VIEWER		■	■
	RECIPE DATABASE		■	■
REMOTE CONTROL	EASY ACCESS 2.0	No	Built-in	Built-in
I/O PORT	ETHERNET	10/100 Base-T x 1	10/100/1000 Base-T x 2	10/100/1000 Base-T x 2

## HOW DOES REMOTE CONTROL WORK

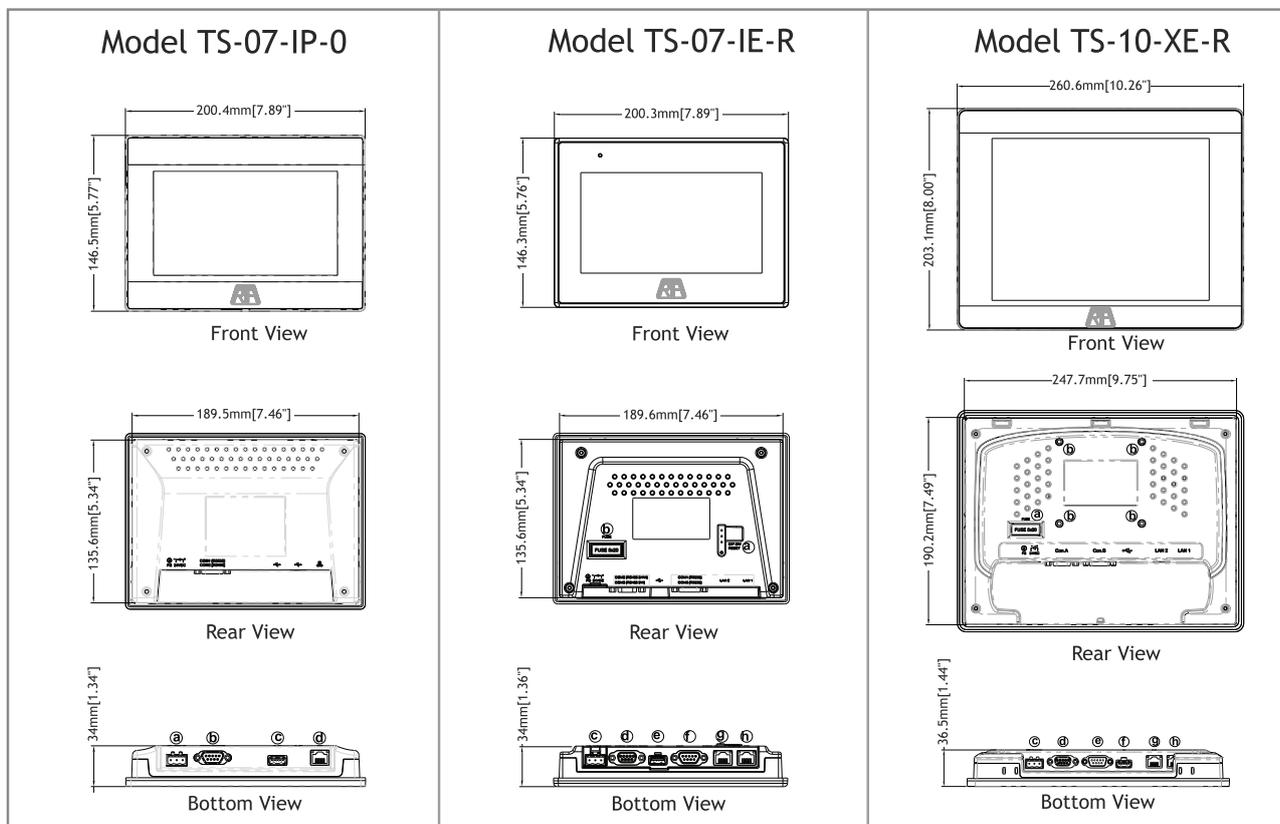
EasyAccess 2.0 enables the operator to easily connect and monitor the remote HMI from anywhere in the world, through a protected remote VPN connection.



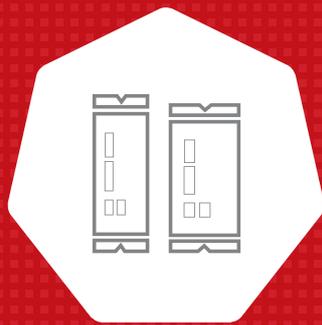
## ADVANCED SPECIFICATIONS

MODEL	TS-07-IP-0	TS-07-IE-R	TS-10-XE-R	
DISPLAY	DISPLAY	7" TFT	7" TFT	9.7" TFT
	RESOLUTION	800x480	800x480	1024x768
	BACKLIGHT LIFE TIME	>30,000 hrs.	>30,000 hrs.	>30,000 hrs.
MEMORY	FLASH	128 Mb	128 Mb	512 Mb
	RAM	128 Mb	128 Mb	256 Mb
PROCESSOR		32 bits RISC Cortex-A8 600 MHz	32 bits RISC Cortex-A8 600 MHz	32 bits RISC Cortex-A8 1 GHz
I/O PORT	USB HOST	USB 2.0 x 1	USB 2.0 x 1	USB 2.0 x 1
	COM PORT	COM1: RS-232, COM2: RS-485 2W/4W /	COM1: RS-232, COM2: RS-485 2W/4W COM3: RS-232/RS-485 2W	Con.A: COM2 RS-485 2W/4W, COM3 RS-485 2W Con.B: COM1 RS-232, COM3 RS-232
RTC		Built-in	Built-in	Built-in
CERTIFICATE		CE	CE/UL/ATEX	CE/UL/ATEX
DIMENSIONS	DIMENSIONS WxHxD	200.4 x 146.5 x 34 mm	200.3 x 146.3 x 34 mm	260.6 x 203.1 x 36.5 mm
	PANEL CUTOUT	192 x 138 mm	192 x 138 mm	248.5 x 191 mm
ENVIROMENT	PROTECTION STRUCTURE	NEMA4 / IP65 Compliant Front Panel	UL Type 4X (indoor use only)/ NEMA4/ IP65 Compliant Front Panel	NEMA4/IP65 Compliant Front Panel
POWER	INPUT POWER	24 ± 20% VDC	24 ± 20% VDC	24 ± 20% VDC
	POWER CONSUMPTION	500 mA at 24VDC	600 mA at 24VDC	650 mA at 24 VDC
	POWER ISOLATION	Built-in	Built-in	Built-in

## DIMENSIONS (UNIT: mm)







## STEPPING MOTOR DRIVES





# STEPPING MOTOR DRIVES



## INDEX

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## 6 Drives families, nearly 100 different models

EtherCAT®

CANopen®

Modbus  
TCP/IP



## Key advantages of R.T.A. stepper drives

- Wide range of operating protocols: Step/Dir, Analog, RS485, EtherCAT, ModBus TCP, CAN Open.
- Tuneless Closed-Loop and Auto-Synchronization functions for EtherCAT and ModBus drives.
- 110-230Vac Direct Voltage Bus technology for top speed/torque performances up to 3,000 rpm.
- Widest power range on market: 200+ models from 24 Vdc to 230 Vac - from 0.1A to 10A.
- Modular, stand-alone and combo units.
- Simplicity by Design: immediate installation setup and easy maintenance.
- Defect-free guaranteed at delivery: double individual test for all models prior to shipment.
- 100% Made in Italy: Design, Production, Assembling, Testing.

## R.T.A. Customer is never left alone

- Pre-sales sizing/selection service.
- Multilanguage post-sales hardware & software technical staff.
- Products availability and support guaranteed for 20 years after installation and wide range of legacy models for spare/maintenance.
- Sales Network in 40+ countries worldwide.
- 24 months International Warranty.



## Main features

- Current range: from 0,1 A to 12 A.
- Operating Voltage range: from 24 VDC to 230 VAC.
- 230 VAC versions, with power supply directly from the main (110 VAC or 230 VAC).
- UL / CSA certified versions available.



## R.T.A. 6 Drives families:

1 EtherCAT

2 CANopen

3 MODBUS TCP/IP

4 STEP & DIRECTION ADVANCED

5 PROGRAMMABLE

6 ANALOG INPUT

EtherCAT

CANopen

Modbus TCP/IP



### DRIVE TYPE GLOSSARY

**ET** EtherCAT

**PM** PROGRAMMABLE

**AD** STEP & DIRECTION ADVANCED

**MT** MODBUS TCP/IP

**CO** CANopen

**AI** ANALOG INPUT

# 1 EtherCAT



- Bus voltage range: 24 VDC-230 VAC  
Rated current: up to 6 A (120% current overboost)
- Extremely wide product portfolio of EtherCAT drives ranging from 25W to 1000W Power.
  - Proven compatibility with most EtherCAT master controllers.
  - Easy setup all through EtherCAT parameters.
  - 1 Firmware for all drivers.
  - Double power supply.
  - Open loop, closed loop and full closed loop.
  - Programmable I/O.
  - Profiles: Homing, PP, CSP, CSV.
  - UL / CSA certified versions.
  - STO (SIL 3 - PL=e) Function available.



## AUTO-SYNC FUNCTION TO AVOID LOSS OF SYNCHRONISM / LOSS OF STEP

### Table of contents

#### EtherCAT

	DRIVE TYPE	VOLTAGE RANGE (V)	CURRENT RANGE (A) OVERBOOST	DIMENSIONS (mm)	CERTIFICATIONS	SUGGESTED MOTORS	PAGE
<b>Stand Alone</b>							
CSD ET 94	ET	24 - 48 VDC	4.0 4,8	Box: 130 x 106 x 32 mm Plug-In connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	50
PLUS ET A3	ET	39 - 85 VDC	6.0 7,2	Box: 152 x 129 x 46 mm Plug-In connectors	CE	Nema 23, 60 mm, Nema 34	52
PLUS ET B3	ET	28 - 62 VDC	6.0 7,2	Box: 152 x 129 x 46 mm Plug-In connectors	CE	Nema 23, 60 mm, Nema 34	52
X-PLUS ET S4	ET	110 - 230 VAC Supply directly from the main	4.0 4,8	Box: 169 x 129 x 46 mm Plug-In connectors	CE,UL,CSA + STO SIL3	Nema 23 or bigger (with rating for high voltage)	54
X-PLUS ET B4	ET	110 - 230 VAC Supply directly from the main	4.0 4,8	Box: 169 x 129 x 46 mm Plug-In connectors	CE,UL,CSA	Nema 23 or bigger (with rating for high voltage)	56
<b>Modular</b>							
FLEX-DRIVE MSE-408	ET	24 - 48 VDC	4.0 4,8	Box: 147 x 17 x 107 mm Plug-In connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	58
FLEX-DRIVE MSB-204	ET	24 - 48 VDC	2.4 2,9	Box: 147 x 17 x 107 mm Plug-In connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	58
<b>Combo Unit</b>							
R-MOD ET A3H2ML <i>BATTERYLESS ABSOLUTE ENCODER</i>	ET	24 - 48 VDC	//	//	CE	//	62
R-MOD ET E3H2MA <i>BATTERYLESS ABSOLUTE ENCODER</i>	ET	24 - 48 VDC	//	//	CE	//	62
R-MOD ET A3H2MA	ET	24 - 48 VDC	//	//	CE	//	62
HI-MOD ETS A4F2HL <i>BATTERYLESS ABSOLUTE ENCODER</i>	ET	32 - 75 VDC	//	//	CE,UL,CSA + STO SIL3	//	64
HI-MOD ETS A4F2HC <i>BATTERYLESS ABSOLUTE ENCODER</i>	ET	32 - 75 VDC	//	//	CE,UL,CSA + STO SIL3	//	64
HI-MOD ETS E4F2HC	ET	32 - 75 VDC	//	//	CE,UL,CSA + STO SIL3	//	64
HI-MOD ET E3F2HA	ET	32 - 75 VDC	//	//	CE	//	64

## 2 CANopen



Operating Bus voltage range:  
24 VDC 85 VDC

**CANopen**

- Microstepping function up to 3200 step/revolution.
- Incremental or absolute encoder function.
- UL / CSA certified versions available.

### Table of contents

#### CANopen

	DRIVE TYPE	VOLTAGE RANGE (V)	CURRENT RANGE (A)	DIMENSIONS (mm)	CERTIFICATIONS	SUGGESTED MOTORS	PAGE
<b>Combo Unit</b>							
HI-MOD A3F1H2 BATTERYLESS ABSOLUTE ENCODER	CO	32 - 75 VDC	//	//	CE	//	68
HI-MOD A3F2H2 BATTERYLESS ABSOLUTE ENCODER	CO	32 - 75 VDC	//	//	CE	//	68
HI-MOD A3F1H5 BATTERYLESS ABSOLUTE ENCODER	CO	32 - 75 VDC	//	//	CE,UL,CSA	//	68
HI-MOD A3F2H5	CO	32 - 75 VDC	//	//	CE,UL,CSA	//	68
HI-MOD E3F1H2	CO	32 - 75 VDC	//	//	CE	//	68
HI-MOD E3F2H2	CO	32 - 75 VDC	//	//	CE	//	68
HI-MOD E3F3H2	CO	32 - 75 VDC	//	//	CE	//	68
HI-MOD E3F1H5	CO	32 - 75 VDC	//	//	CE,UL,CSA	//	68
HI-MOD E3F2H5	CO	32 - 75 VDC	//	//	CE,UL,CSA	//	68
HI-MOD E3F3H5	CO	32 - 75 VDC	//	//	CE,UL,CSA	//	68
<b>Not preferred models</b>							<b>PAGE</b> 70

"Not preferred models" are models which have been replaced with the latest versions. They are still available in R.T.A.'s stock, however they are not recommended for new applications.

## 3 MODBUS TCP



Operating Bus voltage range:  
110 VAC - 230 VAC  
Phase current range: 2.4 A - 4.0 A  
(120% current overboots)

- Full digital microstepping drive
- Modes of operations: PP, PV, Homing
- Configurable IP address via USB port
- UL / CSA certified versions available



### Table of contents

#### MODBUS TCP

	DRIVE TYPE	VOLTAGE RANGE (V)	CURRENT RANGE (A) OVERBOOST	DIMENSIONS (mm)	CERTIFICATIONS	SUGGESTED MOTORS	PAGE
<b>Stand Alone</b>							
X-PLUS MT.S4	MT	110 - 230 VAC Supply directly from the main	2.4 - 4.0 4,8	Open frame drive: 152 x 129 x 46 mm Plug-In connectors	CE,UL,CSA + STO SIL3	Nema 23 or bigger (with rating for high voltage)	72
X-PLUS MT.B4	MT	110 - 230 VAC Supply directly from the main	2.4 - 4.0 4,8	Open frame drive: 152 x 129 x 46 mm Plug-In connectors	CE,UL,CSA	Nema 23 or bigger (with rating for high voltage)	72

## 4 STEP & DIRECTION ADVANCED



Bus voltage range: 24 VDC -230 VAC  
Phase current range: 0,6 A - 8 A

- Full digital microstepping drive.



**STO**

**SIL3**  
SAFE TORQUE  
OFF (STO)

- Adaptive microstepping up to 12.800 step/revolution (1/64).
- Direct input from the main AC power supply versions available.
- Excellent smoothness of movement.
- Low noise and vibrations.
- UL/CSA certified versions available.

### Table of contents

#### STEP & DIRECTION ADVANCED

	DRIVE TYPE	VOLTAGE RANGE (V)	CURRENT RANGE (A)	DIMENSIONS (mm)	CERTIFICATIONS	SUGGESTED MOTORS	PAGE
BSD 02	AD	24 - 48 VDC	0.7 - 2.2	Open frame drive: 78 x 68 x 21 mm AMP connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	76
BSD 02.V	AD	24 - 48 VDC	0.7 - 2.2	Open frame drive: 78 x 68 x 21 mm Screw-type connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	76
BSD 02.S	AD	24 - 48 VDC	0.7 - 2.2	Open frame drive: 78 x 68 x 21 mm Pin connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	78
A-CSD 02	AD	24 - 48 VDC	0.7 - 2.4	Open frame drive: 92 x 85 x 22 mm AMP connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	80
A-CSD 02.V	AD	24 - 48 VDC	0.7 - 2.4	Open frame drive: 92 x 85 x 22 mm Screw-type connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	80
A-CSD 04	AD	24 - 48 VDC	2.6 - 4.4	Open frame drive: 92 x 85 x 23 mm AMP connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	80
A-CSD 04.V	AD	24 - 48 VDC	2.6 - 4.4	Open frame drive: 92 x 85 x 23 mm Screw-type connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	80
A-CSD 92	AD	24 - 48 VDC	0.7 - 2.4	Open frame drive: 90 x 99 x 21 mm Plug-In connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	80
A-CSD 94	AD	24 - 48 VDC	2.6 - 4.4	Open frame drive: 92 x 85 x 22 mm Plug-In connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	80
HGD 02	AD	24 - 75 VDC	0.75 - 2.0	Open frame drive: 70 x 70 x 25 mm PIN connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	82
HGD 05	AD	24 - 75 VDC	2,25 - 6,0	Open frame drive: 110 x 108 X 34 mm PIN connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	82
A-NDC 04	AD	24 - 85 VDC	0.6 - 2.0	Open frame drive: 101 x 94 x 25 mm AMP connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	84
A-NDC 04.V	AD	24 - 85 VDC	0.6 - 2.0	Open frame drive: 101 x 94 x 25 mm Screw-type connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	84
A-NDC 06	AD	24 - 85 VDC	1.9 - 6.0	Open frame drive: 101 x 94 x 25 mm AMP connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	84

### STEP & DIRECTION ADVANCED

	DRIVE TYPE	VOLTAGE RANGE (V)	CURRENT RANGE (A)	DIMENSIONS (mm)	CERTIFICATIONS	SUGGESTED MOTORS	PAGE
A-NDC 06.V	AD	24 - 85 VDC	1.9 - 6.0	Open frame drive: 101 x 94 x 25 mm Screw-type connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	84
A-NDC 94	AD	24 - 85 VDC	0.6 - 2.0	Open frame drive: 110 x 108 x 34 mm Plug-In connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	84
A-NDC 96	AD	24 - 85 VDC	1.9 - 6.0	Open frame drive: 110 x 108 x 34 mm Plug-In connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	84
X-PLUS L2	AD	110 - 230 VAC Supply directly from the main	1.4 - 2.5	Open frame drive: 152 x 129 x 30 mm Plug-In connectors	CE	Nema 23 or bigger (with rating for high voltage)	86
X-PLUS B4.1	AD	110 - 230 VAC Supply directly from the main	2.4 - 4.0	Open frame drive: 152 x 129 x 46 mm Plug-In connectors	CE	Nema 23 or bigger (with rating for high voltage)	88
X-PLUS S4.1	AD	110 - 230 VAC Supply directly from the main	2.4 - 4.0	Open frame drive: 152 x 129 x 46 mm Plug-In connectors	CE,UL,CSA + STO SIL3	Nema 23 or bigger (with rating for high voltage)	90
X-PLUS C4.1	AD	110 - 230 VAC Supply directly from the main	2.4 - 4.0	Open frame drive: 152 x 129 x 46 mm Plug-In connectors	CE,UL,CSA	Nema 23 or bigger (with rating for high voltage)	92

#### Not preferred models

PAGE 94

"Not preferred models" are models which have been replaced with the latest versions. They are still available in R.T.A.'s stock, however they are not recommended for new applications.

## 5 PROGRAMMABLE



Operating Bus voltage range: 28 VAC - 230 VAC  
Phase current range: 0,1 A - 8 A

- Microstepping function up to 4000 step/revolution.



- Communication through RS485 serial line.
- Motor loss of synchronism alarm function available.
- Direct input from the main AC power supply versions available.

### Table of contents

#### PROGRAMMABLE

	DRIVE TYPE	VOLTAGE RANGE (V)	CURRENT RANGE (A)	DIMENSIONS (mm)	CERTIFICATIONS	SUGGESTED MOTORS	PAGE
CSD J2	PM/AI	24 - 48 VDC	1.2 - 2.1	Box: 90 x 99 x 30 mm Plug-In connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	98
CSD J4	PM/AI	24 - 48 VDC	2.6 - 4.4	Box: 90 x 99 x 30 mm Plug-In connectors	CE	Nema 11, Nema 17, Nema 23, 60 mm	98
PLUS J5	PM/AI	28 - 62 VAC	4.4 - 8.0	Box: 152 x 129 x 46 mm Plug-In connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	100
PLUS K4	PM	55 - 100 VAC	3.4 - 6.0	Box: 152 x 129 x 46 mm Plug-In connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	102
PLUS K5	PM	28 - 62 VAC	4.4 - 8.0	Box: 152 x 129 x 46 mm Plug-In connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	102
X-MIND K4	PM	110 - 230 VAC Supply directly from the main	2.3 - 4.0	Box: 180 x 173 x 53 mm Plug-In connectors	CE	Nema 23 or bigger (with rating for high voltage)	104
X-MIND K6	PM	110 - 230 VAC Supply directly from the main	3.4 - 6.0	Box: 180 x 173 x 53 mm Plug-In connectors	CE	Nema 34 or bigger (with rating for high voltage)	104

#### Not preferred models

PAGE 106

"Not preferred models" are models which have been replaced with the latest versions. They are still available in R.T.A.'s stock, however they are not recommended for new applications.

## 6 ANALOG INPUT



Bus voltage range: 24 VDC - 100 VAC  
Phase current range: 0,6 A - 6 A

- Microstepping function up to 4000 step/revolution.



- Intelligent management of the current profile.
- Excellent smoothness of movement.
- Low noise and vibrations.

### Table of contents

#### ANALOG INPUT

	DRIVE TYPE	VOLTAGE RANGE (V)	CURRENT RANGE (A)	DIMENSIONS (mm)	CERTIFICATIONS	SUGGESTED MOTORS	PAGE
ADW 04	AI	24 - 75 VDC	0.65 - 2.0	Open-frame drive: 122 x 94 x 25 mm AMP connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	108
ADW 04.V	AI	24 - 75 VDC	0.65 - 2.0	Open-frame drive: 122 x 94 x 25 mm Screw-type connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	108
ADW 06	AI	24 - 75 VDC	1.9 - 6.0	Open-frame drive: 122 x 94 x 25 mm AMP connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	108
ADW 06.V	AI	24 - 75 VDC	1.9 - 6.0	Box: 122 x 94 x 25 mm Screw-type connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	108
ADW 94	AI	24 - 75 VDC	0.65 - 2.0	Box: 152 x 129 x 46 mm Plug-In connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	108
ADW 96	AI	24 - 75 VDC	1.9 - 6.0	Box: 152 x 129 x 46 mm Plug-In connectors	CE	Nema 17, Nema 23, 60 mm, Nema 34	108

#### ACCESSORIES - SWITCHING POWER SUPPLY

	NOMINAL POWER (W)	INPUT (V)	OUTPUT (V)	DIMENSIONS (mm)	CERTIFICATIONS	PAGE
R-UHP 200-XX	200	90 - 264	12 VDC 24 VDC 48 VDC	194 x 55 x 26	CE	112
R-UHP 350-XX	350	90 - 264	12 VDC 24 VDC 48 VDC	220 x 62 x 31	CE	114
R-UHP 500-XX	500	90 - 264	12 VDC 24 VDC 48 VDC	232 x 81 x 31	CE	116
R-NDR 240-XX	240	90 - 264	24 VDC 48 VDC	125 x 64 x 114	CE	118
R-NDR 480-XX	480	90 - 264	24 VDC 48 VDC	125 x 86 x 129	CE	120

STEPPING MOTOR DRIVES

**EtherCAT**





# CSD ET 94 Series Drives



## EtherCAT®

### INTRODUCTION

- New series of stepping motor drives with EtherCAT interface, now available with a 3<sup>rd</sup> generation firmware release (2021).
- Drives optimized for coupling with SANYO DENKI stepping motors, fitted with encoder, but also able to manage third parts motors.
- Compact system, developed to offer a wide variety of integrated functions and optimized for the most demanding motion control applications.

### MAIN EtherCAT® FEATURES

- Modes of operation: PP, PV, Homing, CSP and CSV.
- Wide range of motor phase current setting and motor current overboost (120%).
- Different variety of HOMING operation modes.
- Encoder feedback and support of different resolution.
- Touch Probe function available.
- Limit switches management.
- Auto-sync function available featuring a closed loop positioning.
- 5 + 5 I/Os.



Please refer to [download.rta.it](http://download.rta.it) for technical specifications

Series	Model	V <sub>DC</sub> range (Volt)	I nom. (Amp)	Digital In/Out	Dimensions (mm)
CSD ET	94	24 to 48	4.0	5/5	130x106x32

## TECHNICAL FEATURES

- Range of operating voltage 24-48 VDC.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available in plastic boxed version with plug-in connectors.
- Maximum compactness.
- Optoinsulated auxiliary and programmable inputs and outputs.
- Warranty: 24 months.

**EtherCAT**<sup>®</sup>

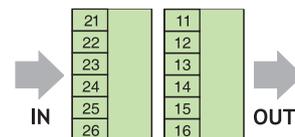
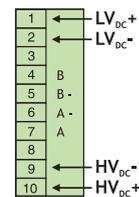
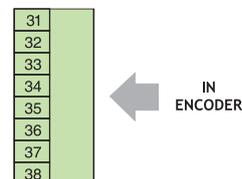


SCAN THE QR CODE TO  
WATCH A VIDEO ON THE  
AUTO-SYNC FUNCTION

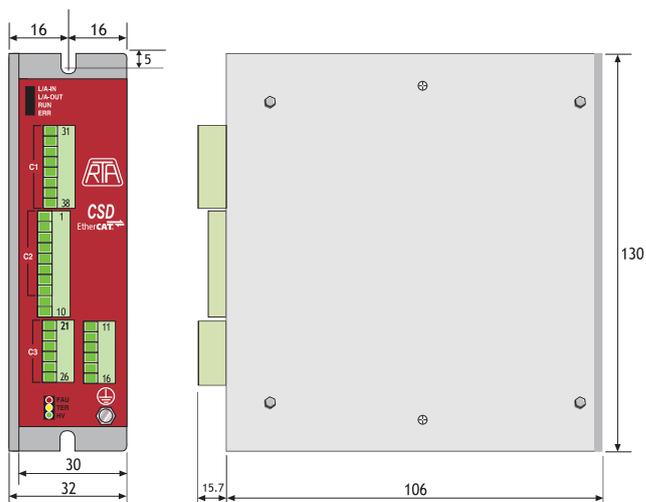


## POWER AND LOGIC CONNECTIONS

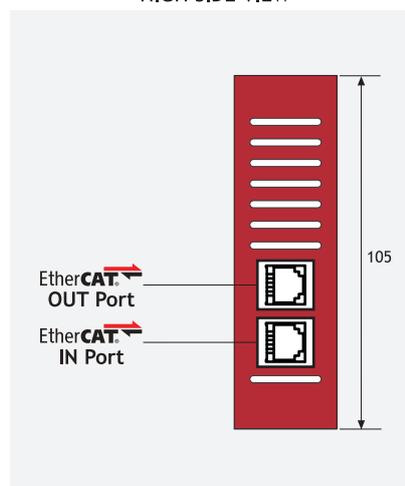
R. T.A. MOTORS  
RH/EM SERIES



## MECHANICAL DIMENSIONS



CSD ET  
HIGH SIDE VIEW



Dimensions in millimeters - Not in scale.

# PLUS ET Series Drives



## EtherCAT®

### INTRODUCTION

- New series of stepping motor drives with EtherCAT interface, now available with a 3<sup>rd</sup> generation firmware release (2021).
- Drives optimized for coupling with SANYO DENKI stepping motors, fitted with encoder, but also able to manage third parts motors.
- Compact system, developed to offer a wide variety of integrated functions and optimized for the most demanding motion control applications.

### MAIN EtherCAT® FEATURES

- Modes of operation: PP, PV, Homing, CSP and CSV.
- Wide range of motor phase current setting and motor current overboost (120%).
- Different variety of HOMING operation modes.
- Encoder feedback and support of different resolution.
- Touch Probe function available.
- Limit switches management.
- Auto-sync function available featuring a closed loop positioning.
- 4 + 3 I/Os.



Please refer to [download.rta.it](http://download.rta.it) for technical specifications

Series	Model	V <sub>AC</sub> range (Volt)	V <sub>DC</sub> range (Volt)	I nom. (Amp)	Digital In/Out	Dimensions (mm)
PLUS ET	A3	/	39 to 85	6.0	4/3	152x129x46
PLUS ET	B3	28 to 62	/	6.0	4/3	152x129x46

## TECHNICAL FEATURES

- Range of operating voltage: 39-85 VDC (PLUS ET A3) and 28-62 VAC (PLUS ET B3).
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available in plastic boxed version with plug-in connectors.
- Maximum compactness.
- Optoinsulated auxiliary and programmable inputs and outputs.
- External fans not needed.
- Warranty: 24 months.

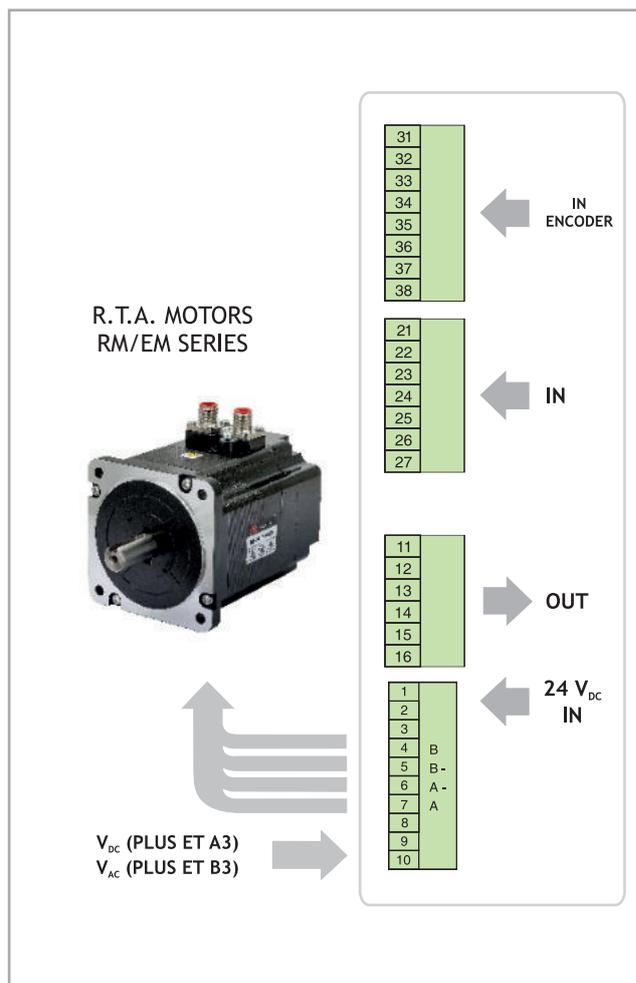
**EtherCAT**



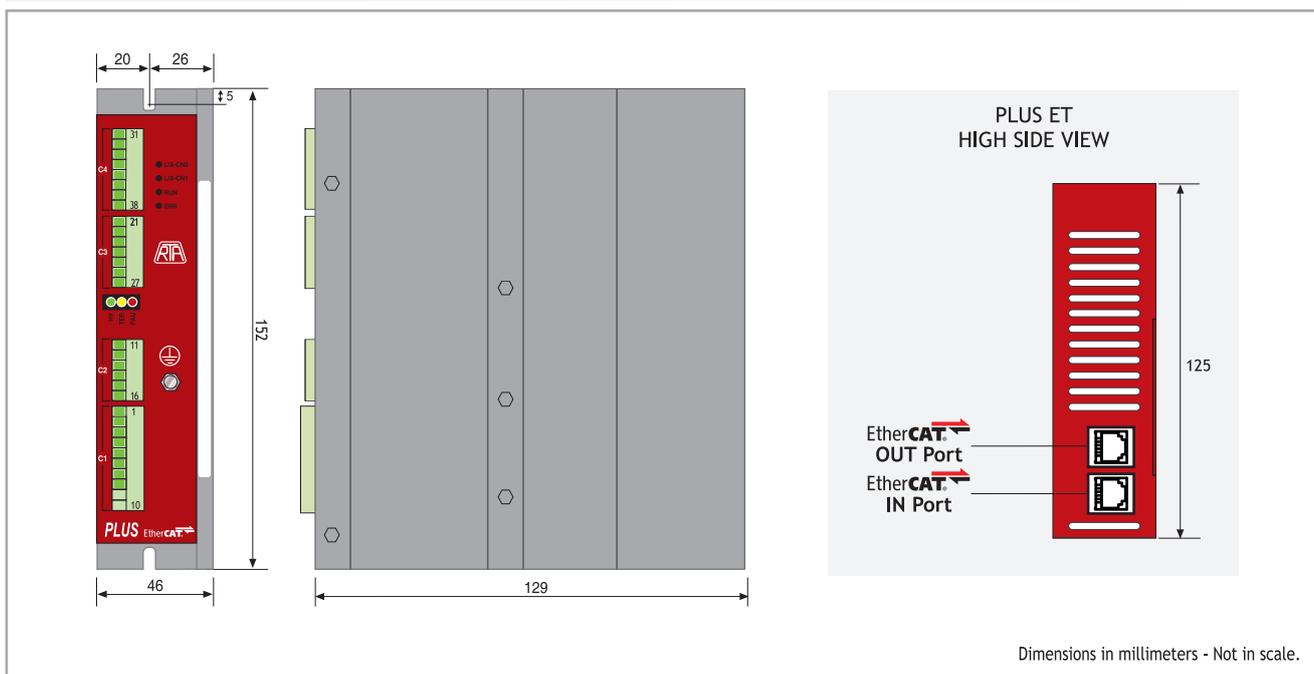
SCAN THE QR CODE TO WATCH A VIDEO ON THE AUTO-SYNC FUNCTION



## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS





# X-PLUS ET S4 Series Drives

## EtherCAT®

3rd  
FIRMWARE  
GENERATION

**SIL3**  
SAFE TORQUE  
OFF (STO)

**STO**  
**X-PLUS**  
EtherCAT®

### INTRODUCTION

- New series of stepping motor drives with EtherCAT interface, direct input from the main AC power supply (from 110 VAC to 230 VAC) and STO function.
- Drives optimized for coupling with SANYO DENKI stepping motors, fitted with encoder, but also able to manage third parts motors.
- High performance in terms of power and able to further increase the application potential.
- Compact system, developed to offer a wide variety of integrated functions and optimized for the most demanding motion control applications.

### MAIN EtherCAT® FEATURES

- Modes of operation: PP, PV, Homing, CSP and CSV.
- Wide range of motor phase current setting and motor current overboost (120%).
- Different variety of HOMING operation modes.
- Encoder feedback and support of different resolution.
- Touch Probe function available.
- Limit switches management.
- 4 + 3 I/Os and 2 STO.
- Auto-sync function available featuring a closed loop positioning.



**UL** US LISTED  
FILE NUMBER: E306454

**AUTO  
SYNC**  
FUNCTION

Please refer to [download.rta.it](http://download.rta.it)  
for technical specifications

### STO FUNCTION FEATURES

- Safe Torque Off (STO) function - **SIL3**
- Error Detection Monitor

**SIL3**  
SAFE TORQUE  
OFF (STO)

Series	Model	V <sub>AC</sub> range (Volt)	I nom. (Amp)	Digital In/Out	STO In	Dimensions (mm)
X-PLUS ET	S4	110 to 230 +/- 15%	4.0	4/3	2	169x129x46

## TECHNICAL FEATURES

- Possibility to switch off motor current by means of STO function.
- Range of operating voltage 110-230 VAC.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available in boxed version with plug-in connectors.
- Maximum compactness.
- Optoisolated auxiliary and programmable inputs and outputs.
- External fans not needed.
- UL / CSA certified.
- Warranty: 24 months.

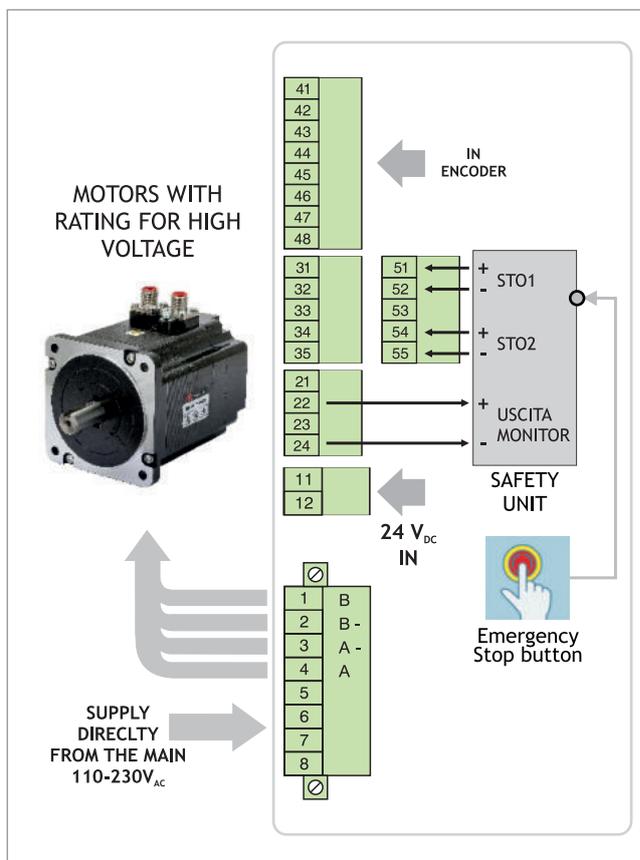
**EtherCAT**®



SCAN THE QR CODE TO WATCH A VIDEO ON THE AUTO-SYNC FUNCTION



## POWER AND LOGIC CONNECTIONS

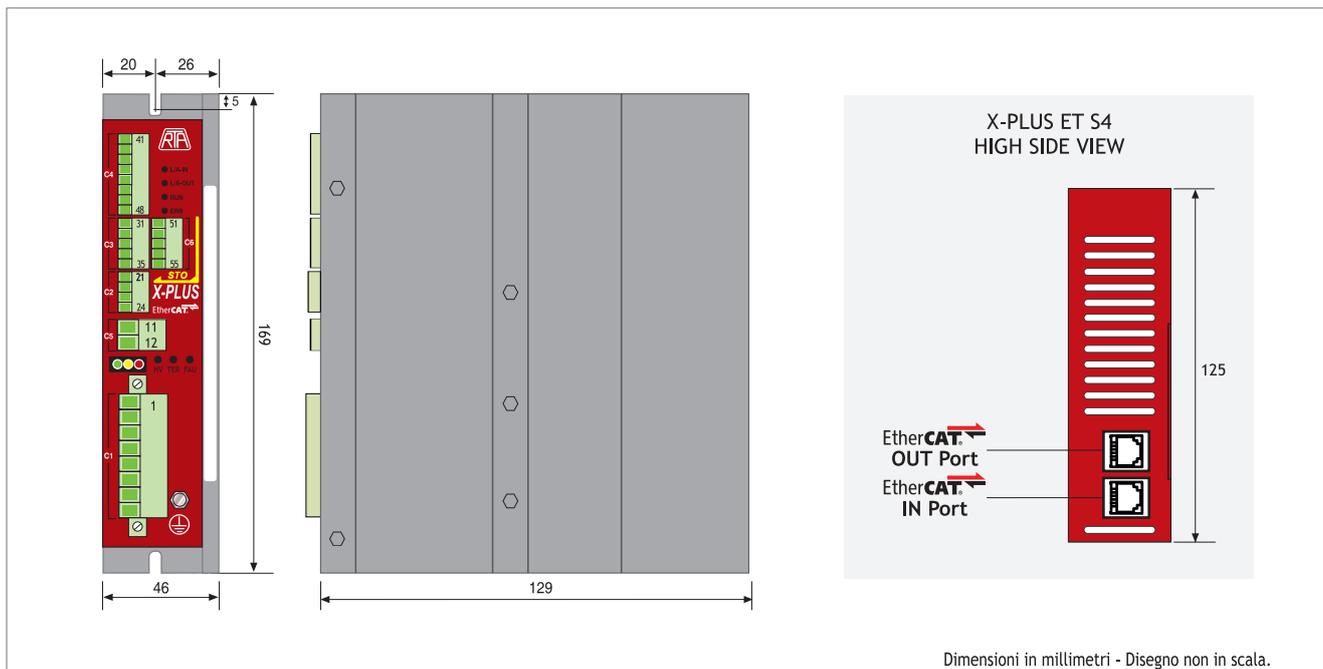


## STO FUNCTION FEATURES

- Safe Torque Off (STO) function [SIL3]
- Error Detection Monitor



## MECHANICAL DIMENSIONS



Dimensioni in millimetri - Disegno non in scala.

# X-PLUS ET B4 Series Drives



## EtherCAT®

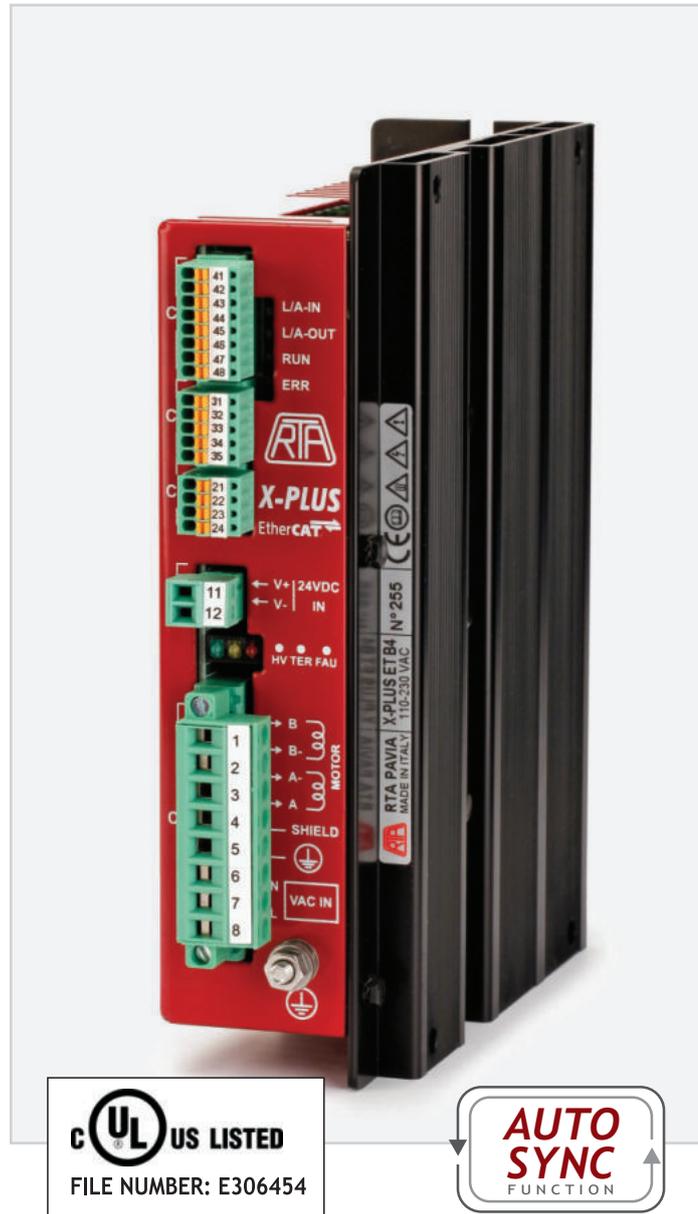
### INTRODUCTION

- New series of stepping motor drives with EtherCAT interface, direct input from the main AC power supply (from 110 VAC to 230 VAC).
- Drives optimized for coupling with SANYO DENKI stepping motors, fitted with encoder, but also able to manage third parts motors.
- High performance in terms of power and able to further increase the application potential.
- Compact system, developed to offer a wide variety of integrated functions and optimized for the most demanding motion control applications.

### MAIN EtherCAT® FEATURES

- Modes of operation: PP, PV, Homing, CSP and CSV.
- Wide range of motor phase current setting and motor current overboost (120%).
- Different variety of HOMING operation modes.
- Encoder feedback and support of different resolution.
- Touch Probe function available.
- Limit switches management.
- Auto-sync function available featuring a closed loop positioning.
- 4 + 3 I/Os.

Please refer to [download.rta.it](http://download.rta.it) for technical specifications



Series	Model	V <sub>ac</sub> range (Volt)	I nom. (Amp)	Digital In/Out	Dimensions (mm)
X-PLUS ET	B4	110 to 230 +/- 15%	4.0	4/3	169x129x46

## TECHNICAL FEATURES

- Range of operating voltage 110-230 VAC.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available in boxed version with plug-in connectors.
- Maximum compactness.
- Optoinsulated auxiliary and programmable inputs and outputs.
- External fans not needed.
- UL / CSA certified.
- Warranty: 24 months.

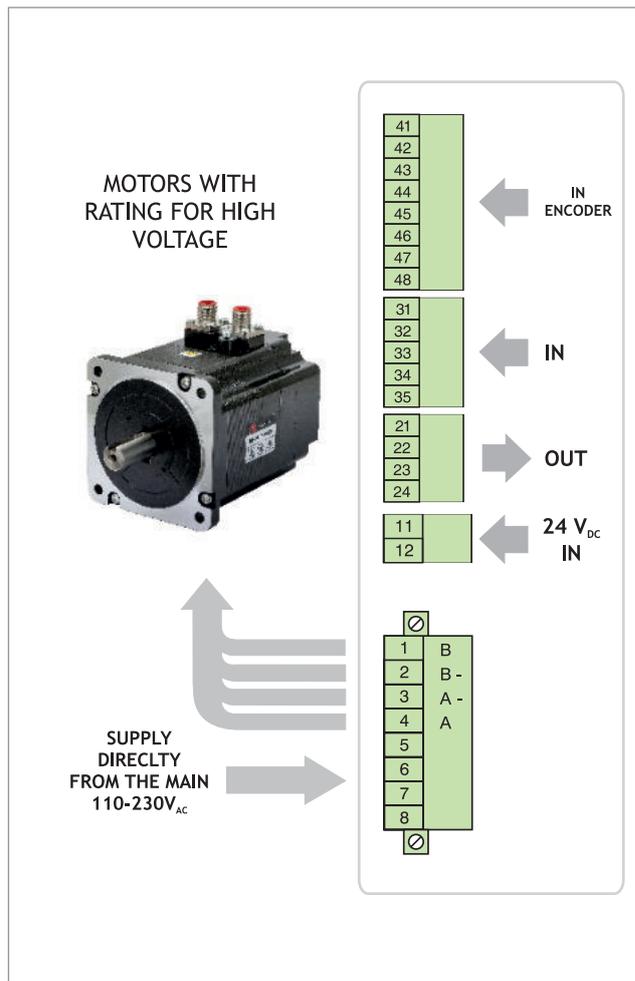
**EtherCAT**



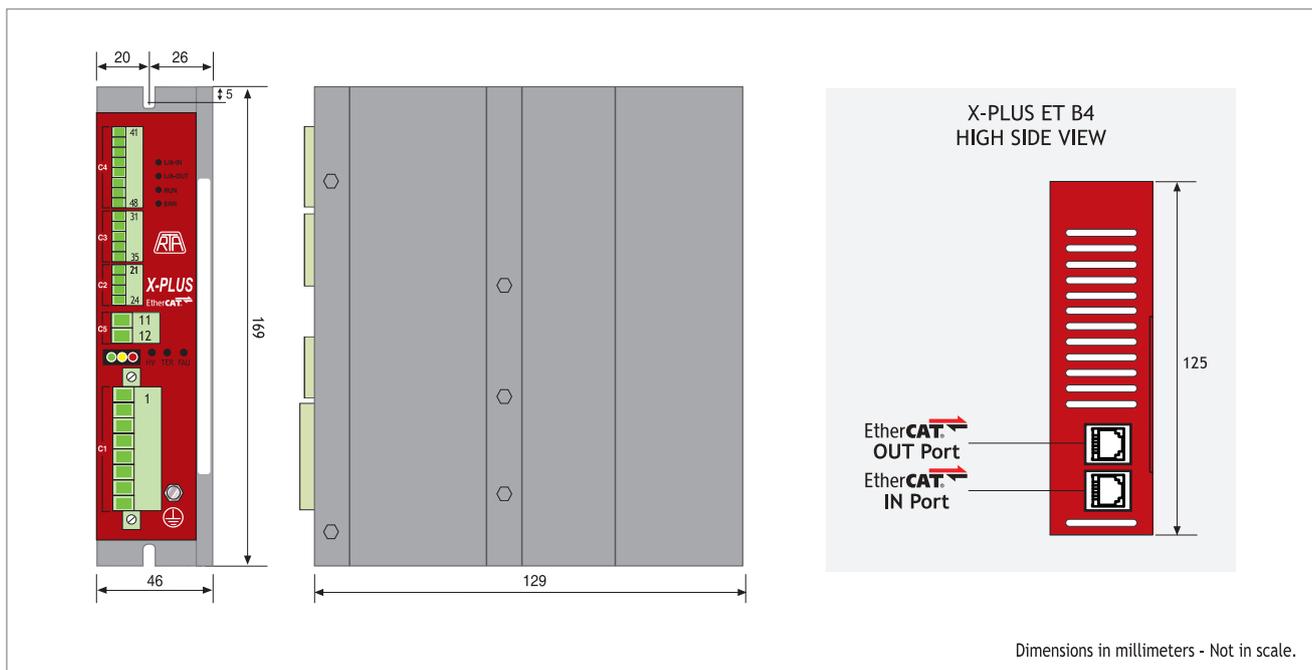
SCAN THE QR CODE TO  
WATCH A VIDEO ON THE  
AUTO-SYNC FUNCTION



## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



# FLEX-DRIVE Series Drives

**3<sup>rd</sup>**  
FIRMWARE  
GENERATION

## EtherCAT®

### INTRODUCTION

- FLEX-DRIVE allows connection with any stepper motor up to Nema 24 (60 mm) with or without encoder feedback, supporting PP, CSP, CSV and Homing mode of operation.
- MSE 408 model is equipped with one configurable fast capture input, suitable for Touch Probe, proximity or free use.
- Easy setup: no need of programming software, all settings are made through EtherCAT network.
- Separated power supply for logic circuit and motor power.

### MAIN EtherCAT® FEATURES

- Modes of operation: PP, PV, Homing, CSP and CSV.
- Wide range of motor phase current setting and motor current overboost (120%).
- Different variety of HOMING operation modes.
- Encoder feedback and support of different resolution.
- Touch Probe function available.
- Limit switches management.
- Auto-sync function available featuring a closed loop positioning.



Please refer to [download.rta.it](http://download.rta.it) for technical specifications



<p>FLEX-DRIVE</p>	<p>SCAN THE QR CODES TO WATCH TWO VIDEOS ON FLEX-DRIVE AND AUTO-SYNC FUNCTION</p>	<p>AUTO-SYNC</p>
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## MODELS AND FEATURES



### MSE 408 Model

- Voltage: 24-48 VDC
- $I_{NP}$  (Peak value): 4 A
- Sensor Feedback: ENCODER or OPEN LOOP

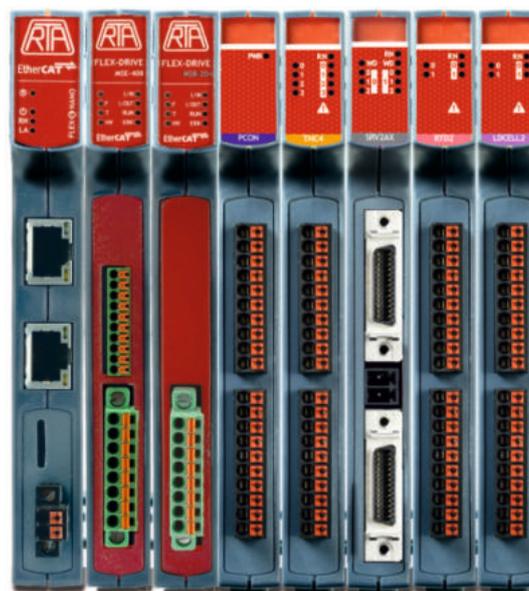


### MSB 204 Model

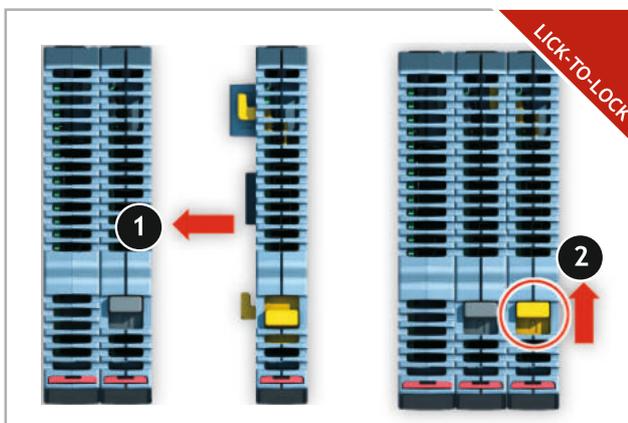
- Voltage: 24-48 VDC
- $I_{NP}$  (Peak value): 2.5 A
- Sensor Feedback: OPEN LOOP

## PERFECTLY FITTING THE FLEXSLICE ARCHITECTURE

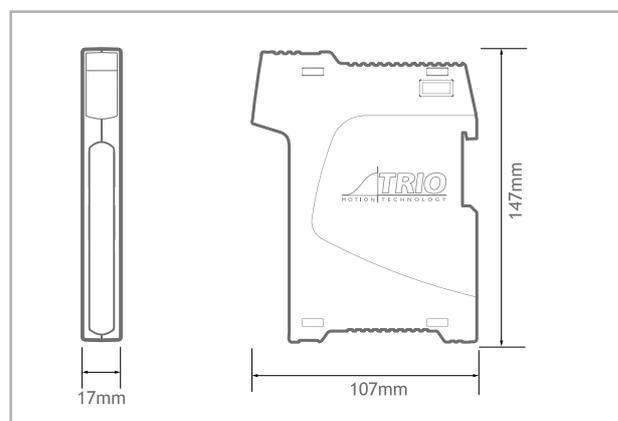
- The Flex-Drive series is designed to fit into FLEXSLICE SYSTEM, the modular EtherCAT architecture by TRIO MOTION TECHNOLOGY
- The direct connection with FLEX-6-NANO or Flex Ethercat COUPLER creates a powerful multiaxis modular system, composed by Motion Controller, stepping motor drives, digital and analogue I/Os, all sharing same internal EBUS and logic power supply.



## FAST & EASY ASSEMBLY



## MECHANICAL DIMENSIONS



# HI-MOD and R-MOD series Combo Units

## INTRODUCTION

First developed in 2004, the Combo Unit solution consists in two series of stepping motors in five sizes, with integrated drives based on EtherCAT or CANopen interface, with incremental or battery-less multi-turn absolute encoder.

It is a compact system housed in a metallic box mounted on motor body, minimizing dimensions and optimizing wiring and mounting easiness.

R.T.A. Combo Units are the ideal integrated solution for advanced applications requiring compact dimensions and ensuring perfect integration in complex architectures.



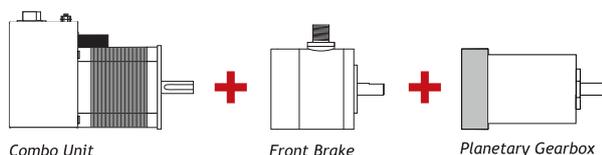
## COMBO UNITS EVOLUTION

- 2004: *First Release*
- 2006: *CANopen version*
- 2012: *UL Certification*
- 2014: *EtherCAT version*
- 2016: *STO Function*
- 2021: *Auto-Sync Function*

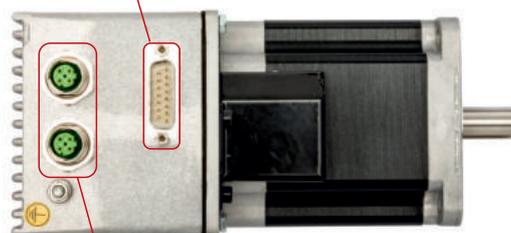
## HIGHLIGHTS

- Holding Torque up to 920 Ncm
- Auto-sync function available featuring a closed loop positioning.
- Battery-less multi-turn ABSOLUTE ENCODER versions
- STO Function - SIL3 with Error Detection Monitor
- Different HOMING operation modes
- UL/CSA Certified

### Front Brake and/or Gearbox versions available

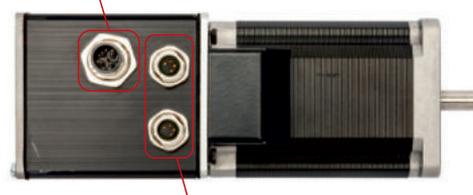


Power Supply, I/O, STO connector



M12 EtherCAT IN / OUT connectors

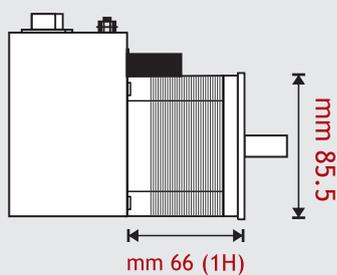
Power Supply, I/O connector



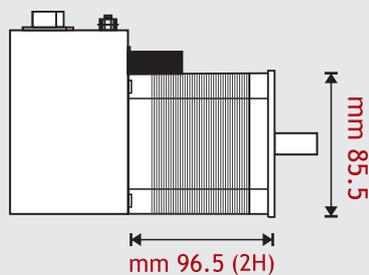
M8 EtherCAT IN / OUT connectors



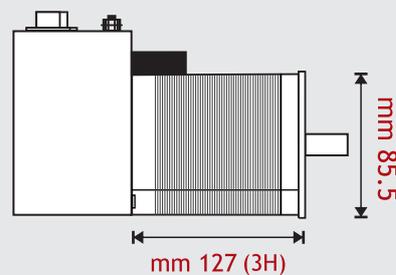
## HI-MOD series



Holding Torque: 360 Ncm

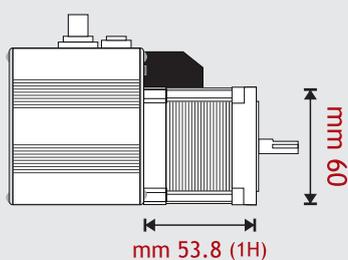


Holding Torque: 700 Ncm

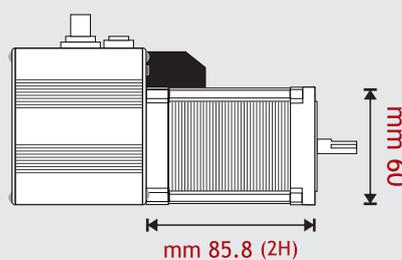


Holding Torque: 920 Ncm

## R-MOD series



Holding Torque: 170 Ncm



Holding Torque: 300 Ncm

# R-MOD ET Combo Unit



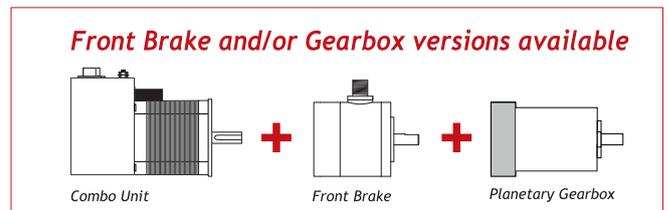
## EtherCAT®

### INTRODUCTION

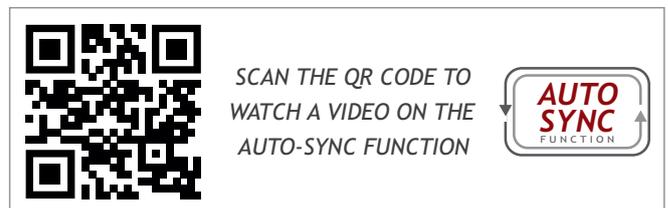
R-MOD ET is a series of stepping motors in two sizes with integrated ministep bipolar chopper EtherCAT drives, based on incremental or battery-less multi-turn absolute encoder.

### HIGHLIGHTS

- Two motor sizes
- Holding Torque up to 300 Ncm
- Communication by means of EtherCAT interface
- Different Operation Modes
- Available Inputs / Outputs
- Different HOMING operation modes
- PROXIMITY hardware input
- AUTO-SYNC function
- Battery-less Multi-turn ABSOLUTE ENCODER versions
- UL/CSA Certified

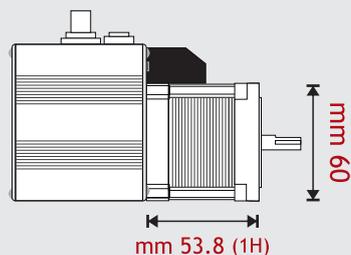


Please refer to [download.rta.it](http://download.rta.it) for technical specifications

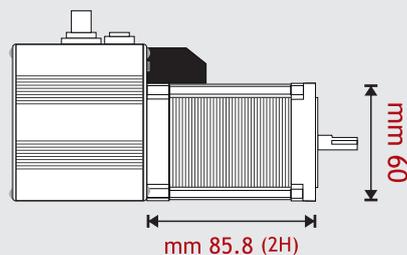


Models	Motor Length (mm)	Holding Torque (Ncm)	Encoder Type	Digital In/Out	Certifications
R-MOD ET A3H2ML	85.8	300	Battery-less Multi-turn Absolute	1/0	CE
R-MOD ET E3H2MA	85.8	300	Incremental	1/0	CE
R-MOD ET A3H2MA	85.8	300	Battery-less Multi-turn Absolute	1/0	CE

## SIZES AND PERFORMANCES



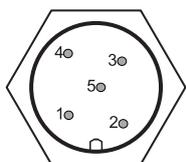
Holding Torque: 170 Ncm



Holding Torque: 300 Ncm

## CONNECTION SCHEME

### CN1



- 1: Input (PX / Touch probe)
- 2: Power supply
- 3: Input (PX / Touch probe)
- 4: GND
- 5: Logic power supply

### CN2



**EtherCAT  
OUT  
(Female)**

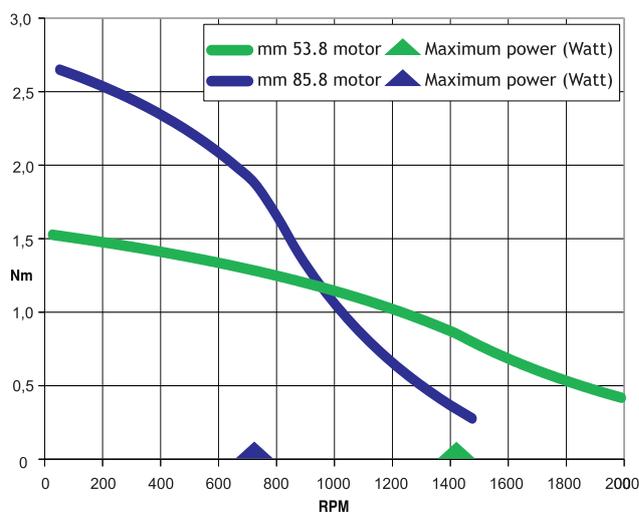
### CN3



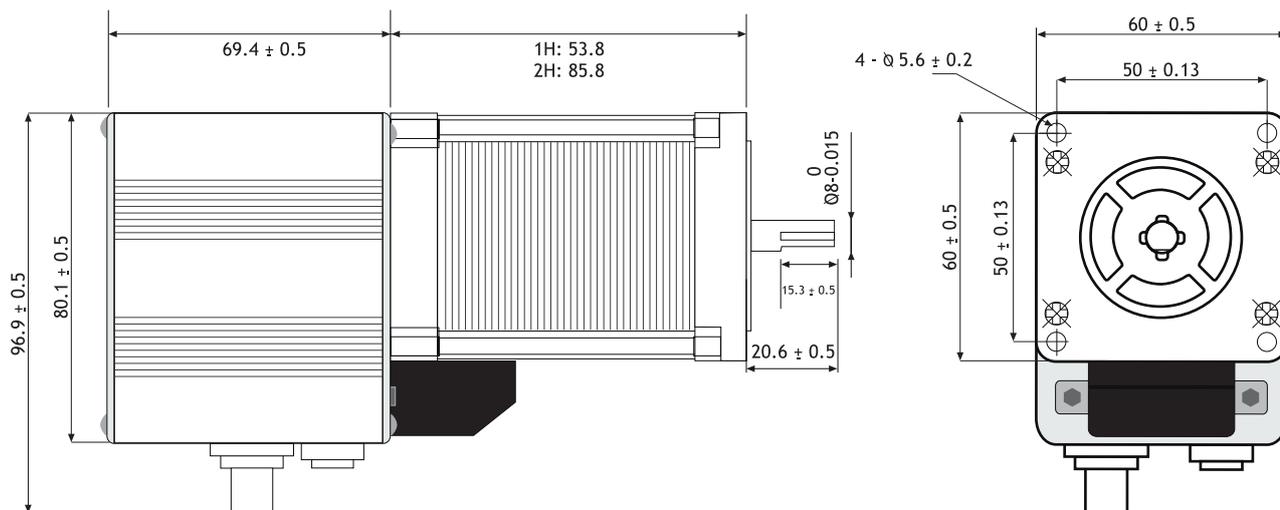
**EtherCAT  
IN  
(Female)**

- 1: Transmit Data +
- 2: Receive Data +
- 3: Transmit Data -
- 4: Receive data -

## TORQUE/SPEED CURVE



## MECHANICAL DIMENSIONS (mm)



*Starter kit and cable set available.*

# HI-MOD ETS Combo Unit



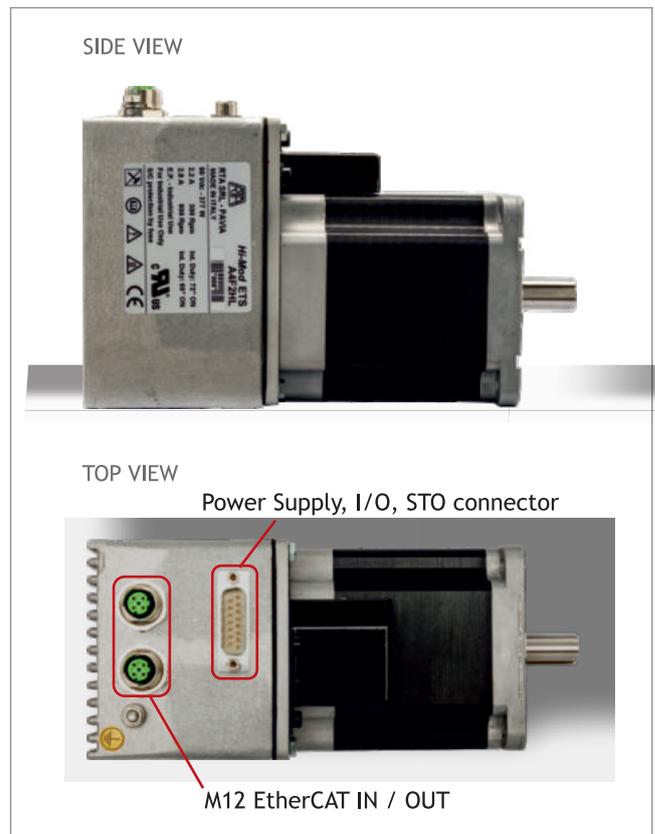
## EtherCAT®

### INTRODUCTION

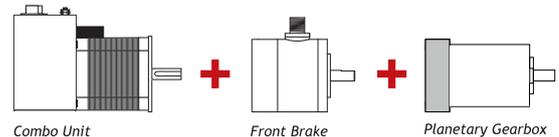
HI-MOD ETS is a series of stepping motors in three sizes with integrated ministep bipolar chopper EtherCAT drives and STO Function, based on incremental or battery-less multi-turn absolute encoder.

### HIGHLIGHTS

- Three motor sizes
- Holding Torque up to 920 Ncm
- Communication by means of EtherCAT interface
- Different Operation Modes
- Available Inputs / Outputs
- Different HOMING operation modes
- PROXIMITY hardware input
- AUTO-SYNC function
- Battery-less Multi-turn ABSOLUTE ENCODER versions
- STO Function - SIL3 with Error Detection Monitor



### Front Brake and/or Gearbox versions available



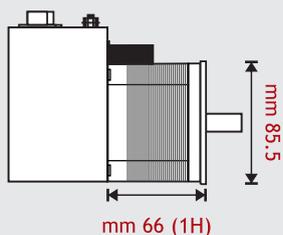
SCAN THE QR CODE TO WATCH A VIDEO ON THE AUTO-SYNC FUNCTION



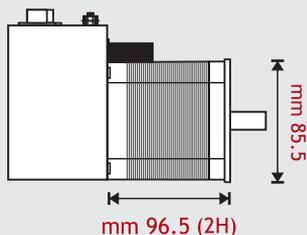
Please refer to [download.rta.it](http://download.rta.it) for technical specifications

Models	Motor Length (mm)	Holding Torque (Ncm)	Encoder Type	Digital In/Out	STO In	Certifications
HI-MOD ETS A4F2HL	96.5	700	Battery-less Multi-turn Absolute	2/2	2	CE,UL,CSA + STO SIL3
HI-MOD ETS A4F2HC	96.5	700	Battery-less Multi-turn Absolute	2/2	2	CE,UL,CSA + STO SIL3
HI-MOD ETS E4F2HC	96.5	700	Incremental	2/2	2	CE,UL,CSA + STO SIL3
HI-MOD ET E3F2HA	96.5	700	Incremental	1/0	/	CE

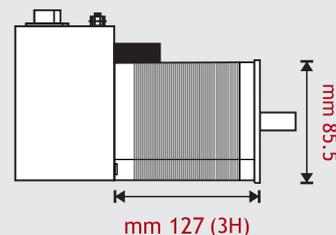
## SIZES AND PERFORMANCES



Holding Torque: 360 Ncm

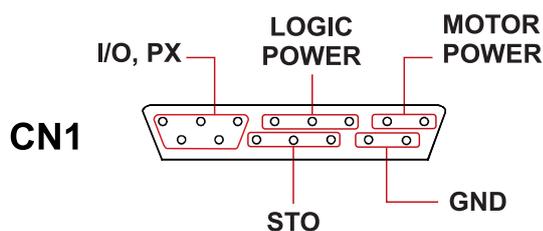


Holding Torque: 700 Ncm



Holding Torque: 920 Ncm

## CONNECTION SCHEME



CN2



EtherCAT  
OUT  
(Female)

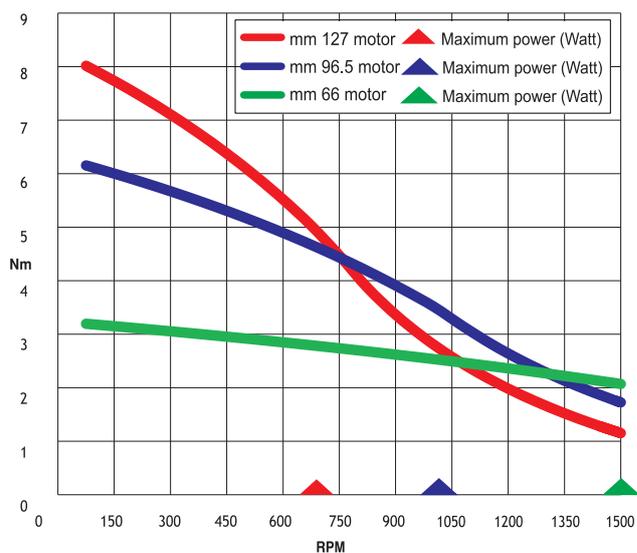
CN3



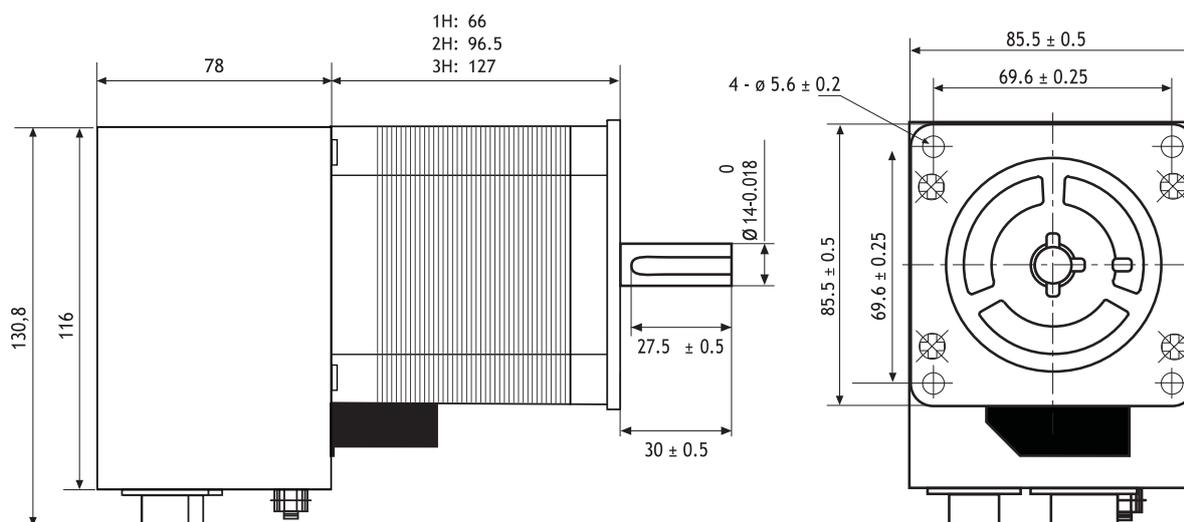
EtherCAT  
IN  
(Female)

- 1: Transmit Data +
- 2: Receive Data +
- 3: Transmit Data -
- 4: Receive data -

## TORQUE/SPEED CURVE



## MECHANICAL DIMENSIONS (mm)



*Starter kit and cable set available.*



STEPPING MOTOR DRIVES

**CANopen**

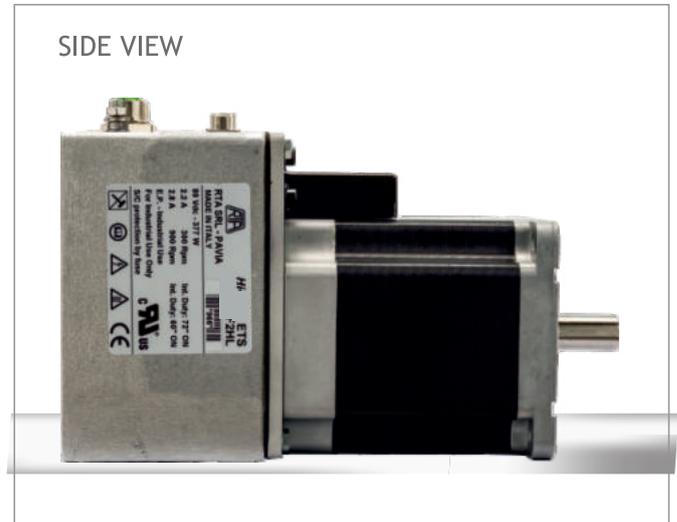


# HI MOD A/E Combo Unit



## INTRODUCTION

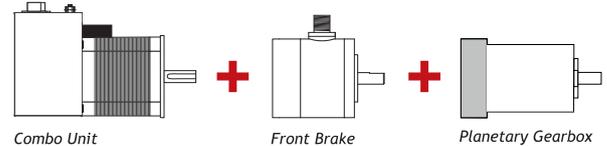
- Series of stepper motors with integrated ministep bipolar chopper drives equipped with programmable motion controller. Setting by means of CANopen interface.
  - Hi-Mod E with Incremental Encoder
  - Hi-Mod A with Absolute Encoder
- Compact system housed in a metallic box mounted on motor body, minimizing dimensions and optimizing wiring and mounting easiness.
- Target: advanced applications requiring the detection of motor loss of synchronism or stall by means of encoder and programmable motion controller setting by means of CANopen interface.
- UL/CSA certified versions available.



## HIGHLIGHTS

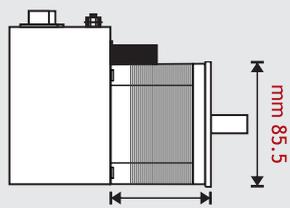
- Communication by means of CANopen interface .
- Command to execute runs with position control to set: distance, direction, speed and acceleration.
- Command to execute zero research (HOMING).
- Incremental Encoder (HI-MOD E) or high resolution Battery-less Multi-Turn Absolute Encoder (HI-MOD A).
- The system does not need back-up battery to keep the information when shut down (HI-MODA).

### Front Brake and/or Gearbox versions available



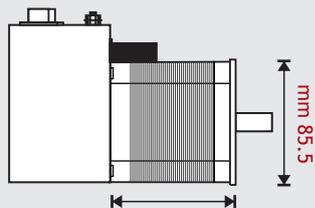
Models	Motor Length (mm)	Holding Torque (Ncm)	Encoder Type	Digital In/Out	UL Marking
HI-MOD A3F1H2	66.0	360	Battery-less Multi-turn Absolute	1/0	NO
HI-MOD A3F2H2	96.5	700	Battery-less Multi-turn Absolute	1/0	NO
HI-MOD A3F1H5	66.0	360	Battery-less Multi-turn Absolute	1/0	YES
HI-MOD A3F2H5	96.5	700	Battery-less Multi-turn Absolute	1/0	YES
HI-MOD E3F1H2	66.0	360	Incremental	1/0	NO
HI-MOD E3F2H2	96.5	700	Incremental	1/0	NO
HI-MOD E3F3H2	127.0	920	Incremental	1/0	NO
HI-MOD E3F1H5	66.0	360	Incremental	1/0	YES
HI-MOD E3F2H5	96.5	700	Incremental	1/0	YES
HI-MOD E3F3H5	127.0	920	Incremental	1/0	YES

## SIZES AND PERFORMANCES



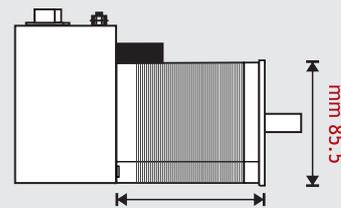
mm 66 (1H)

Holding Torque: 360 Ncm



mm 96.5 (2H)

Holding Torque: 700 Ncm

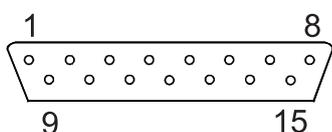


mm 127 (3H)

Holding Torque: 920 Ncm

## CONNECTION SCHEME

### CN1



4-12: PX  
7-8: Power Suppl  
6-13-14-15: GND  
5: + 24 Volt VDC

### CN2



Male

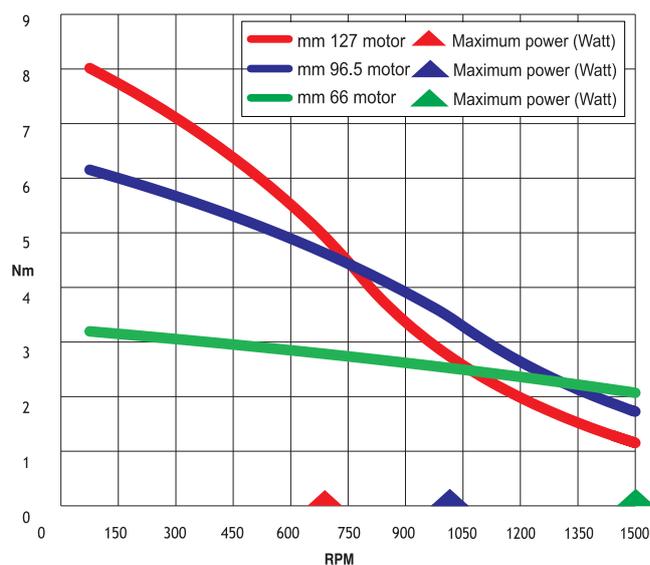
### CN3



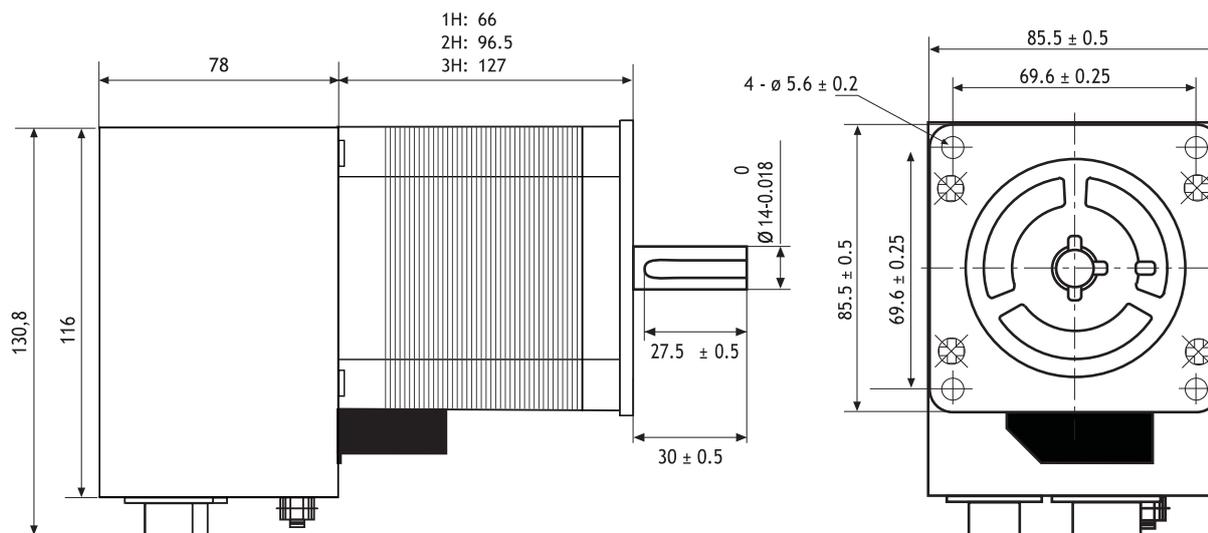
Female

2: Positive control logic supply  
3: Negative logic supply and negative CAN\_H / CAN\_L  
4: CAN\_H bus line  
5: CAN\_L bus line

## TORQUE/SPEED CURVE



## MECHANICAL DIMENSIONS (mm)



*Starter kit and cable set available.*



### CANopen - NOT PREFERRED MODELS

	DRIVE TYPE	VOLTAGE RANGE (V)	PHASE CURRENT RANGE (A)	SUGGESTED MOTORS (Flange size)	CERTIFICATIONS	SUGGESTED MOTORS
HI-MOD B3F1H0.C	CO	32 - 75 VDC	//	//	CE	//
HI-MOD B3F2H0.C	CO	32 - 75 VDC	//	//	CE	//
HI-MOD B3F3H0.C	CO	32 - 75 VDC	//	//	CE	//

"Not preferred models" are models which have been replaced with the latest versions. They are still available in R.T.A.'s stock, however they are not recommended for new applications.

STEPPING MOTOR DRIVES

**MODBUS TCP/IP**



# X-PLUS MT Series Drives

## INTRODUCTION

- New series of stepping motor drives with Modbus interface, direct input from the main AC power supply and STO function.
- Direct connection from the main AC power supply (110 Vac to 230 Vac).
- Auto-sync function available featuring a closed loop positioning.
- Optimized for coupling with SANYO DENKI stepping motors, fitted with or without encoder.
- High performances in terms of power and ability to further increase the potential of the applications.
- UL/CSA certified.

## HIGHLIGHTS

- Communication by means of Modbus TCP/IP interface.
- Modes of operation: PROFILE POSITION, PROFILE VELOCITY and HOMING
- Full digital microstepping drive.
- Wide range of SANYO DENKI stepping motors to be coupled with: holding torque up to 9,2 Nm and flange size up to 86 mm.
- Extremely compact size.
- A highly sophisticated operation system, preserving anyhow the traditional ease of use of R.T.A. drives.
- Configurable IP address via USB port
- Easy setup by RTA Modbus configurator software



Please refer to [download.rta.it](http://download.rta.it) for technical specifications

## STO FUNCTION FEATURES

- Safe Torque Off (STO) function - **SIL3**
- Error Detection Monitor

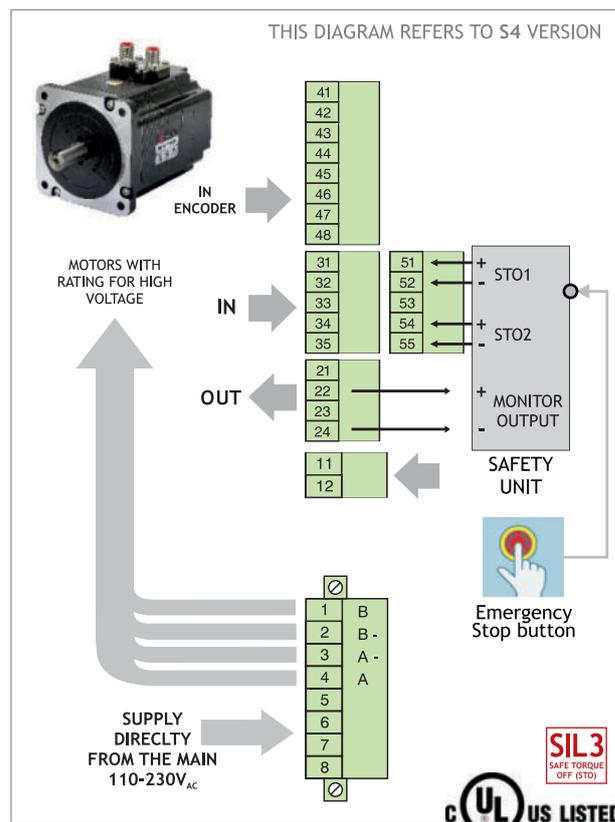


Series	Model	V <sub>AC</sub> range (Volt)	I nom. (Amp)	Digital In/Out	STO In	Dimensions (mm)
X-PLUS MT	S4 <b>STO</b>	110 to 230 +/- 15%	4.0	4/3	2	169x129x46
X-PLUS MT	B4	110 to 230 +/- 15%	4.0	4/3	/	169x129x46

## TECHNICAL FEATURES

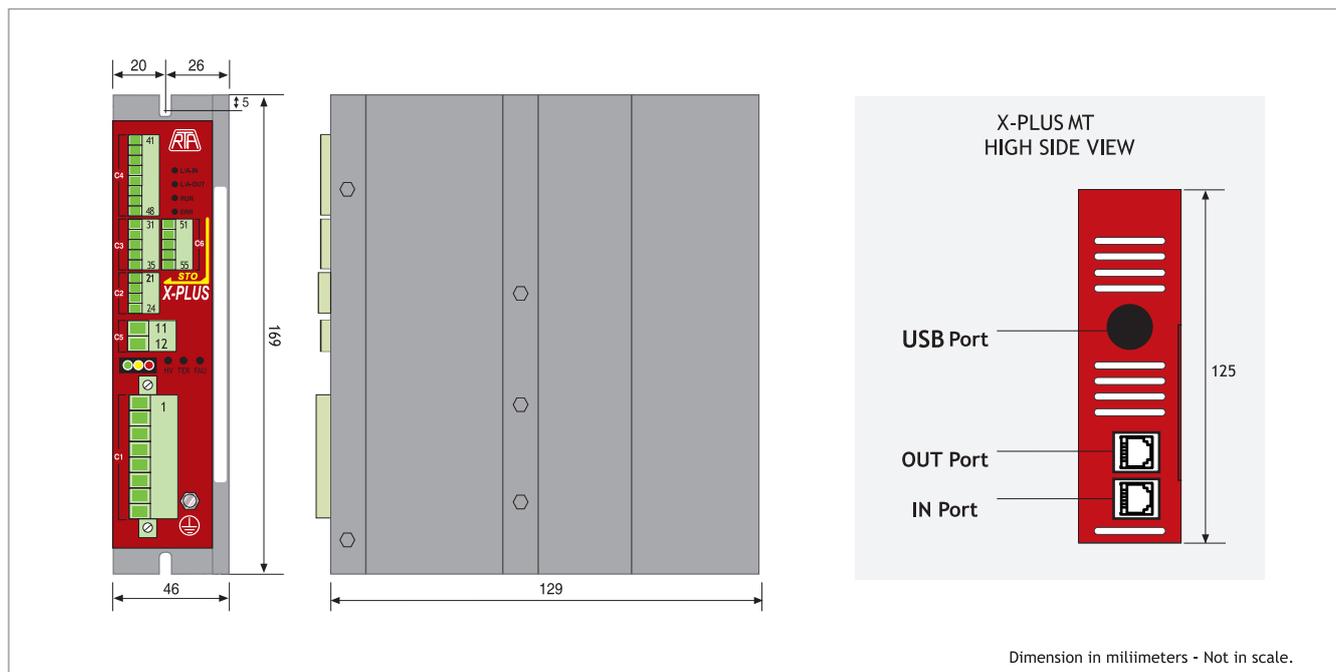
- Communication by means of Modbus TCP/IP interface.
- Possibility to switch off motor current by means of STO function.
- Range of operating voltages: 110-230 V<sub>AC</sub>.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available in boxed version with plug-in connectors. Maximum compactness.
- Optoinsulated auxiliary and programmable inputs and outputs.
- External fans not needed.
- UL/CSA certified.
- Warranty: 24 months.
- Wide range of motor phase current setting.
- Motor current overboost (120%).
- Intelligent management of the current profile.
- Communication by means of Modbus (CoE) interface.
- Different variety of HOMING operation modes.
- Encoder feedback.

## POWER AND LOGIC CONNECTIONS



SCAN THE QR CODE TO WATCH A VIDEO ON THE AUTO-SYNC FUNCTION

## MECHANICAL DIMENSIONS





STEPPING MOTOR DRIVES

**STEP/DIRECTION ADVANCED**



# BSD Series Drives



## INTRODUCTION

- New series of microstep stepping motor drives specifically developed for small and mid-size stepping motors.
- Ultra-compact and optimized design to reduce space and cost, combined with *Adaptive Microstepping* technology ensuring noise and vibration suppression.
- Target: simple and effective motion control solutions requiring low power, high precision, smoothness of movement and low acoustic noise.
- Ideal solution to replace integrated circuits and self-made, low power drives. The perfect choice for small routers, medical, 3D printers and all types of compact machines.

## HIGHLIGHTS

- Full digital microstepping drive.
- Adaptive microstepping up to 3.200 step/rev.
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- A highly sophisticated control system, preserving anyhow the traditional ease of use of R.T.A. drives.

Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
BSD	02 - 02.V*	24 to 48	0.7	2.2	78x68x21

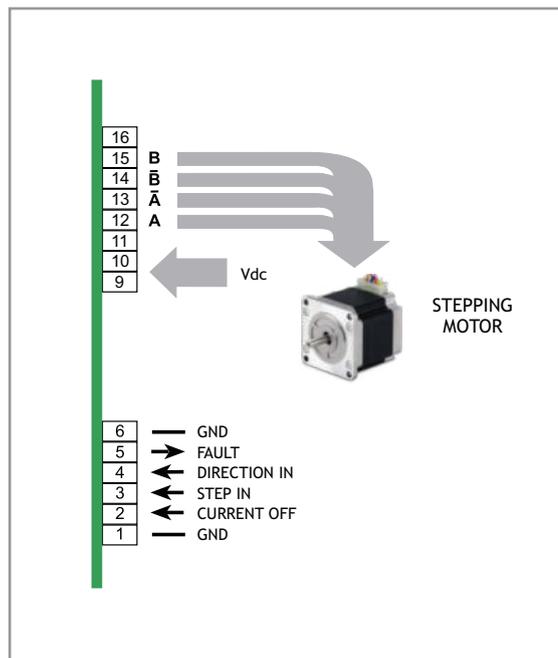
\* BSD 02.V version is equipped with screw-type connectors.

## TECHNICAL FEATURES

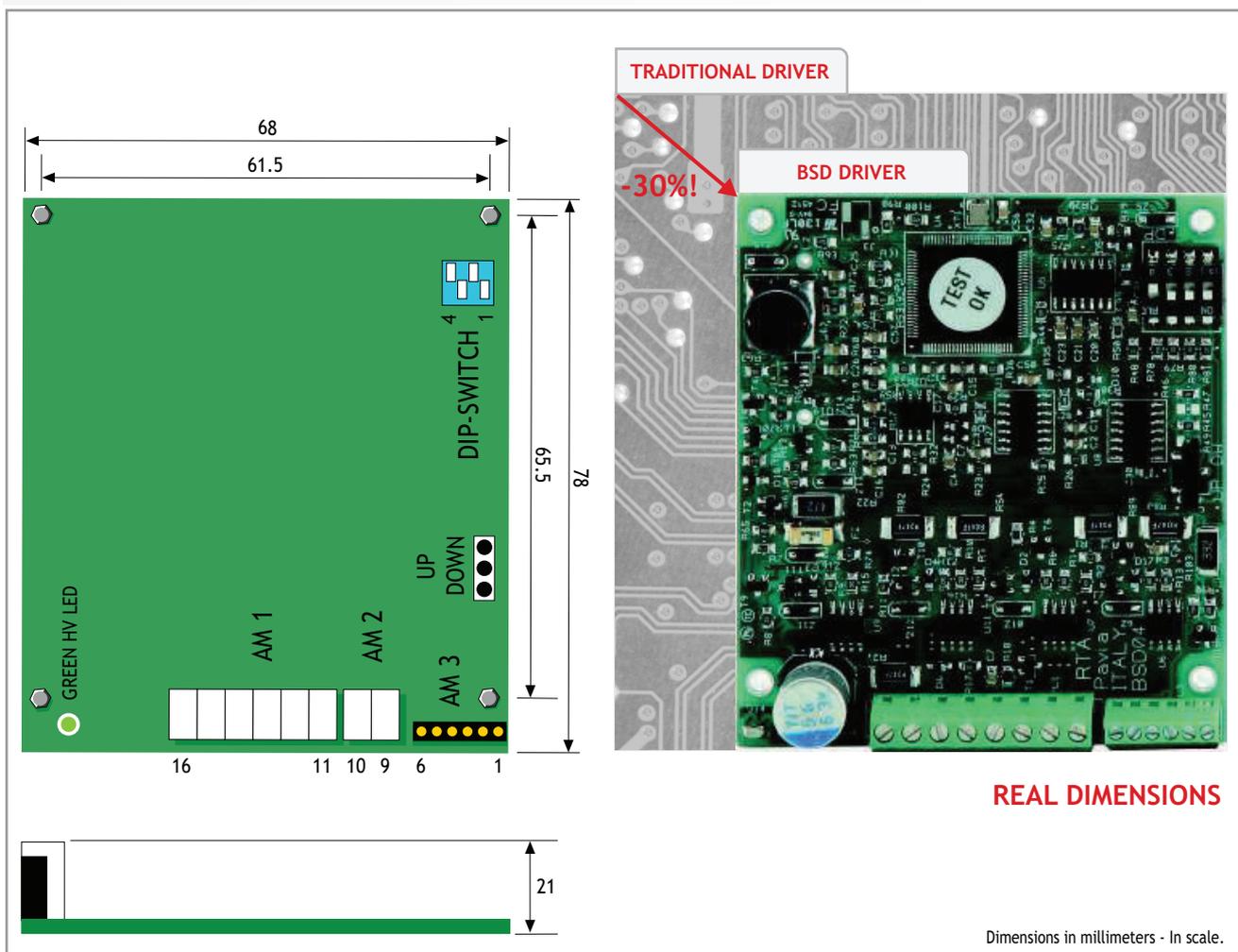
- Range of operating voltage: 24-48 V<sub>DC</sub>.
- Range of current: 0.7-2.2 Amp. Setting up to four possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600 and 3.200 steps/revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Management of the current profile setting by means of a dip-switch.
- Protections:
  - Protection against under-voltage.
  - Protection against a short-circuit at motor outputs.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available version: open frame, crimp-type/screw-type connectors.
- Maximum compactness.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



# BSD 02.S Series Drives



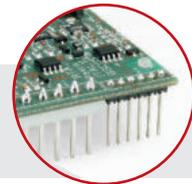
## INTRODUCTION

- New series of microstep stepping motor drives specifically developed for small and mid-size stepping motors.
- Ultra-compact and optimized design to reduce space and cost, combined with *Adaptive Microstepping* technology ensuring noise and vibration suppression.
- Target: simple and effective motion control solutions requiring low power, high precision, smoothness of movement and low acoustic noise.
- Ideal solution to replace integrated circuits and self-made, low power drives. The perfect choice for small routers, medical, 3D printers and all types of compact machines.

## HIGHLIGHTS

- Full digital microstepping drive.
- Adaptive microstepping up to 3.200 step/rev.
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- Highly compact, easy to use and cost effective solution. This system is designed to be soldered to a PCB.
- A highly sophisticated control system, preserving anyhow the traditional ease of use of R.T.A. drives.

## NEW VERSION EQUIPPED WITH SOLDER PINS (STRIPLINE)



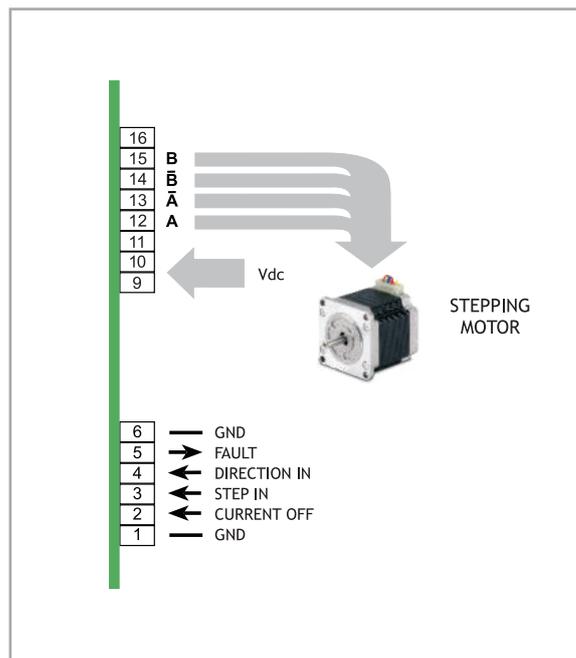
Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
BSD	02.S	24 to 48	0.7	2.2	78x68x27

## TECHNICAL FEATURES

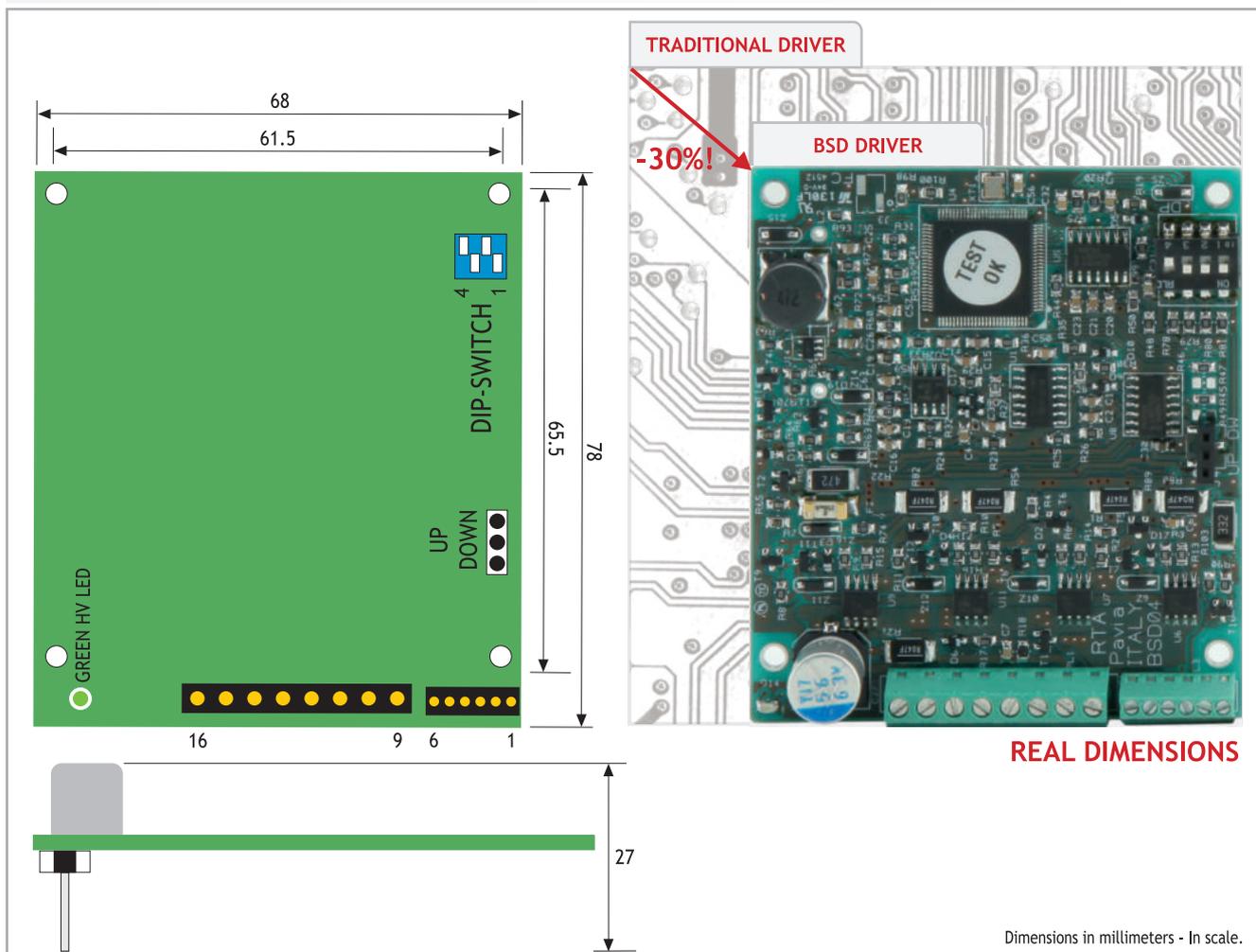
- Range of operating voltage: 24-48 V<sub>DC</sub>.
- Range of current: 0.7-2.2 Amp. Setting up to four possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600 and 3.200 steps/revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Management of the current profile setting by means of a dip-switch.
- Protections:
  - Protection against under-voltage.
  - Protection against a short-circuit at motor outputs.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available version: open frame, crimp-type/screw-type/solder pin connectors. Maximum compactness.
- Warranty: 24 months.



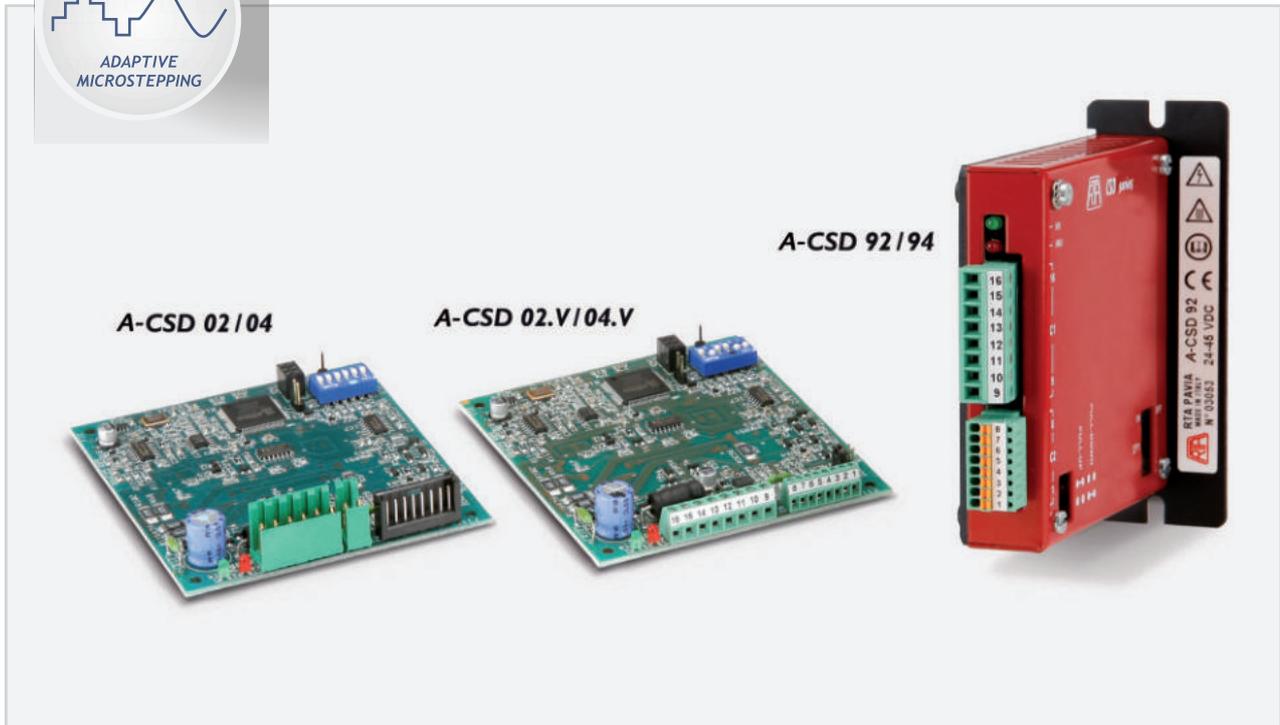
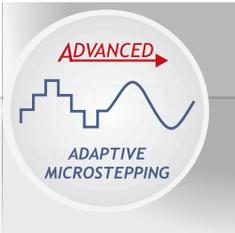
## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



# A-CSD Series Drives



## INTRODUCTION

- New series of bipolar microstep stepping motor drives, specifically developed for applications sensitive to acoustic noise and vibration.
- Significant evolution of the CSD series, preserving backward mechanical, electrical and applicative compatibility.
- Target: advanced applications requiring high precision, smoothness of movement and low acoustic noise.

## HIGHLIGHTS

- Full digital microstepping drive.
- Adaptive microstepping up to a 3.200 step/rev.
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- A highly sophisticated control system, preserving anyhow the traditional ease of use of R.T.A. drives.

Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
A-CSD	02 - 02.V*	24 to 48	0.7	2.4	92x85x22
A-CSD	04 - 04.V*	24 to 48	2.6	4.4	92x85x23
A-CSD	92	24 to 48	0.7	2.4	99x90x21
A-CSD	94	24 to 48	2.6	4.4	99x90x21

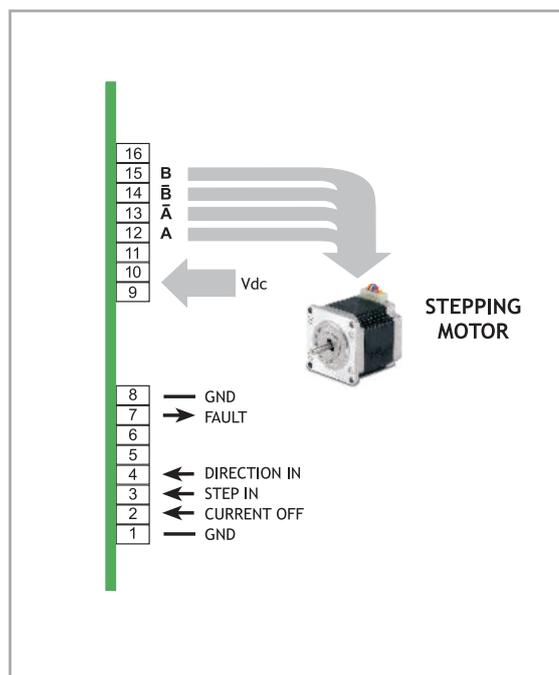
\* A-CSD 02.V and A-CSD 04.V versions are equipped with screw-type connectors.

## TECHNICAL FEATURES

- Range of operating voltage: 24-48 V<sub>DC</sub>.
- Range of current: 0.7-4.4 Amp. Setting up to eight possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600 and 3.200 steps/revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Management of the current profile setting by means of a dip-switch.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available versions: boxed/open frame, crimp-type/screw-type connectors. Maximum compactness.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS



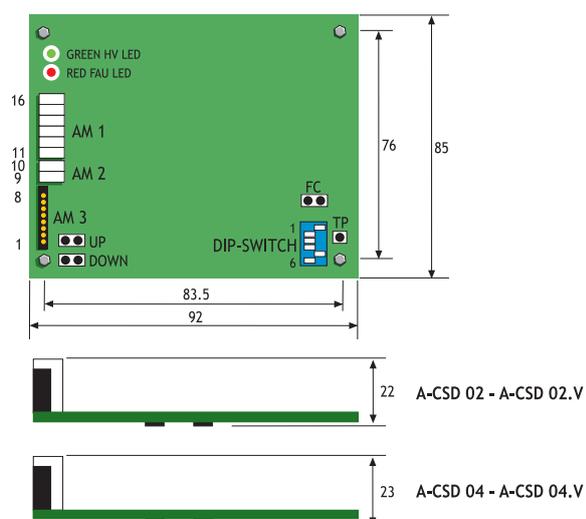
A-CSD is included in KIT CNC 02, a complete 48 VDC motion solution, designed for 3-axes CNC Router machines.

FIND OUT MORE

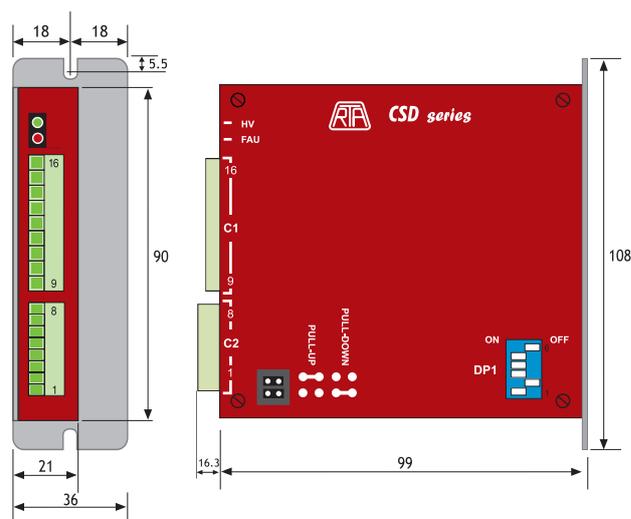


## MECHANICAL DIMENSIONS

A-CSD 02 / A-CSD 04

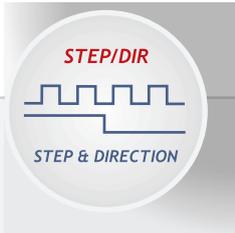


A-CSD 92 / A-CSD 94



Dimensions in millimeters - Not in scale.

# HGD Series Drives



## INTRODUCTION

- Series of ministep bipolar chopper drives, suitable for driving medium power two-phase stepping motors, with four, six or eight terminals.
- Highly compact (70×70×25 mm), easy to use and cost effective solution. This system is designed to be soldered to a PCB.
- Target: medium and medium-low power applications requiring increase in performance compared to self-built or integrated circuits combined with an improvement of reliability and durability.

## HIGHLIGHTS

- Microstepping function up to 3.200 step/rev.
- Separated solder type connectors for logic signals and power connections.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Standard input and output signals ease interfacing with the most commonly used control systems and ensure high noise immunity.

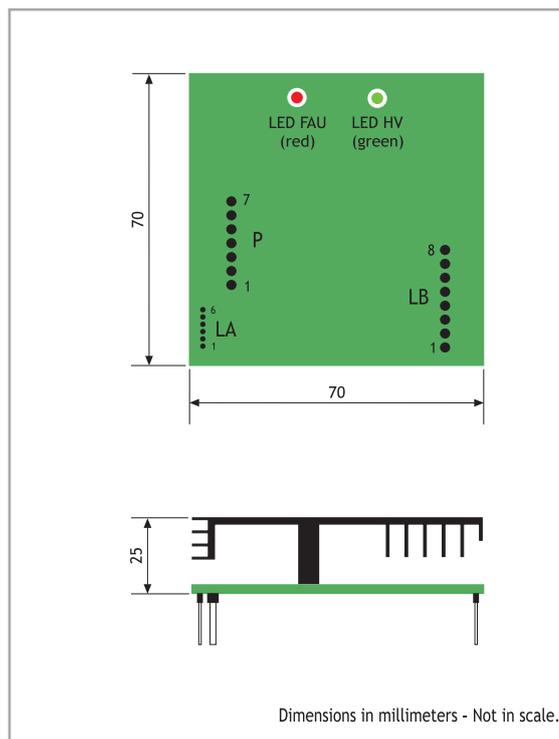
Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
HGD	02	24 to 75	0.75	2.0	70x70x25
HGD	05	24 to 75	2.25	6.0	70x70x25

## TECHNICAL FEATURES

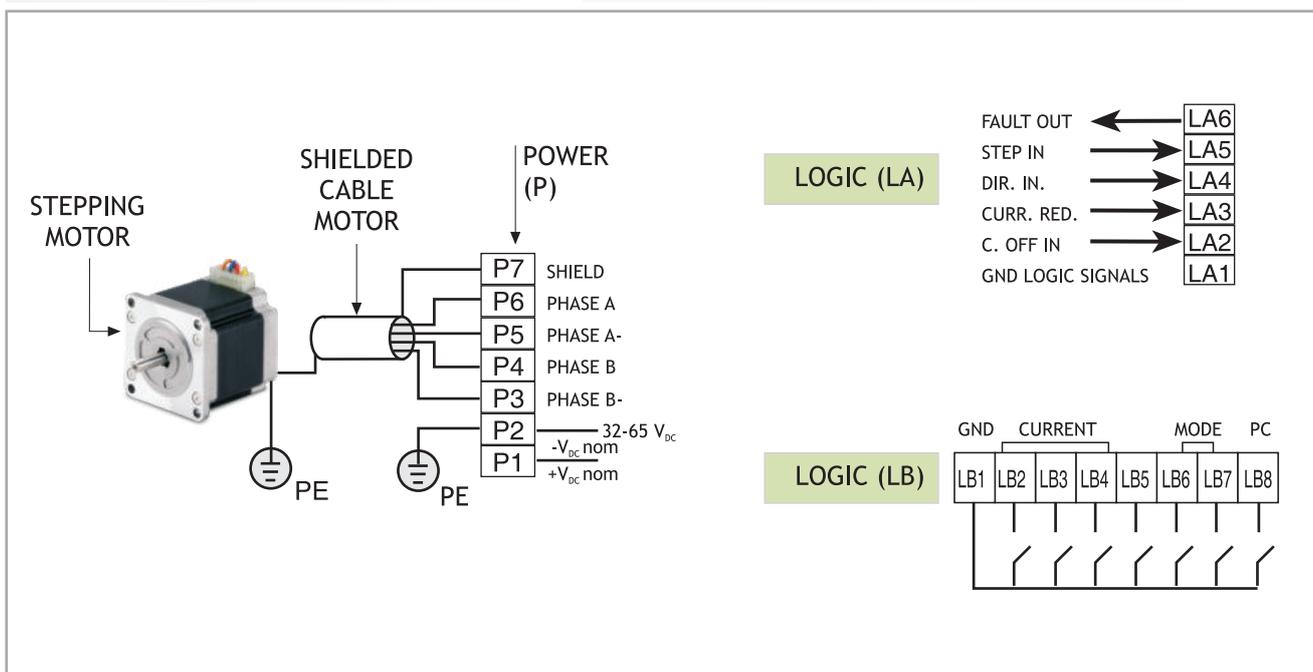
- Range of operating voltages: 24-75 V<sub>DC</sub>.  
Operation with a single external supply voltage.
- Range of current: 0.75-6.0 Amp. Setting up to six possible values by means of hardware connections.
- Microstepping: 400, 800, 1.600 and 3.200 steps /revolution.  
Setting by means of hardware connections.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Possibility to reduce motor current with an external logic signal.
- High efficiency CHOPPER with MOSFET final stage output.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Warranty: 24 months.



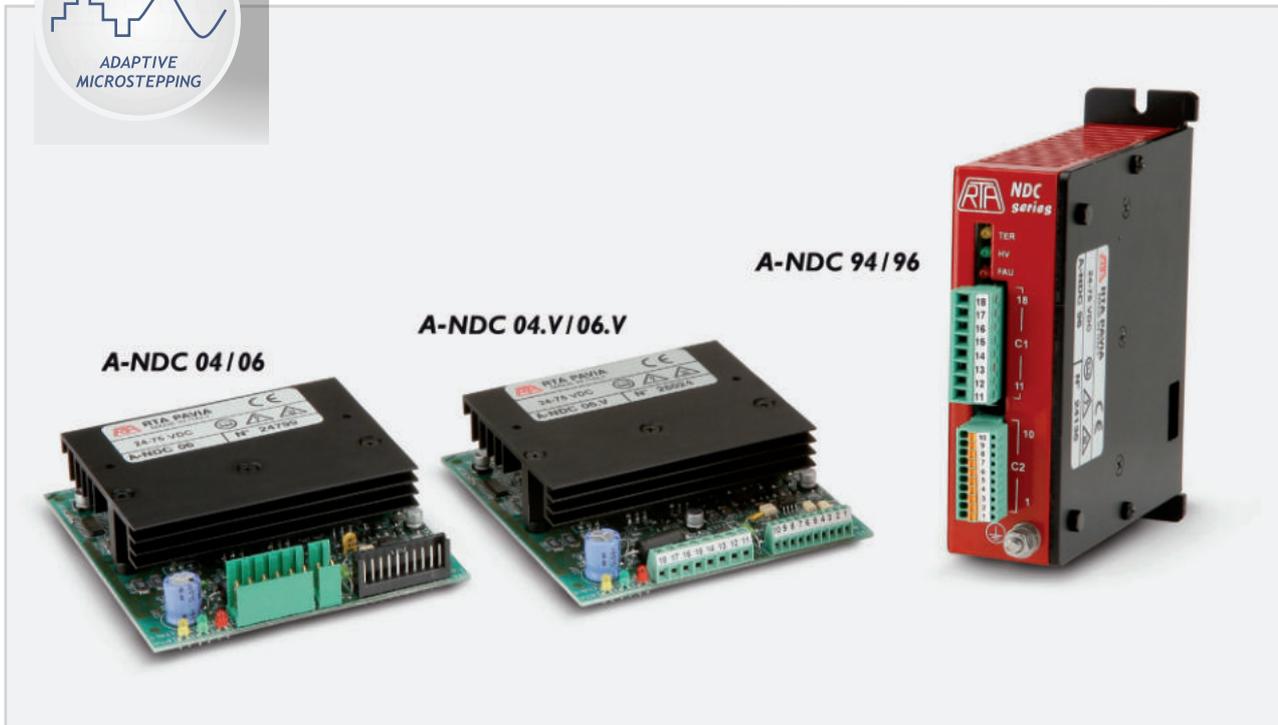
## MECHANICAL DIMENSIONS



## POWER AND LOGIC CONNECTIONS



# A-NDC Series Drives



## INTRODUCTION

- New series of bipolar microstep stepping motor drives, specifically developed for applications sensitive to acoustic noise and vibration.
- Significant evolution of the NDC series, preserving backward mechanical, electrical and applicative compatibility.
- Target: advanced applications requiring high precision, smoothness of movement and low acoustic noise.

## HIGHLIGHTS

- Full digital microstepping drive.
- Adaptive microstepping up to a 12.800 step/rev (1/64).
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- A highly sophisticated control system, preserving anyhow the traditional ease of use of R.T.A. drives.

Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
A-NDC	04 - 04.V*	24 to 85	0.6	2.0	101x94x25
A-NDC	06 - 06.V*	24 to 85	1.9	6.0	101x94x25
A-NDC	94	24 to 85	0.6	2.0	110x108x34
A-NDC	96	24 to 85	1.9	6.0	110x108x34

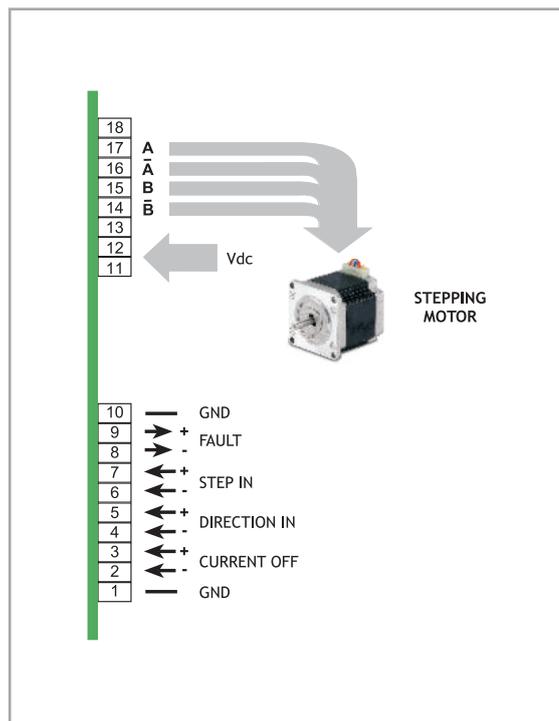
\* A-NDC 04.V and A-NDC 06.V versions are equipped with screw-type connectors.

## TECHNICAL FEATURES

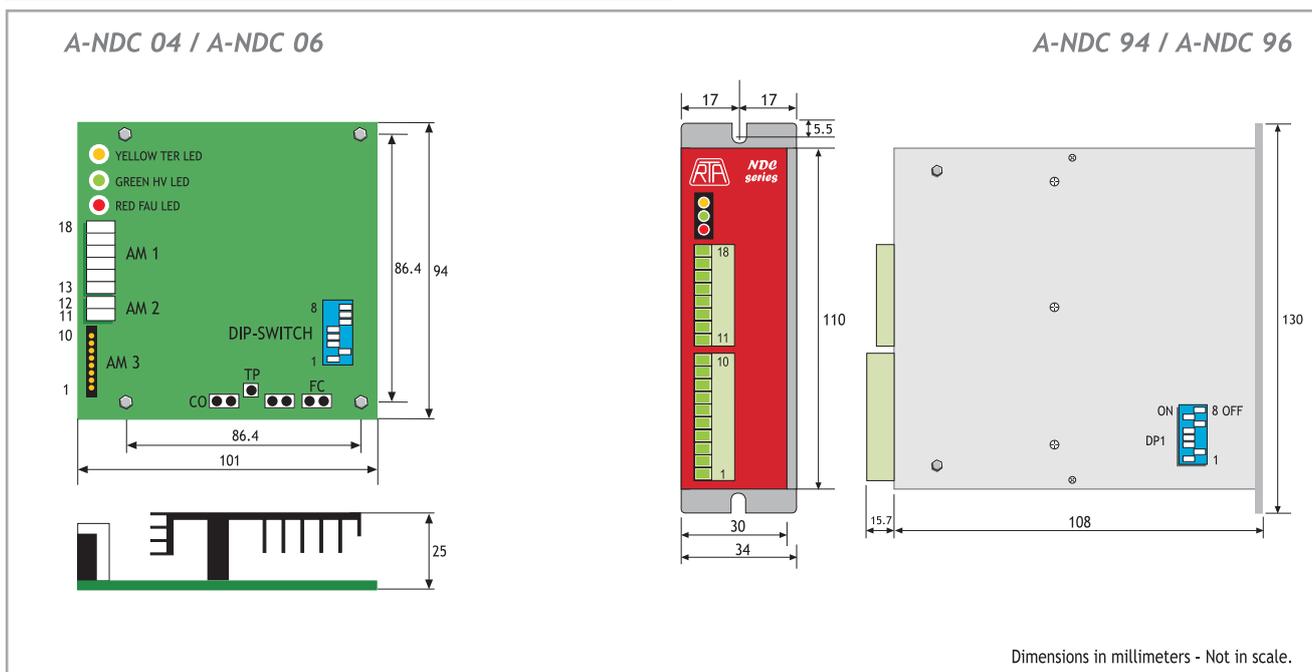
- Range of operating voltage: 24-85 V<sub>DC</sub>.
- Range of current: 0.6-6 Amp. Setting up to eight possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600, 3.200, 6.400 and 12.800 steps/revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Management of the current profile setting by means of a dip-switch.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available versions: boxed/open frame, crimp-type/screw-type connectors. Maximum compactness.
- Optoinsulated inputs to ensure best EM noise immunity.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



Dimensions in millimeters - Not in scale.



# X-PLUS L Series Drives

## INTRODUCTION

- New series of compact bipolar microstep stepping motor drive with power input directly from the main AC supply (110 VAC to 230 VAC), specifically developed for Nema 23 and Nema 34 single stack motor coupling.
- The drive is equipped with an internal rectifier able to transfer more than 300 VDC (230 VAC) to the motor, in order to ensure the maximum power for the applications as well as a significant cost saving on transformer and rectifier, together with related cabling.
- Ten years after the development of X-PLUS B4 (230 VAC, 4 Amp) X-PLUS L2 features a more compact and economically competitive solution especially developed for small size motors.

## HIGHLIGHTS

- Full digital microstepping drive.
- Adaptive microstepping up to 4000 step/rev.
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- A highly sophisticated control system, preserving anyhow the traditional ease of use R.T.A. drives.
- Mandatory coupling with stepper motors rated for high voltage (class F insulation), from NEMA 23 single stack up to, at max, NEMA 34 single stack.

**ONE OF THE MOST COMPACT DRIVES WITH POWER INPUT DIRECTLY FROM THE MAIN AC SUPPLY (110 - 230 VAC)**



*X-PLUS L2 is included in KIT CNC 01, a complete 230 VAC motion solution, designed for 3-axes CNC Router machines.*

FIND OUT MORE

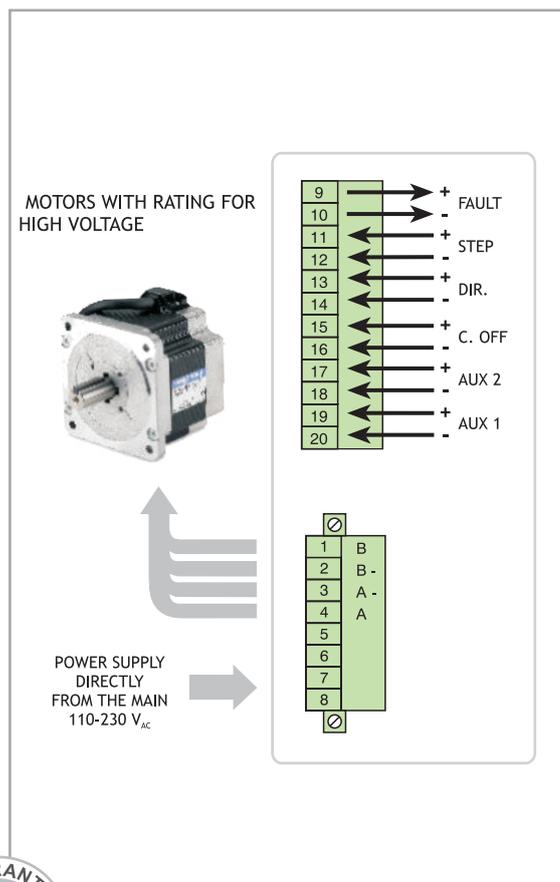


Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (A)	I <sub>NP</sub> max. (Peak value) (A)	Dimensions (mm)
X-PLUS	L2	110 to 230 +/- 15%	1.4	2.5	152x129x30

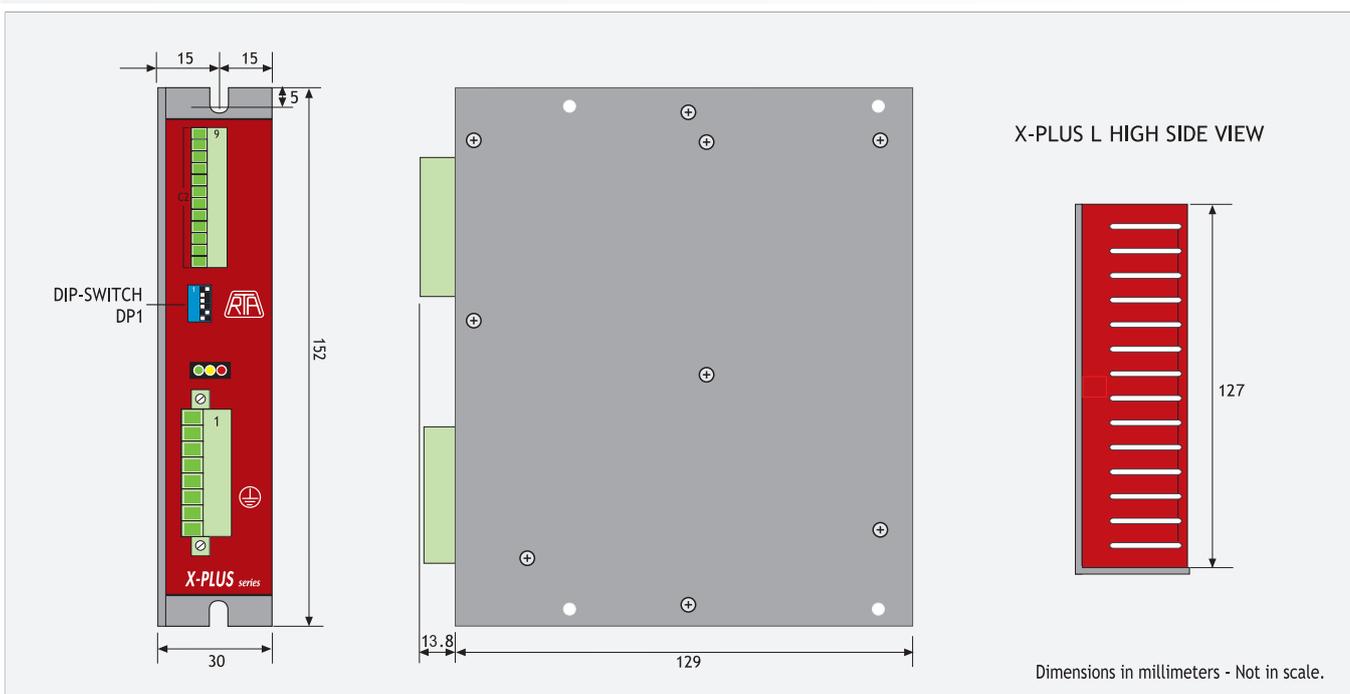
## TECHNICAL FEATURES

- Range of operating voltages: 110-230 VAC.
- Range of current: 1.4 - 2.5 A. Setting up four possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps/revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Management of the current profile setting by means of a dip switch.
- Protections:
  - Protection against under-voltage and over voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Optoinsulated inputs to ensure best EM noise immunity.
- Possibility to switch off motor current with an external logic signal.
- High efficiency CHOPPER.
- Electronic resonance damping circuit to ensure acoustic noise and mechanic vibrations reductions at low and medium speed.
- Alarm memory.
- External fans not needed.
- Coupling with stepping motors rated for high voltage.
- Warranty: 24 months.

## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



# X-PLUS B4.1 Series Drives



## INTRODUCTION

- New series bipolar microstep stepping motor drive with power input directly from the main AC supply (110 V<sub>AC</sub> to 230 V<sub>AC</sub>), specifically developed for applications requiring high performance with reduced acoustic noise and low vibrations.
- Target: advanced applications requiring high precision, low noise and smoothness of movement.
- The perfect choice for combining high power and low acoustic noise.

## HIGHLIGHTS

- Full digital microstepping drive.
- Adaptive microstepping up to 3,200 step/rev.
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- A highly sophisticated control system, preserving anyhow the traditional ease of use of R.T.A. drives.



ONE OF THE MOST COMPACT DRIVES WITH POWER INPUT DIRECTLY FROM THE MAIN AC SUPPLY (110 - 230 VAC)

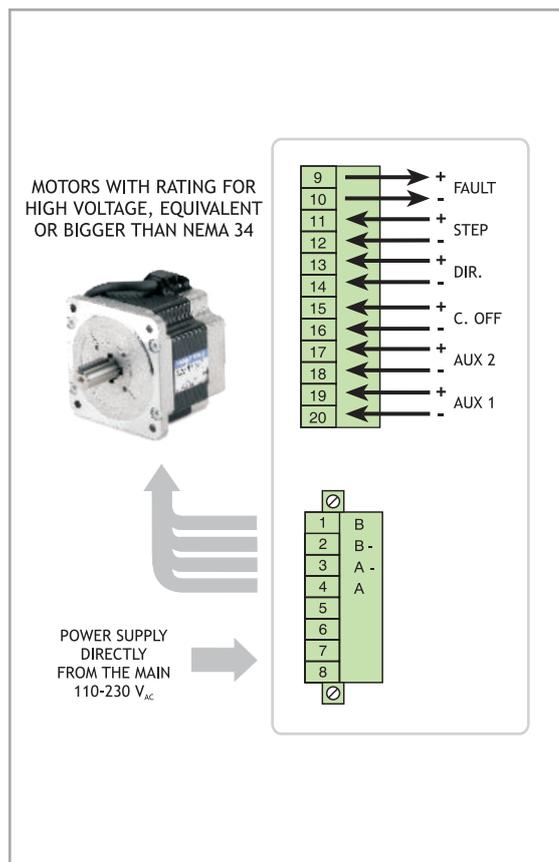
Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
X-PLUS	B4.1	110 to 230 +/- 15%	2.4	4.0	152x129x46

## TECHNICAL FEATURES

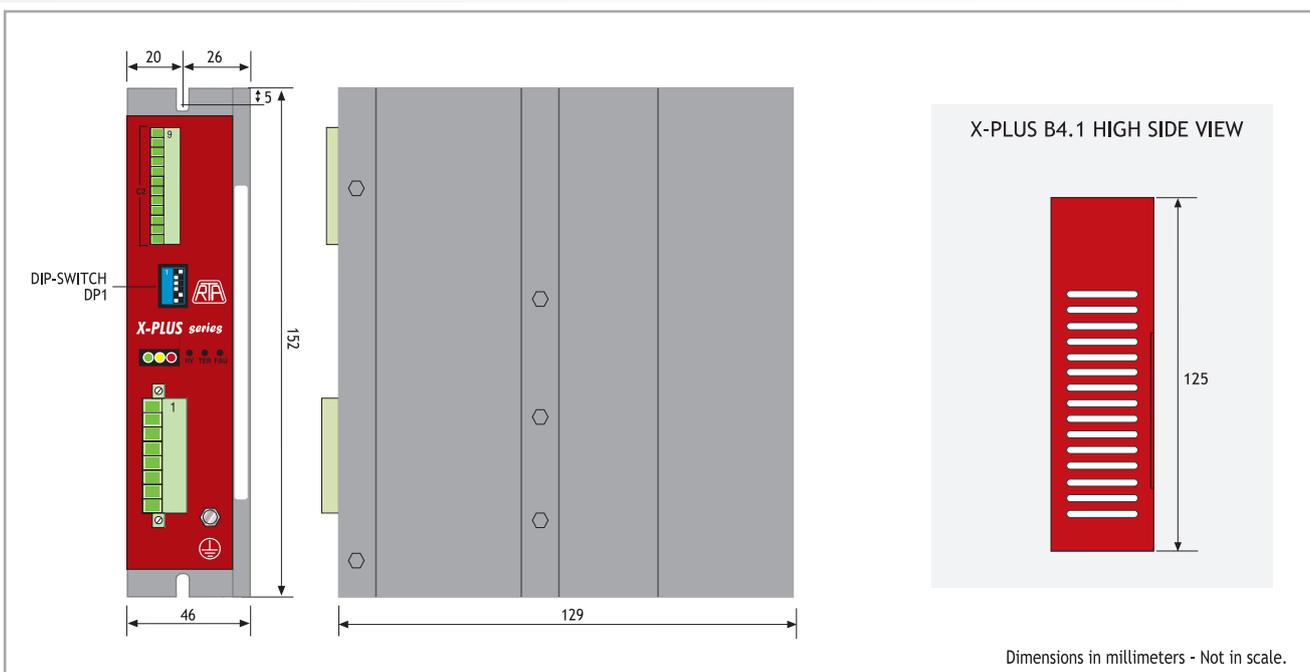
- Range of operating voltage: 110-230 V<sub>AC</sub>.
- Range of current: 2.4-4 Amp. Setting up to four possible values by means of dip-switches.
- Microstepping: 400, 800, 1,600 and 3,200 steps/revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Management of the current profile setting by means of a dip-switch.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available in boxed version with plug-in connectors. Maximum compactness.
- Optoinsulated inputs to ensure best EM noise immunity.
- External fans not needed.
- Coupling with stepping motors rated for high voltage and equivalent or bigger than NEMA 34 is mandatory.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS





# X-PLUS S4.1 Series Drives

## INTRODUCTION

- New series bipolar microstep stepping motor drive with power input directly from the main AC supply (110 V<sub>AC</sub> to 230 V<sub>AC</sub>), with STO function, specifically developed for applications requiring high performance with reduced acoustic noise and low vibrations.
- Target: advanced applications requiring high precision, low noise and smoothness of movement.
- The perfect choice for combining high power and low acoustic noise.
- UL/CSA certified.

## HIGHLIGHTS

- STO [SIL3] function.
- Error Detection Monitor.
- Full digital microstepping drive.
- Adaptive microstepping up to 3,200 step/rev.
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- A highly sophisticated control system, preserving anyhow the traditional ease of use of R.T.A. drives.



**SIL3**  
SAFE TORQUE  
OFF (STO)

**STO**  
**X-PLUS**

**ADVANCED**  
ADAPTIVE  
MICROSTEPPING

## STO FUNCTION FEATURES

- Safe Torque Off (STO) function - **SIL3**
- Error Detection Monitor

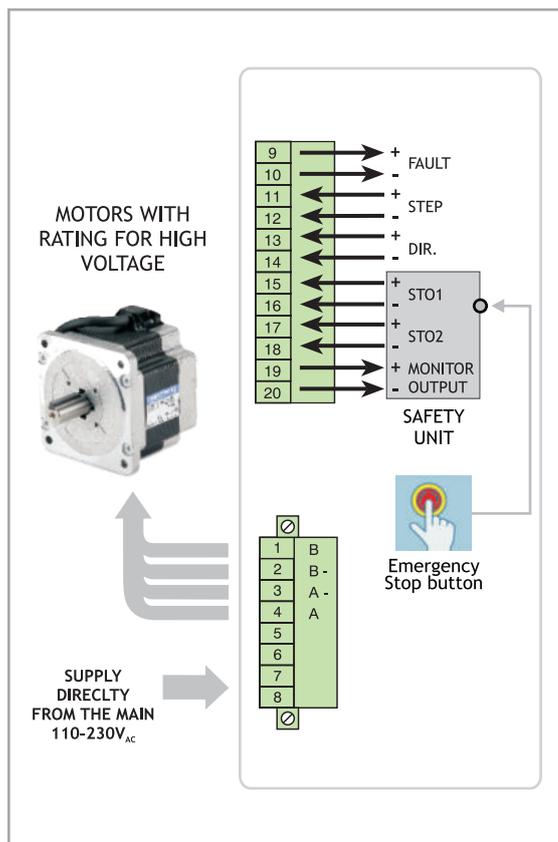
**SIL3**  
SAFE TORQUE  
OFF (STO)

Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
X-PLUS	S4.1	110 to 230 +/- 15%	2.4	4.0	152x129x46

## TECHNICAL FEATURES

- Possibility to switch off motor current by means of STO function.
- Range of operating voltages: 110-230 V<sub>AC</sub>.
- Range of current: 2.4-4.0 Amp. Setting up to four possible values by means of dip-switches.
- Microstepping: 400, 800, 1.600, 3.200 steps /revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available in boxed version with plug-in connectors. Maximum compactness.
- Optoinsulated inputs to ensure best EM noise immunity.
- External fans not needed.
- Coupling with stepping motors rated for high voltage and equivalent or bigger than NEMA 34 is mandatory.
- UL/CSA certified.
- Warranty: 24 months.

## POWER AND LOGIC CONNECTIONS



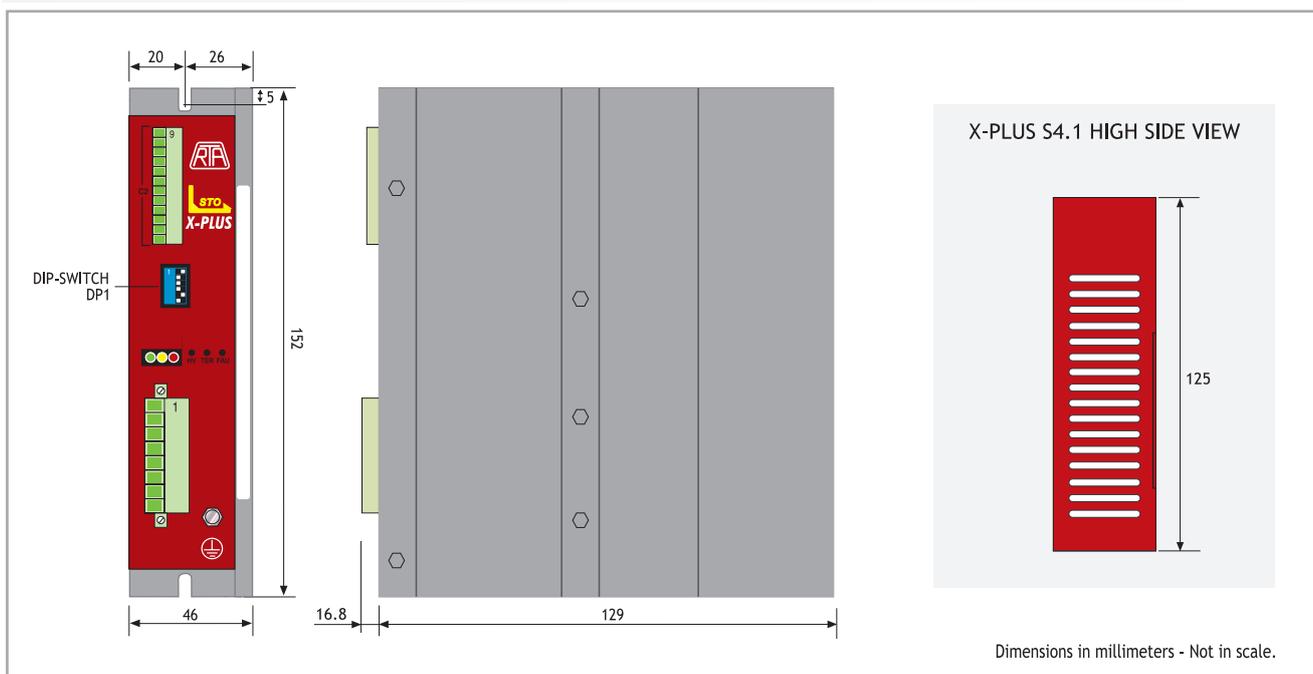
## STO FUNCTION FEATURES

- Safe Torque Off (STO) function [SIL3]
- Error Detection Monitor

**SIL3**  
SAFE TORQUE OFF (STO)



## INGOMBRI MECCANICI



# X-PLUS C4.1 Series Drives

## INTRODUCTION

- New series bipolar microstep stepping motor drive with power input directly from the main AC supply (110 V<sub>AC</sub> to 230 V<sub>AC</sub>), specifically developed for applications requiring high performance with reduced acoustic noise and low vibrations.
- Target: advanced applications requiring high precision, low noise and smoothness of movement.
- The perfect choice for combining high power and low acoustic noise.
- UL/CSA certified.

## HIGHLIGHTS

- Full digital microstepping drive.
- Adaptive microstepping up to 3,200 step/rev.
- Intelligent management of the current profile that achieves good results in terms of smoothness of movement, low noise and vibration control.
- A highly sophisticated control system, preserving anyhow the traditional ease of use of R.T.A. drives.



ONE OF THE MOST COMPACT DRIVES WITH POWER INPUT DIRECTLY FROM THE MAIN AC SUPPLY (110 - 230 VAC)

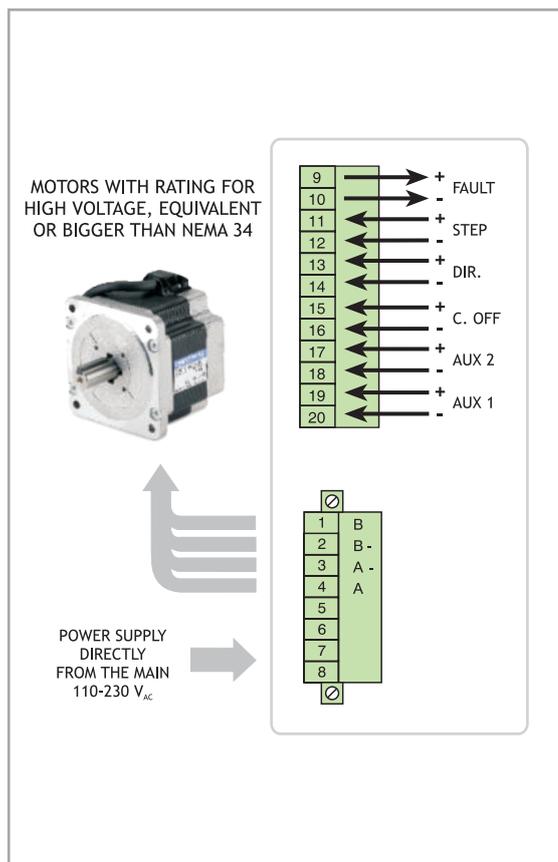
Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
X-PLUS	C4.1	110 to 230 +/- 15%	2.4	4.0	152x129x46

## TECHNICAL FEATURES

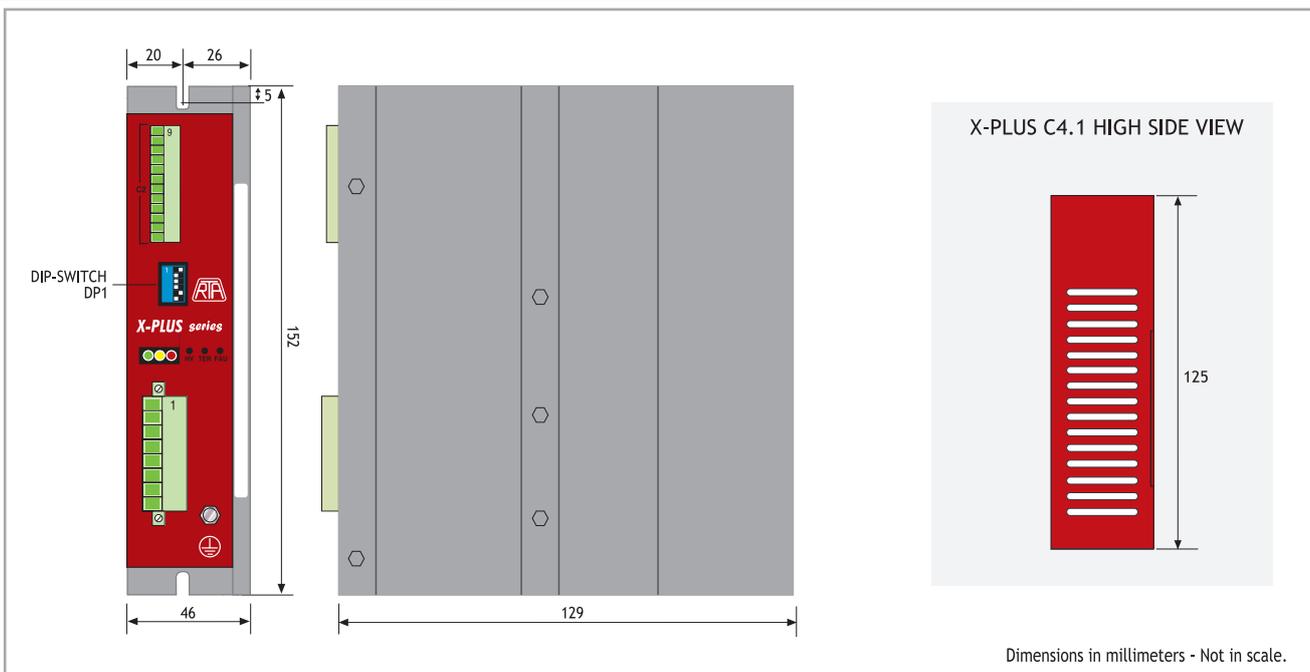
- Range of operating voltage: 110-230 V<sub>AC</sub>.
- Range of current: 2.4-4 Amp. Setting up to four possible values by means of dip-switches.
- Microstepping: 400, 800, 1,600 and 3,200 steps/revolution. Setting by means of dip-switches.
- Automatic current reduction at motor standstill.
- Management of the current profile setting by means of a dip-switch.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction.
- Available in boxed version with plug-in connectors. Maximum compactness.
- Optoinsulated inputs to ensure best EM noise immunity.
- External fans not needed.
- Coupling with stepping motors rated for high voltage and equivalent or bigger than NEMA 34 is mandatory.
- UL/CSA certified.
- Warranty: 24 months.



## POWER AND LOGIC CONNECTIONS



## MECHANICAL DIMENSIONS



### STEP & DIRECTION - NOT PREFERRED MODELS

	DRIVE TYPE	VOLTAGE RANGE (V)	PHASE CURRENT RANGE (A)	SUGGESTED MOTORS (Flange size)
CSD 02	STEP / DIR	24 - 48 VDC	0.7 - 2.4	NEMA 11, NEMA 17, NEMA 23, 60 mm
CSD 02.V	STEP / DIR	24 - 48 VDC	0.7 - 2.4	NEMA 11, NEMA 17, NEMA 23, 60 mm
CSD 04	STEP / DIR	24 - 48 VDC	2.6 - 4.4	NEMA 11, NEMA 17, NEMA 23, 60 mm
CSD 04.V	STEP / DIR	24 - 48 VDC	2.6 - 4.4	NEMA 11, NEMA 17, NEMA 23, 60 mm
CSD12	STEP / DIR	24 - 48 VDC	0.7 - 2.4	NEMA 11, NEMA 17, NEMA 23, 60 mm
CSD12.V	STEP / DIR	24 - 48 VDC	0.7 - 2.4	NEMA 11, NEMA 17, NEMA 23, 60 mm
CSD14	STEP / DIR	24 - 48 VDC	2.6 - 4.4	NEMA 11, NEMA 17, NEMA 23, 60 mm
CSD14.V	STEP / DIR	24 - 48 VDC	2.6 - 4.4	NEMA 11, NEMA 17, NEMA 23, 60 mm
CSD 92	STEP / DIR	24 - 48 VDC	0.7 - 2.4	NEMA 11, NEMA 17, NEMA 23, 60 mm
CSD 94	STEP / DIR	24 - 48 VDC	2.6 - 4.4	NEMA 11, NEMA 17, NEMA 23, 60 mm
NDC 04	STEP / DIR	24 - 75 VDC	0.6 - 2.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
NDC 04.V	STEP / DIR	24 - 75 VDC	0.6 - 2.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
NDC 06	STEP / DIR	24 - 75 VDC	1.9 - 6.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
NDC 06.V	STEP / DIR	24 - 75 VDC	1.9 - 6.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
NDC 94	STEP / DIR	24 - 75 VDC	0.6 - 2.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
NDC 96	STEP / DIR	24 - 75 VDC	1.9 - 6.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
SAC 25	STEP / DIR	24 - 50 VAC	1.7 - 3.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
SAC 26	STEP / DIR	25 - 50 VAC	3.4 - 6.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
PLUS A3	STEP / DIR	39 - 85 VDC	2.4 - 8.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
PLUS A4	STEP / DIR	77 - 140 VDC	1.9 - 6.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
PLUS B3	STEP / DIR	28 - 62 VAC	2.4 - 8.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
PLUS B4	STEP / DIR	55 - 100 VAC	1.9 - 6.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
PLUS B7	STEP / DIR	28 - 62 VAC	3.0 - 10.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
PLUS E3	STEP / DIR	28 - 62 VAC	2.4 - 8.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
PLUS E4	STEP / DIR	55 - 100 VAC	1.9 - 6.0	NEMA 17, NEMA 23, 60 mm, NEMA 34
X-PLUS B4	STEP / DIR	110- 230 VAC (direct from the main)	2.4 - 4.0	NEMA 34 (High Voltage)
X-PLUS S4	STEP / DIR	110- 230 VAC (direct from the main)	2.4 - 4.0	NEMA 34 (High Voltage)
X-PLUS C4	STEP / DIR	110- 230 VAC (direct from the main)	2.4 - 4.0	NEMA 34 (High Voltage)
X-MIND B2	STEP / DIR	110- 230 VAC (direct from the main)	1.13 - 2.0	NEMA 34 (High Voltage)
X-MIND B4	STEP / DIR	110- 230 VAC (direct from the main)	2.3 - 4.0	NEMA 34 - NEMA 42 (High Voltage)
X-MIND B6	STEP / DIR	110- 230 VAC (direct from the main)	3.4 - 6.0	NEMA 34 - NEMA 42 (High Voltage)
HI-MOD B	STEP / DIR	32 - 75 VDC	Value set by R. T.A.	NEMA 34
GAC03	EUROCARD	42- 62 VAC	4.0 - 10.0	NEMA 23, 60 mm, NEMA 34

	DRIVE TYPE	VOLTAGE RANGE (V)	PHASE CURRENT RANGE (A)	SUGGESTED MOTORS (Flange size)
GAC04	EUROCARD	69 - 100 VAC	5.0 - 12.0	NEMA 23, 60 mm, NEMA 34
GMH 05	EUROCARD	55 - 85 VDC	1.6 - 3.0	NEMA 23, 60 mm, NEMA 34
GMH 06	EUROCARD	55 - 85 VDC	3.5 - 6.0	NEMA 23, 60 mm, NEMA 34
GMH 07	EUROCARD	55 - 85 VDC	7.0 - 12.0	NEMA 23, 60 mm, NEMA 34
GMH 09	EUROCARD	100 - 180 VDC	7.0 - 12.0	NEMA 23, 60 mm, NEMA 34
GMD 02	EUROCARD	55 - 85 VDC	1.6 - 6.0	NEMA 23, 60 mm, NEMA 34
GMD 03	EUROCARD	55 - 85 VDC	4.0 - 10.0	NEMA 23, 60 mm, NEMA 34
GMD 04	EUROCARD	95 - 140 VDC	5.0 - 12.0	NEMA 23, 60 mm, NEMA 34
GMD 06	EUROCARD	160 - 190 VDC	5.0 - 12.0	NEMA 23, 60 mm, NEMA 34
MIND A3	STEP / DIR	55 - 85 VDC	5.7 - 10.0	60 mm, NEMA 34
MIND A4	STEP / DIR	95 - 140 VDC	4.55 - 8.0	60 mm, NEMA 34
MIND A5	STEP / DIR	120 - 180 VDC	6.7 - 12.0	NEMA 34
MIND B2	STEP / DIR	55 - 85 VDC	2.3 - 4.0	NEMA 23, 60 mm, NEMA 34
MIND B3	STEP / DIR	55 - 85 VDC	5.7 - 10.0	NEMA 23, 60 mm, NEMA 34
MIND B4	STEP / DIR	95 - 140 VDC	4.5 - 8.0	NEMA 23, 60 mm, NEMA 34
MIND B5	STEP / DIR	120 - 180 VDC	6.7 - 12.0	NEMA 34
FFM01	OPTIONAL CARD	//	//	GAC, GMH, GMD Series.
FFM02	OPTIONAL CARD	//	//	GAC, GMH, GMD Series.
FFM04	OPTIONAL CARD	//	//	GAC, GMH, GMD Series.
FFM05	OPTIONAL CARD	//	//	GAC, GMH, GMD Series.
OFM30	OPTIONAL CARD	//	//	GAC, GMH, GMD Series.
OFM60	OPTIONAL CARD	//	//	GAC, GMH, GMD Series.
RMM36	OPTIONAL CARD	//	//	GAC, GMH, GMD Series.

"Not preferred models" are models which have been replaced with the latest versions. They are still available in R.T.A.'s stock, however they are not recommended for new applications.



STEPPING MOTOR DRIVES  
**PROGRAMMABLE**



# CSD J Series Drives



## INTRODUCTION

- Series of ministep bipolar chopper drives with an on-board programmable motion controller that can be used:
  - for the interfacing, through RS485 serial line, with a central control system
  - as an independent unit.
- Presence of a dedicated analog input for the setting of motor target speed.
- Target: low-power applications needing a programmable motion controller with small size motors.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Setting of the motor target speed sampled at the beginning of the motion sequence (before motor starts running).
- Programmable motion controller allowing the connection up to 48 drives on a single serial line.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

Series	Model	V <sub>DC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
CSD	J2	24 to 48	1.2	2.1	90x99x30
CSD	J4	24 to 48	2.6	4.4	90x99x30

## TECHNICAL FEATURES

- Range of operating voltage: 24-48 V<sub>DC</sub>.
- Range of current: 1.2-4.4 A. Setting up to four possible values by means of a serial line.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps/revolution. Setting by means of a serial line.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection with thermal sensor.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Optoinsulated inputs compatible with Pull-Up or Pull-Down command signals.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- Warranty: 24 months.

## ANALOG INPUT TO CONTROL MOTOR SPEED

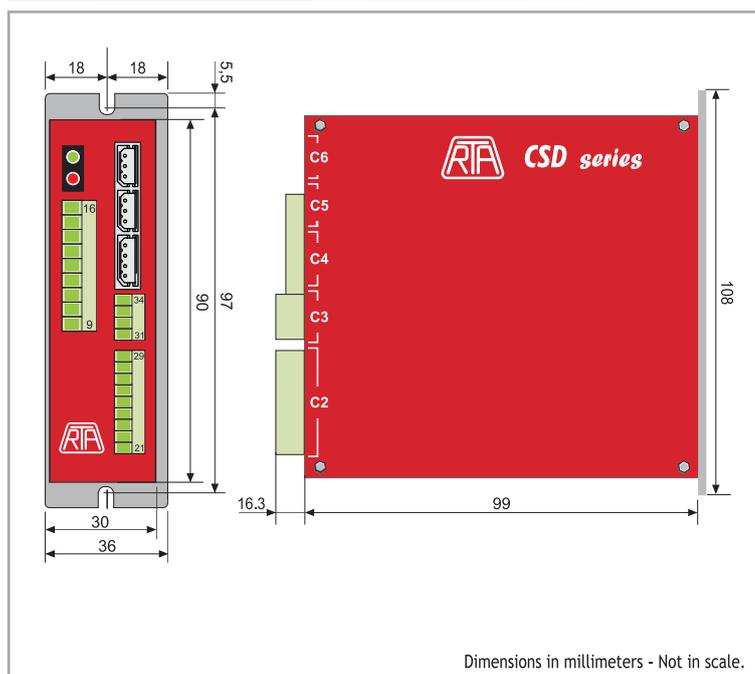
- Target speed setting by means of analog input sampled at the beginning of the motion sequence (before motor starts running).
- Input setting: 0-5 V<sub>DC</sub> or 0-10 V<sub>DC</sub>
- Frequency range:
  - 3000 Hz- 48000 Hz (with ramp)
  - 0 Hz-4100 Hz or 0 Hz-510 Hz (without ramp)
- Possibility of matching with potentiometers of 2.2 KOhm.

## PROGRAMMABLE MOTION CONTROLLER

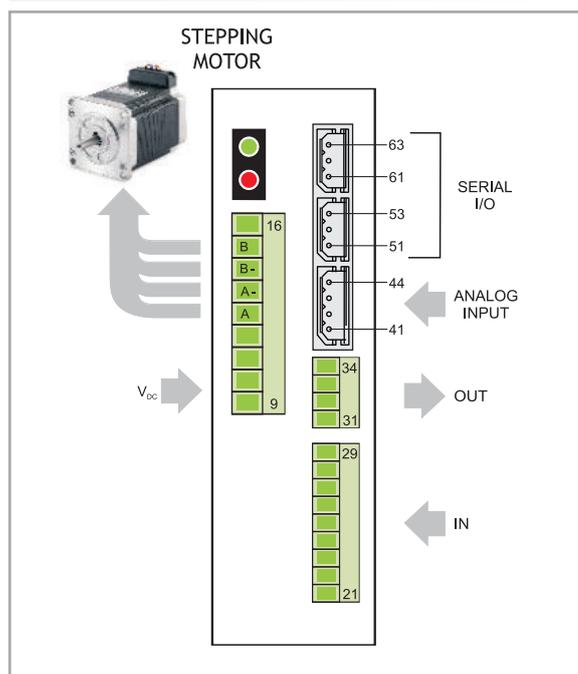
- Communication through RS485 serial line; up to 48 drives can be connected on a single serial line. One instruction can be broadcasted to all drives.
- Various types of available instructions, as for example: indexed run with ramp, free run with ramp, indexed run without ramp, run with a programmable braking distance, zero research. Space can be programmed in relative or absolute mode (linear or circular).
- Number of steps for indexed ramp up to ± 8.338.607 in relative or absolute mode, speed from 1 to 24.000 Hz in standard resolution and from 1 to 48.000 Hz in high resolution, ramp times from 16 to 1440 msec.
- Availability of instructions to develop motion programs as, for example: conditional jump, time delay, program block and recovery, I/O management, FOR NEXT loop.
- Possibility to control the execution of 8 previously stored motion programs through hardware inputs. Accordingly, the drive can be used in stand-alone applications, without serial connection.
- 8 inputs and 3 outputs, all optically insulated. Among them 1 input and 1 output are freely programmable.
- Memory of 128 instructions kept also at drive switched-off and three run time instructions.
- A utility working in Windows® is available in order to ease motion programs development by the user.



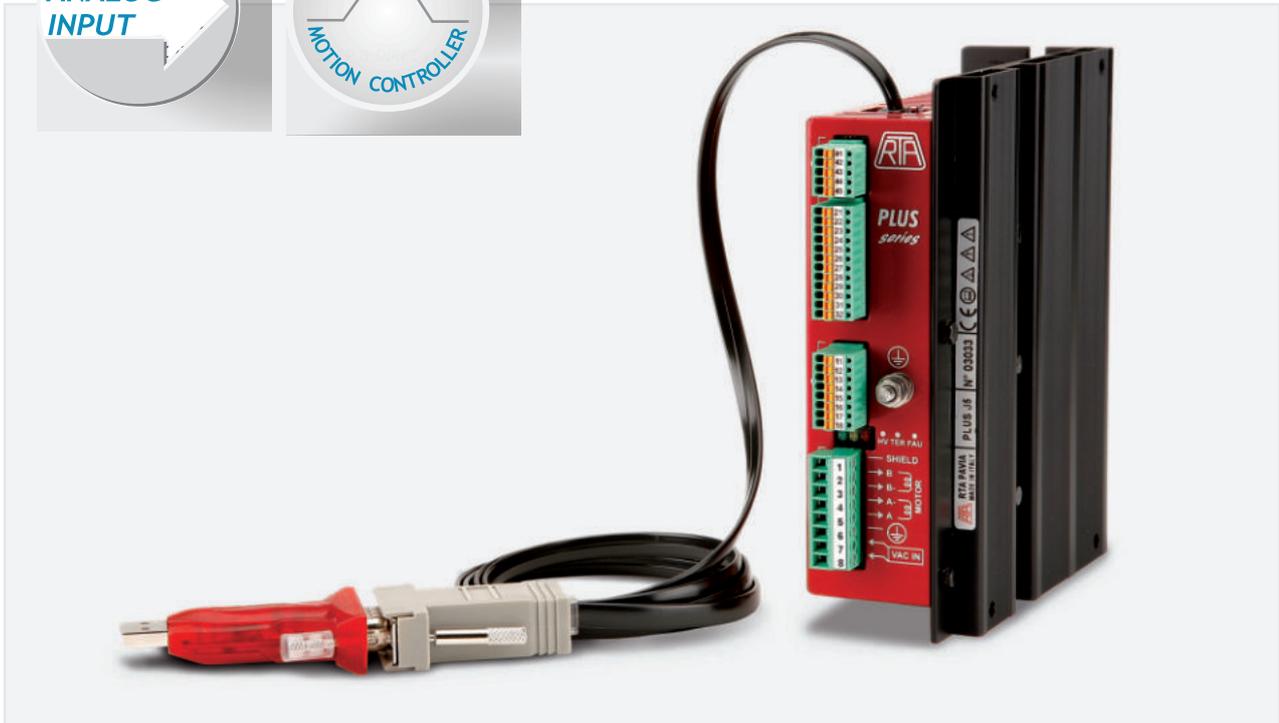
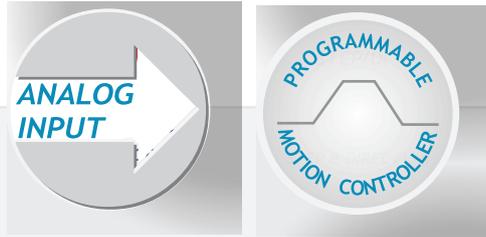
## MECHANICAL DIMENSIONS



## POWER AND LOGIC CONNECTIONS



# PLUS J Series Drives



## INTRODUCTION

- Series of ministepped bipolar chopper drives with an on-board programmable motion controller that can be used:
  - for the interfacing, through RS485 serial line, with a central control system
  - as an independent unit.
- Presence of a dedicated analog input for the setting of motor target speed.
- Target: medium power applications needing AC power supply and a programmable motion controller.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Setting of the motor target speed sampled at the beginning of the motion sequence (before motor starts running).
- Programmable motion controller allowing connection up to 48 drives on a single serial line.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
PLUS	J5	28 to 62	4.4	8.0	152x129x46

## TECHNICAL FEATURES

- Range of operating voltage: 28-62 V<sub>ac</sub>.
- Range of current: 4.4-8.0 Amp. Setting up to four possible values by means of a serial line.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps/revolution. Setting by means of a serial line.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Optoinsulated inputs compatible with Pull-Up or Pull-Down command signals.
- External fans not needed.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.

## ANALOG INPUT TO CONTROL MOTOR SPEED

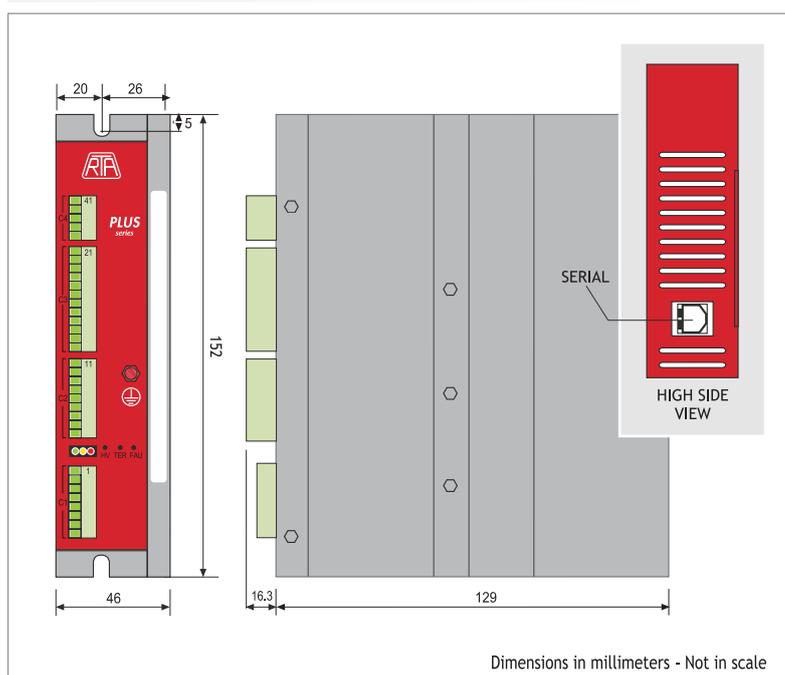
- Target speed setting by means of analog input sampled at the beginning of the motion sequence (before motor starts running).
- Input setting: 0-5 V<sub>DC</sub> or 0-10 V<sub>DC</sub>
- Frequency range:
  - 3000 Hz- 48000 Hz (with ramp)
  - 0 Hz-4100 Hz or 0 Hz-510 Hz (without ramp)
- Possibility of matching with potentiometers of 2.2 KOhm.

## PROGRAMMABLE MOTION CONTROLLER

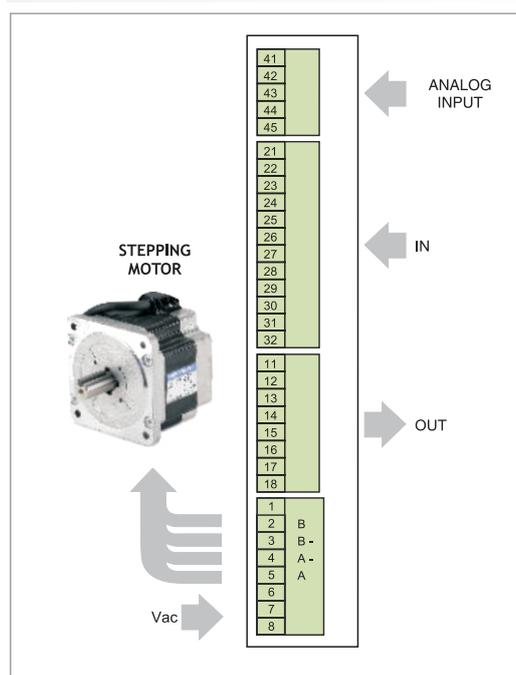
- Communication through RS485 serial line; up to 48 drives can be connected on a single serial line. One instruction can be broadcasted to all drives.
- Various types of available instructions, as for example: indexed run with ramp, free run with ramp, indexed run without ramp, run with a programmable braking distance, zero research. Space can be programmed in relative or absolute mode (linear or circular).
- Number of steps for indexed ramp up to  $\pm 8.338.607$  in relative or absolute mode, speed from 1 to 24.000 Hz in standard resolution and from 1 to 48.000 Hz in high resolution, ramp times from 16 to 1440 msec.
- Availability of instructions to develop motion programs as, for example: conditional jump, time delay, program block and recovery, I/O management, FOR NEXT loop.
- Possibility to control the execution of 16 previously stored motion programs through hardware inputs. Accordingly, the drive can be used in stand-alone applications, without serial connection.
- 11 inputs and 6 outputs, all optically insulated. Among them 3 inputs and 4 outputs are freely programmable.
- Memory of 128 instructions kept also at drive switched-off and three run time instructions.
- A utility working in Windows® is available in order to ease motion programs development by the user.
- Alarm memory by use of yellow blinking led.



## MECHANICAL DIMENSIONS



## POWER AND LOGIC CONNECTIONS



# PLUS K Series Drives



## INTRODUCTION

- Series of ministep bipolar chopper drives with an on-board programmable motion controller that can be used:
  - for the interfacing, through RS485 serial line, with a central control system
  - as an independent unit.
- Compact system equipped with dedicated instructions optimized for advanced motion control applications.
- Target: medium power applications needing AC power supply and a programmable motion controller.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Communication through RS485 serial line.
- Programmable motion controller allowing connection up to 48 drives on a single serial line.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
PLUS	K4	55 to 100	3.4	6.0	152x129x46
PLUS	K5	28 to 62	4.4	8.0	152x129x46

## TECHNICAL FEATURES

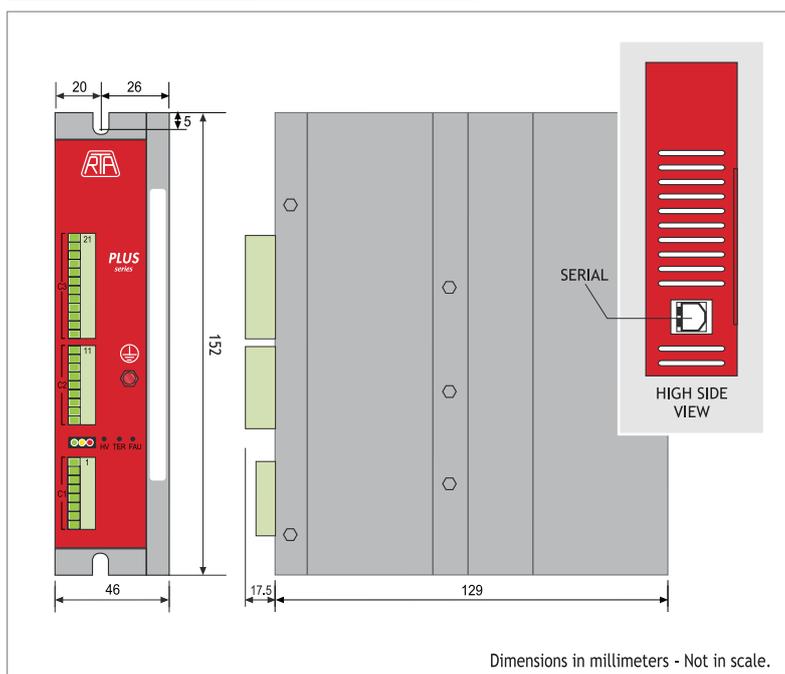
- Range of operating voltage: 28-100 V<sub>ac</sub>.
- Range of current: 3.4-8.0 Amp. Setting up to four possible values by means of a serial line.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps/revolution. Setting by means of a serial line.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- Optoinsulated inputs.
- External fans not needed.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- Warranty: 24 months.



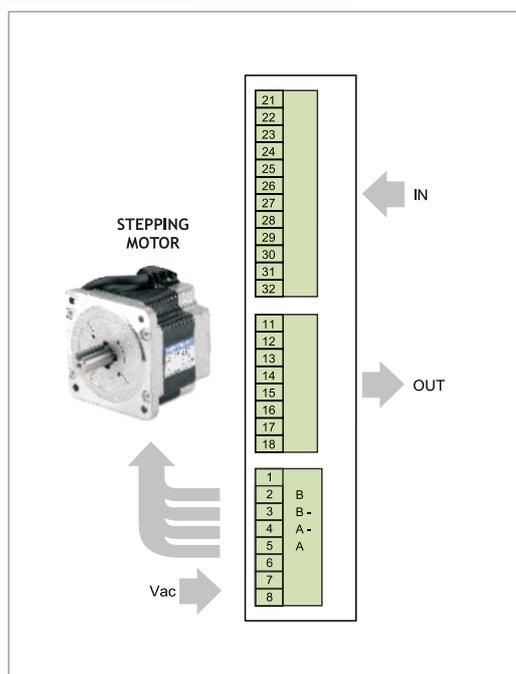
## PROGRAMMABLE MOTION CONTROLLER

- Communication through RS485 serial line; up to 48 drives can be connected on a single serial line. One instruction can be broadcasted to all drives.
- Various types of available instructions, as for example: indexed run with ramp, free run with ramp, indexed run without ramp, run with a programmable braking distance, zero research. Space can be programmed in relative or absolute mode (linear or circular).
- Number of steps for indexed ramp up to  $\pm 8.338.607$  in relative or absolute mode, speed from 1 to 24.000 Hz in standard and increased resolution, ramp times from 16 to 1440 msec.
- Availability of instructions to develop motion programs as, for example: conditional jump, time delay, program block and recovery, I/O management, FOR NEXT loop.
- Possibility to control the execution of 16 previously stored motion programs through hardware inputs. Accordingly, the drive can be used in stand-alone applications, without serial connection.
- 11 inputs and 6 outputs, all optically insulated. Among them 3 inputs and 4 outputs are freely programmable.
- Memory of 128 instructions kept also at drive switched-off and three run time instructions.
- A utility working in Windows® is available in order to ease motion programs development by the user.
- Alarm memory by use of yellow blinking led.

## MECHANICAL DIMENSIONS



## POWER AND LOGIC CONNECTIONS



# X-MIND K Series Drives



## INTRODUCTION

- Series of ministep bipolar chopper drives with direct input from the main AC power supply (110-230 VAC) and an on-board programmable motion controller that can be used:
  - for the interfacing, through RS485 serial line, with a central control system
  - as an independent unit.
- Compact system equipped with dedicated instructions optimized for advanced motion control applications.
- Target: advanced applications requiring direct input from the main power supply and a programmable motion controller.

## HIGHLIGHTS

- Microstepping function up to 4.000 step/rev.
- Communication through RS485 serial line.
- Programmable motion controller allowing connection up to 48 drives on a single serial line.
- External fans not needed: ideal both for mounting inside a metallic electrical cabinet and for stand-alone applications.

Series	Model	V <sub>AC</sub> range (Volt)	I <sub>NP</sub> min. (Peak value) (Amp)	I <sub>NP</sub> max. (Peak value) (Amp)	Dimensions (mm)
X-MIND	K4	110 to 230 +/-15%	2.3	4.0	180x173x53
X-MIND	K6	110 to 230 +/-15%	3.4	6.0	180x173x53

## TECHNICAL FEATURES

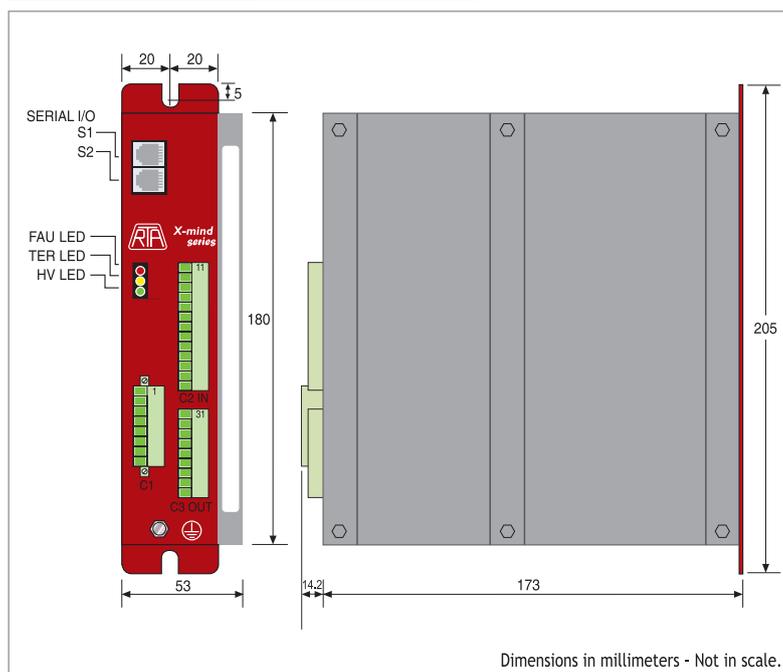
- Range of operating voltage: 110-230 V<sub>AC</sub>.
- Range of current: 2.3-6.0 Amp. Setting up to four possible values by means of a serial line.
- Microstepping: 400, 800, 1.600, 3.200 and 500, 1.000, 2.000, 4.000 steps/revolution. Setting by means of a serial line.
- Automatic current reduction at motor standstill.
- Protections:
  - Protection against under-voltage and over-voltage.
  - Protection against a short-circuit at motor outputs.
  - Overtemperature protection.
- Electronic damping facility for further acoustic noise and mechanic vibrations reduction at low and medium speed.
- External fans not needed.
- Coupling with stepping motors rated for high voltage and equivalent or bigger than NEMA 34 is mandatory.
- Version: boxed, equipped with crimp-type connectors. Maximum compactness.
- Warranty: 24 months.



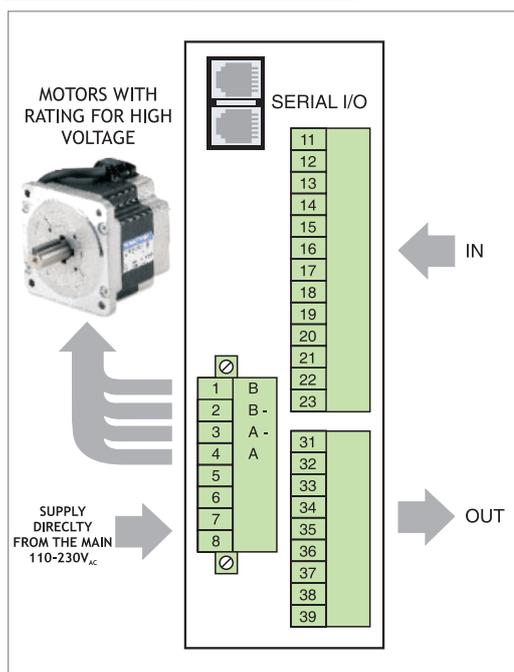
## PROGRAMMABLE MOTION CONTROLLER

- Communication through RS485 serial line; up to 48 drives can be connected on a single serial line. One instruction can be broadcasted to all drives.
- Various types of available instructions, as for example: indexed run with ramp, free run with ramp, indexed run without ramp, run with a programmable braking distance, zero research. Space can be programmed in relative or absolute mode (linear or circular).
- Number of steps for indexed ramp up to  $\pm 8.338.607$  in relative or absolute mode, speed from 1 to 24.000 Hz in standard and increased resolution, ramp times from 16 to 1440 msec.
- Availability of instructions to develop motion programs as, for example: conditional jump, time delay, program block and recovery, I/O management, FOR NEXT loop.
- Possibility to control the execution of 16 previously stored motion programs through hardware inputs. Accordingly, the drive can be used in stand-alone applications, without serial connection.
- 11 inputs and 6 outputs, all optically insulated. Among them 3 inputs and 4 outputs are freely programmable.
- Memory of 128 instructions kept also at drive switched-off and three run time instructions.
- A utility working in Windows® is available in order to ease motion programs development by the user.

## MECHANICAL DIMENSIONS



## POWER AND LOGIC CONNECTIONS





### PROGRAMMABLE - NOT PREFERRED MODELS

	DRIVE TYPE	VOLTAGE RANGE (V)	PHASE CURRENT RANGE (A)	SUGGESTED MOTORS (Flange size)
MIND T2	PROGRAMMABLE	55 - 85 VDC	2.3 - 4.0	NEMA 23, 60 mm, NEMA 34
MIND T3	PROGRAMMABLE	55 - 85 VDC	5.7 - 10.0	NEMA 23, 60 mm, NEMA 34
MIND T4	PROGRAMMABLE	95 - 140 VDC	4.5 - 8.0	NEMA 34
MIND T5	PROGRAMMABLE	120 - 180 VDC	6.7 - 12.0	NEMA 34

"Not preferred models" are models which have been replaced with the latest versions. They are still available in R.T.A.'s stock, however they are not recommended for new applications.

STEPPING MOTOR DRIVES

**ANALOG INPUT**



# ADW Series Drives

ANALOG  
INPUT

ADW 06



ADW 06.V



ADW 96



## INTRODUCTION

- ADW is the new R.T.A. electronic drive designed for all applications where accurate SPEED CONTROL is needed.
- The motor velocity can be regulated in 3 ways:
  - Analog voltage input
  - External potentiometer
  - Internal speed settings
- The extended ADW power range (24-75 V<sub>DC</sub>, 0.65 - 6.0 A) and its versatility (four Modes of Operation) allow to access to a wide variety of application fields.

## HIGHLIGHTS

- Any speed-regulated applications with variable or pre-set velocity setting.
- Conveyors:
  - Single belt transport
  - Multi belt transport with high precision position/speed synchronization.
- Jog or adjustment movements.

### MODES OF OPERATION

- |                          |                            |
|--------------------------|----------------------------|
| <b>1</b> RUN MODE        | <b>3</b> CW/CCW (JOG)      |
| <b>2</b> START/STOP MODE | <b>4</b> LIMIT SWITCH MODE |

Series	Model	V <sub>DC</sub> range (V)	I <sub>NP</sub> min. (Peak value) (A)	I <sub>NP</sub> max. (Peak value) (A)	Dimensions (mm)
ADW	04 - 04.V*	24 to 75	0.65	2.0	122x94x25
ADW	06 - 06.V*	24 to 75	1.9	6.0	122x94x25
ADW	94	24 to 75	0.65	2.0	129x110x34
ADW	96	24 to 75	1.9	6.0	129x110x34

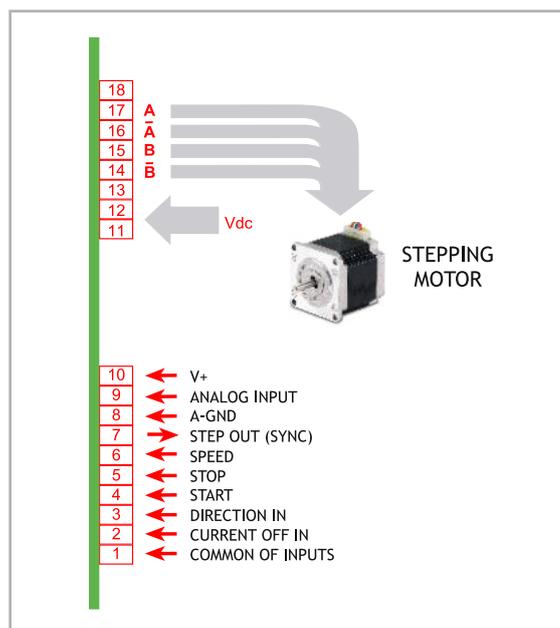
\* ADW 04.V and ADW 06.V versions are equipped with screw-type connectors.

## TECHNICAL FEATURES

- Range of operating voltage: 24-75 V<sub>dc</sub>.
- Range of current: 0.65-6 A. Easy setting of values by means of dip-switches.
- Wide speed range: 0.8 rpm to 2,000 rpm. Continuous operation zone up to approx 400 rpm, depending on motor choice.
- 64 internally selectable preset speed.
- 0-5V<sub>dc</sub> or 0-10V<sub>dc</sub> selectable analog command range.
- Low & High-speed motion profile.
- Adjustable internal acceleration/deceleration ramp.
- Voltage source for potentiometer available at connector.
- “Auto-stop” function.
- All opto-insulated digital inputs.
- Sync-out for multi-Axis synchronization.
- Over-voltage, short-circuit and thermal protection.
- Warranty: 24 months.

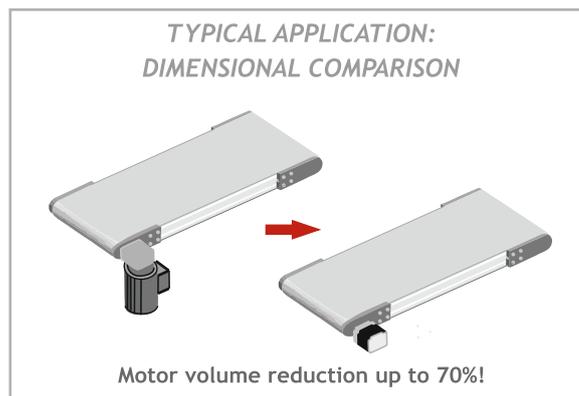


## POWER AND LOGIC CONNECTIONS

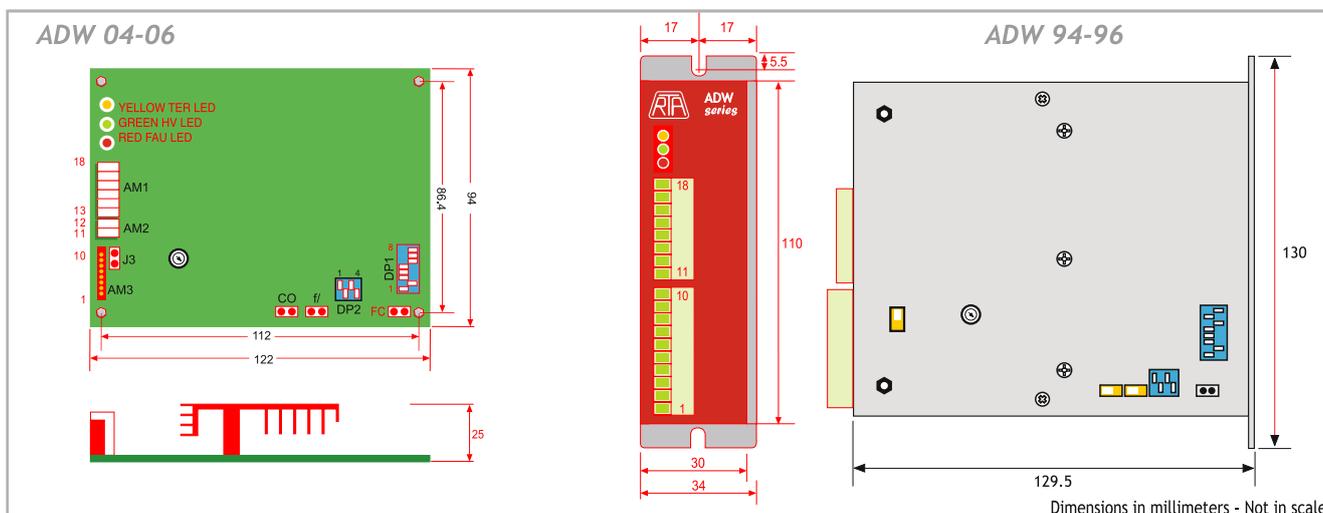


## BENEFITS VS. CONVENTIONAL INVERTERS + AC MOTORS + WORM GEARBOX SETUP.

- Broader and more accurate speed range [0.8 rpm to 2,000 rpm]
- Zero-deviation motor speed control at any speed.  
[motor speed is not affected by variable factors like load, inertia or friction].
- The motors automatically act as brake at zero speed.
- Easy multi-axis synchronization in Position and Speed.
- No need of worm gearbox due to the high-torque at low rotation speed range [0-400 rpm].
- Smaller dimension: overall size < 1/3 compared with traditional AC Asynchronous sets.
- Lower weight.



## MECHANICAL DIMENSIONS





STEPPING MOTOR DRIVES

**ACCESSORIES - SWITCHING POWER SUPPLIES**



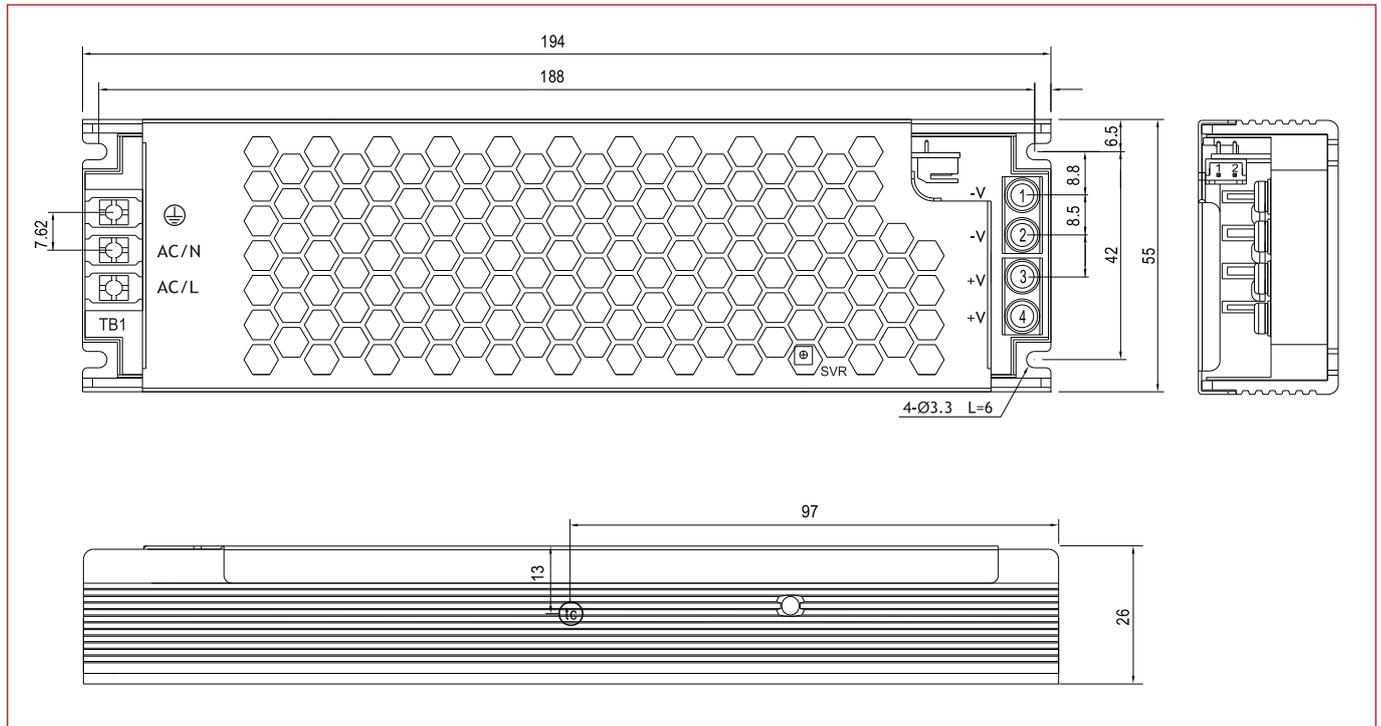
# R-UHP 200-XX SWITCHING POWER SUPPLY

## Main Features

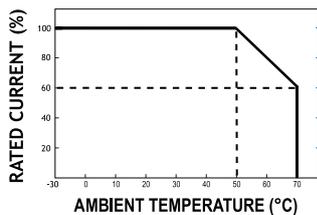
- 16.7A output - 12 VDC
- 8,4A output - 24 VDC
- 4,2A output - 48 VDC
- AC input voltage range: 90~264 VAC
- -30~+70 °C ambient temperature
- Protections: Short Circuit, Overload, Over Voltage, Over Temperature
- V<sub>DC\_OK</sub> signal active
- Led indicator for power on
- Warranty: 24 months



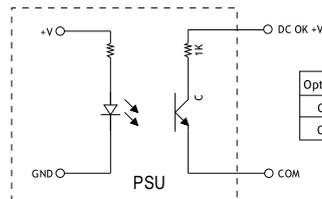
## Dimensions (Units:mm)



## MORE INFO



DERATING CURVE



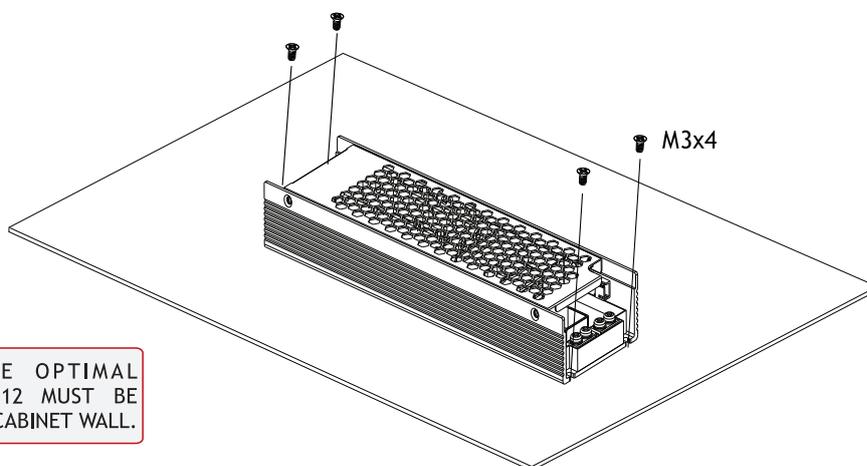
Optocoupler C-E Pin Conduction	PSU turns on	DC ok
Optocoupler C-E Pin Open	PSU turns off	DC fail
Optocoupler Rating(max.)	15Vdc/10mA resistive load	

V<sub>DC\_OK</sub> FUNCTION MANUAL

## Specifications

MODEL	R-UHP 200-12	R-UHP 200-24	R-UHP 200-48		
OUTPUT	DC VOLTAGE	12V	24V	48V	
	RATED CURRENT	16.7A	8.4A	4.2A	
	RATED POWER (convection)	200.4W	201.6W	201.6W	
	VOLTAGE ADJ. RANGE	11.4 ~ 12.6V	22.8 ~ 25.2 V	45.6-50.4V	
	VOLTAGE TOLERANCE Note.3	±1.0%	±1.0%	±1.0%	
	LINE REGULATION	±0.3%	±0.3%	±0.3%	
	LOAD REGULATION	±0.5%	±0.5%	±0.5%	
INPUT	VOLTAGE RANGE Note.3	90 ~ 264VAC    127 ~ 370VDC	90 ~ 264VAC    127 ~ 370VDC	90 ~ 264VAC    127 ~ 370VDC	
	FREQUENCY RANGE	47 ~ 63Hz	47 ~ 63Hz	47 ~ 63Hz	
	EFFICIENCY	93%	94%	94%	
	AC CURRENT (Typ.)	2.2A/115VAC    1.1A/230VAC	2.2A/115VAC    1.1A/230VAC	2.2A/115VAC    1.1A/230VAC	
PROTECTION	OVERLOAD	110-140% rated output power		110-140% rated output power	110-140% rated output power
		Protection type : Hiccup mode, recovers automatically after fault condition is removed			
	OVER VOLTAGE	13.2 ~ 15.6 V	26.4 ~ 31.2 V	52.8 ~ 62.4V	
		Protection type :Shut down O/P voltage,re-power on to recover			
OVER TEMPERATURE	Protection type :Shut down O/P voltage, recovers automatically after temperature goes down				
FUNCTION	VDC_OK SIGNAL(Optional)	Contact rating(max.):15Vdc/10mA resistive load			
ENVIRONMENT	WORKING TEMP.	-30 ~ +70 (Refer to "Derating Curve")			
	WORKING HUMIDITY	20 ~ 90% RH non-condensing			
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes			
SAFETY STANDARDS	UL60950-1,TUV EN60950-1,EN60335-1,CCC GB4943, EAC TP TC 004 approved, Design refer to EN61558-1,-2-16				
SAFETY & EMC (Note.5)	WITHSTAND VOLTAGE	I/P-O/P:3.75KVAC    I/P-FG:2KVAC    O/P-FG:1.25KVAC			
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC/25°C/70%RH			
	EMC EMISSION	Compliance to EN55032,GB9254,Class B, EN55014,EN61000-3-2,-3,EAC TP TC 020			
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11;EN61000-6-2 (EN50082-2), heavy industry level ,criterial A, EAC TP TC020			
OTHERS	MTBF	257K hrs min.    MIL-HD 10217F (25 C)			
NOTE	<ol style="list-style-type: none"> <li>1. All parameters NOT specially mentioned are measured at 230 VAC input, rated load and 25°C ambient temperature.</li> <li>2. Tolerance: includes set up tolerance, line regulation and load regulation.</li> <li>3. Please check the derating curve for more details.</li> <li>4. The ambient temperature derating of 5°C /1000m is needed for operating altitude greater than 2000m (6500ft).</li> <li>5. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that is still meets EMC directives.</li> </ol>				

## Mounting

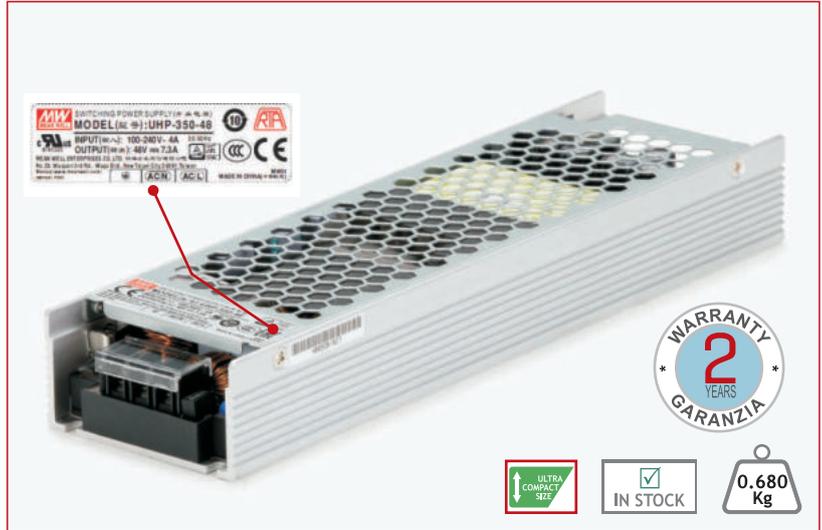


IN ORDER TO ASSURE OPTIMAL DISSIPATION, R-UHP 200-12 MUST BE INSTALLED ON ELECTRICAL CABINET WALL.

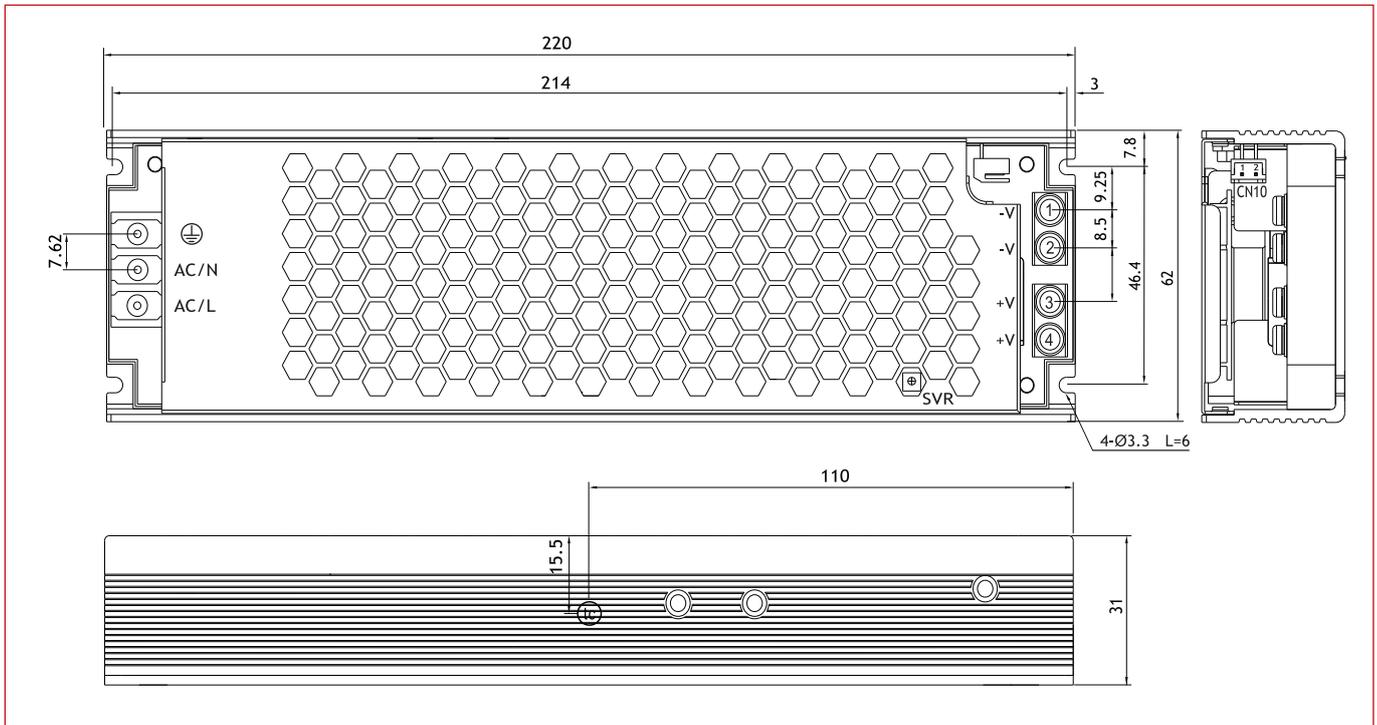
# R-UHP 350-XX SWITCHING POWER SUPPLY

## Main Features

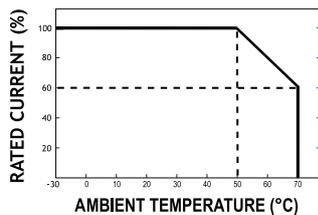
- 29.2 A output - 12 VDC
- 14.6 A output - 24 VDC
- 7.3 A output - 48 VDC
- AC input voltage range: 90~264 VAC
- -30~+70 °C ambient temperature
- Protections: Short Circuit, Overload, Over Voltage, Over Temperature
- V<sub>DC\_OK</sub> signal active
- Led indicator for power on
- Warranty: 24 months



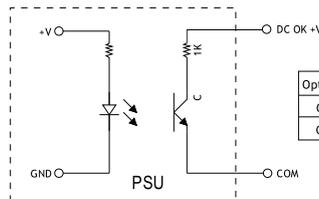
## Dimensions (Units:mm)



## MORE INFO



DERATING CURVE



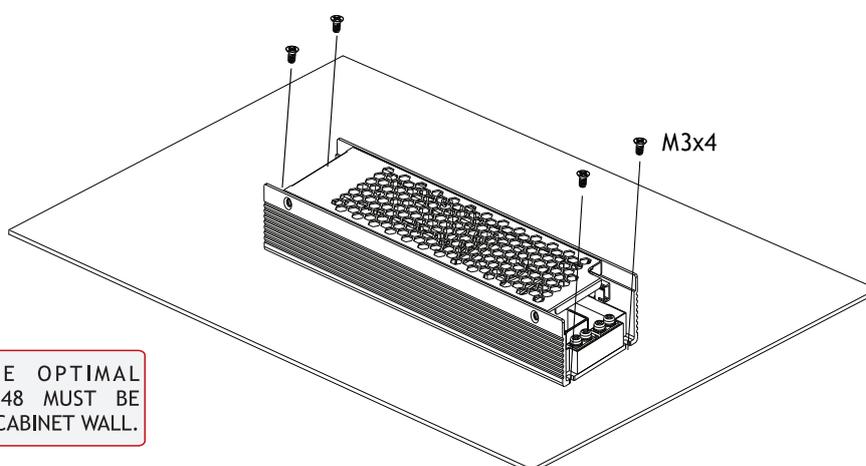
Optocoupler C-E Pin Conduction	PSU turns on	DC ok
Optocoupler C-E Pin Open	PSU turns off	DC fail
Optocoupler Rating(max.)	15Vdc/10mA resistive load	

V<sub>DC\_OK</sub> FUNCTION MANUAL

## Specifications

MODEL		R-UHP 350-12	R-UHP 350-24	R-UHP 350-48
OUTPUT	DC VOLTAGE	12 V	24V	48V
	RATED CURRENT	29.2A	14.6A	7.3A
	RATED POWER (convection)	350.4W	350.4W	350.4W
	VOLTAGE TOLERANCE	±1.0%	±1.0%	±1.0%
	VOLTAGE ADJ. RANGE	11.4~12.6V	22.8~25.2V	45.6~ 50.4V
	LINE REGULATION	±0.3%	±0.3%	±0.3%
	LOAD REGULATION Note.2	±0.5%	±0.5%	±0.5%
INPUT	VOLTAGE RANGE Note.3	90 ~ 264VAC    127 ~ 370VDC	90 ~ 264VAC    127 ~ 370VDC	90 ~ 264VAC    127 ~ 370VDC
	FREQUENCY RANGE	47 ~ 63Hz	47 ~ 63Hz	47 ~ 63Hz
	EFFICIENCY	91%	94%	94%
	AC CURRENT (Typ.)	4A/115VAC    2A/230VAC	4A/115VAC    2A/230VAC	4A/115VAC    2A/230VAC
PROTECTION	OVERLOAD	110~140% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed		
	OVER VOLTAGE	13.2 ~ 15.6V	26.4 ~ 31.2V	52.8 ~ 62.4V
	OVER TEMPERATURE	Protection type :Shut down O/P voltage, re-power on to recover		
FUNCTION	VDC_OK SIGNAL(Optional)	Contact rating(max.):15Vdc/10mA resistive load		
ENVIRONMENT	WORKING TEMP.	-30 ~ +70 (Refer to "Derating Curve")		
	WORKING HUMIDITY	20 ~ 90% RH non-condensing		
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes		
	SAFETY STANDARDS	UL60950-1,TUV EN60950-1,EN60335-1,CCC GB4943, EAC TP TC 004 approved, Design refer to EN61558-1,-2-16		
SAFETY & EMC (Note.5)	WITHSTAND VOLTAGE	I/P-O/P:3.75KVAC    I/P-FG:2KVAC    O/P-FG:1.25KVAC		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC/25°C/70%RH		
	EMC EMISSION	Compliance to EN55032,GB9254,Class B, EN55014,EN61000-3-2,-3,EAC TP TC 020		
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11;EN61000-6-2 (EN50082-2), heavy industry level ,criterial A, EAC TP TC 020		
OTHERS	MTBF	285 K hrs min.    MIL-HDBK-217F (25°C)		
NOTE	<ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 230 VAC input, rated load and 25°C ambient temperature.</li> <li>Tolerance: includes set up tolerance, line regulation and load regulation.</li> <li>Please check the derating curve for more details.</li> <li>The ambient temperature derating of 3.5°C /1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m (6500ft).</li> <li>The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that is still meets EMC directives.</li> </ol>			

## Mounting



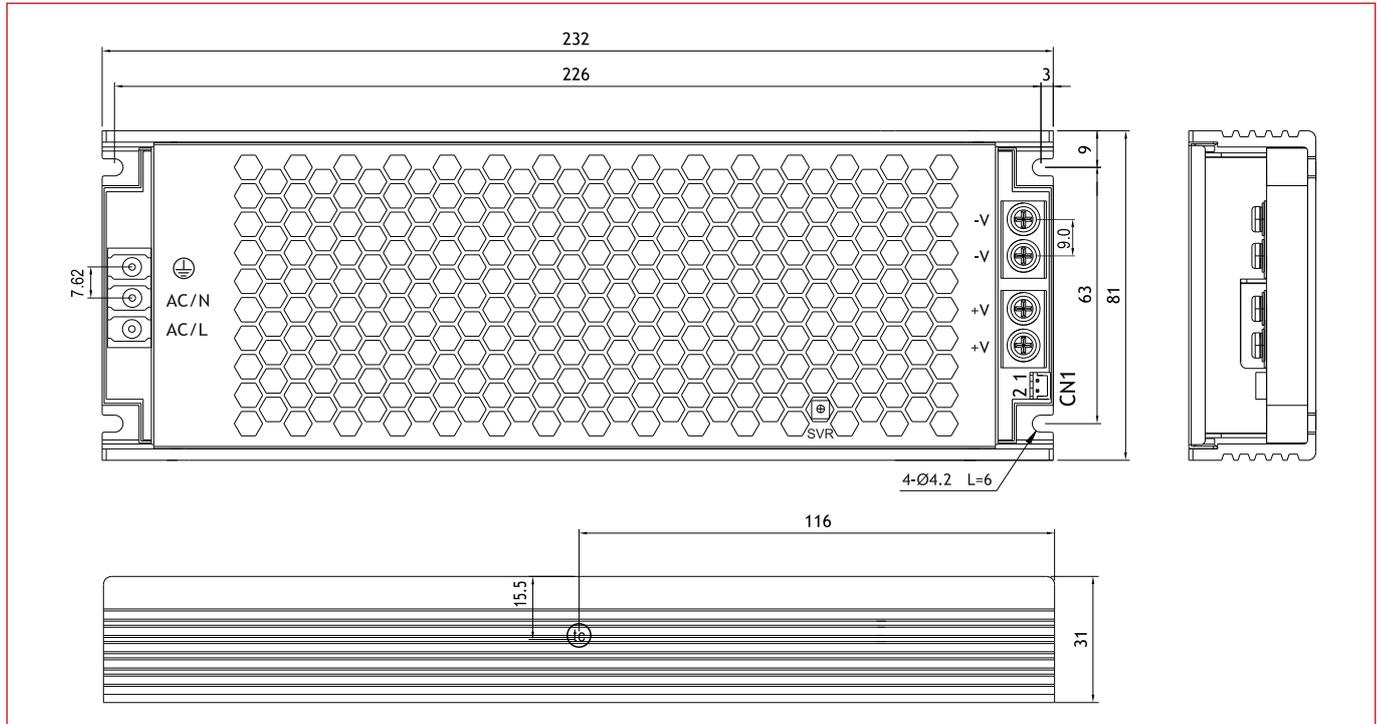
# R-UHP 500-XX SWITCHING POWER SUPPLY

## Main Features

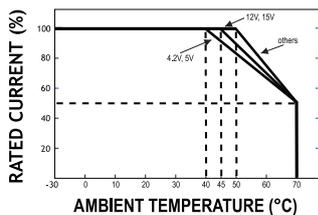
- 41.7 A output - 12 VDC  
20.9 A output - 24 VDC  
10.45 A output - 48 VDC
- AC input voltage range: 90~264 VAC
- -30~+70 °C ambient temperature
- Protections: Short Circuit, Overload, Over Voltage, Over Temperature
- $V_{DC\_OK}$  signal active
- Led indicator for power on
- Warranty: 24 months



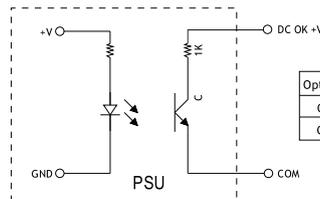
## Dimensions (Units:mm)



## MORE INFO



DERATING CURVE



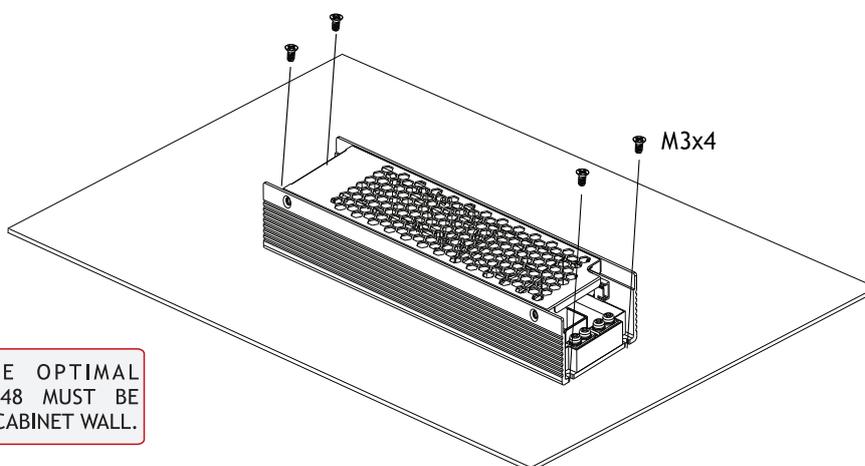
Optocoupler C-E Pin Conduction	PSU turns on	DC ok
Optocoupler C-E Pin Open	PSU turns off	DC fail
Optocoupler Rating(max.)	15Vdc/10mA resistive load	

$V_{DC\_OK}$  FUNCTION MANUAL

## Specifications

MODEL	R-UHP 500-12	R-UHP 500-24	R-UHP 500-48	
OUTPUT	DC VOLTAGE	12V	24V	48V
	RATED CURRENT	41.7A	20.9A	10.45A
	RATED POWER (convection)	500.4W	501.6W	501.6W
	VOLTAGE ADJ. RANGE	11.4 ~ 12.6	22.8 ~ 25.2V	45.6-50.4V
	VOLTAGE TOLERANCE Note.3	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.3%	±0.3%	±0.3%
	LOAD REGULATION	±0.5%	±0.5%	±0.5%
INPUT	VOLTAGE RANGE Note.3	90 ~ 264VAC    127 ~ 370VDC	90 ~ 264VAC    127 ~ 370VDC	90 ~ 264VAC    127 ~ 370VDC
	FREQUENCY RANGE	47 ~ 63Hz	47 ~ 63Hz	47 ~ 63Hz
	EFFICIENCY	94%	94.5%	95%
	AC CURRENT (Typ.)	4.85A/115VAC    2.6A/230VAC	4.85A/115VAC    2.6A/230VAC	4.85A/115VAC    2.6A/230VAC
PROTECTION	OVERLOAD	110-140% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed		
	OVER VOLTAGE	13.2 ~ 15.6	26.4 ~ 31.2V	52.8 ~ 62.4V
	OVER TEMPERATURE	Protection type : Shut down O/P voltage, re-power on to recover		
FUNCTION	VDC_OK SIGNAL(Optional)	Contact rating(max.):30Vdc/1A resistive load		
ENVIRONMENT	WORKING TEMP.	-20 ~ +70 °C (Refer to "Derating Curve")		
	WORKING HUMIDITY	20 ~ 90% RH non-condensing		
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes		
SAFETY & EMC (Note.5)	SAFETY STANDARDS	UL60950-1,TUV EN60950-1,EN60335-1,CCC GB4943, EAC TP TC 004 approved, Design refer to EN61558-1,-2-16		
	WITHSTAND VOLTAGE	I/P-O/P:3 75KVAC    I/P-FG:2KVAC    O/P-FG:1 25KVAC		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC/25 °C/70%RH		
	EMC EMISSION	Compliance to EN55032,GB9254,Class B, EN55014,EN61000-3-2,-3,EAC TP TC 020		
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11;EN61000-6-2 (EN50082-2), heavy industry level ,criterialA, EAC TP TC020		
OTHERS	MTBF	168K hrs min.    MIL-HDBK-217F (25 °C)		
NOTE	<ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 230 VAC input, rated load and 25 °C ambient temperature.</li> <li>Tolerance: includes set up tolerance, line regulation and load regulation.</li> <li>Please check the derating curve for more details.</li> <li>The ambient temperature derating of 5 °C /1000m is needed for operating altitude greater than 2000m (6500ft).</li> <li>The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that is still meets EMC directives.</li> </ol>			

## Mounting



IN ORDER TO ASSURE OPTIMAL DISSIPATION, R-UHP 500-48 MUST BE INSTALLED ON ELECTRICAL CABINET WALL.

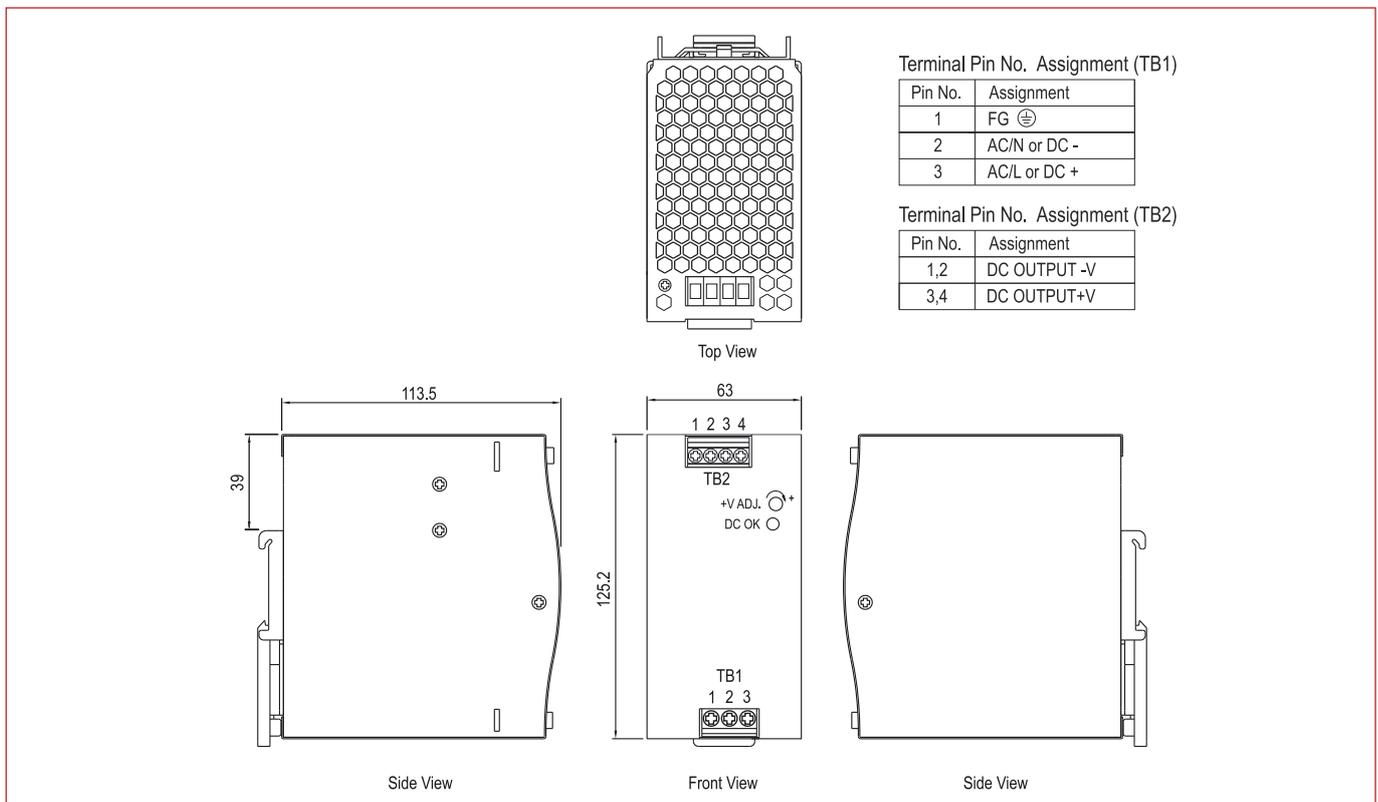
# R-NDR-240-XX SWITCHING POWER SUPPLY

## Main Features

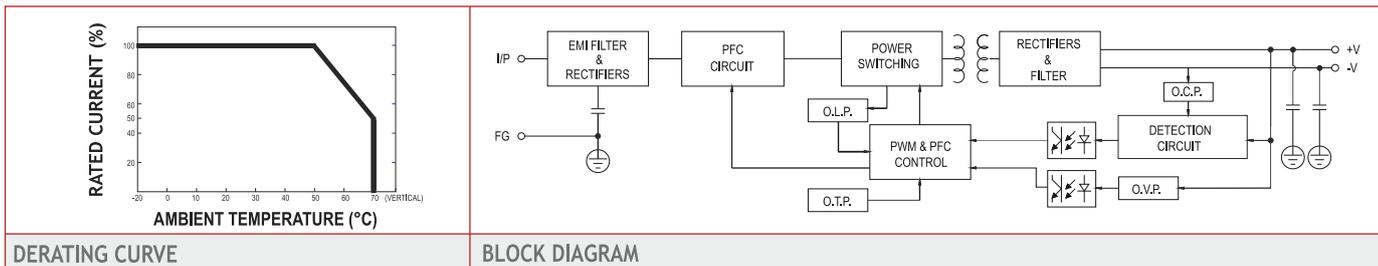
- 10 A output - 24 VDC
- 5 A output - 48 VDC
- AC input voltage range: 90~264 VAC
- -20~+70 °C ambient temperature
- Protections: Short Circuit, Overload, Over Voltage, Over Temperature
- DC output voltage adjustable
- DIN rail TS-35 / 7.5 or 15 mounting
- Warranty: 24 months



## Dimensions (Units:mm)



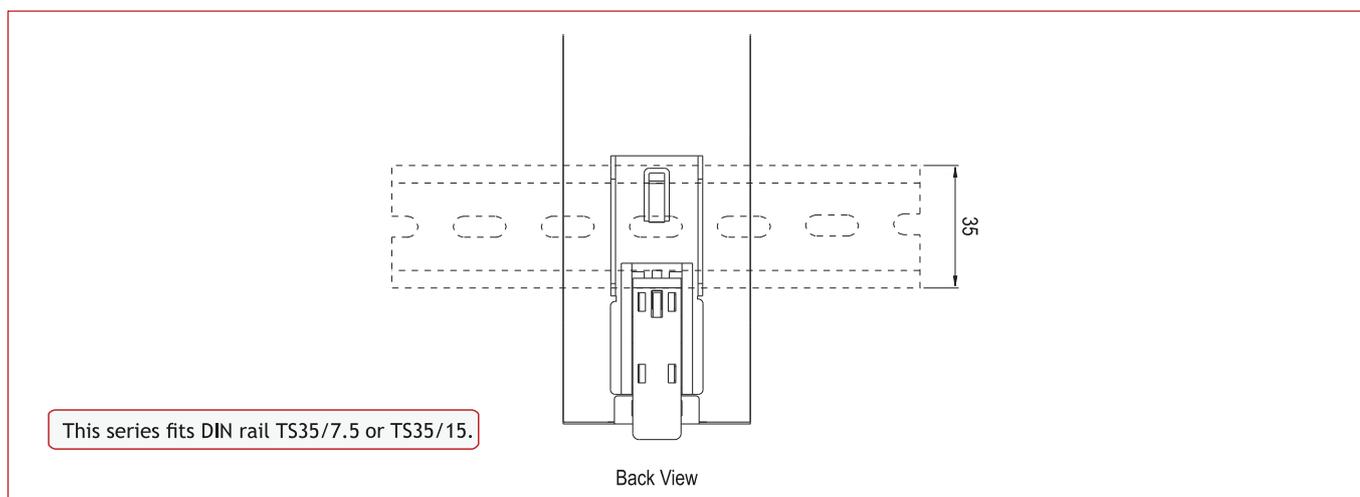
## MORE INFO



## Specifications

MODEL	R-NDR-240-24		R-NDR-240-48	
OUTPUT	DC VOLTAGE	24 V		48V
	RATED CURRENT	10A		5A
	RATED POWER (convection)	240W		240W
	VOLTAGE ADJ. RANGE	24~28V		48-55V
	VOLTAGE TOLERANCE Note.3	±1.0%		±1.0%
	LINE REGULATION	±0.5%		±0.5%
	LOAD REGULATION	±1.0%		±1.0%
INPUT	VOLTAGE RANGE Note.3	90 ~ 264VAC	127 ~ 370VDC	90 ~ 264VAC 127 ~ 370VDC
	FREQUENCY RANGE	47 ~ 63Hz		47 ~ 63Hz
	EFFICIENCY	88.5%		88,5%
	AC CURRENT (Typ.)	2.5A/115VAC	1.3A/230VAC	2.5A/115VAC 1.3A/230VAC
PROTECTION	OVERLOAD	105-130% rated output power		105-130% rated output power
		Protection type : Constant current limiting, recovers automatically after fault condition is removed		
	OVER VOLTAGE	29~33V		56-65V
		Protection type :Shut down O/P voltage,re-power on to recover		
	OVER TEMPERATURE	Protection type :Shut down O/P voltage, recovers automatically after temperature goes down		
ENVIRONMENT	WORKING TEMP.	-20 ~ +70 (Refer to "Derating Curve")		
	WORKING HUMIDITY	20 ~ 95% RH non-condensing		
	VIBRATION	10 ~ 500Hz 2G 10min./1c cle 60min. each along X Y Z axes		
SAFETY & EMC (Note.5)	SAFETY STANDARDS	UL508, TUV EN60950-1 approved		
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:>100M Ohms / 500VDC / 25°C / 70% RH		
	EMC EMISSION	Compliance to EN55032 (CISPR32), EN61204-3 Class B, EN61000-3-2,-3		
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, EN61000-6-2 (EN50082-2), EN61204-3, heavy industry level, criteria A		
OTHERS	MTBF	230.2K hrs min.		MIL-HDBK-217F (25°C)
NOTE	<ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 230 VAC input, rated load and 25°C ambient temperature.</li> <li>Tolerance: includes set up tolerance, line regulation and load regulation.</li> <li>Please check the derating curve for more details.</li> <li>The ambient temperature derating of 5°C /1000m is needed for operating altitude greater than 2000m (6500ft).</li> <li>The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.</li> </ol>			

## Mounting



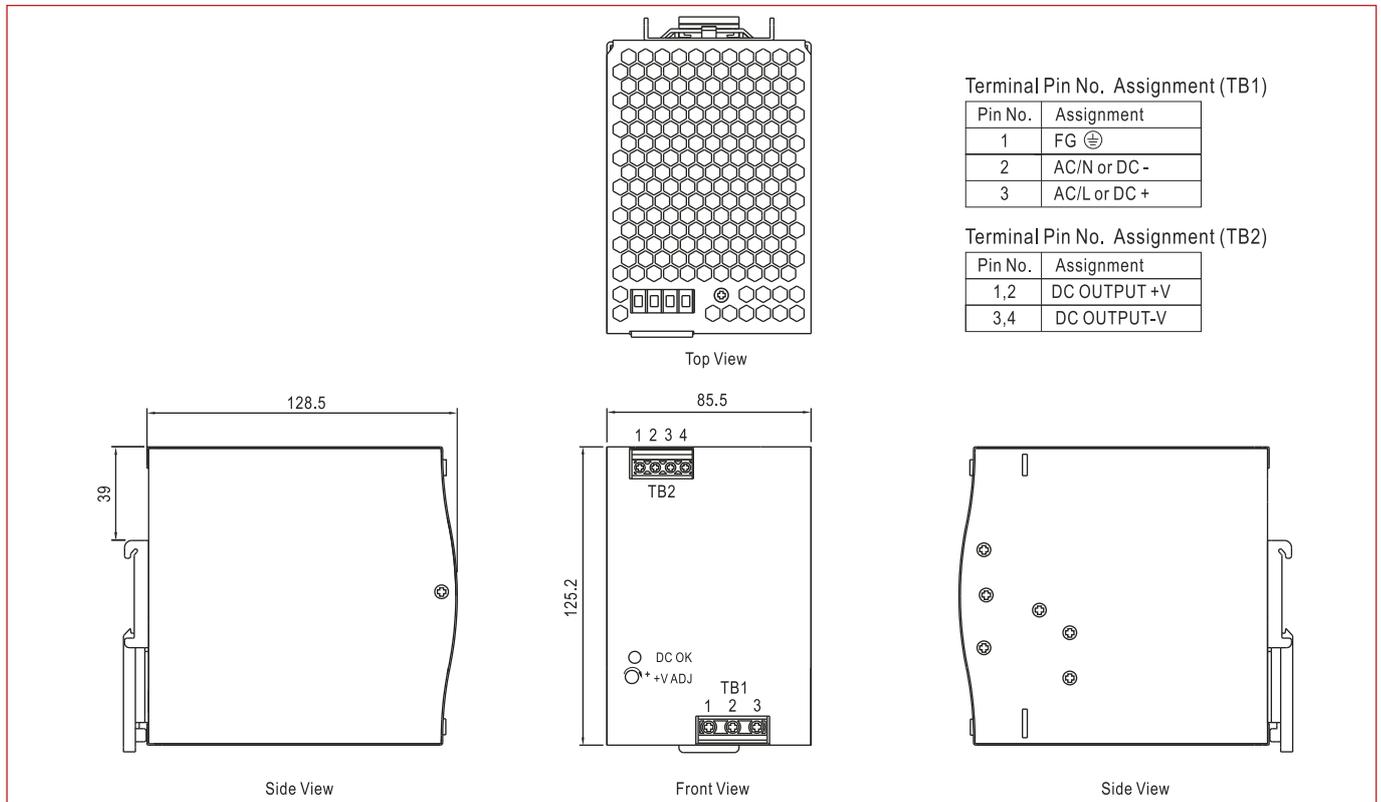
# R-NDR-480-XX SWITCHING POWER SUPPLY

## Main Features

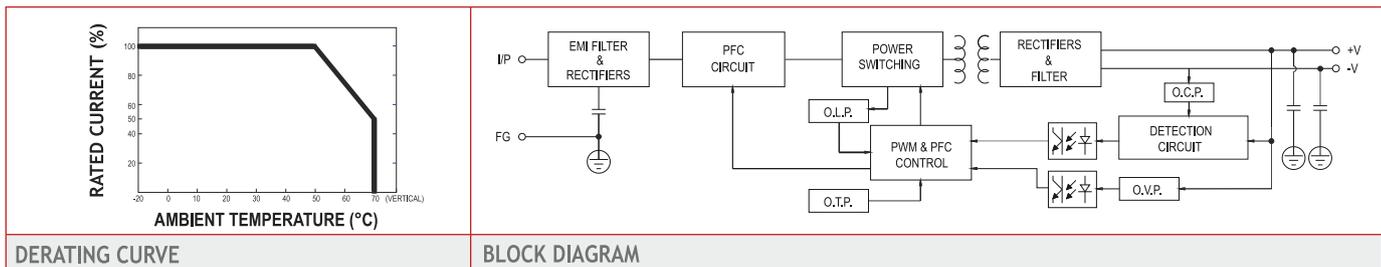
- 20 A output - 24 VDC
- 10 A output - 48 VDC
- AC input voltage range: 90~264 VAC
- -20~+70 °C ambient temperature
- Protections: Short Circuit, Overload, Over Voltage, Over Temperature
- DC output voltage adjustable
- DIN rail TS-35 / 7.5 or 15 mounting
- Warranty: 24 months



## Dimensions (Units:mm)



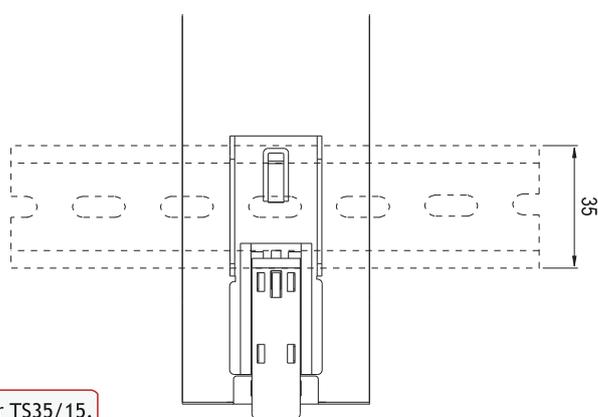
## MORE INFO



## Specifications

MODEL	R-NDR-480-24	R-NDR-480-48	
OUTPUT	DC VOLTAGE	24 V	48 V
	RATED CURRENT	20A	10A
	RATED POWER (convection)	480W	480W
	VOLTAGE ADJ. RANGE	24-28V	48-55V
	VOLTAGE TOLERANCE Note.3	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%
INPUT	VOLTAGE RANGE Note.3	90 ~ 264VAC      127 ~ 370VDC	90 ~ 264VAC      127 ~ 370VDC
	FREQUENCY RANGE	47 ~ 63Hz	47 ~ 63Hz
	EFFICIENCY	92.5%	92.5%
	AC CURRENT (Typ.)	4.8A/115 VAC      2.4A/230VAC	4.8A/115 VAC      2.4A/230VAC
PROTECTION	OVERLOAD	105-130% rated output power Protection type : Constant current limiting, until will shut down after 3 seconds, re-power to recover	
	OVER VOLTAGE	29-33V	56-65V Protection type :Shut down O/P voltage,re-power on to recover
	OVER TEMPERATURE	Protection type :Shut down O/P voltage, recovers automatically after temperature goes down	
	WORKING TEMP.	-20 ~ +70 (Refer to "Derating Curve")	
ENVIRONMENT	WORKING HUMIDITY	20 ~ 95% RH non-condensing	
	VIBRATION	10 ~ 500Hz 2G 10min./1c cle 60min. each along X Y Z axes	
	SAFETY STANDARDS	UL508, TUV EN60950-1 approved	
SAFETY & EMC (Note.5)	WITHSTAND VOLTAGE	I/P-O/P:3KVAC    I/P-FG:2KVAC    O/P-FG:0.5KVAC	
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:>100M Ohms / 500VDC / 25°C / 70% RH	
	EMC EMISSION	Compliance to EN55032 (CISPR32), EN61204-3 Class B, EN61000-3-2,-3	
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, EN61000-6-2 (EN5082-2), EN61204-3, heavy industry level, criteria A	
OTHERS	MTBF	146.8K hrs min.    MIL-HDBK-217F (25°C)	
NOTE	<p>1. All parameters NOT specially mentioned are measured at 230 VAC input, rated load and 25°C ambient temperature.</p> <p>2. Tolerance: includes set up tolerance, line regulation and load regulation.</p> <p>3. Please check the derating curve for more details.</p> <p>4. The ambient temperature derating of 5°C / 1000m is needed for operating altitude greater than 2000m (6500ft).</p> <p>5. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.</p>		

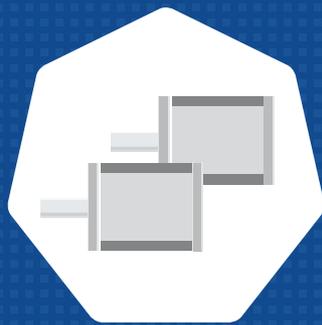
## Mounting



This series fits DIN rail TS35/7.5 or TS35/15.

Back View





## STEPPING MOTORS





# STEPPING MOTORS



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# Key advantages of R.T.A. stepping motors



SANYO DENKI  
**SANMOTION**  
STEPPING SYSTEMS

Exclusive Partnership with **SANYO DENKI CO.** since 1989, one of the leading manufacturer of motion solution in the world.

- More than 30 years of experience, collaboration and evolution.
- High quality and reliability made in Japan, through automatized and robotized assembly line.

## 2 Families, Industrial stepping motors and Traditional stepping motors 5 Series with more than 100 models



### 1 INDUSTRIAL STEPPING MOTORS



- 22 models
- Flange size: 42 mm, 56 mm, 60 mm, 86 mm
- Holding torque: from 29 Ncm to 920 Ncm
- M12 and JST built-in connectors
- Protection degree: IP 54, IP 65, FULL IP 65
- Encoder versions available

### 2 INDUSTRIAL STEPPING MOTORS WITH ENCODER



- 21 models
- Embedded encoder in a terminal box
- Encoder resolutions: 400 cpr, 4000 cpr, INDEX
- Standard signal: differential (single-ended version available)

## Table of contents

### INDUSTRIAL STEPPING MOTORS

	HOLDING TORQUE (Ncm)	FLANGE SIZE (mm)	LENGTH (mm)	CURRENT (A)	PROTECTION DEGREE	PAGE
<b>RH SERIES</b>						
RH 1S0M (-RS)	29	42	33	1.0	IP40	133
RH 1S1M (-RS)	43	42	39	1.0	IP40	134
RH 1S2M (-RS)	56	42	48	1.0	IP40	135
RH 1S3M (-RS)	80	42	59.5	1.0	IP40	136
<b>RM SERIES</b>						
RM 2R2M	165	56	102	4.0	IP54	137
RM 3R1M	360	86	89.5	4.0	IP54	138
RM 3R2M	700	86	120	4.0	IP54	139
RM 3R3M	920	86	150	4.0	IP54	140
<b>SP SERIES (IP 65)</b>						
SP 2563-5000	100	56	80.0	1.0	IP65	141
SP 2563-5200	100	56	80.0	3.0	IP65	142
SP 2566-5200	170	56	102.0	3.0	IP65	143
SP 2862-5100	700	85.5	120.0	4.0	IP65	144
SP 2863-5100	900	85.5	150.0	4.0	IP65	145
<b>SP SERIES (FULL IP 65)</b>						
SP 2566-50SX00	170	56	102.0	1.0	FULL IP65	146
SP 2566-52SX00	170	56	102.0	3.0	FULL IP65	147
SP2861-51SX01	360	85.5	89.5	4.0	FULL IP65	148
SP2862-51SX01	700	85.5	120.0	4.0	FULL IP65	149
SP2863-51SX01	900	85.5	150.0	4.0	FULL IP65	150

NOTE: Codes between brackets refer to double-shaft models.

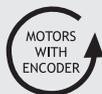
### INDUSTRIAL STEPPING MOTORS WITH ENCODER

	MOTOR CODE	HOLDING TORQUE (Ncm)	FLANGE SIZE (mm)	LENGTH (mm)	CURRENT (A)	PROTECTION DEGREE	PAGE
RH 1S0M-04D0	RH 1S0M	29	42	53	1.0	IP40	152
RH 1S0M-04E0	RH 1S0M	29	42	53	1.0	IP40	152
RH 1S0M-0HE0	RH 1S0M	29	42	53	1.0	IP40	152
RH 1S1M-04D0	RH 1S1M	43	42	59	1.0	IP40	153
RH 1S1M-04E0	RH 1S1M	43	42	59	1.0	IP40	153
RH 1S1M-0HE0	RH 1S1M	43	42	59	1.0	IP40	153
RH 1S2M-04D0	RH 1S2M	56	42	69	1.0	IP40	154
RH 1S2M-04E0	RH 1S2M	56	42	69	1.0	IP40	154
RH 1S2M-0HE0	RH 1S2M	56	42	69	1.0	IP40	154
RH 1S3M-04D0	RH 1S3M	80	42	79	1.0	IP40	155
RH 1S3M-04E0	RH 1S3M	80	42	79	1.0	IP40	155
RH 1S3M-0HE0	RH 1S3M	80	42	79	1.0	IP40	155
RM 3T1M-04D0	RM 3R1M	360	86	111	4.0	IP54	156
RM 3T1M-04E0	RM 3R1M	360	86	111	4.0	IP54	156
RM 3T1M-0HE0	RM 3R1M	360	86	111	4.0	IP54	156
RM 3T2M-04D0	RM 3R2M	700	86	142	4.0	IP54	157
RM 3T2M-04E0	RM 3R2M	700	86	142	4.0	IP54	157
RM 3T2M-0HE0	RM 3R2M	700	86	142	4.0	IP54	157
RM 3T3M-04D0	RM 3R3M	920	86	172	4.0	IP54	158
RM 3T3M-04E0	RM 3R3M	920	86	172	4.0	IP54	158
RM 3T3M-0HE0	RM 3R3M	920	86	172	4.0	IP54	158

### 3 TRADITIONAL STEPPING MOTORS



- 66 models
- Flange size: 14 mm, 28 mm, 42 mm, 56 mm  
60 mm, 86 mm, 106,4 mm
- Holding torque: from 0,65 Ncm to 2.460 Ncm
- Encoder and brake versions available



### 4 TRADITIONAL STEPPING MOTORS WITH ENCODER



- 32 models
- Encoder assembled and tested by RTA
- Encoder resolutions: 400 cpr, 4000 cpr, INDEX
- Standard signal: differential (single ended version available)

### 5 TRADITIONAL STEPPING MOTORS WITH BRAKE



- 12 models
- Brakes static torque: from 24 Ncm to 350 Ncm

**VERSION WITH BRAKE AND ENCODER AVAILABLE**

### 6 ACCESSORIES - FRONT BRAKES



- 2 sizes: Nema 24 and Nema 34
- 24 VDC Power Supply
- M12 Connectors
- Holding Torque: 1.5 Nm (Nema 24) and 3.5 Nm (Nema 34)
- Cables: Standard or 90° (1 m or 3 m length)

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#### TRADITIONAL STEPPING MOTORS

	HOLDING TORQUE (Ncm)	FLANGE SIZE (mm)	LENGTH (mm)	BIPOLAR CURRENT* (A)	PAGE
<b>14 mm FLANGE</b>					
SH2141-5541	0.65	14	30	0.3	160
<b>28 mm FLANGE</b>					
SH2281-5271 (-5231)	7	28	32	0.7*	161
SH2285-5271 (-5231)	14.5	28	51.5	0.7*	162
<b>42 mm FLANGE</b>					
103-H5205-5040	23	42	33	0.25	163
103-H5205-0351 (-0312)	25	42	33	0.7*	164
103-H5205-4240 (-4210)	26.5	42	33	1.0	165
103-H5208-0483	42	42	39	0.9*	166
103-H5210-4240 (-4210)	51	42	48	1.0	167
103-H5210-4541 (-4512)	51	42	48	2.0	168
103-H5212-4640 (-4610)	65	42	59.5	2	169

## TRADITIONAL STEPPING MOTORS

	HOLDING TORQUE (Ncm)	FLANGE SIZE (mm)	LENGTH (mm)	BIPOLAR CURRENT* (A)	PAGE
<b>50 mm FLANGE</b>					
103-H6701-0140 (-0113)	38	50	39.8	0.7*	170
103-H6703-0440	68	50	51.3	1.4*	171
<b>56 mm FLANGE</b>					
103-H7121-0440	49	56	41.8	1.5*	172
103-H7123-5040 (-5010)	85	56	53.8	2.0	173
103-H7123-0140	110	56	53.8	0.7*	174
103-H7123-0440	110	56	53.8	1.5	175
103-H7123-0740 (-0710)	110	56	53.8	2.2*	176
103-H7123-1749 (-1711)	110	56	53.8	4.0	177
103-H7126-0140	165	56	75.8	0.75*	178
103-H7126-0740 (-0710)	165	56	75.8	2.2*	179
103-H7126-1740 (-1710)	165	56	75.8	4.0	180
103-H7126-6640 (-6610)	165	56	75.8	5.60	181
103-H7128-5740 (-5710)	200	56	94.8	2	182
<b>60 mm FLANGE</b>					
103-H7822-0740	170	60	53.8	2.2*	183
103-H7823-0740	300	60	85.8	2.2*	184
103-H7823-1740 (-1714)	300	60	85.8	4.0	185
103-H7826-1642 (-1612)	380	60	103.8	6.0	186
<b>85.5 mm FLANGE</b>					
SM 2861-5055 (-5025)	360	86	66.0	2.0	187
SM 2861-5255 (-5225)	360	86	66.0	6.0	188
SM 2862-5055	700	86	96.5	2.0	189
SM 2862-5155 (-5125)	700	86	96.5	4.0	190
SM 2862-5255 (-5225)	700	86	96.5	6.0	191
SM 2863-5155 (-5126)	920	86	127.0	4.0	192
SM 2863-5255 (-5225)	920	86	127.0	6.0	193

### TRADITIONAL STEPPING MOTORS

	HOLDING TORQUE (Ncm)	FLANGE SIZE (mm)	LENGTH (mm)	BIPOLAR CURRENT (A)	PAGE
<b>106.4 mm FLANGE</b>					
103-H89222-6341 (-6311)	1620	106.4	163.0	6.0	194
103-H89222-6541	1620	106.4	163.0	10.0	195
103-H89223-6341 (-6311)	2460	106.4	221.0	6.0	196
103-H89223-6641 (-6611)	2460	106.4	221.0	12.00	197

### Not preferred models

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### TRADITIONAL STEPPING MOTORS WITH ENCODER

	SANYO DENKI MOTOR CODE	HOLDING TORQUE (Ncm)	FLANGE SIZE (mm)	LENGTH (mm)	BIPOLAR CURRENT* (A)	PAGE
EM 0H1M-04D0	SH 2281-5231	7	28.0	32.0	0.7*	200
EM 0H2M-04D0	SH 2285-5231	14.5	28.0	51.5	0.7*	200
EM 1H2H-04D0	103-H5210-4512	51	42	48	2.0	201
EM 1H2H-04E0	103-H5210-4512	51	42	48	2.0	201
EM 1H2H-0HE0	103-H5210-4512	51	42	48	2.0	201
EM 1H3H-04D0	103-H212-4610	65	42	59.5	2.0	202
EM 1H3H-04E0	103-H212-4610	65	42	59.5	2.0	202
EM 1H3H-0HE0	103-H212-4610	65	42	59.5	2.0	202
EM 2H1M-04D0	103-H7123-1711	110	56	53.8	4.0	203
EM 2H1M-04E0	103-H7123-1711	110	56	53.8	4.0	203
EM 2H1M-0HE0	103-H7123-1711	110	56	53.8	4.0	203
EM 2H2M-04D0	103-H7126-1710	165	56	75.8	4.0	204
EM 2H2M-04E0	103-H7126-1710	165	56	75.8	4.0	204
EM 2H2M-0HE0	103-H7126-1710	165	56	75.8	4.0	204
EM 6H2M-04D0	103-H7823-1714	300	60	85.8	4.0	205
EM 6H2M-04E0	103-H7823-1714	300	60	85.8	4.0	205
EM 6H2M-0HE0	103-H7823-1714	300	60	85.8	4.0	205
EM 6H3H-04D0	103-H7826-1612	380	60	103.8	6	206
EM 6H3H-04E0	103-H7826-1612	380	60	103.8	6	206

### TRADITIONAL STEPPING MOTORS WITH ENCODER

	SANYO DENKI MOTOR CODE	HOLDING TORQUE (Ncm)	FLANGE SIZE (mm)	LENGTH (mm)	BIPOLAR CURRENT* (A)	PAGE
EM 6H3H-OHEO	103-H7826-1612	380	60	103.8	6	206
EM 3F1L-04D0	SM 2861-5025	360	85.5	66.0	2.0	207
EM 3F1H-04D0	SM 2861-5225	360	85.5	66.0	6.0	208
EM 3F1H-04E0	SM 2861-5225	360	85.5	66.0	6.0	208
EM 3F1H-OHEO	SM 2861-5225	360	85.5	66.0	6.0	208
EM 3F2M-04D0	SM 2862-5125	700	85.5	96.5	4.0	209
EM 3F2H-04D0	SM 2862-5225	700	85.5	96.5	6.0	210
EM 3F2H-04E0	SM 2862-5225	700	85.5	96.5	6.0	210
EM 3F2H-OHEO	SM 2862-5225	700	85.5	96.5	6.0	210
EM 3F3H-04D0	SM 2863-5225	920	85.5	127.0	6.0	211
EM 3F3H-04E0	SM 2863-5225	920	85.5	127.0	6.0	211
EM 3F3H-OHEO	SM 2863-5225	920	85.5	127.0	6.0	211
EM 3F3M-14D0	SM 2863-5126	920	85.5	127.0	4.0	212

### TRADITIONAL STEPPING MOTORS WITH BRAKE

	SANYO DENKI MOTOR CODE	HOLDING TORQUE (Ncm)	FLANGE SIZE (mm)	LENGTH (mm)	CURRENT (A)	PAGE
103-H5210-4512.B	103-H5210-4512	51	42	82	2.0	214
103-H7123-5010.B	103-H7123-5010	85	56	89.8	2.0	215
103-H7123-0710.B	103-H7123-0710	110	56	89.8	3.0	216
103-H7123-1711.B	103-H7123-1711	110	56	89.8	4.0	217
103-H7126-0710.B	103-H7126-0710	165	56	89.8	3.0	218
103-H7126-1710.B	103-H7126-1710	165	56	89.8	4.0	219
103-H7823-1714.B	103-H7823-1714	300	60	121.8	4.0	220
103-H7826-1612.B	103-H7826-1612	380	60	103.8	6.0	221
SM 2861-5025.B	SM 2861-5025	360	86	102	2.0	222
SM 2861-5225.B	SM 2861-5225	360	86	102	6.0	223
SM 2862-5125.B	SM 2862-5125	700	86	132.5	4.0	224
SM 2862-5225.B	SM 2862-5225	700	86	132.5	6.0	225

### ACCESSORIES - FRONT BRAKES

	HOLDING TORQUE (Ncm)	FLANGE (mm)	CURRENT (mA)	VOLTAGE (V)	POWER (W)	PAGE
FB-M12-24-15-00000	1.5	60	460	24 VDC	11.0	233
FB-M12-34-35-00000	3.5	86	460	24 VDC	11.0	234

\* Bipolar series connection

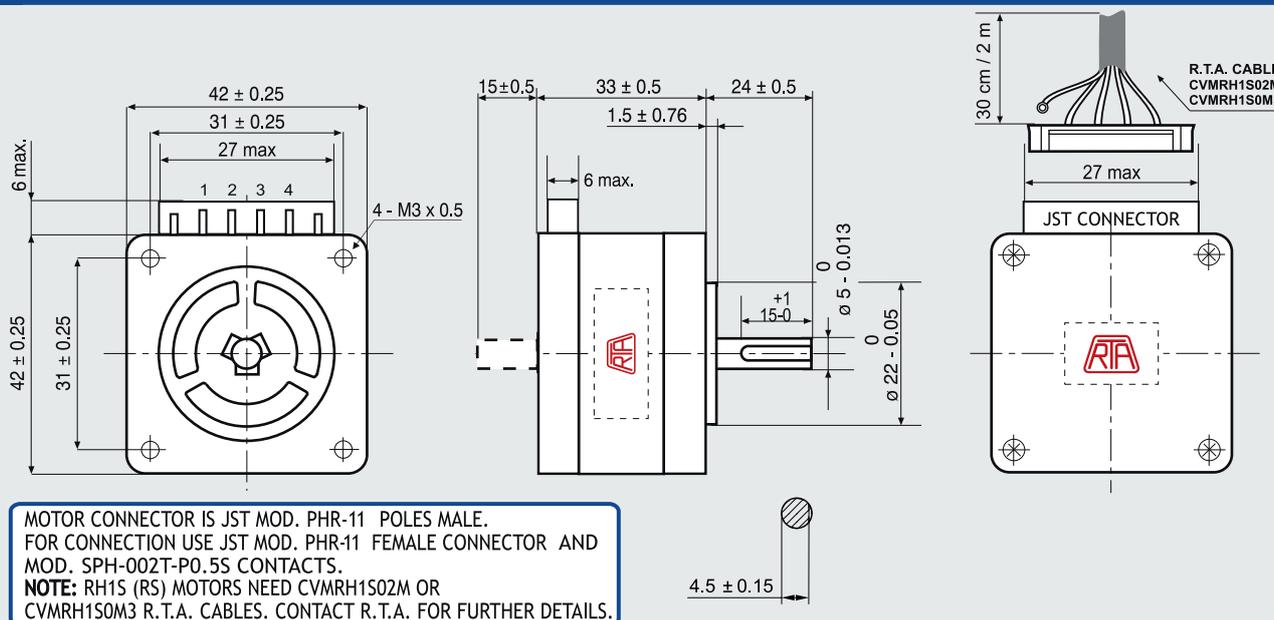
STEPPING MOTORS

# INDUSTRIAL STEPPING MOTORS



# RH 1S0M

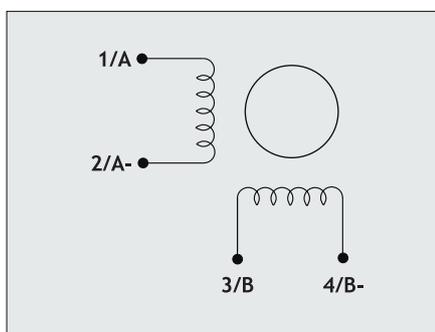
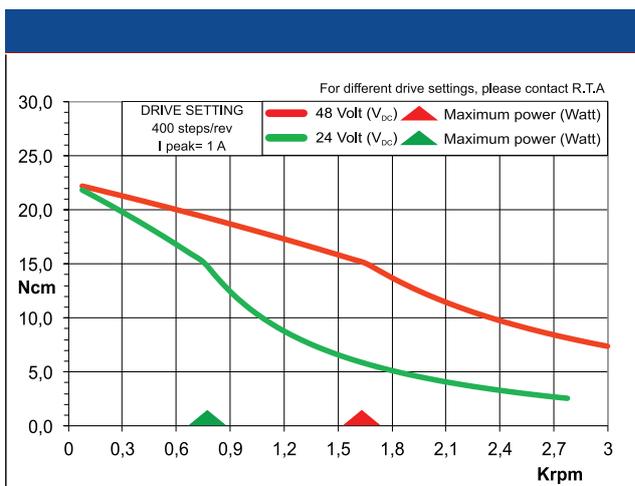
## Dimensions (Unit:mm)



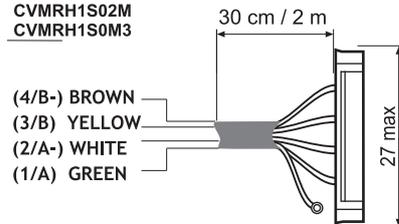
## FEATURES

MODEL	RH 1S0M (RH 1S0M-RS)
BASIC STEP ANGLE	1,8°
BIPOLAR CURRENT (Amp)	1.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	3,6
INDUCTANCE (mH)	7
BIPOLAR HOLDING TORQUE (Ncm)	29
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm <sup>2</sup> x 10 <sup>-7</sup> )	31
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	93500
BACK E.M.F. (V/Krpm)	29
MASS (Kg)	0.23
PROTECTION DEGREE	IP40
LEADS CODE	V

Codes between brackets refer to double shaft models.



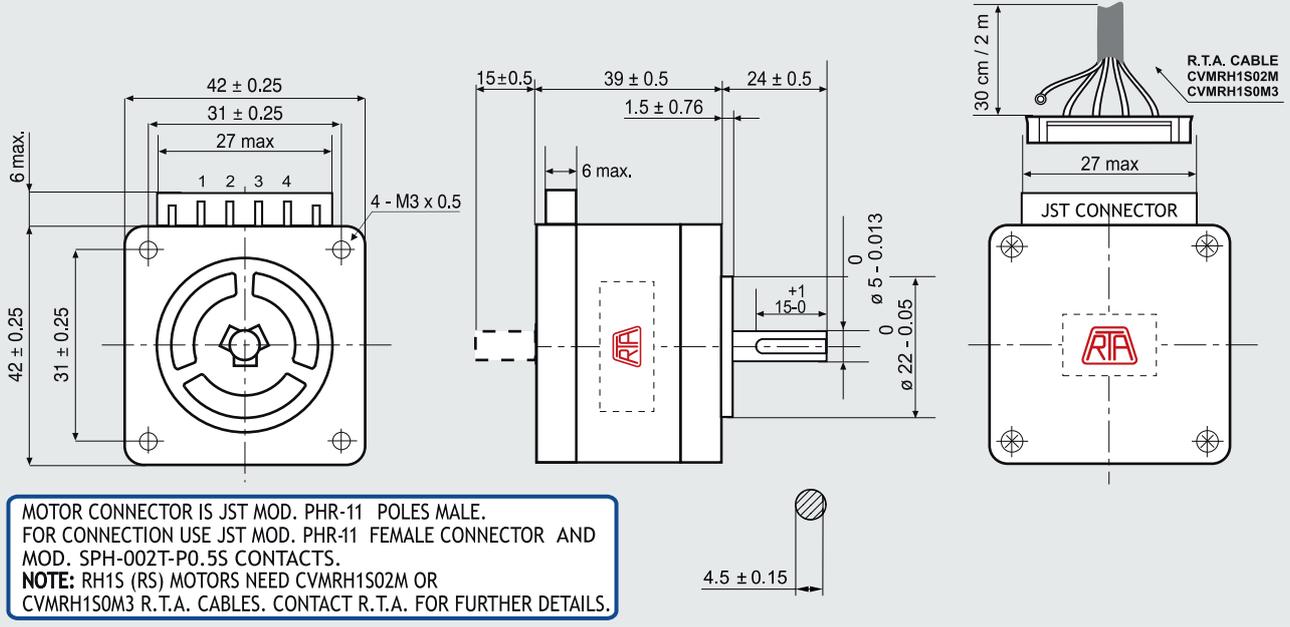
R.T.A. MOTOR  
CABLE  
CVMRH1S02M  
CVMRH1S0M3



Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# RH 1S1M

## Dimensions (Unit:mm)

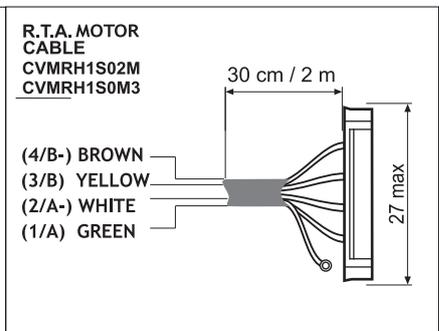
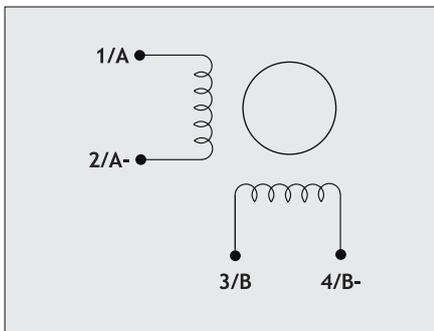
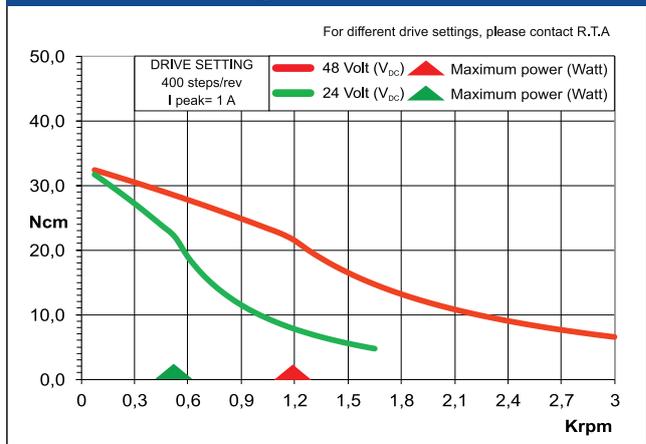


## FEATURES

MODEL	RH 1S1M (RH 1S1M-RS)
BASIC STEP ANGLE	1.8°
BIPOLAR CURRENT (Amp)	1.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	4.6
INDUCTANCE (mH)	9.6
BIPOLAR HOLDING TORQUE (Ncm)	43
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm <sup>2</sup> x 10 <sup>-7</sup> )	46
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	93500
BACK E.M.F. (V/Krpm)	43
MASS (Kg)	0.3
PROTECTION DEGREE	IP40
LEADS CODE	V

Codes between brackets refer to double shaft models.

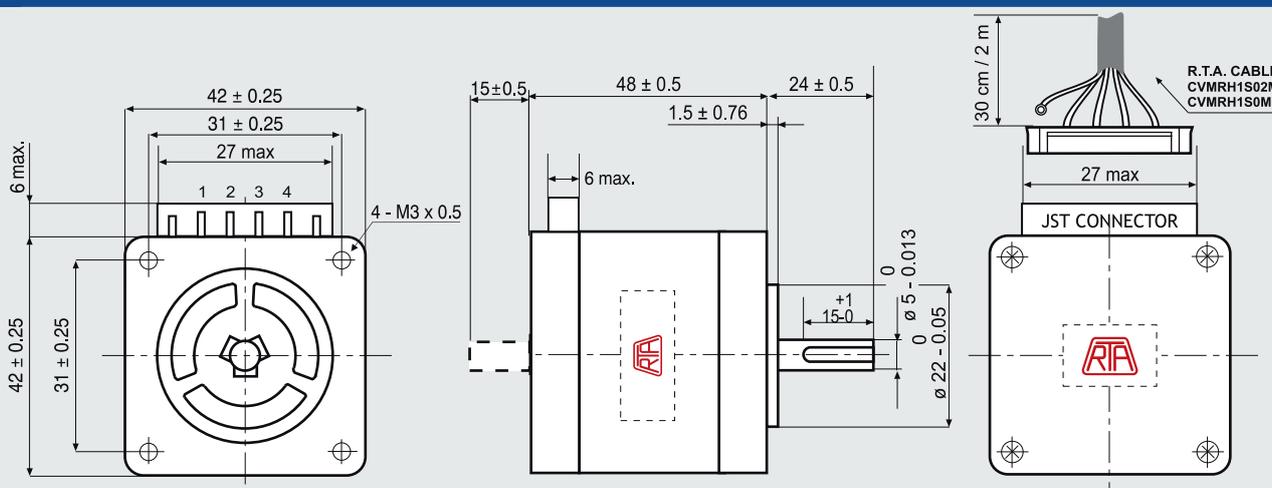
## TORQUE/SPEED CURVE



Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# RH 1S2M

## Dimensions (Unit:mm)



MOTOR CONNECTOR IS JST MOD. PHR-11 POLES MALE.  
 FOR CONNECTION USE JST MOD. PHR-11 FEMALE CONNECTOR AND  
 MOD. SPH-002T-PO.5S CONTACTS.  
**NOTE:** RH1S (RS) MOTORS NEED CVMRH1S02M OR  
 CVMRH1S0M3 R.T.A. CABLES. CONTACT R.T.A. FOR FURTHER DETAILS.

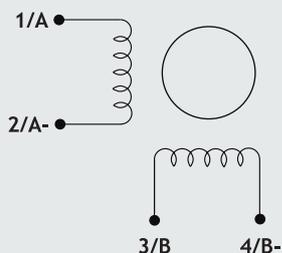
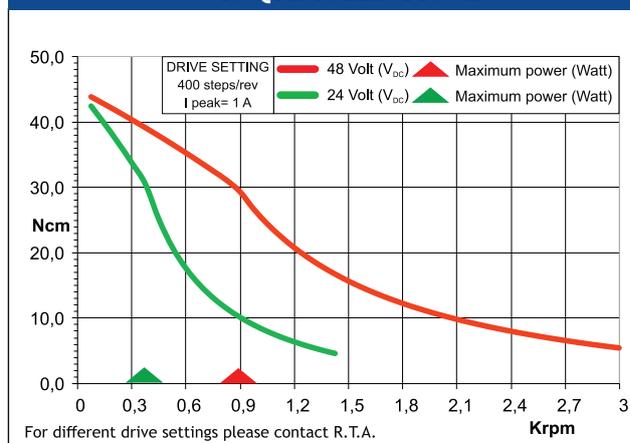


## FEATURES

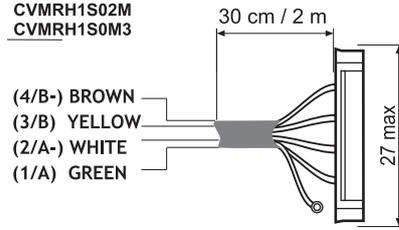
MODEL	RH 1S2M (RH 1S2M-RS)
BASIC STEP ANGLE	1.8°
BIPOLAR CURRENT (Amp)	1.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	5.3
INDUCTANCE (mH)	12.5
BIPOLAR HOLDING TORQUE (Ncm)	56
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kg <sup>m</sup> ² x 10 <sup>-7</sup> )	63
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	88900
BACK E.M.F. (V/Krpm)	56
MASS (Kg)	0.38
PROTECTION DEGREE	IP40
LEADS CODE	V

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



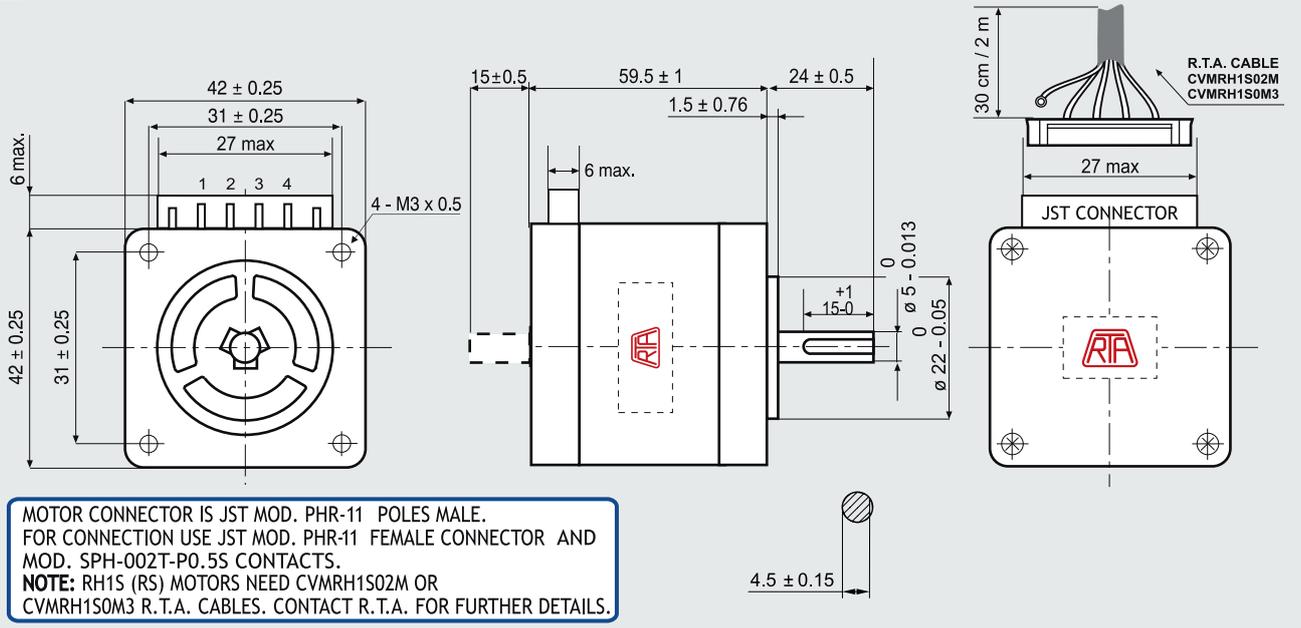
R.T.A. MOTOR CABLE  
 CVMRH1S02M  
 CVMRH1S0M3



Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# RH 1S3M

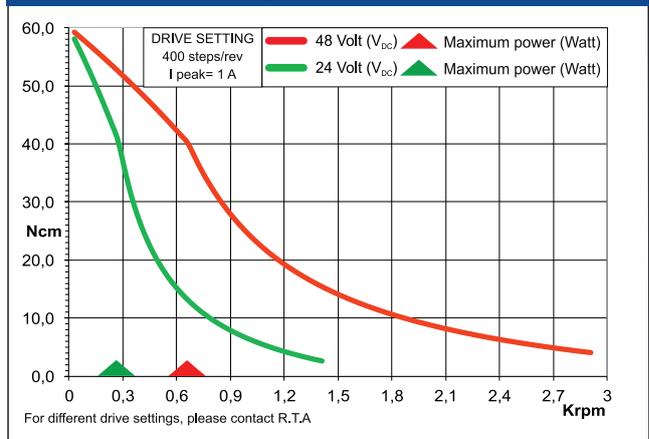
## Dimensions (Unit:mm)



## FEATURES

MODEL	RH 1S3M (RH 1S3M-RS)
BASIC STEP ANGLE	1.8°
BIPOLAR CURRENT (Amp)	1.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	6.5
INDUCTANCE (mH)	16
BIPOLAR HOLDING TORQUE (Ncm)	80
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kg <sup>m</sup> 2 x 10 <sup>-7</sup> )	94
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	85100
BACK E.M.F. (V/Krpm)	80
MASS (Kg)	0.51
PROTECTION DEGREE	IP40
LEADS CODE	V

## TORQUE/SPEED CURVE



Codes between brackets refer to double shaft models.

R.T.A. MOTOR CABLE  
CVMRH1S02M  
CVMRH1S0M3

30 cm / 2 m

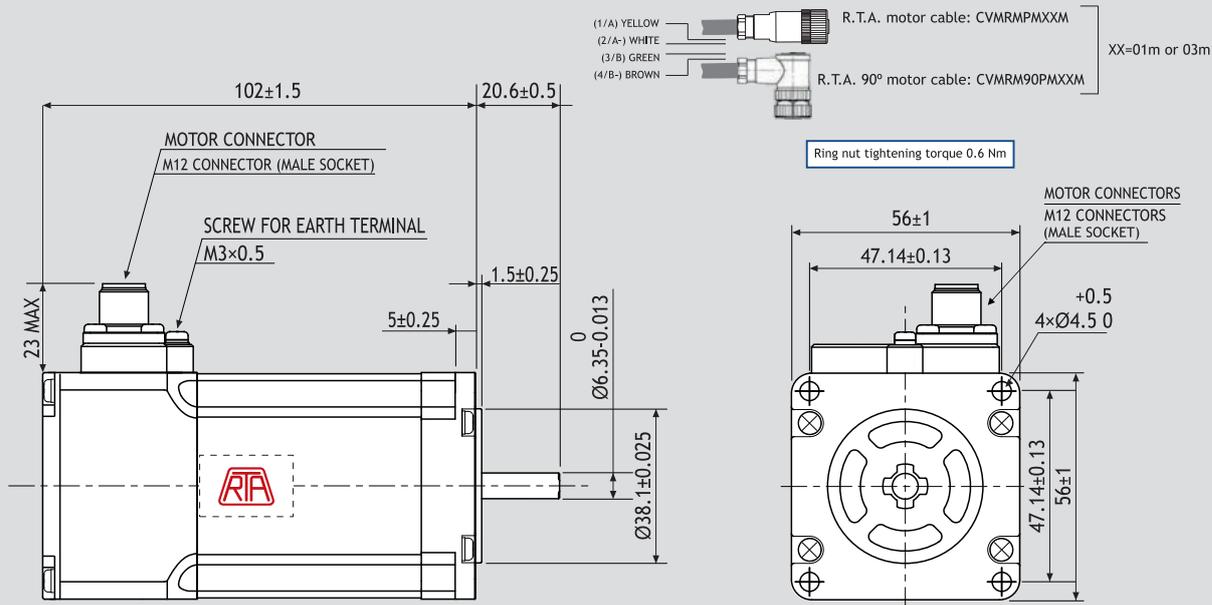
27 max

(4/B-) BROWN  
(3/B) YELLOW  
(2/A-) WHITE  
(1/A) GREEN

Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# RM 2R2M

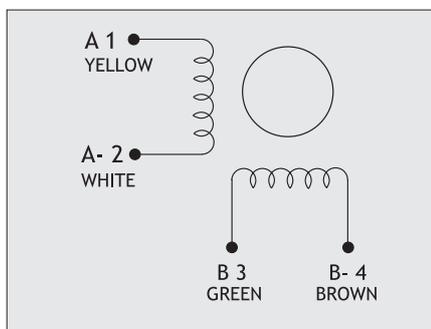
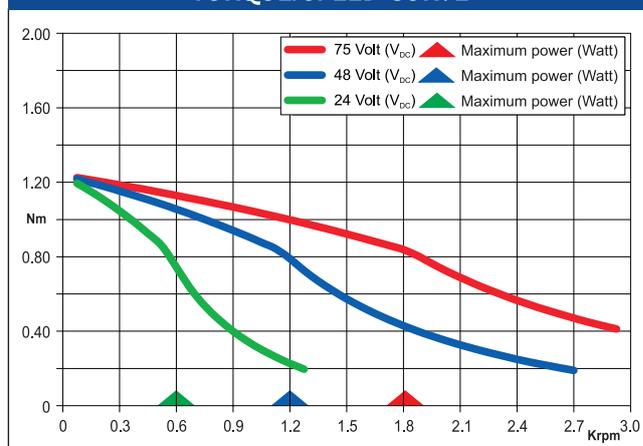
## Dimensions (Unit:mm)



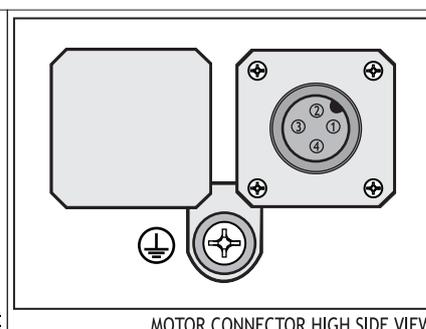
## FEATURES

MODEL	RM 2R2M
BASIC STEP ANGLE	$1.8 \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	4
RESISTANCE (Ohm)	0.48
INDUCTANCE (mH)	2.2
BIPOLAR HOLDING TORQUE (Ncm)	165
ROTOR INERTIA ( $\text{Kg} \cdot \text{m}^2 \times 10^{-7}$ )	360
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec}^{-2}$ )	45800
BACK E.M.F. (V/Krpm)	31
MASS (Kg)	1.2
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS
PROTECTION DEGREE	IP 54
LEADS CODE	V

## TORQUE/SPEED CURVE



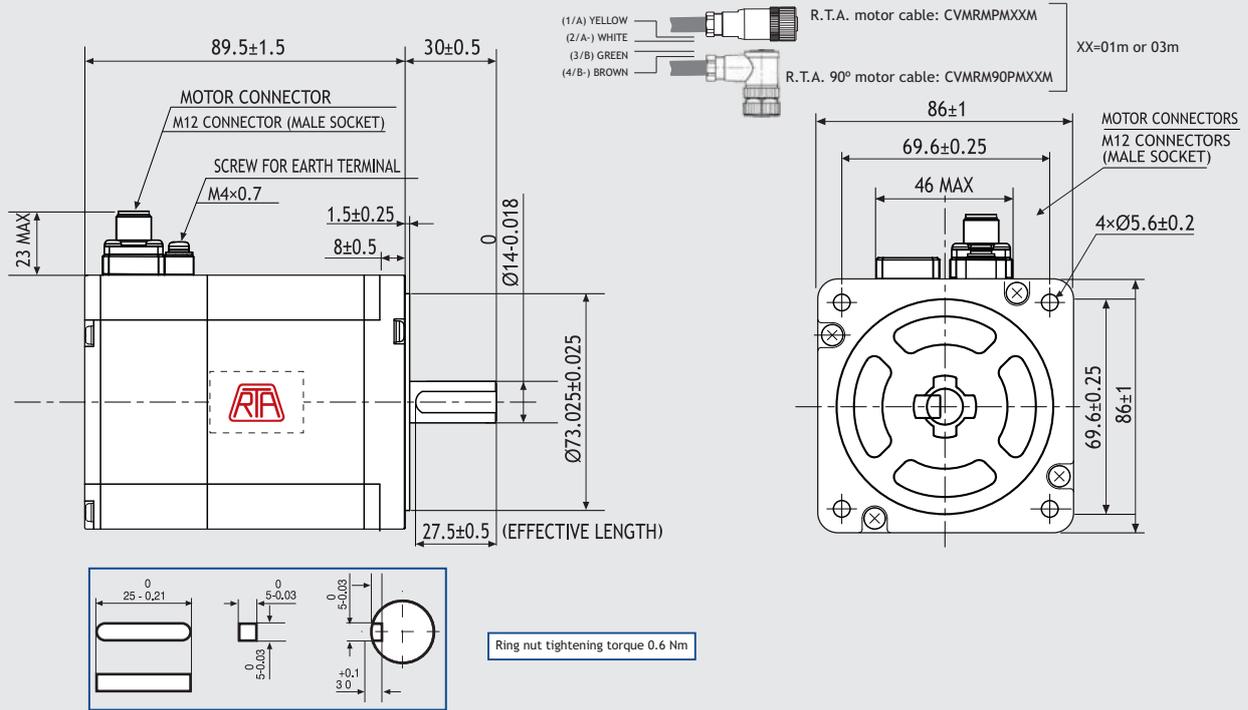
RIA US



Suggested R.T.A. drive series: CSD, NDC, ADW, HGD, PLUS, FLEX-DRIVE

# RM 3R1M

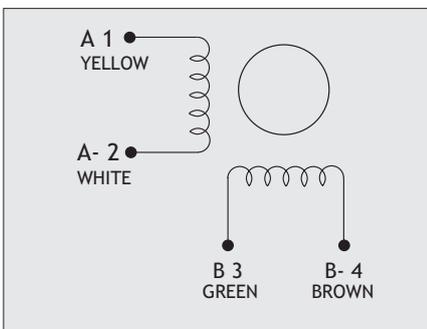
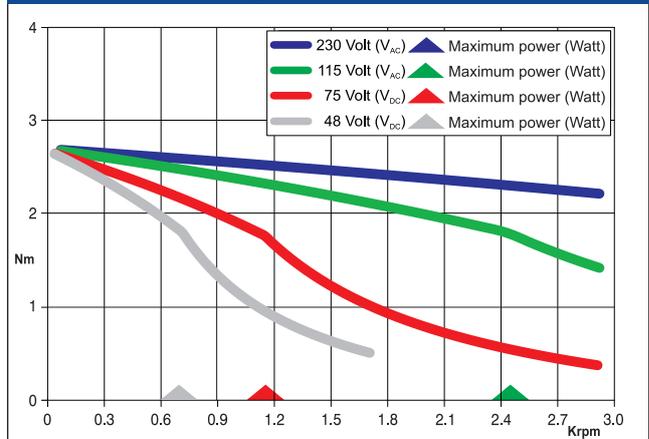
## Dimensions (Unit:mm)



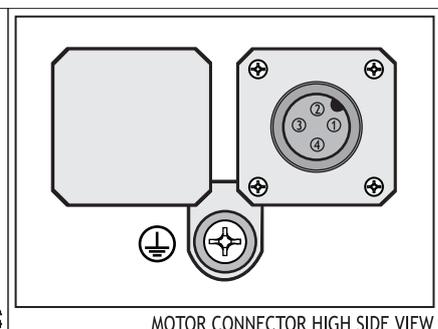
## FEATURES

MODEL	RM 3R1M
BASIC STEP ANGLE	1.8 ± 0.09°
BIPOLAR CURRENT (Amp)	4
RESISTANCE (Ohm)	0.56
INDUCTANCE (mH)	3.7
BIPOLAR HOLDING TORQUE (Ncm)	360
ROTOR INERTIA (Kg <sup>m</sup> 2 x 10 <sup>-7</sup> )	1480
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	24300
BACK E.M.F. (V/Krpm)	90
MASS (Kg)	1.95
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS
INSULATION VOLTAGE (V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS	IP 54 - CLASS F
LEADS CODE	V

## TORQUE/SPEED CURVE



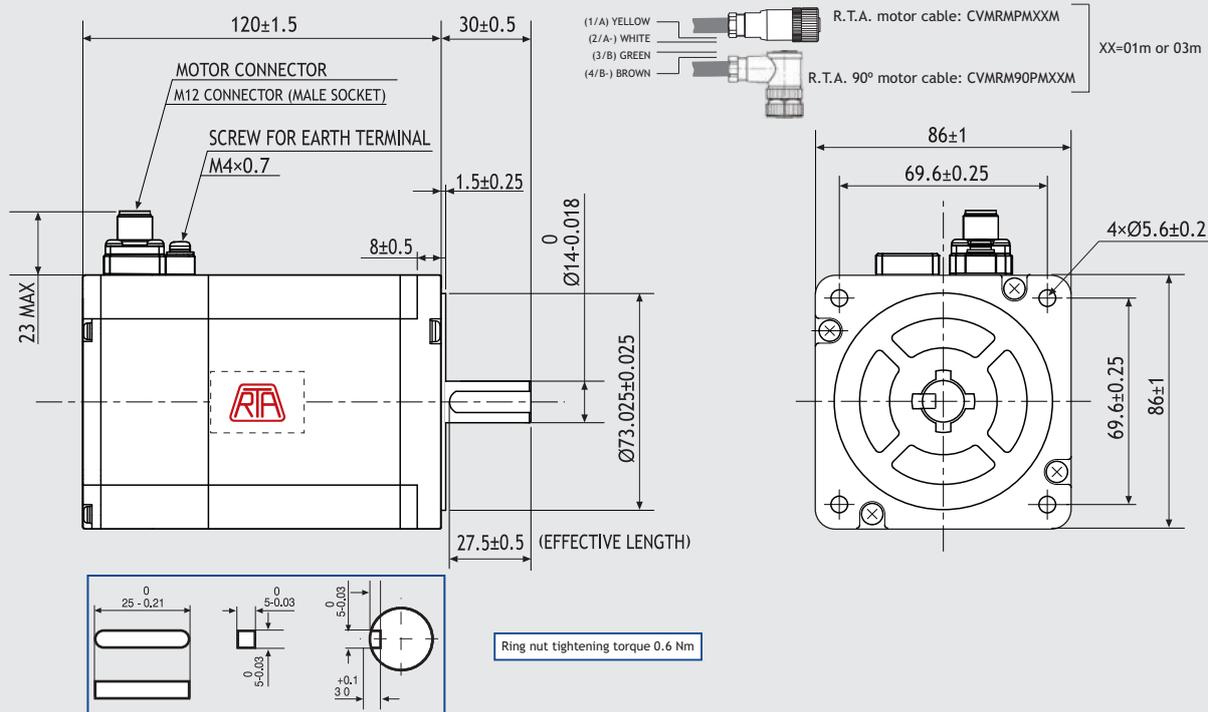
RIA US



Suggested R.T.A. driver: 230 Vac X-PLUS series/230 Vac X-MIND series.

# RM 3R2M

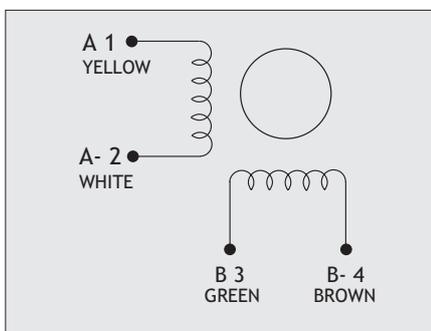
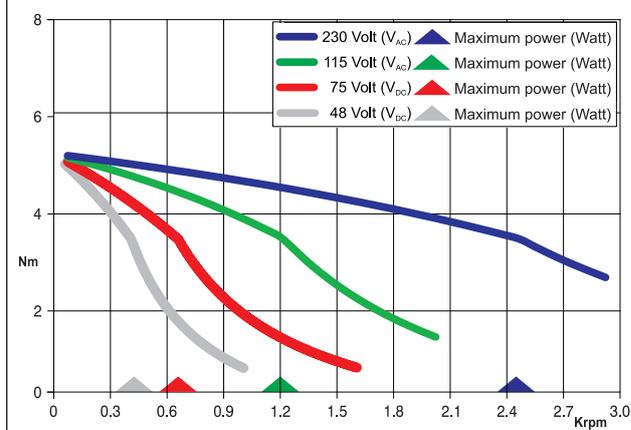
## Dimensions (Unit:mm)



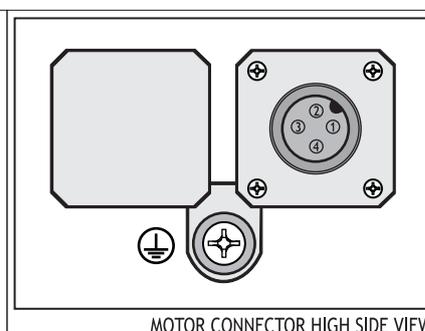
## FEATURES

MODEL	RM 3R2M
BASIC STEP ANGLE	$1.8 \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	4
RESISTANCE (Ohm)	0.83
INDUCTANCE (mH)	6.4
BIPOLAR HOLDING TORQUE (Ncm)	700
ROTOR INERTIA ( $\text{Kg m}^2 \times 10^{-7}$ )	3000
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec.}^{-2}$ )	23330
BACK E.M.F. (V/Krpm)	175
MASS (Kg)	3.1
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS
INSULATION VOLTAGE (V)	250 $V_{AC}$ (350 $V_{DC}$ )
PROTECTION DEGREE - INSULATION CLASS	IP 54 - CLASS F
LEADS CODE	V

## TORQUE/SPEED CURVE



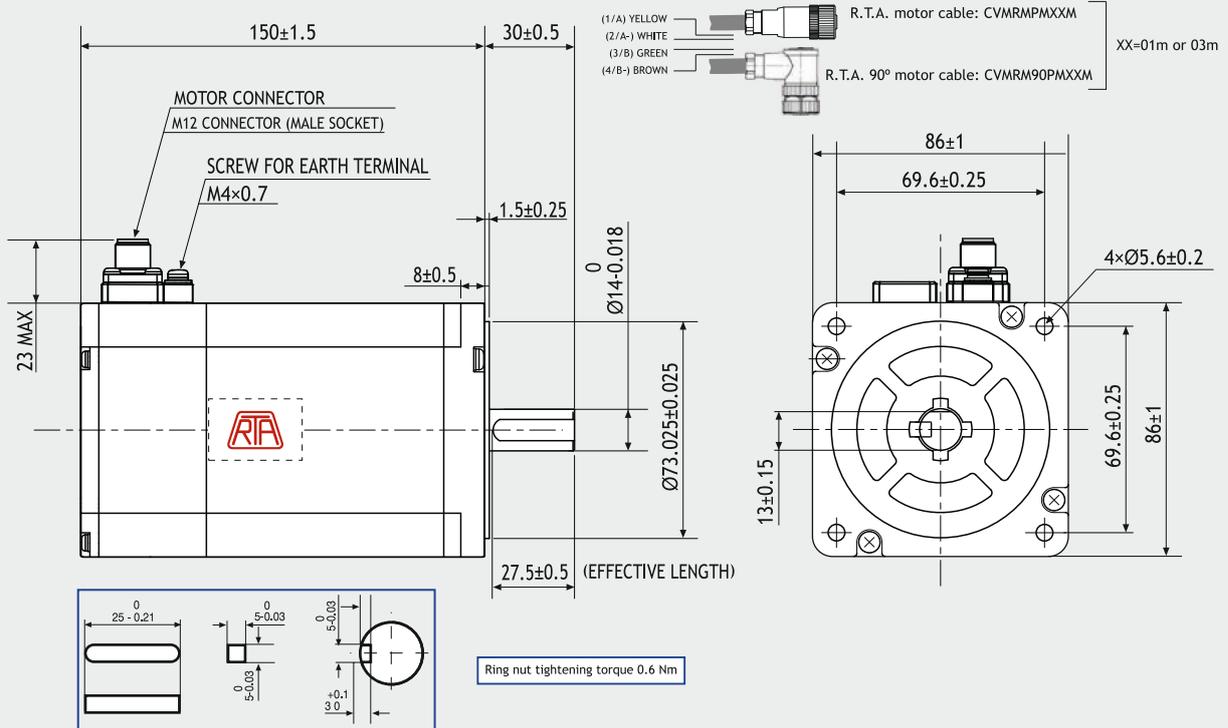
RIA<sup>®</sup> US



Suggested R.T.A. driver: 230 Vac X-PLUS series/230 Vac X-MIND series.

# RM 3R3M

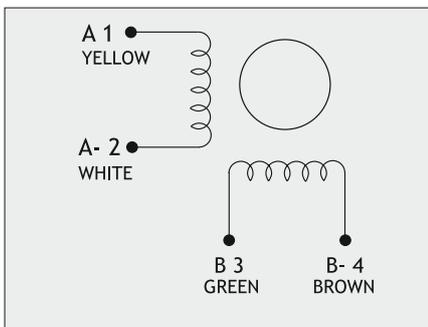
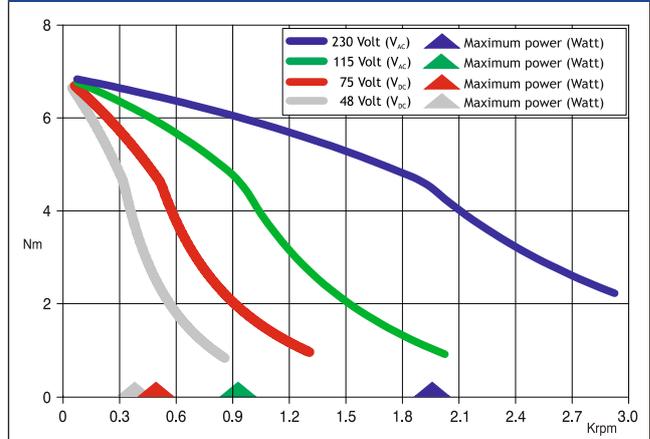
## Dimensions (Unit:mm)



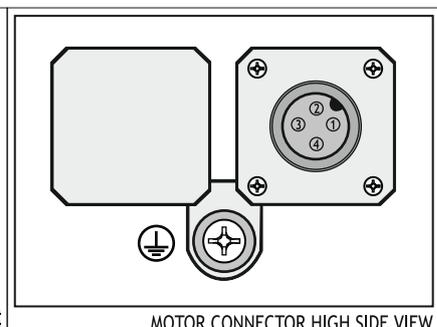
## FEATURES

MODEL	RM 3R3M
BASIC STEP ANGLE	1.8 ± 0.09°
BIPOLAR CURRENT (Amp)	4
RESISTANCE (Ohm)	1
INDUCTANCE (mH)	7.9
BIPOLAR HOLDING TORQUE (Ncm)	920
ROTOR INERTIA (Kgm <sup>2</sup> x 10 <sup>-7</sup> )	4500
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	20500
BACK E.M.F. (V/Krpm)	241
MASS (Kg)	4.2
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS
INSULATION VOLTAGE (V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS	IP 54 - CLASS F
LEADS CODE	V

## TORQUE/SPEED CURVE



RIA<sup>®</sup> US



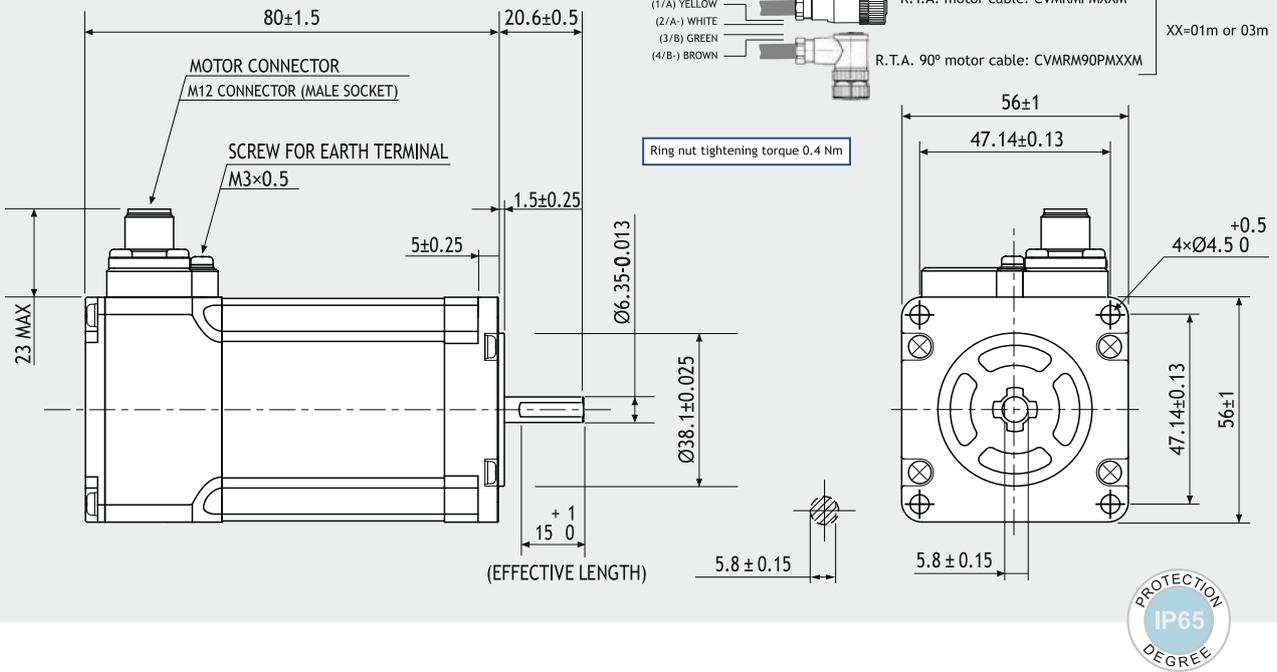
Suggested R.T.A. drive series: 230 Vac X-PLUS

# SP 2563-5000

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

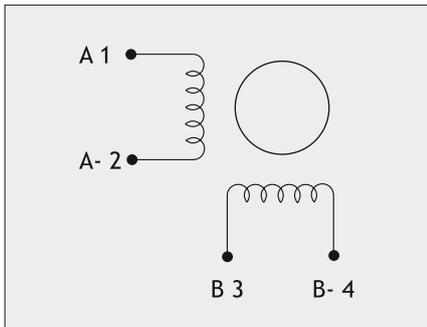
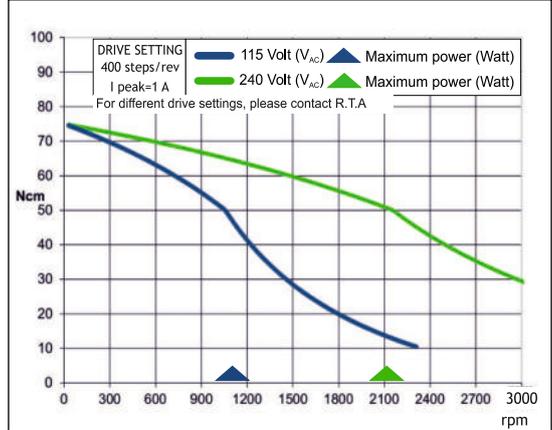
**CAUS**



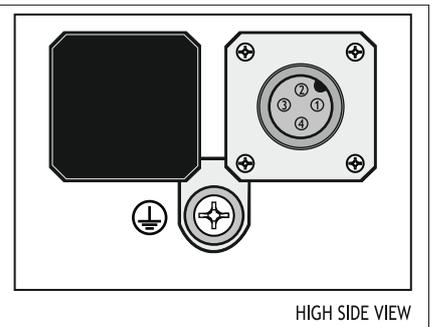
## FEATURES

MODEL	SP 2563-5000	
BASIC STEP ANGLE		$1.8 \pm 0.09^\circ$
BIPOLAR CURRENT	(A)	1
RESISTANCE	(Ohm)	5.8
INDUCTANCE	(mH)	29
BIPOLAR HOLDING TORQUE	(Ncm)	100
ROTOR INERTIA	( $\text{Kgm}^2 \times 10^{-7}$ )	210
THEORETICAL ACCELERATION	( $\text{rad} \times \text{sec}^{-2}$ )	47600
BACK E.M.F.	(V/Krpm)	100
MASS	(Kg)	0.9
INTERNATIONAL STANDARDS		UL, CSA, CE, RoHS
INSULATION VOLTAGE	(V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS		IP65 - F

## TORQUE CURVE



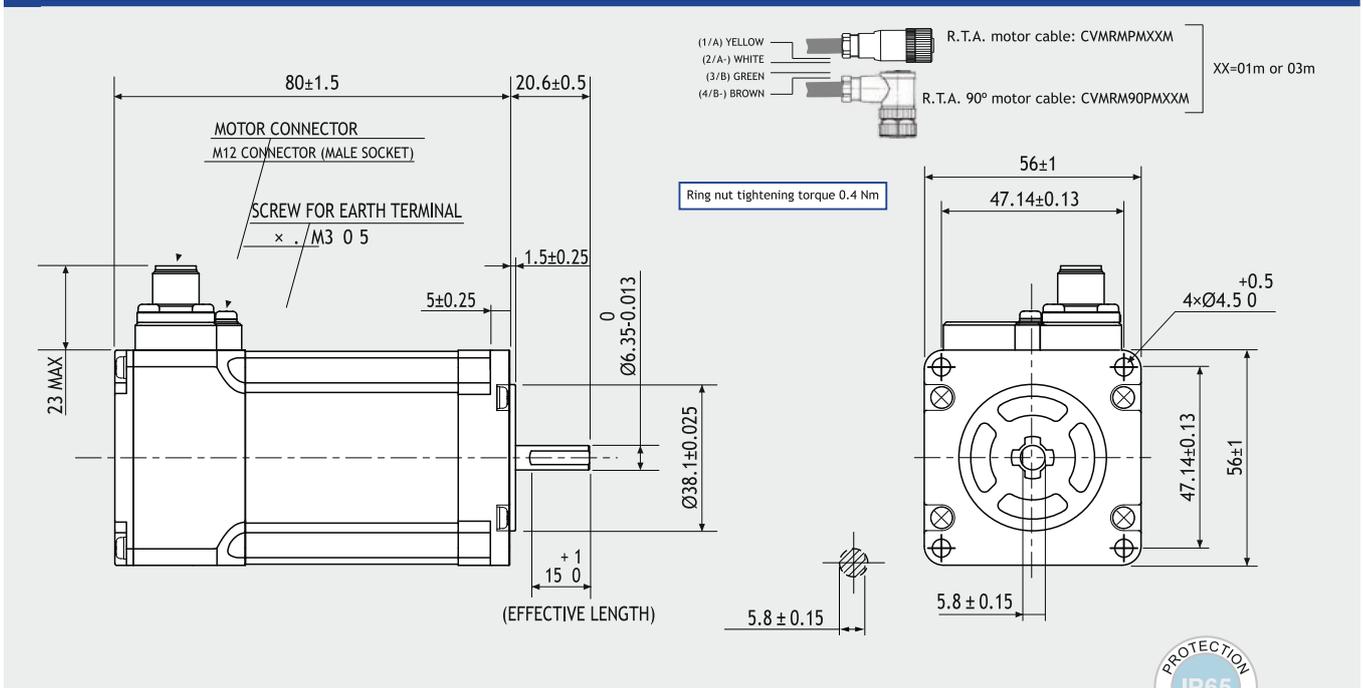
**CAUS**



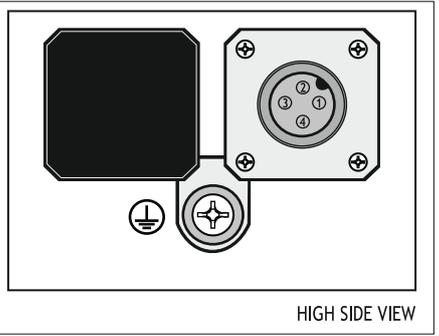
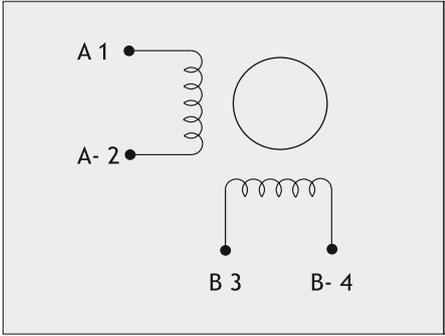
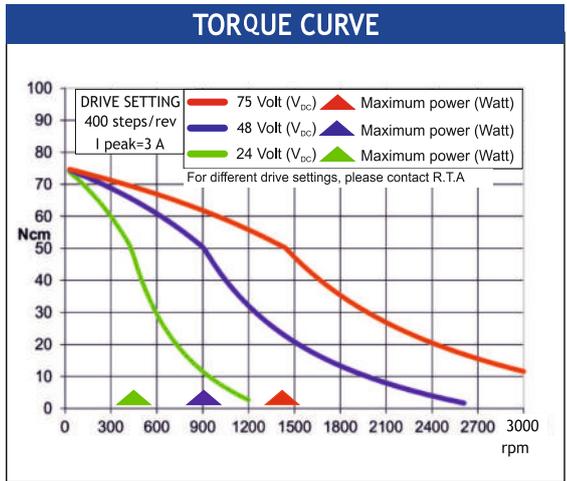
HIGH SIDE VIEW

Suggested R.T.A. drive model: X-PLUS L2

## Dimensions (Unit:mm)



FEATURES	
<b>MODEL</b>	<b>SP 2563-5200</b>
BASIC STEP ANGLE	1.8 ± 0.09°
BIPOLAR CURRENT	(A) 3
RESISTANCE	(Ohm) 0.75
INDUCTANCE	(mH) 3.4
BIPOLAR HOLDING TORQUE	(Ncm) 100
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> ) 210
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> ) 47600
BACK E.M.F.	(V/Krpm) 33
MASS	(Kg) 0.9
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS
INSULATION VOLTAGE	(V) 250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS	IP65 - F

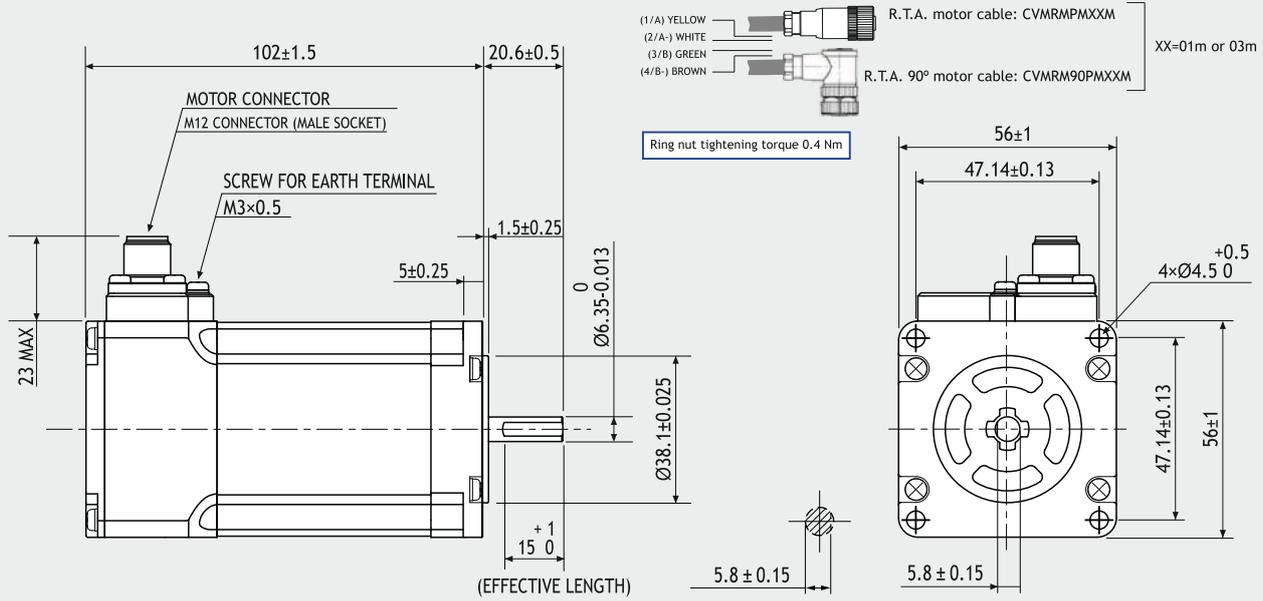


Suggested R.T.A. drive series: CSD, NDC, ADW, HGD, PLUS, FLEX-DRIVE

# SP 2566-5200

SANYO DENKI  
SANMOTION

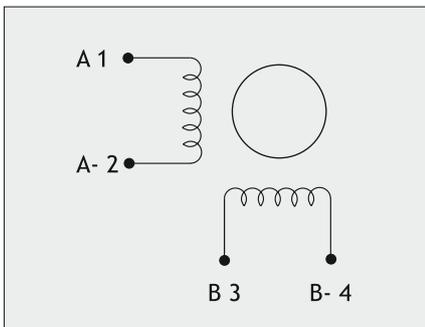
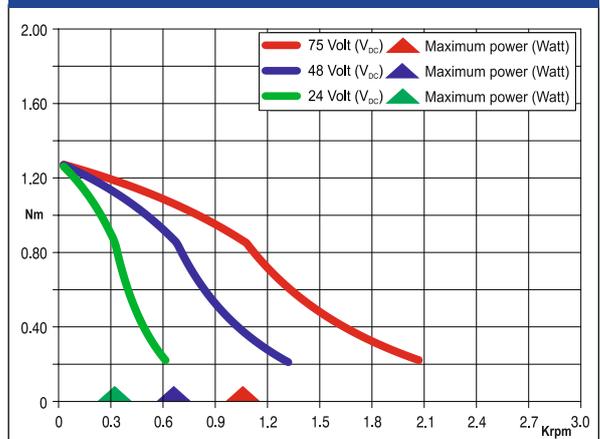
## Dimensions (Unit:mm)



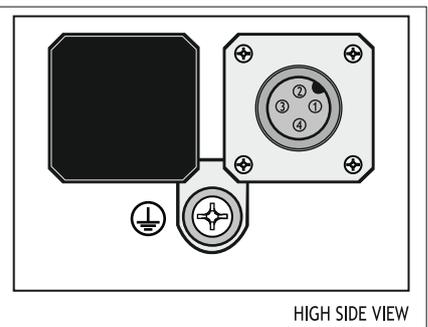
## FEATURES

MODEL	SP 2566-5200	
BASIC STEP ANGLE	1.8 ± 0.09°	
BIPOLAR CURRENT	(Amp)	3
RESISTANCE	(Ohm)	0.94
INDUCTANCE	(mH)	4.4
BIPOLAR HOLDING TORQUE	(Ncm)	170
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	360
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	47200
BACK E.M.F.	(V/Krpm)	55
MASS	(Kg)	1.2
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS	
INSULATION VOLTAGE	(V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS	IP65 - F	

## TORQUE/SPEED CURVE

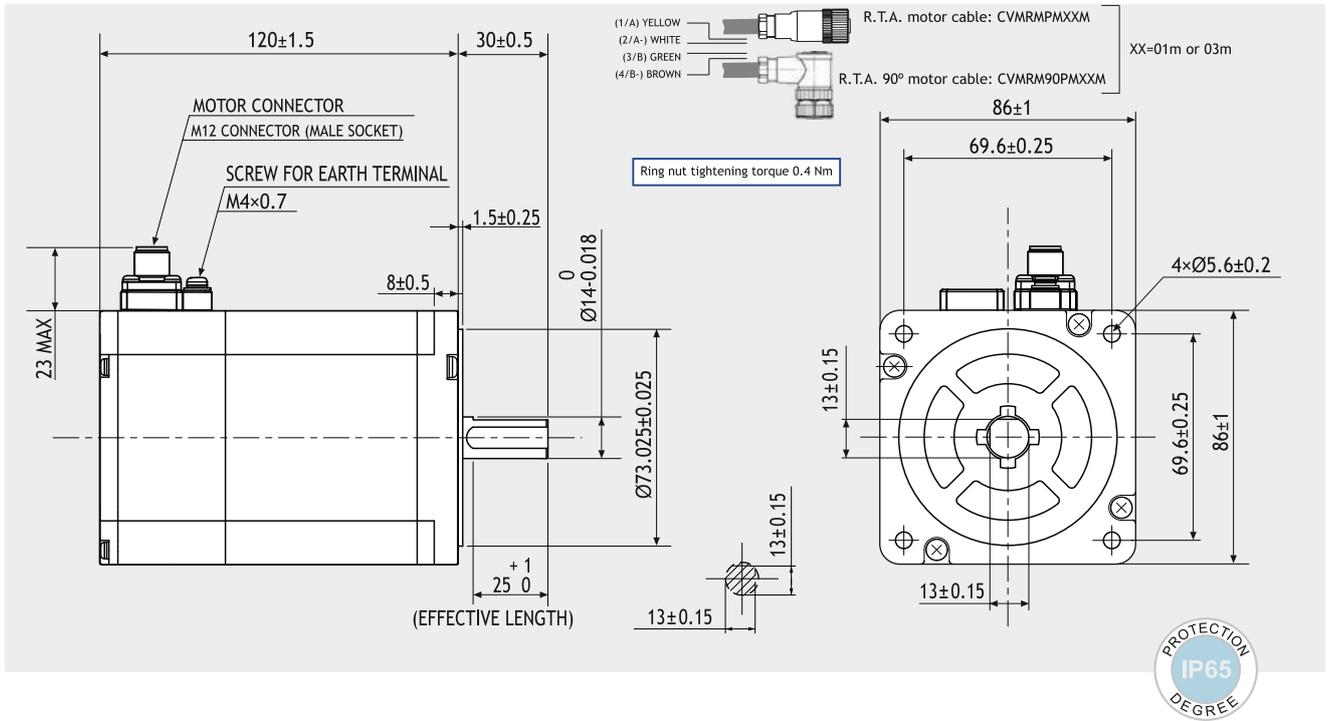


CALUS

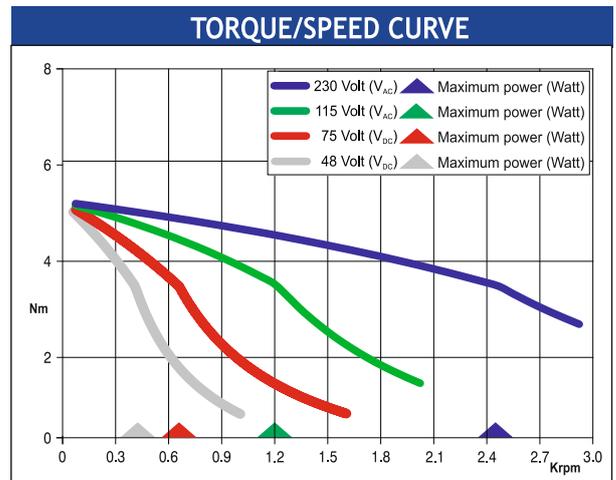


Suggested R.T.A. drive series: CSD, NDC, ADW, HGD, PLUS, FLEX-DRIVE

## Dimensions (Unit:mm)



FEATURES		
	MODEL	SP 2862-5100
BASIC STEP ANGLE		1.8 ± 0.09°
BIPOLAR CURRENT	(Amp)	4
RESISTANCE	(Ohm)	0.83
INDUCTANCE	(mH)	6.4
BIPOLAR HOLDING TORQUE	(Ncm)	700
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	3000
THEORETICAL ACCELERATION	(rad x sec <sup>-2</sup> )	23300
BACK E.M.F.	(V/Krpm)	175
MASS	(Kg)	3.1
INTERNATIONAL STANDARDS		UL, CSA, CE, RoHS
INSULATION VOLTAGE	(V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS		IP65 - F

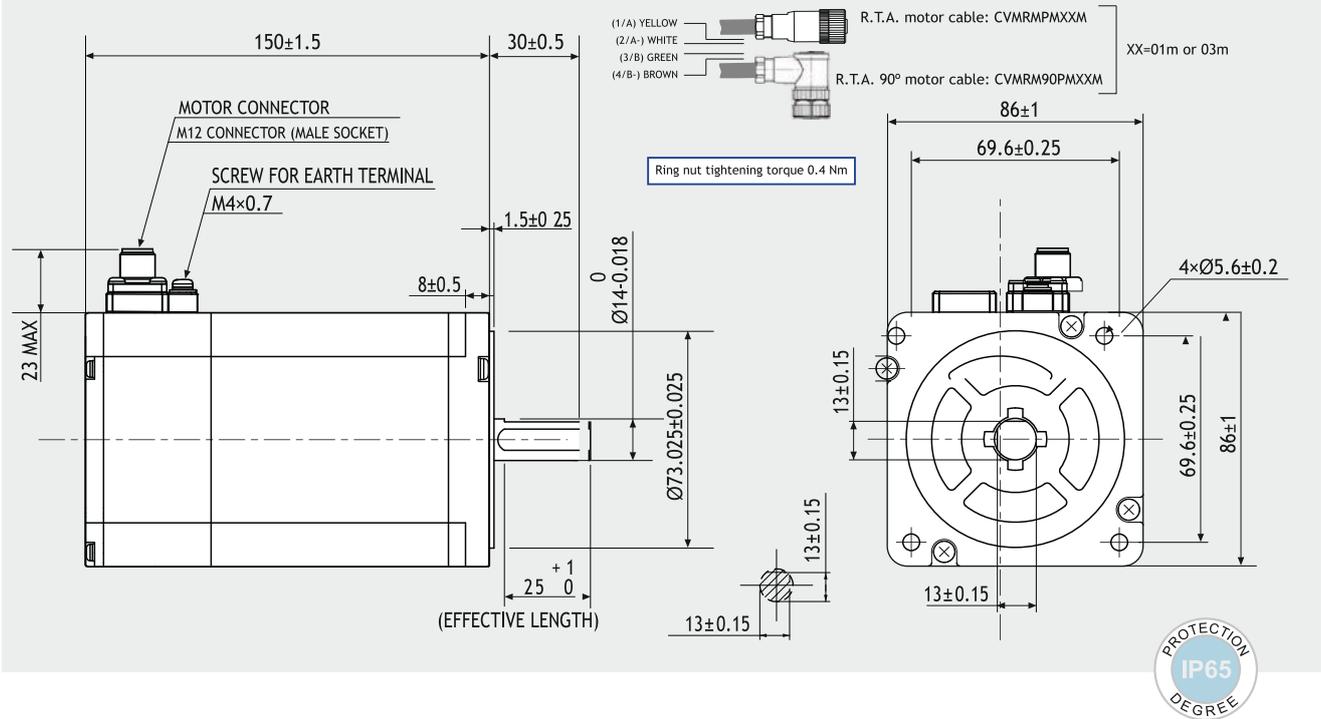


Suggested R.T.A. drive series: 230 Vac X-PLUS

# SP 2863-5100

SANYO DENKI  
SANMOTION

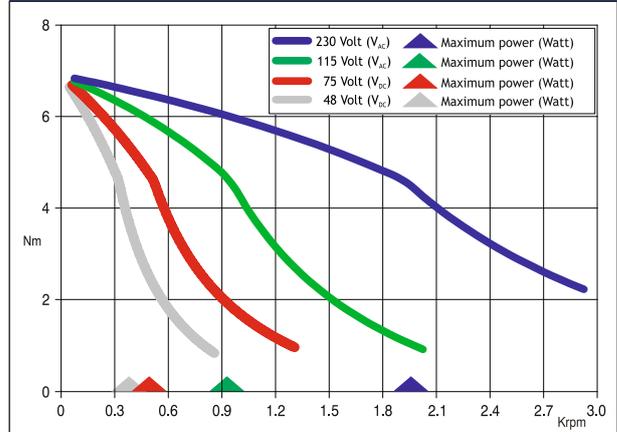
## Dimensions (Unit:mm)



## FEATURES

MODEL	SP 2863-5100	
BASIC STEP ANGLE	1.8 ± 0.09°	
BIPOLAR CURRENT	(Amp)	4
RESISTANCE	(Ohm)	1
INDUCTANCE	(mH)	7.9
BIPOLAR HOLDING TORQUE	(Ncm)	900
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	4500
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	20000
BACK E.M.F.	(V/Krpm)	225
MASS	(Kg)	4.2
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS	
INSULATION VOLTAGE	(V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS	IP65 - F	

## TORQUE/SPEED CURVE

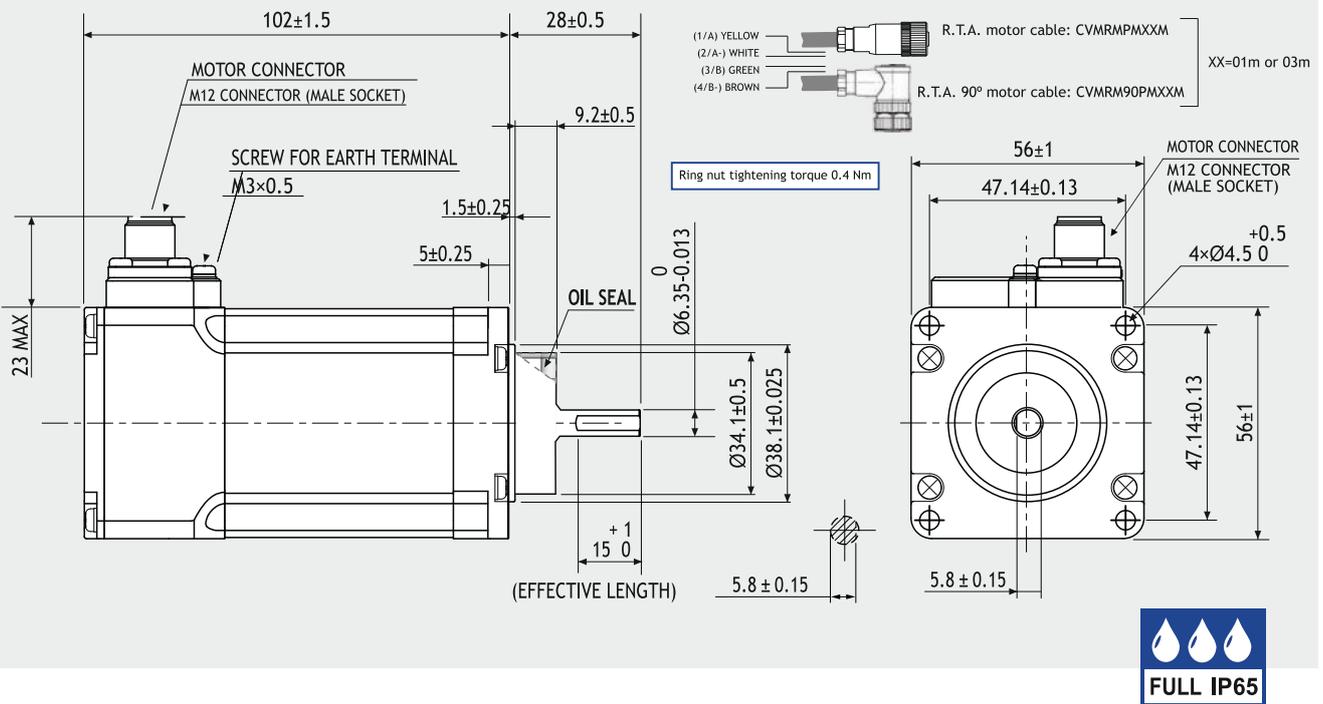


Suggested R.T.A. drive series: 230 Vac X-PLUS

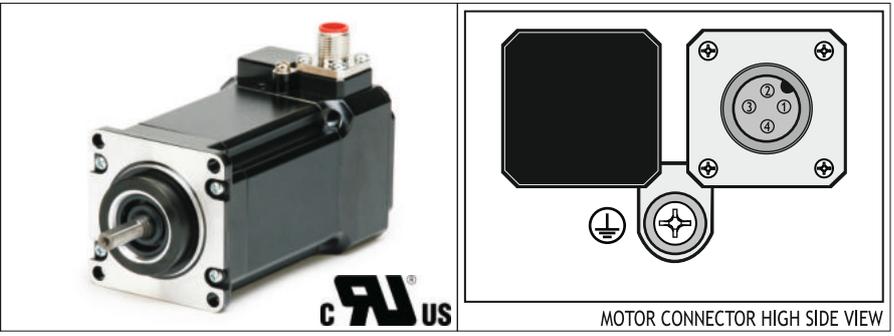
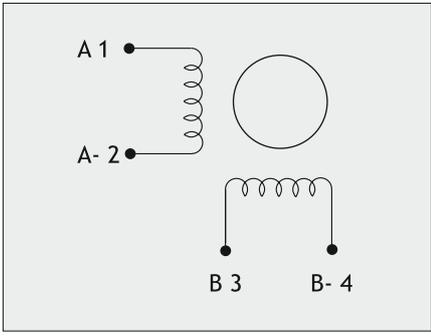
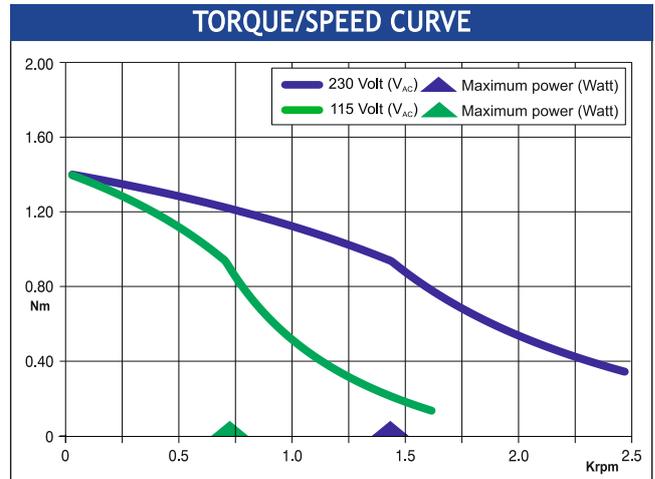
# SP2566-50SX00

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)



FEATURES	
MODEL	SP2566-50SX00
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT	(Amp) 1.0
RESISTANCE	(Ohm) 7.7
INDUCTANCE	(mH) 35.4
BIPOLAR HOLDING TORQUE	(Ncm) 170
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> ) 360
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> ) 47200
BACK E.M.F.	(V/Krpm) 160
MASS	(Kg) 1.2
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS
INSULATION VOLTAGE	(V) 250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS	FULL IP65 - F
LEADS CODE	V

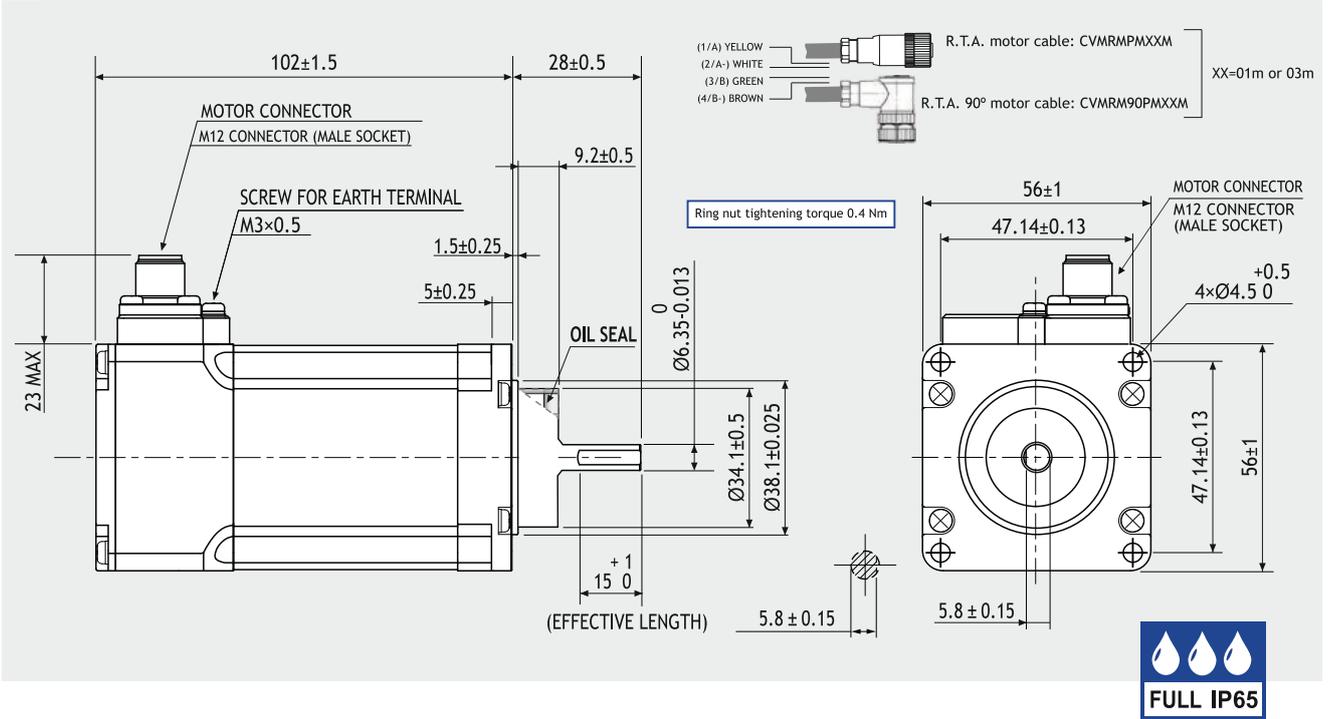


Suggested R.T.A. drive series: X-PLUS L2

# SP2566-52SX00

SANYO DENKI  
SANMOTION

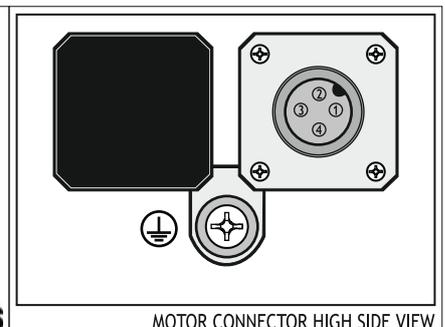
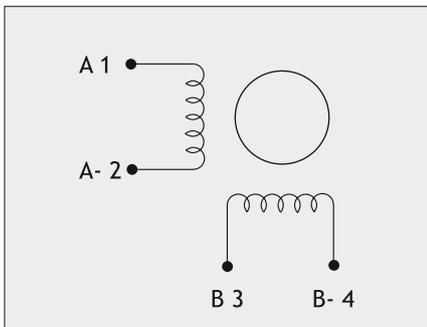
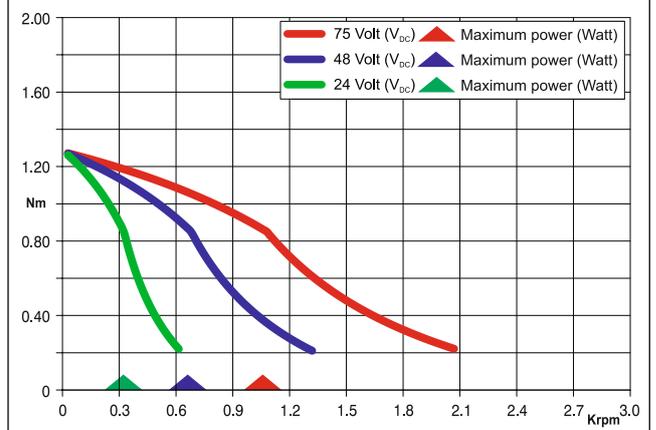
## Dimensions (Unit:mm)



## FEATURES

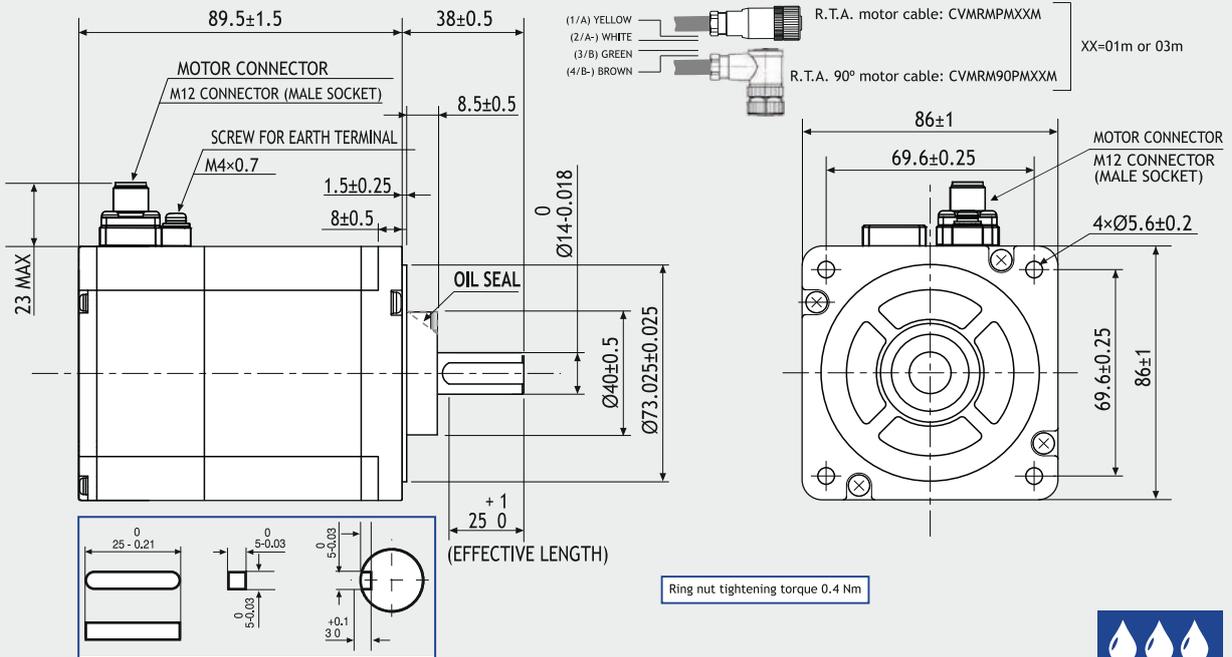
MODEL	SP2566-52SX00
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	3.0
RESISTANCE (Ohm)	0.94
INDUCTANCE (mH)	4.4
BIPOLAR HOLDING TORQUE (Ncm)	170
ROTOR INERTIA (Kg·m <sup>2</sup> × 10 <sup>-7</sup> )	360
THEORETICAL ACCELERATION (rad × sec. <sup>-2</sup> )	47200
BACK E.M.F. (V/Krpm)	55
MASS (Kg)	1.2
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS
INSULATION VOLTAGE (V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS	FULL IP65 - F
LEADS CODE	V

## TORQUE/SPEED CURVE



Suggested R.T.A. drive series: CSD, NDC, ADW, HGD, PLUS, FLEX-DRIVE

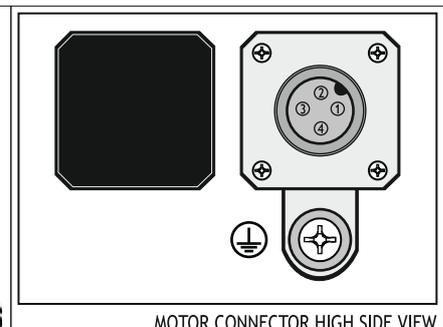
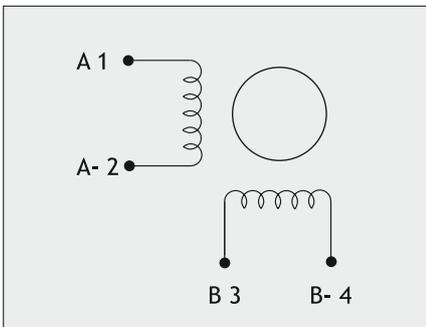
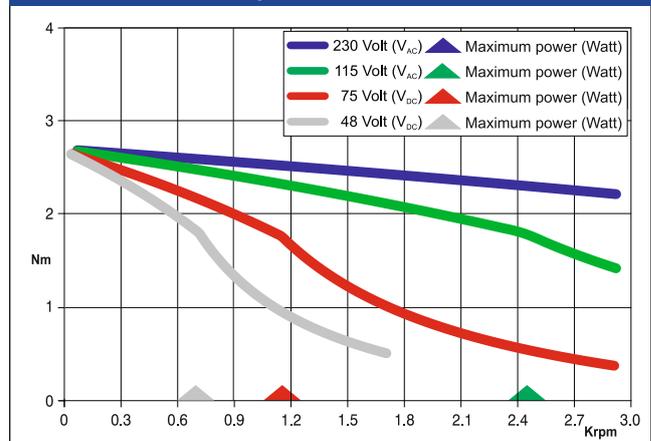
## Dimensions (Unit:mm)



## FEATURES

	MODEL	SP2861-51SX01
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	0.56
INDUCTANCE	(mH)	3.7
BIPOLAR HOLDING TORQUE	(Ncm)	360
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	1480
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	24300
BACK E.M.F.	(V/Krpm)	90
MASS	(Kg)	1.9
INTERNATIONAL STANDARDS		UL, CSA, CE, RoHS
INSULATION VOLTAGE	(V)	250 V <sub>ac</sub> (350 V <sub>dc</sub> )
PROTECTION DEGREE - INSULATION CLASS		FULL IP65 - F
LEADS CODE		V

## TORQUE/SPEED CURVE

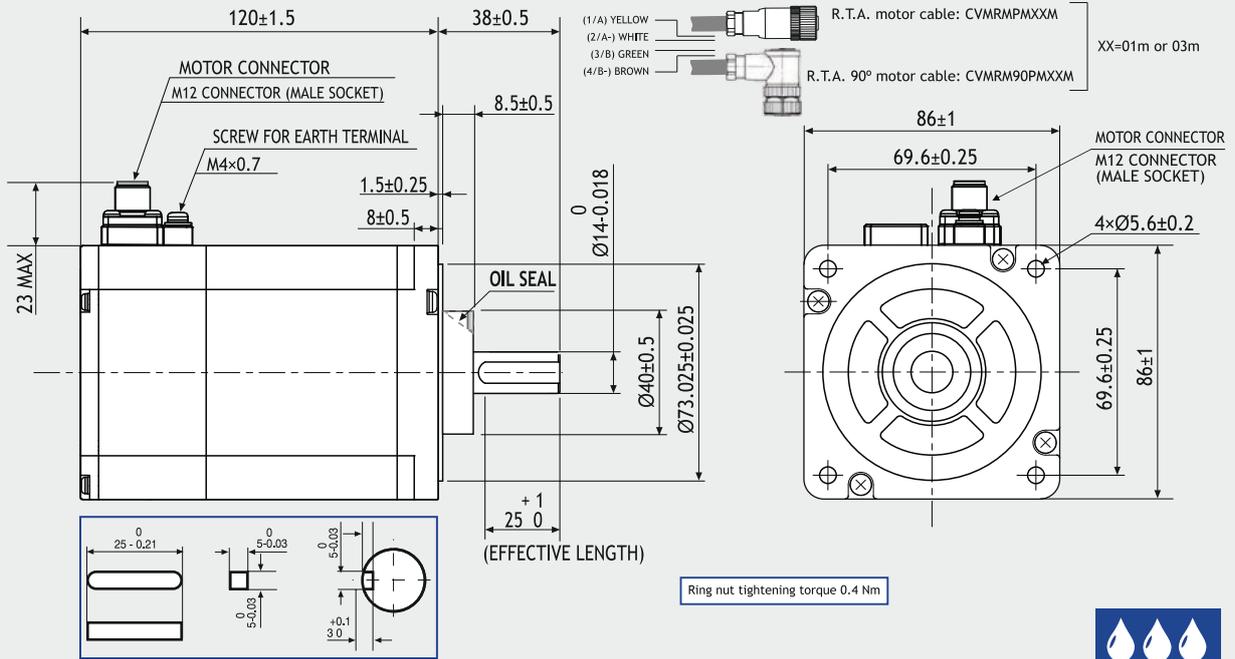


Suggested R.T.A. drive series: CSD, NDC, ADW, HGD, PLUS, FLEX-DRIVE

# SP2862-51SX01

SANYO DENKI  
SANMOTION

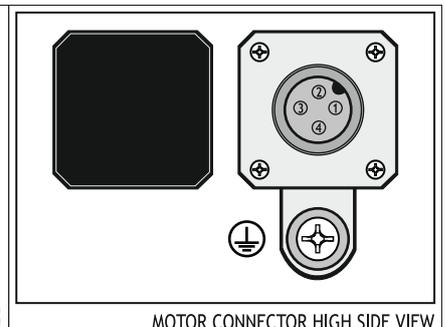
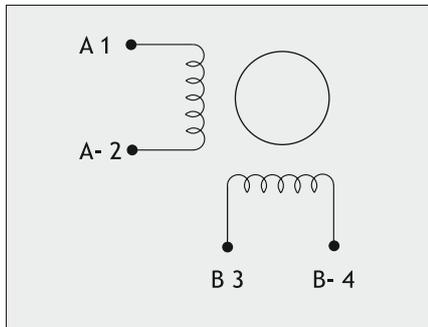
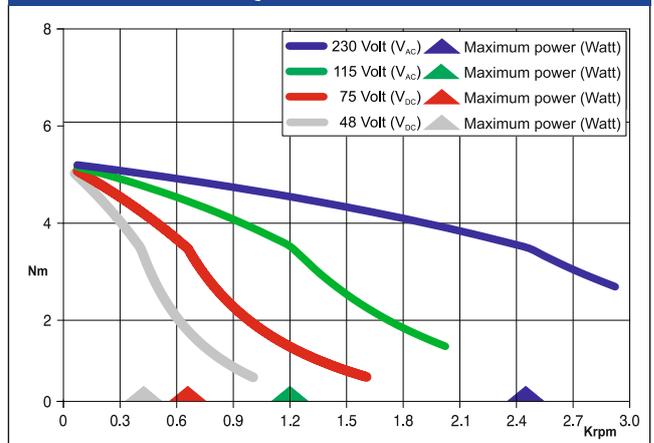
## Dimensions (Unit:mm)



## FEATURES

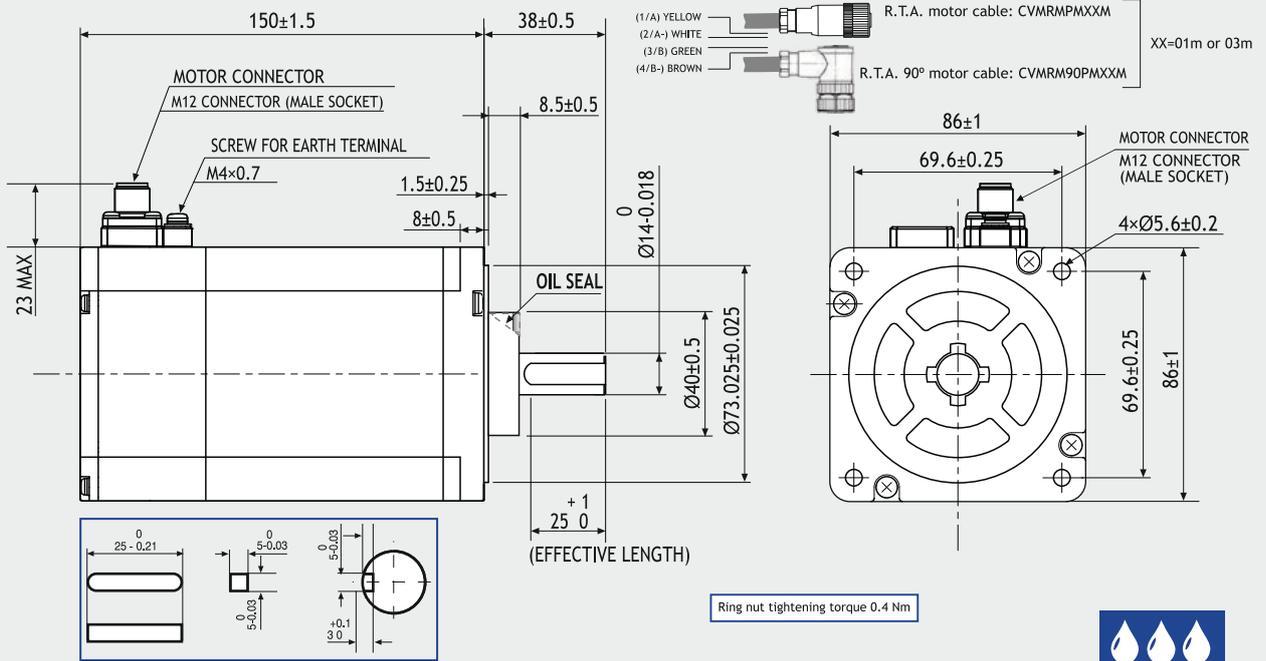
MODEL	SP2862-51SX01	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	0.83
INDUCTANCE	(mH)	6.4
BIPOLAR HOLDING TORQUE	(Ncm)	700
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	3000
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	23300
BACK E.M.F.	(V/Krpm)	175
MASS	(Kg)	3.1
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS	
INSULATION VOLTAGE	(V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS	FULL IP65 - F	
LEADS CODE	V	

## TORQUE/SPEED CURVE



Suggested R.T.A. drive series: 230 Vac X-PLUS

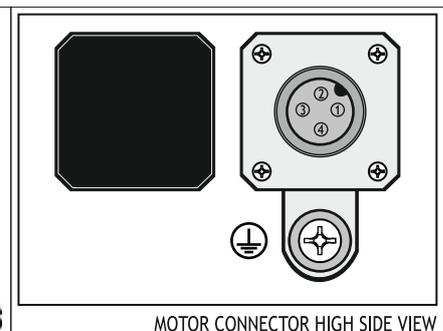
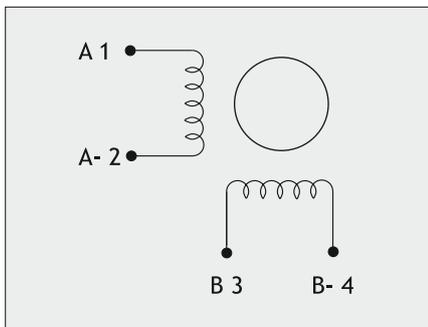
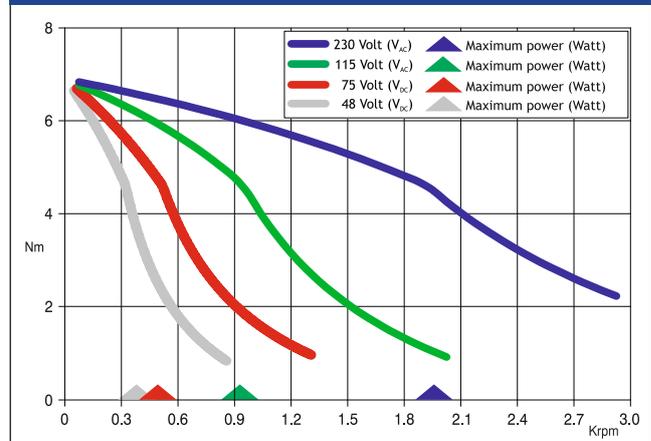
## Dimensions (Unit:mm)



## FEATURES

MODEL	SP2863-51SX01	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	1.0
INDUCTANCE	(mH)	7.9
BIPOLAR HOLDING TORQUE	(Ncm)	920
ROTOR INERTIA	(Kg <sup>m</sup> ² x 10 <sup>-7</sup> )	4500
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	20500
BACK E.M.F.	(V/Krpm)	241
MASS	(Kg)	4.2
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS	
INSULATION VOLTAGE	(V)	250 V <sub>ac</sub> (350 V <sub>dc</sub> )
PROTECTION DEGREE - INSULATION CLASS	FULL IP65 - F	
LEADS CODE	V	

## TORQUE/SPEED CURVE



**Suggested R.T.A. drive series: 230 Vac X-PLUS**

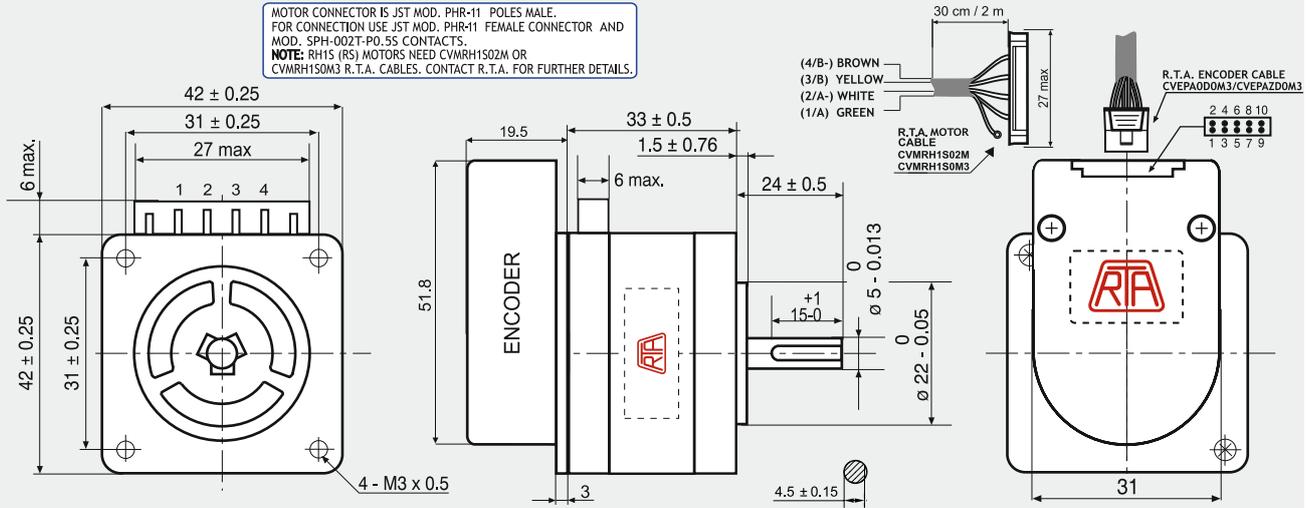
STEPPING MOTORS

# INDUSTRIAL STEPPING MOTORS WITH ENCODER



# RH 1S0M-OXX0

## Dimensions (Unit:mm)

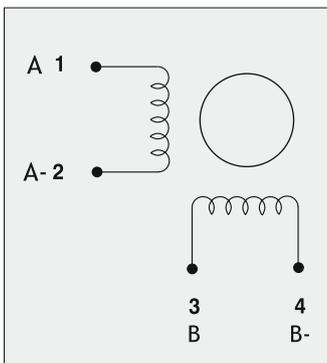
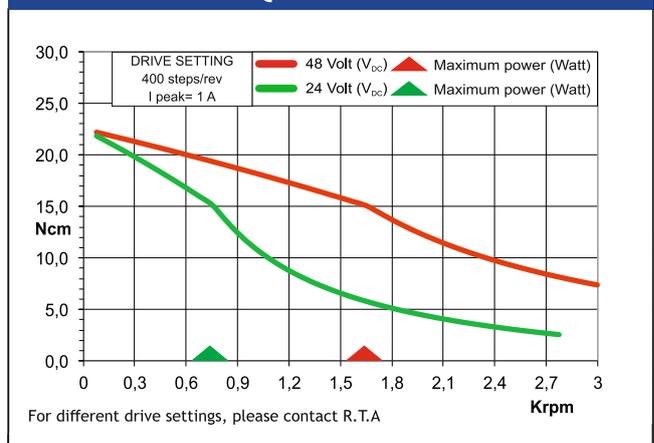


ENCODER OPTIONS:	RH 1S0M-04D0	RH 1S0M-04E0	RH 1S0M-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

## FEATURES

MODEL	RH 1S0M
BASIC STEP ANGLE	1.8°
BIPOLAR CURRENT (A)	1.0
UNIPOlar CURRENT (A)	
RESISTANCE (Ohm)	3.6
INDUCTANCE (mH)	7
BIPOLAR HOLDING TORQUE (Ncm)	29
UNIPOlar HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kg <sup>m</sup> ² x 10 <sup>-7</sup> )	31
THEORETICAL ACCELERATION (rad x sec <sup>-2</sup> )	93500
BACK E.M.F. (V/Krpm)	29
MASS (Kg)	0.23
PROTECTION DEGREE	IP40
LEADS CODE	V

## TORQUE/SPEED CURVE



## RTA MOTOR CABLE COLORS

DESCRIPTION	COLOR
CHANNEL A	GREEN
CHANNEL A-	WHITE
CHANNEL B	YELLOW
CHANNEL B-	BROWN

## ENCODER PIN-OUT

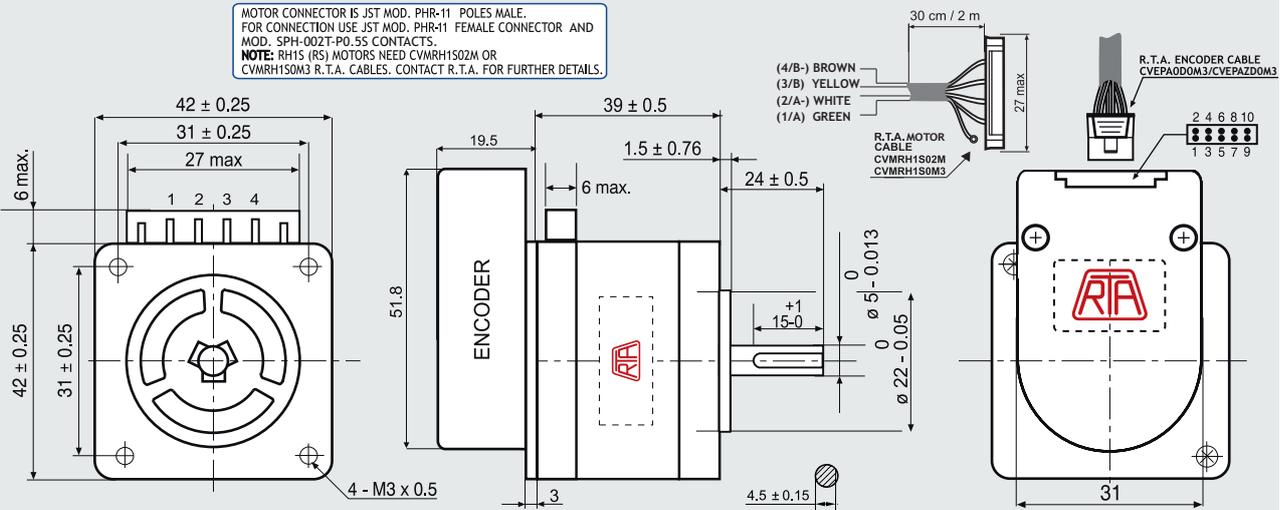
DESCRIPTION	04D0 PINS	04E0/0HE0 PINS	R.T.A. CABLE LEADS COLOR
CHANNEL A+	6	6	GREEN
CHANNEL A-	5	5	PURPLE
CHANNEL B+	8	8	BLUE
CHANNEL B-	7	7	BROWN
+ DC (5V)	2	2	RED
GROUND	3	3	BLACK
INDEX+	/	10	ORANGE
INDEX-	/	9	WHITE

R.T.A. CABLE (30 cm) CVEPA0D0M3 CVEPAZD0M3

Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# RH 1S1M-OXXO

## Dimensions (Unit:mm)

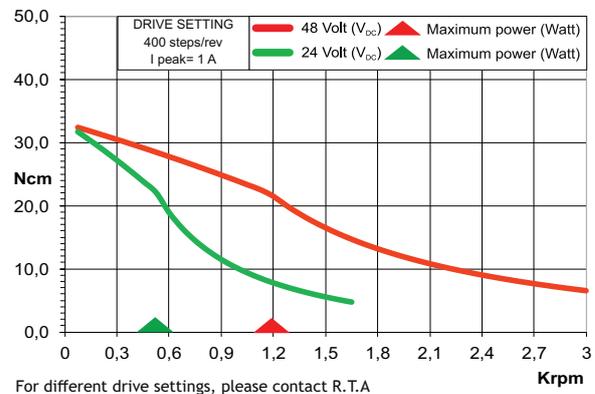


ENCODER OPTIONS:	RH 1S1M-04D0	RH 1S1M-04E0	RH 1S1M-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

## FEATURES

MODEL	RH 1S1M
BASIC STEP ANGLE	1.8°
BIPOLAR CURRENT (A)	1.0
UNIPOLAR CURRENT (A)	
RESISTANCE (Ohm)	4.6
INDUCTANCE (mH)	9.6
BIPOLAR HOLDING TORQUE (Ncm)	43
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm <sup>2</sup> x 10 <sup>-7</sup> )	46
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	93500
BACK E.M.F. (V/Krpm)	43
MASS (Kg)	0.3
PROTECTION DEGREE	IP40
LEADS CODE	V

## TORQUE/SPEED CURVE



## RTA MOTOR CABLE COLORS

DESCRIPTION	COLOR
CHANNEL A	GREEN
CHANNEL A-	WHITE
CHANNEL B	YELLOW
CHANNEL B-	BROWN

## ENCODER PIN-OUT

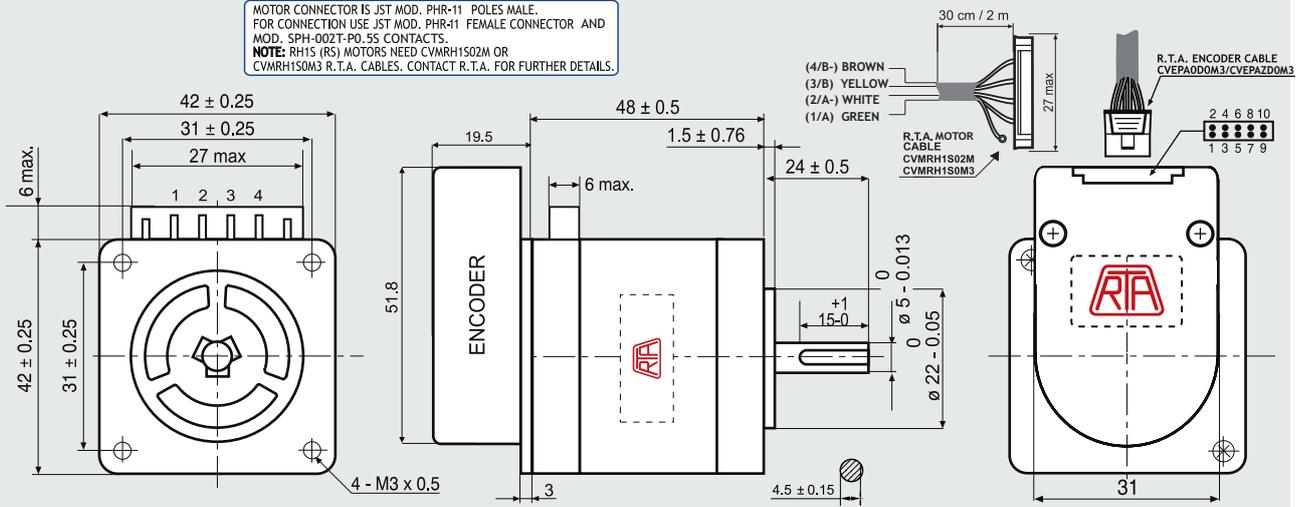
DESCRIPTION	04D0 PINS	04E0/OHE0 PINS	R.T.A. CABLE LEADS COLOR
CHANNEL A+	6	6	GREEN
CHANNEL A-	5	5	PURPLE
CHANNEL B+	8	8	BLUE
CHANNEL B-	7	7	BROWN
+ DC (5V)	2	2	RED
GROUND	3	3	BLACK
INDEX+	/	10	ORANGE
INDEX-	/	9	WHITE

R.T.A. CABLE (30 cm) CVEPA0D0M3 CVEPAZD0M3

Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# RH 1S2M-OXX0

## Dimensions (Unit:mm)

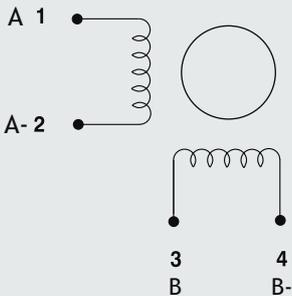
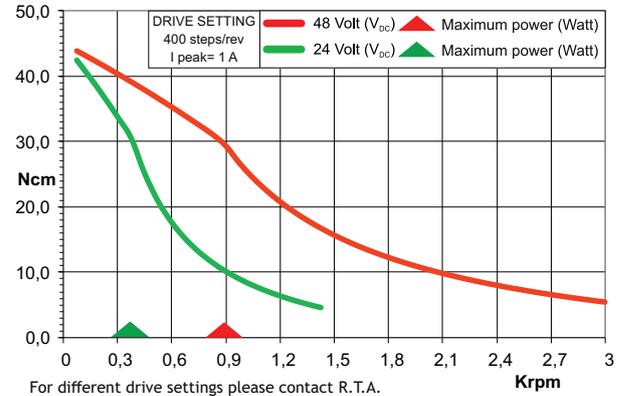


ENCODER OPTIONS:	RH 1S2M-04D0	RH 1S2M-04E0	RH 1S2M-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) ( $I_{MAX}=25mA$ )	3.4 (TIP) - 2.4 (MIN) ( $I_{MAX}=20mA$ )	3.4 (TIP) - 2.4 (MIN) ( $I_{MAX}=20mA$ )
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) ( $I_{MAX}=25mA$ )	0.2 (TIP) - 0.4 (MAX) ( $I_{MAX}=20mA$ )	0.2 (TIP) - 0.4 (MAX) ( $I_{MAX}=20mA$ )
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	$5 V_{DC} \pm 10\%$	$5 V_{DC} \pm 10\%$	$5 V_{DC} \pm 10\%$

## FEATURES

MODEL	RH 1S2M
BASIC STEP ANGLE	1.8°
BIPOLAR CURRENT (A)	1.0
UNIPOLAR CURRENT (A)	
RESISTANCE (Ohm)	5.3
INDUCTANCE (mH)	12.5
BIPOLAR HOLDING TORQUE (Ncm)	56
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ( $Kgm^2 \times 10^{-7}$ )	63
THEORETICAL ACCELERATION ( $rad \times sec^{-2}$ )	88900
BACK E.M.F. (V/Krpm)	56
MASS (Kg)	0.38
PROTECTION DEGREE	IP40
LEADS CODE	V

## TORQUE/SPEED CURVE



## RTA MOTOR CABLE COLORS

DESCRIPTION	COLOR
CHANNEL A	GREEN
CHANNEL A-	WHITE
CHANNEL B	YELLOW
CHANNEL B-	BROWN

## ENCODER PIN-OUT

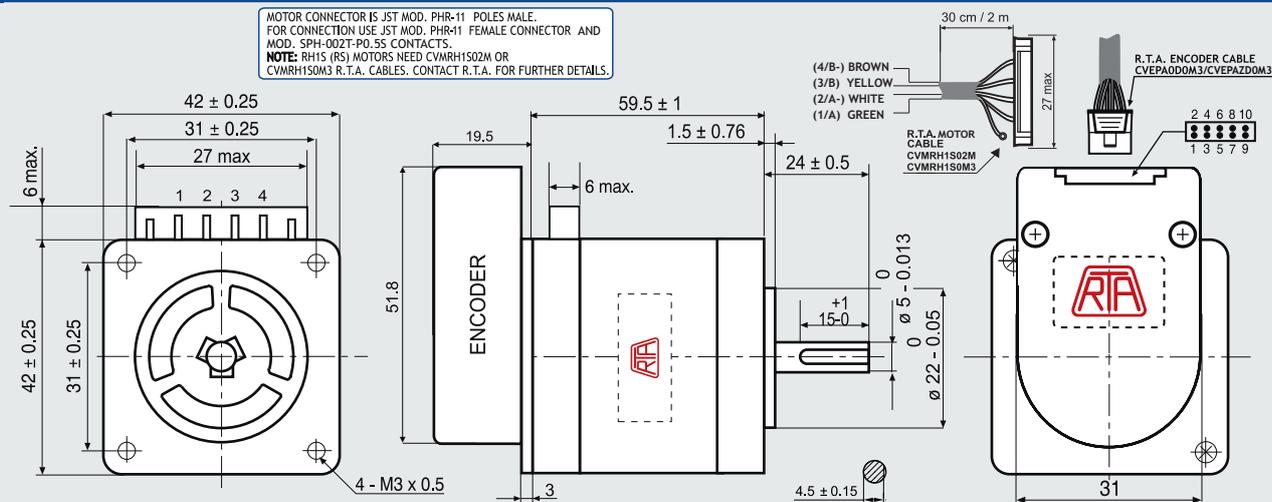
DESCRIPTION	04D0 PINS	04E0/0HE0 PINS	R.T.A. CABLE LEADS COLOR
CHANNEL A+	6	6	GREEN
CHANNEL A-	5	5	PURPLE
CHANNEL B+	8	8	BLUE
CHANNEL B-	7	7	BROWN
+ DC (5V)	2	2	RED
GROUND	3	3	BLACK
INDEX+	/	10	ORANGE
INDEX-	/	9	WHITE

R.T.A. CABLE (30 cm) CVEPA0D0M3 CVEPAZD0M3

Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# RH 1S3M-OXX0

## Dimensions (Unit:mm)

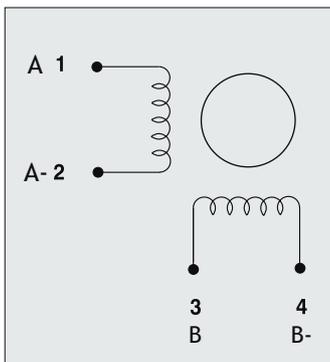
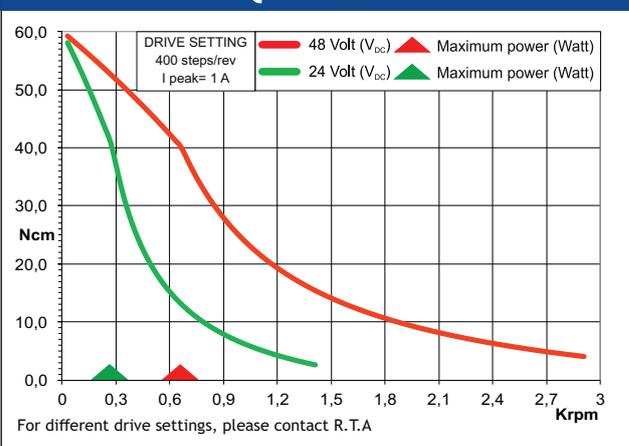


ENCODER OPTIONS:	RH 1S3M-04D0	RH 1S3M-04E0	RH 1S3M-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

## FEATURES

MODEL	RH 1S3M
BASIC STEP ANGLE	1.8°
BIPOLAR CURRENT (A)	1.0
UNIPOLAR CURRENT (A)	
RESISTANCE (Ohm)	6.5
INDUCTANCE (mH)	16
BIPOLAR HOLDING TORQUE (Ncm)	80
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm <sup>2</sup> x 10 <sup>-7</sup> )	94
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	85100
BACK E.M.F. (V/Krpm)	80
MASS (Kg)	0.51
PROTECTION DEGREE	IP40
LEADS CODE	V

## TORQUE/SPEED CURVE



## RTA MOTOR CABLE COLORS

DESCRIPTION	COLOR
CHANNEL A	GREEN
CHANNEL A-	WHITE
CHANNEL B	YELLOW
CHANNEL B-	BROWN

## ENCODER PIN-OUT

DESCRIPTION	04D0 PINS	04E0/0HE0 PINS	R.T.A. CABLE LEADS COLOR
CHANNEL A+	6	6	GREEN
CHANNEL A-	5	5	PURPLE
CHANNEL B+	8	8	BLUE
CHANNEL B-	7	7	BROWN
+ DC (5V)	2	2	RED
GROUND	3	3	BLACK
INDEX+	/	10	ORANGE
INDEX-	/	9	WHITE

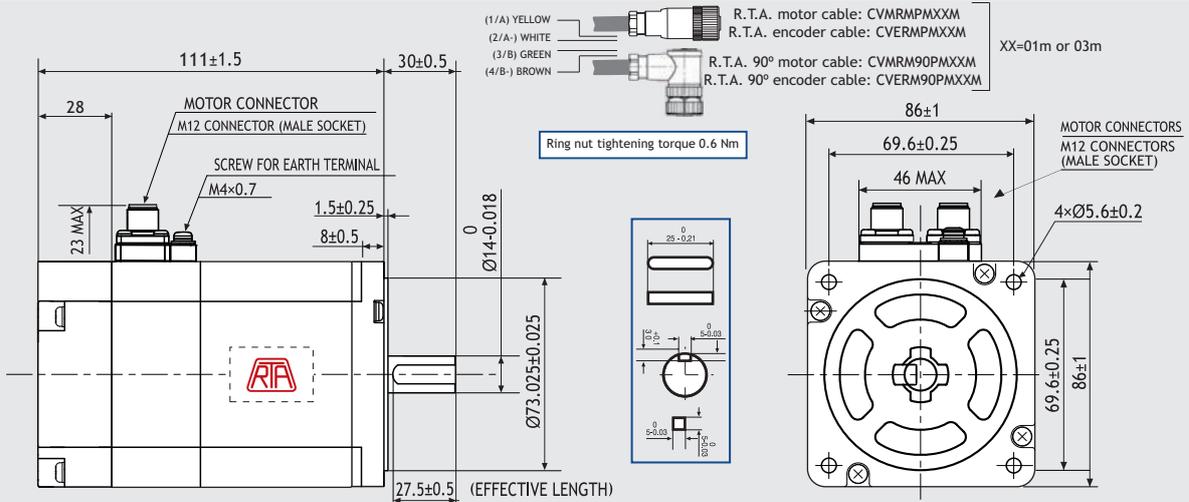
R.T.A. CABLE (30 cm) CVEPA0D0M3 CVEPAZ0M3

Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE



# RM 3T1M-0XX0

## Dimensions (Unit:mm)

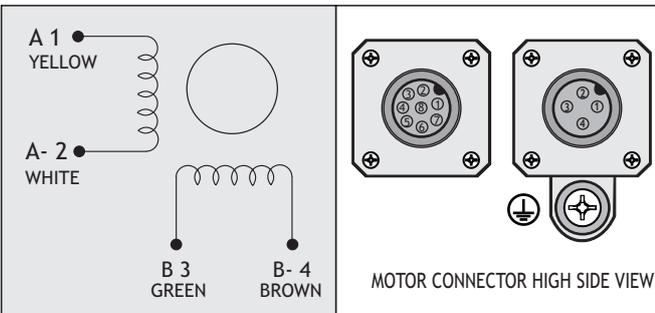
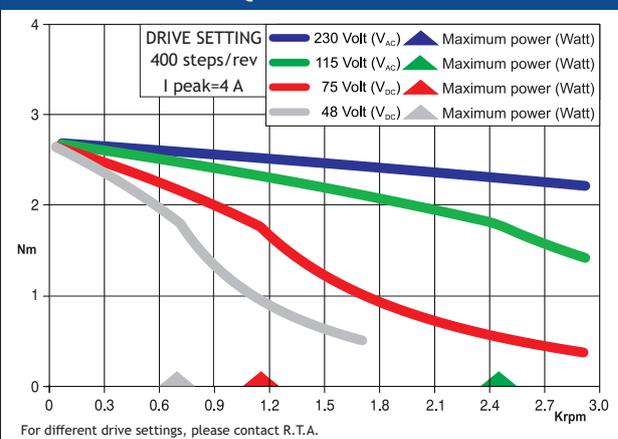


ENCODER OPTIONS:	RM 3T1M-04D0	RM 3T1M-04E0	RM 3T1M-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

## FEATURES

MODEL	RM 3T1M
BASIC STEP ANGLE	1.8 ± 0.09°
BIPOLAR CURRENT (A)	4
RESISTANCE (Ohm)	0.56
INDUCTANCE (mH)	3.7
BIPOLAR HOLDING TORQUE (Ncm)	360
ROTOR INERTIA (Kg·m <sup>2</sup> × 10 <sup>-7</sup> )	1480
THEORETICAL ACCELERATION (rad × sec. <sup>-2</sup> )	24300
BACK E.M.F. (V/Krpm)	90
MASS (Kg)	1.95
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS
INSULATION VOLTAGE (V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS	IP 54 - CLASS F
LEADS CODE	V

## TORQUE/SPEED CURVE



## ENCODER CONNECTOR PIN-OUT

DESCRIPTION	04D0 PINS	04E0/OHE0 PINS	R.T.A. CABLE LEADS COLOR
CHANNEL B+	3	3	GREEN
CHANNEL B-	4	4	PURPLE
CHANNEL A+	1	1	BLUE
CHANNEL A-	2	2	BROWN
+ DC (5V)	8	8	RED
GROUND	5	5	BLACK
INDEX+	/	7	ORANGE
INDEX-	/	6	WHITE

R.T.A. CABLE

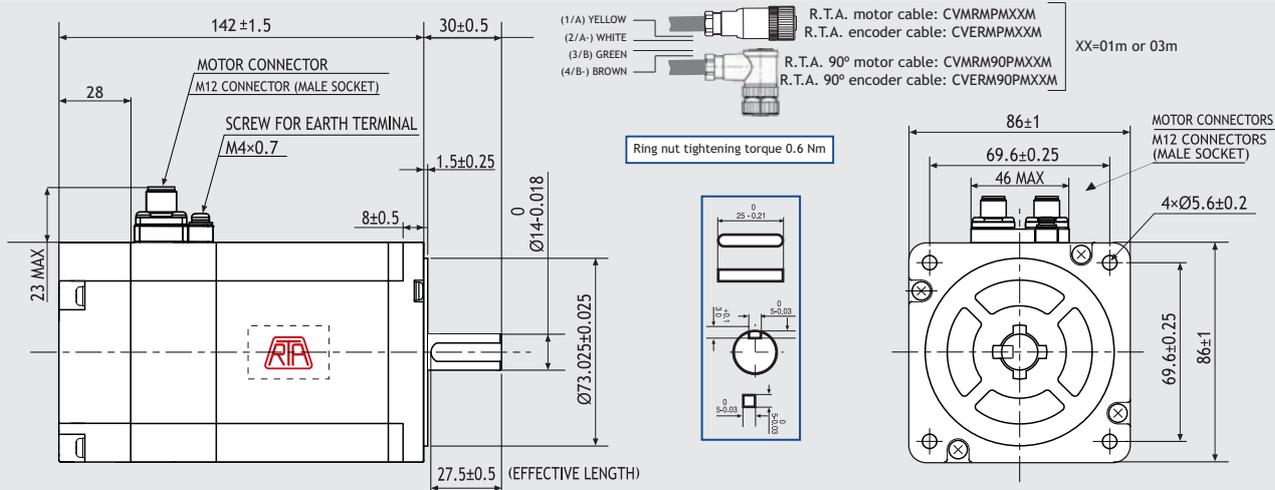
CVMRMPMXXM

Suggested R.T.A. drive series: 230 Vac X-PLUS



# RM 3T2M-0XX0

## Dimensions (Unit:mm)

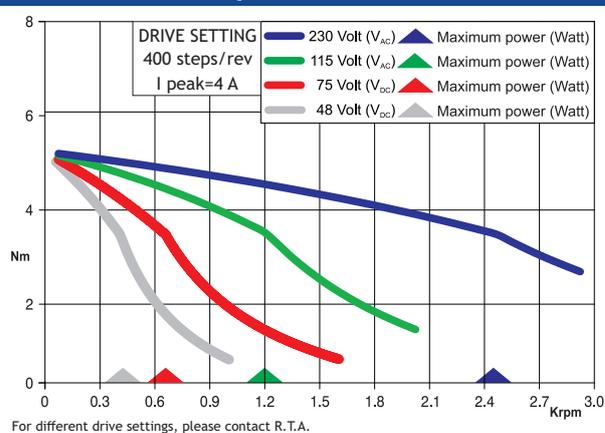


ENCODER OPTIONS:	RM 3T2M-04D0	RM 3T2M-04E0	RM 3T2M-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

## FEATURES

MODEL	RM 3T2M
BASIC STEP ANGLE	1.8 ± 0.09°
BIPOLAR CURRENT (A)	4
RESISTANCE (Ohm)	0.83
INDUCTANCE (mH)	6.4
BIPOLAR HOLDING TORQUE (Ncm)	700
ROTOR INERTIA (Kgm <sup>2</sup> x 10 <sup>-7</sup> )	3000
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	23330
BACK E.M.F. (V/Krpm)	175
MASS (Kg)	3.1
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS
INSULATION VOLTAGE (V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS	IP 54 - CLASS F
LEADS CODE	V

## TORQUE/SPEED CURVE



## ENCODER CONNECTOR PIN-OUT

DESCRIPTION	04D0 PINS	04E0/OHE0 PINS	R.T.A. CABLE LEADS COLOR
CHANNEL B+	3	3	GREEN
CHANNEL B-	4	4	PURPLE
CHANNEL A+	1	1	BLUE
CHANNEL A-	2	2	BROWN
+ DC (5V)	8	8	RED
GROUND	5	5	BLACK
INDEX+	/	7	ORANGE
INDEX-	/	6	WHITE

R.T.A. CABLE

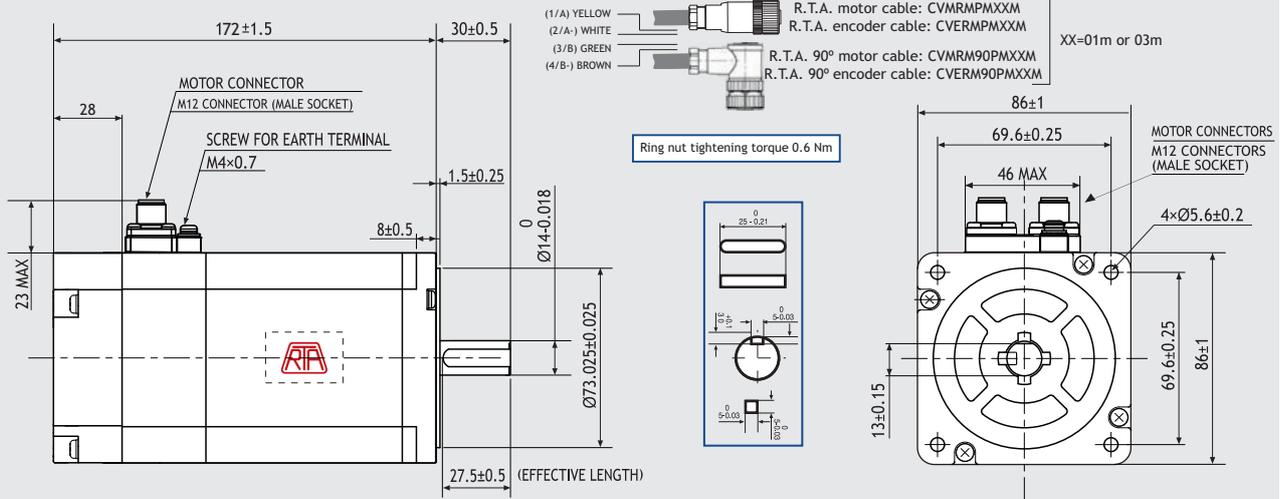
CVMRMPXXM

Suggested R.T.A. drive series: 230 Vac X-PLUS

# RM 3T3M-0XX0



## Dimensions (Unit:mm)

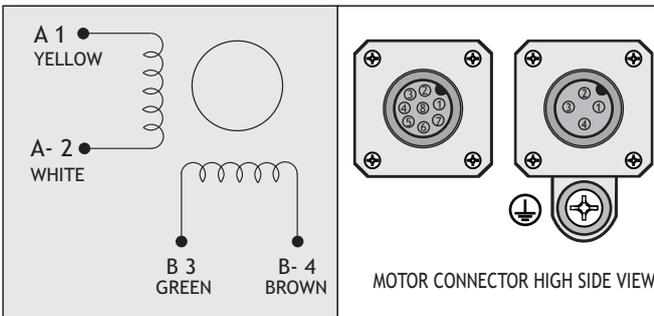
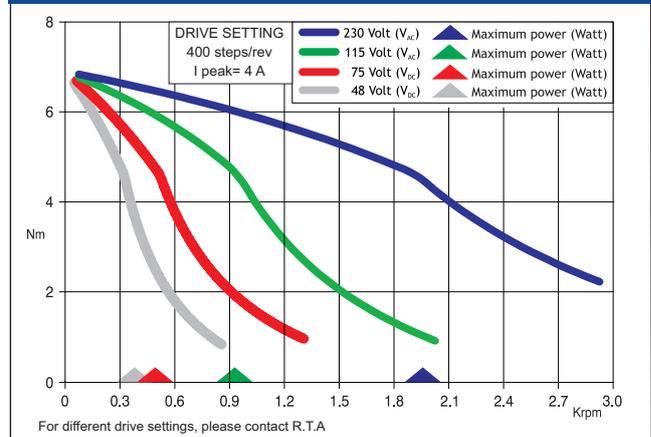


ENCODER OPTIONS:	RM 3T3M-04D0	RM 3T3M-04E0	RM 3T3M-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

## FEATURES

MODEL	RM 3T3M
BASIC STEP ANGLE	1.8 ± 0.09°
BIPOLAR CURRENT (A)	4
RESISTANCE (Ohm)	1
INDUCTANCE (mH)	7.9
BIPOLAR HOLDING TORQUE (Ncm)	920
ROTOR INERTIA (Kg <sub>m</sub> <sup>2</sup> x 10 <sup>-7</sup> )	4500
THEORETICAL ACCELERATION (rad x sec <sup>-2</sup> )	20500
BACK E.M.F. (V/Krpm)	241
MASS (Kg)	4.2
INTERNATIONAL STANDARDS	UL, CSA, CE, RoHS
INSULATION VOLTAGE (V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE - INSULATION CLASS	IP 54 - CLASS F
LEADS CODE	V

## TORQUE/SPEED CURVE



## ENCODER CONNECTOR PIN-OUT

DESCRIPTION	04D0 PINS	04E0/OHE0 PINS	R.T.A. CABLE LEADS COLOR
CHANNEL B+	3	3	GREEN
CHANNEL B-	4	4	PURPLE
CHANNEL A+	1	1	BLUE
CHANNEL A-	2	2	BROWN
+ DC (5V)	8	8	RED
GROUND	5	5	BLACK
INDEX+	/	7	ORANGE
INDEX-	/	6	WHITE

R.T.A. CABLE

CVMRMPMXXM

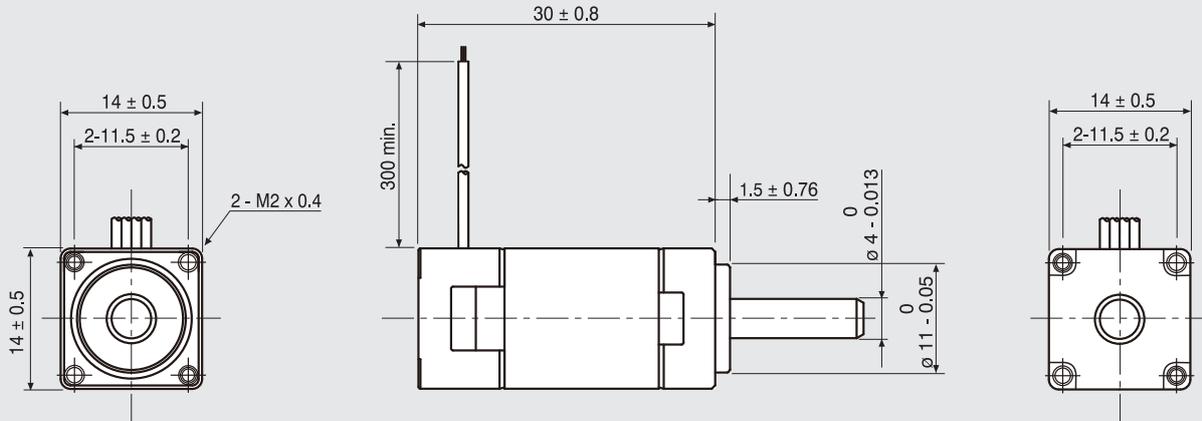
Suggested R.T.A. drive series: 230 Vac X-PLUS

STEPPING MOTORS

## TRADITIONAL STEPPING MOTORS



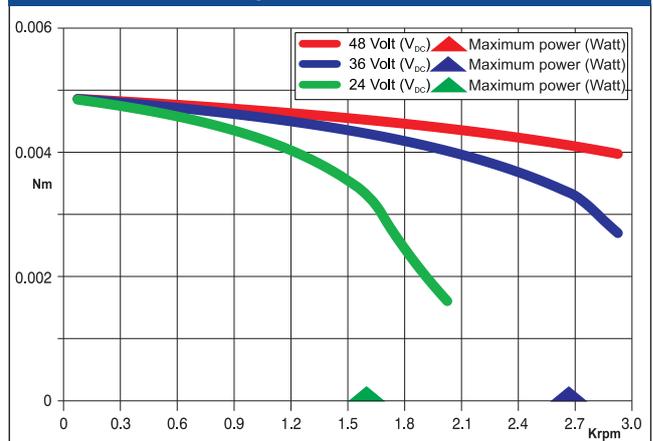
## Dimensions (Unit:mm)



## FEATURES

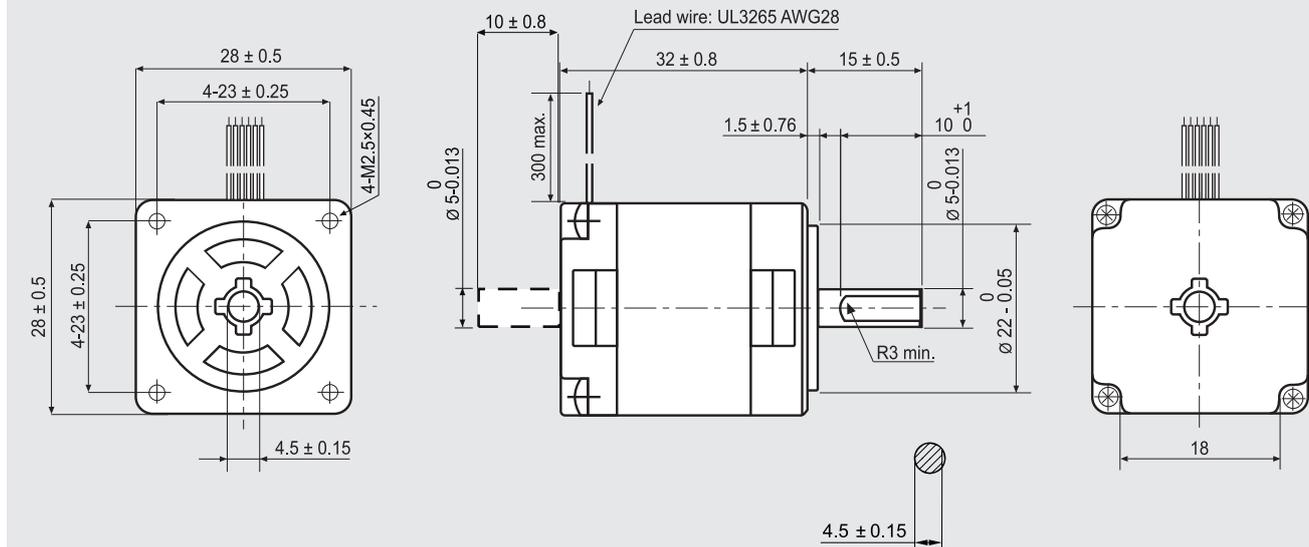
MODEL	SH2141-5541	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	0.3
UNIPOLAR CURRENT	(Amp)	
RESISTANCE	(Ohm)	21
INDUCTANCE	(mH)	4.2
BIPOLAR HOLDING TORQUE	(Ncm)	0.65
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	( $\text{Kgm}^2 \times 10^{-7}$ )	0.58
THEORETICAL ACCELERATION	( $\text{rad} \times \text{sec}^{-2}$ )	112000
BACK E.M.F.	(V/Krpm)	10
MASS	(Kg)	0.028
LEADS CODE	V	

## TORQUE/SPEED CURVE



Suggested R.T.A. drive series: CSD, FLEX-DRIVE

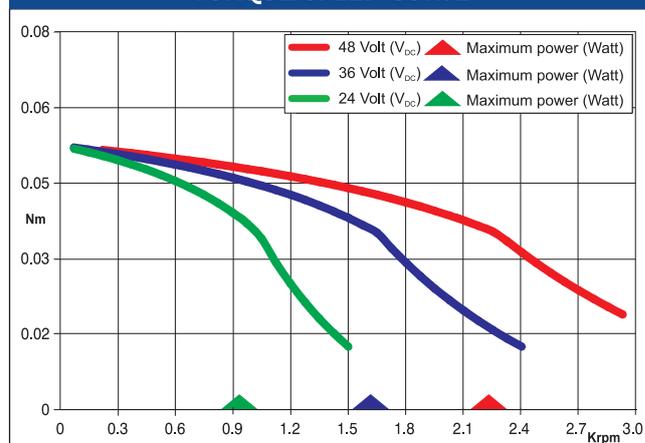
## Dimensions (Unit:mm)



## FEATURES

MODEL	SH2281-5271 (SH2281-5231)	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	0.7 <sup>(*)</sup>
UNIPOLAR CURRENT	(Amp)	1.0
RESISTANCE	(Ohm)	2.85
INDUCTANCE	(mH)	1.0
BIPOLAR HOLDING TORQUE	(Ncm)	7
UNIPOLAR HOLDING TORQUE	(Ncm)	5.5
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	10
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	70000
BACK E.M.F.	(V/Krpm)	15
MASS	(Kg)	0.11
LEADS CODE	IV	

## TORQUE/SPEED CURVE



<sup>(\*)</sup>Bipolar series connection.



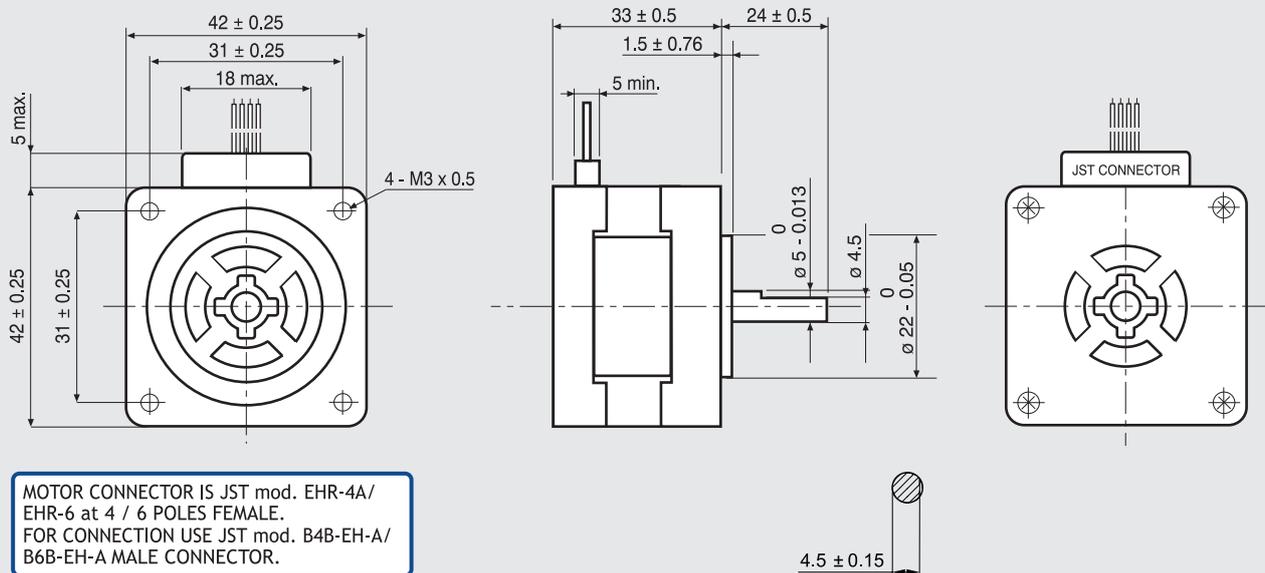
Suggested R.T.A. drive series: BSD, CSD, ADW, HGD, FLEX-DRIVE



# 103-H5205-5040

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SANMOTION

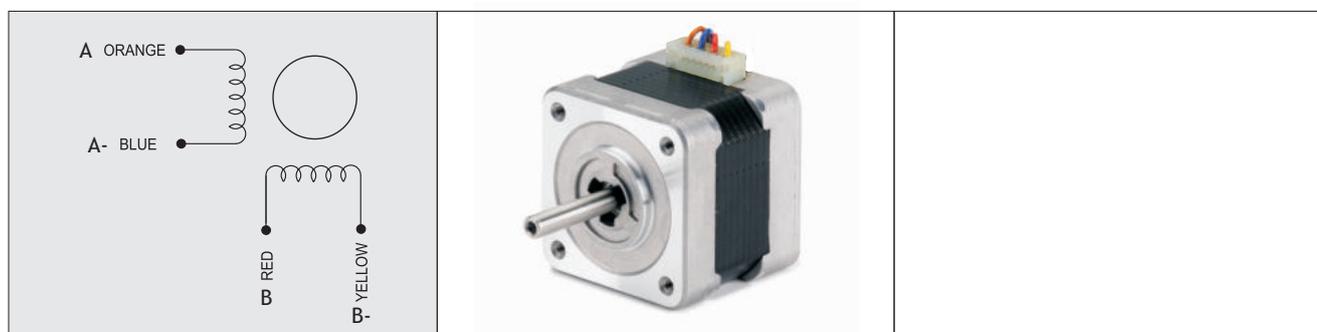
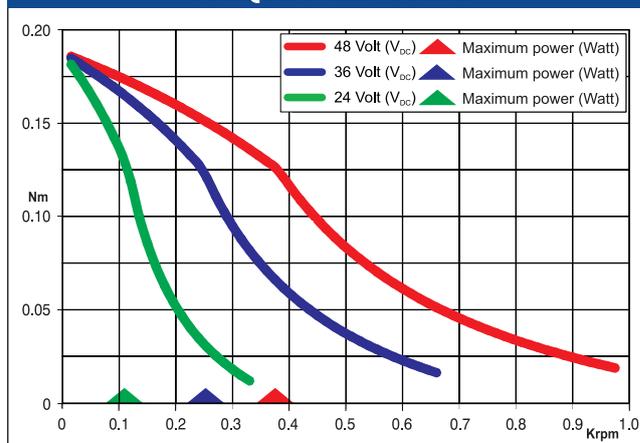
## Dimensions (Unit:mm)



## FEATURES

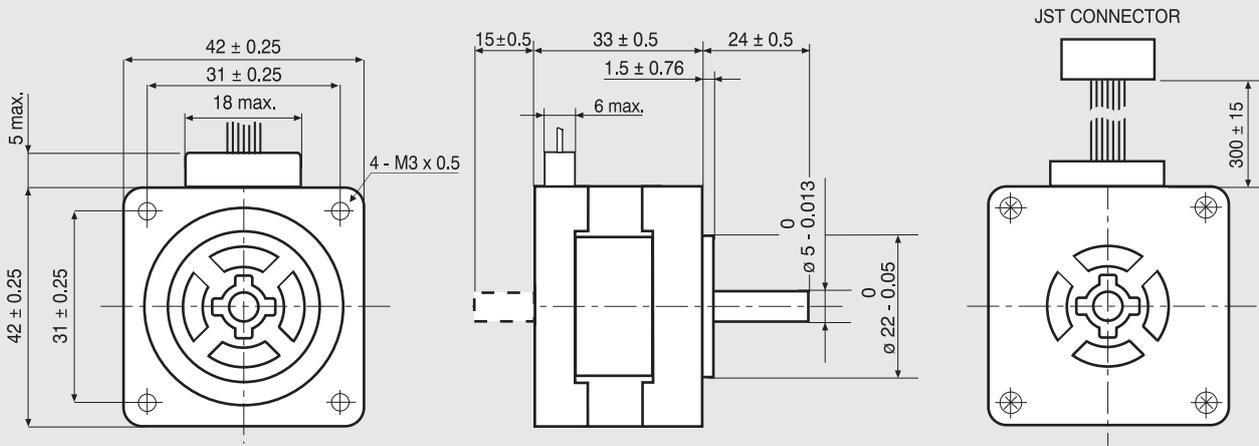
MODEL	103-H5205-5040	
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	0.25
UNIPOLAR CURRENT	(Amp)	
RESISTANCE	(Ohm)	54
INDUCTANCE	(mH)	78
BIPOLAR HOLDING TORQUE	(Ncm)	23.0
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	36
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	64000
BACK E.M.F.	(V/Krpm)	100
MASS	(Kg)	0.23
LEADS CODE		V

## TORQUE/SPEED CURVE



Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

## Dimensions (Unit:mm)



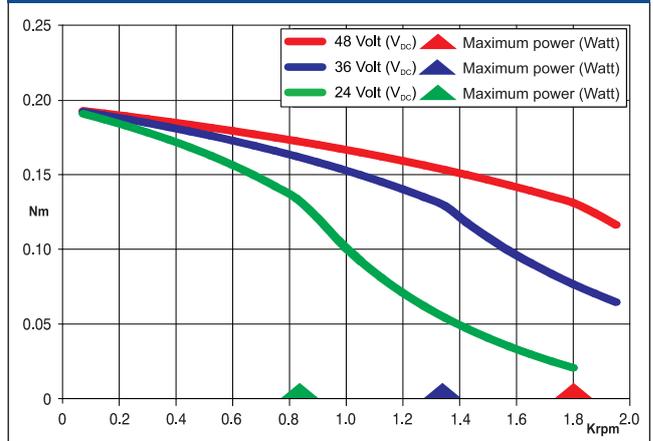
MOTOR CONNECTOR IS JST mod. EHR-6A  
6 POLES FEMALE.  
FOR CONNECTION USE JST  
mod. B6B-EH-A MALE CONNECTOR.

## FEATURES

MODEL	103-H5205-0351 (103-H5205-0312)	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	0.7*
UNIPOLAR CURRENT	(Amp)	1.0
RESISTANCE	(Ohm)	3.6
INDUCTANCE	(mH)	3.3
BIPOLAR HOLDING TORQUE	(Ncm)	25
UNIPOLAR HOLDING TORQUE	(Ncm)	19
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	36
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	69800
BACK E.M.F.	(V/Krpm)	37
MASS	(Kg)	0.23
LEADS CODE	IV	

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



(\*)Bipolar series connection.

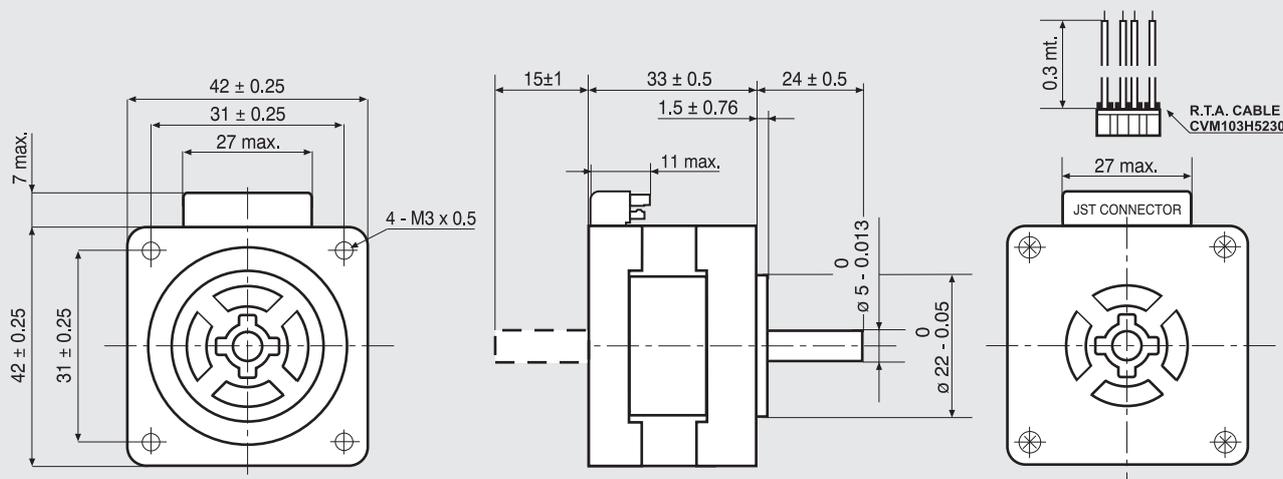


Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# 103-H5205-4240

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)



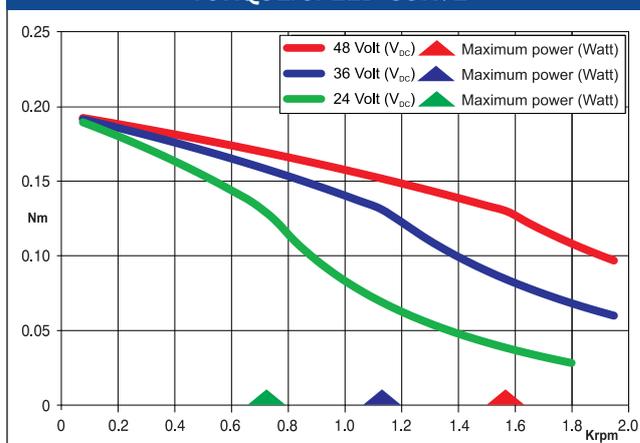
MOTOR CONNECTOR IS JST mod. B6B-EH K 6 POLES MALE.  
FOR CONNECTION USE JST mod. EHR-6 FEMALE CONNECTOR AND  
mod. SEH-001 T-P0.6 CONTACTS.  
NOTE: 103-H5205-4240 MOTORS NEED CVM103H5230 R.T.A. CABLES.  
CONTACT R.T.A. FOR FURTHER DETAILS.

## FEATURES

MODEL	103-H5205-4240 (103-H5205-4210)
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	1.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	3.4
INDUCTANCE (mH)	6.5
BIPOLAR HOLDING TORQUE (Ncm)	26.5
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ( $\text{Kgm}^2 \times 10^{-7}$ )	36
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec}^{-2}$ )	69800
BACK E.M.F. (V/Krpm)	27
MASS (Kg)	0.23
LEADS CODE	V

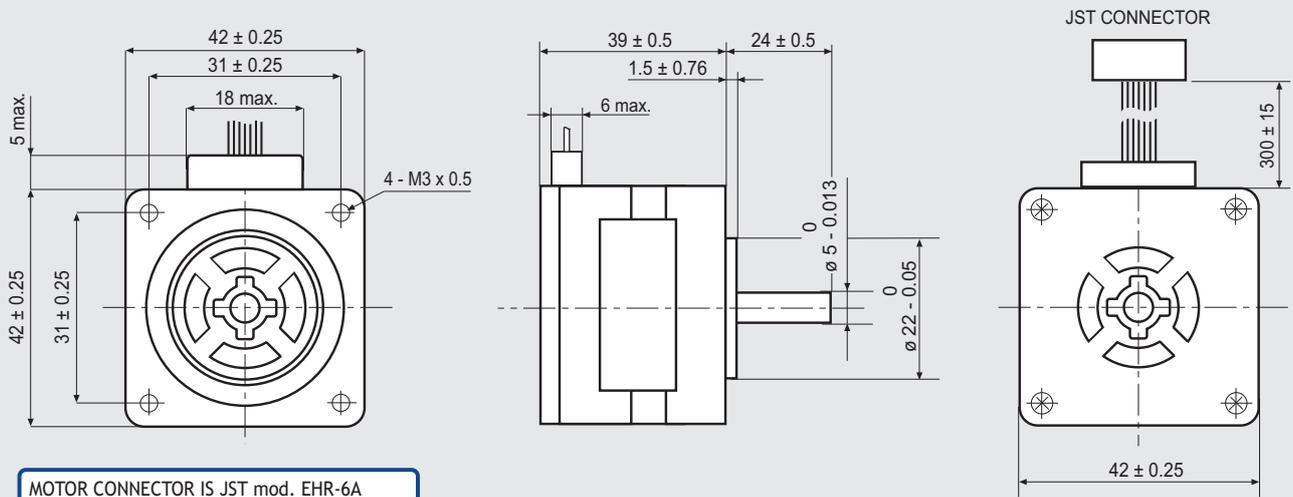
Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

## Dimensions (Unit:mm)

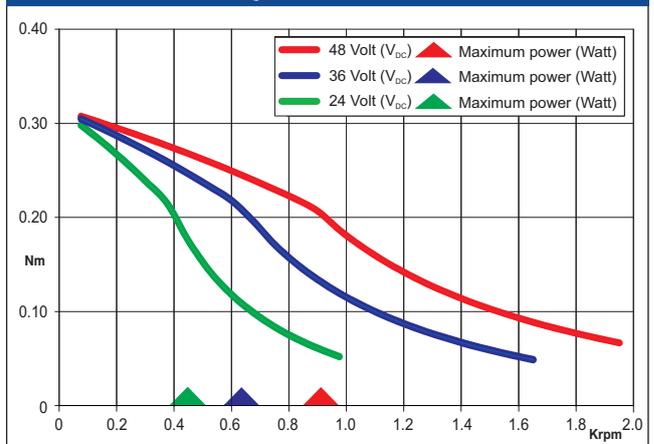


MOTOR CONNECTOR IS JST mod. EHR-6A  
6 POLES FEMALE.  
FOR CONNECTION USE JST  
mod. B6B-EH-A MALE CONNECTOR.

## FEATURES

MODEL	103-H5208-0483	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	0.9 <sup>(*)</sup>
UNIPOLAR CURRENT	(Amp)	1.2
RESISTANCE	(Ohm)	2.9
INDUCTANCE	(mH)	3.4
BIPOLAR HOLDING TORQUE	(Ncm)	42
UNIPOLAR HOLDING TORQUE	(Ncm)	30
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	56
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	71000
BACK E.M.F.	(V/Krpm)	19
MASS	(Kg)	0.27
LEADS CODE	IV	

## TORQUE/SPEED CURVE



(\*)Bipolar series connection.

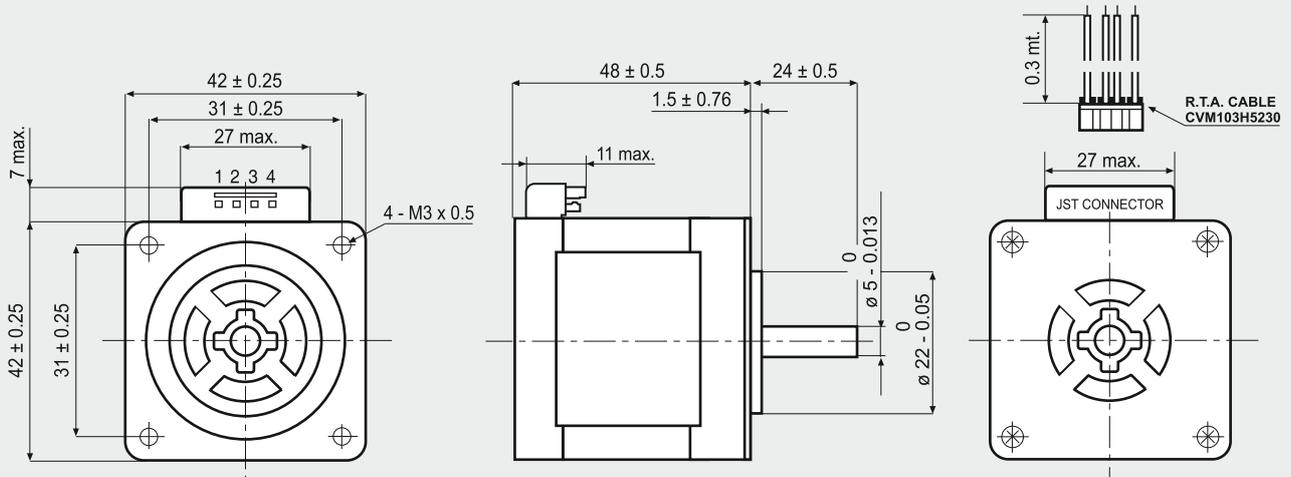


Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# 103-H5210-4240

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

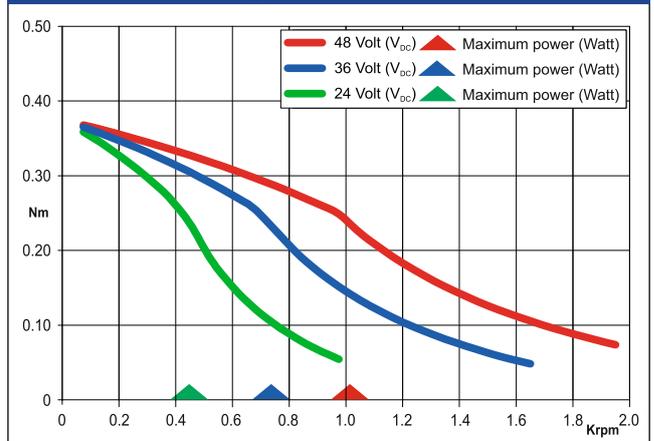


MOTOR CONNECTOR IS JST mod. B6B-EH K 6 POLES MALE.  
FOR CONNECTION USE JST mod. EHR-6 FEMALE CONNECTOR AND  
mod. SEH-001 T-P0.6 CONTACTS.  
NOTE: 103-H5210-4240 MOTORS NEED CVM103H5230 R.T.A. CABLES.  
CONTACT R.T.A. FOR FURTHER DETAILS.

## FEATURES

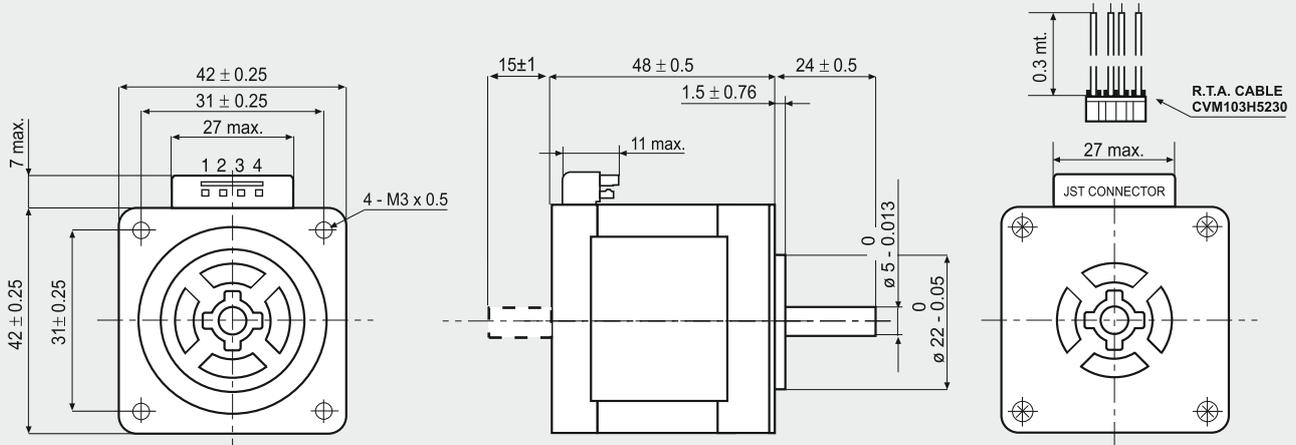
MODEL	103-H5210-4240
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	1.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	4.8
INDUCTANCE (mH)	9.5
BIPOLAR HOLDING TORQUE (Ncm)	51
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ( $\text{Kgm}^2 \times 10^{-7}$ )	74
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec.}^{-2}$ )	69000
BACK E.M.F. (V/Krpm)	14
MASS (Kg)	0.35
LEADS CODE	V

## TORQUE/SPEED CURVE

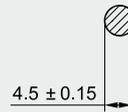


Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

## Dimensions (Unit:mm)



MOTOR CONNECTOR IS JST mod. B6B-EH K 6 POLES MALE.  
FOR CONNECTION USE JST mod. EHR-6 FEMALE CONNECTOR AND  
mod. SEH-001 T-P0.6 CONTACTS.  
**NOTE:** 103-H5210-4541/4512 MOTORS NEED CVM103H5230 R.T.A.  
CABLES. CONTACT R.T.A. FOR FURTHER DETAILS.

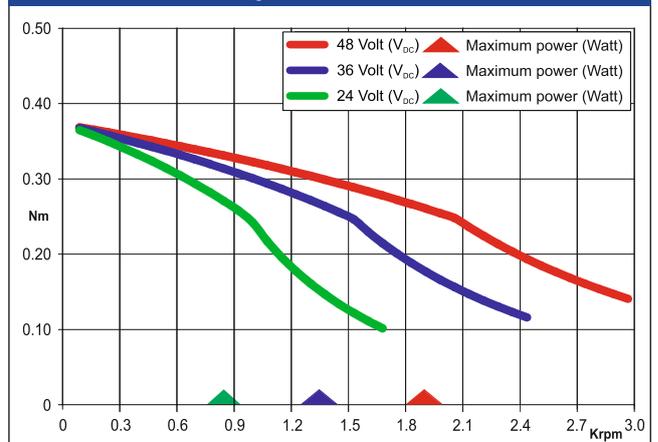


## FEATURES

MODEL	103-H5210-4541 (103-H5210-4512)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	2.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	1.25
INDUCTANCE (mH)	2.4
BIPOLAR HOLDING TORQUE (Ncm)	51
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm <sup>2</sup> × 10 <sup>-7</sup> )	74
THEORETICAL ACCELERATION (rad × sec. <sup>-2</sup> )	69000
BACK E.M.F. (V/Krpm)	25
MASS (Kg)	0.35
LEADS CODE	V

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE

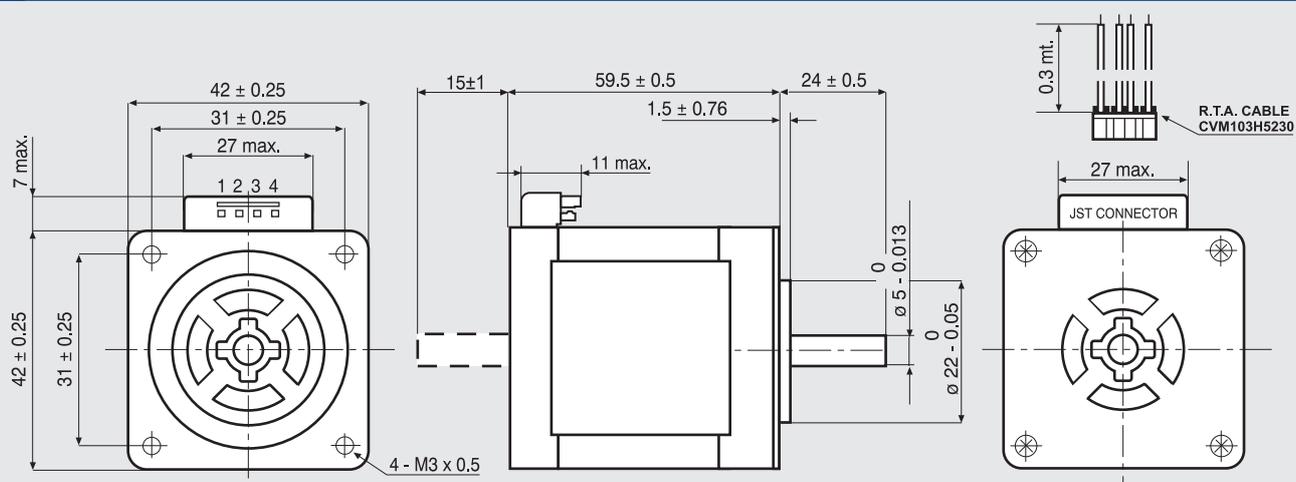


Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# 103-H5212-4640

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)



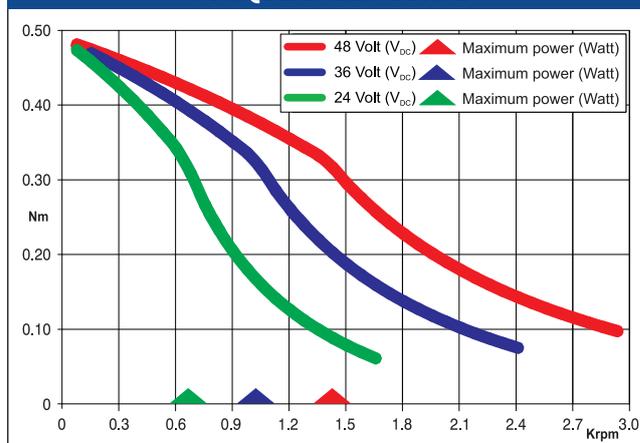
MOTOR CONNECTOR IS JST mod. B6B-EH K 6 POLES MALE.  
FOR CONNECTION USE JST mod. EHR-6 FEMALE CONNECTOR AND  
mod. SEH-001 T-P0.6 CONTACTS.  
NOTE: 103-H5212-4640 MOTORS NEED CVM103H5230 R.T.A. CABLES.  
CONTACT R.T.A. FOR FURTHER DETAILS.

## FEATURES

MODEL	103-H5212-4640 (103-H5212-4610)
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	2.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	1.5
INDUCTANCE (mH)	3.0
BIPOLAR HOLDING TORQUE (Ncm)	65
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ( $\text{Kgm}^2 \times 10^{-7}$ )	110
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec.}^{-2}$ )	59000
BACK E.M.F. (V/Krpm)	32
MASS (Kg)	0.35
LEADS CODE	V

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE

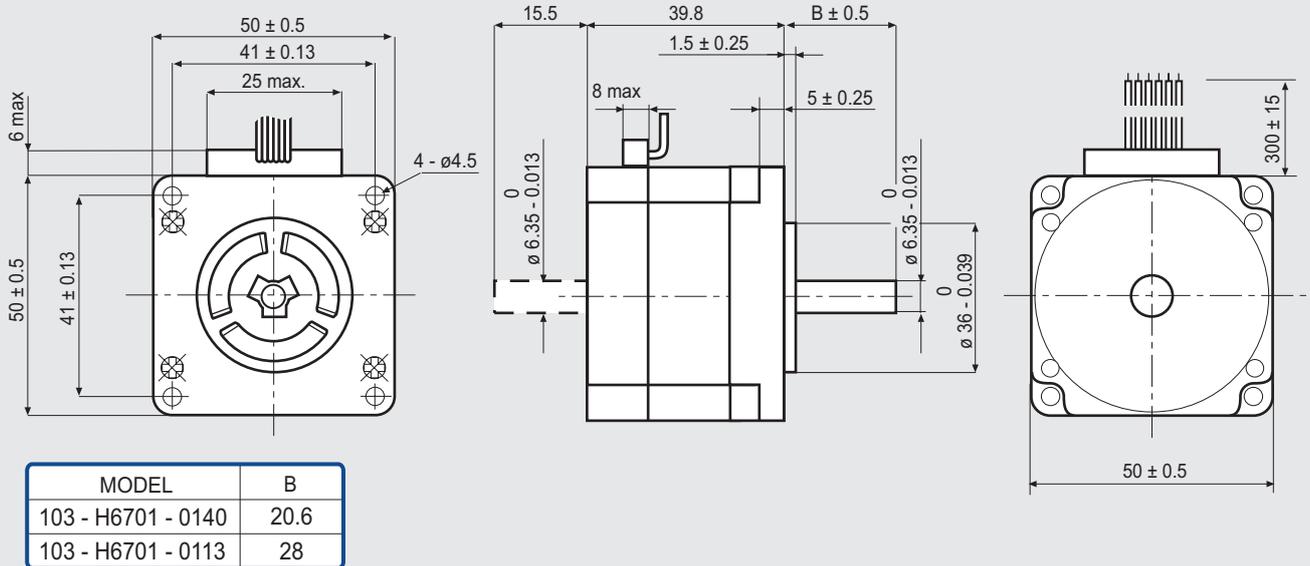


Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# 103-H6701-0140

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

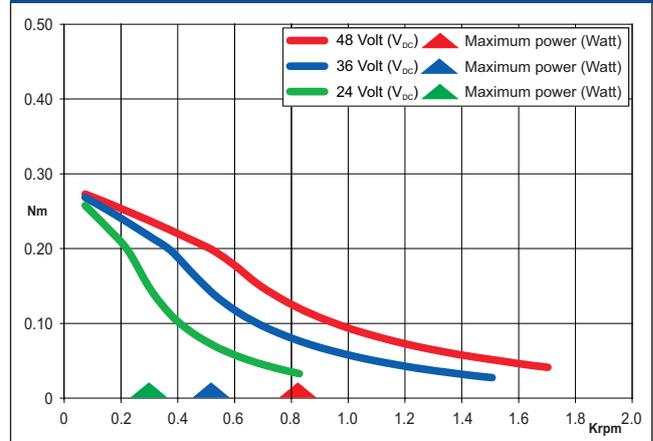


## FEATURES

MODEL	103-H6701-0140 (103-H6701-0113)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	0.7 <sup>(*)</sup>
UNIPOLAR CURRENT (Amp)	1.0
RESISTANCE (Ohm)	4.3
INDUCTANCE (mH)	6.8
BIPOLAR HOLDING TORQUE (Ncm)	38
UNIPOLAR HOLDING TORQUE (Ncm)	28
ROTOR INERTIA (Kg <sup>m</sup> 2 x 10 <sup>-7</sup> )	57
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	66000
BACK E.M.F. (V/Krpm)	20
MASS (Kg)	0.35
LEADS CODE	IV

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



(\*)Bipolar series connection.

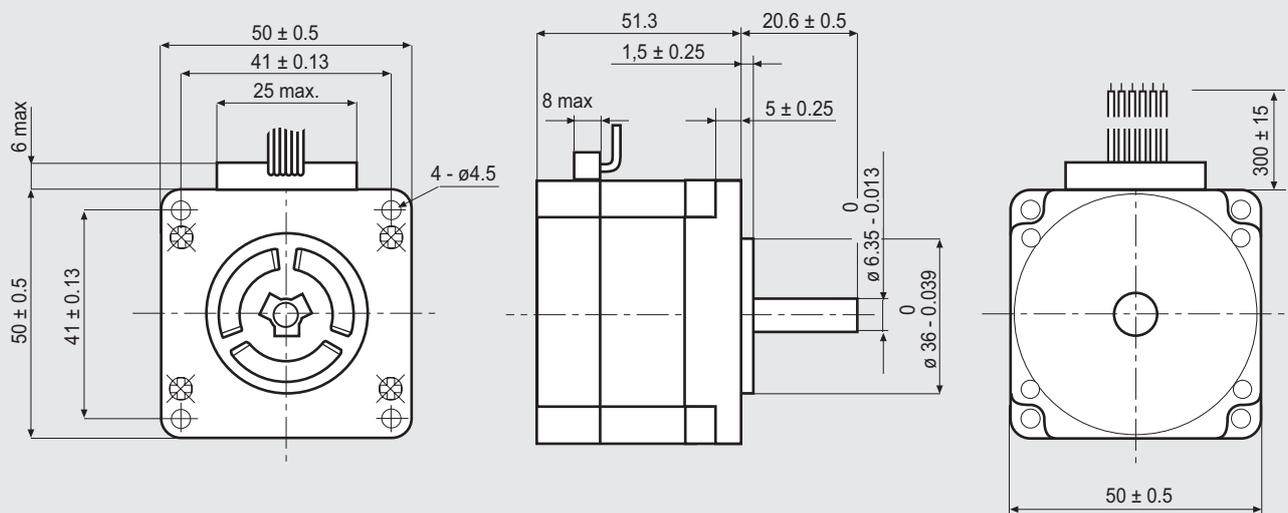


Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# 103-H6703-0440

SANYO DENKI  
SANMOTION

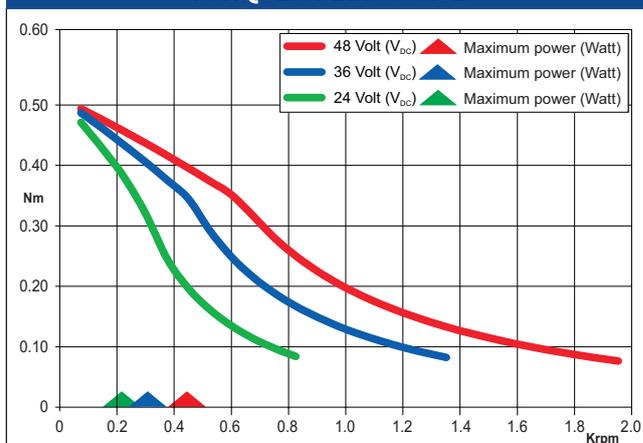
## Dimensions (Unit:mm)



## FEATURES

MODEL	103-H6703-0440	
BASIC STEP ANGLE		$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT	(Amp)	1.4 <sup>(*)</sup>
UNIPOLAR CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	1.6
INDUCTANCE	(mH)	3.2
BIPOLAR HOLDING TORQUE	(Ncm)	68
UNIPOLAR HOLDING TORQUE	(Ncm)	49
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	118
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	58000
BACK E.M.F.	(V/Krpm)	17.5
MASS	(Kg)	0.5
LEADS CODE		IV

## TORQUE/SPEED CURVE

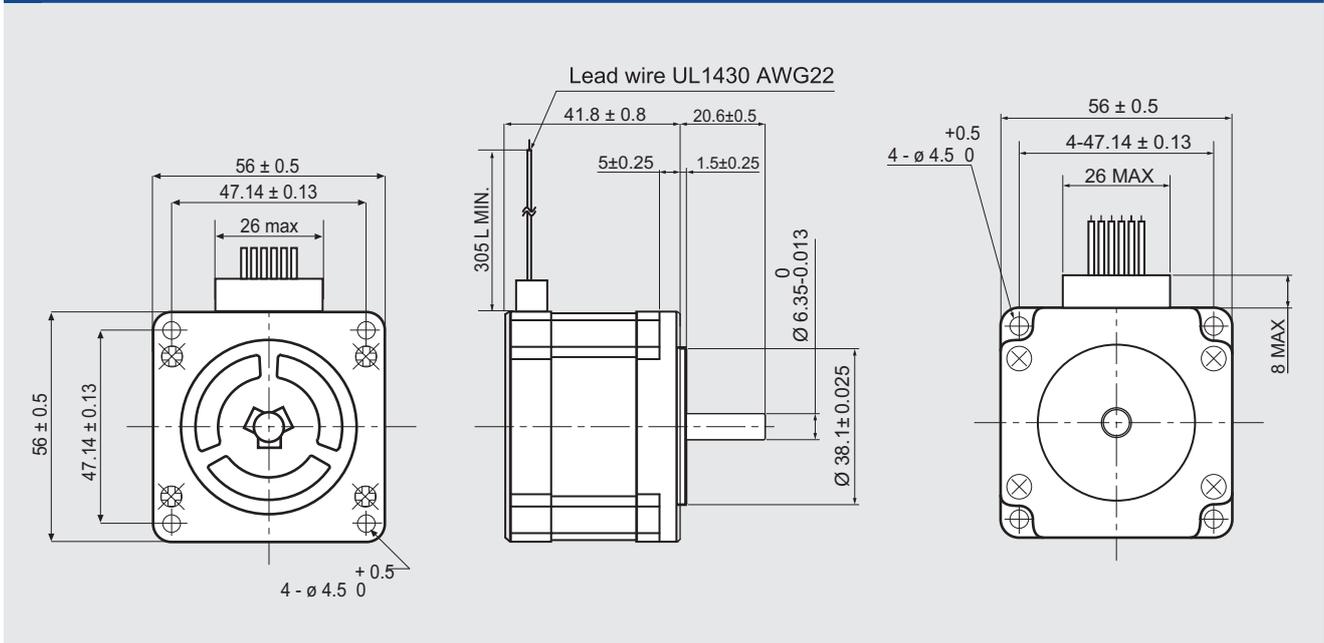


(\*)Bipolar series connection.



Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

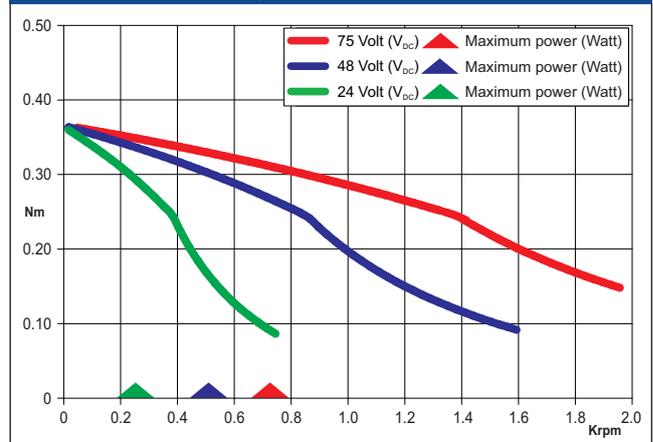
## Dimensions (Unit:mm)



## FEATURES

MODEL	103-H7121-0440	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	1.5 <sup>(*)</sup>
UNIPOLAR CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	1.25
INDUCTANCE	(mH)	1.9
BIPOLAR HOLDING TORQUE	(Ncm)	49
UNIPOLAR HOLDING TORQUE	(Ncm)	39
ROTOR INERTIA	(Kg $m^2 \times 10^{-7}$ )	100
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	50000
BACK E.M.F.	(V/Krpm)	20
MASS	(Kg)	0.47
LEADS CODE	IV	

## TORQUE/SPEED CURVE



(\*)Bipolar series connection.

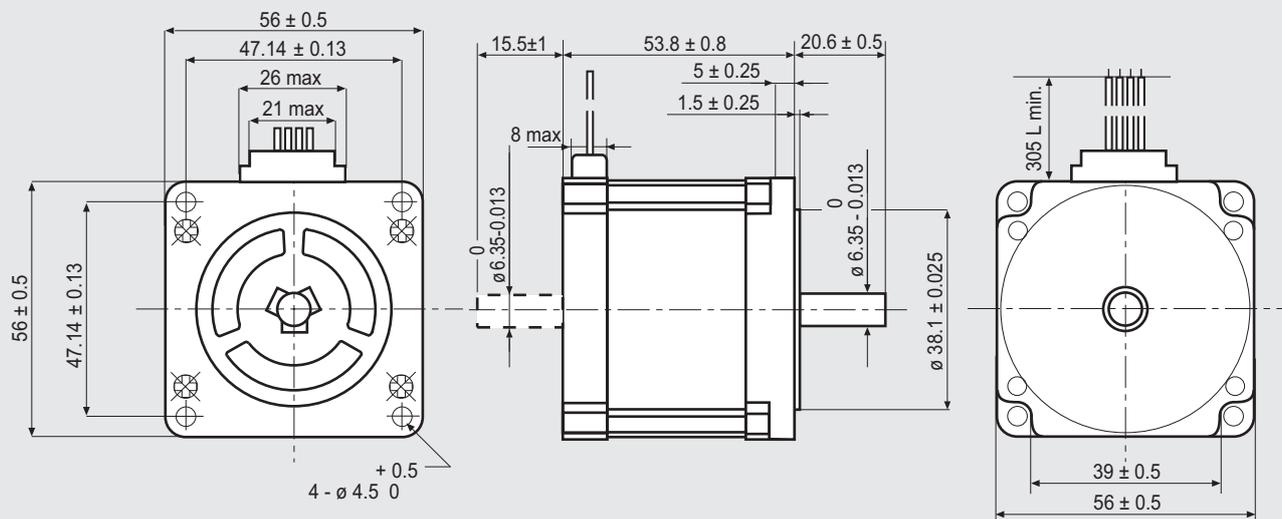


Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7123-5040

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

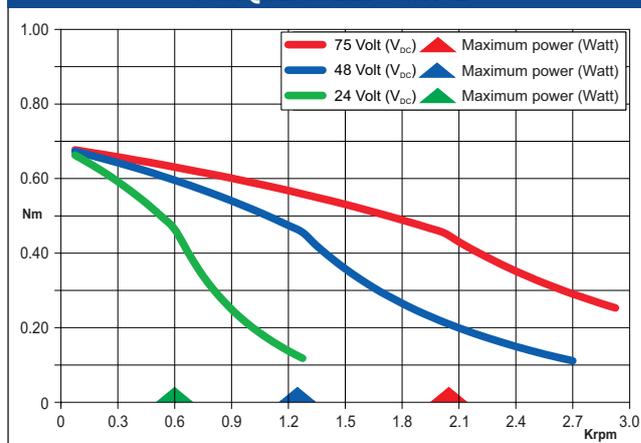


## FEATURES

MODEL	103-H7123-5040 (103-H7123-5010)
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	2.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.8
INDUCTANCE (mH)	3.8
BIPOLAR HOLDING TORQUE (Ncm)	85
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ( $\text{Kgm}^2 \times 10^{-7}$ )	210
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec}^{-2}$ )	38500
BACK E.M.F. (V/Krpm)	31
MASS (Kg)	0.65
LEADS CODE	V

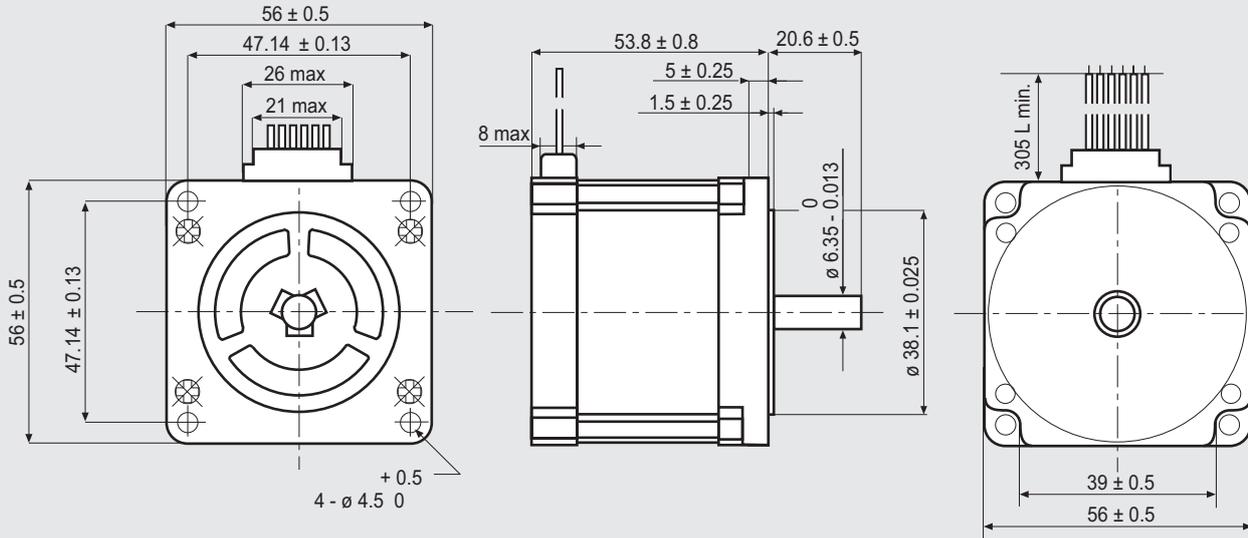
Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

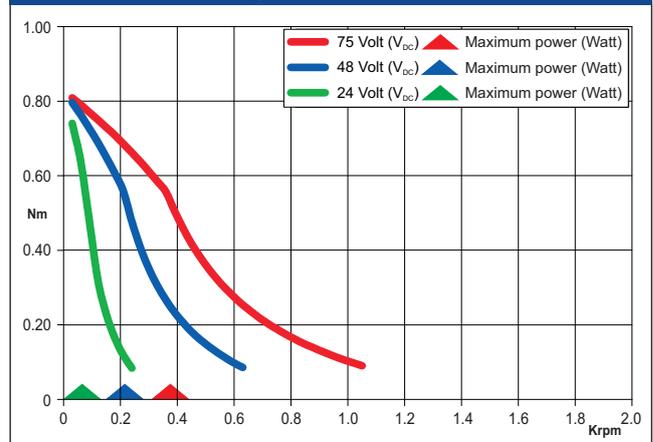
## Dimensions (Unit:mm)



## FEATURES

MODEL	103-H7123-0140	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	$0.7^{(*)}$
UNIPOLAR CURRENT	(Amp)	1.0
RESISTANCE	(Ohm)	6.7
INDUCTANCE	(mH)	15
BIPOLAR HOLDING TORQUE	(Ncm)	110
UNIPOLAR HOLDING TORQUE	(Ncm)	85
ROTOR INERTIA	( $\text{Kgm}^2 \times 10^{-7}$ )	210
THEORETICAL ACCELERATION	( $\text{rad} \times \text{sec}^{-2}$ )	50000
BACK E.M.F.	(V/Krpm)	60
MASS	(Kg)	0.65
LEADS CODE	IV	

## TORQUE/SPEED CURVE



(\*)Bipolar series connection.

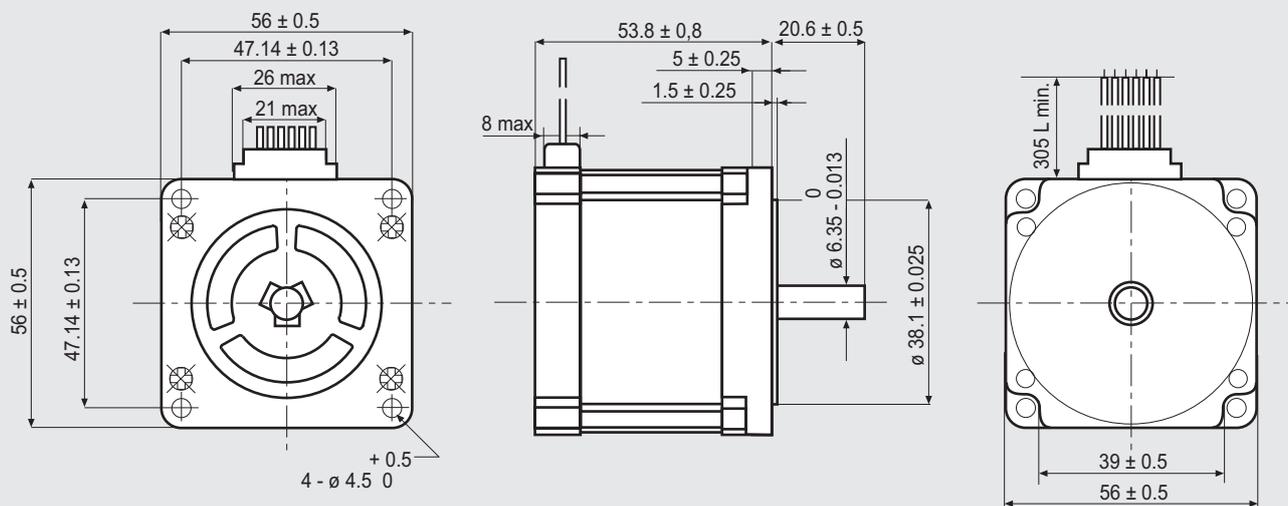


Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7123-0440

SANYO DENKI  
SANMOTION

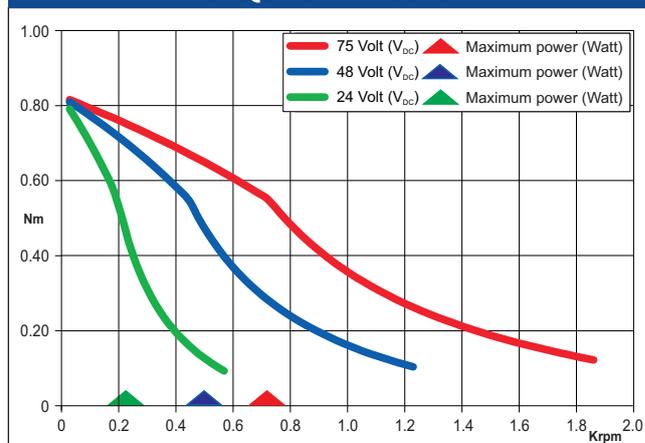
## Dimensions (Unit:mm)



## FEATURES

MODEL	103-H7123-0440
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	1.5 <sup>(*)</sup>
UNIPOLAR CURRENT (Amp)	2.0
RESISTANCE (Ohm)	1.6
INDUCTANCE (mH)	3.8
BIPOLAR HOLDING TORQUE (Ncm)	110
UNIPOLAR HOLDING TORQUE (Ncm)	85
ROTOR INERTIA ( $\text{Kg} \cdot \text{m}^2 \times 10^{-7}$ )	210
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec}^{-2}$ )	50000
BACK E.M.F. (V/Krpm)	31
MASS (Kg)	0.65
LEADS CODE	IV

## TORQUE/SPEED CURVE

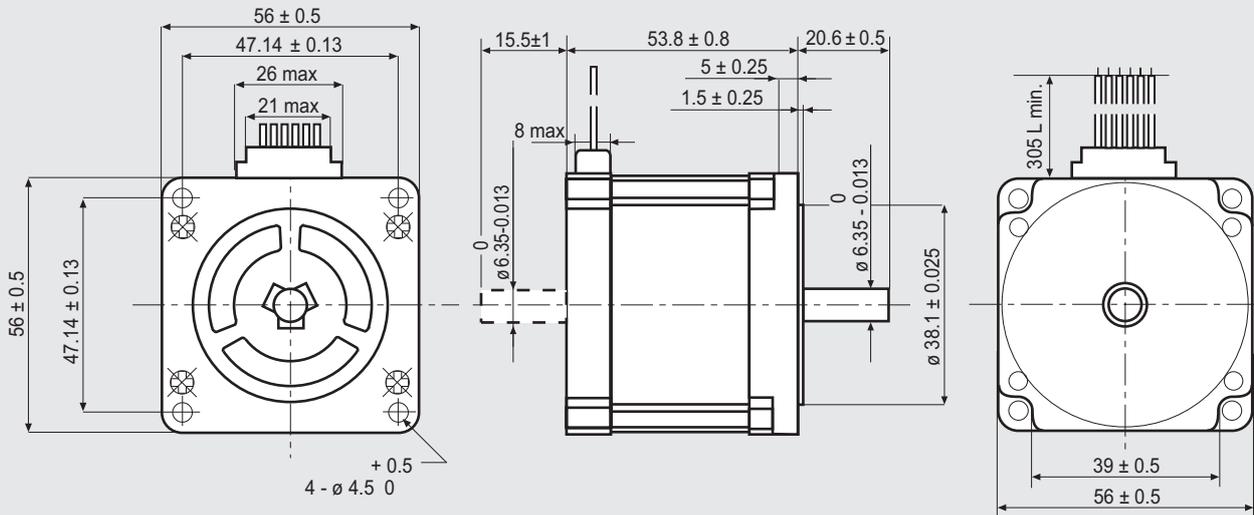


(\*)Bipolar series connection.



Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

## Dimensions (Unit:mm)

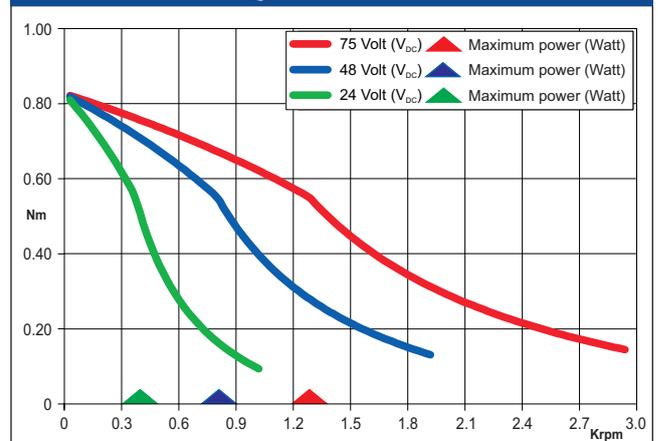


## FEATURES

MODEL	103-H7123-0740 (103-H7123-0710)	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	2.2 <sup>(*)</sup>
UNIPOLAR CURRENT	(Amp)	3.0
RESISTANCE	(Ohm)	0.77
INDUCTANCE	(mH)	1.6
BIPOLAR HOLDING TORQUE	(Ncm)	110
UNIPOLAR HOLDING TORQUE	(Ncm)	85
ROTOR INERTIA	(Kg $\cdot$ m <sup>2</sup> x 10 <sup>-7</sup> )	210
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	50000
BACK E.M.F.	(V/Krpm)	20
MASS	(Kg)	0.65
LEADS CODE	IV	

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



(\*)Bipolar series connection.

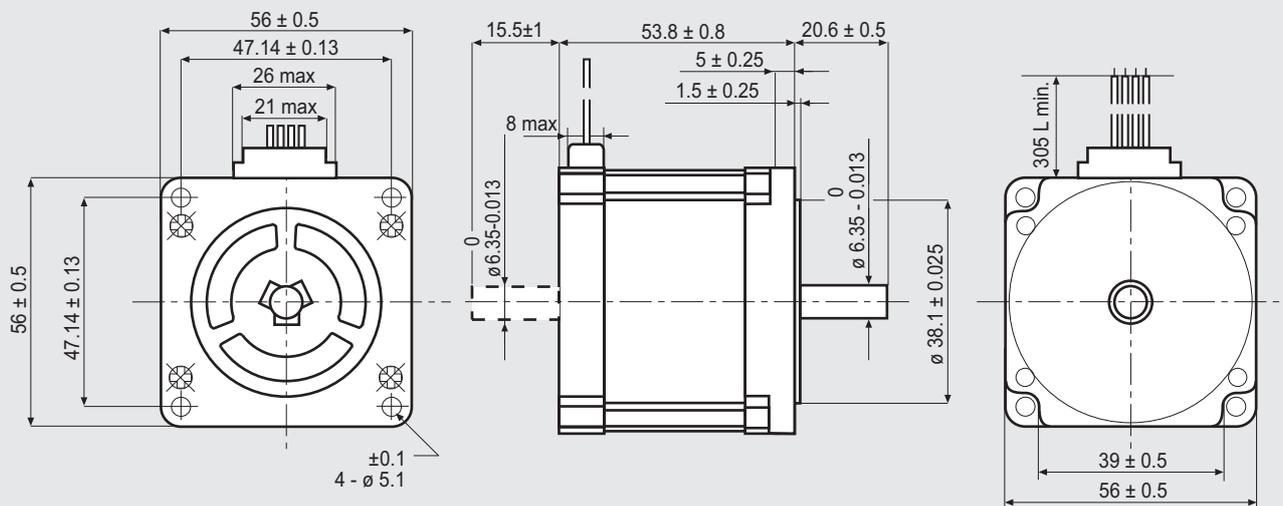


Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7123-1749

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

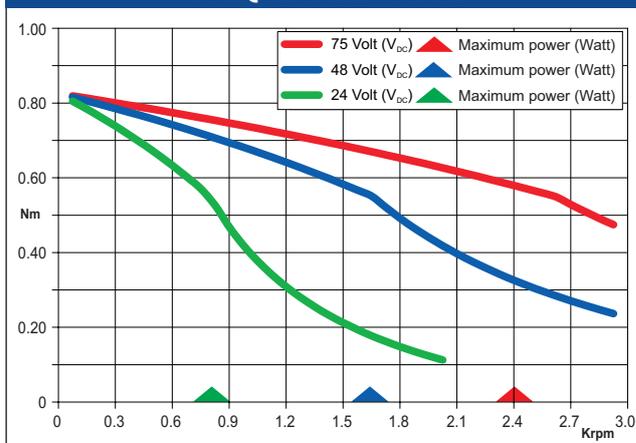


## FEATURES

MODEL	103-H7123-1749 (103-H7123-1711)	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	4.0
UNIPOLAR CURRENT	(Amp)	
RESISTANCE	(Ohm)	0.41
INDUCTANCE	(mH)	1.6
BIPOLAR HOLDING TORQUE	(Ncm)	110
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	( $\text{Kgm}^2 \times 10^{-7}$ )	210
THEORETICAL ACCELERATION	( $\text{rad} \times \text{sec.}^{-2}$ )	50000
BACK E.M.F.	(V/Krpm)	20
MASS	(Kg)	0.65
LEADS CODE	V	

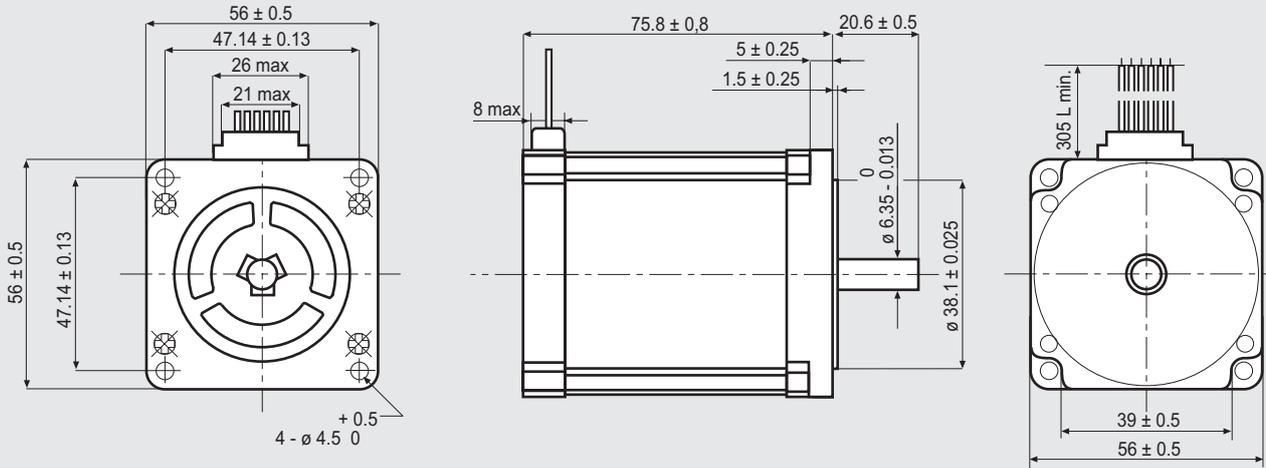
Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

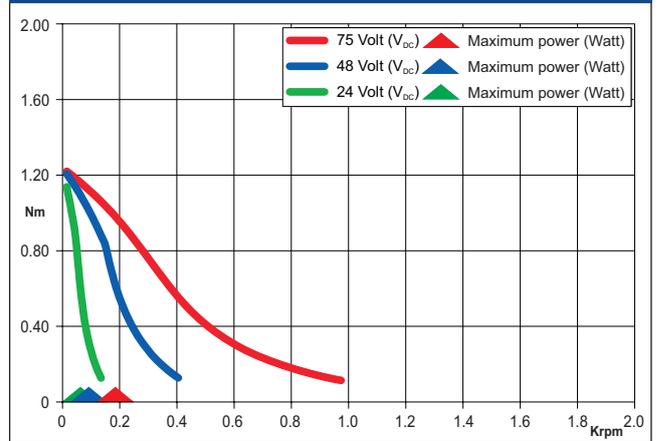
## Dimensions (Unit:mm)



## FEATURES

MODEL	103-H7126-0140
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	0.75 <sup>(*)</sup>
UNIPOLAR CURRENT (Amp)	1.0
RESISTANCE (Ohm)	8.6
INDUCTANCE (mH)	19
BIPOLAR HOLDING TORQUE (Ncm)	165
UNIPOLAR HOLDING TORQUE (Ncm)	130
ROTOR INERTIA ( $\text{Kgm}^2 \times 10^{-7}$ )	360
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec}^{-2}$ )	45800
BACK E.M.F. (V/Krpm)	92
MASS (Kg)	1
LEADS CODE	IV

## TORQUE/SPEED CURVE



(\*)Bipolar series connection.

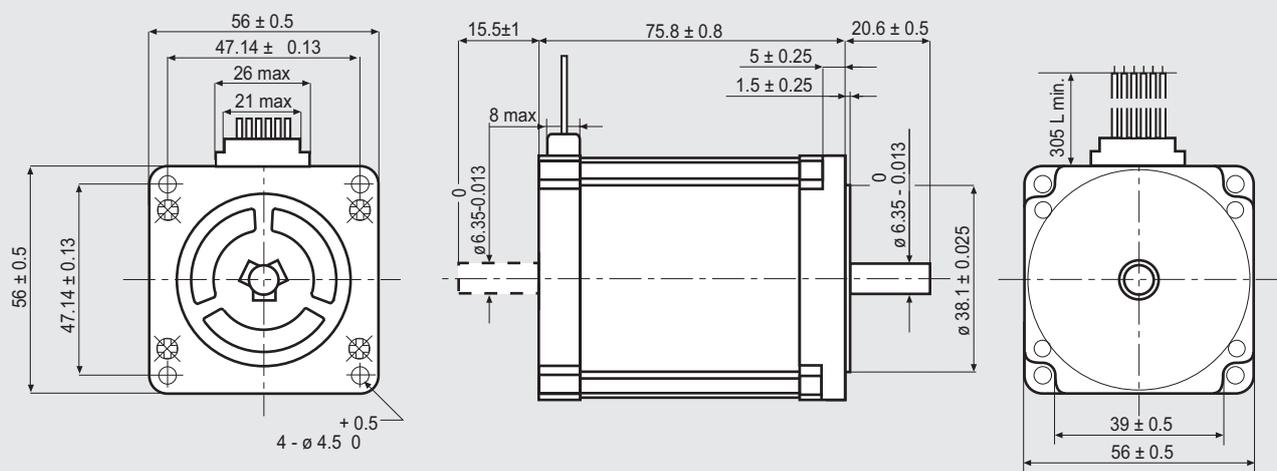


Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7126-0740

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

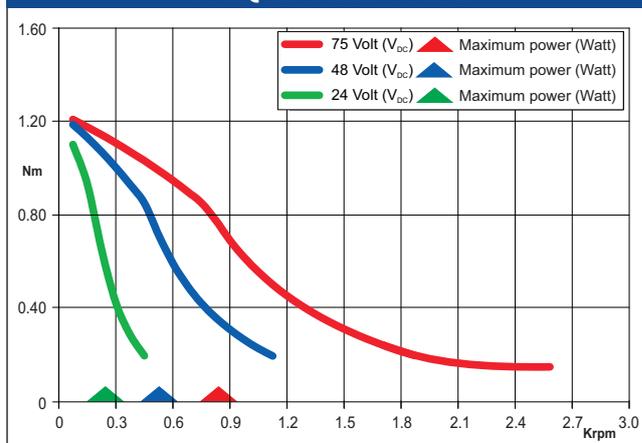


## FEATURES

MODEL	103-H7126-0740 (103-H7126-0710)	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR CURRENT	(Amp)	$2.2^{(*)}$
UNIPOLAR CURRENT	(Amp)	3
RESISTANCE	(Ohm)	0.9
INDUCTANCE	(mH)	2.2
BIPOLAR HOLDING TORQUE	(Ncm)	165
UNIPOLAR HOLDING TORQUE	(Ncm)	130
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	360
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	45800
BACK E.M.F.	(V/Krpm)	31
MASS	(Kg)	1
LEADS CODE	IV	

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



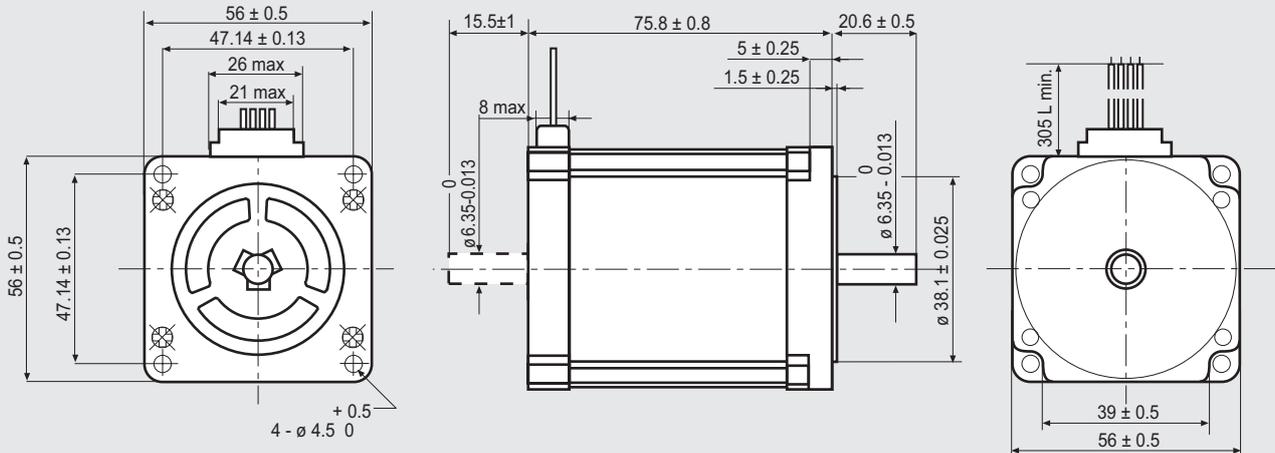
(\*)Bipolar series connection.



Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7126-1740

## Dimensions (Unit:mm)

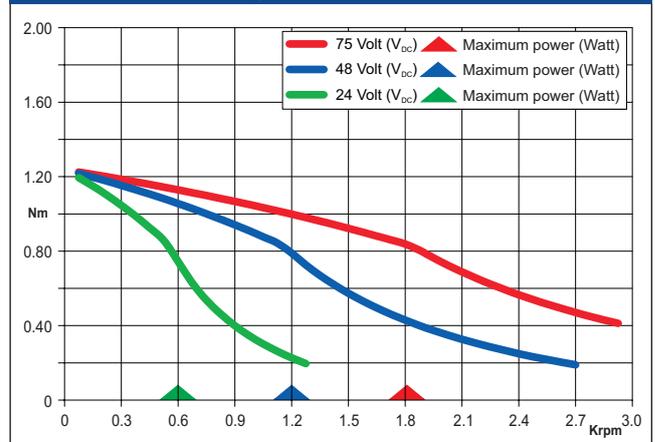


## FEATURES

MODEL	103-H7126-1740 (103-H7126-1710)
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	4.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.48
INDUCTANCE (mH)	2.2
BIPOLAR HOLDING TORQUE (Ncm)	165
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ( $\text{Kgm}^2 \times 10^{-7}$ )	360
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec}^{-2}$ )	45800
BACK E.M.F. (V/Krpm)	31
MASS (Kg)	1
LEADS CODE	V

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE

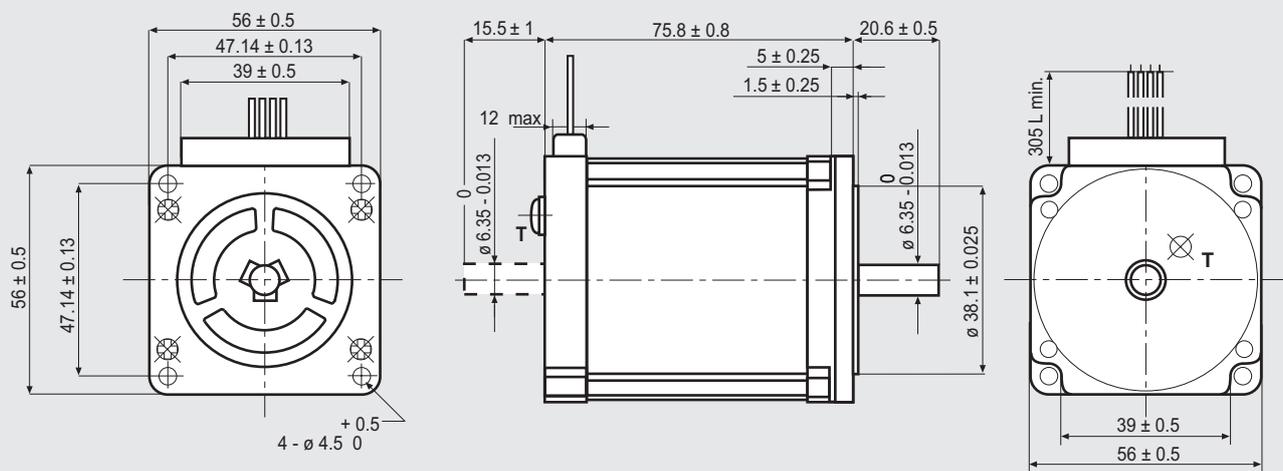


Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7126-6640

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)



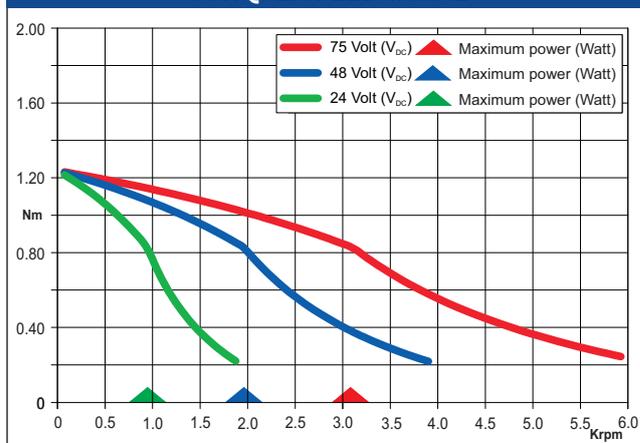
T IS THE EARTH TERMINAL

## FEATURES

MODEL	103-H7126-6640 (103-H7126-6610)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	5.6
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.3
INDUCTANCE (mH)	0.85
BIPOLAR HOLDING TORQUE (Ncm)	165
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm <sup>2</sup> × 10 <sup>-7</sup> )	360
THEORETICAL ACCELERATION (rad × sec. <sup>-2</sup> )	45800
BACK E.M.F. (V/Krpm)	23
MASS (Kg)	1
PROTECTION DEGREE	IP43
LEADS CODE	V

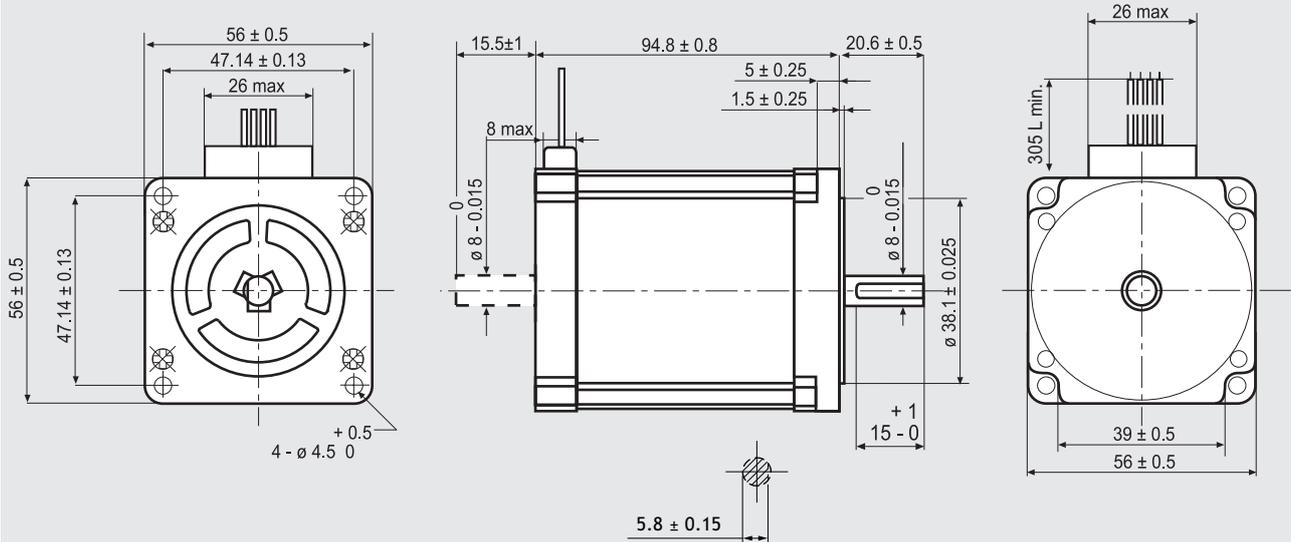
Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

## Dimensions (Unit:mm)

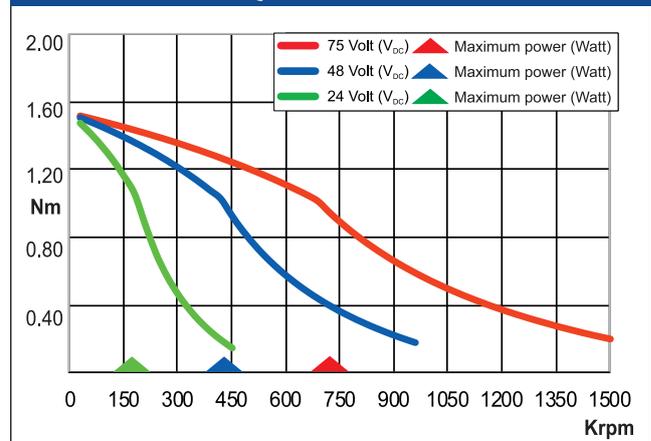


## FEATURES

MODEL	103-H7128-5740 (103-H7128-5710)
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (Amp)	2
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	2.3
INDUCTANCE (mH)	10.4
BIPOLAR HOLDING TORQUE (Ncm)	200
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA ( $\text{Kgm}^2 \times 10^{-7}$ )	490
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec}^{-2}$ )	40816
BACK E.M.F. (V/Krpm)	53.3
MASS (Kg)	1.3
LEADS CODE	V

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE

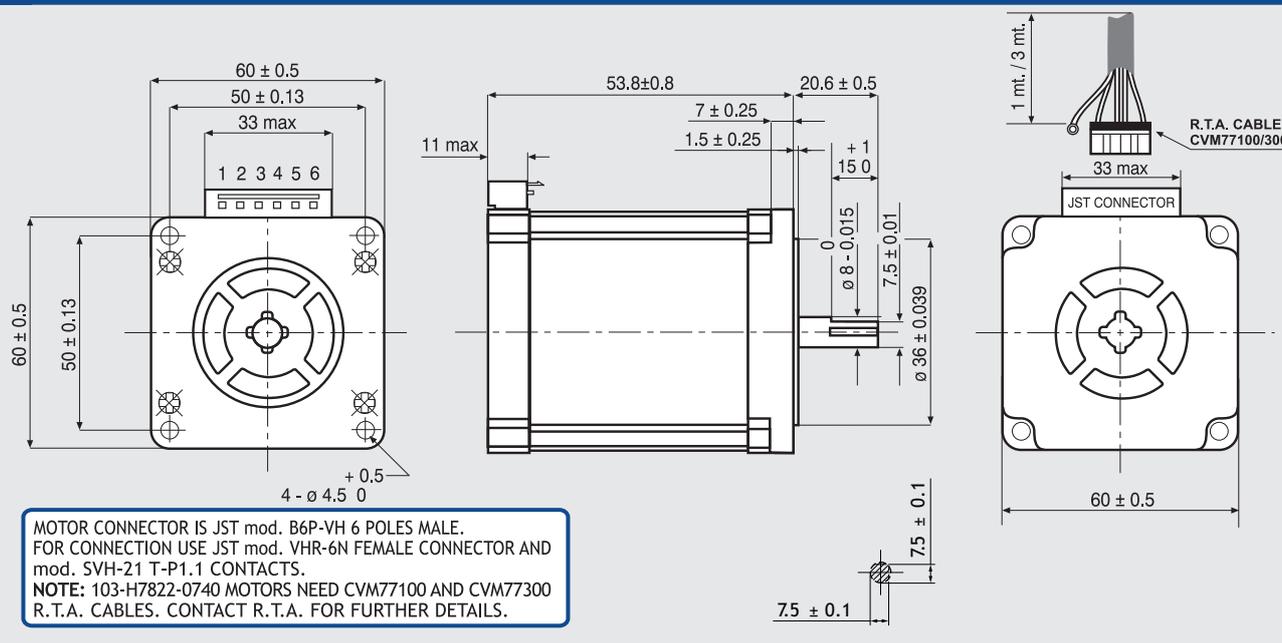


Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7822-0740

SANYO DENKI  
SANMOTION

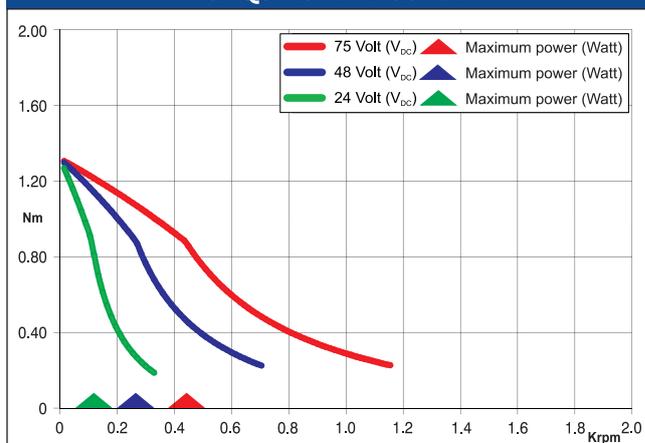
## Dimensions (Unit:mm)



## FEATURES

MODEL	103-H7822-0740	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	2.2 <sup>(*)</sup>
UNIPOLAR CURRENT	(Amp)	3.0
RESISTANCE	(Ohm)	0.8
INDUCTANCE	(mH)	1.38
BIPOLAR HOLDING TORQUE	(Ncm)	170
UNIPOLAR HOLDING TORQUE	(Ncm)	125
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	400
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	42500
BACK E.M.F.	(V/Krpm)	77
MASS	(Kg)	0.8
LEADS CODE	IV	

## TORQUE/SPEED CURVE

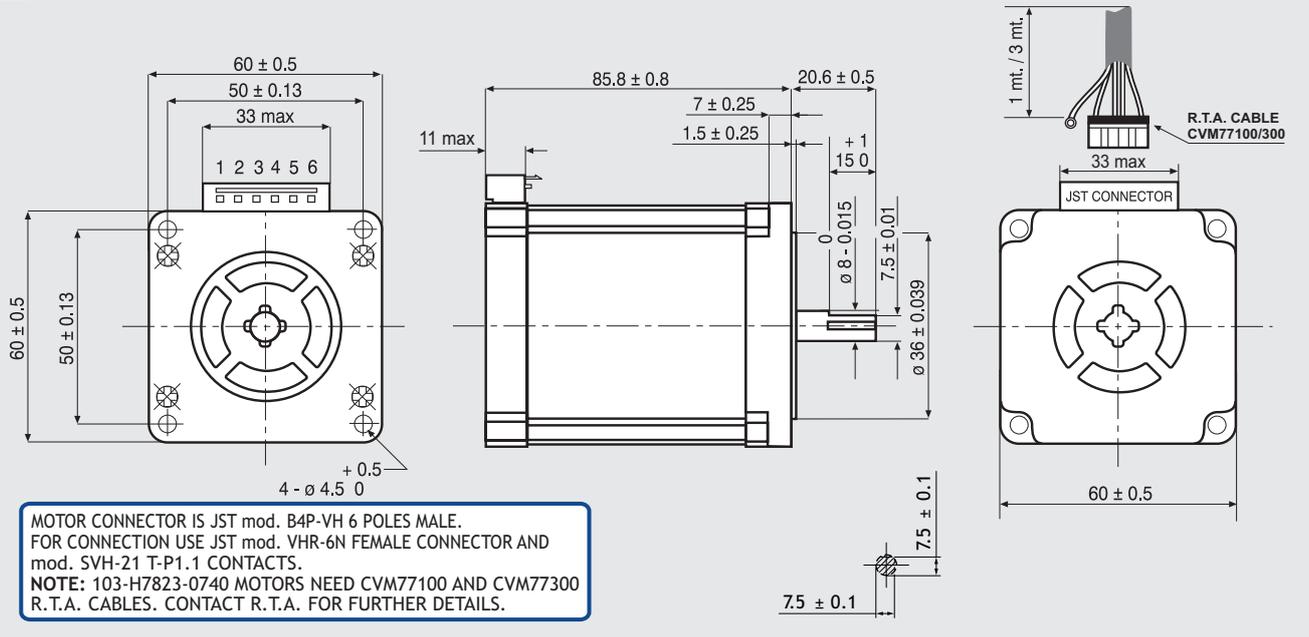


(\*)Bipolar series connection.



Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, FLEX-DRIVE

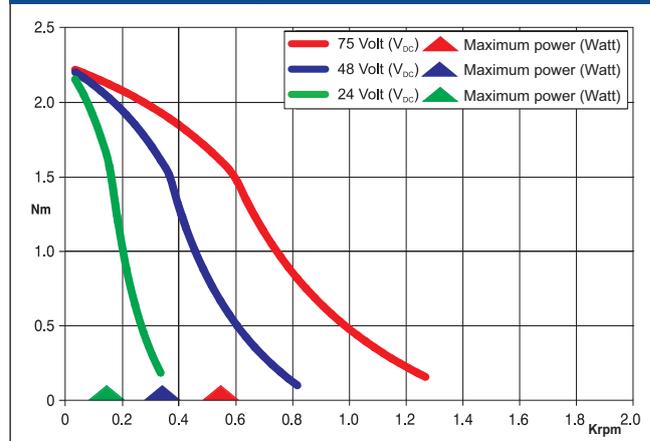
## Dimensions (Unit:mm)



## FEATURES

MODEL	103-H7823-0740	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	2.2 <sup>(*)</sup>
UNIPOLAR CURRENT	(Amp)	3.0
RESISTANCE	(Ohm)	1.25
INDUCTANCE	(mH)	2.4
BIPOLAR HOLDING TORQUE	(Ncm)	300
UNIPOLAR HOLDING TORQUE	(Ncm)	240
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	840
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	35700
BACK E.M.F.	(V/Krpm)	55
MASS	(Kg)	1.4
LEADS CODE	IV	

## TORQUE/SPEED CURVE

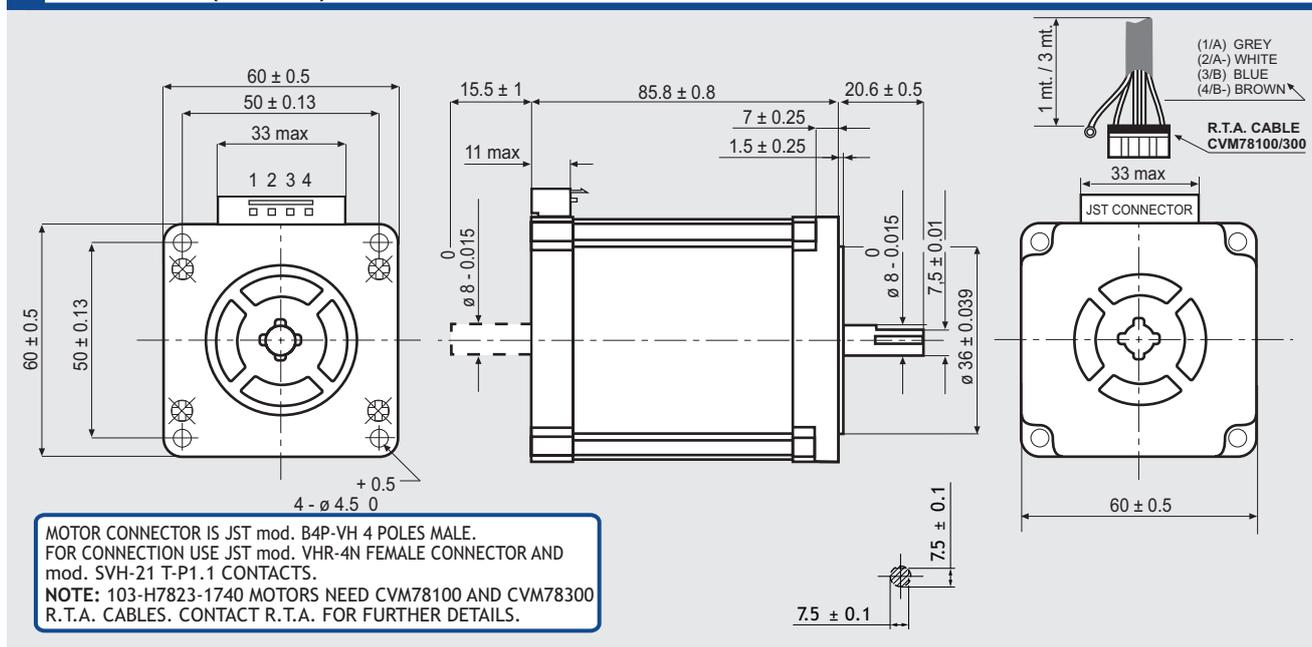


Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, PLUS, FLEX-DRIVE

# 103-H7823-1740

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

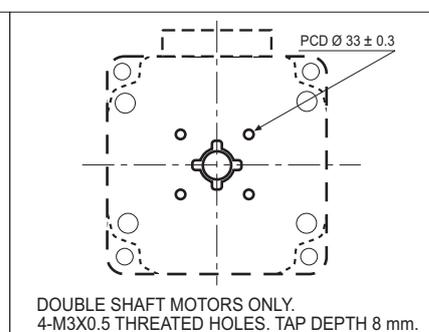
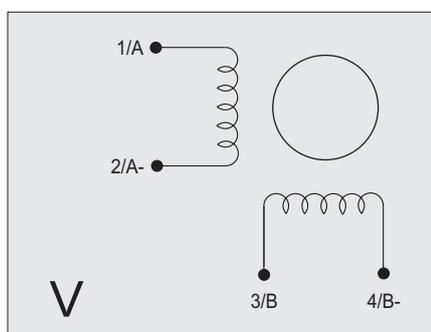
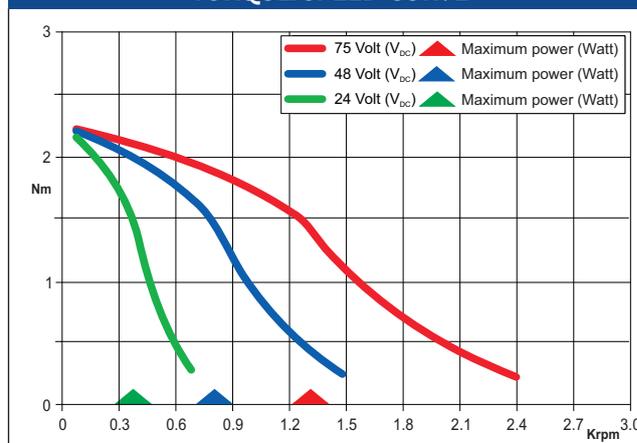


## FEATURES

MODEL	103-H7823-1740 (103-H7823-1714)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	4.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.65
INDUCTANCE (mH)	2.4
BIPOLAR HOLDING TORQUE (Ncm)	300
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kg <sup>m</sup> 2 x 10 <sup>-7</sup> )	840
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	35700
BACK E.M.F. (V/Krpm)	75
MASS (Kg)	1.4
LEADS CODE	V

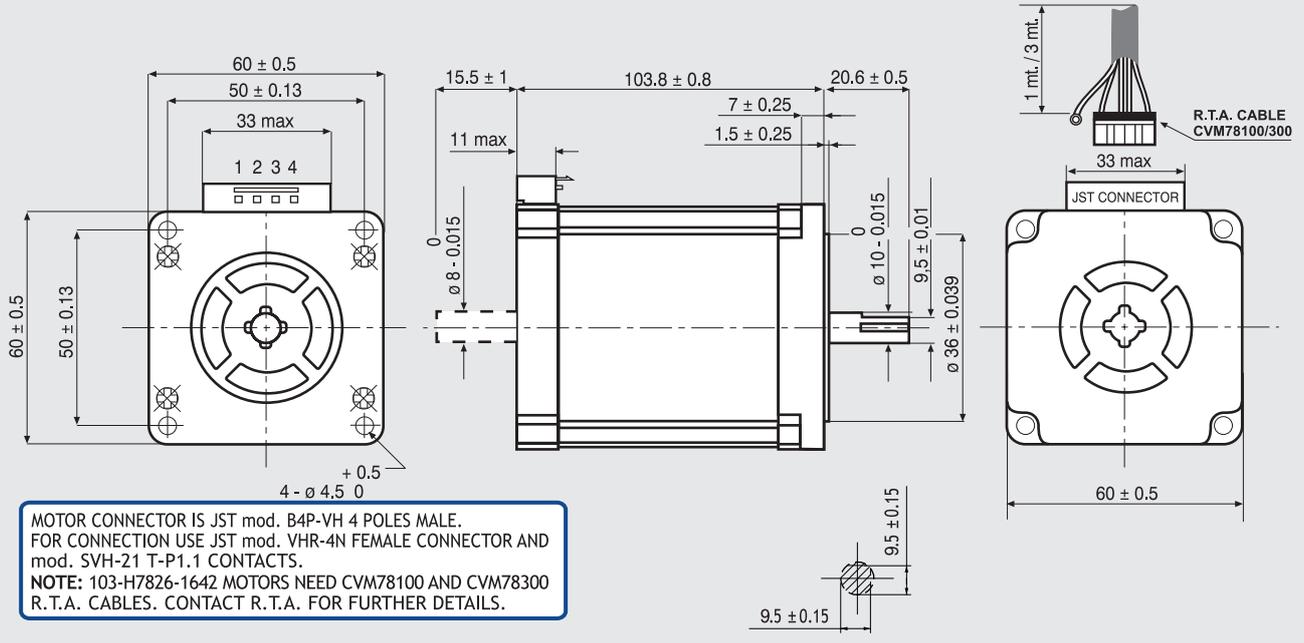
Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, PLUS, FLEX-DRIVE

## Dimensions (Unit:mm)

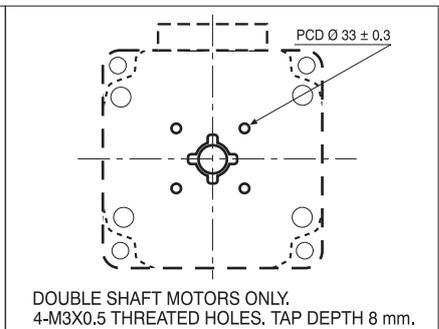
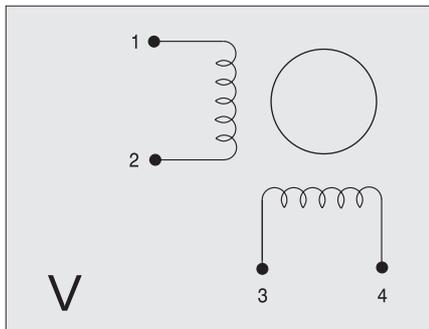
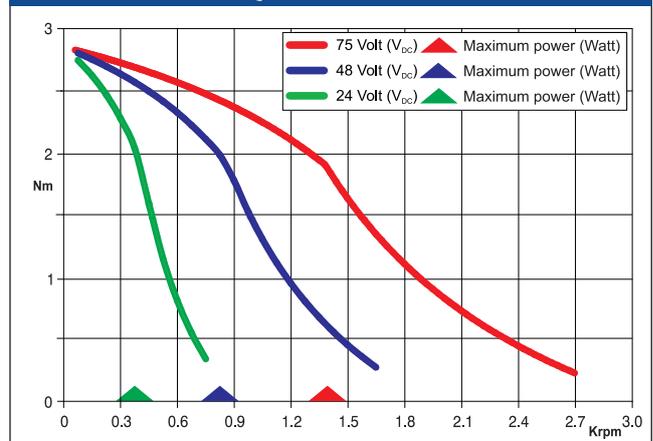


## FEATURES

MODEL	103-H7826-1642 (103-H7826-1612)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	6.0
UNIPOLAR CURRENT (Amp)	
RESISTANCE (Ohm)	0.43
INDUCTANCE (mH)	1.45
BIPOLAR HOLDING TORQUE (Ncm)	380
UNIPOLAR HOLDING TORQUE (Ncm)	
ROTOR INERTIA (Kgm <sup>2</sup> × 10 <sup>-7</sup> )	1080
THEORETICAL ACCELERATION (rad × sec. <sup>-2</sup> )	35200
BACK E.M.F. (V/Krpm)	70
MASS (Kg)	1.65
LEADS CODE	V

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE

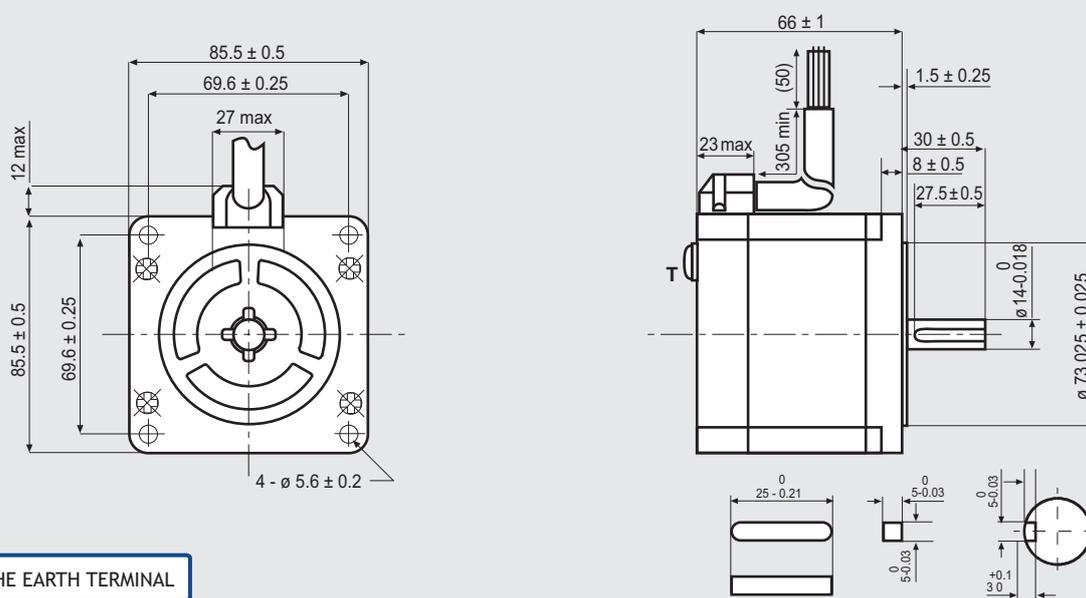


Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

# SM 2861-5055

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

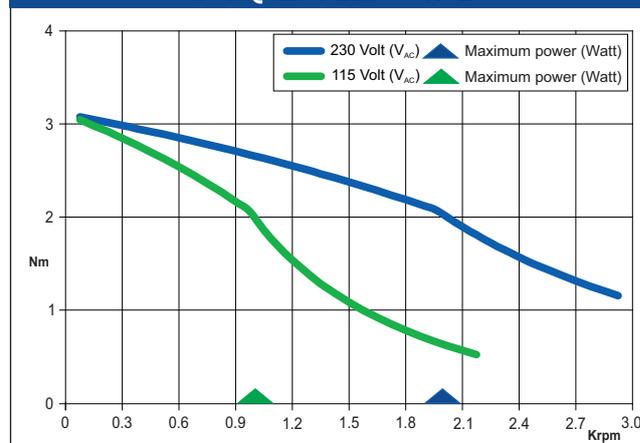


## FEATURES

MODEL	SM 2861-5055 (SM 2861-5025)	
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	2.2
INDUCTANCE	(mH)	15
BIPOLAR HOLDING TORQUE	(Ncm)	360
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	1480
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	24300
BACK E.M.F.	(V/Krpm)	180
MASS	(Kg)	1.7
INTERNATIONAL STANDARDS		UL, CSA
INSULATION VOLTAGE	(V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE		IP43-F
LEADS CODE		V

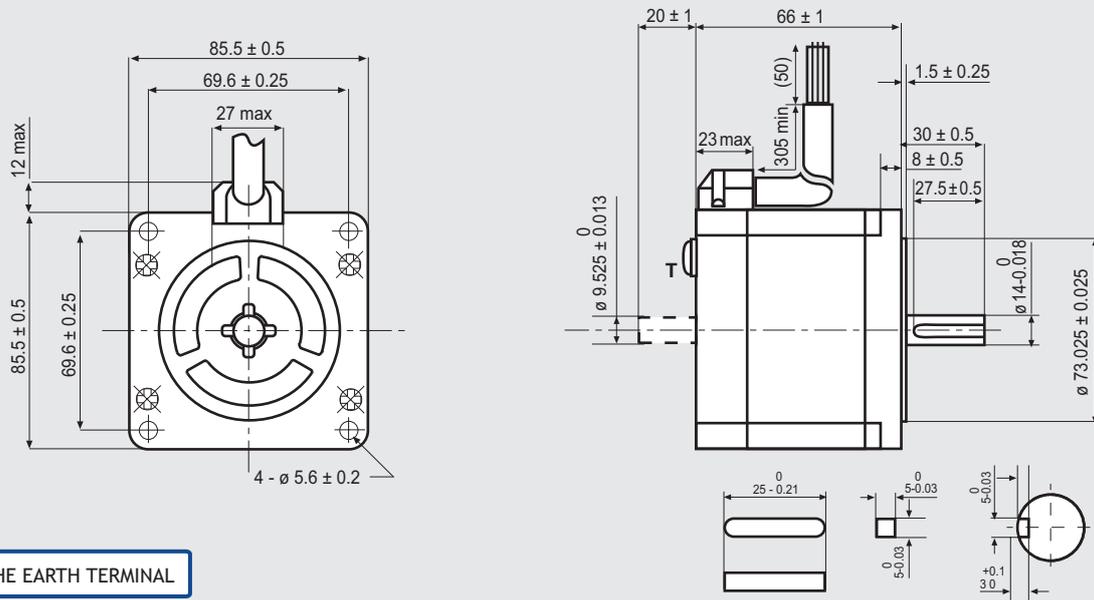
Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



Suggested R.T.A. drive model: X-PLUS L2

## Dimensions (Unit:mm)



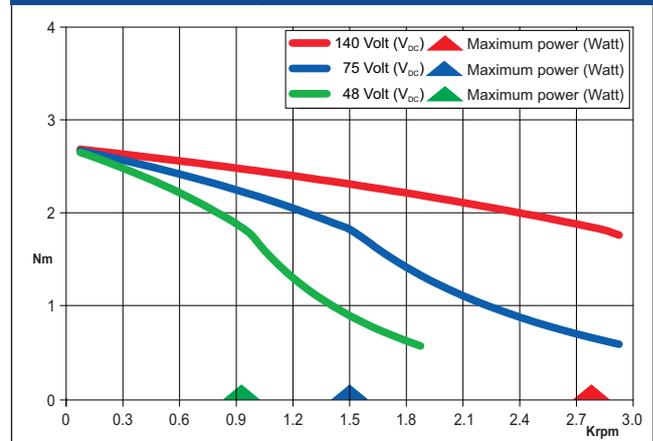
T IS THE EARTH TERMINAL

## FEATURES

MODEL	SM 2861-5255 (SM 2861-5225)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	6.0
RESISTANCE (Ohm)	0.29
INDUCTANCE (mH)	1.7
BIPOLAR HOLDING TORQUE (Ncm)	360
ROTOR INERTIA (Kg m <sup>2</sup> x 10 <sup>-7</sup> )	1480
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	24300
BACK E.M.F. (V/Krpm)	60
MASS (Kg)	1.7
INTERNATIONAL STANDARDS	UL, CSA
INSULATION VOLTAGE (V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE	IP43-F
LEADS CODE	V

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE

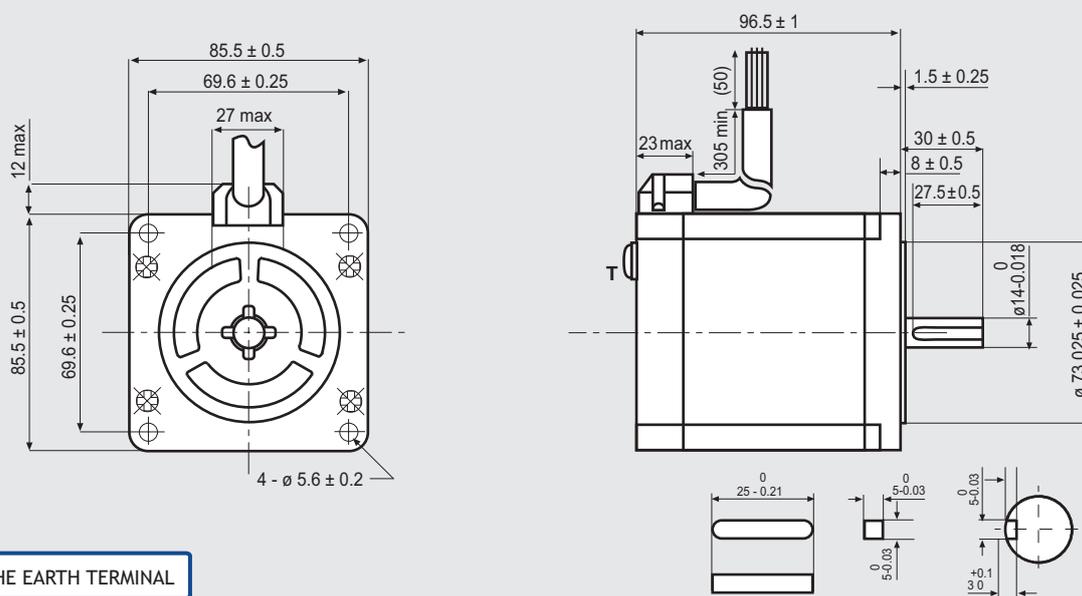


Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

# SM 2862-5055

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

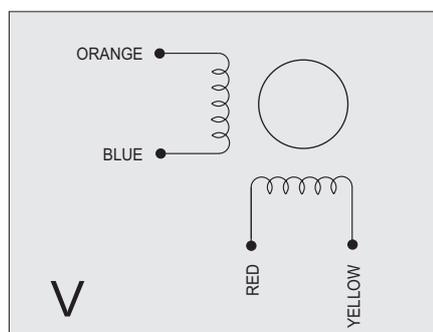
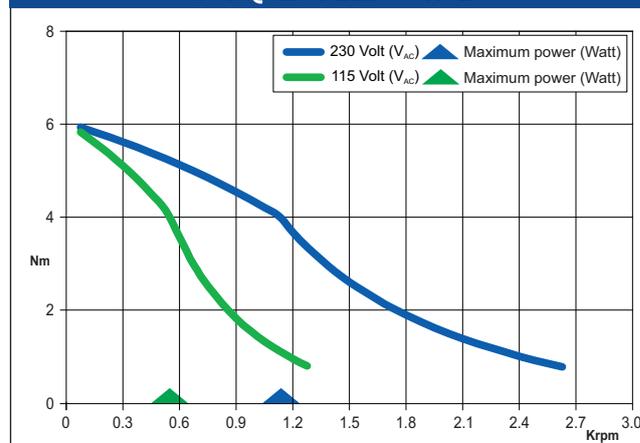


T IS THE EARTH TERMINAL

## FEATURES

MODEL	SM 2862-5055	
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	3.2
INDUCTANCE	(mH)	25
BIPOLAR HOLDING TORQUE	(Ncm)	700
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	3000
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	23300
BACK E.M.F.	(V/Krpm)	350
MASS	(Kg)	2.9
INTERNATIONAL STANDARDS		UL, CSA
INSULATION VOLTAGE	(V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE		IP43-F
LEADS CODE		V

## TORQUE/SPEED CURVE



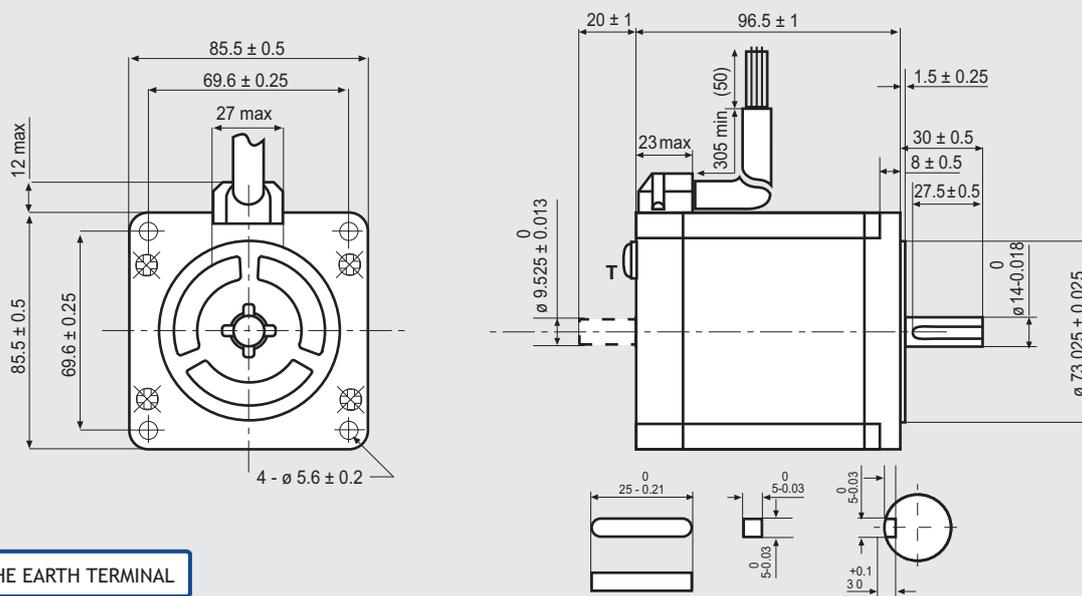
Suggested R.T.A. drive series: 230 Vac X-PLUS



# SM 2862-5255

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

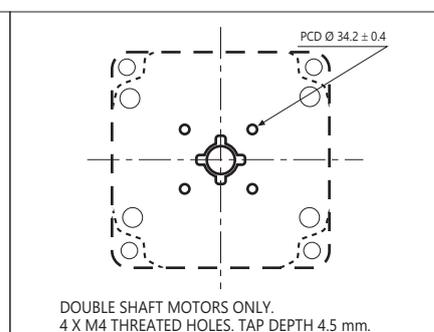
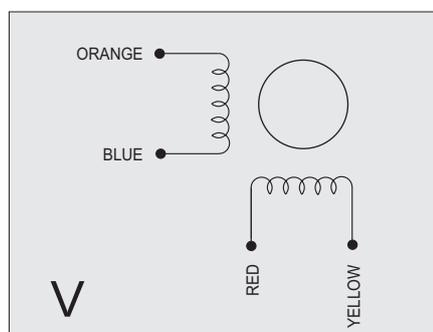
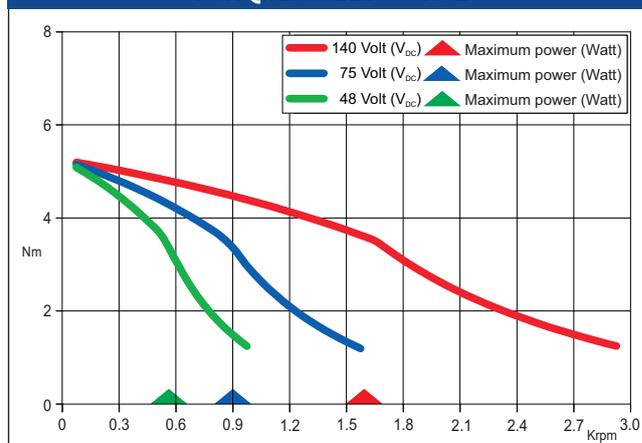


## FEATURES

MODEL	SM 2862-5255 (SM 2862-5225)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	6.0
RESISTANCE (Ohm)	0.36
INDUCTANCE (mH)	2.8
BIPOLAR HOLDING TORQUE (Ncm)	700
ROTOR INERTIA (Kgm <sup>2</sup> x 10 <sup>-7</sup> )	3000
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	23300
BACK E.M.F. (V/Krpm)	120
MASS (Kg)	2.9
INTERNATIONAL STANDARDS	UL, CSA
INSULATION VOLTAGE (V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE	IP43-F
LEADS CODE	V

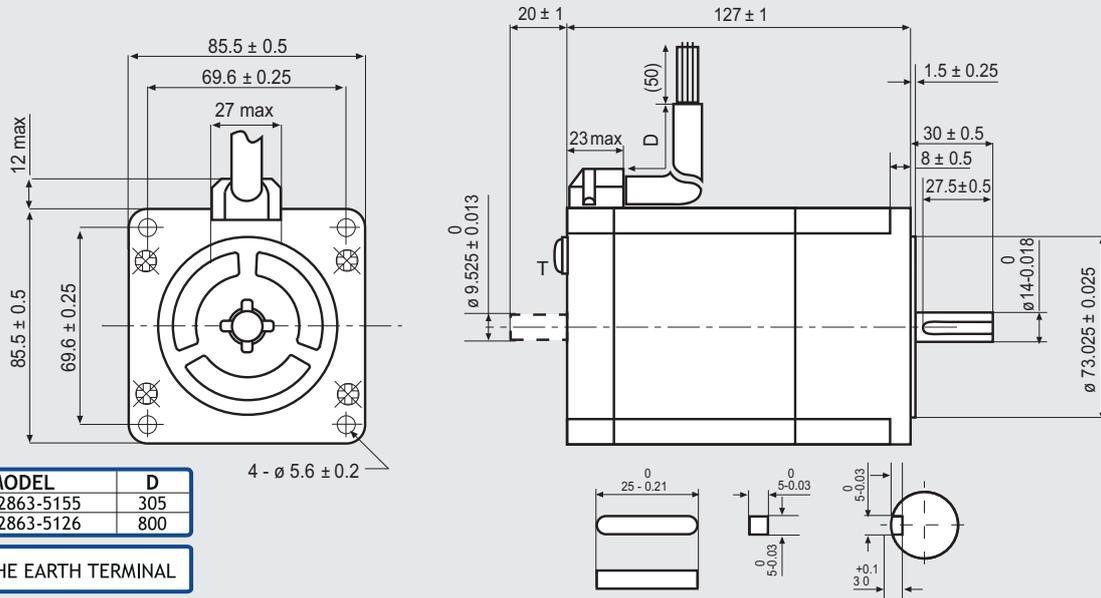
Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

## Dimensions (Unit:mm)

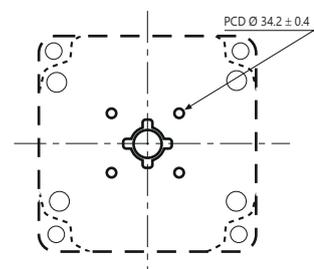
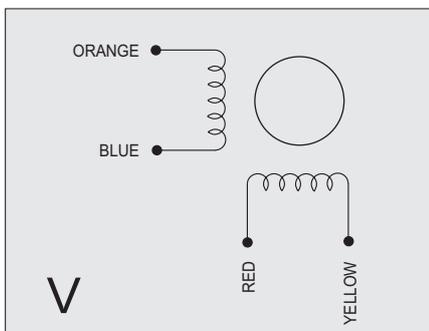
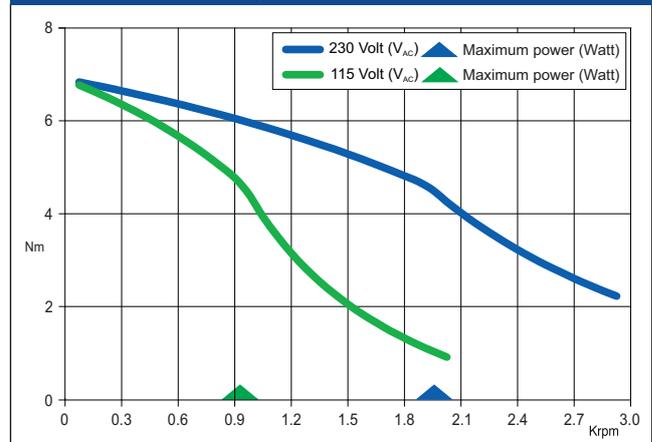


## FEATURES

MODEL	SM 2863-5155 (SM 2863-5126)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	4.0
RESISTANCE (Ohm)	1.0
INDUCTANCE (mH)	7.9
BIPOLAR HOLDING TORQUE (Ncm)	920
ROTOR INERTIA (Kgm <sup>2</sup> × 10 <sup>-7</sup> )	4500
THEORETICAL ACCELERATION (rad × sec. <sup>-2</sup> )	20500
BACK E.M.F. (V/Krpm)	241
MASS (Kg)	4
INTERNATIONAL STANDARDS	UL, CSA
INSULATION VOLTAGE (V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE	IP43-F
LEADS CODE	V

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



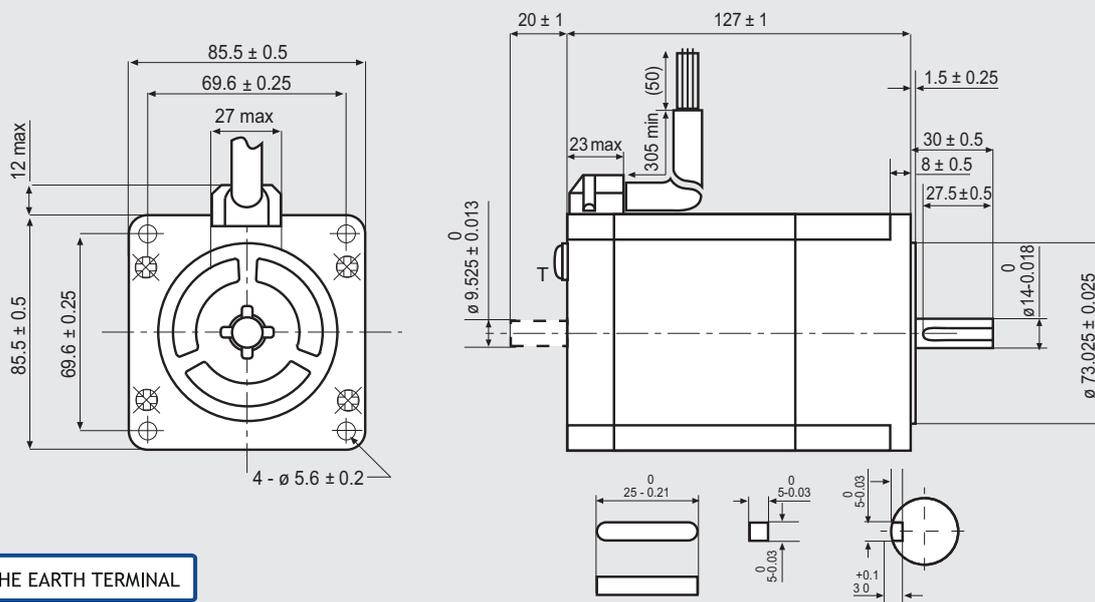
DOUBLE SHAFT MOTORS ONLY.  
4 X M4 THREADED HOLES. TAP DEPTH 4.5 mm.

Suggested R.T.A. drive series: 230 Vac X-PLUS

# SM 2863-5255

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

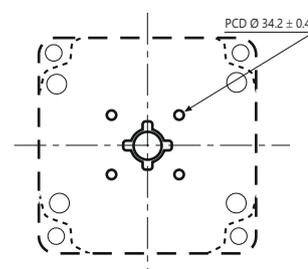
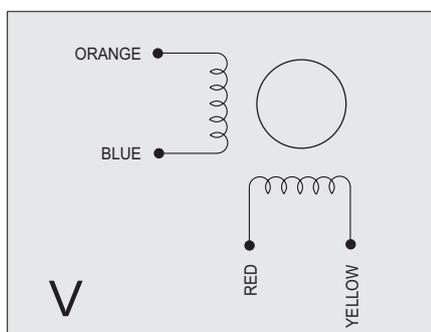
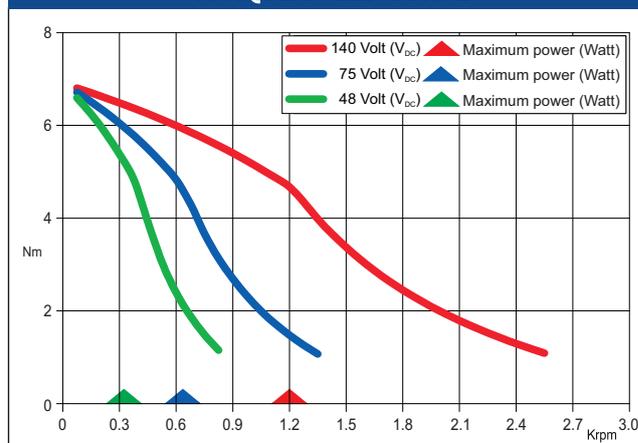


## FEATURES

MODEL	SM 2863-5255 (SM 2863-5225)
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR CURRENT (Amp)	6.0
RESISTANCE (Ohm)	0.46
INDUCTANCE (mH)	3.8
BIPOLAR HOLDING TORQUE (Ncm)	920
ROTOR INERTIA (Kgm <sup>2</sup> x 10 <sup>-7</sup> )	4500
THEORETICAL ACCELERATION (rad x sec. <sup>-2</sup> )	20500
BACK E.M.F. (V/Krpm)	161
MASS (Kg)	4
INTERNATIONAL STANDARDS	UL, CSA
INSULATION VOLTAGE (V)	250 V <sub>AC</sub> (350 V <sub>DC</sub> )
PROTECTION DEGREE	IP43-F
LEADS CODE	V

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE

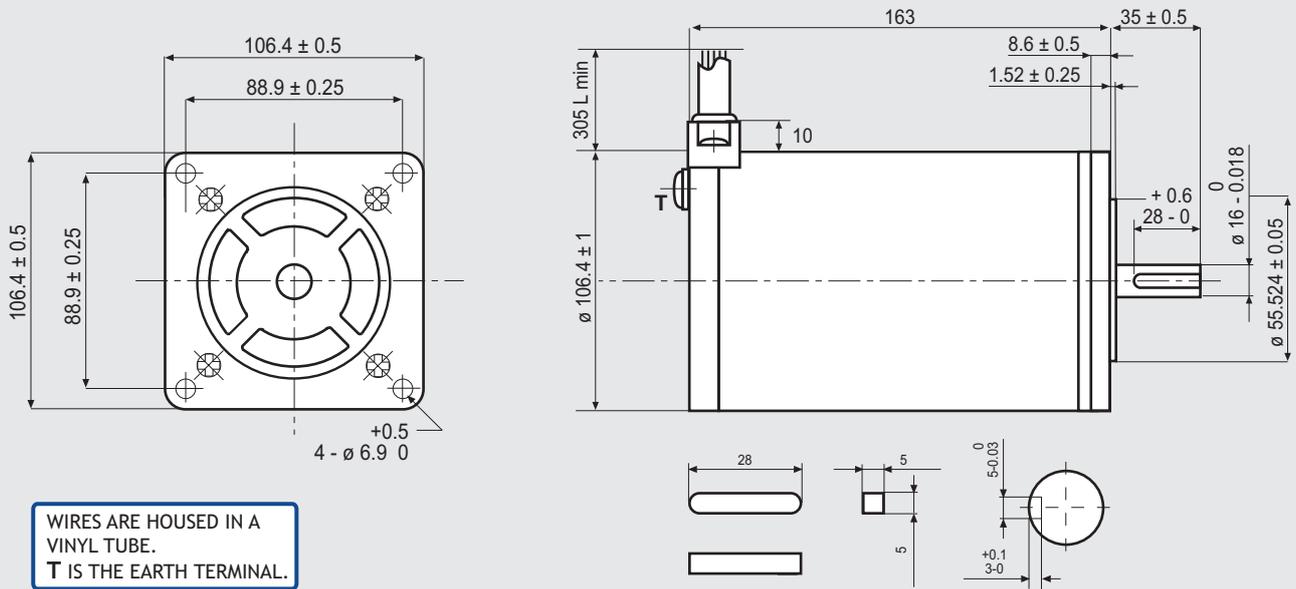


DOUBLE SHAFT MOTORS ONLY.  
4 X M4 THREATED HOLES. TAP DEPTH 4.5 mm.

Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

# 103-H89222-6341

## Dimensions (Unit:mm)

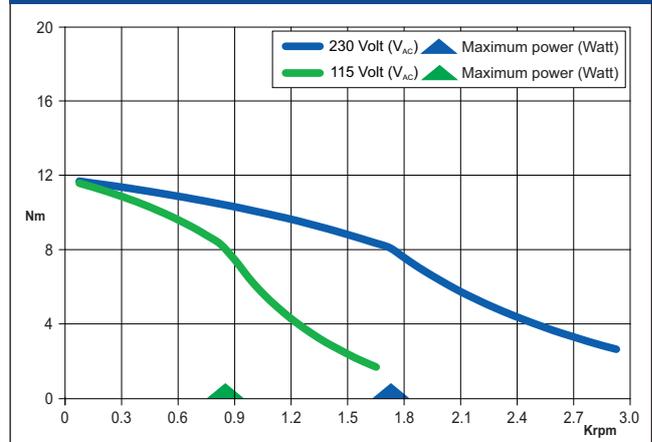


## FEATURES

MODEL	103-H89222-6341 (103-H89222-6311)	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	6.0
UNIPOLAR CURRENT	(Amp)	
RESISTANCE	(Ohm)	0.45
INDUCTANCE	(mH)	5.4
BIPOLAR HOLDING TORQUE	(Ncm)	1620
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	(Kgm <sup>2</sup> x 10 <sup>-7</sup> )	14650
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	11100
BACK E.M.F.	(V/Krpm)	270
MASS	(Kg)	7
PROTECTION DEGREE	IP43	
LEADS CODE	V	

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE

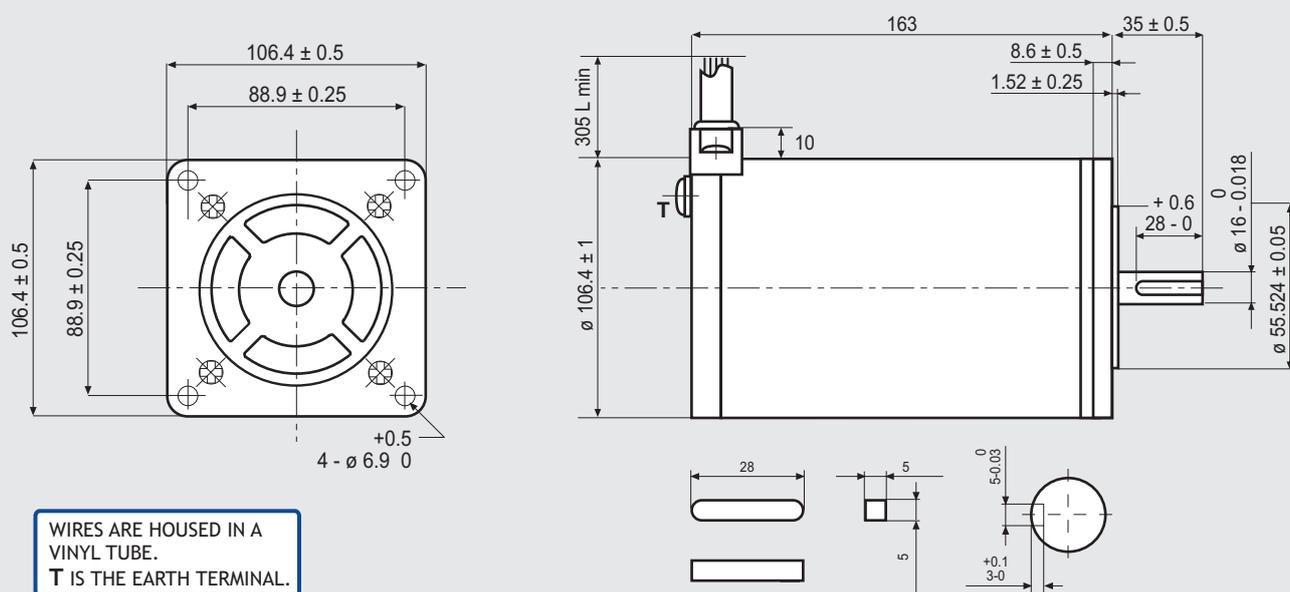


Suggested R.T.A. drive model: X-MIND B6

# 103-H89222-6541

SANYO DENKI  
SANMOTION

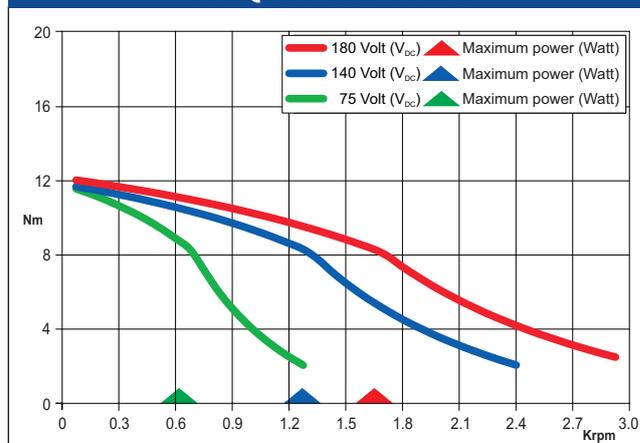
## Dimensions (Unit:mm)



## FEATURES

MODEL	103-H89222-6541	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	10
UNIPOLAR CURRENT	(Amp)	
RESISTANCE	(Ohm)	0.16
INDUCTANCE	(mH)	1.9
BIPOLAR HOLDING TORQUE	(Ncm)	1620
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	(Kg <sup>m</sup> 2 x 10 <sup>-7</sup> )	14650
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	11100
BACK E.M.F.	(V/Krpm)	162
MASS	(Kg)	7
PROTECTION DEGREE	IP43	
LEADS CODE	V	

## TORQUE/SPEED CURVE

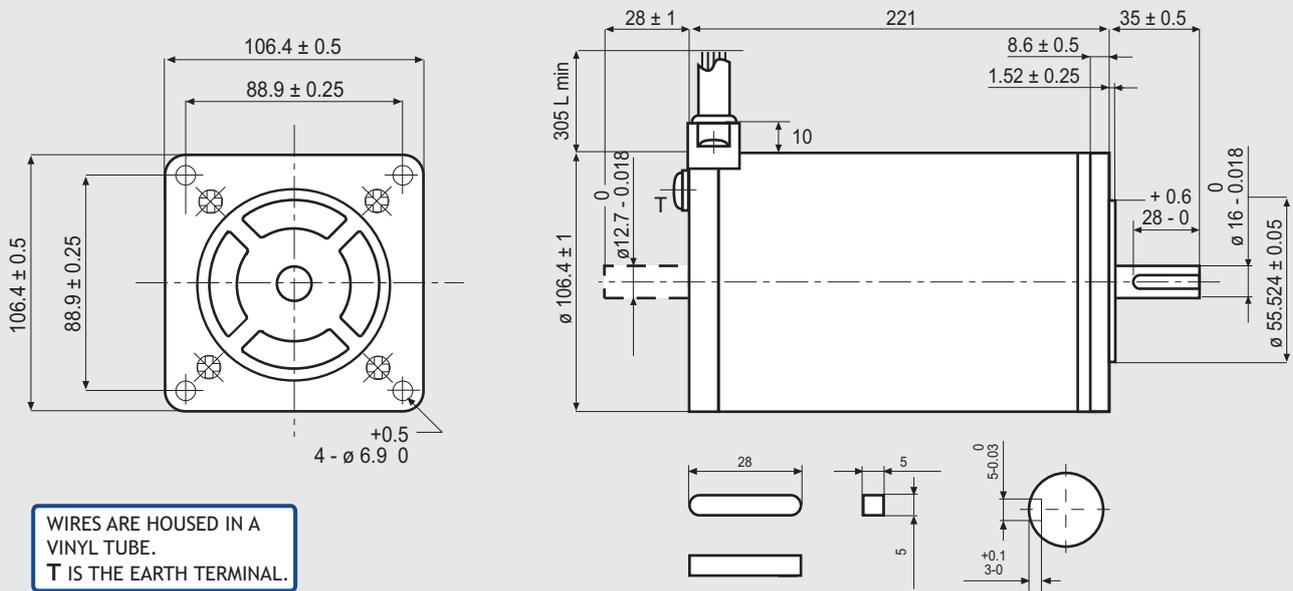


Suggested R.T.A. drive series: PLUS

# 103-H89223-6341

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

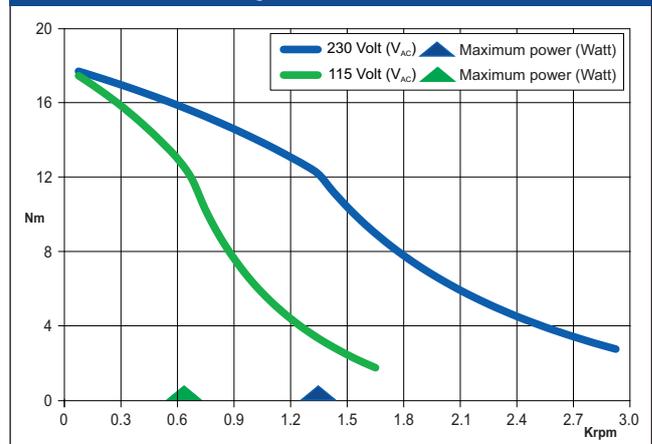


## FEATURES

MODEL	103-H89223-6341 (103-H89223-6311)	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	6.0
UNIPOLAR CURRENT	(Amp)	
RESISTANCE	(Ohm)	0.63
INDUCTANCE	(mH)	8.0
BIPOLAR HOLDING TORQUE	(Ncm)	2460
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	22000
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	11100
BACK E.M.F.	(V/Krpm)	410
MASS	(Kg)	10
PROTECTION DEGREE	IP43	
LEADS CODE	V	

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE

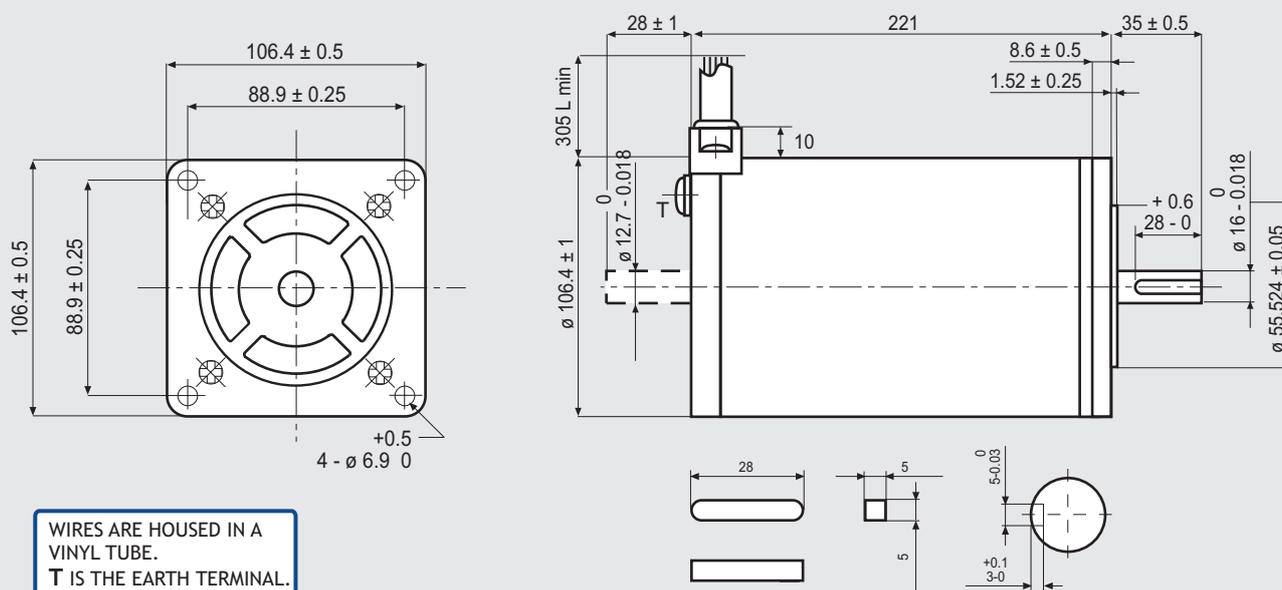


Suggested R.T.A. drive model: X-MIND B6

# 103-H89223-6641

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

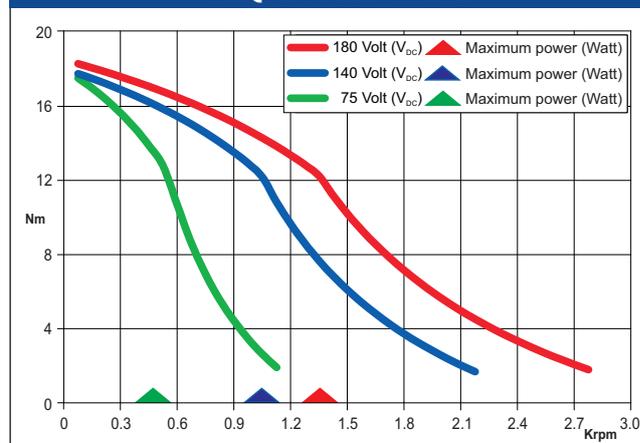


## FEATURES

MODEL	103-H89223-6641 (103-H89223-6611)	
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	12.0
UNIPOLAR CURRENT	(Amp)	
RESISTANCE	(Ohm)	0.16
INDUCTANCE	(mH)	2.0
BIPOLAR HOLDING TORQUE	(Ncm)	2460
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	22000
THEORETICAL ACCELERATION	(rad x sec. <sup>-2</sup> )	11100
BACK E.M.F.	(V/Krpm)	205
MASS	(Kg)	10
PROTECTION DEGREE		IP43
LEADS CODE		V

Codes between brackets refer to double shaft models.

## TORQUE/SPEED CURVE



Suggested R.T.A. series: PLUS



## NOT PREFERRED MODELS

	HOLDING TORQUE (Ncm)	FLANGE SIZE (mm)	LENGTH (mm)	BIPOLAR CURRENT* (A)
103-H8221-6241	300	85.8	62.0	6.0
103-H8221-6211	300	85.8	62.0	6.0
103-H8222-6340	560	85.8	92.2	6.0
103-H8222-6310	560	85.8	92.2	6.0
103-H8223-6540	790	85.8	125.9	9.0
103-H8223-6510	790	85.8	125.9	9.0

"Not preferred models" are models which have been replaced with the latest versions. They are still available in R.T.A.'s stock, however they are not recommended for new applications.

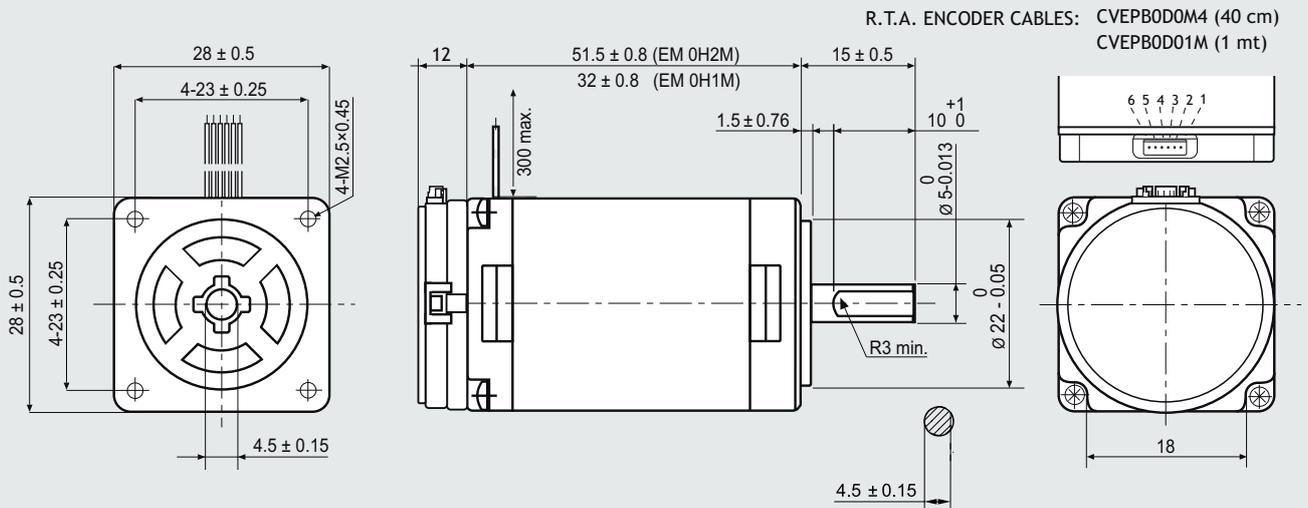
STEPPING MOTORS

## TRADITIONAL STEPPING MOTORS WITH ENCODER



# EM 0HxM-04D0

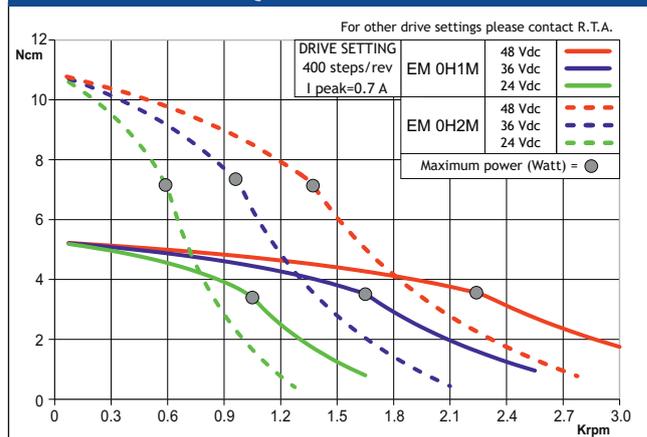
## Dimensions (Unit:mm)



## FEATURES

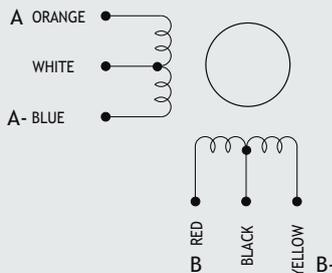
MODEL	EM 0H1M-04D0	EM 0H2M-04D0
SANYO DENK MOTOR CODE	SH 2281-5231	SH 2285-5231
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	$1.8^\circ \pm 0.09^\circ$
BIPOLAR CURRENT (A)	0.7*	0.7*
UNIPOLAR CURRENT (A)	1.0	1.0
RESISTANCE (Ohm)	2.85	4.1
INDUCTANCE (mH)	1.0	1.9
BIPOLAR HOLDING TORQUE (Ncm)	7	14.5
UNIPOLAR HOLDING TORQUE (Ncm)	5.5	11.5
ROTOR INERTIA ( $\text{Kg} \cdot \text{m}^2 \times 10^{-7}$ )	10	22
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec}^{-2}$ )	70000	66000
BACK E.M.F. (V/Krpm)	15	15
MASS (Kg)	0.11	0.2

## TORQUE/SPEED CURVE



## ENCODER FEATURES

POWER SUPPLY VOLTAGE (V)	$5 V_{DC} \pm 5\%$
CURRENT CONSUMPTION (mA)	40
HIGH LEVEL OUTPUT (V)	3.4 (TIP) - 2.4 (MIN) ( $I_{MAX}=20$ mA)
LOW LEVEL OUTPUT (V)	0.2 (TIP) - 0.4 (MAX) ( $I_{MAX}=20$ mA)
OUTPUT SIGNAL	Differential
RESOLUTION	400 cycles per revolution
MAXIMUM FREQUENCY (KHz)	60
INDEX VERSION	No



## ENCODER PIN-OUT

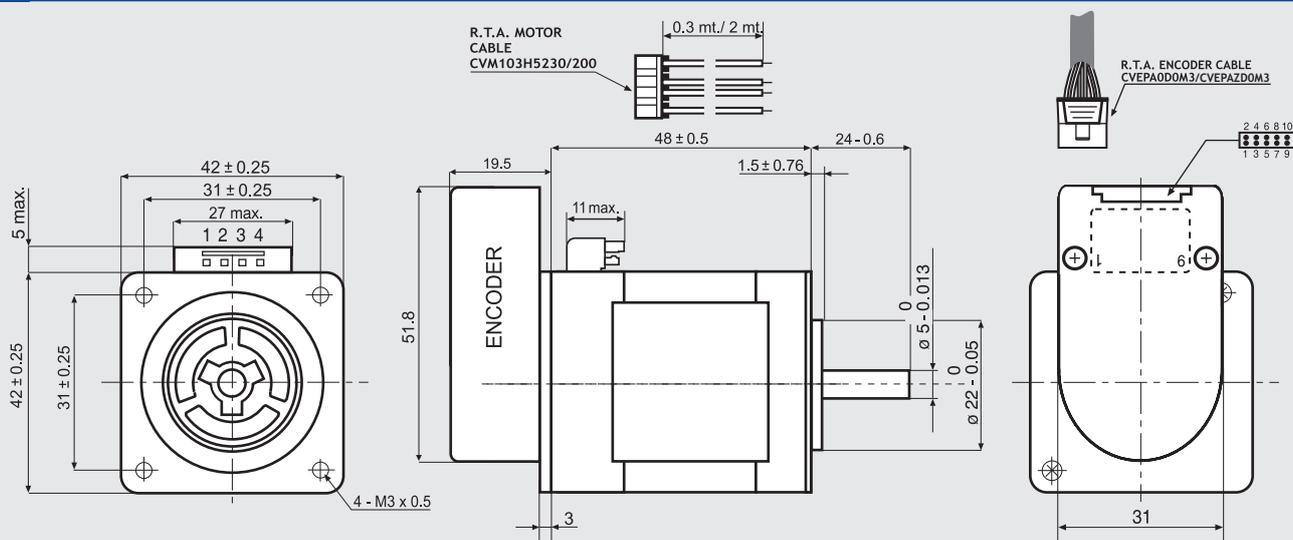
DESCRIPTION	PINS	R.T.A. CABLE LEADS COLOR
GND	1	● BLACK
CHANNEL A+	2	● BLUE
CHANNEL A-	3	● BROWN
+DC (5 V)	4	● RED
CHANNEL B+	5	● GREEN
CHANNEL B-	6	● PURPLE

R.T.A. ENCODER CABLES:  
CVEPB0D0M4 (40 cm) / CVEPB0D01M (1 mt)

Suggested R.T.A. drive series: BSD, CSD, ADW, HGD, FLEX-DRIVE

# EM 1H2H-OXXO

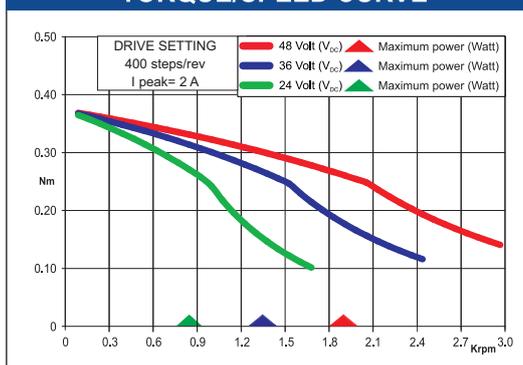
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	EM 1H2H-OXXO	
SANYO DENKI MOTOR CODE	103-H5210-4512	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(A)	2.0
RESISTANCE	(Ohm)	1.25
INDUCTANCE	(mH)	2.4
BIPOLAR HOLDING TORQUE	(Ncm)	51
ROTOR INERTIA	(Kg·m <sup>2</sup> × 10 <sup>-7</sup> )	74
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	69000
BACK E.M.F.	(V/Krpm)	14
MASS	(Kg)	0.35
LEADS CODE	V	

## TORQUE/SPEED CURVE



103-H5210-4512 MOTOR NEEDS CVM103H5230 OR CVM103H52200 R.T.A. CABLES. CONTACT R.T.A. FOR FURTHER DETAILS.

ENCODER OPTIONS:	EM 1H2H-04D0	EM 1H2H-04E0	EM 1H2H-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

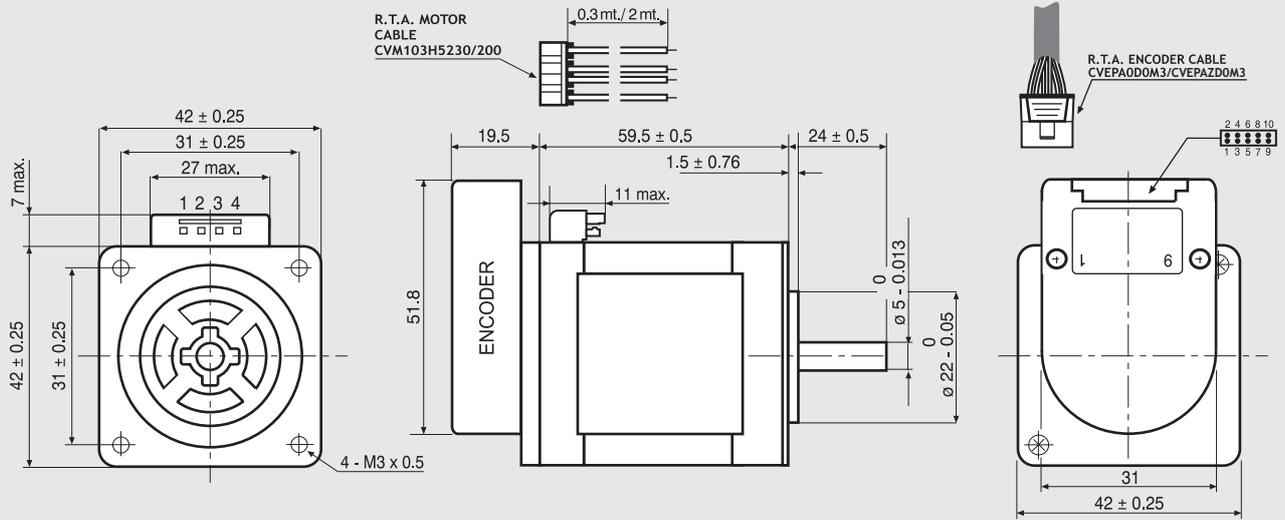
ENCODER NEEDS CVEPA0D0M3 OR CVEPAZD0M3 R.T.A. CABLE. CONTACT R.T.A. FOR FURTHER DETAILS

A 1 A- 2 B 3 B- 4	RTA MOTOR CABLE COLORS		ENCODER PIN-OUT			
	DESCRIPTION	CVM103H52200 COLORS	DESCRIPTION	04D0 PINS	04E0/0HE0 PINS	R.T.A. CABLE LEADS COLOR
	CHANNEL A	ORANGE	CHANNEL A+	6	6	GREEN
	CHANNEL A-	BLUE	CHANNEL A-	5	5	PURPLE
	CHANNEL B	YELLOW	CHANNEL B+	8	8	BLUE
	CHANNEL B-	RED	CHANNEL B-	7	7	BROWN
			+ DC (5V)	2	2	RED
			GROUND	3	3	BLACK
			INDEX+	/	10	ORANGE
			INDEX-	/	9	WHITE

Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# EM 1H3H-OXXO

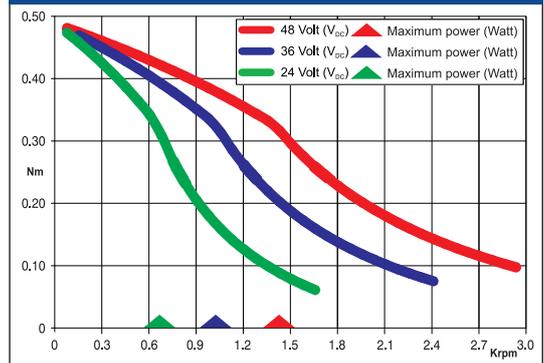
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	EM 1H3H-OXXO	
SANYO DENKI MOTOR CODE	103-H5212-4610	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(A)	2.0
RESISTANCE	(Ohm)	1.5
INDUCTANCE	(mH)	3.0
BIPOLAR HOLDING TORQUE	(Ncm)	65
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	110
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	59000
BACK E.M.F.	(V/Krpm)	32
MASS	(Kg)	0.50
LEADS CODE	V	

## TORQUE/ SPEED CURVE



103-H5212-4610 MOTOR NEEDS CVM103H5230 R.T.A. CABLE. CONTACT R.T.A. FOR FURTHER DETAILS.

ENCODER OPTIONS:	EM 1H3H-04D0	EM 1H3H-04E0	EM 1H3H-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>MAX</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>MAX</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>MAX</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>MAX</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>MAX</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>MAX</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

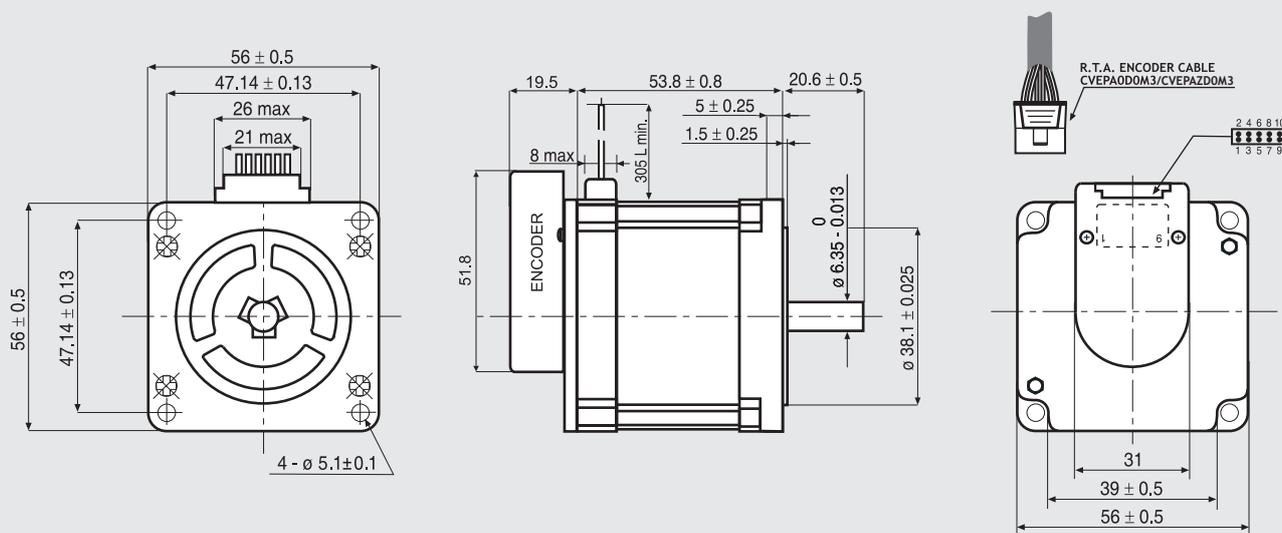
ENCODER NEEDS CVEPA0D0M3 OR CVEPAZD0M3 R.T.A. CABLE. CONTACT R.T.A. FOR FURTHER DETAILS

DESCRIPTION	RTA MOTOR CABLE COLORS		ENCODER PIN-OUT		R.T.A. CABLE LEADS COLOR
	CVM103H52200 COLORS	CVM103H5230 COLORS	04D0 PINS	04E0/0HE0 PINS	
CHANNEL A	ORANGE	WHITE	6	6	GREEN
CHANNEL A-	BLUE	GREEN	5	5	PURPLE
CHANNEL B	YELLOW	YELLOW	8	8	BLUE
CHANNEL B-	RED	BROWN	7	7	BROWN
+ DC (5V)			2	2	RED
GROUND			3	3	BLACK
INDEX+			/	10	ORANGE
INDEX-			/	9	WHITE

Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# EM 2H1M-0XX0

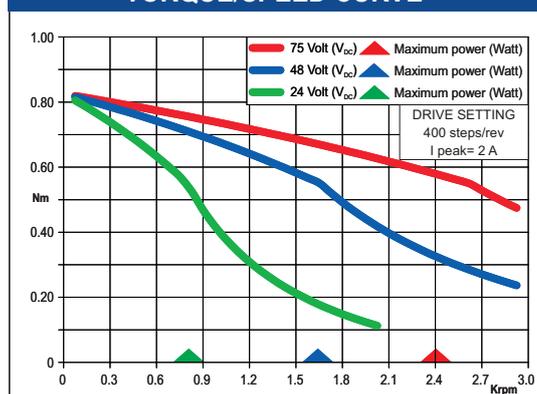
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	EM 2H1M-0XX0	
SANYO DENKI MOTOR CODE	103-H7123-1711	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(A)	4.0
RESISTANCE	(Ohm)	0.41
INDUCTANCE	(mH)	1.6
BIPOLAR HOLDING TORQUE	(Ncm)	110
ROTOR INERTIA	(Kg·m <sup>2</sup> × 10 <sup>-7</sup> )	210
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	50000
BACK E.M.F.	(V/Krpm)	20
MASS	(Kg)	0.65
LEADS CODE	V	

## TORQUE/SPEED CURVE



ENCODER OPTIONS:	EM 2H1M-04D0	EM 2H1M-04E0	EM 2H1M-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

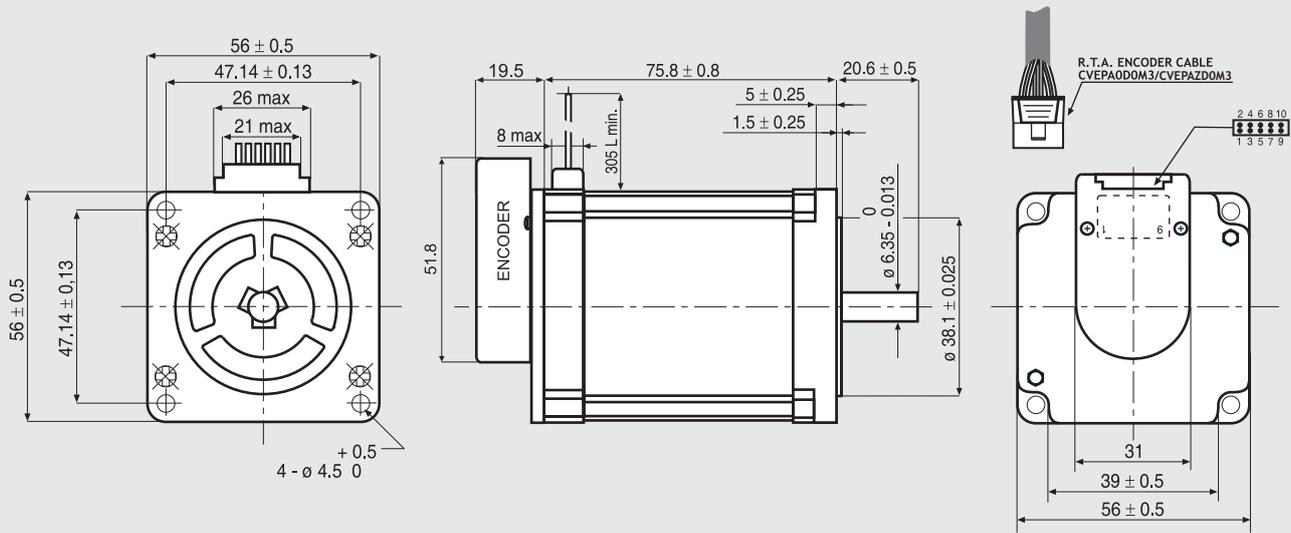
ENCODER NEEDS CVEPA0D0M3 OR CVEPAZD0M3 R.T.A. CABLE. CONTACT R.T.A. FOR FURTHER DETAILS

DESCRIPTION	ENCODER PIN-OUT			R.T.A. CABLE LEADS COLOR
	04D0 PINS	04E0 PINS	0HE0 PINS	
CHANNEL A+	6	6	6	GREEN
CHANNEL A-	5	5	5	PURPLE
CHANNEL B+	8	8	8	BLUE
CHANNEL B-	7	7	7	BROWN
+ DC (5V)	2	2	2	RED
GROUND	3	3	3	BLACK
INDEX+	/	10	10	ORANGE
INDEX-	/	9	9	WHITE

Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# EM 2H2M-OXXO

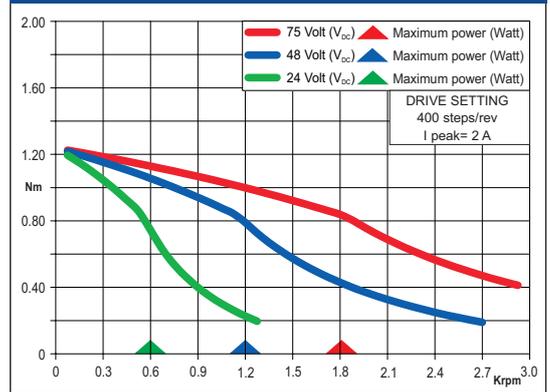
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	EM 2H2M-OXXO	
SANYO DENKI MOTOR CODE	103-H7126-1710	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(A)	4.0
RESISTANCE	(Ohm)	0.48
INDUCTANCE	(mH)	2.2
BIPOLAR HOLDING TORQUE	(Ncm)	165
ROTOR INERTIA	(Kg <sup>m</sup> × 10 <sup>7</sup> )	360
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	45800
BACK E.M.F.	(V/Krpm)	31
MASS	(Kg)	1.0
LEADS CODE	V	

## TORQUE/SPEED CURVE



ENCODER OPTIONS:	EM 2H2M-04D0	EM 2H2M-04E0	EM 2H2M-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

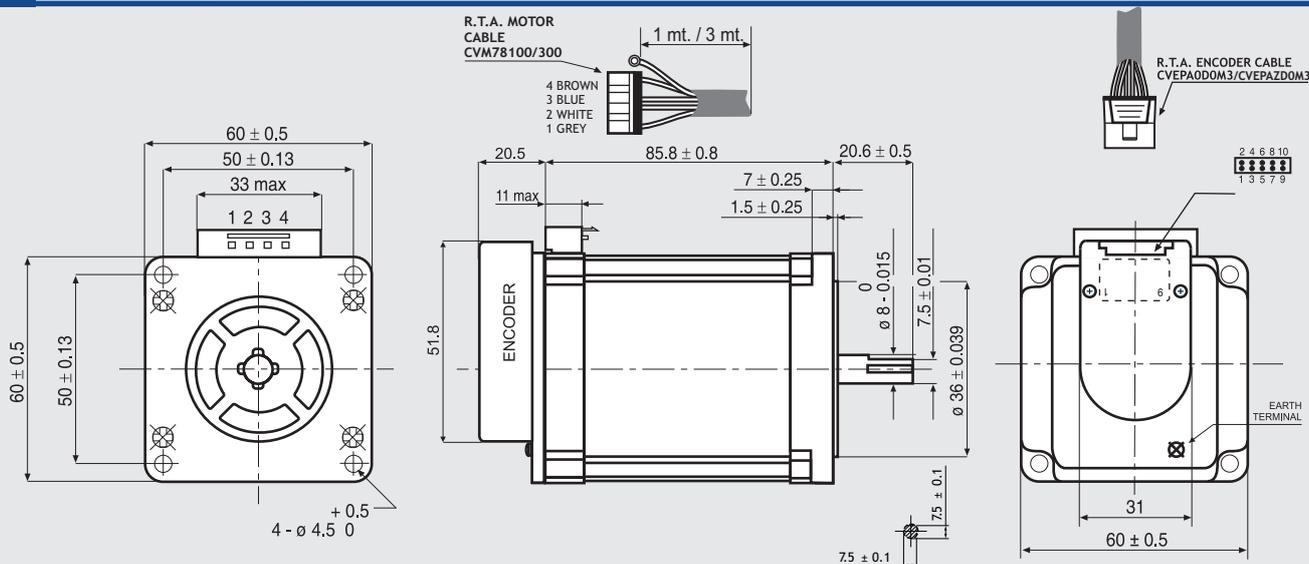
ENCODER NEEDS CVEPA0D0M3 OR CVEPAZD0M3 R.T.A. CABLE. CONTACT R.T.A. FOR FURTHER DETAILS

DESCRIPTION	ENCODER PIN-OUT			R.T.A. CABLE LEADS COLOR
	04D0 PINS	04E0 PINS	0HE0 PINS	
CHANNEL A+	6	6	6	GREEN
CHANNEL A-	5	5	5	PURPLE
CHANNEL B+	8	8	8	BLUE
CHANNEL B-	7	7	7	BROWN
+ DC (5V)	2	2	2	RED
GROUND	3	3	3	BLACK
INDEX+	/	10	10	ORANGE
INDEX-	/	9	9	WHITE

Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# EM 6H2M-OXXO

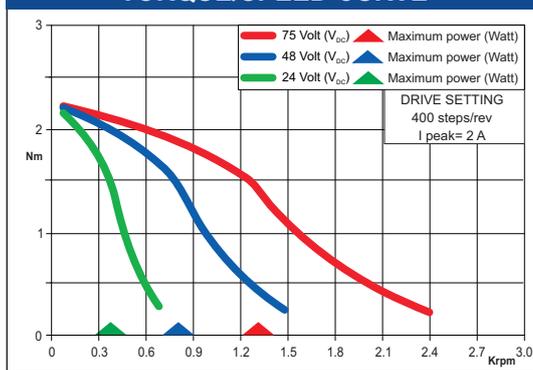
## Dimensions (Unit:mm)



### SANYO DENKI MOTOR FEATURES

MODEL	EM 6H2M-OXXO
SANYO DENKI MOTOR CODE	103-H7823-1714
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT (A)	4.0
RESISTANCE (Ohm)	0.65
INDUCTANCE (mH)	2.4
BIPOLAR HOLDING TORQUE (Ncm)	300
ROTOR INERTIA (Kg <sup>m</sup> × 10 <sup>-7</sup> )	840
THEORETICAL ACCELERATION (rad × sec. <sup>-2</sup> )	35700
BACK E.M.F. (V/Krpm)	75
MASS (Kg)	1.4
LEADS CODE	V

### TORQUE/SPEED CURVE



103-H7823-1714 MOTOR NEEDS CVM78/100 OR CVM78/300 R.T.A. CABLES. CONTACT R.T.A. FOR FURTHER DETAILS.

ENCODER OPTIONS:	EM 6H2M-04D0	EM 6H2M-04E0	EM 6H2M-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

ENCODER NEEDS CVEPA0D0M3 OR CVEPAZD0M3 R.T.A. CABLE. CONTACT R.T.A. FOR FURTHER DETAILS

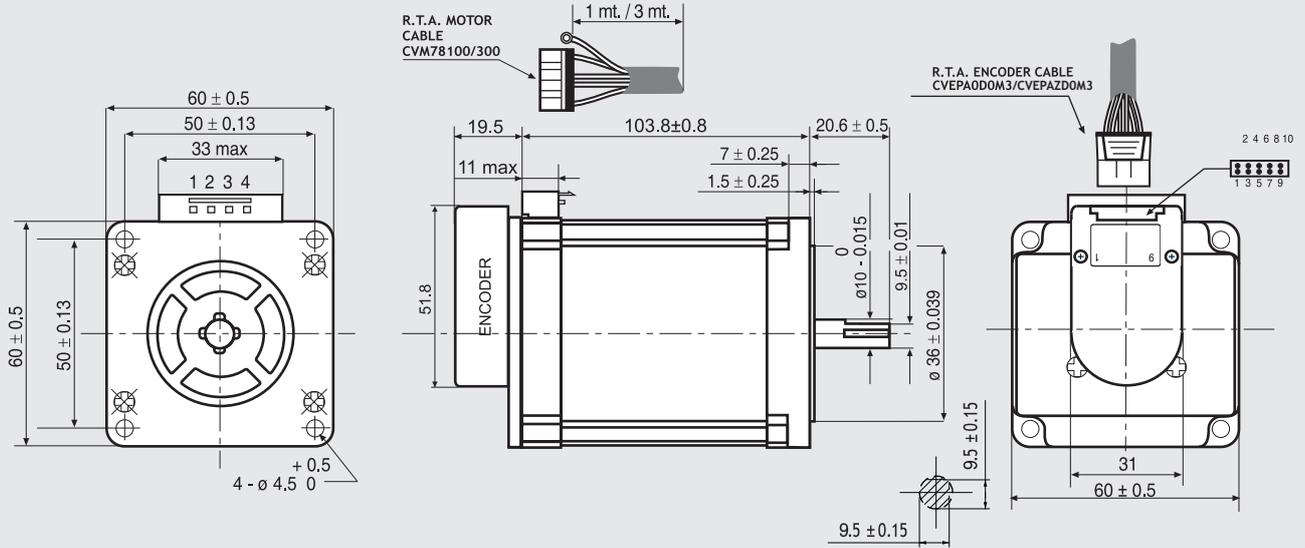
DESCRIPTION	ENCODER PIN-OUT			R.T.A. CABLE LEADS COLOR
	04D0 PINS	04E0 PINS	0HE0 PINS	
CHANNEL A+	6	6	6	GREEN
CHANNEL A-	5	5	5	PURPLE
CHANNEL B+	8	8	8	BLUE
CHANNEL B-	7	7	7	BROWN
+ DC (5V)	2	2	2	RED
GROUND	3	3	3	BLACK
INDEX+	/	10	10	ORANGE
INDEX-	/	9	9	WHITE

R.T.A. CABLE CVEPA0D0M3 CVEPAZD03M CVEPAZD03M

Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, PLUS, FLEX-DRIVE

# EM 6H3H-OXXO

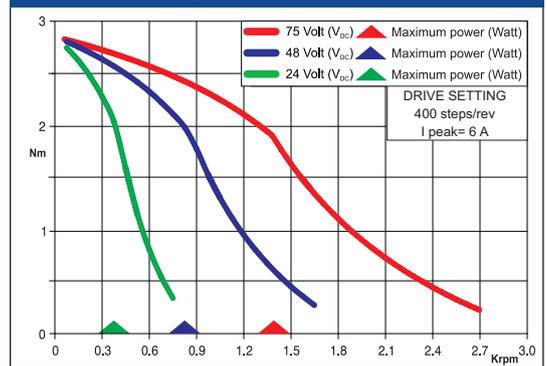
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	EM 6H3H-OXXO	
SANYO DENKI MOTOR CODE	103-H7826-1612	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(A)	6.0
RESISTANCE	(Ohm)	0.43
INDUCTANCE	(mH)	1.45
BIPOLAR HOLDING TORQUE	(Ncm)	380
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	1080
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	35200
BACK E.M.F.	(V/Krpm)	70
MASS	(Kg)	1.70
LEADS CODE	V	

## TORQUE/SPEED CURVE



103-H7826-1612 MOTOR NEEDS CVM78/100 OR CVM78/300 R.T.A. CABLES. CONTACT R.T.A. FOR FURTHER DETAILS.

ENCODER OPTIONS:	EM 6H3H-04D0	EM 6H3H-04E0	EM 6H3H-0HE0
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%

ENCODER NEEDS CVEPA0D0M3 OR CVEPAZD0M3 R.T.A. CABLE. CONTACT R.T.A. FOR FURTHER DETAILS

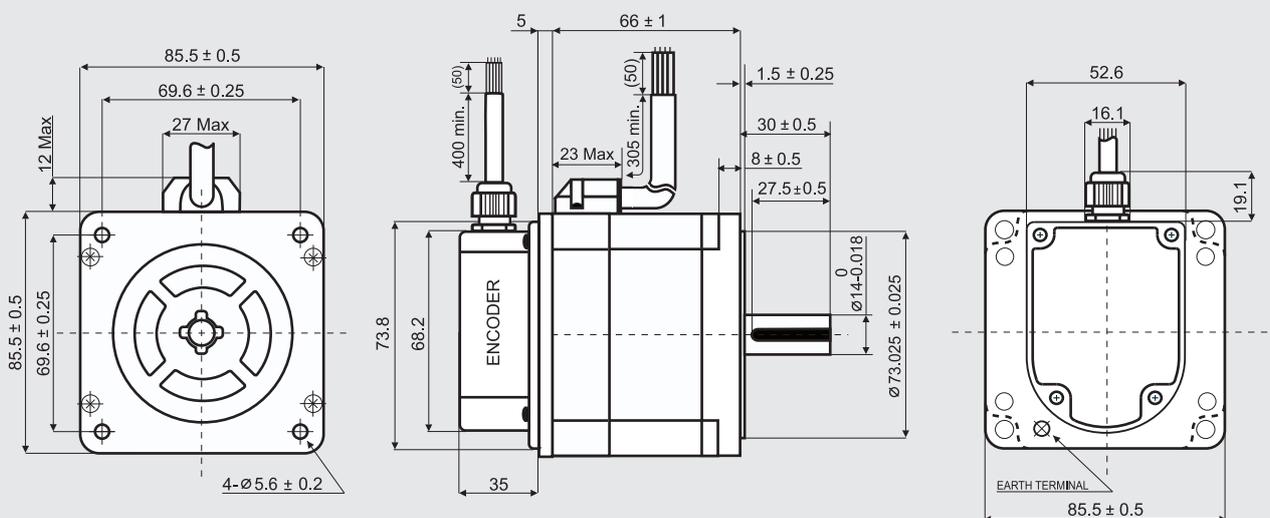
DESCRIPTION	ENCODER PIN-OUT			R.T.A. CABLE LEADS COLOR
	04D0 PINS	04E0 PINS	0HE0 PINS	
CHANNEL A+	6	6	6	GREEN
CHANNEL A-	5	5	5	PURPLE
CHANNEL B+	8	8	8	BLUE
CHANNEL B-	7	7	7	BROWN
+ DC (5V)	2	2	2	RED
GROUND	3	3	3	BLACK
INDEX+	/	10	10	ORANGE
INDEX-	/	9	9	WHITE

R.T.A. CABLE CVEPA0D0M3 CVEPAZD0M3 CVEPAZD0M3

Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

# EM 3F1L-04D0

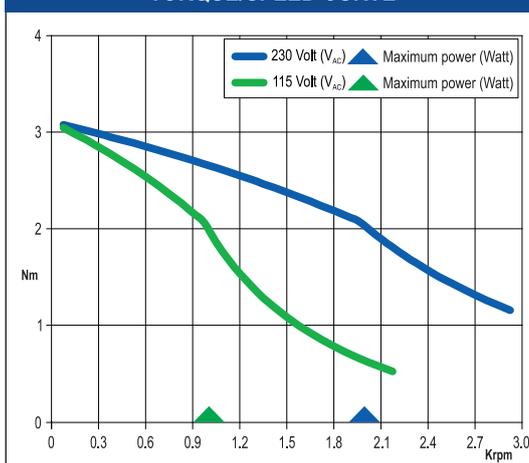
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

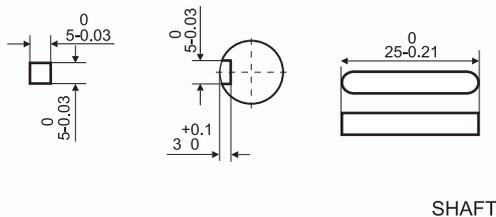
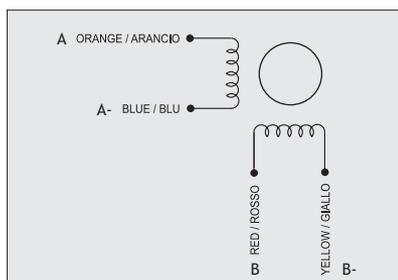
MODEL	EM 3F1L-04D0	
SANYO DENKI MOTOR CODE	SM 2861-5025	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	2.2
INDUCTANCE	(mH)	15
BIPOLAR HOLDING TORQUE	(Ncm)	360
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	1480
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	24300
BACK E.M.F.	(V/Krpm)	180
MASS	(Kg)	1.7
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

## TORQUE/SPEED CURVE



## ENCODER FEATURES

POWER SUPPLY VOLTAGE	(Volt)	5 V <sub>DC</sub> ± 5%
CURRENT CONSUMPTION	(mAmp)	40
HIGH LEVEL OUTPUT	(Volt)	3.4 (TIP) - 2.4 (MIN) (I <sub>MAX</sub> =20 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I <sub>MAX</sub> =20 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	60
INDEX VERSION	Available upon request	

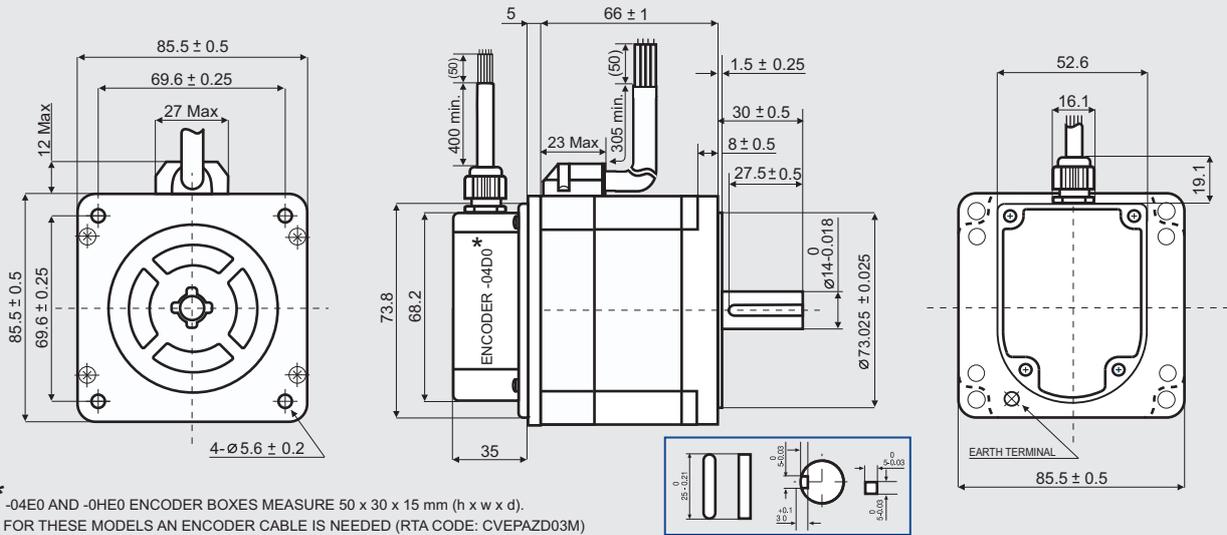


LEADS COLOR	ENCODER
BROWN	CHANNEL A-
BLUE	CHANNEL A+
PURPLE	CHANNEL B-
GREEN	CHANNEL B+
BLACK	GND (0 V)
RED	+ DC (5 V)
SHIELD	

Suggested R.T.A. drive model: X-PLUS L2

# EM 3F1H-0XX0

## Dimensions (Unit:mm)

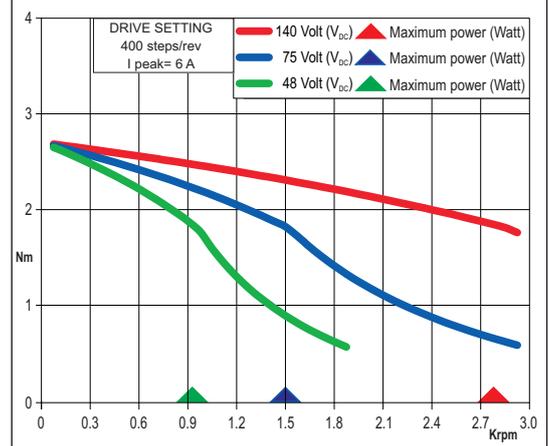


\* -04E0 AND -0HE0 ENCODER BOXES MEASURE 50 x 30 x 15 mm (h x w x d).  
FOR THESE MODELS AN ENCODER CABLE IS NEEDED (RTA CODE: CVEPAZD03M)

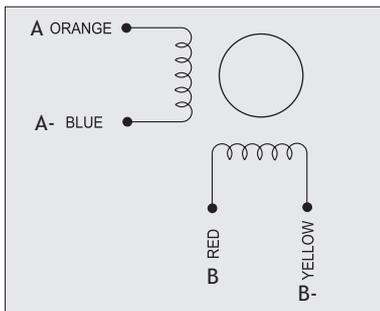
## SANYO DENKI MOTOR FEATURES

MODEL	EM 3F1H-0XX0	
SANYO DENKI MOTOR CODE	SM 2861-5225	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	6.0
RESISTANCE	(Ohm)	0.29
INDUCTANCE	(mH)	1.7
BIPOLAR HOLDING TORQUE	(Ncm)	360
ROTOR INERTIA	(Kg·m <sup>2</sup> × 10 <sup>-7</sup> )	1480
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	24300
BACK E.M.F.	(V/Krpm)	60
MASS	(Kg)	1.7
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

## TORQUE/SPEED CURVE



ENCODER OPTIONS:	EM 3F1H-04D0	EM 3F1H-04E0 *	EM 3F1H-0HE0 *
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>MAX</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>MAX</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>MAX</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>MAX</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>MAX</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>MAX</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%



## ENCODER CABLE / ENCODER PIN OUT

DESCRIPTION	04D0	04E0 PINS	0HE0 PINS
CHANNEL A+	● BLUE	6 ● GREEN	6 ● GREEN
CHANNEL A-	● BROWN	5 ● PURPLE	5 ● PURPLE
CHANNEL B+	● GREEN	8 ● BLUE	8 ● BLUE
CHANNEL B-	● PURPLE	7 ● BROWN	7 ● BROWN
+ DC (5V)	● RED	2 ● RED	2 ● RED
GROUND	● BLACK	3 ● BLACK	3 ● BLACK
INDEX+	/	10 ● ORANGE	10 ● ORANGE
INDEX-	/	9 ● WHITE	9 ● WHITE

R.T.A. CABLE

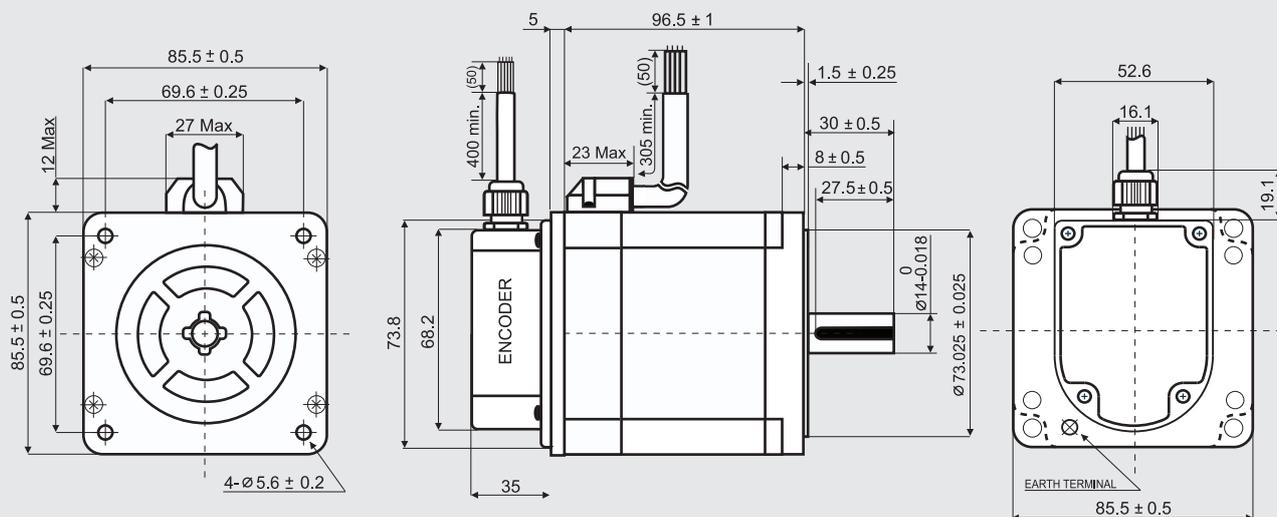
CVEPAZD03M

CVEPAZD03M

Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

# EM 3F2M-04D0

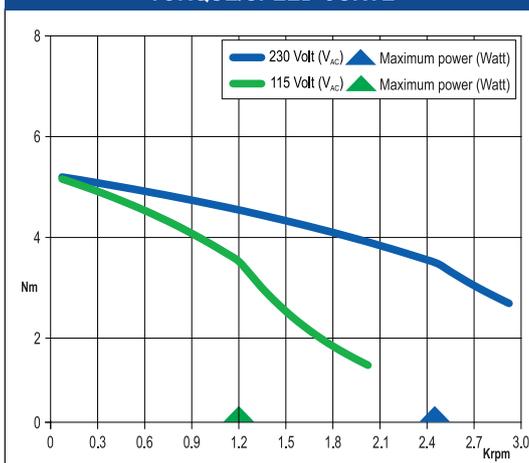
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

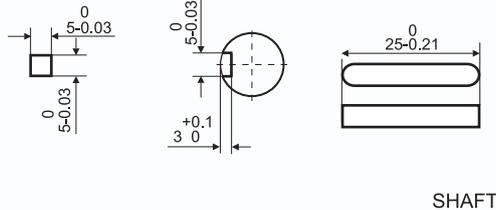
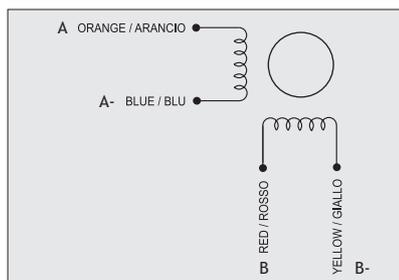
MODEL	EM 3F2M-04D0	
SANYO DENKI MOTOR CODE	SM 2862-5125	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	0.83
INDUCTANCE	(mH)	6.4
BIPOLAR HOLDING TORQUE	(Ncm)	700
ROTOR INERTIA	(Kg <sup>m</sup> × 10 <sup>-7</sup> )	3000
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	23300
BACK E.M.F.	(V/Krpm)	175
MASS	(Kg)	2.9
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

## TORQUE/SPEED CURVE



## ENCODER FEATURES

POWER SUPPLY VOLTAGE	(Volt)	5 V <sub>DC</sub> ± 5%
CURRENT CONSUMPTION	(mAmp)	40
HIGH LEVEL OUTPUT	(Volt)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	60
INDEX VERSION	Available upon request	

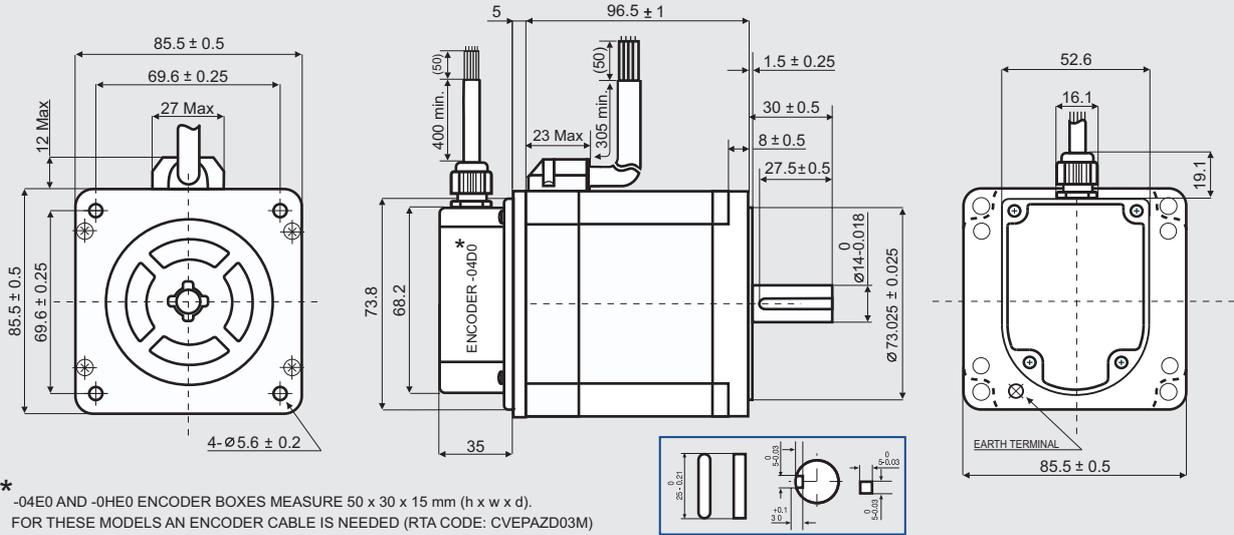


LEADS COLOR	ENCODER
BROWN	CHANNEL A-
BLUE	CHANNEL A+
PURPLE	CHANNEL B-
GREEN	CHANNEL B+
BLACK	GND (0 V)
RED	+ DC (5 V)
SHIELD	

Suggested R.T.A. drive model: 230 Vac X-PLUS

# EM 3F2H-OXXO

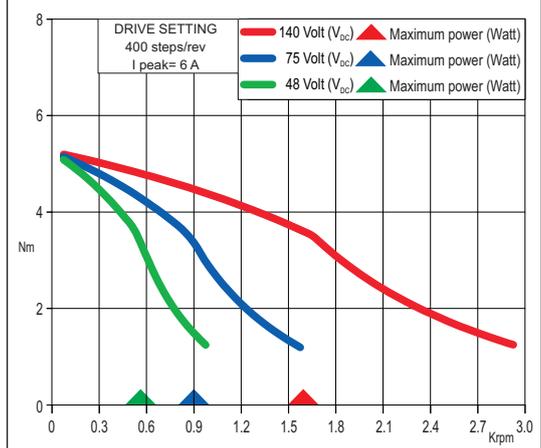
## Dimensions (Unit:mm)



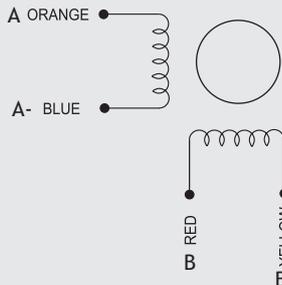
## SANYO DENKI MOTOR FEATURES

MODEL	EM 3F2H-OXXO	
SANYO DENKI MOTOR CODE	SM 2862-5225	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(A)	6.0
RESISTANCE	(Ohm)	0.36
INDUCTANCE	(mH)	2.8
BIPOLAR HOLDING TORQUE	(Ncm)	700
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	3000
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	23300
BACK E.M.F.	(V/Krpm)	120
MASS	(Kg)	2.9
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

## TORQUE/SPEED CURVE



ENCODER OPTIONS:	EM 3F2H-04D0	EM 3F2H-04E0 *	EM 3F2H-0HE0 *
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%



## ENCODER CABLE / ENCODER PIN OUT

DESCRIPTION	04D0	04E0 PINS	0HE0 PINS
CHANNEL A+	● BLUE	6 ● GREEN	6 ● GREEN
CHANNEL A-	● BROWN	5 ● PURPLE	5 ● PURPLE
CHANNEL B+	● GREEN	8 ● BLUE	8 ● BLUE
CHANNEL B-	● PURPLE	7 ● BROWN	7 ● BROWN
+ DC (5V)	● RED	2 ● RED	2 ● RED
GROUND	● BLACK	3 ● BLACK	3 ● BLACK
INDEX+	/	10 ● ORANGE	10 ● ORANGE
INDEX-	/	9 ○ WHITE	9 ○ WHITE

R.T.A. CABLE

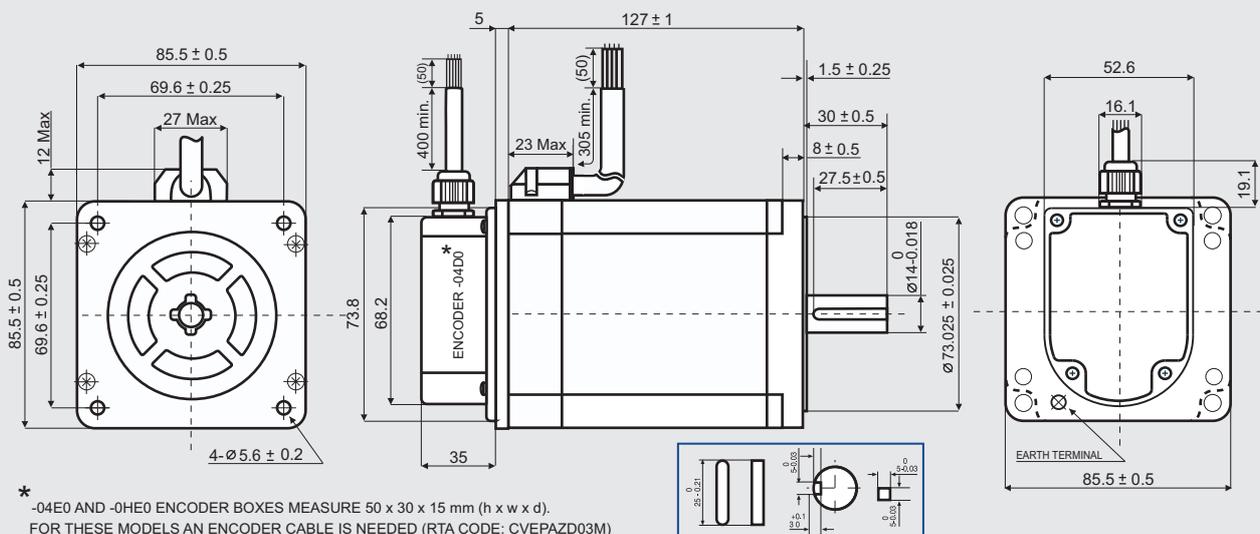
CVEPAZD03M

CVEPAZD03M

Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

# EM 3F3H-0XX0

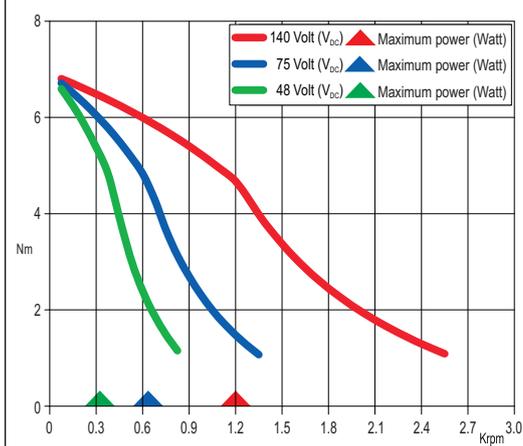
Dimensions (Unit:mm)



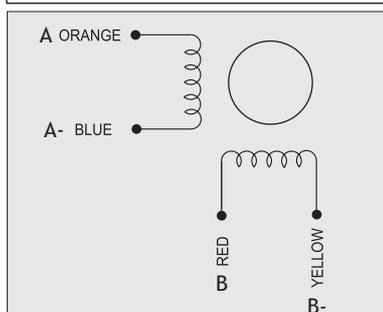
## SANYO DENKI MOTOR FEATURES

MODEL	EM 3F3H-0XX0	
SANYO DENKI MOTOR CODE	SM 2863-5225	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	6.0
RESISTANCE	(Ohm)	0.46
INDUCTANCE	(mH)	3.8
BIPOLAR HOLDING TORQUE	(Ncm)	920
ROTOR INERTIA	(Kg <sup>m</sup> × 10 <sup>-7</sup> )	4500
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	20500
BACK E.M.F.	(V/Krpm)	161
MASS	(Kg)	4.0
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

## TORQUE/SPEED CURVE



ENCODER OPTIONS:	EM 3F3H-04D0	EM 3F3H-04E0 *	EM 3F3H-0HE0 *
RESOLUTION	400 cpr	400 cpr	4000 cpr
INDEX	No	Yes	Yes
CURRENT CONSUMPTION (mA)	50	50	85
HIGH LEVEL OUTPUT (Volt)	5 (TIP) - 4.75 (MIN) (I <sub>max</sub> =25mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)	3.4 (TIP) - 2.4 (MIN) (I <sub>max</sub> =20mA)
LOW LEVEL OUTPUT (Volt)	0.25 (TIP) - 0.6 (MAX) (I <sub>max</sub> =25mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)	0.2 (TIP) - 0.4 (MAX) (I <sub>max</sub> =20mA)
OUTPUT SIGNAL	Differential	Differential	Differential
MAXIMUM FREQUENCY (KHz)	100	100	720
POWER SUPPLY VOLTAGE (Volt)	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%	5 V <sub>DC</sub> ± 10%



## ENCODER CABLE / ENCODER PIN OUT

DESCRIPTION	04D0	04E0 PINS	0HE0 PINS
CHANNEL A+	● BLUE	6 ● GREEN	6 ● GREEN
CHANNEL A-	● BROWN	5 ● PURPLE	5 ● PURPLE
CHANNEL B+	● GREEN	8 ● BLUE	8 ● BLUE
CHANNEL B-	● PURPLE	7 ● BROWN	7 ● BROWN
+ DC (5V)	● RED	2 ● RED	2 ● RED
GROUND	● BLACK	3 ● BLACK	3 ● BLACK
INDEX+	/	10 ● ORANGE	10 ● ORANGE
INDEX-	/	9 ○ WHITE	9 ○ WHITE

R.T.A. CABLE

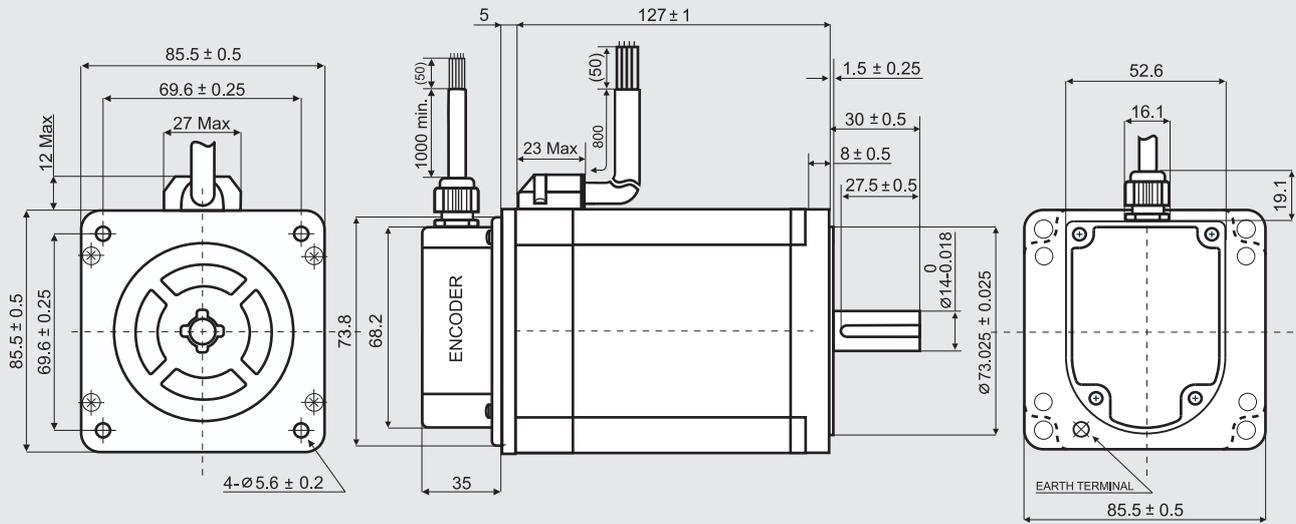
CVEPAZD03M

CVEPAZD03M

Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

# EM 3F3M-14D0

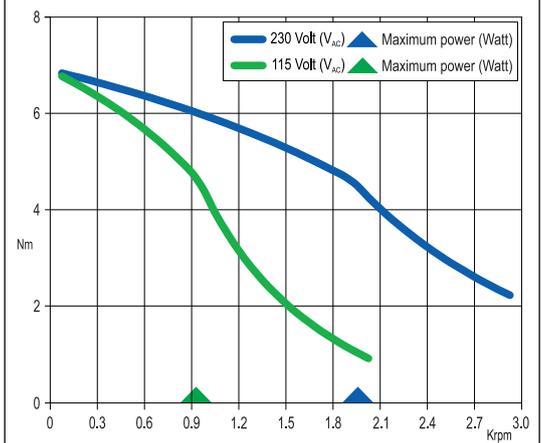
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

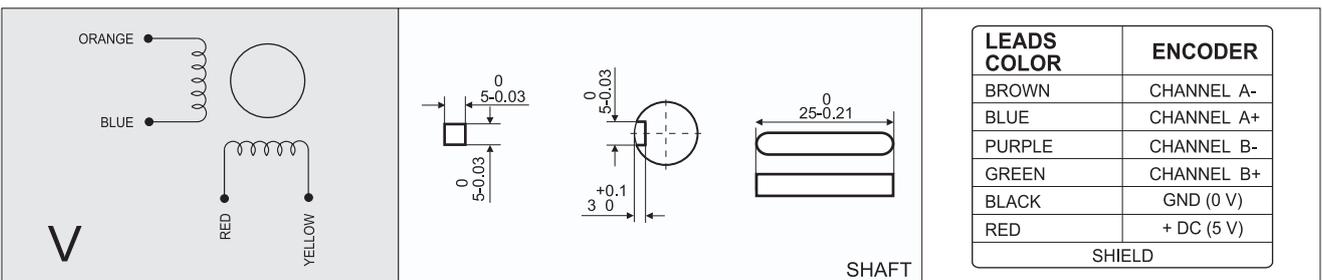
MODEL	EM 3F3M-14D0	
SANYO DENKI MOTOR CODE	SM 2863-5126	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	1.0
INDUCTANCE	(mH)	7.9
BIPOLAR HOLDING TORQUE	(Ncm)	920
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	4500
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	20500
BACK E.M.F.	(V/Krpm)	241
MASS	(Kg)	4.0
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

## TORQUE/SPEED CURVE



## ENCODER FEATURES

POWER SUPPLY VOLTAGE	(Volt)	5 V <sub>DC</sub> ± 5%
CURRENT CONSUMPTION	(mAmp)	40
HIGH LEVEL OUTPUT	(Volt)	3.4 (TIP) - 2.4 (MIN) (I <sub>MAX</sub> =20 mA)
LOW LEVEL OUTPUT	(Volt)	0.2 (TIP) - 0.4 (MAX) (I <sub>MAX</sub> =20 mA)
OUTPUT SIGNAL	Differential (SINGLE ENDED version available)	
RESOLUTION	400 cycles per revolution (500 & 1000 CPR version available)	
MAXIMUM FREQUENCY	(KHz)	60
INDEX VERSION	Available upon request	



Suggested R.T.A. drive model: 230 Vac X-PLUS

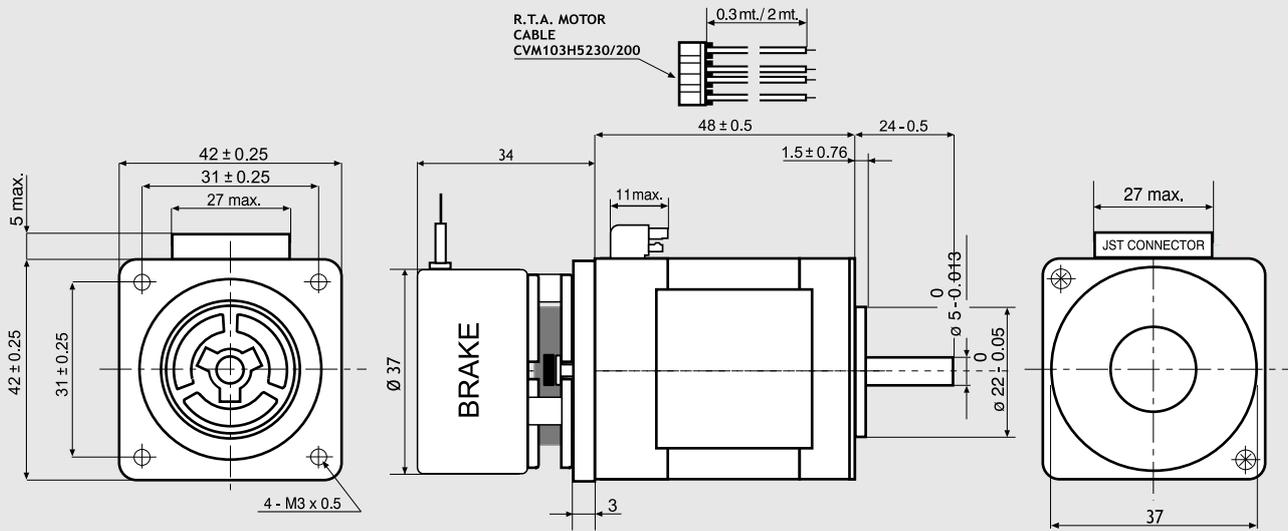
STEPPING MOTORS

## TRADITIONAL STEPPING MOTORS WITH BRAKE



# 103-H5210-4512.B

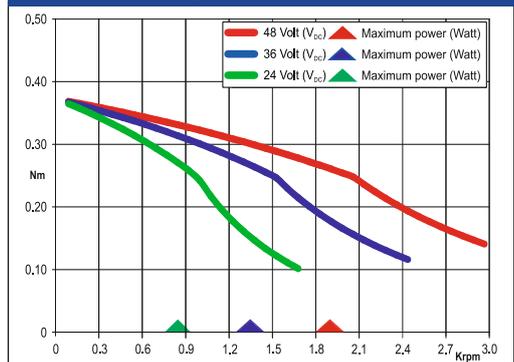
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	103-H5210-4512.B	
SANYO DENKI MOTOR CODE	103-H5210-4512	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	1.25
INDUCTANCE	(mH)	2.4
BIPOLAR HOLDING TORQUE	(Ncm)	51
ROTOR INERTIA	(Kg <sup>m</sup> × 10 <sup>-7</sup> )	74
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	69000
BACK E.M.F.	(V/Krpm)	25
MASS	(Kg)	0.55
LEADS CODE	V	

## TORQUE/SPEED CURVE



103-H5210-4512 MOTOR NEEDS CVM103H5230 OR CVM103H52200 R.T.A. CABLES. CONTACT R.T.A. FOR FURTHER DETAILS.

## BRAKE FEATURES

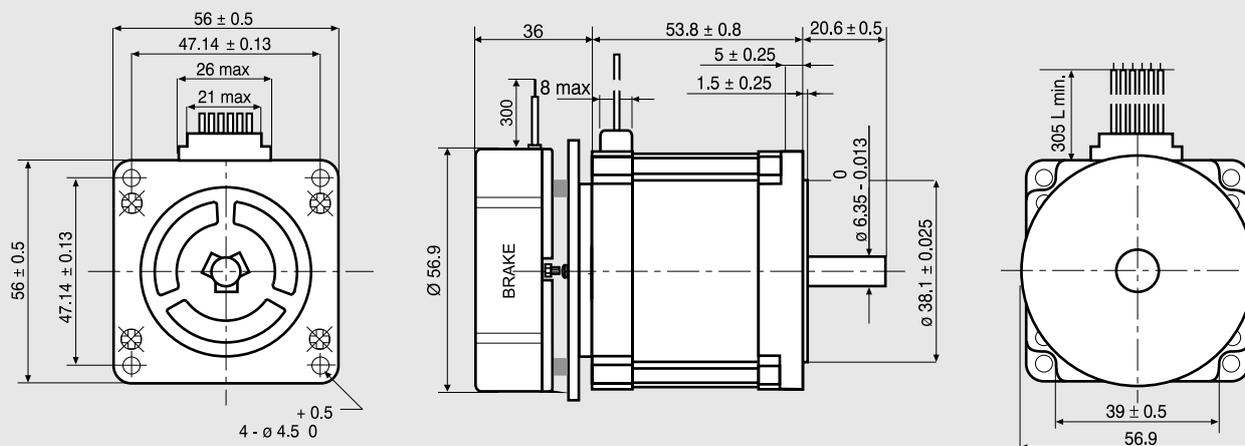
STATIC TORQUE	(Nm)	0.24
DUTY CYCLE		50% max.
VOLTAGE	(Volt)	24 VDC
POWER	(W)	5
RELEASE TIME	(ms)	50



Suggested R.T.A. drive series: BSD, CSD, FLEX-DRIVE

# 103-H7123-5010.B

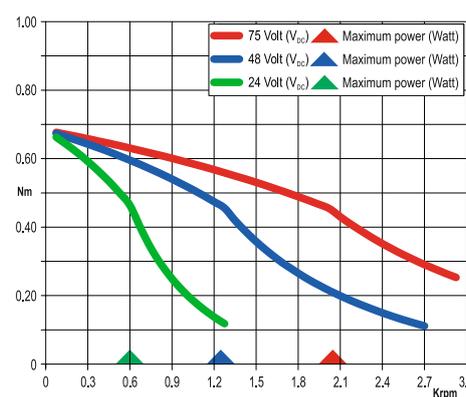
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL		103-H7123-5010.B
SANYO DENKI MOTOR CODE		103-H7123-5010
BASIC STEP ANGLE		$1.8^\circ \pm 0.09^\circ$
BIPOLAR PARALLEL CURRENT	(Amp)	2.0
UNIPOLAR PARALLEL CURRENT	(Amp)	
RESISTANCE	(Ohm)	0.8
INDUCTANCE	(mH)	3.8
BIPOLAR HOLDING TORQUE	(Ncm)	85
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	( $\text{Kgm}^2 \times 10^{-7}$ )	210
THEORETICAL ACCELERATION	( $\text{rad} \times \text{sec.}^{-2}$ )	38500
BACK E.M.F.	(V/Krpm)	31
MASS	(Kg)	1.15
LEADS CODE		V

## TORQUE/SPEED CURVE



## BRAKE FEATURES

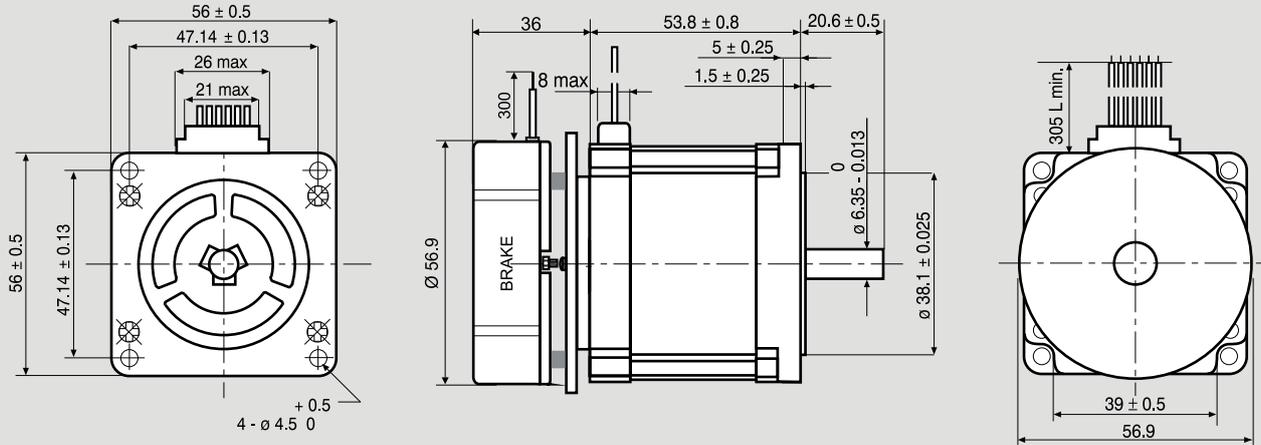
STATIC TORQUE	(Nm)	3.3
DUTY CYCLE		50% max.
VOLTAGE	(Volt)	24 VDC
POWER	(W)	11
RELEASE TIME	(ms)	300



Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7123-0710.B

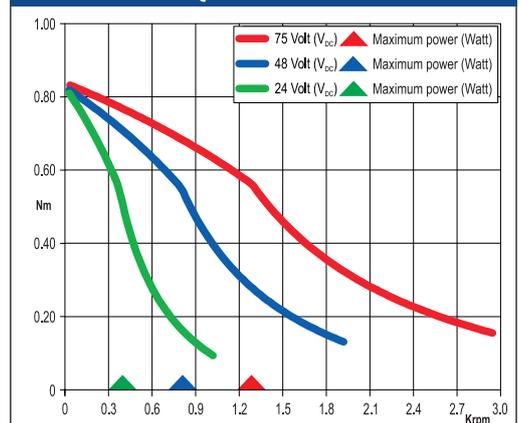
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	103-H7123-0710.B	
SANYO DENKI MOTOR CODE	103-H7123-0710	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR PARALLEL CURRENT	(Amp)	2.2*
UNIPOLAR PARALLEL CURRENT	(Amp)	3.0
RESISTANCE	(Ohm)	0.77
INDUCTANCE	(mH)	1.6
BIPOLAR HOLDING TORQUE	(Ncm)	110
UNIPOLAR HOLDING TORQUE	(Ncm)	85
ROTOR INERTIA	( $\text{Kg} \cdot \text{m}^2 \times 10^{-7}$ )	210
THEORETICAL ACCELERATION	( $\text{rad} \times \text{sec}^{-2}$ )	50000
BACK E.M.F.	(V/Krpm)	20
MASS	(Kg)	1.15
LEADS CODE	IV	

## TORQUE/SPEED CURVE



## BRAKE FEATURES

STATIC TORQUE	(Nm)	3.3
DUTY CYCLE		50% max.
VOLTAGE	(Volt)	24 VDC
POWER	(W)	11
RELEASE TIME	(ms)	300



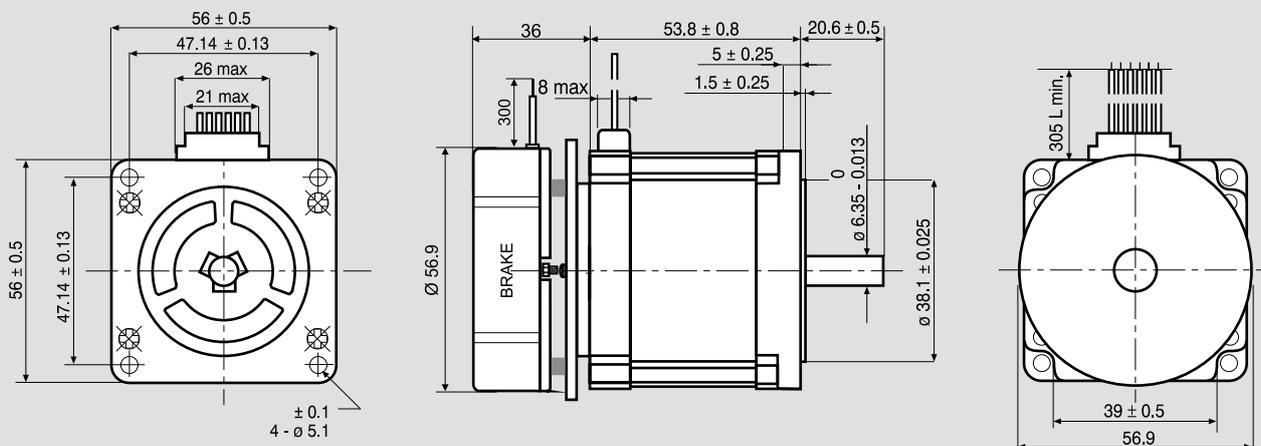
IV



Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7123-1711.B

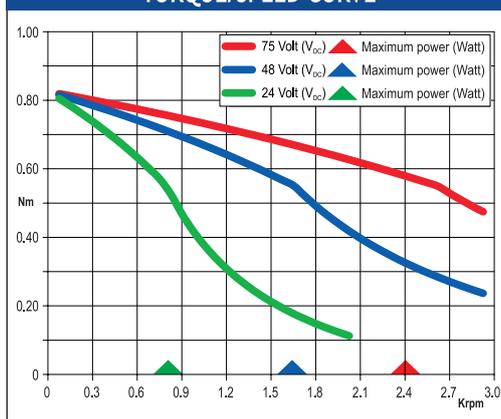
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

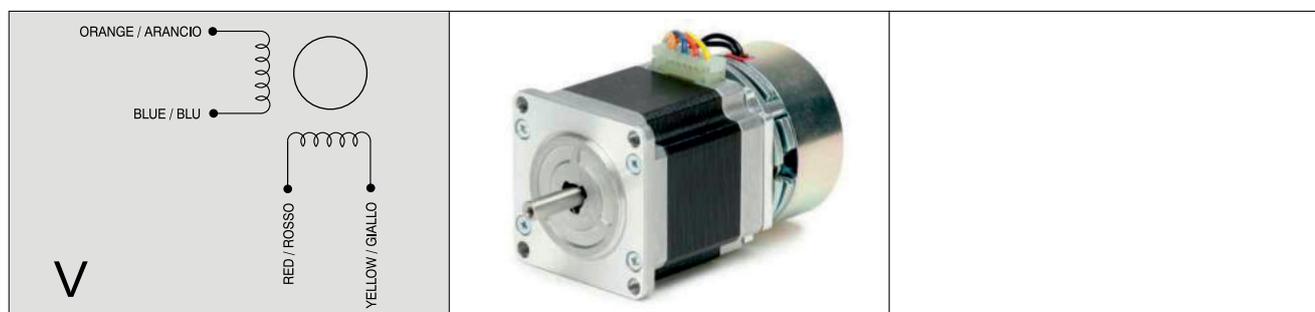
MODEL	103-H7123-1711.B	
SANYO DENKI MOTOR CODE	103-H7123-1711	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR PARALLEL CURRENT	(Amp)	4.0
UNIPOLAR PARALLEL CURRENT	(Amp)	
RESISTANCE	(Ohm)	0.41
INDUCTANCE	(mH)	1.6
BIPOLAR HOLDING TORQUE	(Ncm)	110
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	( $\text{Kg} \cdot \text{m}^2 \times 10^{-7}$ )	210
THEORETICAL ACCELERATION	( $\text{rad} \times \text{sec.}^{-2}$ )	50000
BACK E.M.F.	(V/Krpm)	20
MASS	(Kg)	1.15
LEADS CODE	V	

## TORQUE/SPEED CURVE



## BRAKE FEATURES

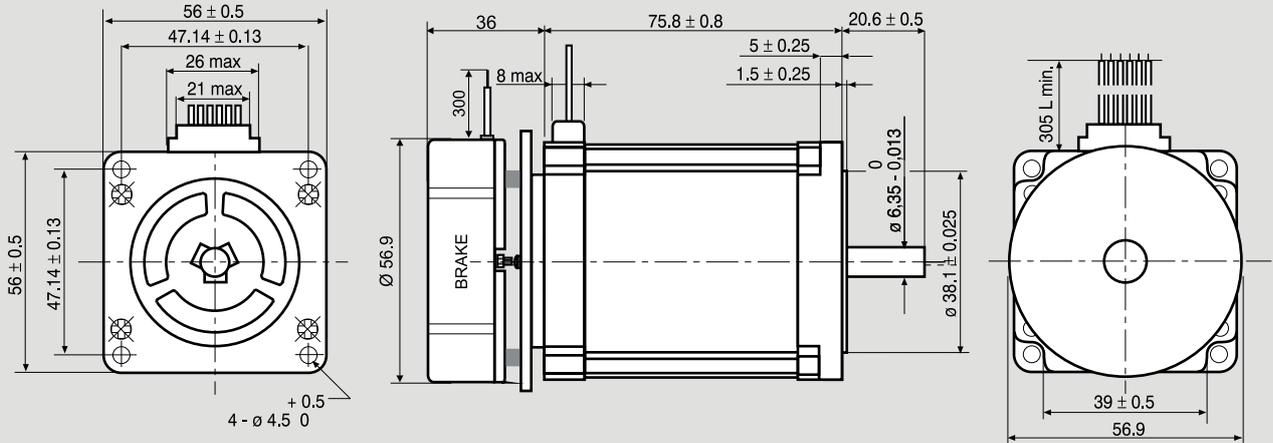
STATIC TORQUE	(Nm)	3.3
DUTY CYCLE		50% max.
VOLTAGE	(Volt)	24 VDC
POWER	(W)	11
RELEASE TIME	(ms)	300



Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7126-0710.B

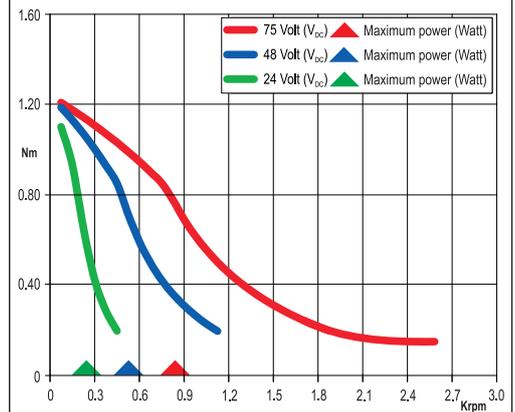
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	103-H7126-0710.B	
SANYO DENKI MOTOR CODE	103-H7126-0710	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR PARALLEL CURRENT (Amp)	2.2*	
UNIPOLAR PARALLEL CURRENT (Amp)	3.0	
RESISTANCE (Ohm)	0.9	
INDUCTANCE (mH)	2.2	
BIPOLAR HOLDING TORQUE (Ncm)	165	
UNIPOLAR HOLDING TORQUE (Ncm)	130	
ROTOR INERTIA ( $\text{Kgm}^2 \times 10^{-7}$ )	360	
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec.}^{-2}$ )	45800	
BACK E.M.F. (V/Krpm)	31	
MASS (Kg)	1.5	
LEADS CODE	IV	

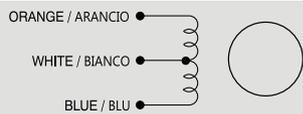
## TORQUE/SPEED CURVE



(\*) Bipolar series connection.

## BRAKE FEATURES

STATIC TORQUE (Nm)	3.3
DUTY CYCLE	50% max.
VOLTAGE (Volt)	24 VDC
POWER (W)	11
RELEASE TIME (ms)	300



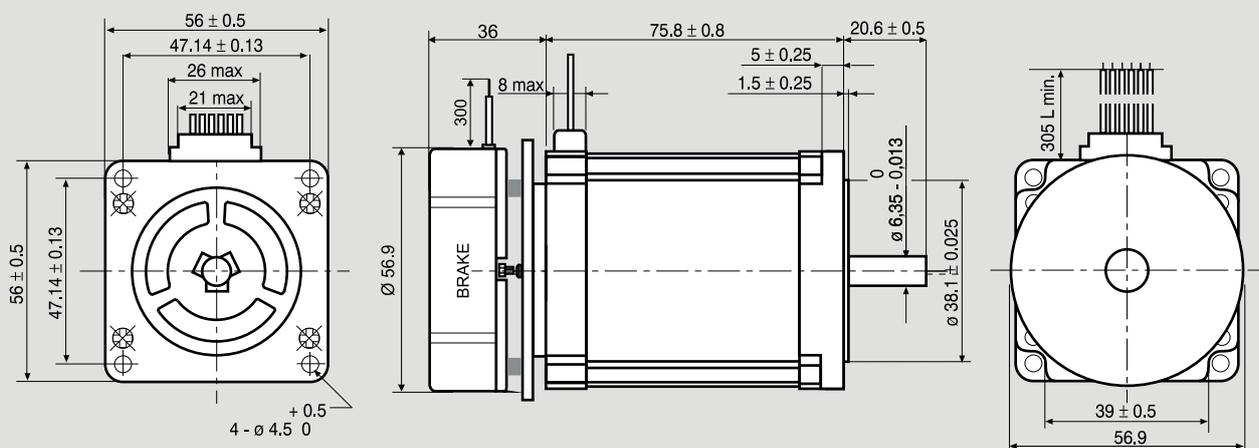
IV



Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7126-1710.B

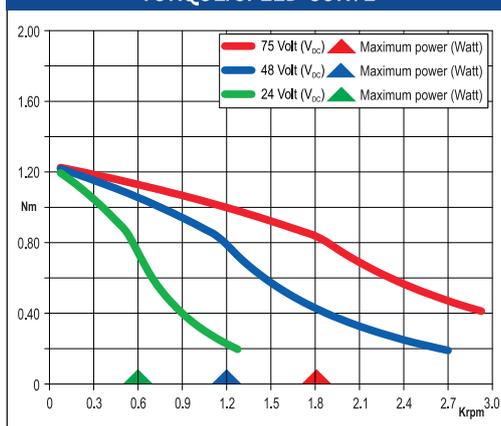
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	103-H7126-1710.B	
SANYO DENKI MOTOR CODE	103-H7126-1710	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR PARALLEL CURRENT	(Amp)	4.0
UNIPOLAR PARALLEL CURRENT	(Amp)	
RESISTANCE	(Ohm)	0.48
INDUCTANCE	(mH)	2.2
BIPOLAR HOLDING TORQUE	(Ncm)	165
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	( $\text{Kg} \cdot \text{m}^2 \times 10^{-7}$ )	360
THEORETICAL ACCELERATION	( $\text{rad} \times \text{sec}^{-2}$ )	45800
BACK E.M.F.	(V/Krpm)	31
MASS	(Kg)	1.5
LEADS CODE	V	

## TORQUE/SPEED CURVE



## BRAKE FEATURES

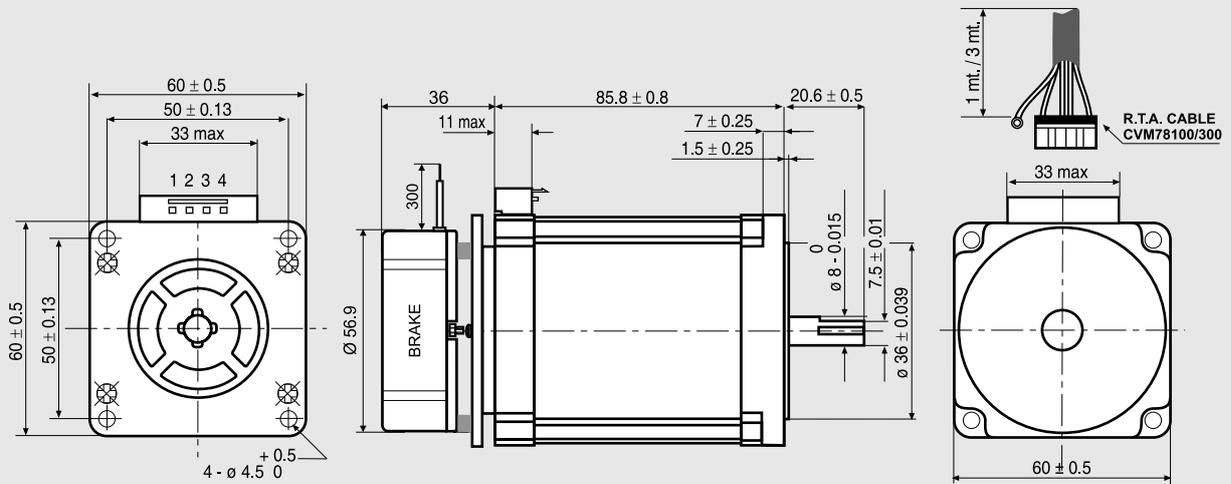
STATIC TORQUE	(Nm)	3.3
DUTY CYCLE		50% max.
VOLTAGE	(Volt)	24 VDC
POWER	(W)	11
RELEASE TIME	(ms)	300



Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, FLEX-DRIVE

# 103-H7823-1714.B

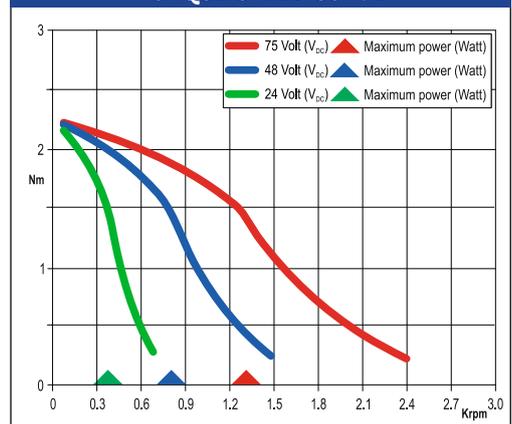
## Dimensions (Unit:mm)



## SANYO DENKY FEATURES

MODEL	103-H7823-1714.B	
SANYO DENKI MOTOR CODE	103-H7823-1714	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR PARALLEL CURRENT	(Amp)	4.0
UNIPOLAR PARALLEL CURRENT	(Amp)	
RESISTANCE	(Ohm)	0.65
INDUCTANCE	(mH)	2.4
BIPOLAR HOLDING TORQUE	(Ncm)	300
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	840
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	35700
BACK E.M.F.	(V/Krpm)	75
MASS	(Kg)	1.9
LEADS CODE	V	

## TORQUE/SPEED CURVE



## BRAKE FEATURES

STATIC TORQUE	(Nm)	3.3
DUTY CYCLE		50% max.
VOLTAGE	(Volt)	24 VDC
POWER	(W)	11
RELEASE TIME	(ms)	300

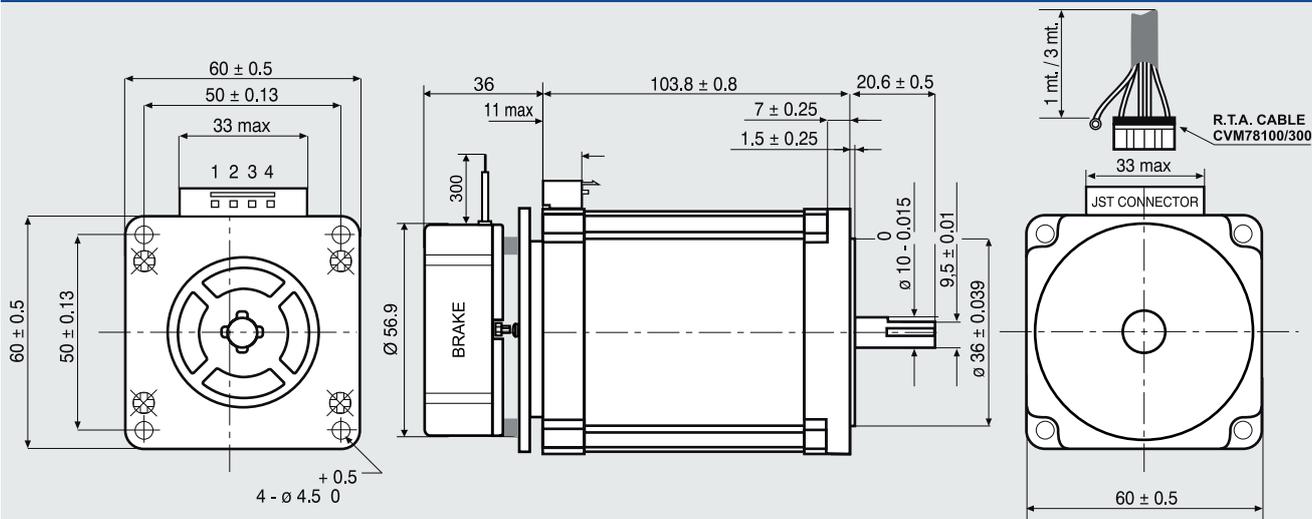


Suggested R.T.A. drive series: BSD, CSD, NDC, ADW, HGD, PLUS, FLEX-DRIVE

# 103-H7826-1612.B

SANYO DENKI  
SANMOTION

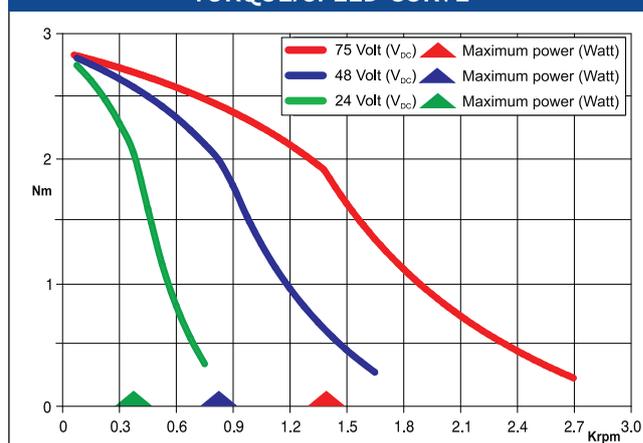
## Dimensions (Unit:mm)



## FEATURES

MODEL	103-H7826-1612.B	
SANYO DENKI MOTOR CODE	103-H7826-1612	
BASIC STEP ANGLE	1.8° ± 0.09°	
BIPOLAR CURRENT	(Amp)	6.0
UNIPOLAR CURRENT	(Amp)	
RESISTANCE	(Ohm)	0.43
INDUCTANCE	(mH)	1.45
BIPOLAR HOLDING TORQUE	(Ncm)	380
UNIPOLAR HOLDING TORQUE	(Ncm)	
ROTOR INERTIA	(Kgm <sup>2</sup> × 10 <sup>-7</sup> )	1080
THEORETICAL ACCELERATION	(rad × sec. <sup>-2</sup> )	35200
BACK E.M.F.	(V/Krpm)	70
MASS	(Kg)	1.65
LEADS CODE	V	

## TORQUE/SPEED CURVE



## BRAKE FEATURES

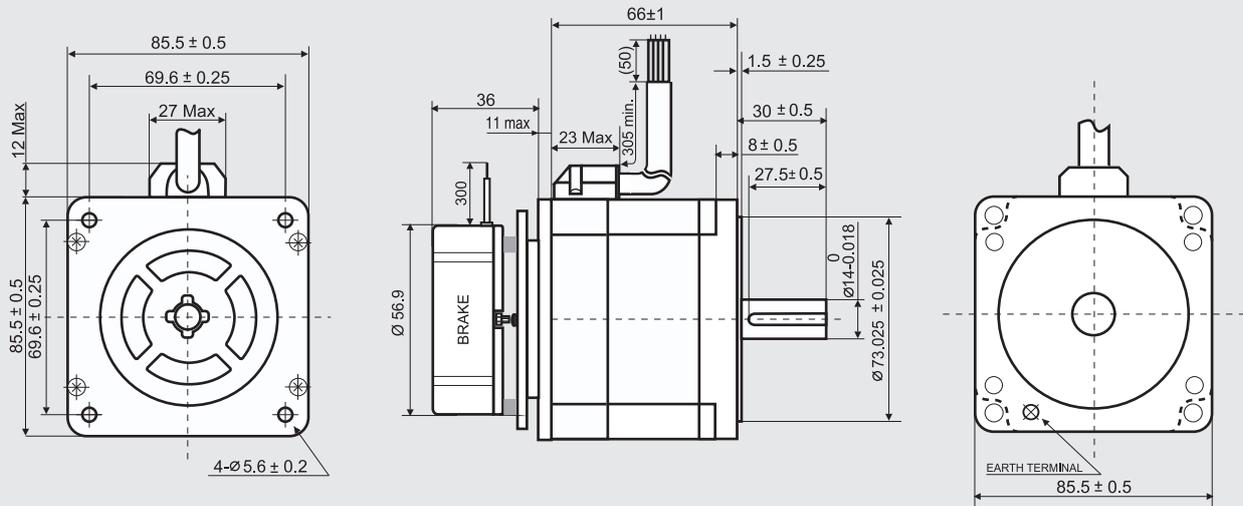
STATIC TORQUE	(Nm)	3.3
DUTY CYCLE		50% max.
VOLTAGE	(Volt)	24 VDC
POWER	(W)	11
RELEASE TIME	(ms)	100



Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

# SM 2861-5025.B

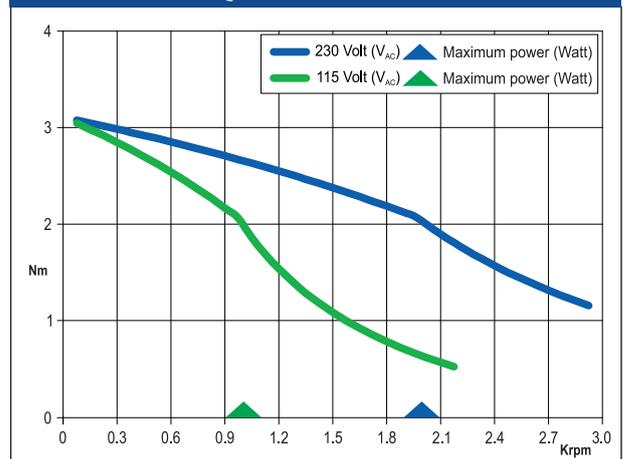
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	SM 2861-5025.B	
SANYO DENKI MOTOR CODE	SM 2861-5025	
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$	
BIPOLAR PARALLEL CURRENT	(Amp)	2.0
RESISTANCE	(Ohm)	2.2
INDUCTANCE	(mH)	15
BIPOLAR HOLDING TORQUE	(Ncm)	360
ROTOR INERTIA	( $\text{Kgm}^2 \times 10^{-7}$ )	1480
THEORETICAL ACCELERATION	( $\text{rad} \times \text{sec.}^{-2}$ )	24300
BACK E.M.F.	(V/Krpm)	180
MASS	(Kg)	2.2
INTERNATIONAL STANDARDS	UL, CSA	
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F	
LEADS CODE	V	

## TORQUE/SPEED CURVE



## BRAKE FEATURES

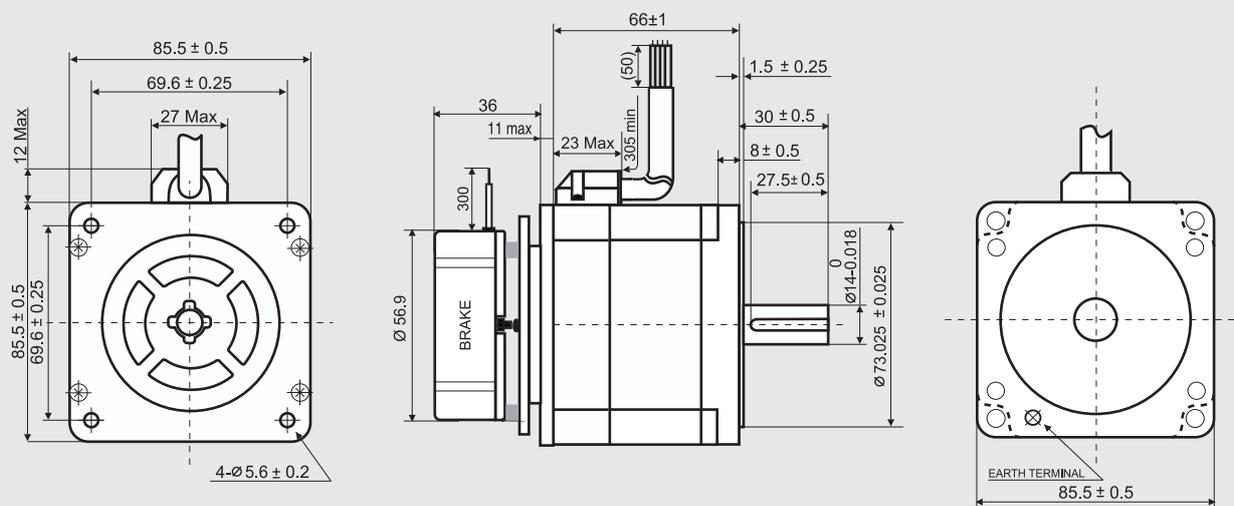
STATIC TORQUE	(Nm)	3.3
DUTY CYCLE		50% max.
VOLTAGE	(Volt)	24 VDC
POWER	(W)	11
RELEASE TIME	(ms)	300



Suggested R.T.A. drive model: X-PLUS L2

# SM 2861-5225.B

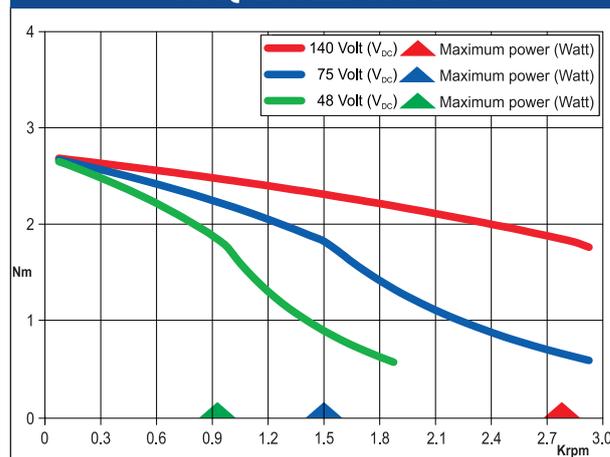
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

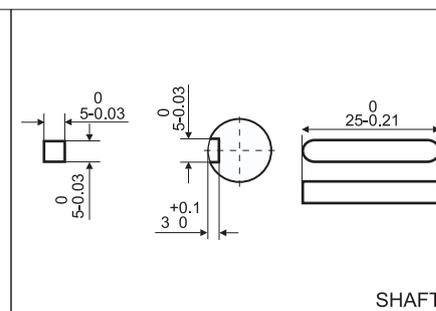
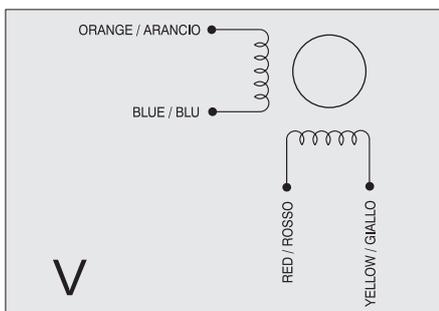
MODEL	SM 2861-5225.B
SANYO DENKI MOTOR CODE	SM 2861-5225
BASIC STEP ANGLE	$1.8^\circ \pm 0.09^\circ$
BIPOLAR PARALLEL CURRENT (Amp)	6.0
RESISTANCE (Ohm)	0.29
INDUCTANCE (mH)	1.7
BIPOLAR HOLDING TORQUE (Ncm)	360
ROTOR INERTIA ( $\text{Kg} \cdot \text{m}^2 \times 10^{-7}$ )	1480
THEORETICAL ACCELERATION ( $\text{rad} \times \text{sec.}^{-2}$ )	24300
BACK E.M.F. (V/Krpm)	60
MASS (Kg)	2.2
INTERNATIONAL STANDARDS	UL, CSA
INSULATION VOLTAGE (V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F
LEADS CODE	V

## TORQUE/SPEED CURVE



## BRAKE FEATURES

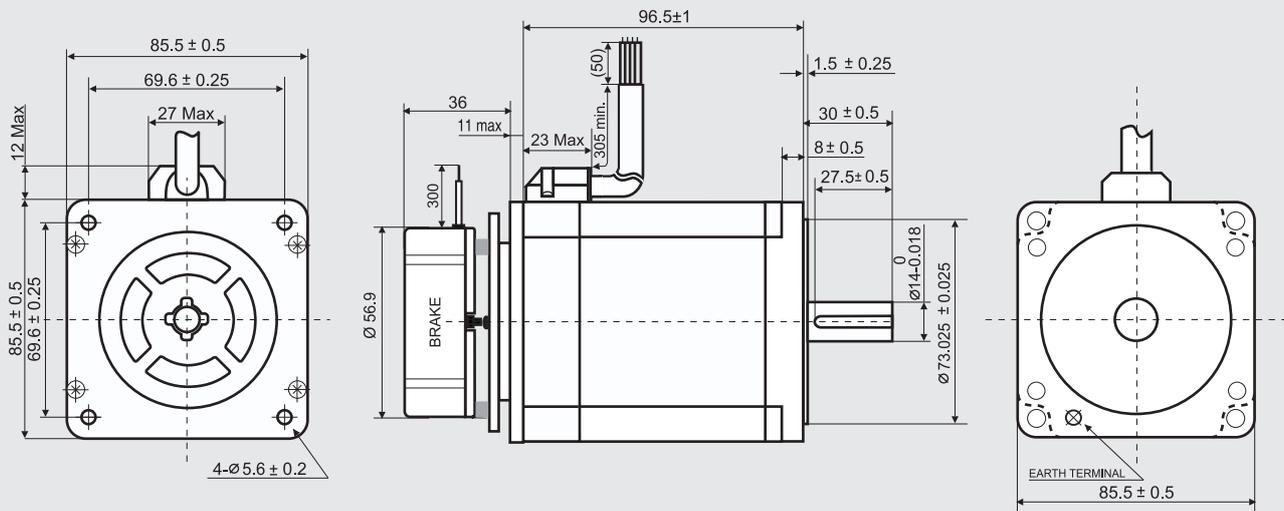
STATIC TORQUE (Nm)	3.3
DUTY CYCLE	50% max.
VOLTAGE (Volt)	24 VDC
POWER (W)	11
RELEASE TIME (ms)	300



Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

# SM 2862-5125.B

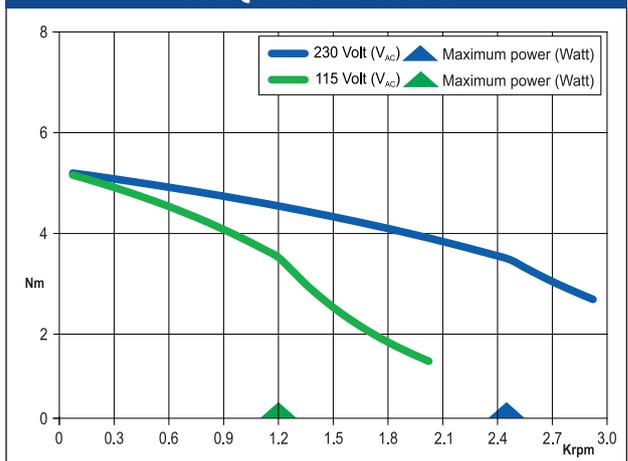
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	SM 2862-5125.B
SANYO DENKI MOTOR CODE	SM 2862-5125
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT (Amp)	4.0
RESISTANCE (Ohm)	0.83
INDUCTANCE (mH)	6.4
BIPOLAR HOLDING TORQUE (Ncm)	700
ROTOR INERTIA (Kgm <sup>2</sup> × 10 <sup>-7</sup> )	3000
THEORETICAL ACCELERATION (rad × sec. <sup>-2</sup> )	23300
BACK E.M.F. (V/Krpm)	175
MASS (Kg)	3.4
INTERNATIONAL STANDARDS	UL, CSA
INSULATION VOLTAGE (V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F
LEADS CODE	V

## TORQUE/SPEED CURVE



## BRAKE FEATURES

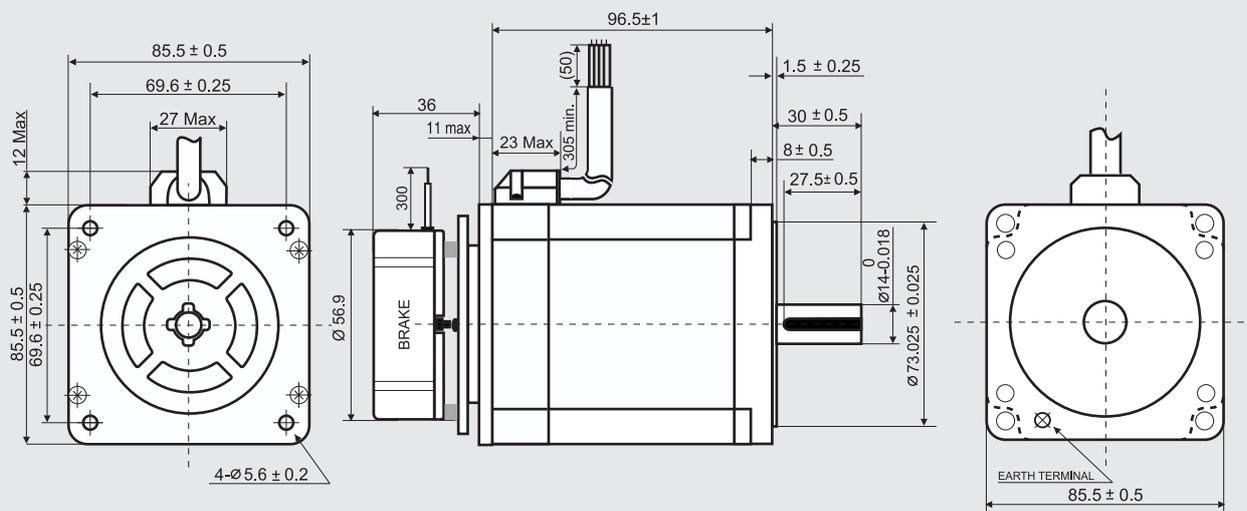
STATIC TORQUE (Nm)	3.3
DUTY CYCLE	50% max.
VOLTAGE (Volt)	24 VDC
POWER (W)	11
RELEASE TIME (ms)	300



Suggested R.T.A. drive series: 230 Vac X-PLUS

# SM 2862-5225.B

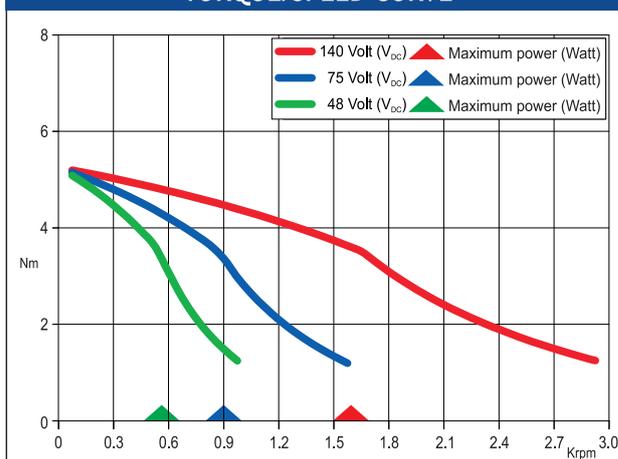
## Dimensions (Unit:mm)



## SANYO DENKI MOTOR FEATURES

MODEL	SM 2862-5225.B
SANYO DENKI MOTOR CODE	SM 2862-5225
BASIC STEP ANGLE	1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT (Amp)	6.0
RESISTANCE (Ohm)	0.36
INDUCTANCE (mH)	2.8
BIPOLAR HOLDING TORQUE (Ncm)	700
ROTOR INERTIA (Kg <sup>m</sup> × 10 <sup>-7</sup> )	3000
THEORETICAL ACCELERATION (rad × sec. <sup>-2</sup> )	23300
BACK E.M.F. (V/Krpm)	120
MASS (Kg)	3.4
INTERNATIONAL STANDARDS	UL, CSA
INSULATION VOLTAGE (V)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS	IP43 - F
LEADS CODE	V

## TORQUE/SPEED CURVE



## BRAKE FEATURES

STATIC TORQUE (Nm)	3.3
DUTY CYCLE	50% max.
VOLTAGE (Volt)	24 VDC
POWER (W)	11
RELEASE TIME (ms)	300



Suggested R.T.A. drive series: NDC, ADW, HGD, PLUS

# CONNECTION SCHEMATICS OF DRIVES AND MOTORS

LEADS CODE	SERIES BIPOLAR CONNECTION	PARALLEL BIPOLAR CONNECTION
<b>IV</b>		
<b>V</b>		

## INDUSTRIAL STEPPING MOTORS - CABLE OPTIONS

RH SERIES	MOTOR CABLE	ENCODER CABLE
RH 1S0M	CVMRH1S02M/CVMRH1S0M3	N/A
RH 1S0M-RS	CVMRH1S02M/CVMRH1S0M3	N/A
RH 1S1M	CVMRH1S02M/CVMRH1S0M3	N/A
RH 1S1M-RS	CVMRH1S02M/CVMRH1S0M3	N/A
RH 1S2M	CVMRH1S02M/CVMRH1S0M3	N/A
RH 1S2M-RS	CVMRH1S02M/CVMRH1S0M3	N/A
RH 1S3M	CVMRH1S02M/CVMRH1S0M3	N/A
RH 1S3M-RS	CVMRH1S02M/CVMRH1S0M3	N/A
RM SERIES	MOTOR CABLE	ENCODER CABLE
RM 2R2M	CVMRMPM01M/CVMRMPM03M CVMRM90PM01M/CVMRM90PM03M	N/A
RM 3R1M	CVMRMPM01M/CVMRMPM03M CVMRM90PM01M/CVMRM90PM03M	N/A
RM 3R2M	CVMRMPM01M/CVMRMPM03M CVMRM90PM01M/CVMRM90PM03M	N/A
RM 3R3M	CVMRMPM01M/CVMRMPM03M CVMRM90PM01M/CVMRM90PM03M	N/A
SP SERIES (IP 65)	MOTOR CABLE	ENCODER CABLE
SP 2563-5000	CVMRMPM01M/CVMRMPM03M CVMRM90PM01M/CVMRM90PM03M	N/A
SP 2563-5200	CVMRMPM01M/CVMRMPM03M CVMRM90PM01M/CVMRM90PM03M	N/A
SP 2566-5200	CVMRMPM01M/CVMRMPM03M CVMRM90PM01M/CVMRM90PM03M	N/A
SP 2862-5100	CVMRMPM01M/CVMRMPM03M CVMRM90PM01M/CVMRM90PM03M	N/A
SP 2863-5100	CVMRMPM01M/CVMRMPM03M CVMRM90PM01M/CVMRM90PM03M	N/A

## INDUSTRIAL STEPPING MOTORS - CABLE OPTIONS

SP SERIES (FULL IP 65)	MOTOR CABLE	ENCODER CABLE
SP 2566-50SX00	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	N/A
SP 2566-52SX00	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	N/A
SP2861-51SX01	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	N/A
SP2862-51SX01	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	N/A
SP2863-51SX01	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	N/A

## INDUSTRIAL STEPPING MOTORS WITH ENCODER - CABLE OPTIONS

	MOTOR CABLE	ENCODER CABLE
RH 1S0M-04D0	CVMRH1S02M/CVMRH1S0M3	CVEPA0D0M3/CVEPA0D02M
RH 1S0M-04E0	CVMRH1S02M/CVMRH1S0M3	CVEOZD0M3/CVEPAZD02M
RH 1S0M-0HE0	CVMRH1S02M/CVMRH1S0M3	CVEOZD0M3/CVEPAZD02M
RH 1S1M-04D0	CVMRH1S02M/CVMRH1S0M3	CVEPA0D0M3/CVEPA0D02M
RH 1S1M-04E0	CVMRH1S02M/CVMRH1S0M3	CVEOZD0M3/CVEPAZD02M
RH 1S1M-0HE0	CVMRH1S02M/CVMRH1S0M3	CVEOZD0M3/CVEPAZD02M
RH 1S2M-04D0	CVMRH1S02M/CVMRH1S0M3	CVEPA0D0M3/CVEPA0D02M
RH 1S2M-04E0	CVMRH1S02M/CVMRH1S0M3	CVEOZD0M3/CVEPAZD02M
RH 1S2M-0HE0	CVMRH1S02M/CVMRH1S0M3	CVEOZD0M3/CVEPAZD02M
RH 1S3M-04D0	CVMRH1S02M/CVMRH1S0M3	CVEPA0D0M3/CVEPA0D02M
RH 1S3M-04E0	CVMRH1S02M/CVMRH1S0M3	CVEOZD0M3/CVEPAZD02M
RH 1S3M-0HE0	CVMRH1S02M/CVMRH1S0M3	CVEOZD0M3/CVEPAZD02M
RM 3T1M-04D0	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	CVERMP01M/CVERMP03M CVERM90PM01M/CVERM90PM03M
RM 3T1M-04E0	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	CVERMP01M/CVERMP03M CVERM90PM01M/CVERM90PM03M
RM 3T1M-0HE0	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	CVERMP01M/CVERMP03M CVERM90PM01M/CVERM90PM03M
RM 3T2M-04D0	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	CVERMP01M/CVERMP03M CVERM90PM01M/CVERM90PM03M
RM 3T2M-04E0	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	CVERMP01M/CVERMP03M CVERM90PM01M/CVERM90PM03M
RM 3T2M-0HE0	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	CVERMP01M/CVERMP03M CVERM90PM01M/CVERM90PM03M
RM 3T3M-04D0	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	CVERMP01M/CVERMP03M CVERM90PM01M/CVERM90PM03M
RM 3T3M-04E0	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	CVERMP01M/CVERMP03M CVERM90PM01M/CVERM90PM03M
RM 3T3M-0HE0	CVMRMP01M/CVMRMP03M CVMRM90PM01M/CVMRM90PM03M	CVERMP01M/CVERMP03M CVERM90PM01M/CVERM90PM03M

## TRADITIONAL STEPPING MOTORS - CABLE OPTIONS

14 mm FLANGE	MOTOR CABLE	ENCODER CABLE
SH2141-5541	30 cm LEAD WIRE	N/A
28 mm FLANGE	MOTOR CABLE	ENCODER CABLE
SH2281-5271	30 cm LEAD WIRE	N/A
SH2281-5231	30 cm LEAD WIRE	N/A
SH2285-5271	30 cm LEAD WIRE	N/A
SH2285-5231	30 cm LEAD WIRE	N/A
42 mm FLANGE	MOTOR CABLE	ENCODER CABLE
103-H5205-5040	30 cm LEAD WIRE	N/A
103-H5205-0351	30 cm LEAD WIRE	N/A
103-H5205-0312	30 cm LEAD WIRE	N/A
103-H5205-4240	CVM103H5230	N/A
103-H5205-4210	CVM103H5230	N/A
103-H5208-0483	30 cm LEAD WIRE	N/A
103-H5210-4240	CVM103H5230	N/A
103-H5210-4210	CVM103H5230	N/A
103-H5210-4541	CVM103H5230	N/A
103-H5210-4512	30 cm LEAD WIRE	N/A
103-H5212-4640	CVM103H5230	N/A
103-H5212-4610	CVM103H5230	N/A
50 mm FLANGE	MOTOR CABLE	ENCODER CABLE
103-H6701-0140	30 cm LEAD WIRE	N/A
103-H6703-0440	30 cm LEAD WIRE	N/A
56 mm FLANGE	MOTOR CABLE	ENCODER CABLE
103-H7121-0440	30 cm LEAD WIRE	N/A
103-H7123-5040	30 cm LEAD WIRE	N/A
103-H7123-5010	30 cm LEAD WIRE	N/A
103-H7123-0140	30 cm LEAD WIRE	N/A
103-H7123-0440	30 cm LEAD WIRE	N/A
103-H7123-0740	30 cm LEAD WIRE	N/A
103-H7123-0710	30 cm LEAD WIRE	N/A
103-H7123-1749	30 cm LEAD WIRE	N/A
103-H7123-1711	30 cm LEAD WIRE	N/A
103-H7126-0140	30 cm LEAD WIRE	N/A
103-H7126-0740	30 cm LEAD WIRE	N/A
103-H7126-0710	30 cm LEAD WIRE	N/A
103-H7126-1740	30 cm LEAD WIRE	N/A
103-H7126-1710	30 cm LEAD WIRE	N/A
103-H7126-6640	30 cm LEAD WIRE	N/A
103-H7126-6610	30 cm LEAD WIRE	N/A
103-H7128-5740	30 cm LEAD WIRE	N/A
103-H7128-5710	30 cm LEAD WIRE	N/A
60 mm FLANGE	MOTOR CABLE	ENCODER CABLE
103-H7822-0740	CVM77100 + CVM77300	N/A
103-H7823-0740	CVM77100 + CVM77300	N/A
103-H7823-1740	CVM78100 + CVM78300	N/A
103-H7823-1714	CVM78100 + CVM78300	N/A
103-H7826-1642	CVM78100 + CVM78300	N/A
103-H7826-1612	CVM78100 + CVM78300	N/A

## TRADITIONAL STEPPING MOTORS - CABLE OPTIONS

85.5 mm FLANGE	MOTOR CABLE	ENCODER CABLE
SM 2861-5055	30 cm LEAD WIRE	N/A
SM 2861-5025	30 cm LEAD WIRE	N/A
SM 2861-5255	30 cm LEAD WIRE	N/A
SM 2861-5225	30 cm LEAD WIRE	N/A
SM 2862-5055	30 cm LEAD WIRE	N/A
SM 2862-5155	30 cm LEAD WIRE	N/A
SM 2862-5125	30 cm LEAD WIRE	N/A
SM 2862-5255	30 cm LEAD WIRE	N/A
SM 2862-5225	30 cm LEAD WIRE	N/A
SM 2863-5155	30 cm LEAD WIRE	N/A
SM 2863-5126	30 cm LEAD WIRE	N/A
SM 2863-5255	30 cm LEAD WIRE	N/A
SM 2863-5225	30 cm LEAD WIRE	N/A
106.4 mm FLANGE	MOTOR CABLE	ENCODER CABLE
103-H89222-6341	30 cm LEAD WIRE	N/A
103-H89222-6311	30 cm LEAD WIRE	N/A
103-H89222-6541	30 cm LEAD WIRE	N/A
103-H89223-6341	30 cm LEAD WIRE	N/A
103-H89223-6311	30 cm LEAD WIRE	N/A
103-H89223-6641	30 cm LEAD WIRE	N/A
103-H89223-6611	30 cm LEAD WIRE	N/A
NOT PREFERRED:		
103-H8221-6241	30 cm LEAD WIRE	N/A
103-H8221-6211	30 cm LEAD WIRE	N/A
103-H8222-6340	30 cm LEAD WIRE	N/A
103-H8222-6310	30 cm LEAD WIRE	N/A
103-H8223-6540	30 cm LEAD WIRE	N/A
103-H8223-6510	30 cm LEAD WIRE	N/A

## TRADITIONAL STEPPING MOTORS WITH ENCODER - CABLE OPTIONS

	MOTOR CABLE	ENCODER CABLE
EM 0H1M-04D0	30 cm LEAD WIRE	CVEPB0D0M4/CVEPB0D01M
EM 0H2M-04D0	30 cm LEAD WIRE	CVEPB0D0M4/CVEPB0D01M
EM 1H2H-04D0	CVM103H5230/CVM103H5200	CVEPA0D03M/CVEPAZD0M3
EM 1H2H-04E0	CVM103H5230/CVM103H5200	CVEPA0D03M/CVEPAZD0M3
EM 1H2H-0HE0	CVM103H5230/CVM103H5200	CVEPA0D03M/CVEPAZD0M3
EM 1H3H-04D0	CVM103H5230/CVM103H5200	CVEPA0D03M/CVEPAZD0M3
EM 1H3H-04E0	CVM103H5230/CVM103H5200	CVEPA0D03M/CVEPAZD0M3
EM 1H3H-0HE0	CVM103H5230/CVM103H5200	CVEPA0D03M/CVEPAZD0M3
EM 2H1M-04D0	30 cm LEAD WIRE	CVEPA0D03M/CVEPAZD0M3
EM 2H1M-04E0	30 cm LEAD WIRE	CVEPA0D03M/CVEPAZD0M3
EM 2H1M-0HE0	30 cm LEAD WIRE	CVEPA0D03M/CVEPAZD0M3
EM 2H2M-04D0	30 cm LEAD WIRE	CVEPA0D03M/CVEPAZD0M3
EM 2H2M-04E0	30 cm LEAD WIRE	CVEPA0D03M/CVEPAZD0M3
EM 2H2M-0HE0	30 cm LEAD WIRE	CVEPA0D03M/CVEPAZD0M3
EM 6H2M-04D0	CVM78100/CVM78300	CVEPA0D03M/CVEPAZD0M3
EM 6H2M-04E0	CVM78100/CVM78300	CVEPA0D03M/CVEPAZD0M3
EM 6H2M-0HE0	CVM78100/CVM78300	CVEPA0D03M/CVEPAZD0M3
EM 6H3H-04D0	CVM78100/CVM78300	CVEPA0D03M/CVEPAZD0M3
EM 6H3H-04E0	CVM78100/CVM78300	CVEPA0D03M/CVEPAZD0M3
EM 6H3H-0HE0	CVM78100/CVM78300	CVEPA0D03M/CVEPAZD0M3
EM 3F1L-04D0	30 cm LEAD WIRE	40 cm LEAD WIRE
EM 3F1H-04D0	30 cm LEAD WIRE	40 cm LEAD WIRE
EM 3F1H-04E0	30 cm LEAD WIRE	40 cm LEAD WIRE
EM 3F1H-0HE0	30 cm LEAD WIRE	40 cm LEAD WIRE
EM 3F2M-04D0	30 cm LEAD WIRE	40 cm LEAD WIRE
EM 3F2H-04D0	30 cm LEAD WIRE	40 cm LEAD WIRE
EM 3F2H-04E0	30 cm LEAD WIRE	40 cm LEAD WIRE
EM 3F2H-0HE0	30 cm LEAD WIRE	40 cm LEAD WIRE
EM 3F3H-04D0	30 cm LEAD WIRE	40 cm LEAD WIRE
EM 3F3H-04E0	30 cm LEAD WIRE	40 cm LEAD WIRE
EM 3F3H-0HE0	30 cm LEAD WIRE	40 cm LEAD WIRE
EM 3F3M-14D0	100 cm LEAD WIRE	80 cm LEAD WIRE

## TRADITIONAL STEPPING MOTORS WITH BRAKE - CABLE OPTIONS

	MOTOR CABLE	ENCODER CABLE
103-H5210-4512.B	CVM103H5230/CVM103H5200	/
103-H7123-5010.B	30 cm LEAD WIRE	/
103-H7123-0710.B	30 cm LEAD WIRE	/
103-H7123-1711.B	30 cm LEAD WIRE	/
103-H7126-0710.B	30 cm LEAD WIRE	/
103-H7126-1710.B	30 cm LEAD WIRE	/
103-H7823-1714.B	CVM78100/CVM78300	/
103-H7826-1612.B	CVM78100/CVM78300	/
SM 2861-5025.B	30 cm LEAD WIRE	/
SM 2861-5225.B	30 cm LEAD WIRE	/
SM 2862-5125.B	30 cm LEAD WIRE	/
SM 2862-5225.B	30 cm LEAD WIRE	/

STEPPING MOTORS

## ACCESSORIES FRONT BRAKES



# FB-M12-24-15-00000

## FRONT BRAKES

M12  
CONNECTOR

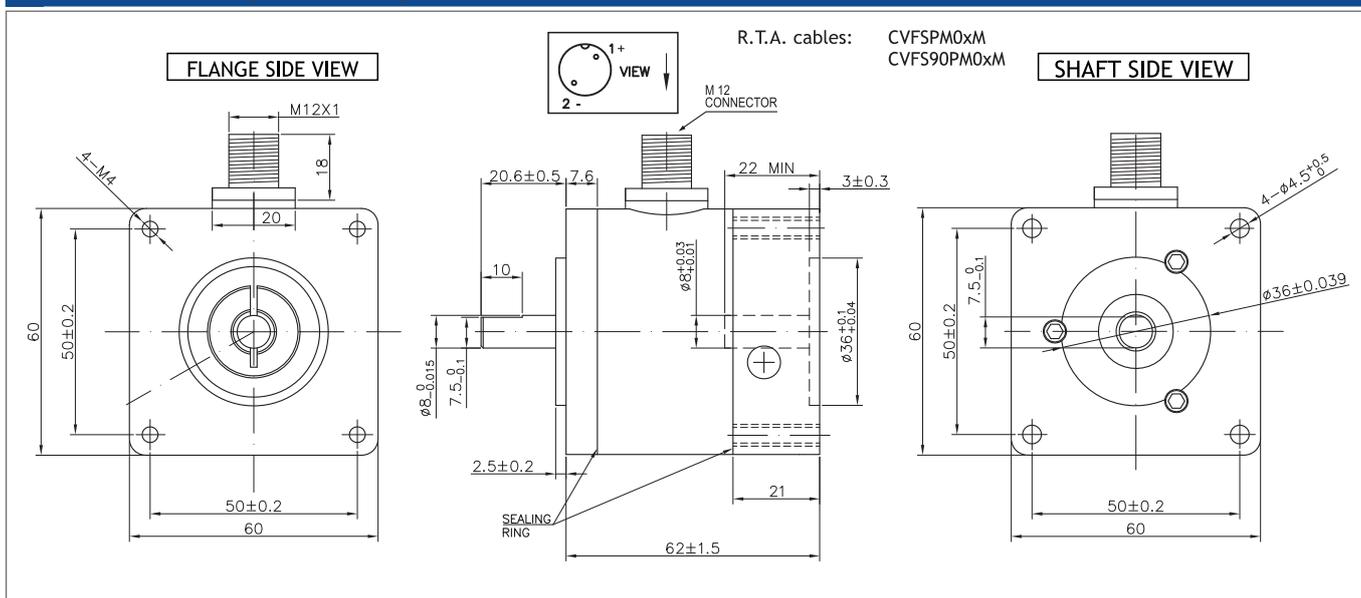
24 VDC

NEMA 24



SCAN THE QR CODE  
TO WATCH A VIDEO  
ON FB SERIES  
FRONT BRAKES

## Dimensions (Units:mm)



MODEL	Static torque (Nm)	Current (mA)	Voltage (V)	Power (W)	Release time (ms)	Mass (Kg)
FB-M12-24-15-00000	1.5	460	24 VDC	11.0	100	0.57

## Suggested motors and cables

	<p>NEMA 24 motors</p>	<p>R.T.A. cables</p> <p>Shield Red + Yellow -</p> <p>CVFSPM0xM x=1m/3m</p> <p>CVFS90PM0xM x=1m/3m</p>
<p>MOUNTING OPERATION MODE: ■ Tightening torque M=3.4 Nm ■ Locking bolt M4 ■ R.T.A. Quality Control</p>		



# FB-M12-34-35-00000

## FRONT BRAKES

M12  
CONNECTOR

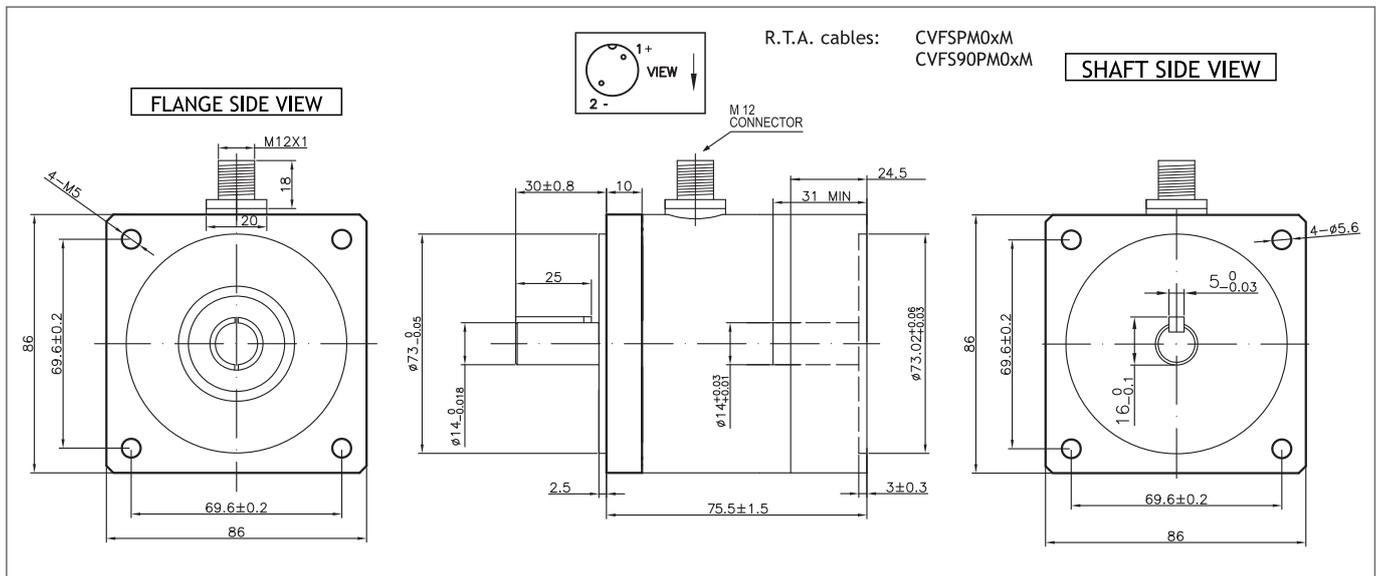
24 VDC

NEMA 34



SCAN THE QR CODE  
TO WATCH A VIDEO  
ON FB SERIES  
FRONT BRAKES

## Dimensions (Units:mm)



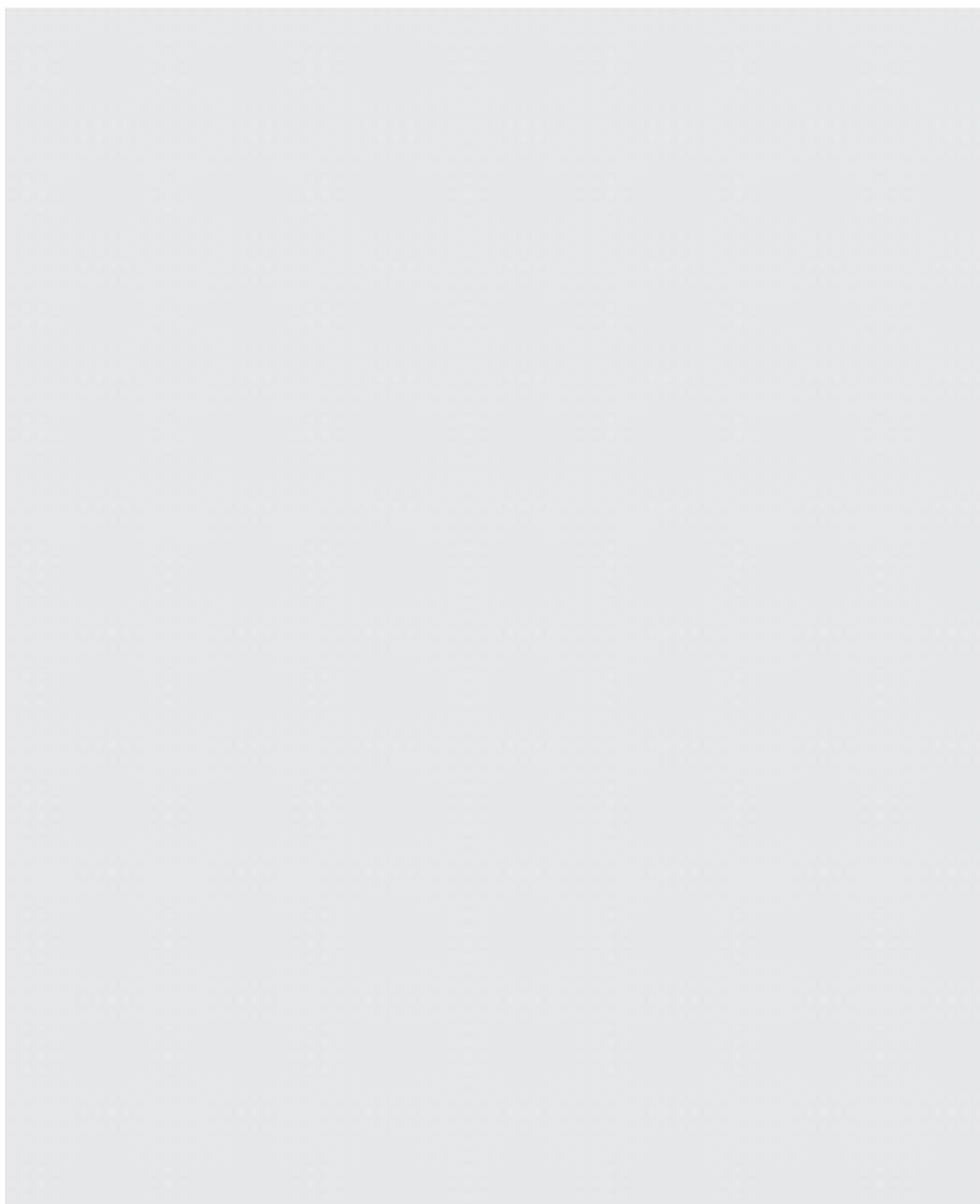
MODEL	Static torque (Nm)	Current (mA)	Voltage (V)	Power (W)	Mass (Kg)
FB-M12-34-35-00000	3.5	460	24 VDC	11.0	1.61

## Suggested motors and cables

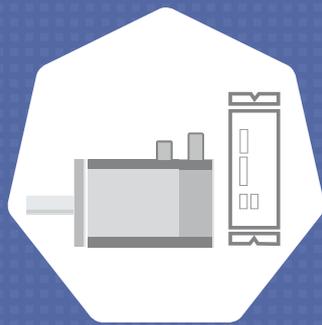
	<p>NEMA 34 motors</p>	<p>R.T.A. cables</p> <p>CVFSPM0xM x=1m/3m</p> <p>CVFS90PM0xM x=1m/3m</p>
<p>MOUNTING OPERATION MODE: ■ Tightening torque M= 8 Nm    ■ Locking bolt M5    ■ R.T.A. Quality Control</p>		

## ACCESSORIES - FRONT BRAKES - CABLE OPTIONS

	BRAKE CABLE
FB-M12-34-35-00000	CVFSPM01M/CVFSPM03M CVFS90PM01M/CVFS90PM03M
FB-M12-24-15-0000	CVFSPM01M/CVFSPM03M CVFS90PM01M/CVFS90PM03M

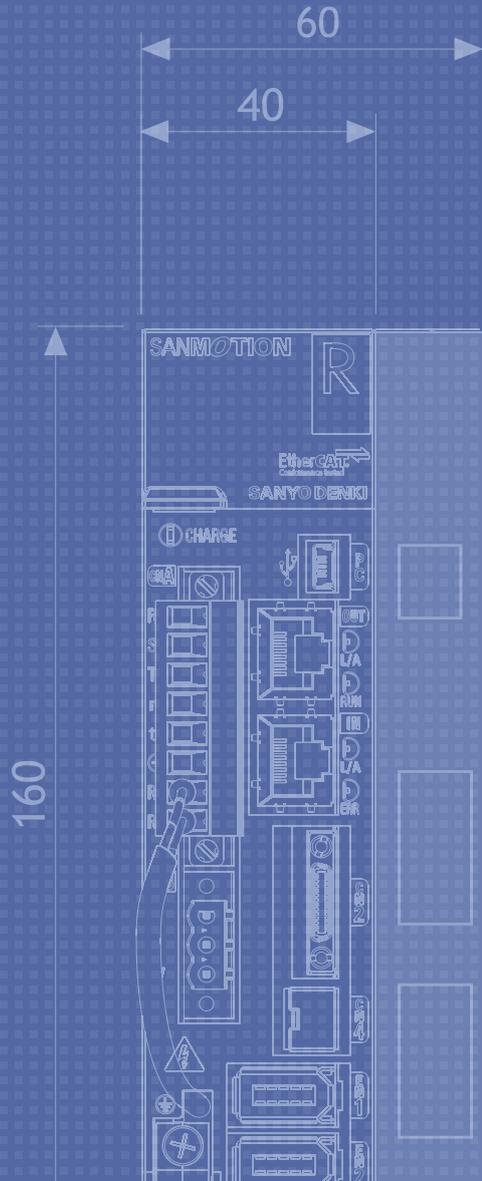
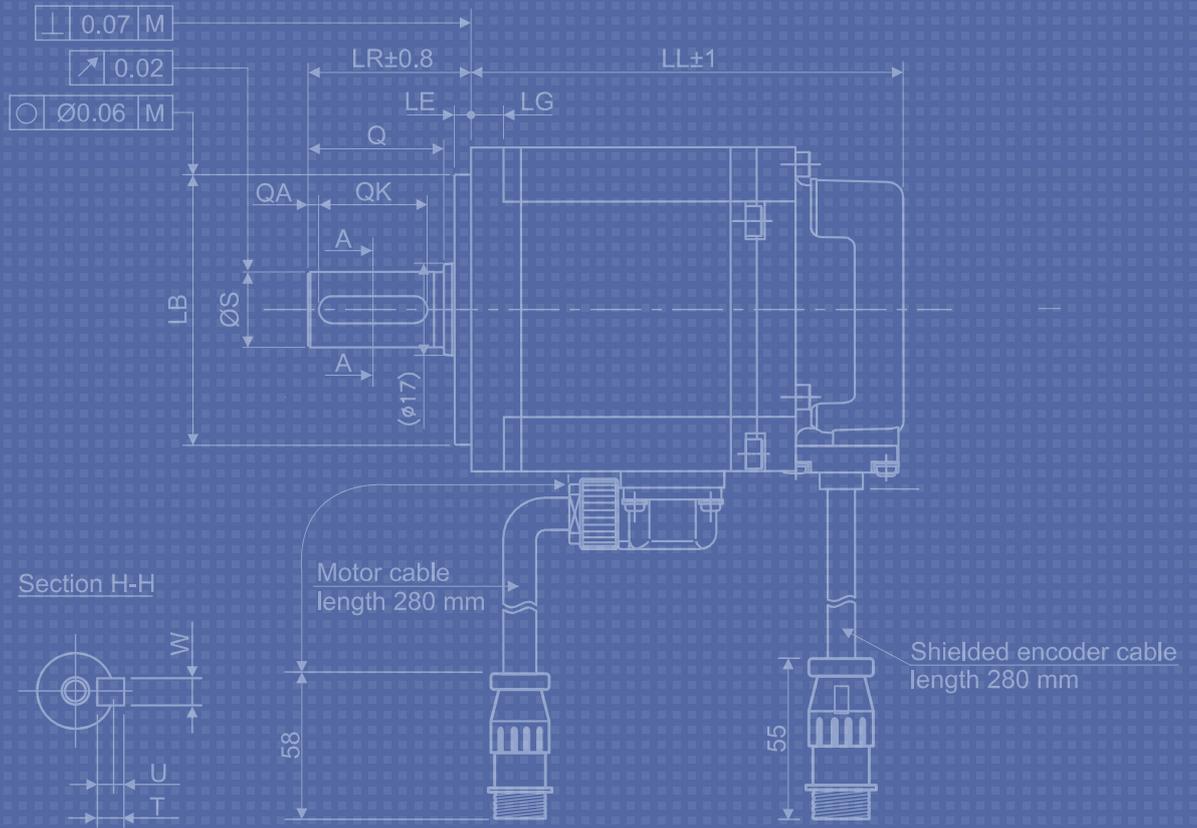






## SERVO SYSTEMS





# SERVO SYSTEMS



## INDEX

48 VDC SERVOAMPLIFIERS	245
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# Servoamplifiers: 3 series, 17 models



## 1 48 VDC SERVOAMPLIFIERS



### EtherCAT - single axis

- 48 VDC main power supply
- 24 VDC control power supply
- Amplifier Capacity: 40 A
- Speed Frequency response 800 Hz
- Built-in Dynamic Brake
- Built-in Regenerative Resistor
- Safe Torque Off (STO) - SIL 2 PL=d
- Two encoder inputs
- 6 Inputs / 2 Outputs
- Seven segments display monitor
- Protection functions

### EtherCAT - multi axes

- 48 VDC main power supply
- 24 VDC control power supply
- Amplifier Capacity: 40 A
- Speed Frequency response 800 Hz
- Optional External Regenerative Resistor
- Safe Torque Off (STO) - SIL 3 PL=e
- 8 Inputs / 8 Outputs
- Led display monitor
- Protection functions

### Pulse Train

- 48 VDC main power supply
- 5 VDC control power supply
- Amplifier Capacity: 40 A
- Speed Frequency response 1,2 KHz
- Built-in Dynamic Brake
- 8 Inputs / 8 Outputs
- Led display monitor
- Protection functions



## 2 230 VAC SERVOAMPLIFIERS



### EtherCAT

- 230 VAC power supply
- Amplifier capacity: 30 A, 50 A, 100 A
- Speed Frequency response 2,2 KHz
- Built-in Dynamic Brake
- Built-in Regenerative Resistor
- Safe Torque Off (STO) - SIL 3 PL=e
- Advanced Safety Functions available: STO, SS1, SS2, SLS, SOS, SBC, SSM
- Two encoder inputs
- 7 Inputs / 2 Outputs

### Pulse Train - Analog Input

- 230 VAC power supply
- Amplifier capacity: 20 A, 30 A, 50 A, 100 A
- Speed Frequency response 2,2 KHz
- Built-in Dynamic Brake
- Optional External Regenerative Resistor
- Safe Torque Off (STO) - SIL 3 PL=e
- 8 Inputs / 8 Outputs



### 3 400 VAC SERVOAMPLIFIERS



#### EtherCAT

- 400 VAC power supply
- Amplifier capacity: 50 A, 100 A
- Speed Frequency response 2,2 KHz
- Safe Torque Off (STO) - SIL 3
- Two encoder inputs

#### Pulse Train - Analog Input

- 400 VAC power supply
- Amplifier capacity: 50 A, 100 A, 150 A
- Speed Frequency response 2,2 KHz
- Safe Torque Off (STO) - SIL 3



## Main features

- Simultaneous access to all parameters through the “Group/Page” Interface.
- Intuitive graphic interface for I/O settings.
- Advanced jogging for mechanics testing.
- Real-time autotuning function.
- Efficient warnings control system for real-time diagnosis.
- Embedded oscilloscope for results checking.
- STO function available.

#### Table of contents

#### SERVOAMPLIFIERS

	DRIVE TYPE	MAIN POWER SUPPLY VOLTAGE (V)	STO (Safe Torque Off)	DIMENSIONS (mm)	PAGE
<b>48 VDC SERVOAMPLIFIERS</b>					
<b>EtherCAT</b>					
RS2K04A2HL5	EtherCAT	48 VDC	YES	40x160x85	246
RF2K24A0HL5	EtherCAT	48 VDC	YES	50x200x130	248
<b>Step/Dir</b>					
RF2G21A0A00	Step/Dir analog	48 VDC	NO	30x116x70	250
<b>230 VAC SERVOAMPLIFIERS</b>					
<b>EtherCAT</b>					
RS3A03A2HA4W00P	EtherCAT	230 VAC	YES	50 x 160 x 130	254
RS3A05A2HA4W00P	EtherCAT	230 VAC	YES	85x160x130	254
RS3A10A2HA4W00P	EtherCAT	230 VAC	YES	100x235x220	254
RS3A03A2HAE (ADVANCED SAFETY)	EtherCAT	230 VAC	ADVANCED FUNCTIONS	60x160x130	256
<b>Step/Dir - Analog Input</b>					
RS3A03A0AL0W00P	Step/Dir analog	230 VAC	NO	50x160x130	258
RS3A03A0AL2 (STO)	Step/Dir analog	230 VAC	YES	50x160x130	260
RS3A05A0AA2 (STO)	Step/Dir analog	230 VAC	YES	85x160x130	260
RS3A10A0AA2 (STO)	Step/Dir analog	230 VAC	YES	100x235x220	260
<b>400 VAC SERVOAMPLIFIERS</b>					
<b>EtherCAT</b>					
RS3C05A2HA4	EtherCAT	400 VAC	YES	100x235x235	264
RS3C10A2HA4	EtherCAT	400 VAC	YES	175x235x235	264
RS3C15A2HL4	EtherCAT	400 VAC	YES	220x375x217	264
<b>Step/Dir - Analog Input</b>					
RS3C05A0AA2	Step/Dir analog	400 VAC	YES	100x235x235	266
RS3C10A0AA2	Step/Dir analog	400 VAC	YES	175x235x235	266
RS3C15A0AL2	Step/Dir analog	400 VAC	YES	220x375x217	266

# 2 Families: VDC servomotors and VAC servomotors, 4 series with 38 models

## 1 48 VDC SERVOMOTORS - INCREMENTAL ENCODER



- Nominal Power: 50W, 100W, 200W
- Nominal Torque: From 0,159 Nm to 0,637 Nm
- Maximum torque: From 0,54 Nm to 1,5 Nm
- Encoder resolution: 131072 imp/rev (17 bit)



## 2 230 VAC SERVOMOTORS - BATTERY LESS MULTI-TURN ABSOLUTE ENCODER



- Nominal Power: 100W, 200W, 400W, 750W, 1000W, 3000W
- Nominal Torque: From 0,286 Nm to 7,2 Nm
- Maximum torque: From 1,18 Nm to 20,5 Nm
- Single-turn Encoder resolution: 131072 imp/rev (17 bit)
- Multi-turn Encoder resolution: 65537 turns



## 3 230 VAC SERVOMOTORS - INCREMENTAL ENCODER



- Nominal Power: 100W, 200W, 400W, 750W, 1000W, 1500W, 1800W, 2000W, 3000W
- Nominal Torque: From 0,318 Nm to 9,7 Nm
- Maximum torque: From 1,18 Nm to 21,4 Nm
- Encoder resolution: 131072 imp/rev (17 bit)



## 4 400 VAC SERVOMOTORS - INCREMENTAL ENCODER



- Nominal Power: 3500W, 4500W, 15000W
- Nominal Torque: From 1700 Ncm to 9500 Ncm
- Maximum torque: From 4900 Ncm to 21500 Ncm
- Encoder resolution: 131072 imp/rev (17 bit)



## Table of contents

### SERVOMOTORS

	NOMINAL POWER (W)	NOMINAL SPEED (rpm)	MAX SPEED (rpm)	NOMINAL TORQUE (Nm)	STALL TORQUE (Nm)	MAX TORQUE (Nm)	INERTIA (Kg x m <sup>2</sup> )	FLANGE SIZE (mm)	PAGE
<b>DC SERVOMOTORS</b>									
<b>48 VDC Servomotors Incremental Encoder</b>									
R2GD04005FXH1CM	50	3000	6000	0.159	0.167	0.54	0.0376x10 <sup>-4</sup>	40	269
R2GD06010DXH11M	100	3000	5000	0.318	0.353	0.84	0.117x10 <sup>-4</sup>	60	270
R2GD06020DXH11M	200	3000	4500	0.637	0.637	1.5	0.219x10 <sup>-4</sup>	60	271
<b>AC SERVOMOTORS</b>									
<b>230 Vac Servomotors Battery Less Multi-turn Absolute Encoder</b>									
R2AA04010FXR1CM	100	3000	6000	0.286	0.318	1.18	0.0627x10 <sup>-4</sup>	40	273
R2AA04010FCR1CM6	100	3000	6000	0.286	0.318	1.18	0.0627x10 <sup>-4</sup>	40	273
R2AA06020FXR11M	200	3000	6000	0.637	0.686	2.20	0.219x10 <sup>-4</sup>	60	274
R2AA06020FCR11M	200	3000	6000	0.637	0.686	2.20	0.219x10 <sup>-4</sup>	60	274
R2AA06040FXR11M	400	3000	6000	1.270	1.370	4.80	0.412x10 <sup>-4</sup>	60	275
R2AA06040FCR11M6	400	3000	6000	1.270	1.370	4.80	0.412x10 <sup>-4</sup>	60	275
R2AA08075FXR11M	750	3000	6000	2.390	2.550	8.50	1.820x10 <sup>-4</sup>	80	276
R2AA08075FCR11M	750	3000	6000	2.390	2.550	8.50	1.820x10 <sup>-4</sup>	80	276
R2AAB8100HXR29M	1000	3000	3000	3.180	3.920	11.60	2.383x10 <sup>-4</sup>	86	277
R2AAB8100HCR29M	1000	3000	3000	3.180	3.920	11.60	2.383x10 <sup>-4</sup>	86	277
Q2AA10150BXR48M	1500	2000	2000	7.2	7.7	20.5	8.0x10 <sup>-4</sup>	100	278
Q2AA10150BCR48M	1500	2000	2000	7.2	7.7	20.5	8.0x10 <sup>-4</sup>	100	278
<b>230 VAC Servomotors Incremental Encoder</b>									
R2AA04010FXH1CM	100	3000	6000	0.318	0.318	1.18	0.0627x10 <sup>-4</sup>	40	280
R2AA04010FCH1CM6	100	3000	6000	0.286	0.318	1.18	0.0627x10 <sup>-4</sup>	40	280
R2AA06020FXH11M	200	3000	6000	0.637	0.686	2.20	0.219x10 <sup>-4</sup>	60	281
R2AA06020FCH11M	200	3000	6000	0.637	0.686	2.20	0.219x10 <sup>-4</sup>	60	281
R2AA06040FXH11M	400	3000	6000	1.270	1.370	4.80	0.412x10 <sup>-4</sup>	60	282
R2AA06040FCH11M6	400	3000	6000	1.15	1.370	4.80	0.412x10 <sup>-4</sup>	60	282
R2AA08075FXH11M	750	3000	6000	2.390	2.550	8.50	1.820x10 <sup>-4</sup>	80	283
R2AA08075FCH11M	750	3000	6000	2.390	2.550	8.50	1.820x10 <sup>-4</sup>	80	283
R2AAB8100HXH29M	1000	3000	3000	3.180	3.920	11.60	2.383x10 <sup>-4</sup>	86	284
R2AAB8100HCH29M	1000	3000	3000	3.180	3.920	11.60	2.383x10 <sup>-4</sup>	86	284
Q2AA10150BXH48M	1500	2000	2000	7.2	7.7	20.5	8x10 <sup>-4</sup>	100	285
Q2AA10150BCH48M	1500	2000	2000	7.2	7.7	20.5	8x10 <sup>-4</sup>	100	285
R1AA10150FXH00M	1500	3000	6000	4.8	4.9	15	2x10 <sup>-4</sup>	100	286
R1AA10150FCH00M	1500	3000	6000	4.8	4.9	15	2x10 <sup>-4</sup>	100	286
R2AA13180HXH00M	1800	2000	3500	8.6	10.0	22.0	9x10 <sup>-4</sup>	130	287
R2AA13180HCH00M	1800	2000	3500	8.6	10.0	22.0	9x10 <sup>-4</sup>	130	287
R2AA13200LXHW0M	2000	2000	3000	9.5	12.0	24.0	12.2x10 <sup>-4</sup>	130	288
R2AA13200LCHW0M	2000	2000	3000	9.5	12.0	24.0	12.2x10 <sup>-4</sup>	130	288
R1AA13300FXH00M	3000	3000	6000	9.7	9.7	29.0	7x10 <sup>-4</sup>	130	289
R1AA13300FCH00M	3000	3000	6000	9.7	9.7	29.0	7x10 <sup>-4</sup>	130	289
<b>400 VAC Servomotors Incremental Encoder</b>									
R2CA18350LXH00M	3500	2000	3000	17.0	22.0	49.0	40x10 <sup>-4</sup>	180	291
R2CA18450HXH00M	4500	2000	3500	21.5	30.0	75.0	50x10 <sup>-4</sup>	180	292
R2CA2215KVXH00M	15.000	1500	2000	95.0	95.0	215	288x10 <sup>-4</sup>	220	293



SERVO SYSTEMS

## 48 VDC SERVOAMPLIFIERS

● For cable options please see the table at the end of the section.



## 48 VDC SERVOAMPLIFIERS

R Advanced series - 48VDC EtherCAT servo drive with STO

**FIVE DIGIT DISPLAY:** it allows to monitor amplifier and EtherCAT Network.

**Rs232 PC INTERFACE:** set up and monitor by SanMotion Motor Setup

**I/O CONNECTOR:** 6 inputs and 2 outputs user configurable.

**INPUT POWER SUPPLY CONNECTORS:** two separated power supplies. One for the control board (24VDC), and one for the power stage (48VDC). Built in protection against overload and input overvoltage.

**EtherCAT INTERFACE CONNECTORS:** RJ45

**MOTOR POWER CONNECTORS**

**SAFE TORQUE OFF - SIL2 CONNECTOR**

**ENCODER CONNECTORS** - Second encoder for external linear scale to avoid backlash.



Dimensions:  
mm 40x160x85  
Model: RS2K04A2HL5



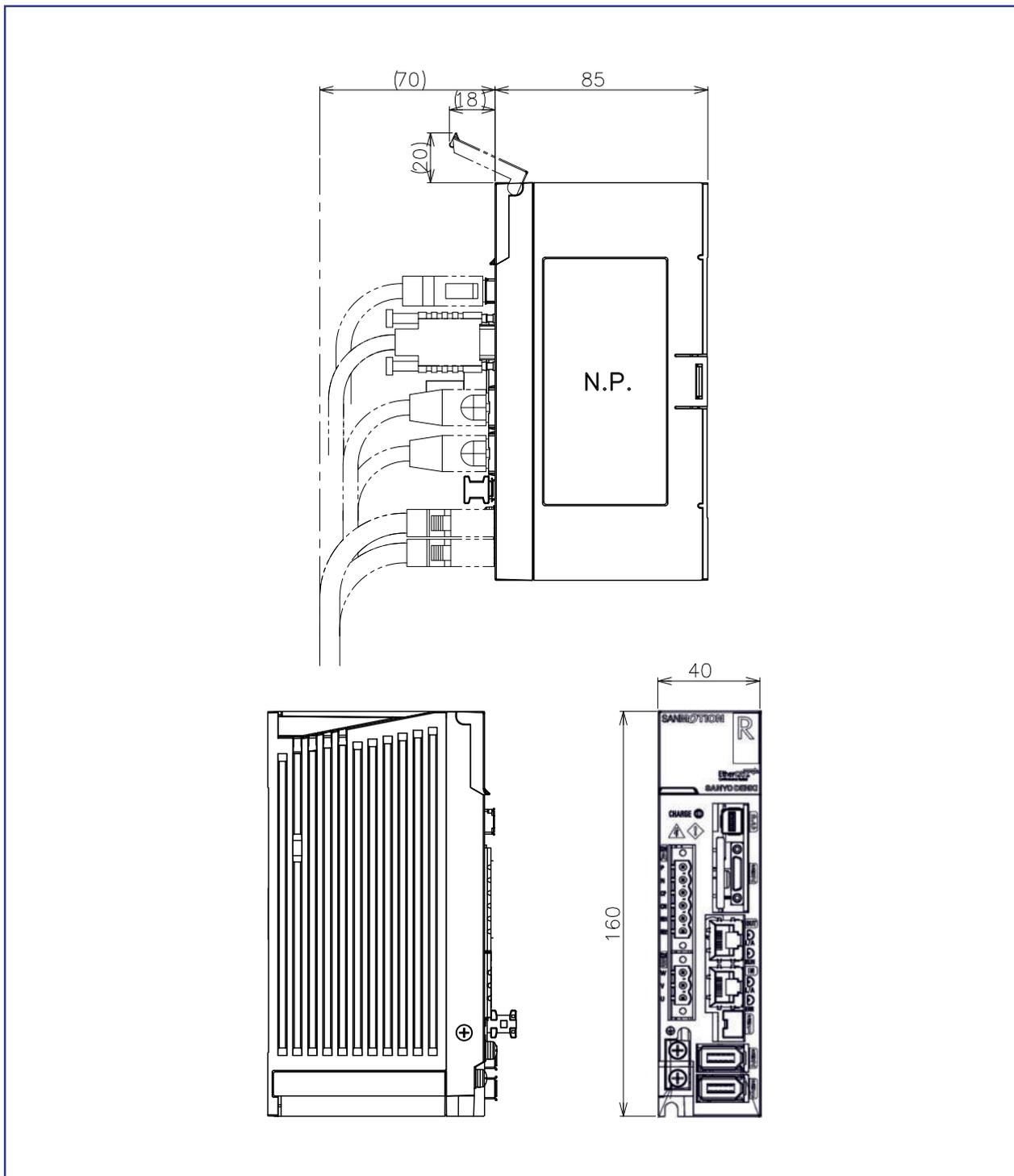
### MAIN FEATURES

- Amplifier capacity: 40A
- Mode of Operation: Homing Mode, Profile Velocity Mode, Profile Position Mode, Profile Torque Mode, Cycle Sync Position Mode, Cycle Sync Velocity Mode, Cycle Sync Torque Mode.
- Speed frequency response of 800 Hz
- EtherCAT cycle time: up to 125 microsec
- External Regenerative Resistor (optional)
- Built-In Dynamic Brake
- Safe Torque Off(STO) Function: SIL2, IEC62061 : SILCL2, ISO 13894-1 Cat3 : PL=d
- RS2K04A2HL5 amplifier covers motors from 20W to 200W

TECHNICAL DATA	EtherCAT control
MODEL	RS2K04A2HL5
MAX CURRENT	40 A
MOTOR OUTPUT STAGE	IGBT, PWM control, sinusoidal current
POWER SUPPLY VOLTAGE	48 VDC (±10%)
LOGIC SUPPLY VOLTAGE	24 VDC (±10%)
DIMENSIONS (mm)	40x160x85
MASS (kg)	0,50 Kg

## 48 VDC SERVOAMPLIFIERS

R Advanced series - 48VDC EtherCAT servo drive with STO





**SANMOTION**  
AC SERVO SYSTEMS

**ADVANCED  
MODEL**

**SIL3**  
SAFE TORQUE  
OFF (STO)

**48  
VDC**

**4 AXIS  
SYSTEM**

**EtherCAT**

## 48 VDC SERVOAMPLIFIERS

R Advanced series - 48VDC 4 AXIS EtherCAT servo drive with STO

**1 DRIVE  
4 MOTORS**

**INPUT POWER SUPPLY CONNECTORS:** two separated power supply. One for the control board (24VDC), and one for the power stage (48VDC). Built in protection against overload and input overvoltage.

**LED DISPLAY STATUS MONITOR:** it allows to monitor the status of the amplifier.

**EXTERNAL REGENERATIVE RESISTOR (Optional)**

**I/O CONNECTORS:** 8 Inputs + 8 Outputs user configurable.

**ENCODER CONNECTORS**

**Rs232 PC INTERFACE:** set up and monitor by SanMotion Motor Setup

**SAFE TORQUE OFF - SIL3 CONNECTOR**



**EtherCAT INTERFACE CONNECTORS:** RJ45

**MOTOR POWER CONNECTORS**



Dimensions:

mm 50x200x130

Model: RF2K24A0HL5



### MAIN FEATURES

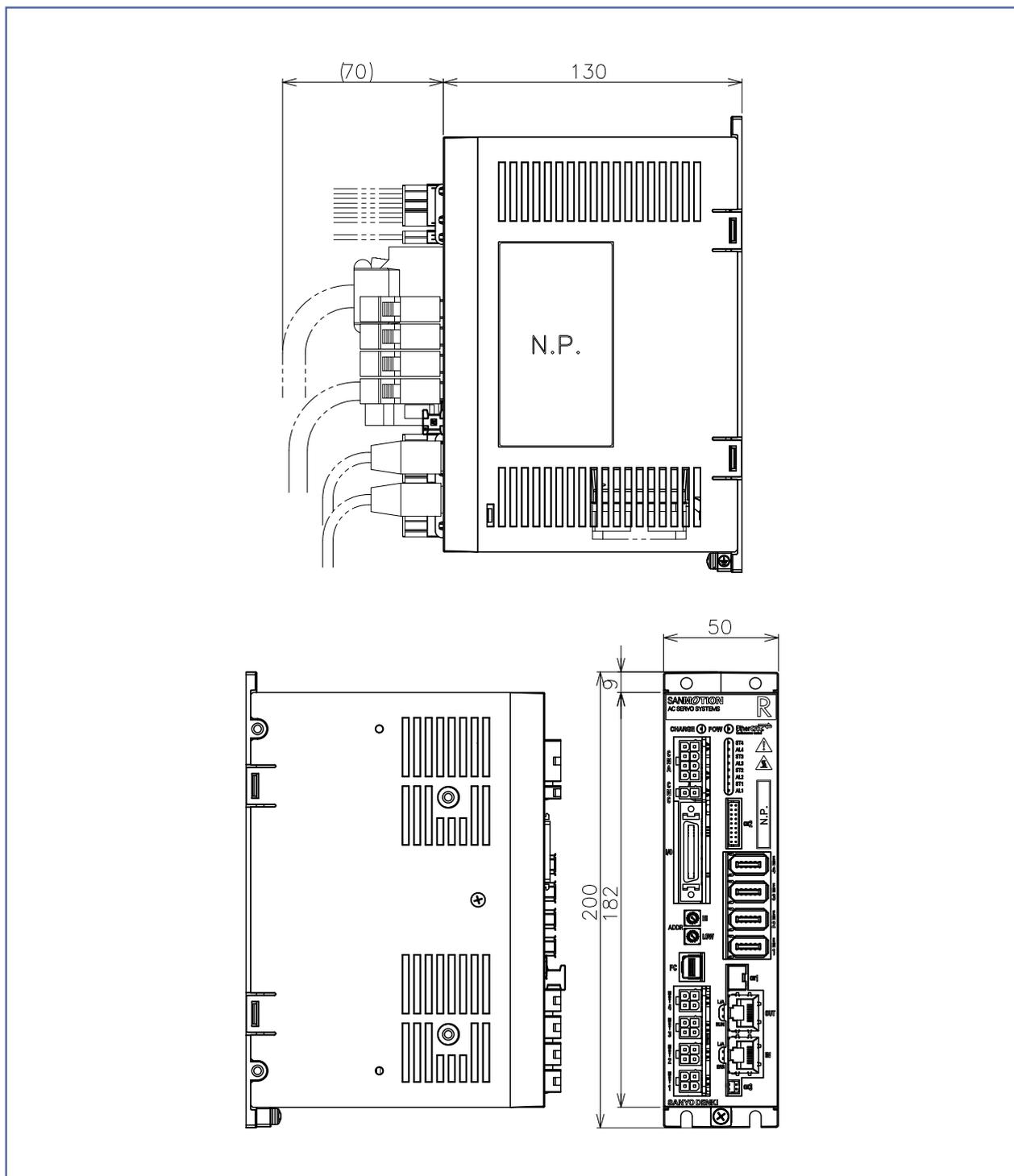
- Amplifier capacity: 40A
- Mode of Operation: Homing Mode, Profile Velocity Mode, Profile Position Mode, Profile Torque Mode, Cycle Sync Position Mode, Cycle Sync Velocity Mode, Cycle Sync Torque Mode.
- Speed frequency response of 800 Hz
- EtherCAT cycle time: up to 125 microsec
- External Regenerative Resistor (optional)
- Safe Torque Off(STO) Function: SIL3/IEC61508. PL=e/ISO 13894-1
- RF2K24A0HL5 amplifier covers motors up to 300W (4 axes)

TECHNICAL DATA	EtherCAT control
MODEL	RF2K24A0HL5
MAX CURRENT	40 A
MOTOR OUTPUT STAGE	IGBT, PWM control, sinusoidal current
POWER SUPPLY VOLTAGE	48 VDC (± 10%)
LOGIC SUPPLY VOLTAGE	24 VDC (± 10%)
DIMENSIONS (mm)	50x200x130
MASS (kg)	0,8 Kg

## 48 VDC SERVOAMPLIFIERS

R Advanced series - 48VDC 4 AXIS EtherCAT servo drive with STO

**1 DRIVE**  
**4 MOTORS**





**SANMOTION** AC SERVO SYSTEMS  
**R ADVANCED MODEL**

**48**  
VDC

ULTRA  
COMPACT  
SIZE

**PULSE TRAIN**

## 48 VDC SERVOAMPLIFIERS

R Advanced series - 48 VDC Pulse-Train interface servodrive

**INPUT POWER SUPPLY CONNECTORS:** two separated power supplies. One for the control board (5VDC), and one for the power stage (48VDC). Built in protection against overload and input overvoltage.

**LED DISPLAY STATUS MONITOR:** it allows to monitor the status of the amplifier.

**I/O CONNECTOR:** pulse train input (clock + direction; forward + backward pulse; 90 phase shift) - encoder output.

**I/O CONNECTOR:** 8 inputs + 8 outputs user configurable.

**ENCODER CONNECTOR**

**MOTOR POWER CONNECTORS**

**Rs232 PC INTERFACE:** set up and monitor by SanMotion Motor Setup



Dimensions:  
mm 30x116x70

Model: RF2G21A0AA0



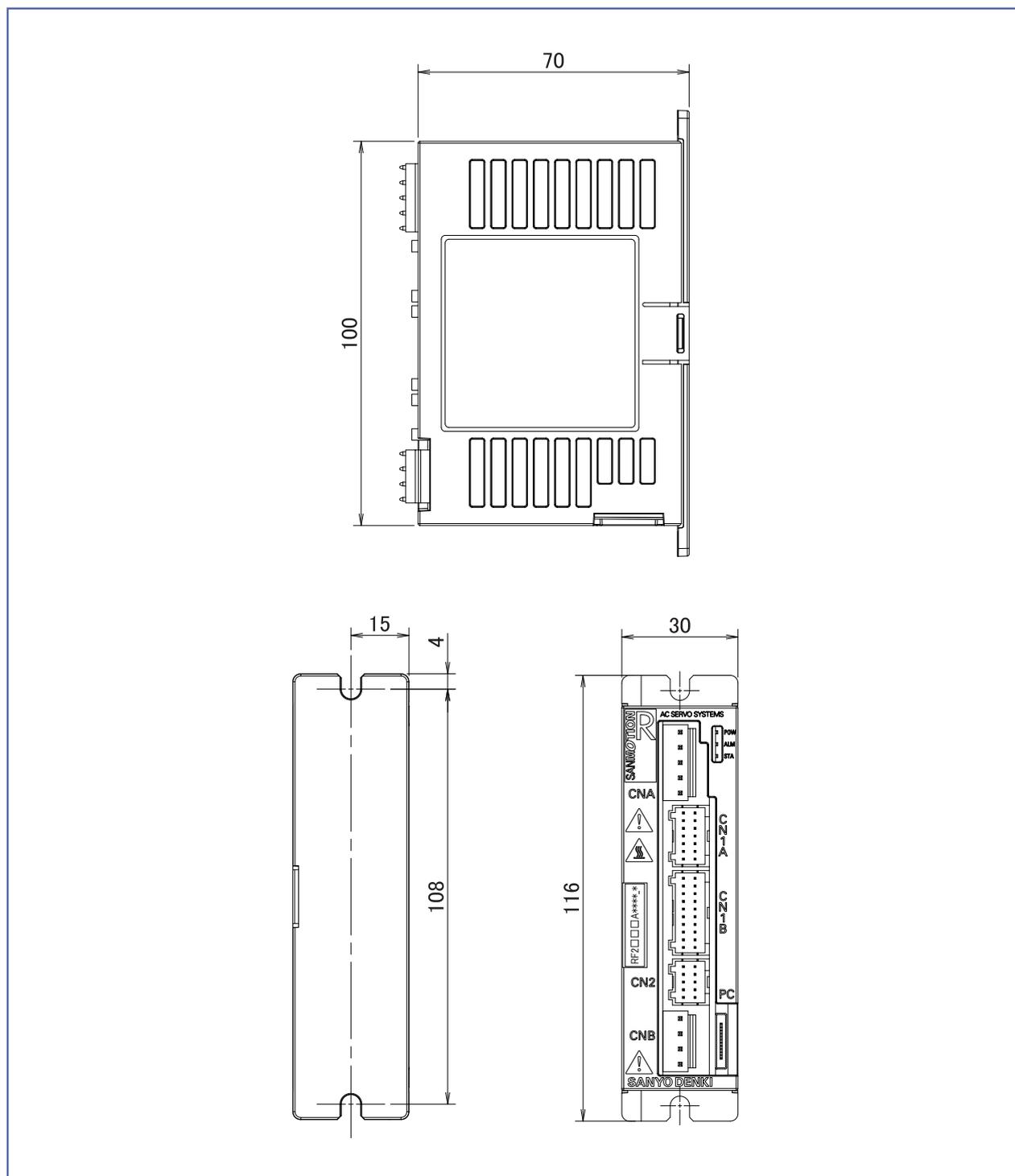
### MAIN FEATURES

- Amplifier capacity: 40A
- Speed frequency response of 1,2 KHz
- Built-In Dynamic Brake
- RF2G21A0A00 amplifier covers motors from 20W to 200W

TECHNICAL DATA	POSITION
MODEL	RF2G21A0AA0
MAX CURRENT	40 A
MOTOR OUTPUT STAGE	IGBT, PWM control, sinusoidal current
POWER SUPPLY VOLTAGE	48 VDC (± 10%)
LOGIC SUPPLY VOLTAGE	5 VDC (± 5%)
DIMENSIONS (mm)	30x116x70
MASS (kg)	0,25 Kg

## 48 VDC SERVOAMPLIFIERS

R Advanced series - 48 VDC Pulse-Train interface servodrive





SERVO SYSTEMS

**230 VAC SERVOAMPLIFIER**

 For cable options please see the table at the end of the section.



**SANMOTION**  
AC SERVO SYSTEMS **RS3**

**230**  
VAC

**SIL3**  
SAFE TORQUE  
OFF (STO)

**EtherCAT**

**3rd**  
GENERATION!

## 230 VAC SERVOAMPLIFIERS

### RS3 SERIES AC SERVOAMPLIFIERS - EtherCAT INTERFACE & STO

**FIVE DIGIT DISPLAY:** It allows to monitor amplifier and EtherCAT Network.

**PC CONNECTOR:** The amplifier can be set and monitored by means of Personal Computer USB interface.

**POWER CONNECTOR:** 230VAC, single-phase or three-phase (configurable by user). Power sections kept separated for logic/signal and power. Built-in protection circuits against overload and input overvoltage.

**Internal regenerative resistor.** External regenerative resistor (optional)

**EtherCAT INTERFACE CONNECTOR:** RJ45 - CAT5e.

**I/O CONNECTOR:** 7 inputs and 2 outputs.

**MOTOR POWER CONNECTOR**

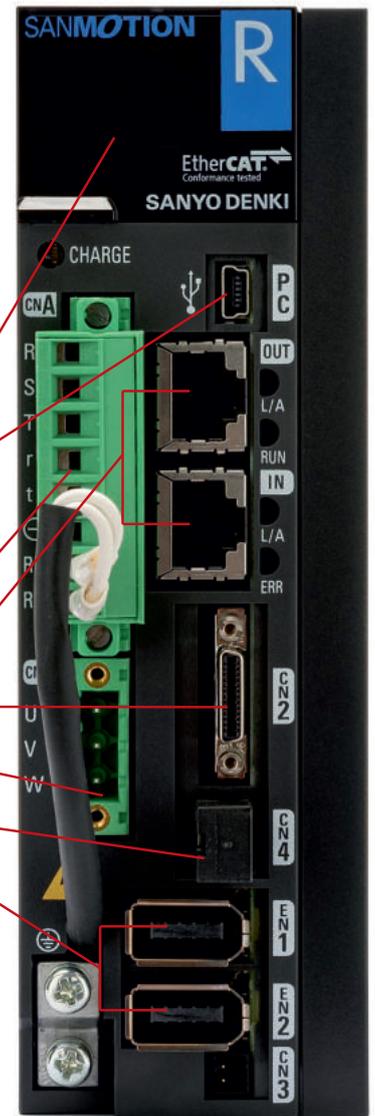
**SAFE TORQUE OFF - SIL3 CONNECTOR**



**SECOND ENCODER CONNECTOR FOR EXTERNAL LINEAR SCALE TO AVOID BACKLASH**

#### MAIN FEATURES OF THE 3rd GENERATION

- Mode of Operation: Homing Mode, Profile Velocity Mode, Profile Position Mode, Profile Torque Mode, Cycle Sync Position Mode, Cycle Sync Velocity Mode, Cycle Sync Torque Mode.
- Touch Probe Function.
- Speed frequency response of 2.2 kHz [3.3 times that of previous RS1 model!]
- Safe Torque Off (STO) function - SIL3/IEC61508. Performance Level - PL = e/ISO13849-1
- RS3A03A2HA4W00P covers 100W, 200W, 400W, 750W, 1000W, 1500W motors



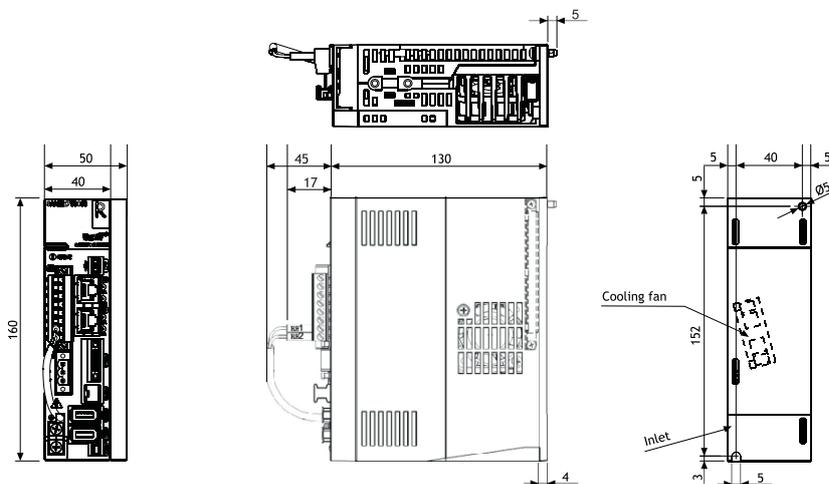
Dimensions:  
(50x160x130)  
Model RS3A03A2HA4W00P



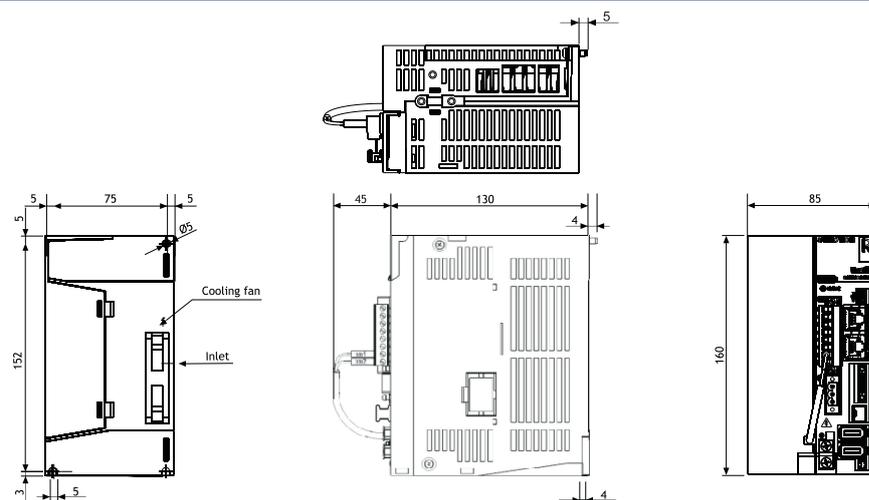
TECHNICAL DATA	EtherCAT Control		
	MODEL	RS3A03A2HA4W00P	RS3A05A2HA4W00P
MAX CURRENT	30 Amp	50 Amp	100 Amp
MOTOR OUTPUT STAGE	IGBT, PWM control, sinusoidal current		
POWER SUPPLY VOLTAGE	Single-phase or three-phase (configurable by the user) 200 VAC or 230 VAC (+10%, -15%) 50/60 Hz (± 3 Hz)		
LOGIC SUPPLY VOLTAGE	Single-phase from 200 VAC to 230 VAC (+10%, -15%) 50/60 Hz (± 3 Hz)		
DIMENSIONS (mm)	50x160x130	85x160x130	100x235x220
MASS (kg)	0.9	1.65	4.2

**“RS3A” SERIES AC SERVOAMPLIFIERS:**  
EtherCAT VERSION OUTLINE DRAWINGS

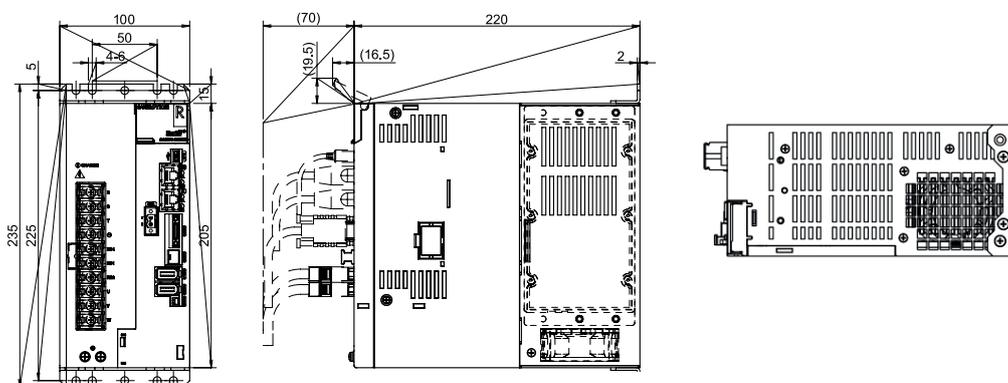
RS3A03A2HA4W00P



RS3A05A2HA4W00P



RS3A10A2HA4W00P



Dimensions mm.



**SANMOTION**  
AC SERVO SYSTEMS **RS3**

**230**  
VAC

**SIL3**  
SAFE TORQUE  
OFF (STO)

**EtherCAT**

**3rd**  
GENERATION!

## 230 VAC SERVOAMPLIFIERS

**ADVANCED SAFETY  
MODULE**

### RS3 SERIES AC SERVOAMPLIFIERS - EtherCAT INTERFACE & STO

**FIVE DIGIT DISPLAY:** It allows to monitor amplifier and EtherCAT Network.

**PC CONNECTOR:** The amplifier can be set and monitored by means of Personal Computer USB interface.

**POWER CONNECTOR:** 230VAC, single-phase or three-phase (configurable by user). Power sections kept separated for logic/signal and power. Built-in protection circuits against overload and input overvoltage.

**Internal regenerative resistor. External regenerative resistor (optional)**

**EtherCAT INTERFACE CONNECTOR:** RJ45 - CAT5e.

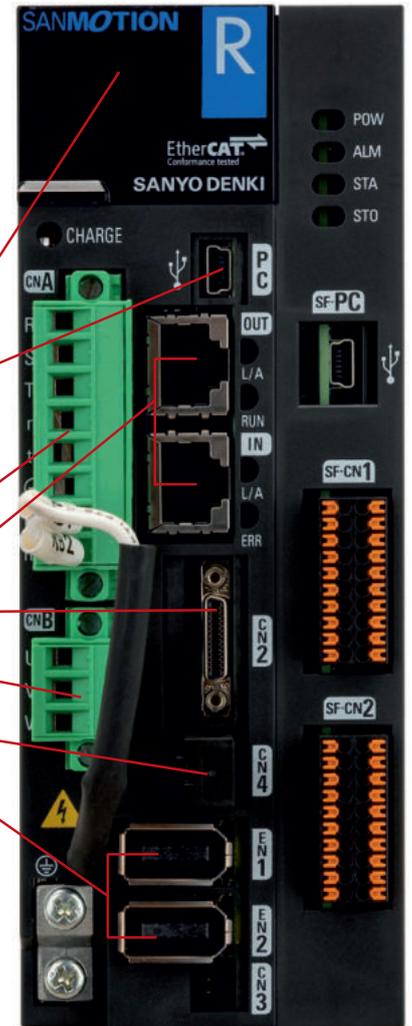
**I/O CONNECTOR:** 7 inputs and 2 outputs.

**MOTOR POWER CONNECTOR - CONNETTORE POTENZA MOTORE**

**SAFE TORQUE OFF SIL3 CONNECTOR**



**SECOND ENCODER CONNECTOR FOR EXTERNAL LINEAR SCALE TO AVOID BACKLASH**



Dimensions:  
(60x160x130)  
Model RS3A03A2HAE

**ADVANCED SAFETY  
MODULE**

### MAIN FEATURES OF THE 3rd GENERATION

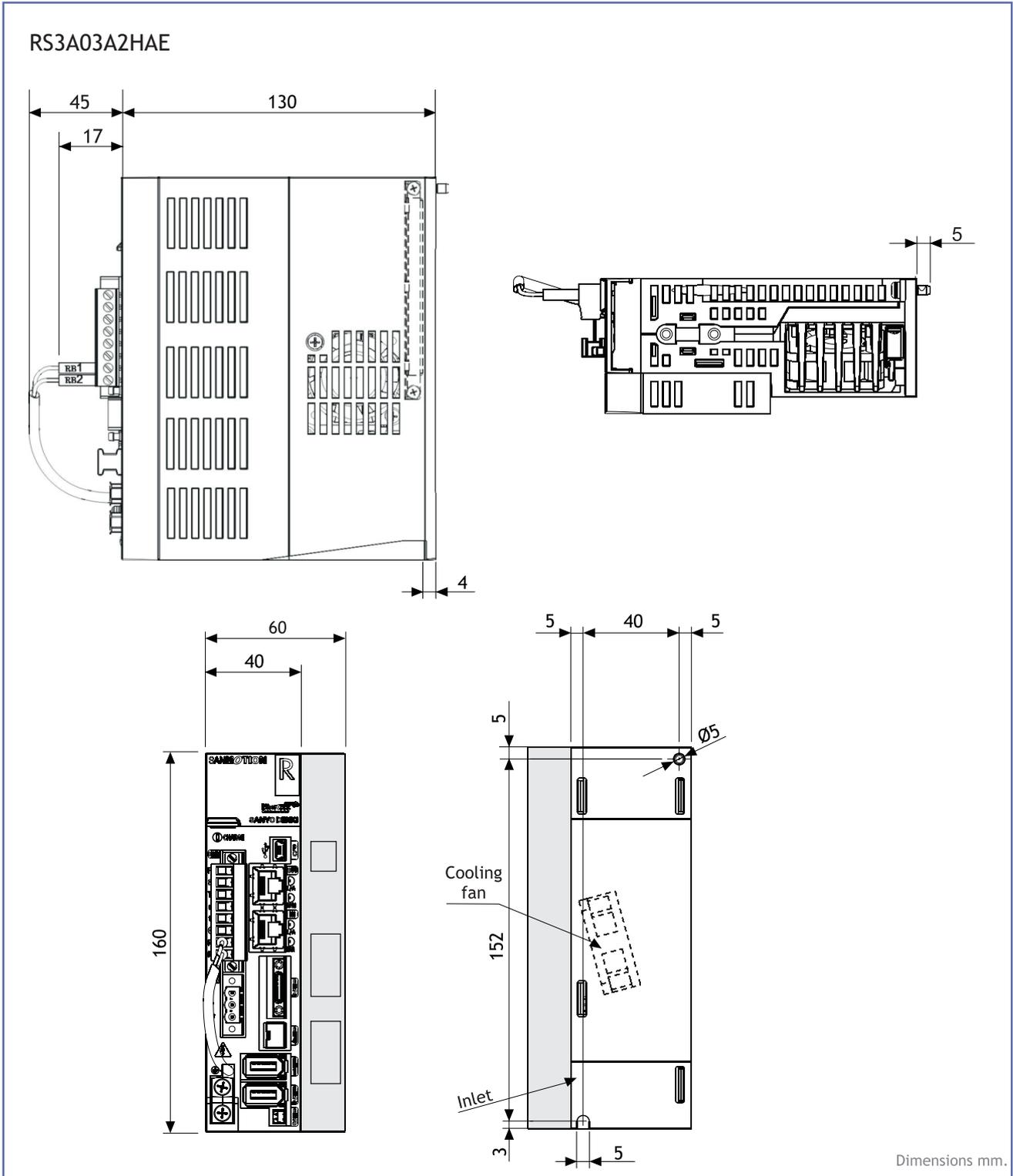
- Mode of Operation: Homing Mode, Profile Velocity Mode, Profile Position Mode, Profile Torque Mode, Cycle Sync Position Mode, Cycle Sync Velocity Mode, Cycle Sync Torque Mode.
- Touch Probe Function.
- Speed frequency response of 2.2 kHz [3.3 times that of previous RS1 model!]
- Safe Torque Off (STO) function - SIL3/IEC61508. Performance Level - PL = e/ISO13849-1
- One single size covers 100W, 200W, 400W, 750W, 1000W, 1500W motors



TECHNICAL DATA	EtherCAT Control
MODEL	RS3A03A2HAE
MAX CURRENT	30 Amp
MOTOR OUTPUT STAGE	IGBT, PWM control, sinusoidal current
POWER SUPPLY VOLTAGE	Single-phase or three-phase (configurable by the user) 200 VAC or 230 VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
LOGIC SUPPLY VOLTAGE	Single-phase from 200 VAC to 230 VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
DIMENSIONS (mm)	60x160x130
MASS (kg)	1.1

SAFETY FUNCTION SPECIFICATIONS	
	DESCRIPTION
STO	SAFE TORQUE OFF
SS1	SAFE STOP 1
SS2	SAFE STOP 2
SOS	SAFE OPERATING STOP
SLS	SAFELY-LIMITED SPEED
SBC	SAFE BRAKE CONTROL
SSM	SAFE SPEED MONITOR

**“RS3A” SERIES AC SERVOAMPLIFIERS:**  
EtherCAT VERSION OUTLINE DRAWINGS





**SANMOTION**  
AC SERVO SYSTEMS **RS3**

**230**  
VAC

**PULSE TRAIN**  
**ANALOG INPUT**

**ULTRA**  
**COMPACT**  
**SIZE**

**3rd**  
**GENERATION!**

## 230 VAC SERVOAMPLIFIERS

### RS3 SERIES AC SERVOAMPLIFIERS - TRADITIONAL INTERFACE

**FIVE DIGIT DISPLAY AND OPERATION KEY:** It allows to view and modify parameters and monitor in real time the behavior of the system.

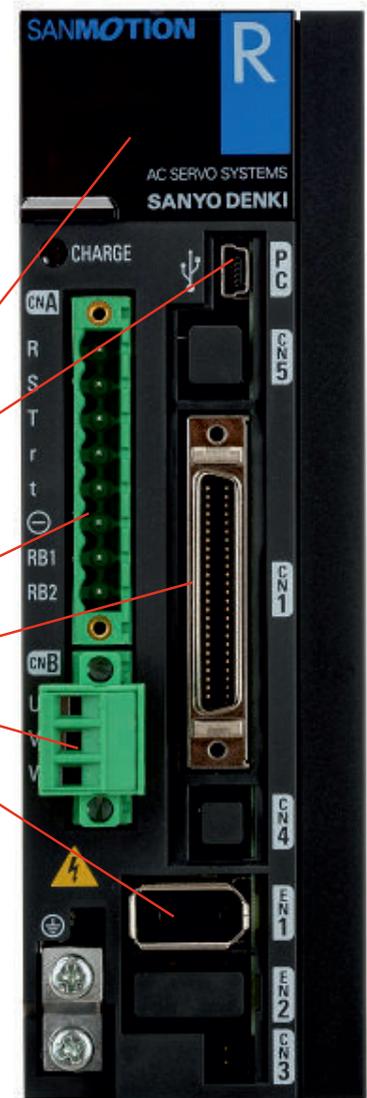
**PC CONNECTOR:** The amplifier can be set and monitored by means of Personal Computer USB interface.

**POWER CONNECTOR:** 230VAC, single-phase or three-phase (configurable by user). Power sections kept separated for logic/signal and power electronics. Built-in protection circuits against overload and input overvoltage.  
External regenerative resistor (optional).

**I/O CONNECTOR:** Control pulse train (clock + direction; forward + backward pulse; 90° phase shift) or analog signal (proportional to speed or torque). 8 inputs and 8 outputs.

**MOTOR POWER CONNECTOR**

**ENCODER CONNECTOR**



### MAIN FEATURES OF THE 3rd GENERATION

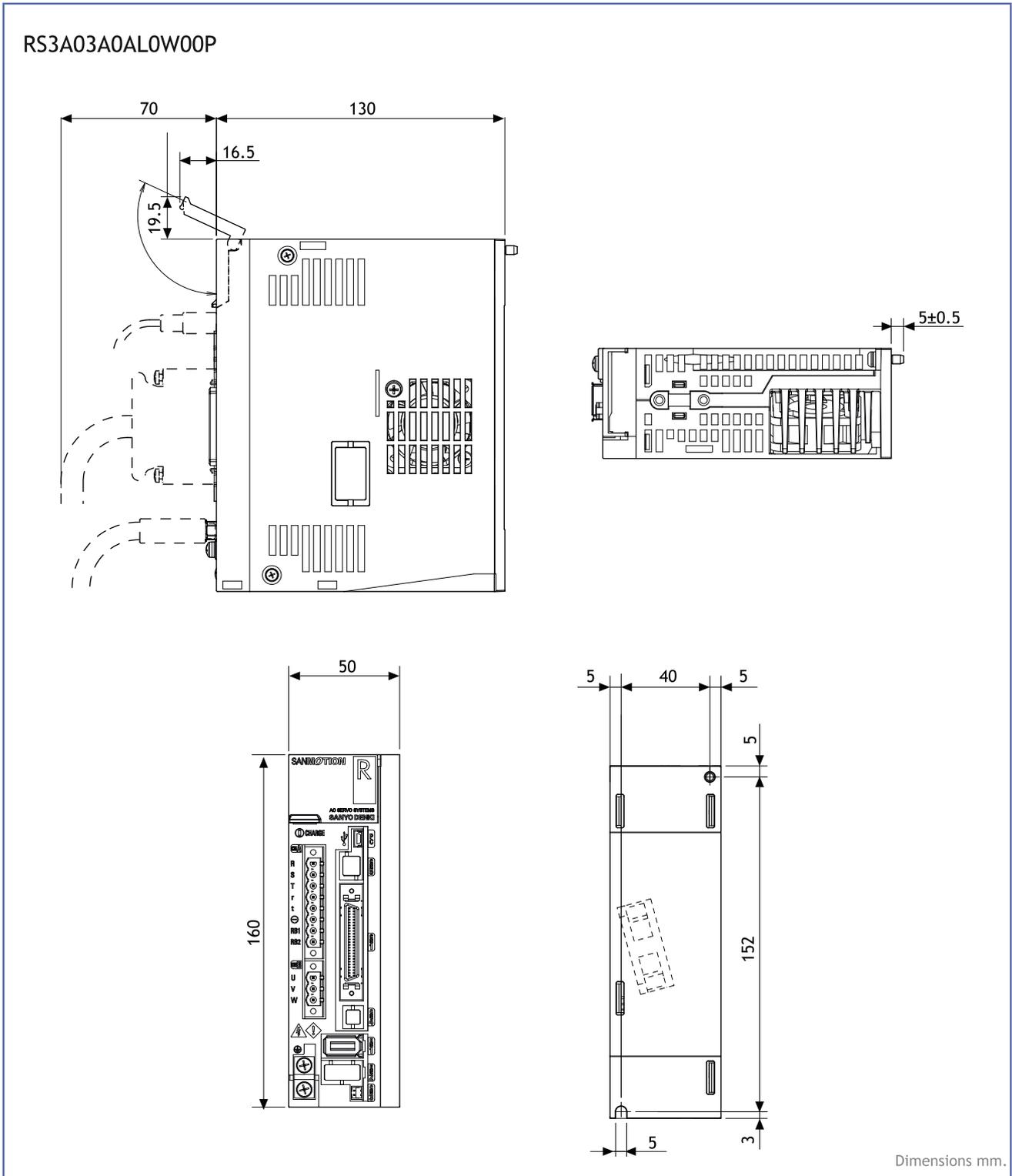
- Speed frequency response of 2.2 kHz [3.3 times that of previous RS1 models!]
- One single size covers 100W, 200W, 400W, 750W, 1000W, 1500W motors
- CN1 connector wiring fully compatible with previous RS1 models
- Sanmotion Motor Setup allows multitasking system settings

Dimensions:  
(50x160x130)

**CALUS** RS3A03A0AL0W00P

TECHNICAL DATA	Position, Velocity, Torque Control Mode Switching available
MODEL	<b>RS3A03A0AL0W00P</b>
MAX CURRENT	30 Amp
MOTOR OUTPUT STAGE	IGBT, PWM control, sinusoidal current
POWER SUPPLY VOLTAGE	Single-phase or three-phase (configurable by the user) 200 VAC to 230 VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
LOGIC SUPPLY VOLTAGE	Single-phase from 200 VAC to 230 VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
DIMENSIONS (mm)	50x160x130
MASS (kg)	0.8

**“RS3A” SERIES AC SERVOAMPLIFIERS:  
PULSE TRAIN AND ANALOG INPUT VERSION OUTLINE DRAWINGS**





**SANMOTION**  
AC SERVO SYSTEMS **RS3**

**230**  
VAC

**SIL3**  
SAFE TORQUE  
OFF (STO)

**PULSE TRAIN  
ANALOG INPUT**

**ULTRA  
COMPACT  
SIZE**

**3rd  
GENERATION!**

## 230 VAC SERVOAMPLIFIERS

### RS3 SERIES AC SERVOAMPLIFIERS - TRADITIONAL INTERFACE

**FIVE DIGIT DISPLAY AND OPERATION KEY:** It allows to view and modify parameters and monitor in real time the behavior of the system.

**PC CONNECTOR:** The amplifier can be set and monitored by means of Personal Computer USB interface.

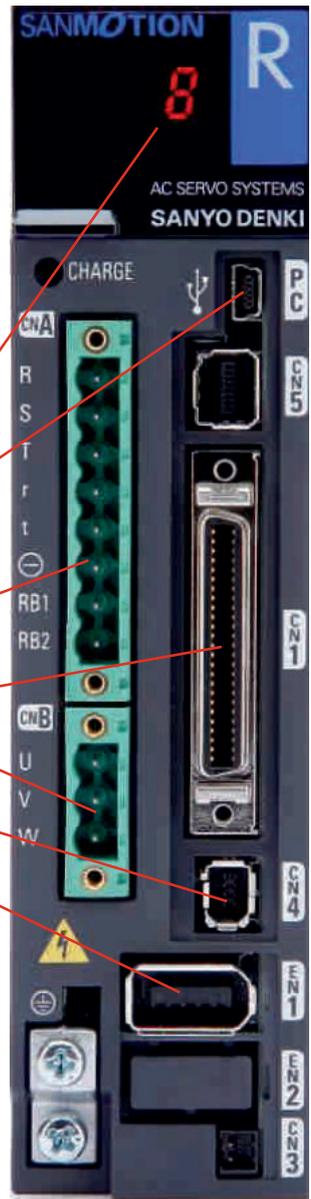
**POWER CONNECTOR:** 230VAC, single-phase or three-phase (configurable by user). Power sections separated for logic/signal and power electronics. Built-in protection circuits against overload and input overvoltage.  
External regenerative resistor (optional).

**I/O CONNECTOR:** Control pulse train (clock + direction; forward + backward pulse; 90° phase shift) or analog signal (proportional to speed or torque). 8 inputs and 8 outputs setting by user.

**MOTOR POWER CONNECTOR**

**SAFE TORQUE OFF - SIL3 CONNECTOR** 

**ENCODER CONNECTOR**



Dimensions:  
(40x160x130)  
Model RS3A02A0AL2

### MAIN FEATURES OF THE 3rd GENERATION

- Safe Torque Off (STO) function - SIL3/IEC61508 Performance Level - PL = e/ISO13849-1
- Speed frequency response of 2.2 kHz [3.3 times that of previous RS1 model!]
- Ultra compact size - see photo

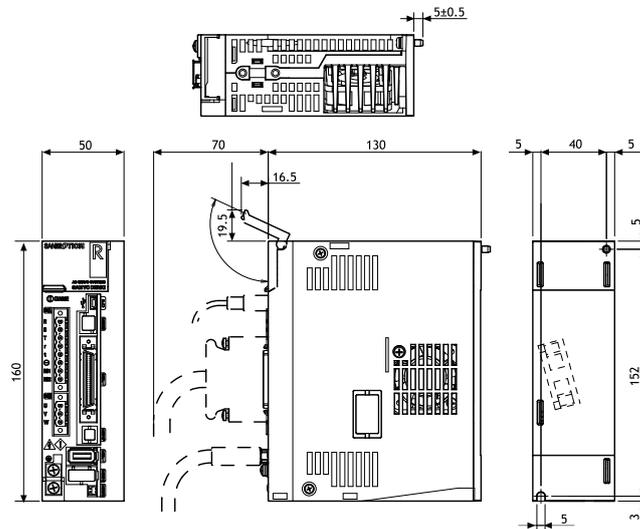
**SIL3**  
SAFE TORQUE  
OFF (STO)



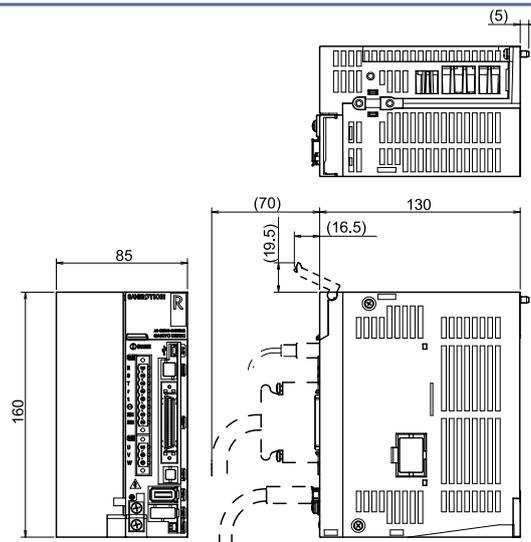
TECHNICAL DATA	Position, Velocity, Torque (Control Mode Switching available)		
	RS3A03A0AL2	RS3A05A0AA2	RS3A10A0AA2
MODEL	RS3A03A0AL2	RS3A05A0AA2	RS3A10A0AA2
MAX CURRENT	30 Amp	50 Amp	100 Amp
MOTOR OUTPUT STAGE	IGBT, PWM control, sinusoidal current		
POWER SUPPLY VOLTAGE	Single-phase or three-phase (configurable by the user) 200 VAC to 230 VAC (+10%, -15%) 50/60 Hz (± 3 Hz)		
LOGIC SUPPLY VOLTAGE	Single-phase from 200 VAC to 230 VAC (+10%, -15%) 50/60 Hz (± 3 Hz)		
DIMENSIONS (mm)	50x160x130	85x160x130	100x235x220
MASS (kg)	0.85	1.55	4.2

## “RS3A” SERIES AC SERVOAMPLIFIERS: PULSE TRAIN AND ANALOG INPUT VERSION OUTLINE DRAWINGS

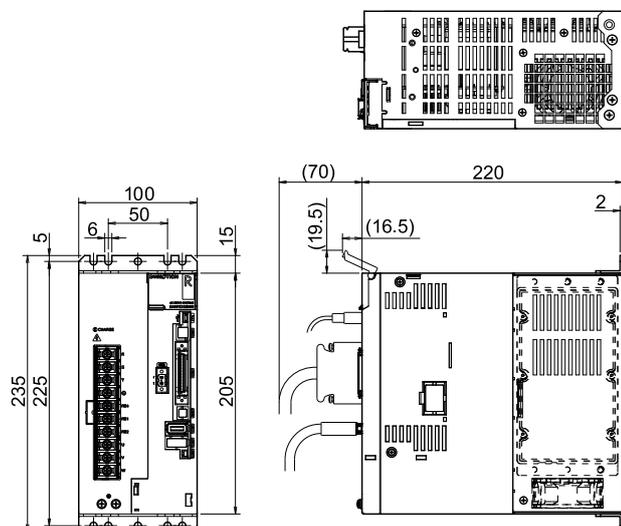
RS3A03A0AL2



RS3A05A0AA2



RS3A10A0AA2



Dimensions mm.



SERVO SYSTEMS

## 400 VAC SERVOAMPLIFIERS

● For cable options please see the table at the end of the section.





**SANMOTION**  
AC SERVO SYSTEMS **RS3C**

**400**  
VAC

**SIL3**  
SAFE TORQUE  
OFF (STO)

**EtherCAT**

**3rd**  
GENERATION!

## 400 VAC SERVOAMPLIFIERS

### RS3C SERIES AC SERVOAMPLIFIERS - EtherCAT INTERFACE

**FIVE DIGIT DISPLAY:** It allows to monitor amplifier and EtherCAT Network.

**POWER CONNECTION:** 400 VAC, three-phase. Built-in protection circuits against overload and input overvoltage.

**PC CONNECTOR:** The amplifier can be set and monitored by means of Personal Computer USB interface.

**EtherCAT INTERFACE CONNECTOR:** RJ45 - CAT5e.

**CONTROL POWER SUPPLY CONNECTOR** 24 VDC.

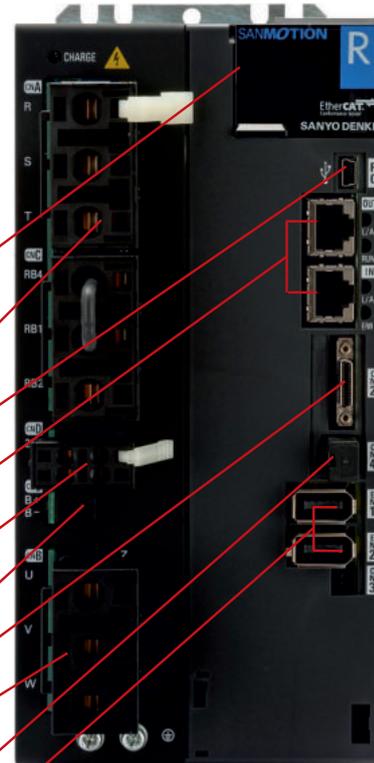
**POWER SUPPLY MOTOR BRAKE EMBEDDED.**

**I/O CONNECTOR:** 7 inputs and 2 outputs configurable by user.

**MOTOR POWER CONNECTOR**

**SAFE TORQUE OFF - SIL3 CONNECTOR**

**SECOND ENCODER CONNECTOR FOR EXTERNAL LINEAR SCALE TO AVOID BACKLASH**



Model RS3C05A2HL4  
Dimensions:  
(100X235X235)

### MAIN FEATURES OF THE 3rd GENERATION

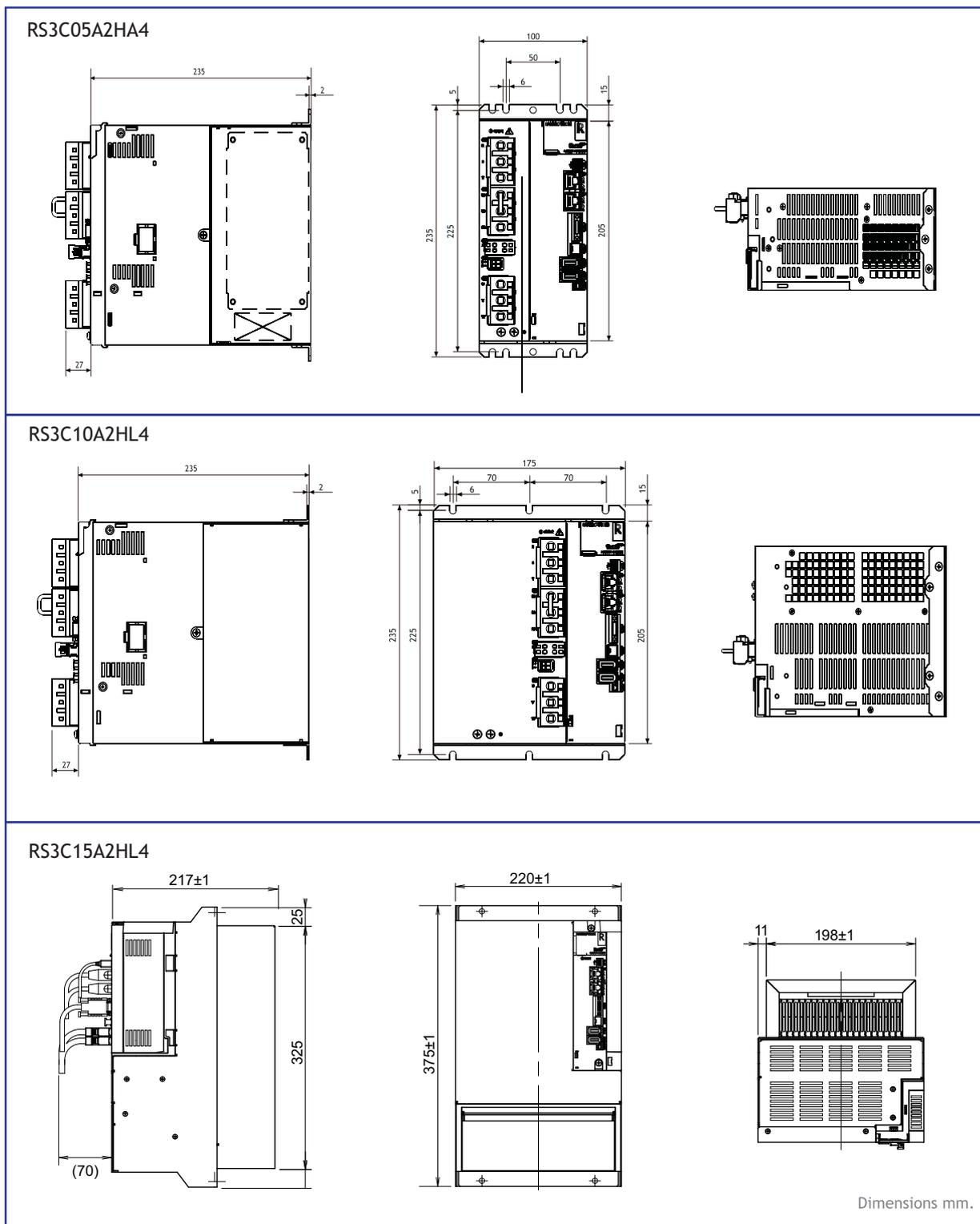
- Safe Torque Off (STO) function - SIL3 [Performance Level - PL = e]
- Mode of Operation: Homing Mode, Profile Velocity Mode, Profile Position Mode, Profile Torque Mode, Cycle Sync Position Mode, Cycle Sync Velocity Mode, Cycle Sync Torque Mode
- Touch Probe Function
- XML file available
- Speed frequency response of 2.2 kHz [3.3 times that of previous RS1 model!]

**SIL3**  
SAFE TORQUE  
OFF (STO)



TECHNICAL DATA	EtherCAT Control		
	MODEL	RS3C05A2HA4	RS3C10A2HA4
MAX CURRENT	50 Amp	100 Amp	150 Amp
MOTOR OUTPUT STAGE	IGBT, PWM control, sinusoidal current		
POWER SUPPLY VOLTAGE	Three-phase 380 VAC to 480 VAC (+10%, -15%) 50/60 Hz (± 3 Hz)		
CONTROL POWER SUPPLY	24VDC +/- 10%		
DIMENSIONS (mm)	100x235x235	175x235x235	220x375x217
MASS (kg)	4.7	8.5	11.0

**“RS3C” SERIES AC SERVOAMPLIFIERS:**  
EtherCAT VERSION OUTLINE DRAWINGS





**SANMOTION**  
AC SERVO SYSTEMS **RS3**

**400**  
VAC

**SIL3**  
SAFE TORQUE  
OFF (STO)

**PULSE TRAIN  
ANALOG INPUT**

**3rd**  
GENERATION!

## 400 VAC SERVOAMPLIFIERS

### RS3C SERIES AC SERVOAMPLIFIERS

**SEVEN DIGIT DISPLAY AND OPERATION KEY:** It allows to view and modify parameters and monitor in real time the behaviour of the system.

**POWER CONNECTION:** 400 VAC, three-phase. Built-in protection circuits against overload and input overvoltage.

**PC CONNECTOR:** The amplifier can be set and monitored by means of USB interface.

**CONNECTION** for external regenerative resistor (optional).

**I/O CONNECTOR:** Control pulse train (clock + direction; forward + backward pulse; 90° phase shift) or analog signal (proportional to speed or torque). 8 inputs and 8 outputs configurable by user.

**CONTROL POWER SUPPLY CONNECTOR** 24 VDC.

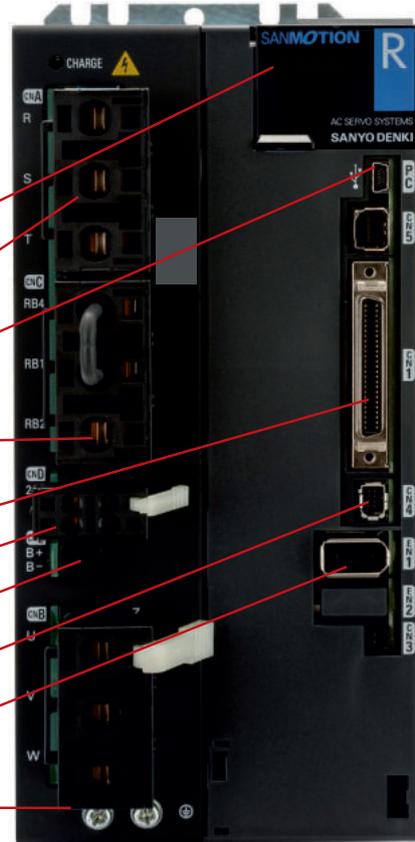
**POWER SUPPLY MOTOR BRAKE EMBEDDED.**

**SAFE TORQUE OFF - SIL3 CONNECTOR**



**ENCODER CONNECTOR**

**MOTOR POWER CONNECTION**



**Model RS3C05A0AA2**

Dimensions:

(100X235X235)



### MAIN FEATURES OF THE 3rd GENERATION

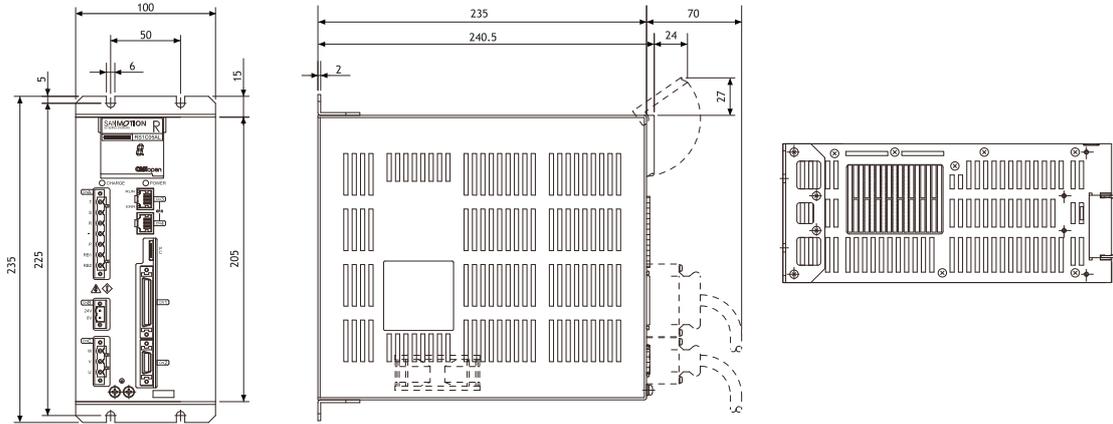
- Safe Torque Off (STO) function - SIL3/IEC61508 Performance Level - PL = e/ISO13849-1
- Speed frequency response of 2.2 kHz [3.3 times that of previous RS1 model!]

TECHNICAL DATA	Position, Velocity, Torque (Control Mode Switching available)		
	RS3C05A0AA2	RS3C10A0AA2	RS3C15A0A2
MODEL	RS3C05A0AA2	RS3C10A0AA2	RS3C15A0A2
MAX CURRENT	50 Amp	100 Amp	150 Amp
MOTOR OUTPUT STAGE	IGBT, PWM control, sinusoidal current		
POWER SUPPLY VOLTAGE	Three-phase 380 VAC to 480 VAC (+10%, -15%) 50/60 Hz (± 3 Hz)		
CONTROL POWER SUPPLY	24VDC +/- 10%		
DIMENSIONS (mm)	100x235x235	175x235x235	220x375x217
MASS (kg)	4.7	8.5	11.0

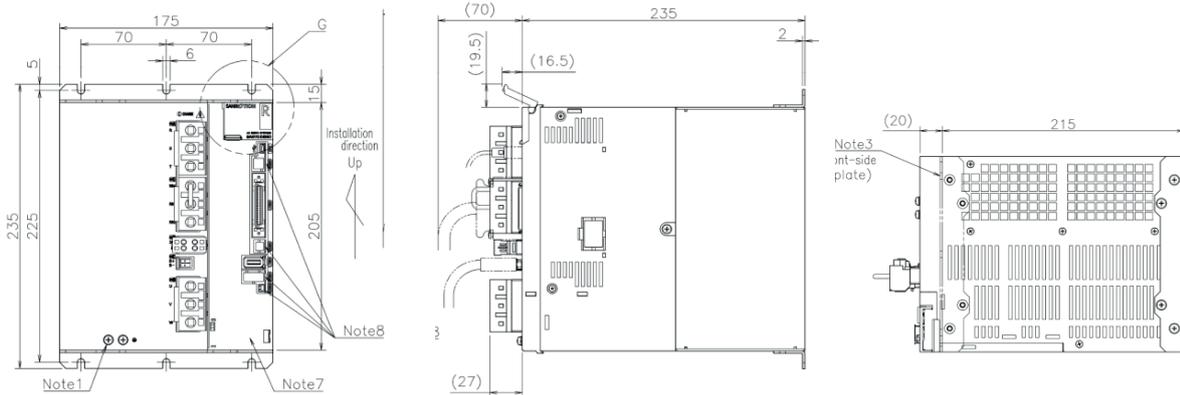
# RS3C SERIES AC SERVOAMPLIFIERS

## PULSE TRAIN AND ANALOG INPUT VERSION OUTLINE DRAWINGS

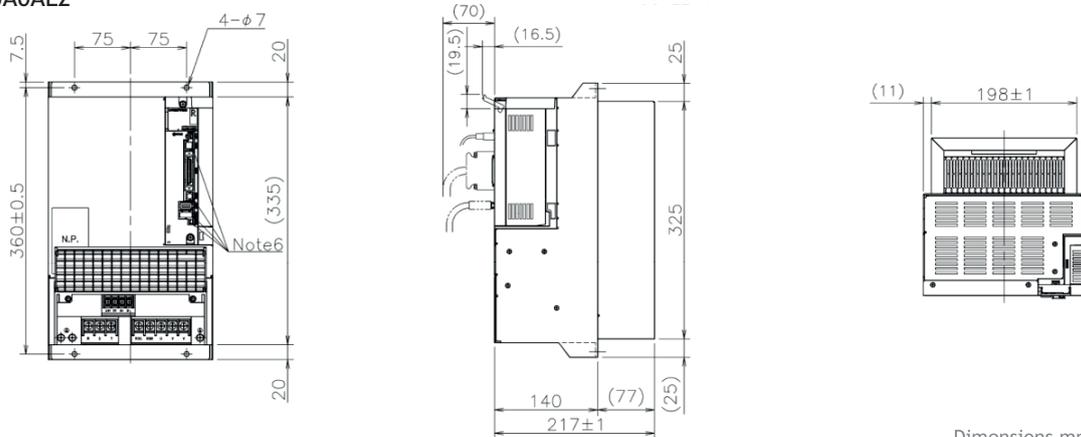
**RS3C05A0AA2**



**RS3C10A0AA2**



**RS3C15A0AL2**



Dimensions mm.

## SERVO SYSTEMS

# 48 VDC SERVOMOTORS - INCREMENTAL ENCODER

● For cable options please see the table at the end of the section.



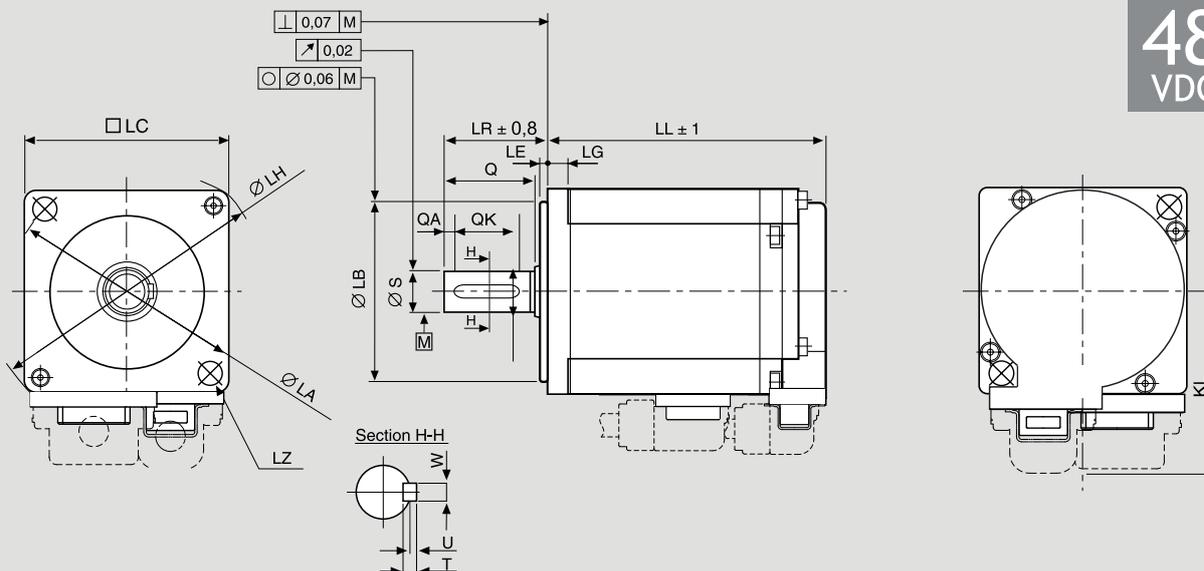
# R2GD04005FXH1CM

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)

c us

48  
VDC

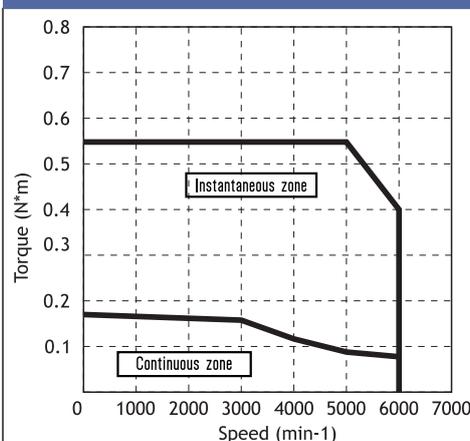


without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
56.5	--	5	35.4	46	$30-0.021^0$	2.5	56	40	2- $\varnothing 4.5$	25	$8-0.009^0$	20	2	12	3	3	1.2	--	--

## FEATURES

MODEL	R2GD04005FXH1CM	
NOMINAL POWER	(W)	50
NOMINAL SPEED	(rpm)	3000
MAXIMUM SPEED	(rpm)	6000
NOMINAL TORQUE	(Nm)	0.159
STALL TORQUE	(Nm)	0.167
MAXIMUM TORQUE	(Nm)	0.54
INERTIA	(Kg*m <sup>2</sup> )	$0.0376 \times 10^{-4}$
INCREMENTAL ENCODER	(imp./rev)	131072 (17 bit)
PROTECTION DEGREE		IP 67 *
WEIGHT	(Kg)	0.27

## TORQUE CURVE



\* Protection degree IP67 (except for the shaft hole and the edge of the cable).



Indicated performances refer to motor controlled by related 48 VDC step-d r and EtherCAT servo-amplifiers.

**Suggested amplifiers: RFG21A0A00, RF2K24A0HL5, RS2K04A2HL5**

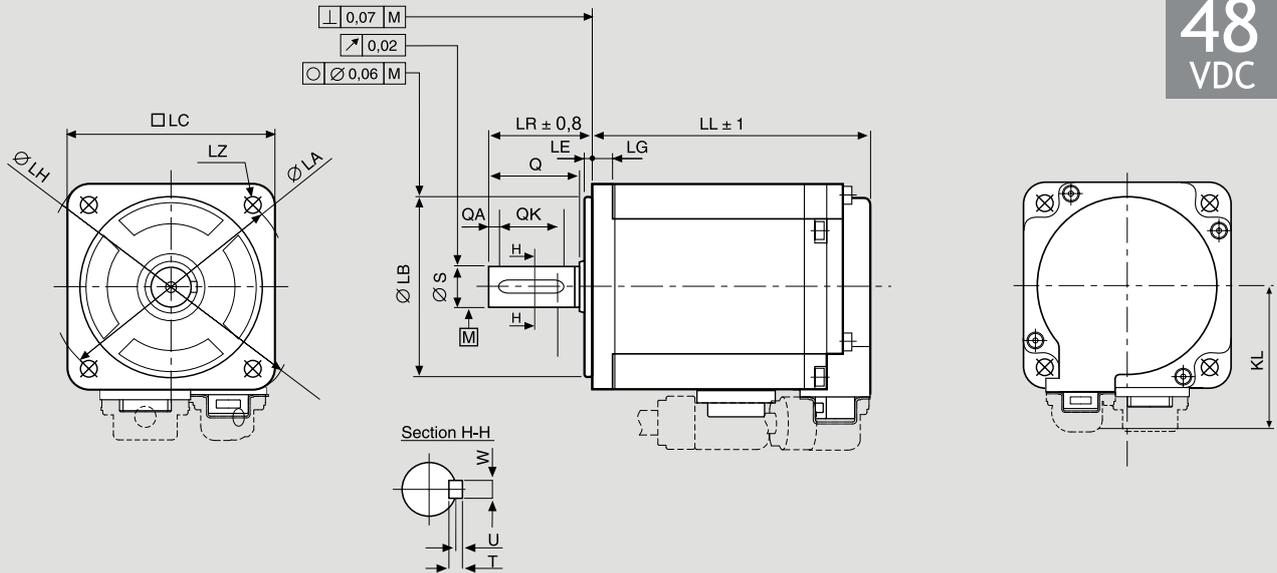
# R2GD06010DXH11M

SANYO DENKI  
SANMOTION

c US

## Dimensions (Unit:mm)

48  
VDC

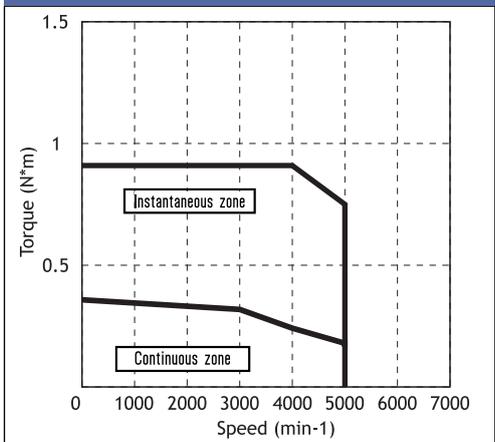


without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
58.5	-	6	44.6	70	$50-0.025^0$	3.0	82	60	4- $\varnothing$ 5.5	25	$8-0.009^0$	20	2	12	3	3	1,2	-	-

## FEATURES

MODEL	R2GD06010DXH11M	
NOMINAL POWER	(W)	100
NOMINAL SPEED	(rpm)	3000
MAXIMUM SPEED	(rpm)	5000
NOMINAL TORQUE	(Nm)	0.318
STALL TORQUE	(Nm)	0.353
MAXIMUM TORQUE	(Nm)	0.84
INERTIA	(Kg*m <sup>2</sup> )	$0.117 \cdot 10^{-4}$
ENCODER	(imp./rev)	131072 (17 bit)
PROTECTION DEGREE		IP67
WEIGHT	(Kg)	0.59

## TORQUE CURVE



\* Protection degree IP67 (except for the shaft hole and the edge of the cable).



Indicated performances refer to motor controlled by related 48 VDC step-dir and EtherCAT servo-amplifiers.

Suggested amplifiers: RF2G21A0A00, RF2K24A0HL5, RS2K04A2HL5

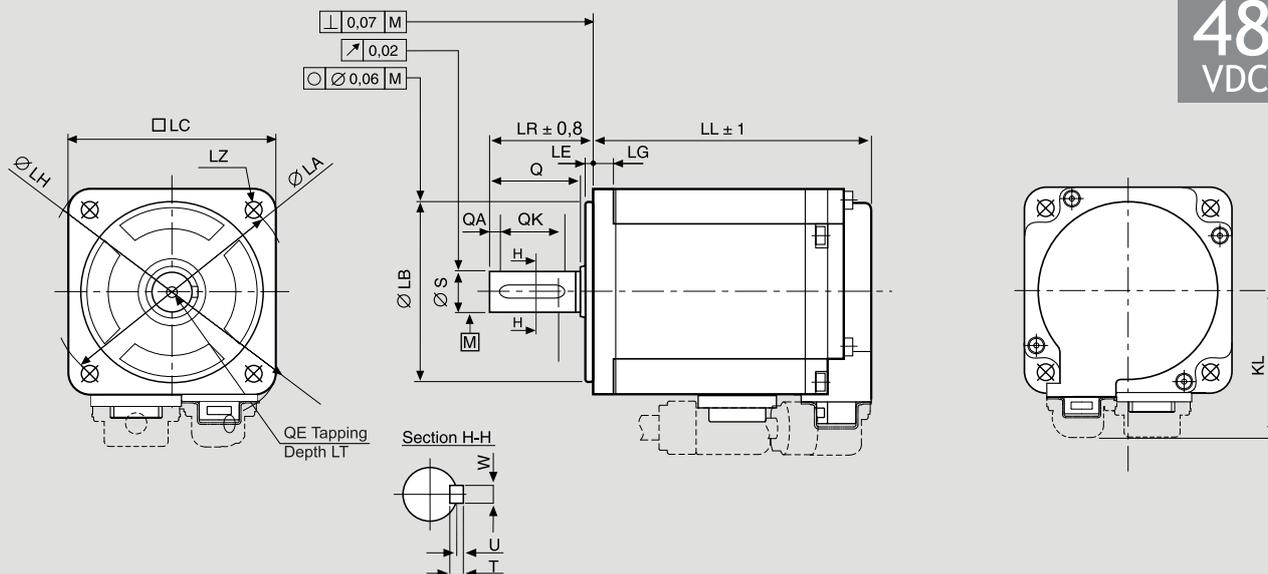
# R2GD06020DXH11M

SANYO DENKI  
SANMOTION

c US

## Dimensions (Unit:mm)

48  
VDC

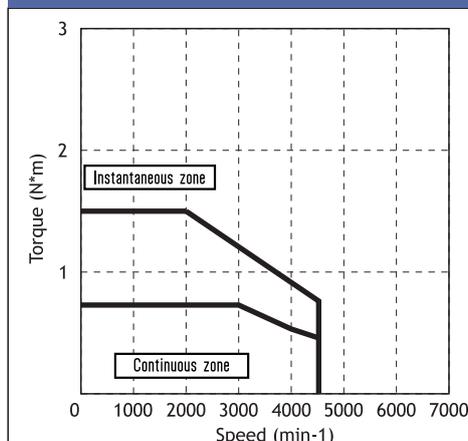


without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
69.5	-	6	44.6	70	50-0.025 <sup>0</sup>	3.0	82	60	4-∅5.5	30	14-0.011 <sup>0</sup>	25	2	20	5	5	2	M5	12

## FEATURES

MODEL	R2GD06020DXH11M	
NOMINAL POWER	(W)	200
NOMINAL SPEED	(rpm)	3000
MAXIMUM SPEED	(rpm)	4500
NOMINAL TORQUE	(Nm)	0.637
STALL TORQUE	(Nm)	0.637
MAXIMUM TORQUE	(Nm)	1.5
INERTIA	(Kg*m <sup>2</sup> )	0.219*10 <sup>-4</sup>
ENCODER	(imp./rev)	131072 (17 bit)
PROTECTION DEGREE		IP67
WEIGHT	(Kg)	0.84

## TORQUE CURVE



\* Protection degree IP67 (except for the shaft hole and the edge of the cable).



Indicated performances refer to motor controlled by related 48 VDC step-dir and EtherCAT servo-amplifiers.

**Suggested amplifiers: RF2G21A0A00, RF2K24A0HL5, RS2K04A2HL5**

SERVO SYSTEMS

**230 VAC SERVOMOTORS  
BATTERY LESS MULTI-TURN ABSOLUTE ENCODER**

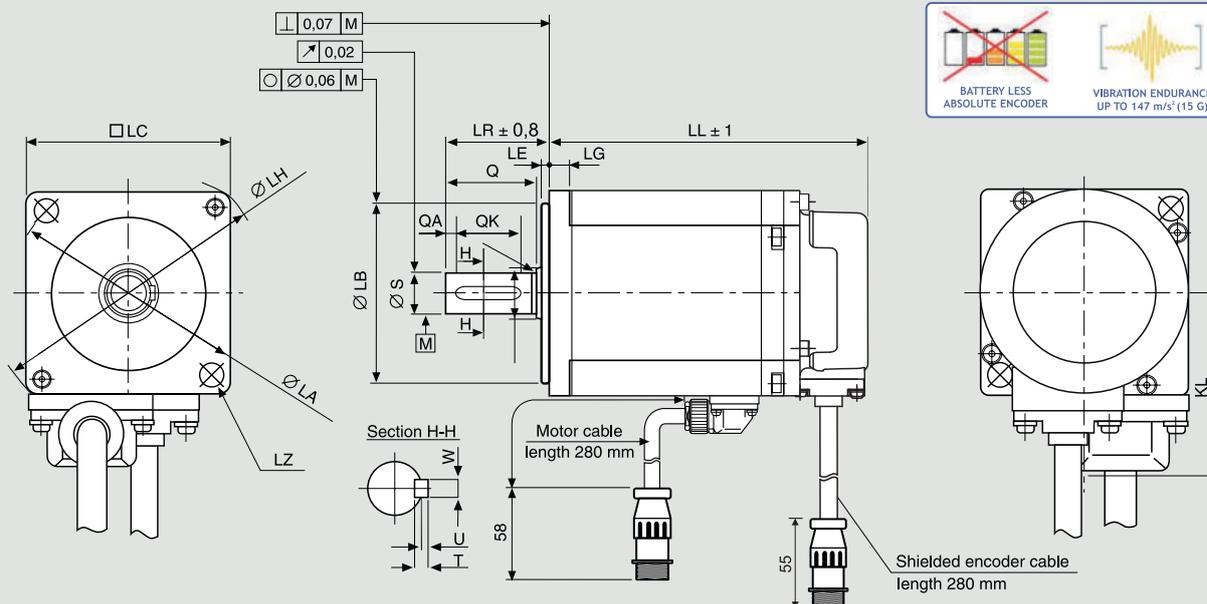
● For cable options please see the table at the end of the section.



# R2AA04010FXR1CM (R2AA04010FCR1CM6)

SANYODENKI  
SANMOTION

## Dimensions (Unit:mm)



without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
83	119	5	34.5	46	30-0.021 <sup>0</sup>	2.5	56	40	2-Ø4.5	25	8-0.009 <sup>0</sup>	20	2	12	3	3	1.2	--	--

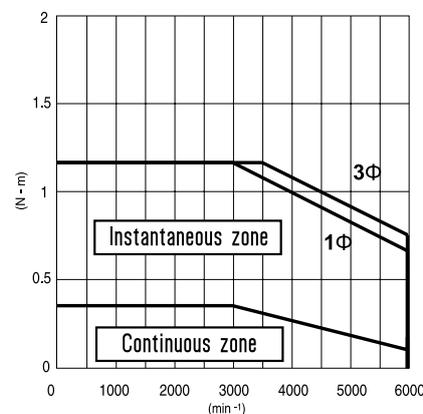
## FEATURES

MODEL	R2AA04010FXR1CM
NOMINAL POWER [version with brake] (W)	100 [90]
NOMINAL SPEED (rpm)	3000
MAXIMUM SPEED (rpm)	6000
NOMINAL TORQUE (Nm)	0.286
STALL TORQUE (Nm)	0.318
MAXIMUM TORQUE (Nm)	1.18
INERTIA (Kg*m <sup>2</sup> )	0.0627*10 <sup>-4</sup>
BATTERY LESS ABSOLUTE ENCODER	SINGLE TURN: 131072 imp/rev (17 bit) MULTI TURN: 65536 turns
PROTECTION DEGREE	IP67*
WEIGHT [version with brake] (Kg)	0.53 [0.80]

\* Protection degree IP67 (except for the shaft hole and the edge of the cable).

## TORQUE CURVE

R2AA04010F [100W] + RS3A03



WITHOUT BRAKE  
R2AA04010FXR1CM



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

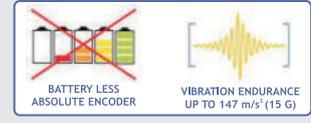
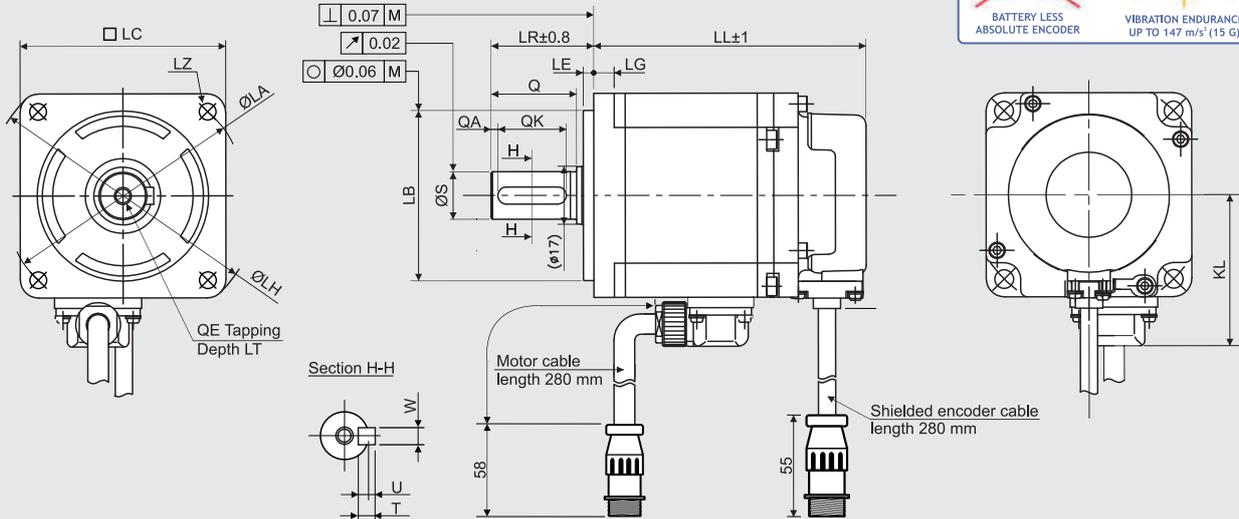
1Φ torque curve with single phase power supply  
3Φ = torque curve with three-phase power supply

Suggested amplifiers: RS3A03A0AL0W00P, RS3A03A2HA4W00P, RS3A03A0AL2

# R2AA06020FXR11M (R2AA06020FCR11M)

SANYODENKI  
SANMOTION

## Dimensions (Unit:mm)

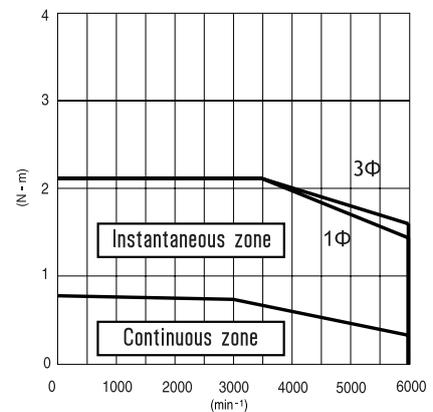


without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
79.5	107.5	6	44.4	70	50-0.025 <sup>0</sup>	3.0	82	60	4-Ø5.5	30	14-0.011 <sup>0</sup>	25	2	20	5	5	2	M5	12

## FEATURES

MODEL	R2AA06020FXR11M	
NOMINAL POWER	(W)	200
NOMINAL SPEED	(rpm)	3000
MAXIMUM SPEED	(rpm)	6000
NOMINAL TORQUE	(Nm)	0.637
STALL TORQUE	(Nm)	0.686
MAXIMUM TORQUE	(Nm)	2.20
INERTIA	(Kg*m <sup>2</sup> )	0.219×10 <sup>-4</sup>
BATTERY LESS ABSOLUTE ENCODER	SINGLE TURN: 131072 imp/rev (17 bit) MULTI TURN: 65536 turns	
PROTECTION DEGREE	IP67*	
WEIGHT [version with brake]	(Kg)	0.99 [1.4]

## TORQUE CURVE R2AA06020F [200W] + RS3A03



\* Protection degree IP67 (except for the shaft hole and the edge of the cable).

WITHOUT BRAKE  
R2AA06020FXR11M



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

1Φ torque curve with single phase power supply  
3Φ = torque curve with three-phase power supply

WITH BRAKE  
R2AA06020FCR11M

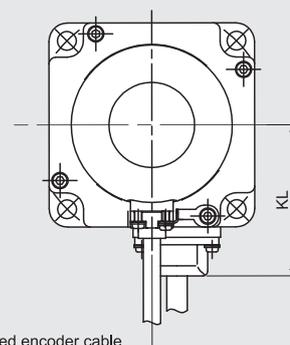
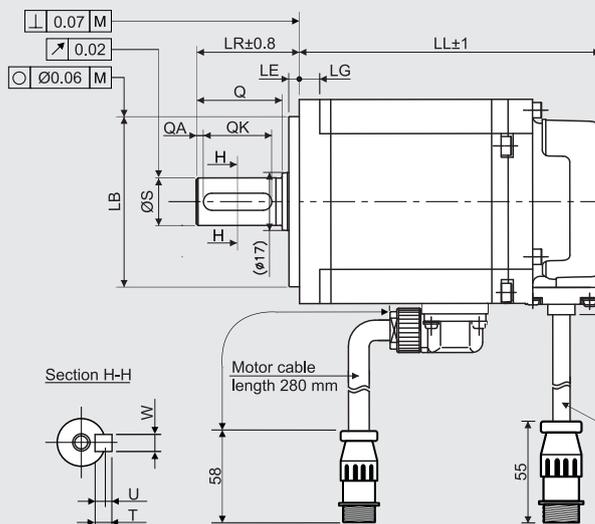
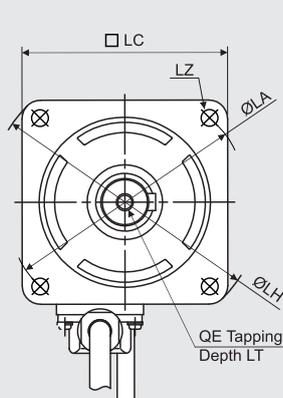


Suggested amplifiers: RS3A03A0AL0W00P, RS3A03A2HA4W00P, RS3A03A0AL2

# R2AA06040FXR11M (R2AA06040FCR11M6)

SANYODENKI  
SANMOTION

## Dimensions (Unit:mm)



without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
105.5	133.5	6	44.4	70	50-0.025 <sup>0</sup>	3.0	82	60	4-Ø5.5	30	14-0.011 <sup>0</sup>	25	2	20	5	5	2	M5	12

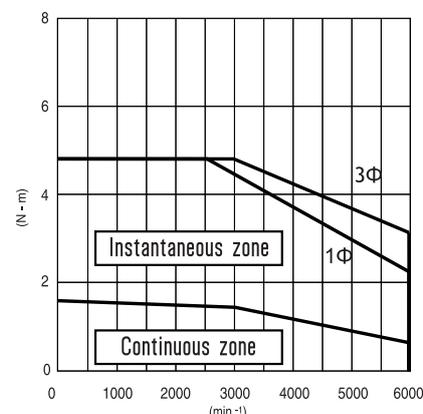
## FEATURES

MODEL	R2AA06040FXR11M	
NOMINAL POWER	(W)	400
NOMINAL SPEED	(rpm)	3000
MAXIMUM SPEED	(rpm)	6000
NOMINAL TORQUE	(Nm)	1.270
STALL TORQUE	(Nm)	1.370
MAXIMUM TORQUE	(Nm)	4.80
INERTIA	(Kg·m <sup>2</sup> )	0.412×10 <sup>-4</sup>
BATTERY LESS ABSOLUTE ENCODER	SINGLE TURN: 131072 imp/rev (17 bit) MULTI TURN: 65536 turns	
PROTECTION DEGREE	IP67*	
WEIGHT	[version with brake] (Kg)	1.50 [1.90]

\* Protection degree IP67 (except for the shaft hole and the edge of the cable).

## TORQUE CURVE

R2AA06040F [400W] + RS3A03



WITHOUT BRAKE  
R2AA06040FXR11M



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

1Φ torque curve with single phase power supply  
3Φ = torque curve with three-phase power supply

WITH BRAKE  
R2AA06040FCR11M6

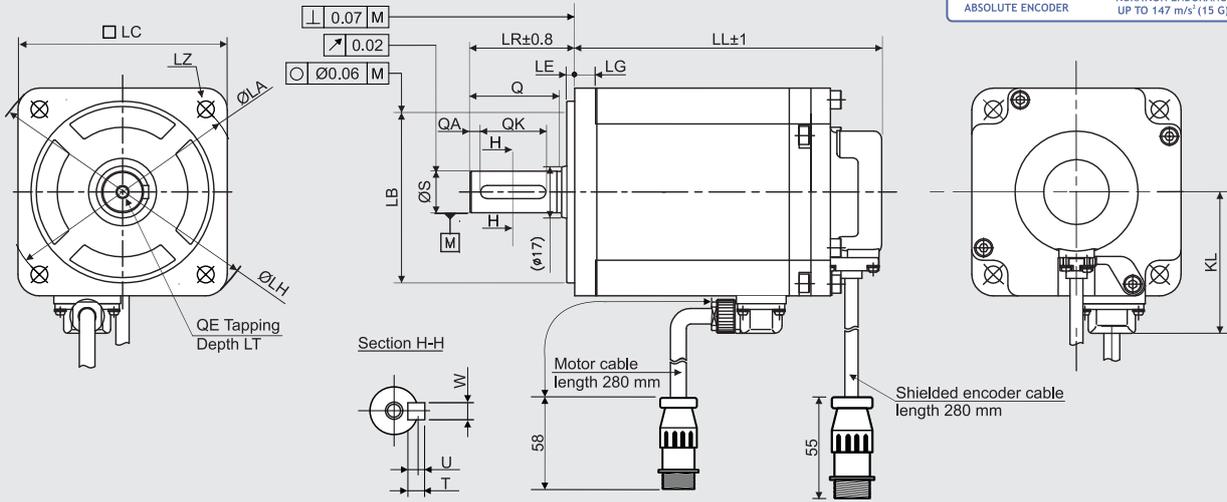


Suggested amplifiers: RS3A03A0AL0W00P, RS3A03A2HA4W00P, RS3A03A0AL2

# R2AA08075FXR11M (R2AA08075FCR11M)

SANYODENKI  
SANMOTION

## Dimensions (Unit:mm)

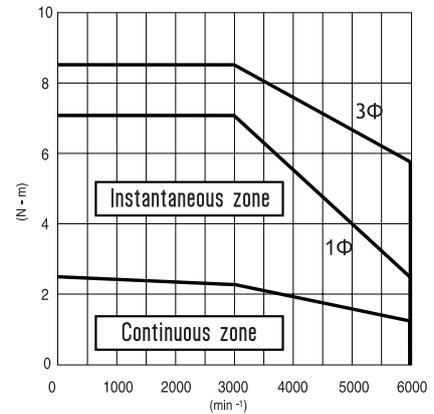


without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
117.3	153	8	54.4	90	70-0.030 <sup>0</sup>	3.0	108	80	4-Ø6.6	40	16-0.011 <sup>0</sup>	35	4	25	5	5	2	M5	12

## FEATURES

MODEL	R2AA08075FXR11M	
NOMINAL POWER	(W)	750
NOMINAL SPEED	(rpm)	3000
MAXIMUM SPEED	(rpm)	6000
NOMINAL TORQUE	(Nm)	2.390
STALL TORQUE	(Nm)	2.550
MAXIMUM TORQUE	(Nm)	8.50
INERTIA	(Kg·m <sup>2</sup> )	1.820×10 <sup>-4</sup>
BATTERY LESS ABSOLUTE ENCODER	SINGLE TURN: 131072 imp/rev (17 bit) MULTI TURN: 65536 turns	
PROTECTION DEGREE	IP67*	
WEIGHT	[version with brake] (Kg)	2.80 [3.70]

## TORQUE CURVE R2AA08075F [750W] + RS3A03



\* Protection degree IP67 (except for the shaft hole and the edge of the cable).

WITHOUT BRAKE  
R2AA08075FXR11M



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

1Φ torque curve with single phase power supply  
3Φ = torque curve with three-phase power supply

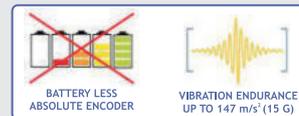
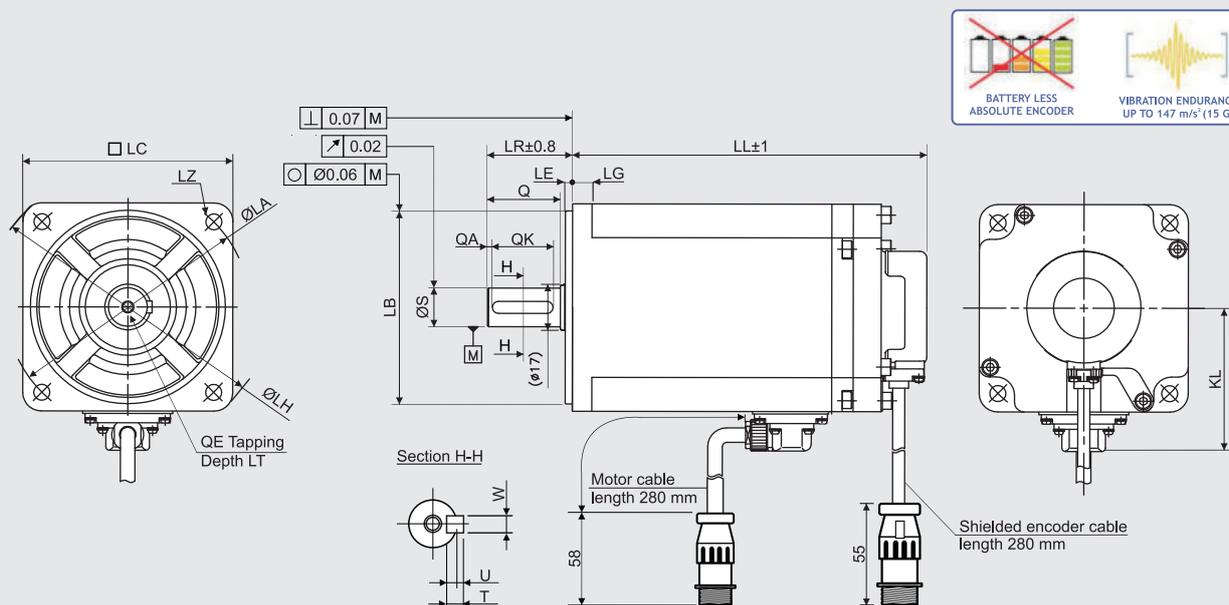
WITH BRAKE  
R2AA08075FCR11M



# R2AAB8100HXR29M (R2AAB8100HCR29M)

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)



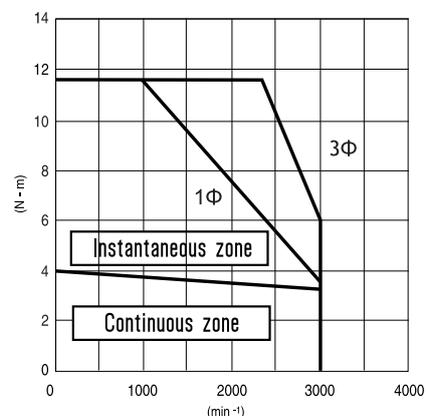
without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
145.8	171.8	8	59.4	100	80-0.03 <sup>0</sup>	3.0	115.5	86	4-Ø6.6	35	16-0.011 <sup>0</sup>	30	2	25	5	5	2	M5	12

## FEATURES

MODEL	R2AAB8100HXR29M	
NOMINAL POWER	(W)	1000
NOMINAL SPEED	(rpm)	3000
MAXIMUM SPEED	(rpm)	3000
NOMINAL TORQUE	(Nm)	3.180
STALL TORQUE	(Nm)	3.920
MAXIMUM TORQUE	(Nm)	11.60
INERTIA	(Kg·m <sup>2</sup> )	2.383×10 <sup>-4</sup>
BATTERY LESS ABSOLUTE ENCODER	SINGLE TURN: 131072 imp/rev (17 bit) MULTI TURN: 65536 turns	
PROTECTION DEGREE	IP67*	
WEIGHT	[version with brake] (Kg)	3.60 [4.50]

## TORQUE CURVE

R2AAB8100H [1kW] + RS3A03



\* Protection degree IP67 (except for the shaft hole and the edge of the cable).

WITHOUT BRAKE  
R2AAB8100HXR29M



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

1Φ torque curve with single phase power supply  
3Φ = torque curve with three-phase power supply

WITH BRAKE  
R2AAB8100HCR29M

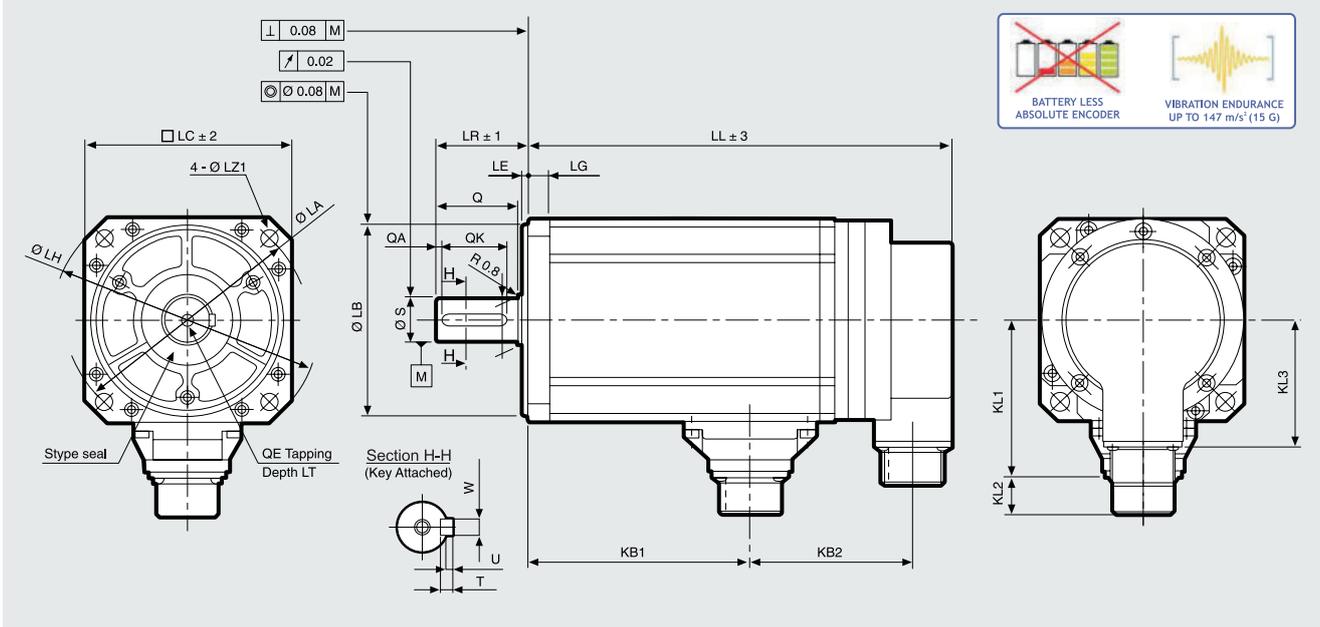


# Q2AA10150BXR48M (Q2AA10150BCR48M)

**SANYO DENKI**  
**SANMOTION**

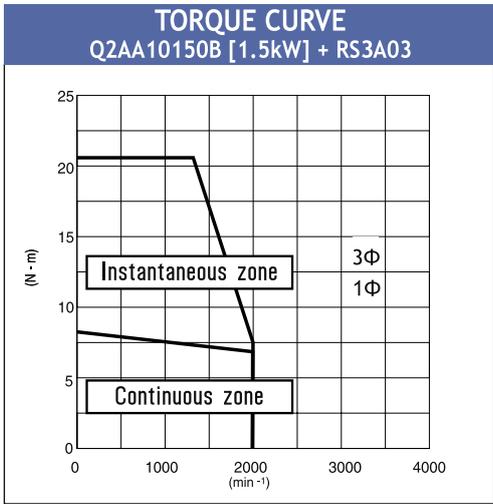


## Dimensions (Unit:mm)



without brake		with brake		KL1	KL2	KL3	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	W	T	U	KB1	QE	LT
LL	KB2	LL	KB2	78	19	64	10	115	95-0.035 <sup>0</sup>	3	130	100	9	--	45	22-0.013 <sup>0</sup>	40	3	32	6-0.030 <sup>0</sup>	6	2.5	128	M6	20

FEATURES		
MODEL	Q2AA10150BXR48M	
NOMINAL POWER	(W)	1500
NOMINAL SPEED	(rpm)	2000
MAXIMUM SPEED	(rpm)	2000
NOMINAL TORQUE	(Nm)	7.2
STALL TORQUE	(Nm)	7.7
MAXIMUM TORQUE	(Nm)	20.5
INERTIA	(Kg·m <sup>2</sup> )	8.0×10 <sup>-4</sup>
BATTERY LESS ABSOLUTE ENCODER	SINGLE TURN: 131072 imp/rev (17 bit) MULTI TURN: 65536 turns	
PROTECTION DEGREE	IP67	
WEIGHT	[version with brake] (Kg)	7.0 [8.5]



Indicated performances refer to motor controlled by related performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

1Φ = torque curve with single-phase power supply  
3Φ = torque curve with three-phase power supply



**Suggested amplifiers: RS3A03A0AL0W00P, RS3A03A2HA4W00P, RS3A03A0AL2**

## SERVO SYSTEMS

# 230 VAC SERVOMOTORS - INCREMENTAL ENCODER

● For cable options please see the table at the end of the section.

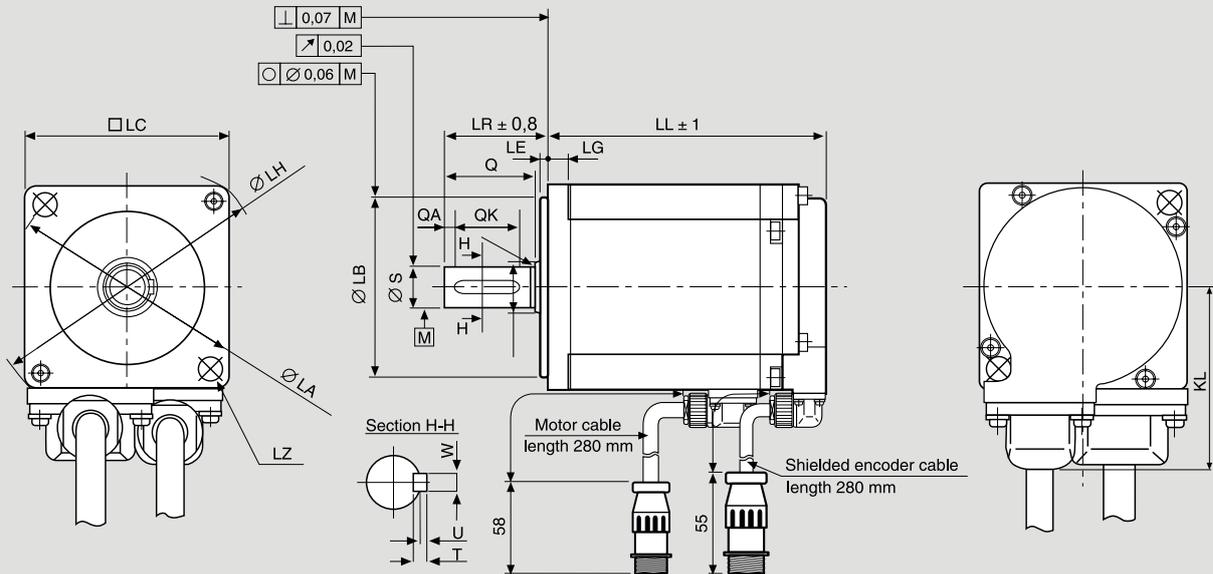


# R2AA04010FXH1CM (R2AA04010FCH1CM6)

SANYODENKI  
SANMOTION



## Dimensions (Unit:mm)



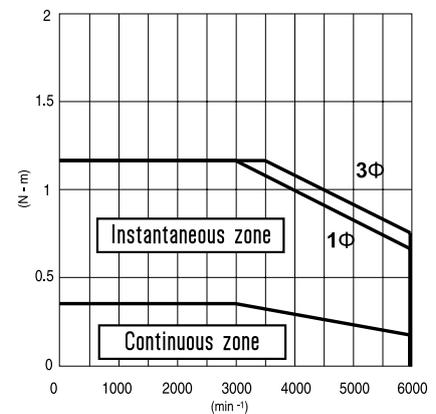
without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
72	108	5	35.4	46	$30-0.021^0$	2.5	56	40	2-Ø4.5	25	$8-0.009^0$	20	2	12	3	3	1.2	--	--

## FEATURES

MODEL	R2AA04010FXH1CM	
NOMINAL POWER [version with brake] (W)	100 [90]	
NOMINAL SPEED (rpm)	3000	
MAXIMUM SPEED (rpm)	6000	
NOMINAL TORQUE (Nm)	0.318	
STALL TORQUE (Nm)	0.318	
MAXIMUM TORQUE (Nm)	1.18	
INERTIA (Kg·m <sup>2</sup> )	$0.0627 \times 10^{-4}$	
ENCODER (imp./rev)	131072 (17 bit)	
PROTECTION DEGREE	IP67*	
WEIGHT [version with brake] (Kg)	0.39 [0.62]	

\* Protection degree IP67 (except for the shaft hole and the edge of the cable).

## TORQUE CURVE R2AA04010F [100W] + RS3A03



WITHOUT BRAKE  
R2AA04010FXH1CM



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

1Φ torque curve with single phase power supply  
3Φ = torque curve with three-phase power supply

WITH BRAKE  
R2AA04010FCH1CM6

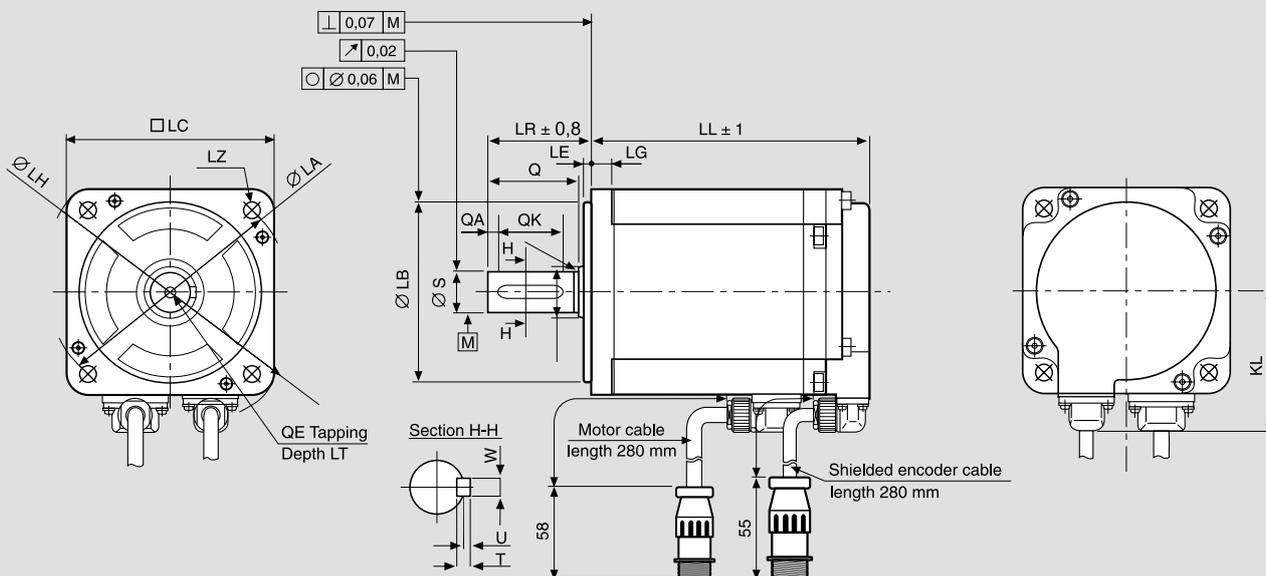


Suggested amplifiers: RS3A03A0AL0W00P, RS3A03A2HA4W00P, RS3A03A0AL2

# R2AA06020FXH11M (R2AA06020FCH11M)

SANYODENKI  
SANMOTION

## Dimensions (Unit:mm)



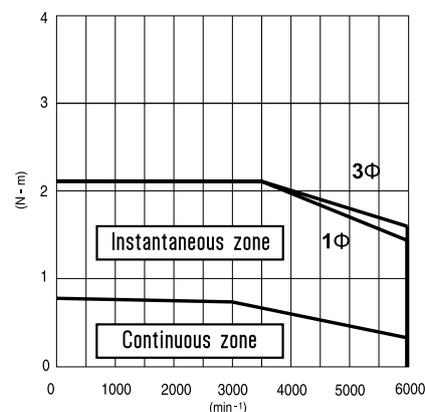
without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
69.5	97.5	6	44.6	70	50-0.025 <sup>0</sup>	3.0	82	60	4-Ø5.5	30	14-0.011 <sup>0</sup>	25	2	20	5	5	2	M5	12

## FEATURES

MODEL	R2AA06020FXH11M
NOMINAL POWER [version with brake] (W)	200
NOMINAL SPEED (rpm)	3000
MAXIMUM SPEED (rpm)	6000
NOMINAL TORQUE (Nm)	0.637
STALL TORQUE (Nm)	0.686
MAXIMUM TORQUE (Nm)	2.20
INERTIA (Kg*m <sup>2</sup> )	0.219×10 <sup>-4</sup>
ENCODER (imp./rev)	131072 (17 bit)
PROTECTION DEGREE	IP67
WEIGHT [version with brake] (Kg)	0.84 [1.19]

## TORQUE CURVE

R2AA06020F [200W] + RS3A03



\* Protection degree IP67 (except for the shaft hole and the edge of the cable).

WITHOUT BRAKE  
R2AA06020FXH11M



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

1Φ torque curve with single phase power supply  
3Φ = torque curve with three-phase power supply

WITH BRAKE  
R2AA06020FCH11M



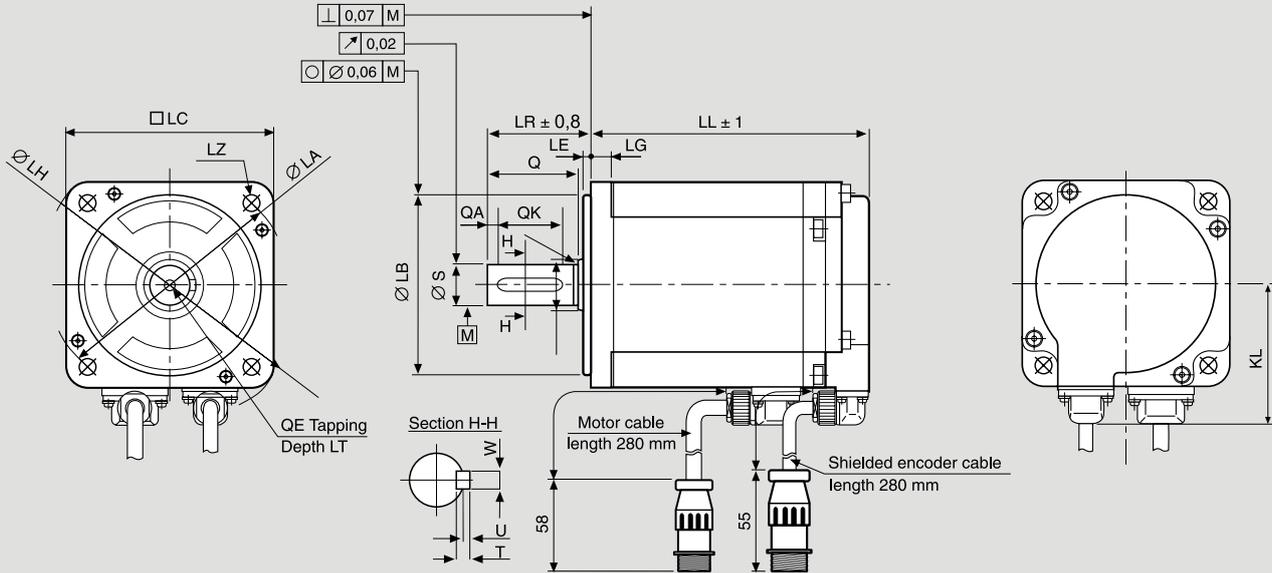
Suggested amplifiers: RS3A03A0ALOW00P, RS3A03A2HA4W00P, RS3A03A0AL2

# R2AA06040FXH11M (R2AA06040FCH11M6)

SANYODENKI  
SANMOTION



## Dimensions (Unit:mm)



without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
95.5	123.5	6	44.6	70	50-0.025 <sup>0</sup>	3.0	82	60	4-Ø5.5	30	14-0.011 <sup>0</sup>	25	2	20	5	5	2	M5	12

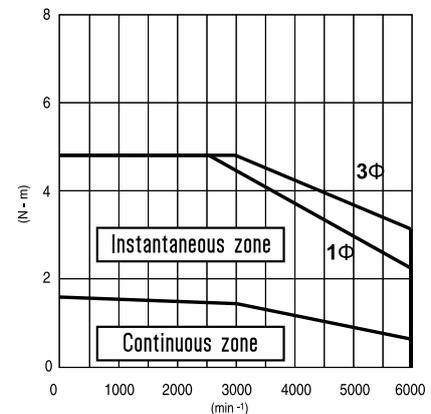
## FEATURES

MODEL	R2AA06040FXH11M
NOMINAL POWER [version with brake] (W)	400 [360]
NOMINAL SPEED (rpm)	3000
MAXIMUM SPEED (rpm)	6000
NOMINAL TORQUE (Nm)	1.270
STALL TORQUE (Nm)	1.370
MAXIMUM TORQUE (Nm)	4.80
INERTIA (Kg*m <sup>2</sup> )	0.412×10 <sup>-4</sup>
ENCODER (imp./rev)	131072 (17 bit)
PROTECTION DEGREE	IP67
WEIGHT [version with brake] (Kg)	1.30 [1.65]

\* Protection degree IP67 (except for the shaft hole and the edge of the cable).

## TORQUE CURVE

R2AA06040F [400W] + RS3A03



WITHOUT BRAKE  
R2AA06040FXH11M



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

1Φ torque curve with single phase power supply  
3Φ = torque curve with three-phase power supply

WITH BRAKE  
R2AA06040FCH11M



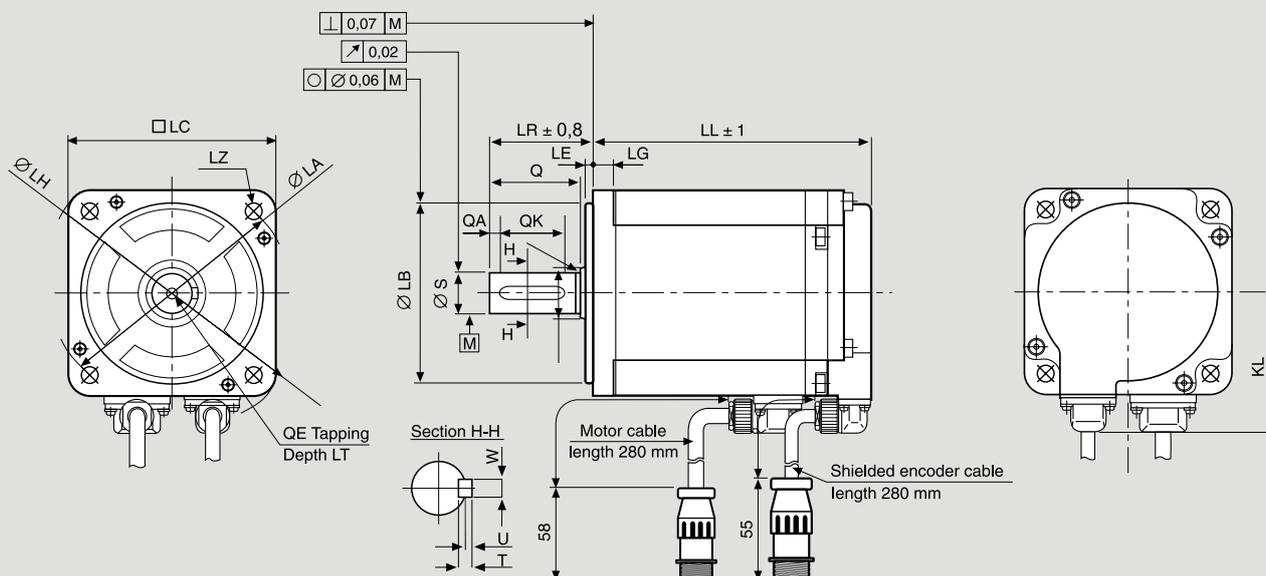
Suggested amplifiers: RS3A03A0AL0W00P, RS3A03A2HA4W00P, RS3A03A0AL2

# R2AA08075FXH11M (R2AA08075FCH11M)

SANYODENKI  
SANMOTION



## Dimensions (Unit:mm)



without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
107.3	143	8	54.4	90	$70-0.030^0$	3.0	108	80	4- $\emptyset 6.6$	40	$16-0.011^0$	35	4	25	5	5	2	M5	12

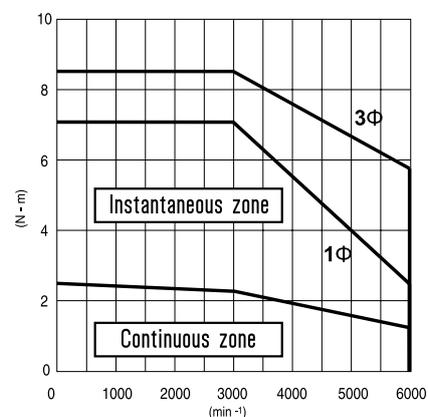
## FEATURES

MODEL	R2AA08075FXH11M	
NOMINAL POWER	(W)	750
NOMINAL SPEED	(rpm)	3000
MAXIMUM SPEED	(rpm)	6000
NOMINAL TORQUE	(Nm)	2.390
STALL TORQUE	(Nm)	2.550
MAXIMUM TORQUE	(Nm)	8.50
INERTIA	(Kg*m <sup>2</sup> )	$1.820 \times 10^{-4}$
ENCODER	(imp./rev)	131072 (17 bit)
PROTECTION DEGREE		IP67
WEIGHT	[version with brake] (Kg)	2.60 [3.45]

\* Protection degree IP67 (except for the shaft hole and the edge of the cable).

## TORQUE CURVE

R2AA08075F [750W] + RS3A03



WITHOUT BRAKE  
R2AA08075FXH11M



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

1Φ torque curve with single phase power supply  
3Φ = torque curve with three-phase power supply

WITH BRAKE  
R2AA08075FCH11M



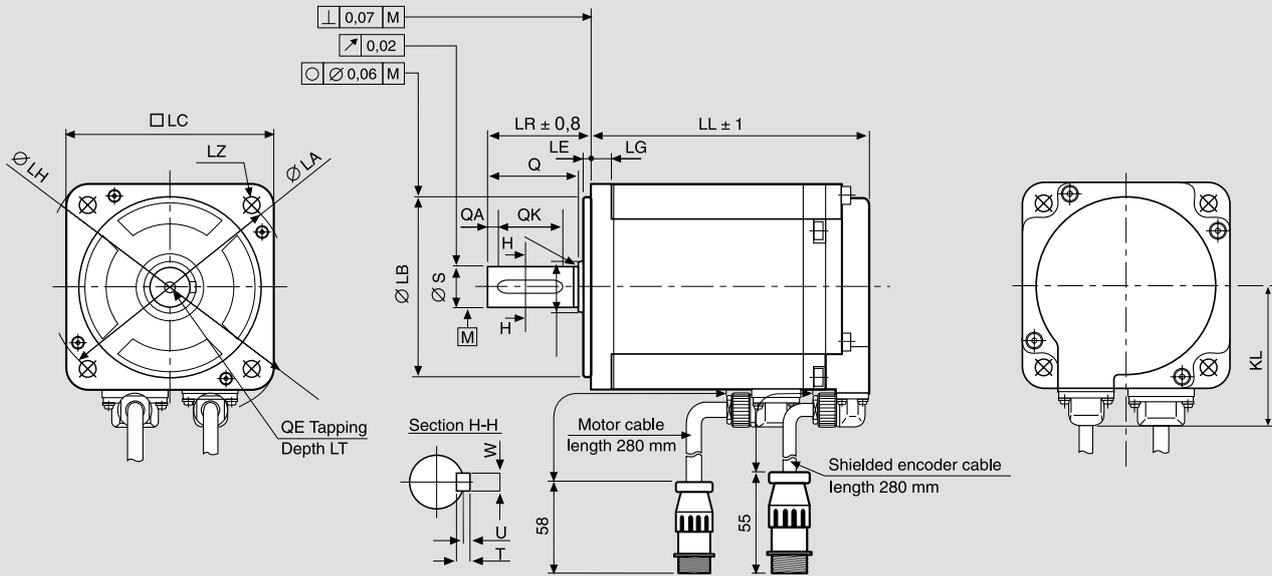
Suggested amplifiers: RS3A03A0ALOW00P, RS3A03A2HA4W00P, RS3A03A0AL2

# R2AAB8100HXH29M (R2AAB8100HCH29M)

SANYODENKI  
SANMOTION



## Dimensions (Unit:mm)



without brake LL	with brake LL	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	QE	LT
137	163	8	59.4	100	$80-0.003^0$	3.0	115.5	86	4- $\varnothing 6.6$	35	$16-0.011^0$	30	2	25	5	5	2	M5	12

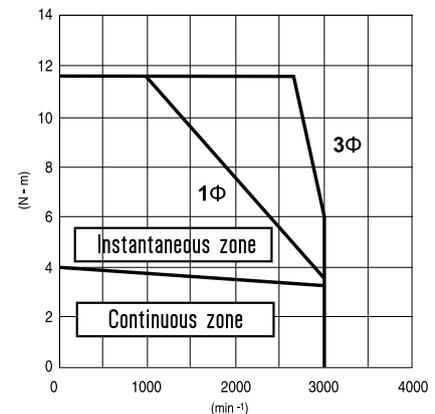
## FEATURES

MODEL	R2AAB8100HXH29M	
NOMINAL POWER	(W)	1000
NOMINAL SPEED	(rpm)	3000
MAXIMUM SPEED	(rpm)	3000
NOMINAL TORQUE	(Nm)	3.180
STALL TORQUE	(Nm)	3.920
MAXIMUM TORQUE	(Nm)	11.60
INERTIA	(Kg <sup>2</sup> m <sup>2</sup> )	$2.383 \times 10^{-4}$
ENCODER	(imp./rev)	131072 (17 bit)
PROTECTION DEGREE		IP67*
WEIGHT	[version with brake] (Kg)	3.50 [4.30]

\* Protection degree IP67 (except for the shaft hole and the edge of the cable).

## TORQUE CURVE

R2AAB8100H [1kW] + RS3A03



WITHOUT BRAKE  
R2AAB8100HXH29M



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

1Φ torque curve with single phase power supply  
3Φ = torque curve with three-phase power supply

WITH BRAKE  
R2AAB8100HCH29M

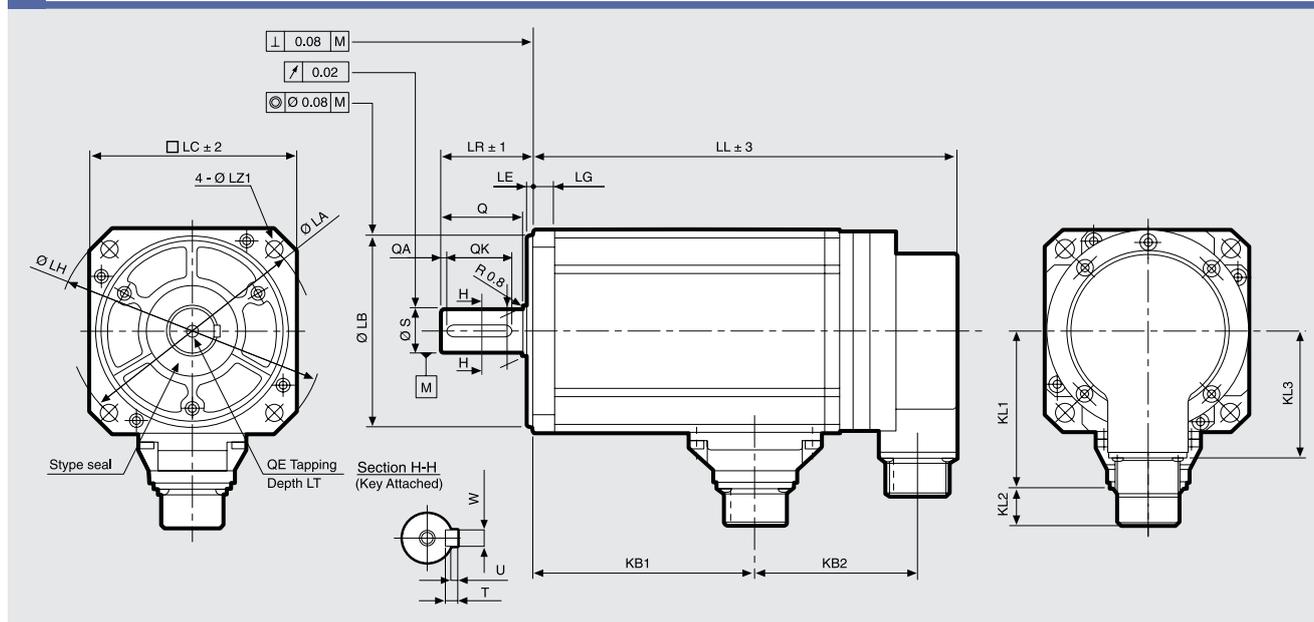


Suggested amplifiers: RS3A03A0ALOW00P, RS3A03A2HA4W00P, RS3A03A0AL2

# Q2AA10150BXH48M (Q2AA10150BCH48M)

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)



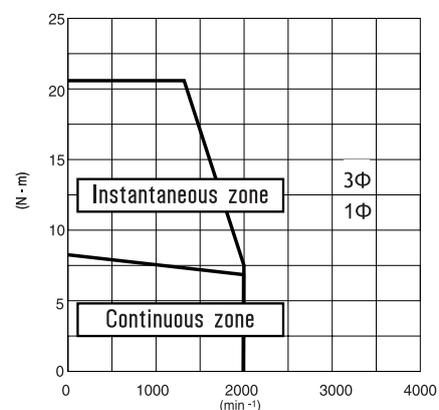
without brake		with brake		KL1	KL2	KL3	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	W	T	U	KB1	QE	LT
LL	KB2	LL	KB2																						
237	88	272,5	124	78	19	64	10	115	95-0,035 <sup>0</sup>	3	130	100	9	--	45	22-0,013 <sup>0</sup>	40	3	32	6-0,030 <sup>0</sup>	6	2.5	128	M6	20

## FEATURES

MODEL	Q2AA10150BXH48M	
NOMINAL POWER	(W)	1500
NOMINAL SPEED	(rpm)	2000
MAXIMUM SPEED	(rpm)	2000
NOMINAL TORQUE	(Nm)	7.2
STALL TORQUE	(Nm)	7.7
MAXIMUM TORQUE	(Nm)	20.5
INERTIA	(Kg*m <sup>2</sup> )	8.0×10 <sup>-4</sup>
ENCODER	(imp./rev)	131072 (17 bit)
PROTECTION DEGREE		IP67
WEIGHT	[version with brake] (Kg)	7.0 [8.5]

## TORQUE CURVE

Q2AA10150B [1.5kW] + RS3A03



Q2AA10150BXH48M



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

1Φ torque curve with single phase power supply  
3Φ = torque curve with three-phase power supply

Q2AA10150BCH48M



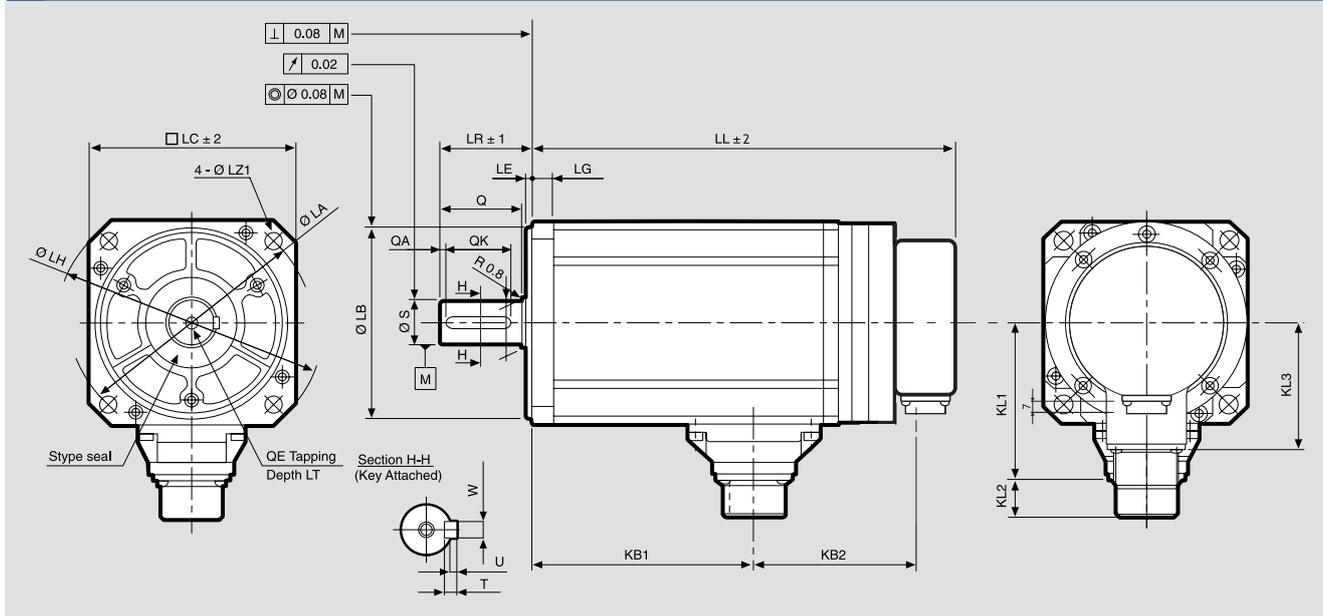
Suggested amplifiers: RS3A03A0ALOW00P, RS3A03A2HA4W00P, RS3A03A0AL2

# R1AA10150FXH00M (R1AA10150FCH00M)

SANYO DENKI  
SANMOTION



## Dimensions (Unit:mm)



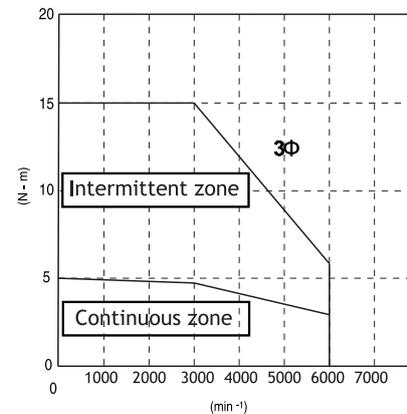
without brake		with brake		KL1	KL2	KL3	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	W	T	U	KB1	QE	LT
LL	KB2	LL	KB2	78	19	70	10	115	95-0.035 <sup>0</sup>	3	130	100	9	--	45	22-0.013 <sup>0</sup>	40	3	32	6-0.030 <sup>0</sup>	6	2.5	85	M6	20

## FEATURES

MODEL	R1AA10150FXH00M	
NOMINAL POWER	(W)	1500
NOMINAL SPEED	(rpm)	3000
MAXIMUM SPEED	(rpm)	6000
NOMINAL TORQUE	(Nm)	4.80
STALL TORQUE	(Nm)	4.90
MAXIMUM TORQUE	(Nm)	15
INERTIA	(Kg*m <sup>2</sup> )	2×10 <sup>-4</sup>
ENCODER	(imp./rev)	131072 (17 BIT)
PROTECTION DEGREE		IP65
WEIGHT	[version with brake] (Kg)	5 [6.6]

## TORQUE CURVE

R1AA10150F [1.5kW] + RS3A05



R1AA10150FXH00M  
R1AA10150FCH00M



Indicated performances refer to motor by related new RS3 standard and EtherCat amplifiers.

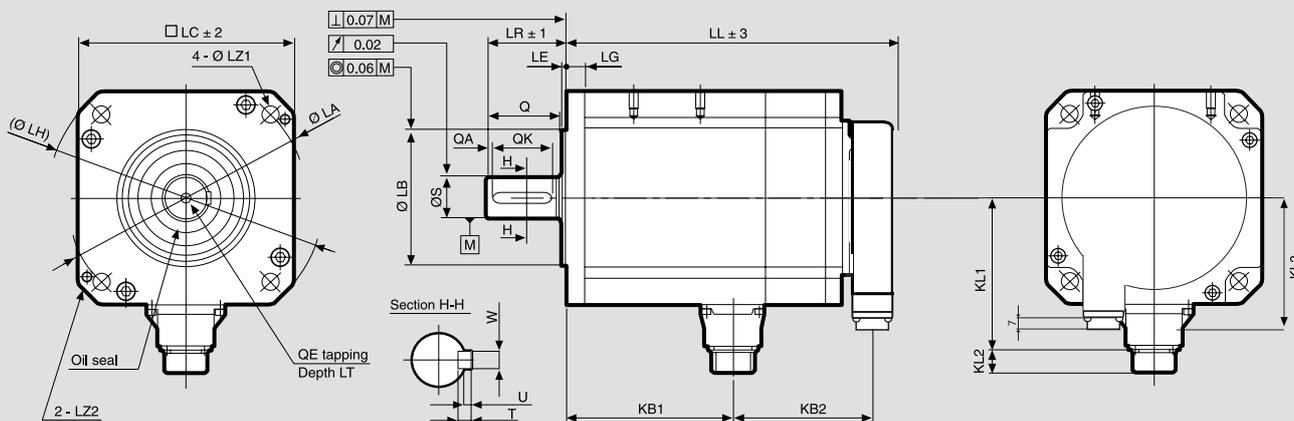
3Φ = torque curve with three-phase power supply

**Suggested amplifiers: RS3A05A0AA2, RS3A05A2HA4**

# R2AA13180HXH00M (R2AA13180HC00M)

SANYO DENKI  
SANMOTION

## Dimensions (Unit:mm)



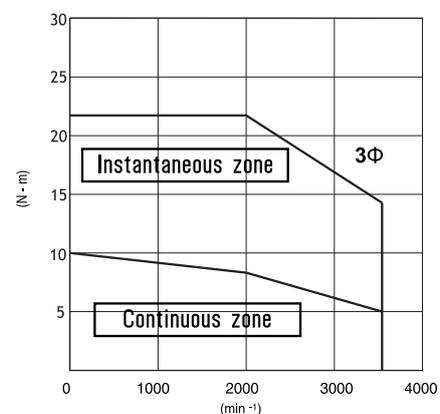
without brake		with brake		KL1	KL2	KL3	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	W	T	U	KB1	QE	LT
LL	KB2	LL	KB2																						
138	44	179	86	98	21	69	12	145	110-0.035 <sup>0</sup>	4	165	130	9	M6	55	22-0.013 <sup>0</sup>	50	3	42	6-0.030 <sup>0</sup>	6	2.5	81	M6	20

## FEATURES

MODEL	R2AA13180HXH00M	
NOMINAL POWER	(W)	1800
NOMINAL SPEED	(rpm)	2000
MAXIMUM SPEED	(rpm)	3500
NOMINAL TORQUE	(Nm)	8.6
STALL TORQUE	(Nm)	10
MAXIMUM TORQUE	(Nm)	22
INERTIA	(Kg*m <sup>2</sup> )	9×10 <sup>-4</sup>
ENCODER	(imp./rev)	131072 (17BIT)
PROTECTION DEGREE		IP65
WEIGHT	[version with brake] (Kg)	8 [9.2]

## TORQUE CURVE

R2AA13180H [1.8kW] + RS3A05



WITHOUT BRAKE  
R2AA13180HXH00M



Indicated performances refer to motor controlled by related RS3 standard and EtherCat amplifiers.

3Φ = torque curve with three-phase power supply

WITH BRAKE  
R2AA13180HC00M



Suggested amplifiers: RS3A05A0AA2, RS3A05A2HA4W00P

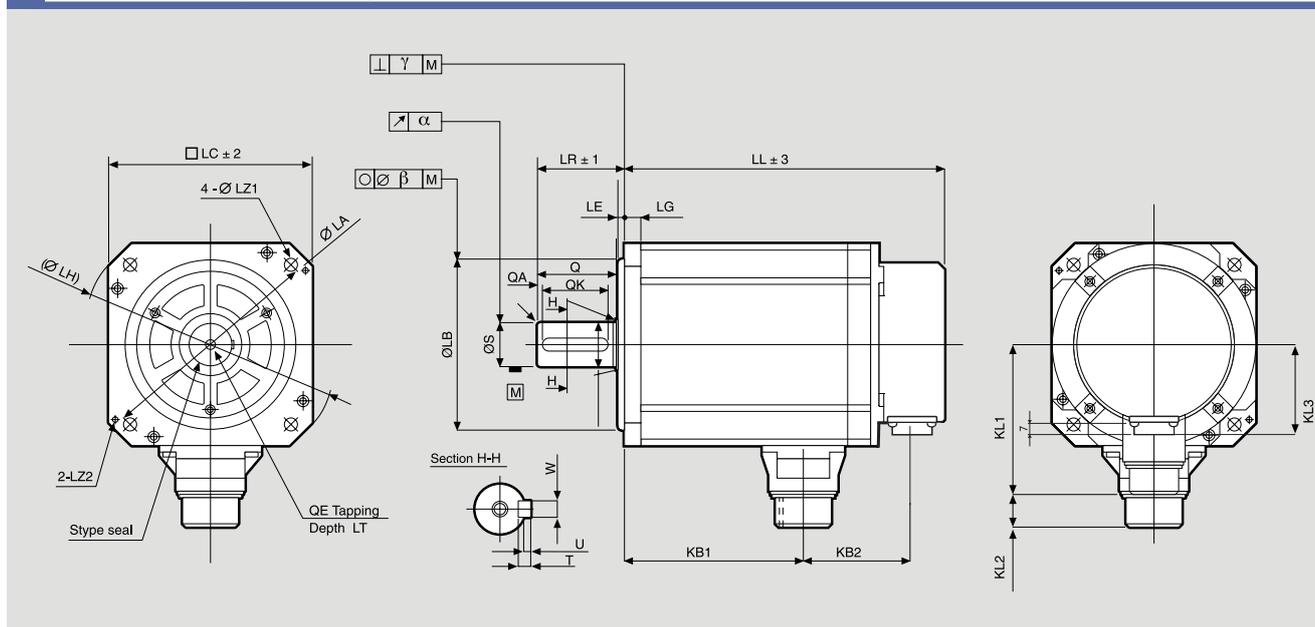


# R1AA13300FXH00M (R1AA13300FCH00M)

SANYODENKI  
SANMOTION



## Dimensions (Unit:mm)



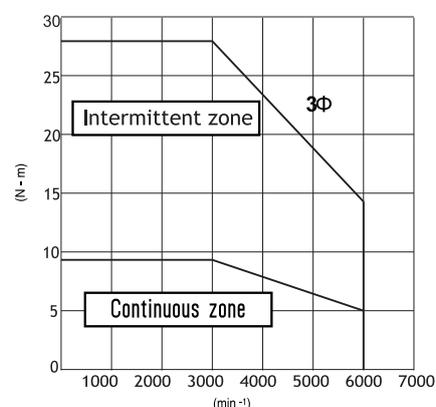
without brake		with brake		KL1	KL2	KL3	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	W	T	U	KB1	QE	LT
LL	KB2	LL	KB2	98	21	78	12	145	$110-0.035^0$	4	165	130	9	M6	55	$28-0.013^0$	50	3	42	$8-0.036^0$	7	3	112	M8	25

## FEATURES

MODEL	R1AA13300FXH00M	
NOMINAL POWER	(W)	3000
NOMINAL SPEED	(rpm)	3000
MAXIMUM SPEED	(rpm)	6000
NOMINAL TORQUE	(Nm)	9.7
STALL TORQUE	(Nm)	9.7
MAXIMUM TORQUE	(Nm)	29
INERTIA	(Kg*m <sup>2</sup> )	$7 \times 10^{-4}$
ENCODER	(imp./rev)	131072 (17BIT)
PROTECTION DEGREE		IP65
WEIGHT	[version with brake] (Kg)	9.7 [11.8]

## TORQUE CURVE

R1AA13300F [3kW] + RS3A10



WITHOUT BRAKE  
R1AA13300FXH00M



Indicated performances refer to motor controlled by related new RS3 standard and EtherCat amplifiers.

3Φ = torque curve with three-phase power supply

WITH BRAKE  
R1AA13300FC00M



Suggested amplifiers: RS3A10A0AA2, RS3A10A2HA4W00P

## SERVO SYSTEMS

# 400 VAC SERVOMOTORS - INCREMENTAL ENCODER

● For cable options please see the table at the end of the section.



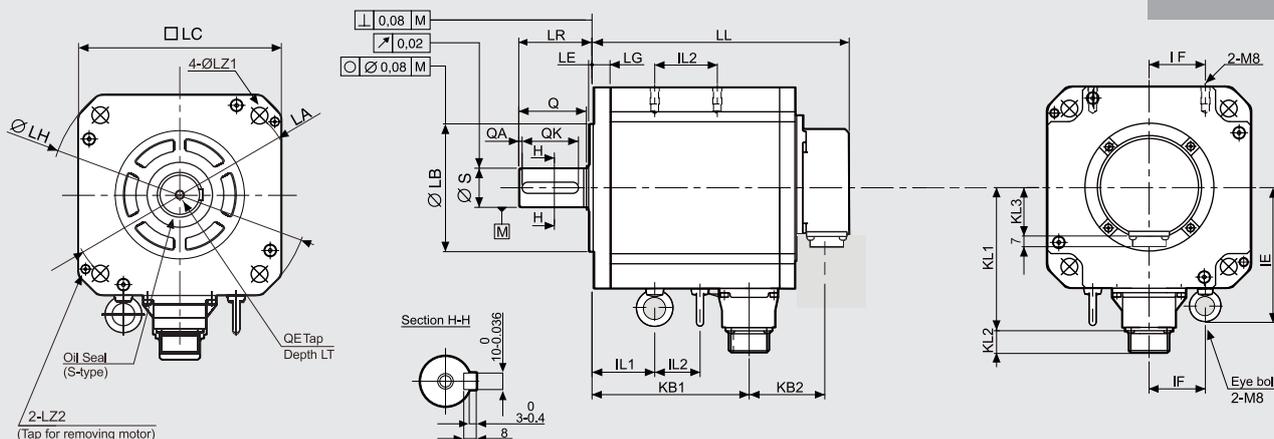
# R2CA18350LXH00M

SANYO DENKI  
SANMOTION

Dimensions (Unit:mm)

C US

400  
VAC



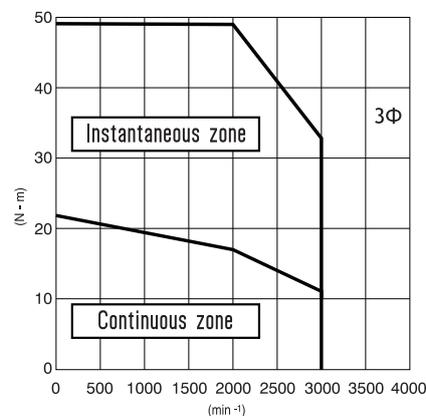
LL	KB2	KL1	KL2	KL3	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	IL1	IL2	IF	IE	KB1	QE	LT
159	52	123	21	38	16	200	$\varnothing$ 114.3-0.035	3	$\varnothing$ 230	$\square$ 180	$\varnothing$ 13.5	M8	65	$\varnothing$ 35-0.016	60	3	50	47	20	50	123	92	M8	25

## FEATURES

MODEL	R2CA18350LXH00M	
NOMINAL POWER	(W)	3500
NOMINAL SPEED	(rpm)	2000
MAXIMUM SPEED	(rpm)	3000
NOMINAL TORQUE	(Nm)	17.0
STALL TORQUE	(Nm)	22.0
MAXIMUM TORQUE	(Nm)	49.0
INERTIA	(Kg $\cdot$ m $^2$ )	40 $\times$ 10 $^{-4}$
ENCODER	(imp./rev)	131072 (17BIT)
PROTECTION DEGREE		IP65
WEIGHT	(Kg)	15.5

## TORQUE CURVE

R2CA18350LXH [3.5kW] + RS3C05



WITHOUT BRAKE



(Version with brake available on request)

Indicated performances refer to motor controlled by related RS3 standard and EtherCat amplifiers.

3 $\Phi$  = torque curve with three-phase power supply

Suggested amplifiers: RS3C05A0AA2, RS3C05A2HA4

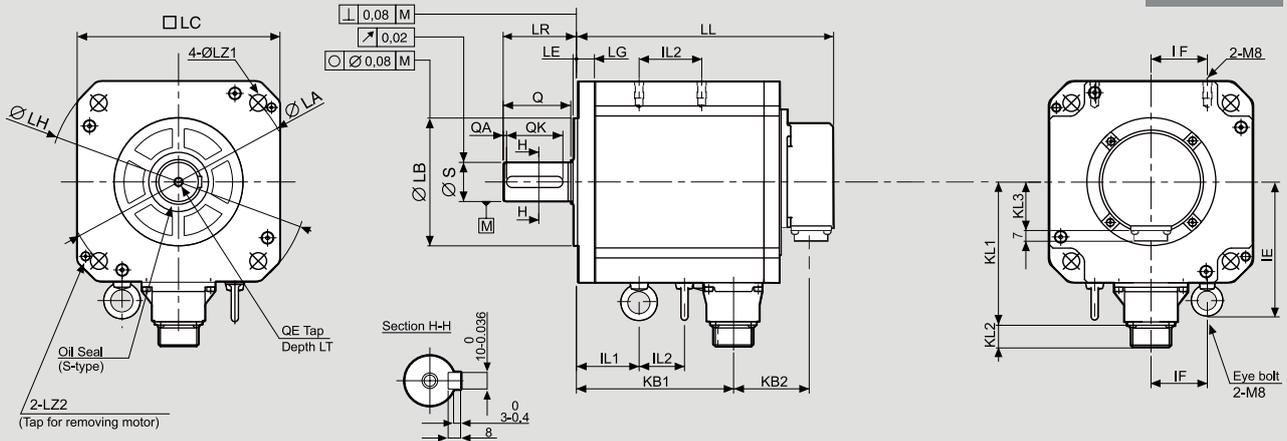
# R2CA18450HXH00M

SANYO DENKI  
SANMOTION

c US

400  
VAC

## Dimensions (Unit:mm)



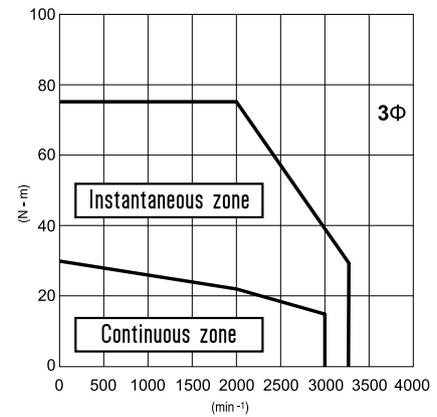
LL	KB2	KL1	KL2	KL3	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	IL1	IL2	IF	IE	KB1	QE	LT
176	52	123	21	38	16	200	$\begin{matrix} 0 \\ \text{Ø}114.3-0.035 \end{matrix}$	3	$\text{Ø}230$	$\square 180$	$\text{Ø}13.5$	M8	$65\pm 1$	$\begin{matrix} 0 \\ \text{Ø}35-0.016 \end{matrix}$	60	3	50	57	20	50	123	109	M8	25

## FEATURES

MODEL	R2CA18450HXH00M	
NOMINAL POWER	(W)	4500
NOMINAL SPEED	(rpm)	2000
MAXIMUM SPEED	(rpm)	3500
NOMINAL TORQUE	(Nm)	21.5
STALL TORQUE	(Nm)	30
MAXIMUM TORQUE	(Nm)	75.0
INERTIA	(Kg*m <sup>2</sup> )	$50 \times 10^{-4}$
ENCODER	(imp./rev)	131072 (17 BIT)
PROTECTION DEGREE		IP65
WEIGHT	(Kg)	20

## TORQUE CURVE

R2CA18450HX [4.5kW] + RS3C10



WITHOUT BRAKE



(Version with brake available on request)

Indicated performances refer to motor controlled by related RS3 standard and EtherCat amplifiers.

3Φ = torque curve with three-phase power supply

**Suggested amplifiers: RS3C10A0AA2, RS3C10A2HA4**

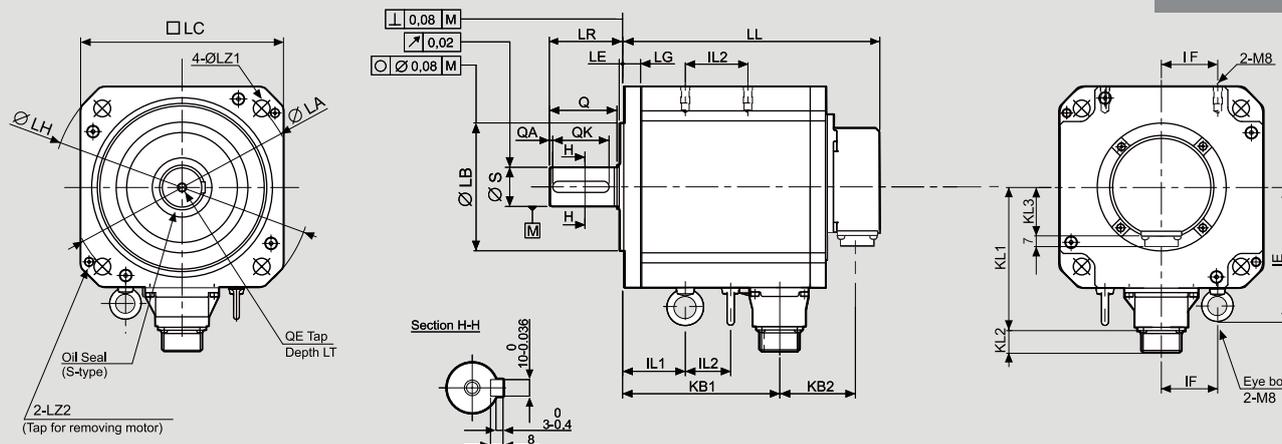
# R2CA2215KVXH00M

SANYODENKI  
SANMOTION

Dimensions (Unit:mm)

c US

400  
VAC



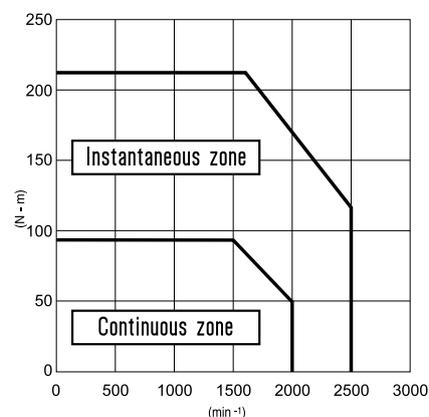
LL	KB2	KL1	KL2	KL3	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	IL1	IL2	IF	IE	KB1	QE	LT
397	78	162	22	38	19	235	0 Ø200-0.046	4	Ø270	□220	Ø13.5	M10	79	0 Ø55-0.019	79	3	67	98	150	60	142	304	M10	25

## FEATURES

MODEL	R2CA2215KVXH00M	
NOMINAL POWER	(W)	15000
NOMINAL SPEED	(rpm)	1500
MAXIMUM SPEED	(rpm)	2500
NOMINAL TORQUE	(Nm)	95.0
STALL TORQUE	(Nm)	95.0
MAXIMUM TORQUE	(Nm)	215
INERTIA	(Kg*m <sup>2</sup> )	288×10 <sup>-4</sup>
ENCODER	(imp./rev)	131072 (17BIT)
PROTECTION DEGREE		IP67
WEIGHT	(Kg)	74

## TORQUE CURVE

R2CA2215KVXH [15.0kW] + RS3C15



WITHOUT BRAKE



(Version with brake available on request)

Indicated performances refer to motor controlled by related RS3 standard amplifiers.

Suggested amplifiers: RS3C15A0AL2



## CABLE OPTIONS EtherCAT SERVODRIVES

AC SERVOMOTORS	EtherCAT SERVODRIVES				
48 VDC Incremental encoder multi-axis	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE
R2GD04005FXH1CM	CVAB48ET402M	CVMB48ET4PMXXM	CVEB48ETPMXXM	NO BRAKE	RF2K24A0HL5
R2GD06010DXH11M	CVAB48ET402M	CVMB48ET4PMXXM	CVEB48ETPMXXM	NO BRAKE	
R2GD06020DXH11M	CVAB48ET402M	CVMB48ET4PMXXM	CVEB48ETPMXXM	NO BRAKE	
48 VDC Incremental Encoder single-axis	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE
R2GD04005FXH1CM	N/A	CVMB48ETPMXXM	CVEB48ETPMXXM	NO BRAKE	RS2K04A2HL5
R2GD06010DXH11M	N/A	CVMB48ETPMXXM	CVEB48ETPMXXM	NO BRAKE	
R2GD06020DXH11M	N/A	CVMB48ETPMXXM	CVEB48ETPMXXM	NO BRAKE	
230 VAC Battery Less Absolute Encoder	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE
R2AA04010FXR1CM	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	RS3 A03A2HA4W00P
R2AA06020FXR11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AA06040FXR11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AA08075FXR11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AAB8100HXR29M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
Q2AA10150BXR48M	N/A	CVMBAR90QHXXM CVMBAR90QHPMXXM	CVEBAR90QHXXM CVEBAR90QHPMXXM	NO BRAKE	
230 VAC Battery Less Multi-turn Absolute Encoder (brake version)	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE
R2AA04010FCR1CM6	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	RS3 A03A2HA4W00P
R2AA06020FCR11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AA06040FCR11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AA08075FCR11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AAB8100HCR29M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
Q2AA10150BCR48M	N/A	CVMBAR90QHXXM CVMBAR90QHPMXXM	CVEBAR90QHXXM CVEBAR90QHPMXXM	CVFPMXXM	
230 VAC Incremental Encoder	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE
R2AA04010FXH1CM	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	RS3 A03A2HA4W00P
R2AA04010FCH1CM6	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AA06020FXH11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AA06020FCH11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AA06040FXH11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AA06040FCH11M6	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AA08075FXH11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	

## CABLE OPTIONS EtherCAT SERVODRIVES

AC SERVMOTORS	EtherCAT SERVODRIVES				
230 VAC Incremental Encoder	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE
R2AA08075FCH11M	CVABRAXXM	CVMBRARXXM CVMBRARPMXXM	CVEBRARXXM CVEBRARPMXXM	CVFRPMXXM	RS3 A03A2HA4W00P
R2AAB8100HXH29M	CVABRAXXM	CVMBRARXXM CVMBRARPMXXM	CVEBRARXXM CVEBRARPMXXM	NO BRAKE	
R2AAB8100HCH29M	CVABRAXXM	CVMBRARXXM CVMBRARPMXXM	CVEBRARXXM CVEBRARPMXXM	CVFRPMXXM	
Q2AA10150BXH48M	N/A	CVMBAR90QHXXM CVMBAR90QHPMXXM	CVEBAR90QHXXM CVEBAR90QHPMXXM	NO BRAKE	
Q2AA10150BCH48M	N/A	CVMBAR90QHXXM CVMBAR90QHPMXXM	CVEBAR90QHXXM CVEBAR90QHPMXXM	CVFPMXXM	
R1AA10150FXH00M	N/A	CVMBR1AR90XXM CVMBR1ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE	
R1AA10150FCH00M	N/A	CVMFR1ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	MOTOR CABLE	
R2AA13180HXH00M	N/A	CVMBR2AR90XXM CVMBR2ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE	
R2AA13180HCH00M	N/A	CVMFR2ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	MOTOR CABLE	
R2AA13200LXHW0M	N/A	CVMBR2AR90XXM CVMBR2ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE	
R2AA13200LCHW0M	N/A	CVMFR2ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	MOTOR CABLE	
R1AA13300FXH00M	N/A	CVMB3KR1AR90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE	RS3 A10A2HA4W00P
R1AA13300FCH00M	N/A	CONNECTOR ONLY	CVEBAR1R2XXM CVEBAR1R2PMXXM	MOTOR CABLE	
400 VAC Incremental Encoder	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE
R2CA18350LXH00M	N/A	CONNECTOR ONLY (cable section: 3x2,5mm <sup>2</sup> )	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE	RS3C05A2HA4
R2CA18450HXH00M	N/A	CONNECTOR ONLY (cable section: 3x4mm <sup>2</sup> )	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE	RS3C10A2HA4
R2CA2215KVXH00M	N/A	CONNECTOR ONLY (cable section: 3x8mm <sup>2</sup> )	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE	RS3C15A2HL4



## CABLE OPTIONS EtherCAT SERVODRIVES

AC SERVOMOTORS	EtherCAT SERVODRIVES		
48 VDC Incremental encoder multi-axis	STO CABLE	I/O CONNECTOR	DRIVE
R2GD04005FXH1CM	CVSIORAD02M	KCIO48ET	
R2GD06010DXH11M	CVSIORAD02M	KCIO48ET	RF2K24A0HL5
R2GD06020DXH11M	CVSIORAD02M	KCIO48ET	
48 VDC Incremental encoder single-axis	STO CABLE	I/O CONNECTOR	DRIVE
R2GD04005FXH1CM	CVSIORAD02M	CVIOB48ET02M	
R2GD06010DXH11M	CVSIORAD02M	CVIOB48ET02M	RS2K04A2HL5
R2GD06020DXH11M	CVSIORAD02M	CVIOB48ET02M	
230 VAC Battery Less Multi-turn Absolute Encoder	STO CABLE	I/O CONNECTOR	DRIVE
R2AA04010FXR1CM	CVSIORAD02M	CVIORS3ET02M	
R2AA06020FXR11M	CVSIORAD02M	CVIORS3ET02M	RS3A03A2HA4W00P
R2AA06040FXR11M	CVSIORAD02M	CVIORS3ET02M	
R2AA08075FXR11M	CVSIORAD02M	CVIORS3ET02M	
R2AAB8100HXR29M	CVSIORAD02M	CVIORS3ET02M	
Q2AA10150BXR48M	CVSIORAD02M	CVIORS3ET02M	
230 VAC Battery Less Multi-turn Absolute Encoder (brake version)	STO CABLE	I/O CONNECTOR	
R2AA04010FCR1CM6	CVSIORAD02M	CVIORS3ET02M	
R2AA06020FCR11M	CVSIORAD02M	CVIORS3ET02M	RS3A03A2HA4W00P
R2AA06040FCR11M	CVSIORAD02M	CVIORS3ET02M	
R2AA08075FCR11M	CVSIORAD02M	CVIORS3ET02M	
R2AAB8100HCR29M	CVSIORAD02M	CVIORS3ET02M	
Q2AA10150BCR48M	CVSIORAD02M	CVIORS3ET02M	
230 VAC Incremental Encoder	STO CABLE	I/O CONNECTOR	
R2AA04010FXH1CM	CVSIORAD02M	CVIORS3ET02M	
R2AA04010FCH1CM6	CVSIORAD02M	CVIORS3ET02M	RS3A03A2HA4W00P
R2AA06020FXH11M	CVSIORAD02M	CVIORS3ET02M	
R2AA06020FCH11M	CVSIORAD02M	CVIORS3ET02M	
R2AA06040FXH11M	CVSIORAD02M	CVIORS3ET02M	
R2AA06040FCH11M6	CVSIORAD02M	CVIORS3ET02M	
R2AA08075FXH11M	CVSIORAD02M	CVIORS3ET02M	
R2AA08075FCH11M	CVSIORAD02M	CVIORS3ET02M	
R2AAB8100HXH29M	CVSIORAD02M	CVIORS3ET02M	
R2AAB8100HCH29M	CVSIORAD02M	CVIORS3ET02M	
Q2AA10150BXH48M	CVSIORAD02M	CVIORS3ET02M	
Q2AA10150BCH48M	CVSIORAD02M	CVIORS3ET02M	
R1AA10150FXH00M	CVSIORAD02M	CVIORS3ET02M	
R1AA10150FCH00M	CVSIORAD02M	CVIORS3ET02M	
R2AA13180HXH00M	CVSIORAD02M	CVIORS3ET02M	
R2AA13180HCH00M	CVSIORAD02M	CVIORS3ET02M	
R2AA13200LXHW0M	CVSIORAD02M	CVIORS3ET02M	
R2AA13200LCHW0M	CVSIORAD02M	CVIORS3ET02M	

CABLE OPTIONS EtherCAT SERVODRIVES			
AC SERVMOTORS	EtherCAT SERVODRIVES		
230 VAC Incremental Encoder	STO CABLE	I/O CONNECTOR	DRIVE
R1AA13300FXH00M	CVSIORAD02M	CVIORS3ET02M	RS3A10A2HA4W00P
R1AA13300FCH00M	CVSIORAD02M	CVIORS3ET02M	
400 VAC Incremental Encoder	STO CABLE	I/O CONNECTOR	DRIVE
R2CA18350LXH00M	CVSIORAD02M	CVIORSRET02M	RS3C05A2HA4
R2CA18450HXXH00M	CVSIORAD02M	CVIORS3ET02M	RS3C10A2HA4
R2CA2215KVXH00M	CVSIORAD02M	CVIORS3ET02M	RS3C15A2HL4



## CABLE OPTIONS PULSE-TRAIN/ANALOG SERVODRIVES

AC SERVMOTORS	PULSE-TRAIN/ANALOG SERVODRIVES				
48 VDC Incremental encoder	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE
R2GD04005FXH1CM	CVAB4802M	CVMB48PMXXM	CVEB48PMXXM	NO BRAKE	RF2G21A0A00
R2GD06010DXH11M	CVAB4802M	CVMB48PMXXM	CVEB48PMXXM	NO BRAKE	
R2GD06020DXH11M	CVAB4802M	CVMB48PMXXM	CVEB48PMXXM	NO BRAKE	
230 VAC Battery Less Multi-turn Absolute Encoder	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE
R2AA04010FXR1CM	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	RS3A03A0ALOW00P RS3A03A0AL2
R2AA06020FXR11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AA06040FXR11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AA08075FXR11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AAB8100HXR29M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
Q2AA10150BXR48M	N/A	CVMBAR90QHXXM CVMBAR90QHPMXXM	CVEBAR90QHXXM CVEBAR90QHPMXXM	NO BRAKE	
230 VAC Battery Less Multi-turn Absolute Encoder (brake version)	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE
R2AA04010FCR1CM6	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	RS3A03A0ALOW00P RS3A03A0AL2
R2AA06020FCR11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AA06040FCR11M6	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AA08075FCR11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AAB8100HCR29M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
Q2AA10150BCR48M	N/A	CVMBAR90QHXXM CVMBAR90QHPMXXM	CVEBAR90QHXXM CVEBAR90QHPMXXM	CVFPMXXM	
230 VAC Incremental Encoder	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE
R2AA04010FXH1CM	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	RS3A03A0ALOW00P RS3A03A0AL2
R2AA04010FCH1CM6	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AA06020FXH11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AA06020FCH11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AA06040FXH11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AA06040FCH11M6	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AA08075FXH11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AA08075FCH11M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	
R2AAB8100HXH29M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	NO BRAKE	
R2AAB8100HCH29M	CVABRAXXM	CVMBRARXXM CVMBRARPXXM	CVEBRARXXM CVEBRARPXXM	CVFRPMXXM	

## CABLE OPTIONS PULSE-TRAIN/ANALOG SERVODRIVES

CABLE OPTIONS PULSE-TRAIN/ANALOG SERVODRIVES						
AC SERVMOTORS	PULSE-TRAIN/ANALOG SERVODRIVES					
230 VAC Incremental Encoder	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE	
Q2AA10150BXH48M	N/A	CVMBAR90QHXXM CVMBAR90QHPMXXM	CVEBAR90QHXXM CVEBAR90QHPMXXM	NO BRAKE	RS3A03A0AL0W00P RS3A03A0AL2	
Q2AA10150BCH48M	N/A	CVMBAR90QHXXM CVMBAR90QHPMXXM	CVEBAR90QHXXM CVEBAR90QHPMXXM	CVFPMXXM		
R1AA10150FXH00M	N/A	CVMBR1AR90XXM CVMBR1ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE	RS3A05A0AA2W00P	
R1AA10150FCH00M	N/A	CVMFR1ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	MOTOR CABLE		
R2AA13180HXH00M	N/A	CVMBR2AR90XXM CVMBR2ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE		
R2AA13180HCH00M	N/A	CVMFR2ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	MOTOR CABLE		
R2AA13200LXHW0M	N/A	CVMBR2AR90XXM CVMBR2ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE		
R2AA13200LCHW0M	N/A	CVMFR2ARPM90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	MOTOR CABLE		
R1AA13300FXH00M	N/A	CVMB3KR1AR90XXM	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE		
R1AA13300FCH00M	N/A	CONNECTOR ONLY	CVEBAR1R2XXM CVEBAR1R2PMXXM	MOTOR CABLE		
						RS3A10A0AA2
400 VAC Incremental Encoder	POWER SUPPLY CABLE	MOTOR CABLE	ENCODER CABLE	HOLDING BRAKE CABLE	DRIVE	
R2CA18350LXH00M	N/A	CONNECTOR ONLY (cable section: 3x2,5mm <sup>2</sup> )	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE	RS3C05A0AA2	
R2CA18450HXH00M	N/A	CONNECTOR ONLY (cable section: 3x4mm <sup>2</sup> )	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE	RS3C10A0AA2	
R2CA2215KVXH00M	N/A	CONNECTOR ONLY (cable section: 3x8mm <sup>2</sup> )	CVEBAR1R2XXM CVEBAR1R2PMXXM	NO BRAKE	RS3C15A0AL2	



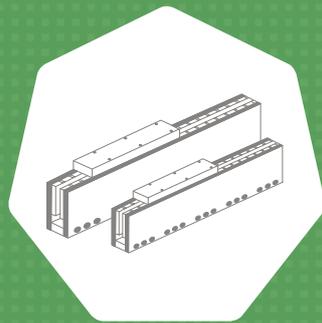
## CABLE OPTIONS PULSE-TRAIN/ANALOG SERVODRIVES

AC SERVOMOTORS	PULSE-TRAIN/ANALOG SERVODRIVES		
48 VDC Incremental encoder	STO CABLE	I/O CONNECTOR	DRIVE
R2GD04005FXH1CM	no SIL	CVSDB4802M-CVIOB4802M	
R2GD06010DXH11M	no SIL	CVSDB4802M-CVIOB4802M	RF2G21A0A00
R2GD06020DXH11M	no SIL	CVSDB4802M-CVIOB4802M	
230 VAC Battery Less Multi-turn Absolute Encoder	STO CABLE	I/O CONNECTOR	DRIVE
R2AA04010FXR1CM	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA06020FXR11M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA06040FXR11M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	RS3A03A0ALOW00P RS3A03A0AL2
R2AA08075FXR11M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AAB8100HXR29M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
Q2AA10150BXR48M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
230 VAC Battery Less Multi-turn Absolute Encoder (brake version)	STO CABLE	I/O CONNECTOR	DRIVE
R2AA04010FCR1CM6	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA06020FCR11M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA06040FCR11M6	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	RS3A03A0ALOW00P RS3A03A0AL2
R2AA08075FCR11M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AAB8100HCR29M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
Q2AA10150BCR48M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
230 VAC Incremental Encoder	STO CABLE	I/O CONNECTOR	DRIVE
R2AA04010FXH1CM	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA04010FCH1CM6	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA06020FXH11M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA06020FCH11M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA06040FXH11M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA06040FCH11M6	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	RS3A03A0ALOW00P RS3A03A0AL2
R2AA08075FXH11M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA08075FCH11M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AAB8100HXH29M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AAB8100HCH29M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
Q2AA10150BXH48M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
Q2AA10150BCH48M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R1AA10150FXH00M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R1AA10150FCH00M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	RS3A05A0AA2W00P

## CABLE OPTIONS PULSE-TRAIN/ANALOG SERVODRIVES

CABLE OPTIONS PULSE-TRAIN/ANALOG SERVODRIVES			
AC SERVO MOTORS	PULSE-TRAIN/ANALOG SERVODRIVES		
230 VAC Incremental Encoder	STO CABLE	I/O CONNECTOR	DRIVE
R2AA13180HXH00M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	RS3A05A0AA2W00P
R2AA13180HCH00M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA13200LXHW0M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R2AA13200LCHW0M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
R1AA13300FXH00M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	RS3A10A0AA2
R1AA13300FCH00M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	
400 VAC Incremental Encoder	STO CABLE	I/O CONNECTOR	DRIVE
R2CA18350LXH00M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	RS3C05A0AA2
R2CA18450HXH00M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	RS3C10A0AA2
R2CA2215KVXH00M	CVSIORAD02M-BPS01	CVLBRR02M-KCQ02	RS3C15A0AL2





**DIRECT DRIVE TECHNOLOGY**





# DIRECT DRIVE TECHNOLOGY



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## Direct Drive Technology



Since 2018 R.T.A. has approached the Direct Drive technology, in partnership with PBA Systems, a well-established innovative company from Singapore.

Since then R.T.A. has enlarged its products portfolio with a new line: LINEAR MOTORS and DIRECT DRIVE ROTARY MOTORS.

The direct drive solutions offered by R.T.A. are very diversified, but special customized solutions can also be developed.

All Direct Drive solutions are managed through Sanyo Denki amplifiers.

## The Direct Drive Technology key advantages

- High Speed and acceleration.
- High Accuracy and Repeatability.
- Long Stroke.
- Zero Backlash.
- Longer Lifetime, No Maintenance.
- Maximum Smoothness & Rigidity.
- Multiple Carriages on the Same Track.



HIGH  
SPEED



COMPACT  
DESIGN



HIGH  
FORCE

## 3 main motors families

### 1 IRONLESS LINEAR MOTORS

- Low moving mass, suitable for high acceleration application.
- High Precision motion.
- No Backlash.
- Excellent repeatability.
- Cogging free.
- Low velocity rippling even at very low speed.
- Unlimited length for magnet track.
- Easy assembly and installation.

**IRONLESS**  
LINEAR MOTOR



### DXB/BT Series

#### Main Features

	PEAK FORCE (N)	CONTINUOUS FORCE AC (N)	PEAK CURRENT (A)	CONTINUOUS CURRENT AC (A)	COIL LENGTH (mm)
DX10B	63.3	12.7	14.01	2.8	22-85
DX20B	229	60	21	5.46	61-151
DX30B/BT	724	188	47.25	12.29	61-301
DX50B/BT	1339	348	52.50	13.65	61-361
DX65B/BT	5191	1247	93.75	22.50	121-901
DX90B/BT	5366	1234	67.50	15.53	121-721

## Application fields

Precision positioning, Semiconductor machines, Laser trimming, Precision Stamping, Biotech handlers, Microscope stages.

## 2 IRON-CORE LINEAR MOTORS

- High output force.
- Compact design.
- High rigidity structure.
- Low cogging force.
- No Backlash.
- Excellent repeatability.
- Easy installation.

**IRONCORE**  
LINEAR MOTOR



### PIX/PIXA Series

#### Main Features

	PEAK FORCE (N)	CONTINUOUS FORCE AC (N)	PEAK CURRENT (A)	CONTINUOUS CURRENT AC (A)	COIL LENGTH (mm)
PIX200-027	1393	279	60.8	8.60	64-320
PIX200-040	2307	461	43.8	8.80	64-320
PIXA030	320	80	11.31	2.83	120-480
PIXA050	597	149	21.27	5.32	120-480
PIXA065	2205	551	36.25	9.06	120-480
PIXA085	3968	992	65.27	16.32	120-480
PIXA110	6409	1602	82.01	20.50	120-480
PIXA135	8196	2049	76.75	19.19	120-480
PIXA160	9827	2457	92.02	23.01	120-480

## Application fields

Pick and place, Laser cutting, Extruders, Machine Tools, Large format printing, Digital printing.

### 3 DIRECT-DRIVE ROTARY MOTORS

- Ultra-compact size.
- Direct mounting without additional mechanical power transmission.
- High precision with quick responsiveness time.
- High resolution.
- Repeatability of rotary positioning.
- High torque & infinite rotations.
- Low mechanical vibrations, longer lifetime, no maintenance.

**DIRECTDRIVE**  
ROTARY MOTOR



## PDDR Series Series

### Main Features

	PEAK TORQUE (Nm)	MAX SPEED (RPS)	REPEATABILITY (arcsec)	ACCURACY (arcsec)
PDDR110-06-I	6.0	10.0	+/-2.5	+/-30
PDDR110-12-I	12.0	8.0	+/-2.5	+/-30
PDDR150-T-I	4.3	10.0	+/-2	+/-30
PDDR150-15-O	15.7	5.0	+/-2	+/-30
PDDR150-30-O	32.2	5.0	+/-2	+/-30
PDDR150-50-O	54.4	5.0	+/-2	+/-30
PDDR150-80-O	86.6	5.0	+/-2	+/-30
PDDR160-40-I	40.0	8.0	+/-4	+/-30
PDDR160-80-I	81.0	9.0	+/-4	+/-30
PDDR240-30-I	30.7	5.0	+/-2	+/-30
PDDR240-80-I	80.6	4.5	+/-2	+/-30
PDDR240-132-I	132.0	2.8	+/-2	+/-30
PDDR300-150-I	150.1	2.9	+/-2	+/-30
PDDR300-300-I	299.7	3.0	+/-2	+/-30
PDDR300-450-I	450.9	2.0	+/-2	+/-30
PDDR490-600-I	540.0	2.8	+/-2	+/-30
PDDR490-900-I	780.0	1.9	+/-2	+/-30
PDDR490-1200-I	1090.0	1.4	+/-2	+/-30

## Application fields

Radars, Scanners, Rotary indexing table, Robots, Packaging, Inspection stations, Direction change conveyors, General automation.

For further information about R.T.A. Direct Drive Technology solutions, please contact R.T.A.





# PLANETARY GEARBOXES





# PLANETARY GEARBOXES



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## Key advantages of R.T.A. planetary gearboxes

SG series is a full range of planetary gearboxes combining high performance with optimal reliability. It features a perfect PLUG AND GO solution with R.T.A. stepper and servo motors.

- Low noise.
- High quality.
- High precision.
- High nominal and accelerants torque.
- Excellent radial and axial load carrying capacity.
- IP64 protection degree.
- Custom ratios available.



## R.T.A. added value: the service

- Wide stock of models always available.
- Dedicated warehouse with quick restore.
- Professional service of assembling and testing.
- Quality test on every product to ensure the best performance and traceability.

## ● R.T.A. Stock philosophy

R.T.A. gearboxes are always available at stock, this philosophy guarantees very fast delivery times.



## ● R.T.A. Plug&Go solution in 5 easy steps

R.T.A. offers an exclusive professional assembly service of stepper and servo motors with the wide range of planetary gearboxes.

- Select the gearboxes and motors from our wide range of models always available in stock.
- Our highly qualified staff will make the assembly and testing of the products.
- The assembled motor/gearbox combo is ready to use.
- Processing and shipping times will be extremely fast.
- No more storage charges, assembly and quality control.



**PLUG  
&  
GO!**

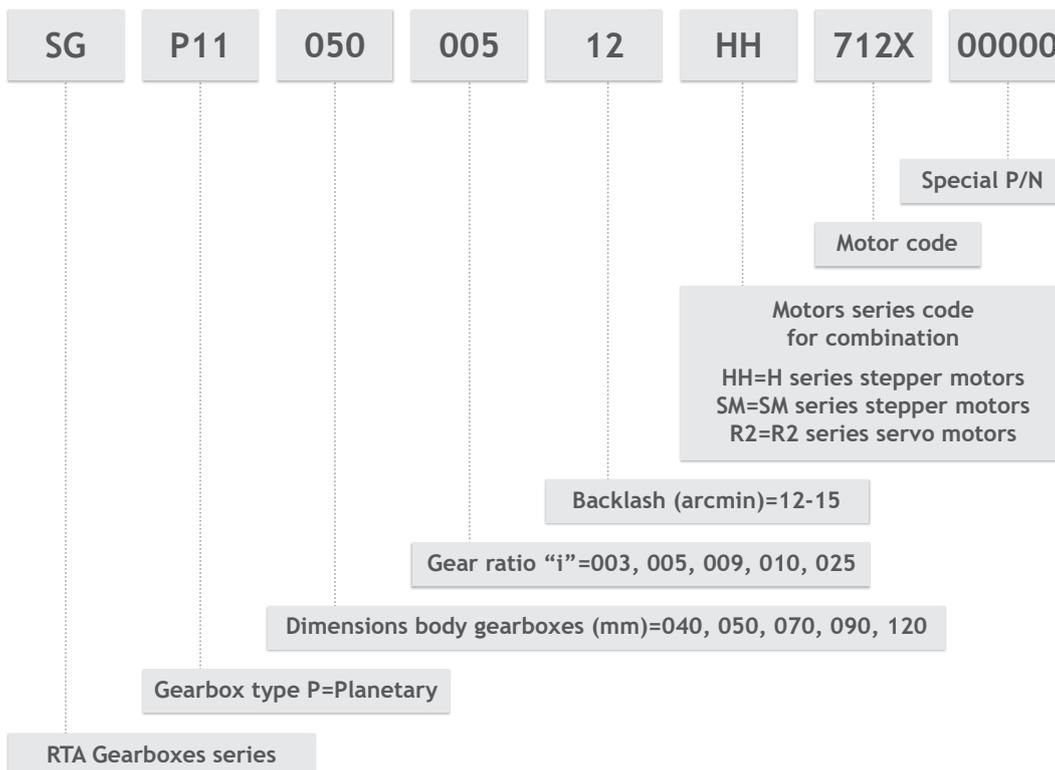


# Planetary gearboxes encoding models



**Motion Control Systems**  
 Type: SG-P11-050-005-12-SM-2861-00000  
 Serial Number: 001041  
 www.rta.it  
 www.rta-store.com  
 MADE IN ITALY

## ENCODING MODELS



# 2 series, 32 models

## 1 STEPPER GEARBOXES



- 16 models
- Motor flange coupling from Nema 17 to Nema 34
- i= 03, 05, 09, 10, 25
- Gearbox body from 40 mm to 90 mm
- IP 64 protection degree
- Low Backlash versions



**CUSTOM RATIOS  
AVAILABLE**

**LOW BACKLASH  
VERSIONS**

## 2 SERVO GEARBOXES



- 16 models
- Motor flange coupling from flange 40mm to 100mm
- i= 03, 05, 10, 25
- Gearbox body from 40 mm to 120 mm
- IP 64 protection degree



**CUSTOM RATIOS  
AVAILABLE**

**LOW BACKLASH  
VERSIONS**

### Table of contents

#### PLANETARY GEARBOXES

	GEARBOX BODY (mm)	MAX VELOCITY (min <sup>-1</sup> )	BACKLASH (arcmin)	RATED OUTPUT TORQUE	EMERGENCY TORQUE (Nm)	MOTOR COUPLING (Flange size)	PAGE
<b>STEPPER GEARBOXES</b>							
<b>BODY SIZE Ø mm 40 MOTOR FLANGE mm 42 - SHAFT Ø mm 5</b>							
SG-P12-040-005-15-HH-52XX-00000	40	5000	15'	12	30	NEMA 17	320
SG-P12-040-010-15-HH-52XX-00000	40	5000	15'	6	25	NEMA 17	320
SG-P12-040-025-19-HH-52XX-00000	40	5000	19'	12	30	NEMA 17	320
<b>BODY SIZE Ø mm 55 MOTOR FLANGE mm 56 - SHAFT Ø mm 6.35</b>							
SG-P11-050-003-12-HH-712X-00000	55	4000	12'	10	28	NEMA 23	321
SG-P11-050-005-12-HH-712X-00000	55	5000	12'	12	30	NEMA 23	321
SG-P11-050-009-12-HH-712X-00000	55	6000	12'	10	28	NEMA 23	321
<b>BODY SIZE Ø mm 55 MOTOR FLANGE mm 60 - SHAFT Ø mm 8</b>							
SG-P11-050-003-12-HH-782X-00000	55	4000	12'	10	28	60 mm	322
SG-P11-050-005-12-HH-782X-00000	55	5000	12'	12	30	60 mm	322
<b>BODY SIZE Ø mm 55 MOTOR FLANGE mm 60 - SHAFT Ø mm 14</b>							
SG-P11-050-003-12-HH-7826-00000	55	4000	12'	10	28	60 mm	323
<b>BODY SIZE Ø mm 55 MOTOR FLANGE mm 85 - SHAFT Ø mm 14</b>							
SG-P11-050-005-12-SM-2861-00000	55	5000	12'	12	30	NEMA 34	324
<b>BODY SIZE Ø mm 70 MOTOR FLANGE mm 60- SHAFT Ø mm 8</b>							
SG-P11-070-010-12-HH-782X-00000	70	6000	12'	18	60	60 mm	325

## PLANETARY GEARBOXES

	GEARBOX BODY (mm)	MAX VELOCITY (min <sup>-1</sup> )	BACKLASH (arcmin)	RATED OUTPUT TORQUE	EMERGENCY TORQUE (Nm)	MOTOR COUPLING (Flange size)	PAGE
<b>STEPPER GEARBOXES</b>							
<b>BODY SIZE Ø mm 70 MOTOR FLANGE mm 85 - SHAFT Ø mm 14</b>							
SG-P11-070-010-12-SM-2861-00000	70	6000	12'	18	60	NEMA 34	326
<b>BODY SIZE Ø mm 70 MOTOR FLANGE mm 85 - SHAFT Ø mm 14</b>							
SG-P11-070-003-12-SM-286X-00000	70	4000	12'	18	60	NEMA 34	327
SG-P11-070-005-12-SM-286X-00000	70	5000	12'	25	70	NEMA 34	327
<b>BODY SIZE Ø mm 90 MOTOR FLANGE 85 mm - SHAFT Ø mm 14</b>							
SG-P11-090-010-12-SM-286X-00000	90	6000	12'	37	150	NEMA 34	328
SG-P11-090-025-15-SM-2861-00000	90	4500	15'	43	160	85 mm	329
<b>SERVO GEARBOXES</b>							
<b>BODY SIZE Ø mm 40 MOTOR FLANGE mm 40 - SHAFT Ø mm 8</b>							
SG-P12-040-005-15-R2-0100-00000	40	5000	15'	12	30	40 mm	331
SG-P12-040-010-15-R2-0100-00000	40	5000	15'	6	25	40 mm	331
SG-P12-040-025-19-R2-0100-00000	40	5000	19'	12	30	40 mm	331
<b>BODY SIZE Ø mm 70 MOTOR FLANGE mm 60 - SHAFT Ø mm 14</b>							
SG-P11-070-003-12-R2-0X00-00000	70	4000	12'	18	60	60 mm	332
SG-P11-070-005-12-R2-0X00-00000	70	5000	12'	25	70	60 mm	332
SG-P11-070-010-12-R2-0X00-00000	70	6000	12'	18	60	60 mm	332
<b>BODY SIZE Ø mm 90 MOTOR FLANGE mm 60 - SHAFT Ø mm 14</b>							
SG-P11-090-010-12-R2-0400-00000	90	6000	12'	37	150	60 mm	333
<b>BODY SIZE Ø mm 90 MOTOR FLANGE mm 60 - SHAFT Ø mm 14</b>							
SG-P11-090-025-15-R2-0X00-00000	90	4500	12'	43	160	60 mm	334
<b>BODY SIZE Ø mm 90 MOTOR FLANGE mm 80 - SHAFT Ø mm 16</b>							
SG-P11-090-003-12-R2-0750-00000	90	3500	12'	37	160	10 mm	335
SG-P11-090-005-12-R2-0750-00000	90	4500	12'	43	160	80 mm	335
SG-P11-090-010-12-R2-0750-00000	90	6000	12'	37	150	80 mm	335
<b>BODY SIZE Ø mm 90 MOTOR FLANGE mm 100 - SHAFT Ø mm 16</b>							
SG-P11-090-005-12-R2-1000-00000	90	4500	12'	43	160	100 mm	336
<b>BODY SIZE Ø mm 120 MOTOR FLANGE mm 80 - SHAFT Ø mm 16</b>							
SG-P11-120-010-12-R2-0750-00000	120	6000	12'	95	150	80 mm	337
SG-P11-120-025-15-R2-0750-00000	120	4500	12'	110	360	80 mm	337
<b>BODY SIZE Ø mm 120 MOTOR FLANGE mm 100 - SHAFT Ø mm 16</b>							
SG-P11-120-010-12-R2-1000-00000	120	5000	12'	95	300	100 mm	338
SG-P11-120-025-15-R2-1000-00000	120	4500	12'	110	360	100 mm	338

PLANETARY GEARBOXES

**STEPPER GEARBOXES**



# SG-P12-040-0XX-1X-HH-52XX-00000



$i=005$

$i=010$

$i=025$

## PLANETARY GEARBOXES

SG 040

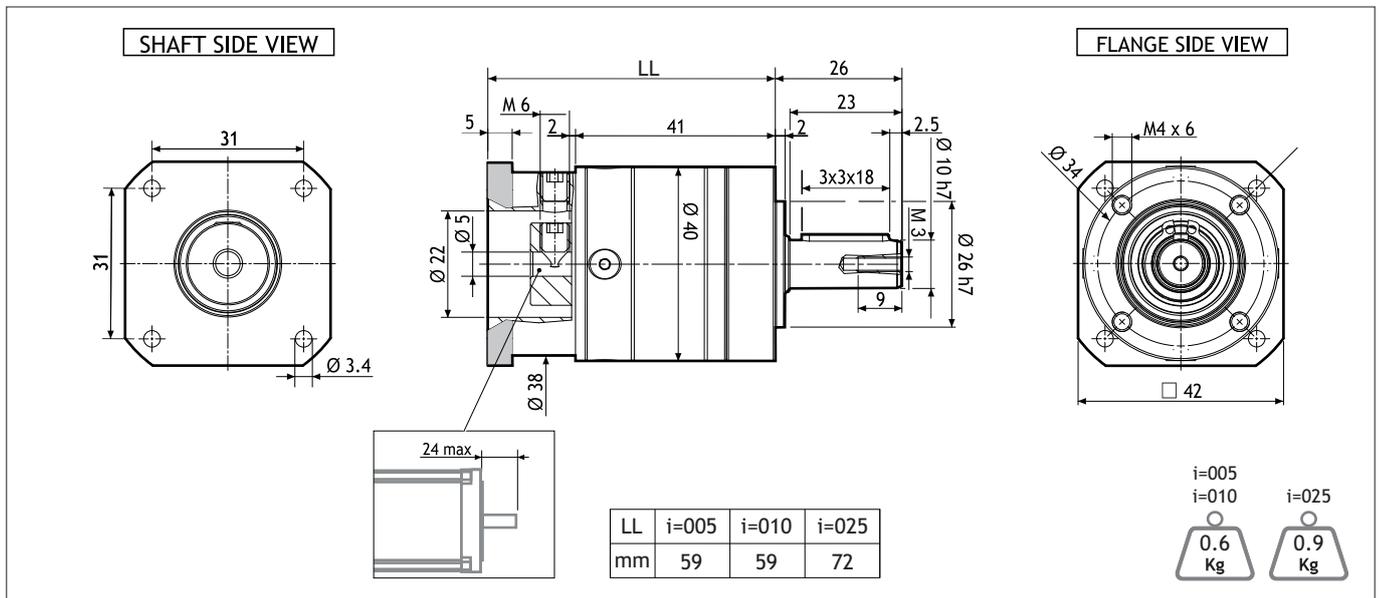
$\varphi < 19'$

$\varphi < 15'$

MADE IN ITALY

IP64

### Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [ $\text{min}^{-1}$ ]	Maximum momentary input speed [ $\text{min}^{-1}$ ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [ $\text{Kg}\cdot\text{m}^2$ ]
SG-P12-040-005-15-HH-52XX-00000	12	18	30	$< 15'$	3500	5000	0.8	220	200	98	$1.6 \times 10^{-6}$
SG-P12-040-010-15-HH-52XX-00000	6	9	25	$< 15'$	3500	5000	0.8	220	200	98	$1.2 \times 10^{-6}$
SG-P12-040-025-19-HH-52XX-00000	12	18	30	$< 19'$	3500	5000	0.8	220	200	97	$1.5 \times 10^{-6}$

### Suggested motors

RH 1S0M

RH 1S1M

RH 1S2M

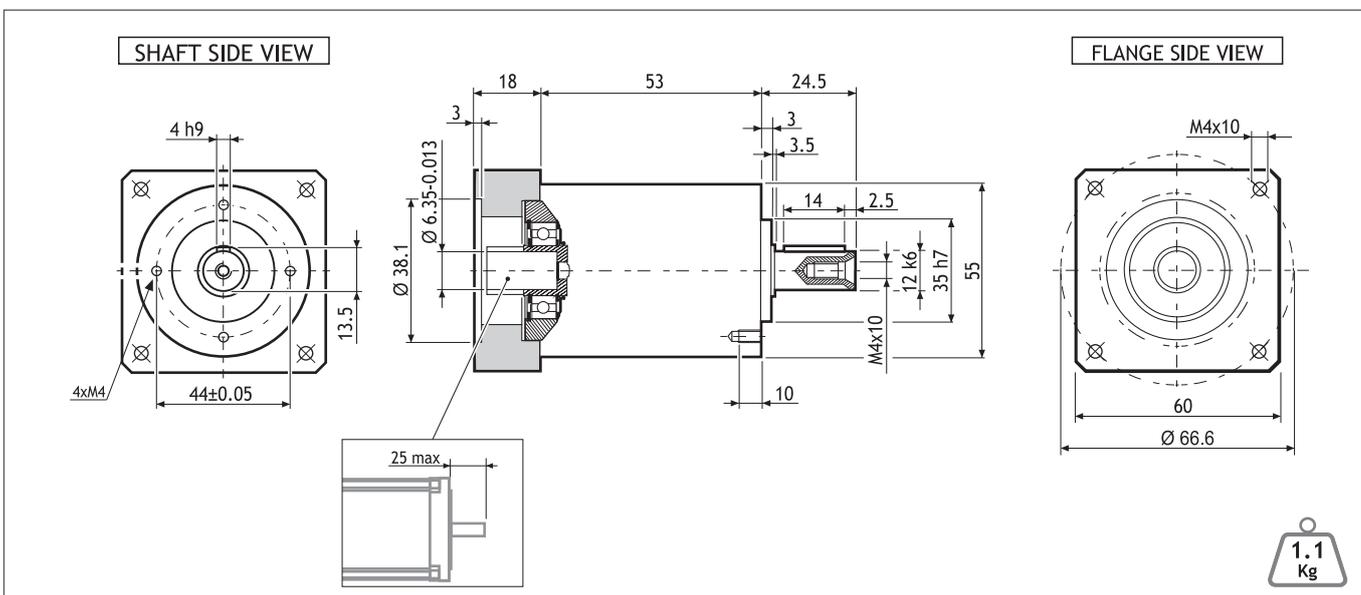
RH 1S3M

MOUNTING OPERATION MODE: ■ Tightening torque  $M=5 \text{ Nm}$  ■ Locking bolt M4 ■ R.T.A. Quality Control

# SG-P11-050-00X-12-HH-712X-00000



## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kg·m <sup>2</sup> ]
SG-P11-050-003-12-HH-712X-00000	10	16	28	12'	3300	4000	0.9	500	600	97	0.07x10 <sup>-4</sup>
SG-P11-050-005-12-HH-712X-00000	12	20	30	12'	3500	5000	0.9	500	600	97	0.05x10 <sup>-4</sup>
SG-P11-050-009-12-HH-712X-00000	10	16	28	12'	4000	6000	0.9	500	600	97	0.04x10 <sup>-4</sup>

## Suggested motors

103-H7123 SERIES

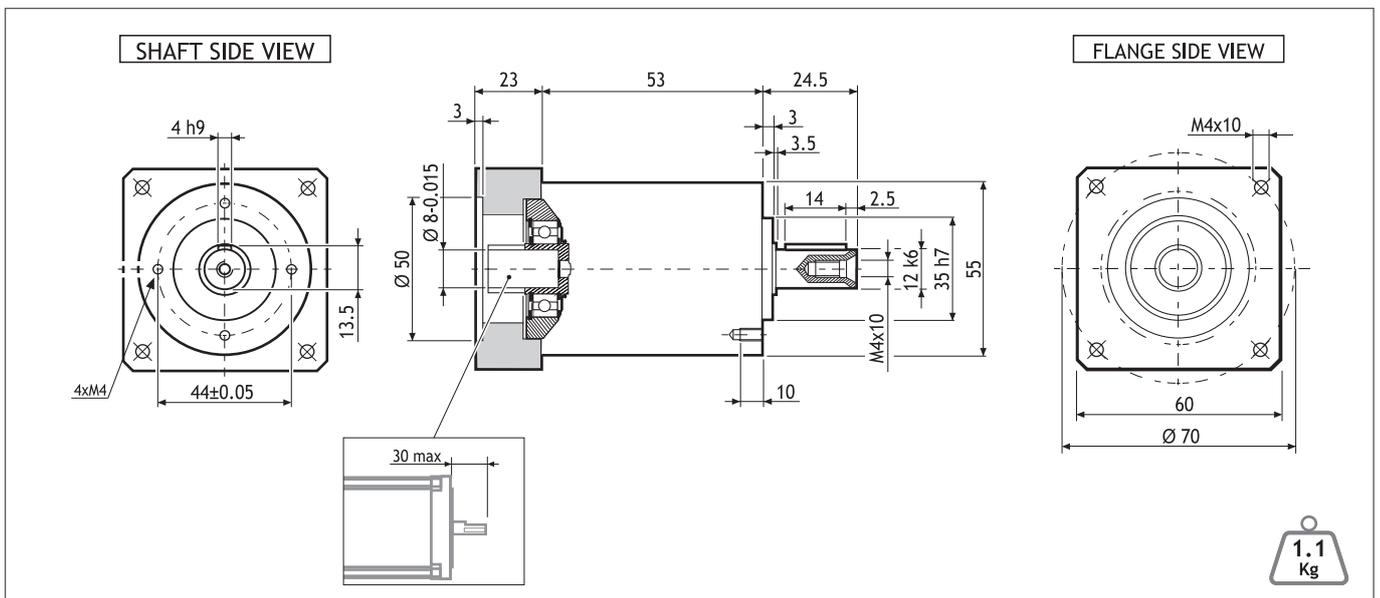
103-H7126 SERIES

MOUNTING OPERATION MODE: ■ Tightening torque M=5 Nm    ■ Locking bolt M4    ■ R.T.A. Quality Control

# SG-P11-050-0XX-12-HH-782X-00000



## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kgm <sup>2</sup> ]
SG-P11-050-003-12-HH-782X-00000	10	16	28	12'	3300	4000	0.9	500	600	97	0.07x10 <sup>-4</sup>
SG-P11-050-005-12-HH-782X-00000	12	20	30	12'	3500	5000	0.9	500	600	97	0.05x10 <sup>-4</sup>

## Suggested motors

103-H7823 SERIES

**MOUNTING OPERATION MODE:** ■ Tightening torque M=5 Nm ■ Locking bolt M4 ■ R.T.A. Quality Control

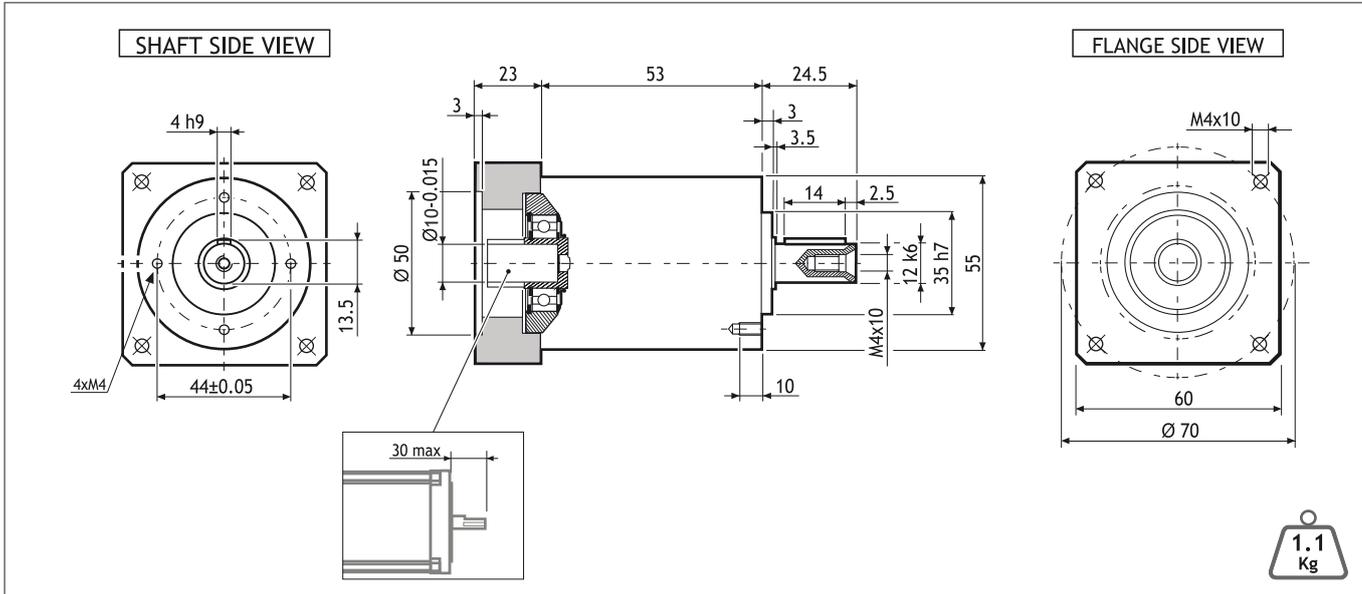
# SG-P11-050-003-12-HH-7826-00000



**PLANETARY GEARBOXES**

- SG 050**
- i=003**
- φ=12'**
- MADE IN ITALY**
- IP64**

## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kg·m <sup>2</sup> ]
SG-P11-050-003-12-HH-7826-00000	10	16	28	12'	3300	4000	0.9	500	600	97	0.07x10 <sup>-4</sup>

## Suggested motors

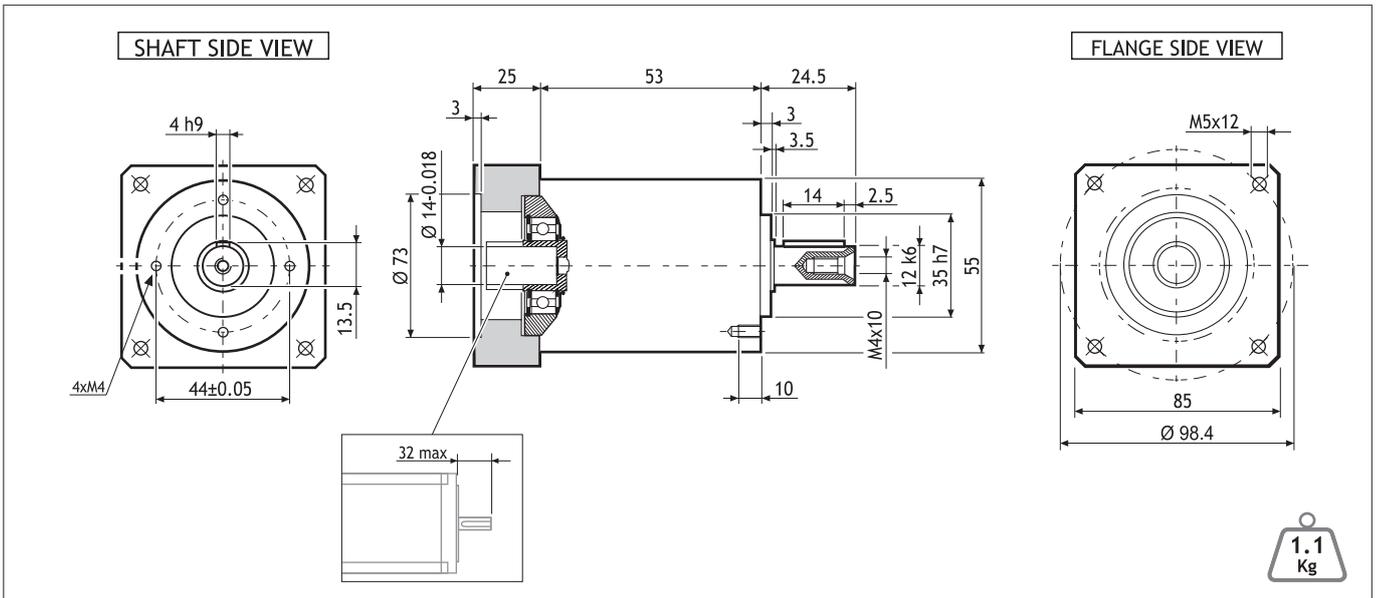
**103-H7826 SERIES**

**MOUNTING OPERATION MODE:** ■ Tightening torque M=5 Nm    ■ Locking bolt M4    ■ R.T.A. Quality Control

# SG-P11-050-005-12-SM-2861-00000



## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kg·m <sup>2</sup> ]
SG-P11-050-005-12-SM-2861-00000	12	20	30	12'	3500	5000	0.9	500	600	97	0.07x10 <sup>-4</sup>

## Suggested motors

RM 3R1M

**MOUNTING OPERATION MODE:** ■ Tightening torque M=5 Nm    ■ Locking bolt M4    ■ R.T.A. Quality Control

# SG-P11-070-010-12-HH-782X-00000



PLANETARY GEARBOXES

SG 070

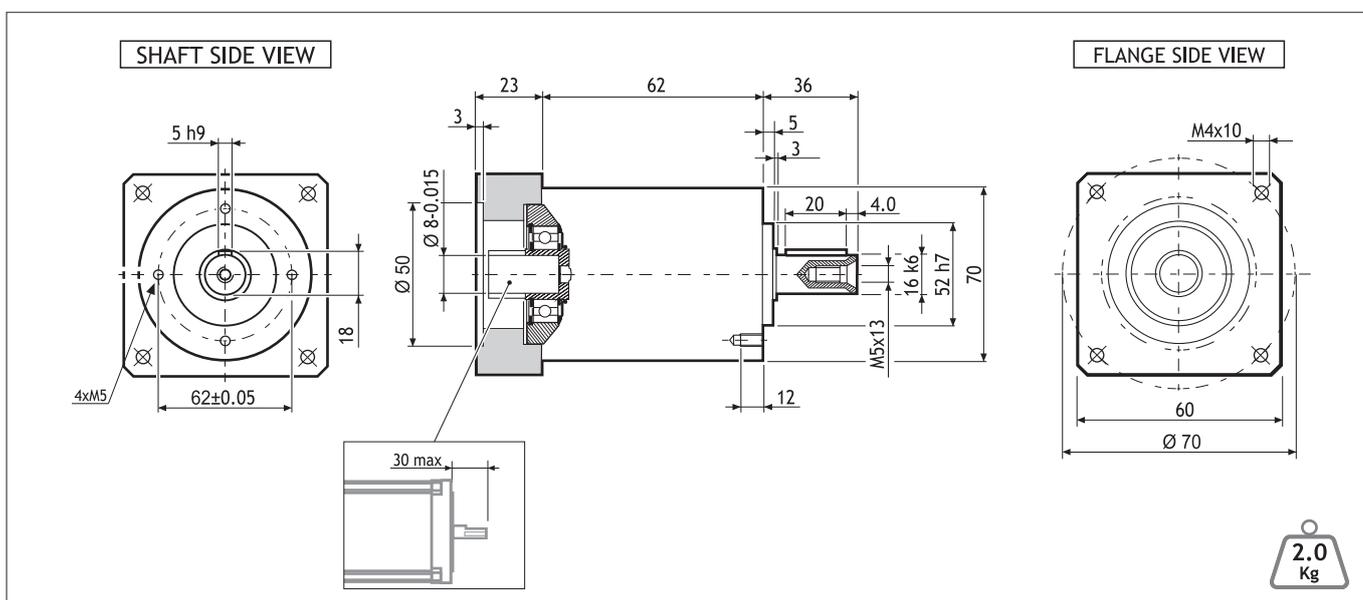
$i=010$

$\varphi=12'$

MADE IN ITALY

IP64

## Dimensions (Units:mm)



2.0 Kg

MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kg <sup>m</sup> ²]
SG-P11-070-010-12-HH-782X-00000	18	30	60	12'	4000	6000	3	1300	1400	97	0.06x10 <sup>-4</sup>

## Suggested motors



MOUNTING OPERATION MODE: ■ Tightening torque M=5 Nm ■ Locking bolt M4 ■ R.T.A. Quality Control

# SG-P11-070-010-12-SM-2861-00000



PLANETARY GEARBOXES

SG 070

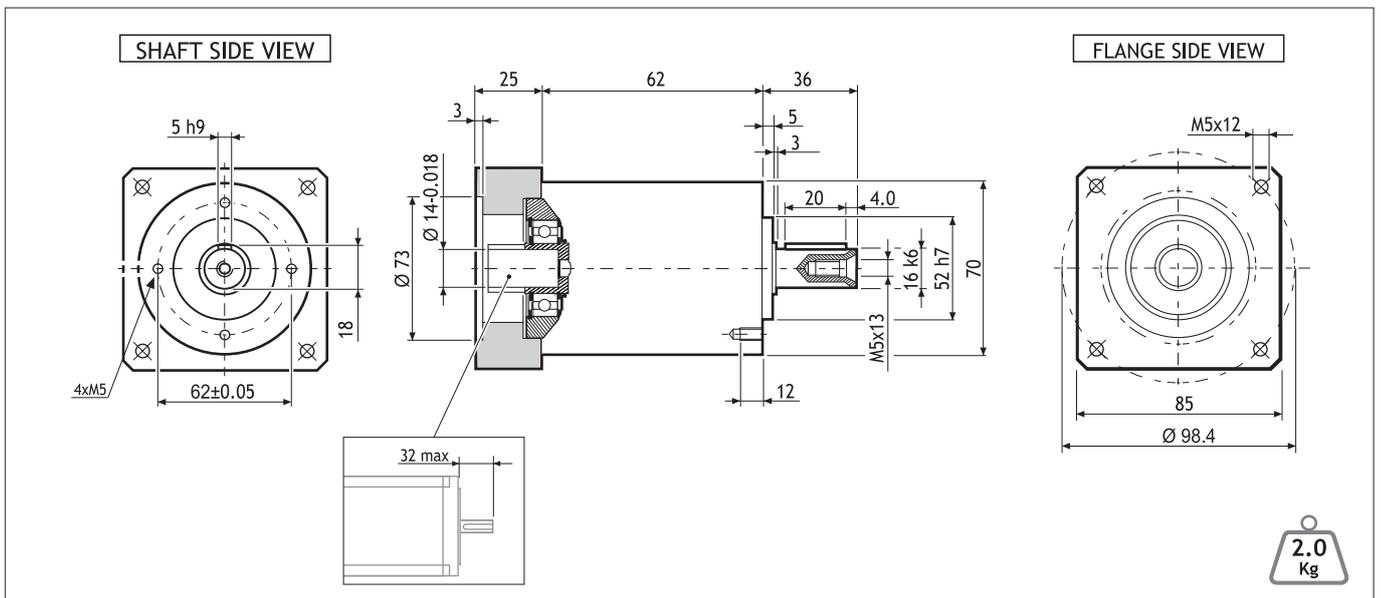
$i=010$

$\Phi=12'$

MADE IN ITALY

IP64

## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kgm <sup>2</sup> ]
SG-P11-070-010-12-SM-2861-00000	18	30	60	12'	4000	6000	3	1300	1400	97	0.04x10 <sup>-4</sup>

## Suggested motors

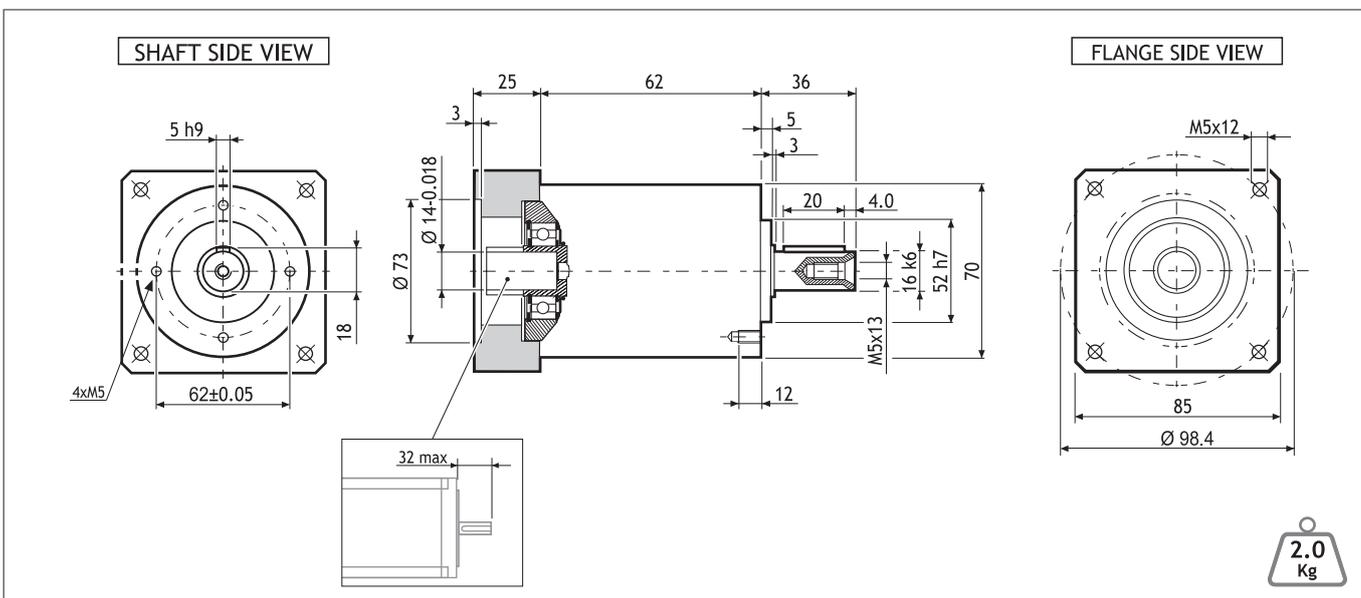
RM 3R1M

MOUNTING OPERATION MODE: ■ Tightening torque M=5 Nm ■ Locking bolt M4 ■ R.T.A. Quality Control

# SG-P11-070-0XX-12-SM-286X-00000



## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kg·m <sup>2</sup> ]
SG-P11-070-003-12-SM-286X-00000	18	30	60	12'	3300	4000	3	1300	1400	97	0.14x10 <sup>-4</sup>
SG-P11-070-005-12-SM-286X-00000	25	35	70	12'	3500	5000	3	1300	1400	97	0.09x10 <sup>-4</sup>

## Suggested motors

RM 3R2M

RM 3R3M

**MOUNTING OPERATION MODE:** ■ Tightening torque M=5 Nm    ■ Locking bolt M4    ■ R.T.A. Quality Control

# SG-P11-090-010-12-SM-286X-00000



PLANETARY GEARBOXES

SG 090

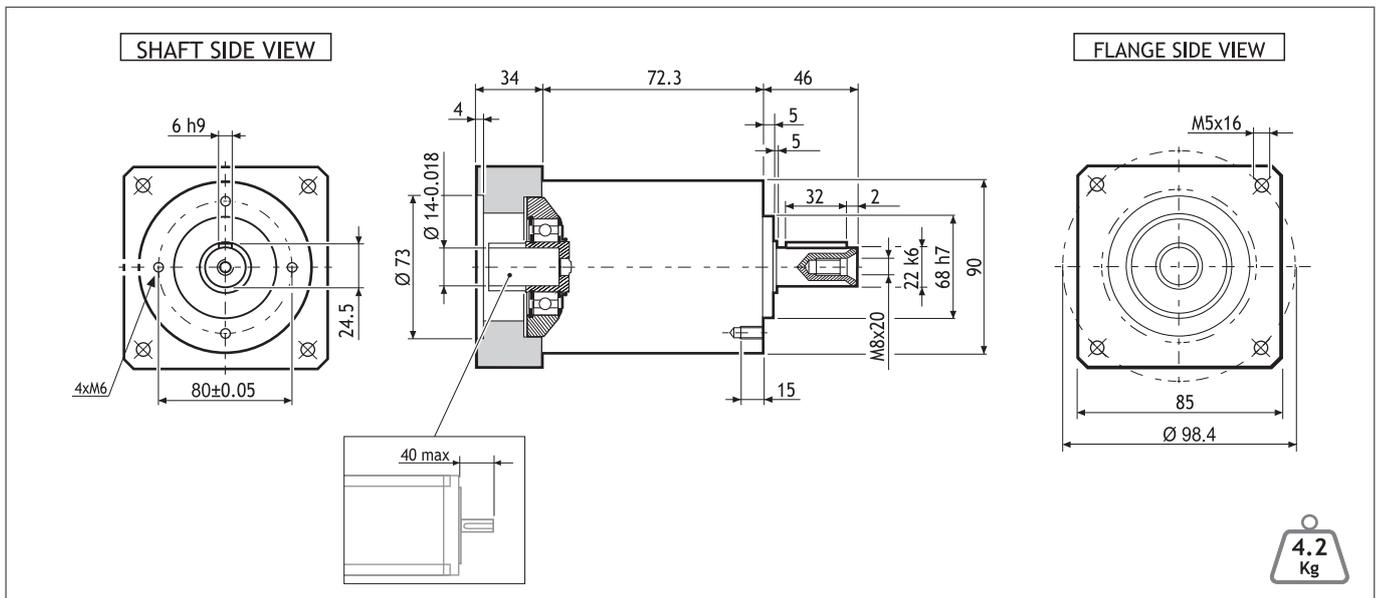
$i=010$

$\Phi=12'$

MADE IN ITALY

IP64

## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kgm <sup>2</sup> ]
SG-P11-090-010-12-SM-286X-00000	37	70	150	12'	4000	6000	9	2200	1900	97	0.35x10 <sup>-4</sup>

## Suggested motors

RM 3R2M

RM 3R3M

MOUNTING OPERATION MODE: ■ Tightening torque M=11 Nm ■ Locking bolt M6 ■ R.T.A. Quality Control

# SG-P11-090-025-15-SM-2861-00000



PLANETARY GEARBOXES

SG 090

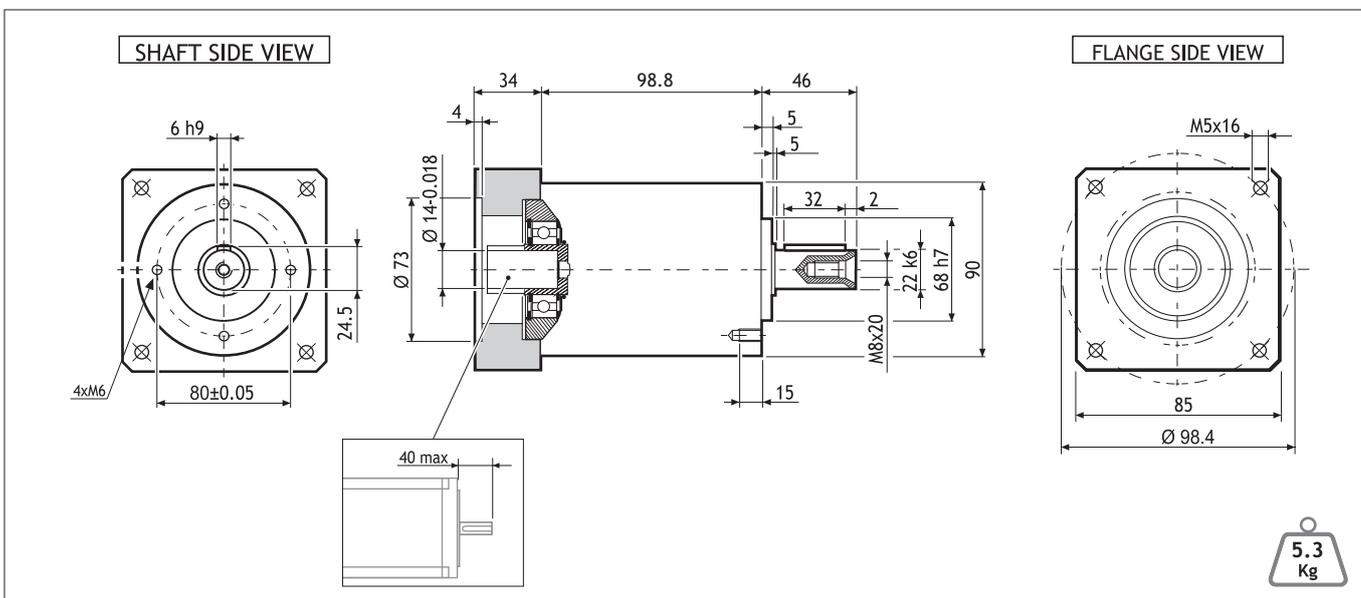
$i=025$

$\varphi=15'$

MADE IN ITALY

IP64

## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [ $\text{min}^{-1}$ ]	Maximum momentary input speed [ $\text{min}^{-1}$ ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [ $\text{Kg} \cdot \text{m}^2$ ]
SG-P11-090-025-15-SM-2861-00000	43	80	160	15'	3200	4500	8.5	2200	1900	94	$0.40 \times 10^{-4}$

## Suggested motors

RM 3R1M

**MOUNTING OPERATION MODE:** ■ Tightening torque M=11 Nm      ■ Locking bolt M6      ■ R.T.A. Quality Control

PLANETARY GEARBOXES

**SERVO GEARBOXES**



# SG P12-040-0XX-1X-R2-0100

$i=005$

$i=010$

$i=025$

PLANETARY GEARBOXES

SG 040

$\varphi < 19'$

$\varphi < 15'$

MADE IN ITALY

IP64

## Dimensions (Units:mm)

**SHAFT SIDE VIEW**

**FLANGE SIDE VIEW**

LL	$i=005$	$i=010$	$i=025$
mm	39	39	52

$i=005$   
 $i=010$   
0.45 Kg

$i=025$   
0.65 Kg

MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kg·m <sup>2</sup> ]
SG-P12-040-005-15-R2-0100	12	18	30	15'	5000	8000	0.8	220	200	98	1.6x10 <sup>-6</sup>
SG-P12-040-010-15-R2-0100	6	9	25	15'	5000	8000	0.8	220	200	98	1.2x10 <sup>-6</sup>
SG-P12-040-025-19-R2-0100	12	18	30	<19'	5000	8000	0.8	220	200	97	1.5x10 <sup>-6</sup>

## Suggested motors

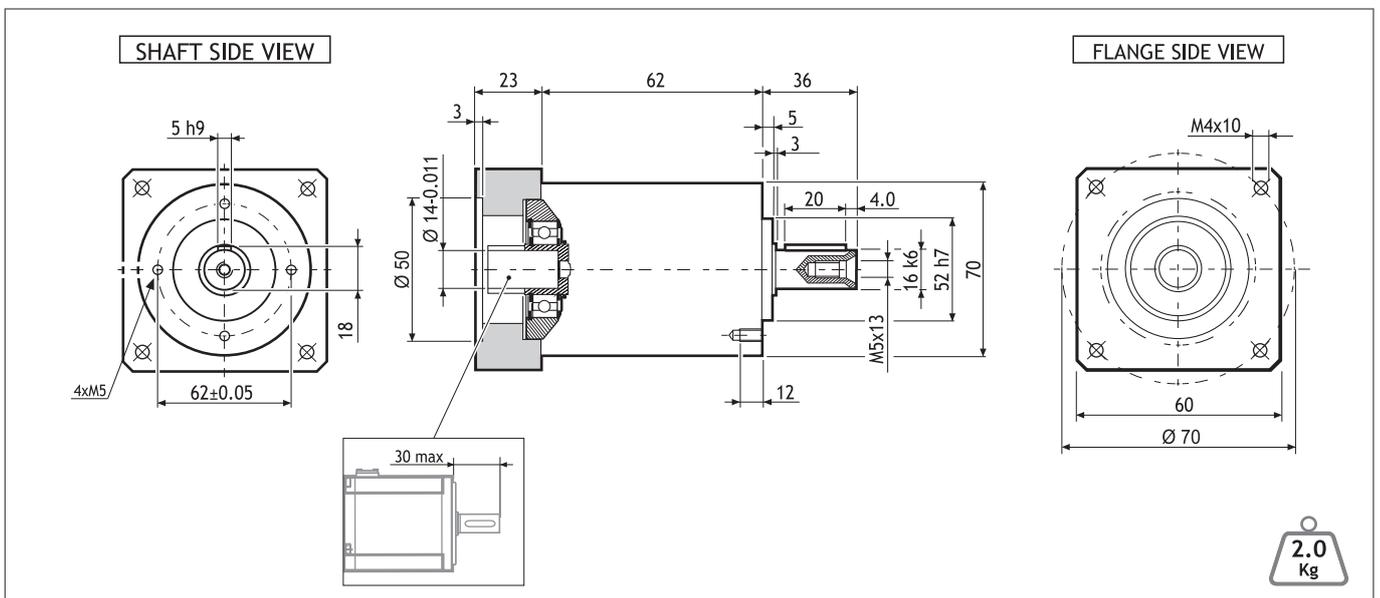
R2AA04010FXH1CM

MOUNTING OPERATION MODE: ■ Tightening torque M=5 Nm ■ Locking bolt M4 ■ R.T.A. Quality Control

# SG-P11-070-0XX-12-R2-0X00-00000



## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kg·m <sup>2</sup> ]
SG-P11-070-003-12-R2-0X00-00000	18	30	60	12'	3300	4000	3	1300	1400	97	0.12x10 <sup>-4</sup>
SG-P11-070-005-12-R2-0X00-00000	25	35	70	12'	3500	5000	3	1300	1400	97	0.09x10 <sup>-4</sup>
SG-P11-070-010-12-R2-0X00-00000	18	30	60	12'	4000	6000	3	1300	1400	97	0.06x10 <sup>-4</sup>

## Suggested motors



# SG-P11-090-010-12-R2-0400-00000



PLANETARY GEARBOXES

SG 090

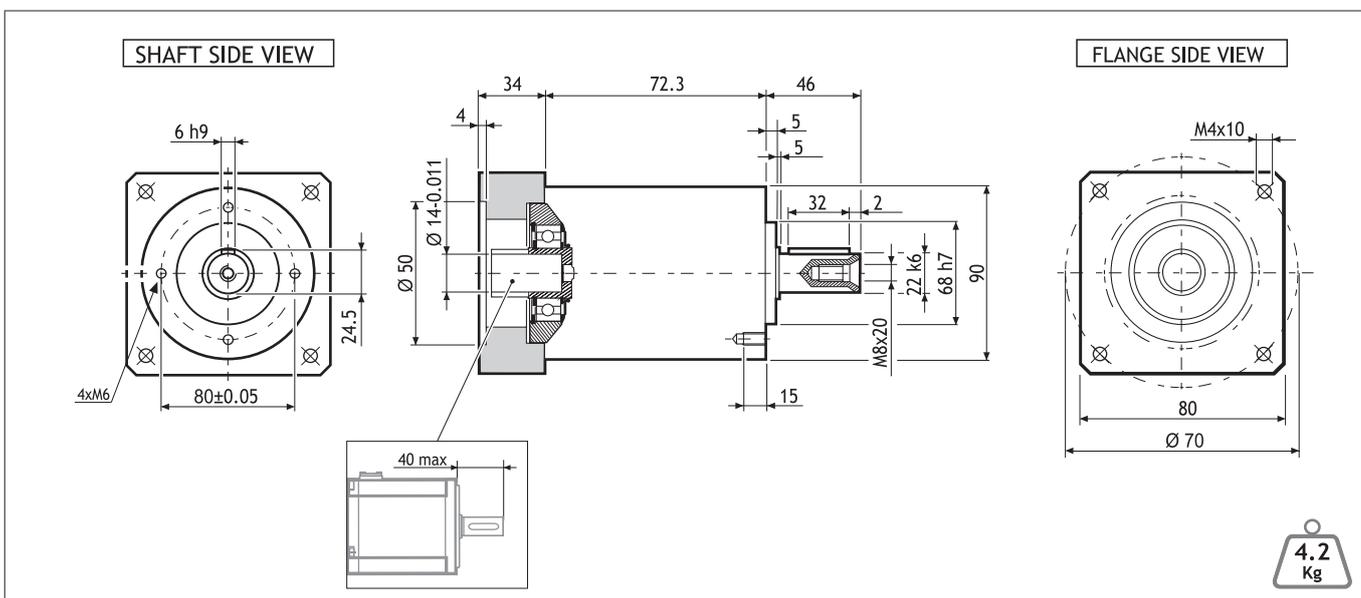
$i=010$

$\Phi=12'$

MADE IN ITALY

IP64

## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kg·m <sup>2</sup> ]
SG-P11-090-010-12-R2-0400-00000	37	70	150	12'	4000	6000	9	2200	1900	97	0.35x10 <sup>-4</sup>

## Suggested motors

R2AA06040 SERIES

MOUNTING OPERATION MODE: ■ Tightening torque M=11 Nm ■ Locking bolt M6 ■ R.T.A. Quality Control

# SG-P11-090-025-15-R2-0X00-00000



PLANETARY GEARBOXES

SG 090

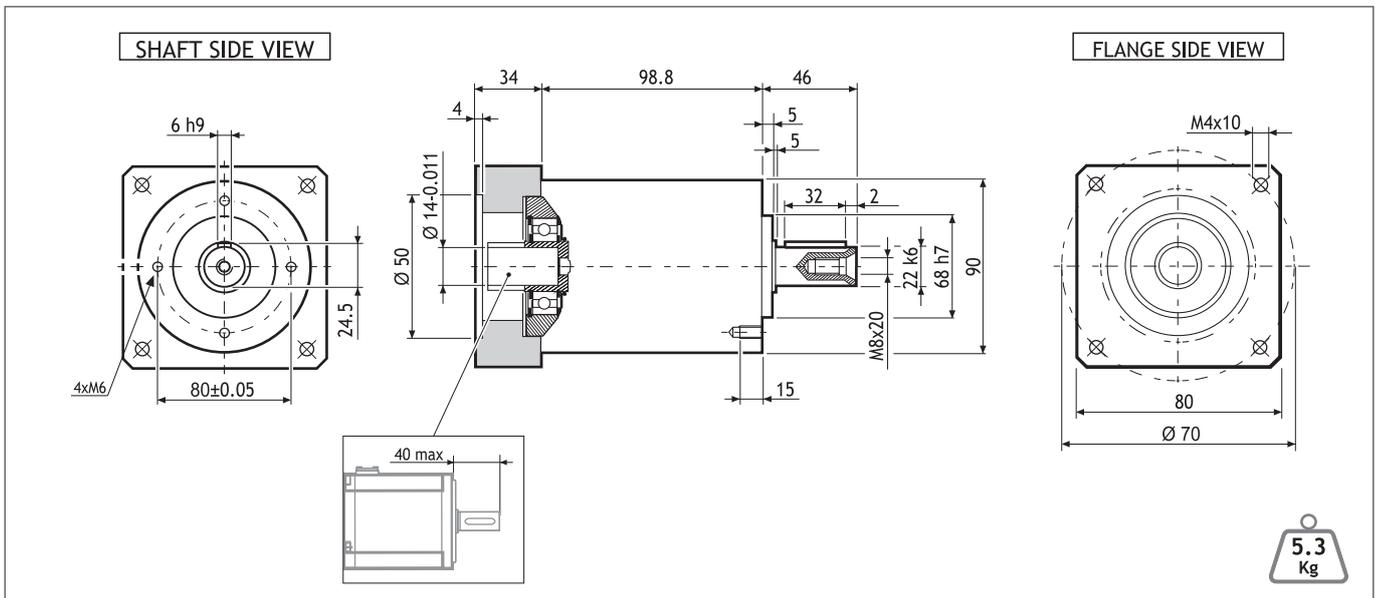
$i=025$

$\varphi=15'$

MADE IN ITALY

IP64

## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kgm <sup>2</sup> ]
SG-P11-090-025-15-R2-0X00-00000	43	80	160	15'	3200	4500	8.5	2200	1900	94	0.40x10 <sup>-4</sup>

## Suggested motors

MOUNTING OPERATION MODE:

R2AA06020 SERIES

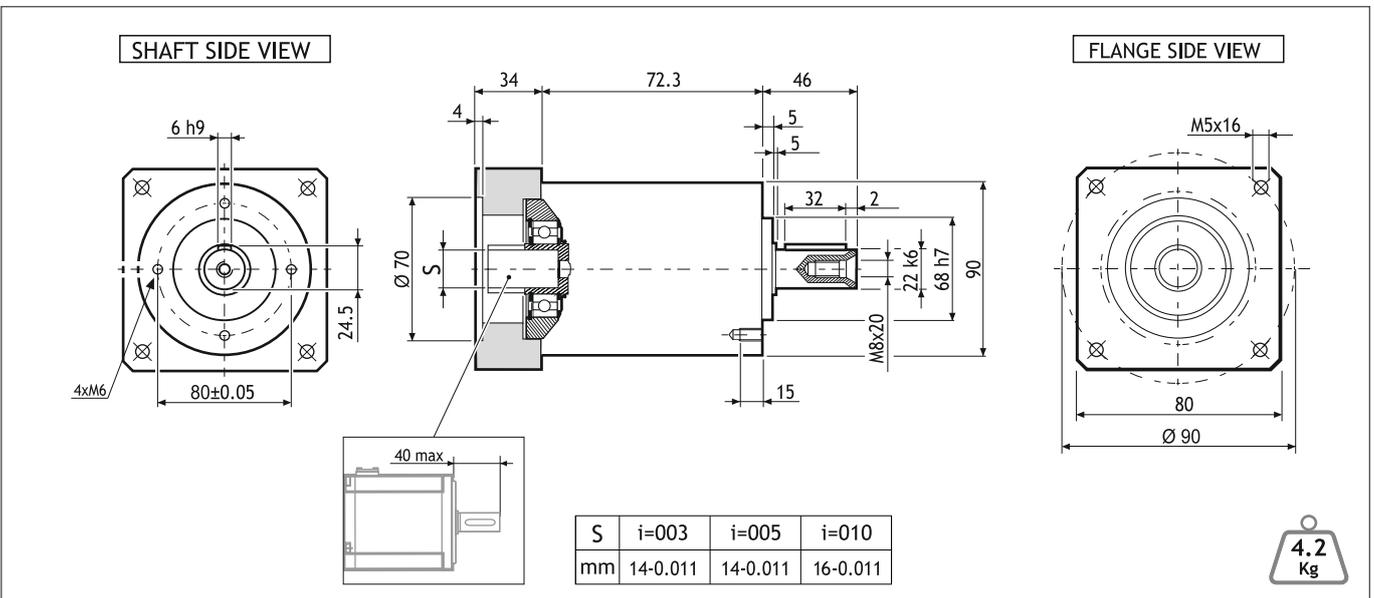
R2AA06040 SERIES

■ Tightening torque M=11 Nm     
 ■ Locking bolt M6     
 ■ R.T.A. Quality Control

# SG-P11-090-0XX-12-R2-0750-00000

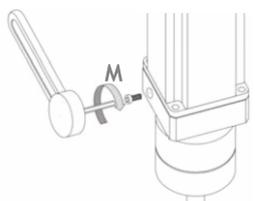


## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kg <sup>m</sup> <sup>2</sup> ]
SG-P11-090-003-12-R2-0750-00000	37	70	150	12'	2900	3500	7	2200	1900	97	0.65x10 <sup>-4</sup>
SG-P11-090-005-12-R2-0750-00000	43	80	160	12'	3200	4500	9	2200	1900	97	0.47x10 <sup>-4</sup>
SG-P11-090-010-12-R2-0750-00000	37	70	150	12'	4000	6000	9	2200	1900	97	0.35x10 <sup>-4</sup>

## Suggested motors



R2AA08075 SERIES



**MOUNTING OPERATION MODE:** ■ Tightening torque M=11 Nm      ■ Locking bolt M6      ■ R.T.A. Quality Control

# SG-P11-090-005-12-R2-1000-00000



PLANETARY GEARBOXES

SG 090

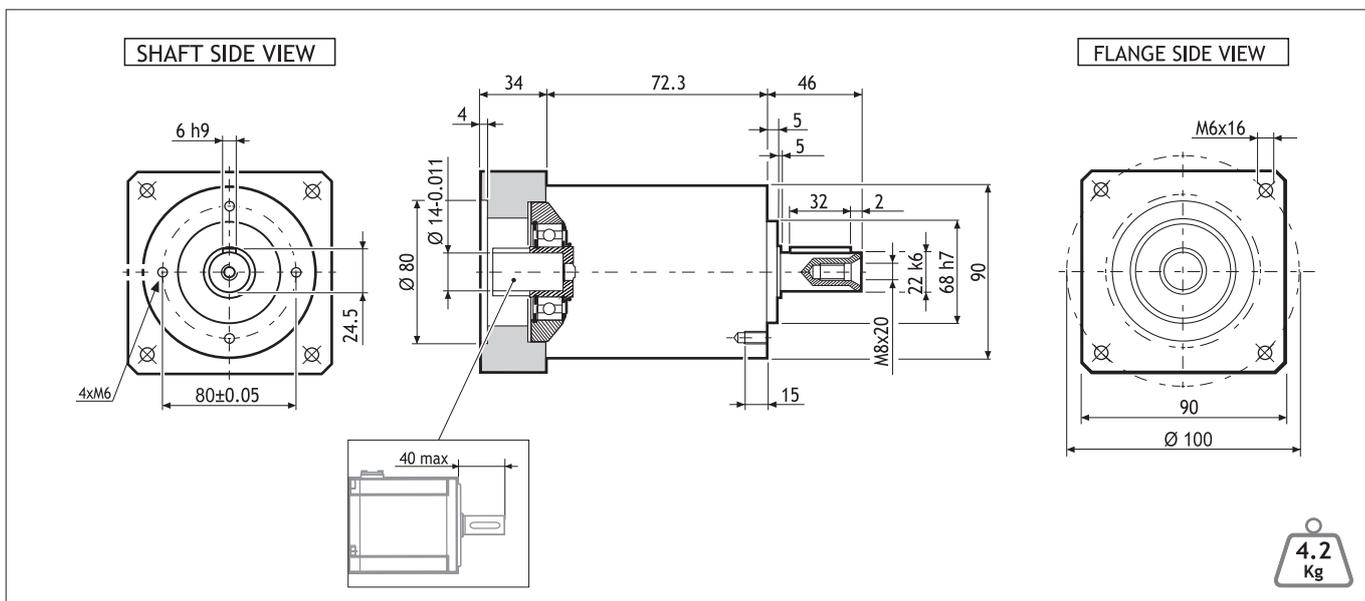
$i=005$

$\varphi=12'$

MADE IN ITALY

IP64

## Dimensions (Units:mm)



4.2 Kg

MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kgm <sup>2</sup> ]
SG-P11-090-005-12-R2-1000-00000	43	80	160	12'	3200	4500	9	2200	1900	97	0.47x10 <sup>-4</sup>

## Suggested motors

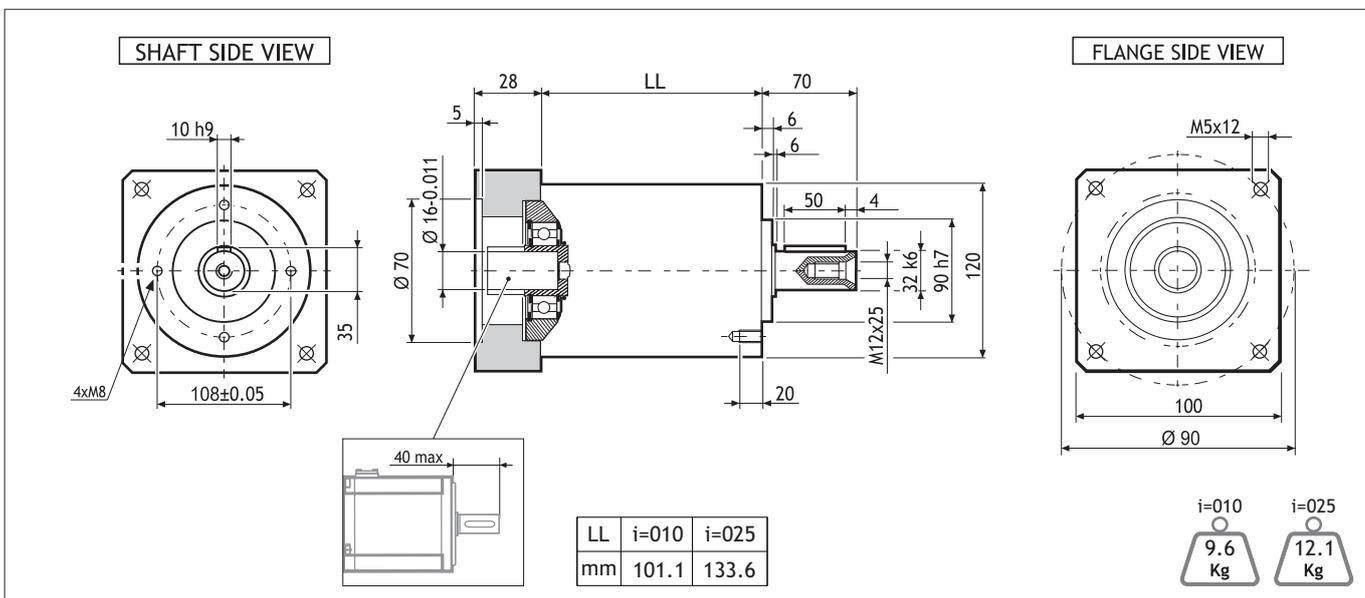
R2AAB8100 SERIES

MOUNTING OPERATION MODE: ■ Tightening torque M=11 Nm ■ Locking bolt M6 ■ R.T.A. Quality Control

# SG-P11-120-0XX-1X-R2-0750-00000

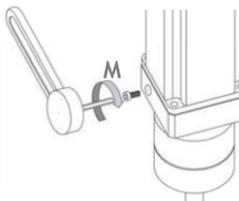


## Dimensions (Units:mm)



MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kgm <sup>2</sup> ]
SG-P11-120-010-12-R2-0750-00000	95	160	300	12'	3500	5000	25	3500	3000	97	0.49x10 <sup>-4</sup>
SG-P11-120-025-15-R2-0750-00000	110	190	360	15'	3000	4500	22.5	3500	3000	94	0.71x10 <sup>-4</sup>

## Suggested motors



R2AA08075 SERIES



**MOUNTING OPERATION MODE:** ■ Tightening torque M=11 Nm    ■ Locking bolt M6    ■ R.T.A. Quality Control

# SG-P11-120- OXX -1X-R2-1000-00000



PLANETARY GEARBOXES

SG 120

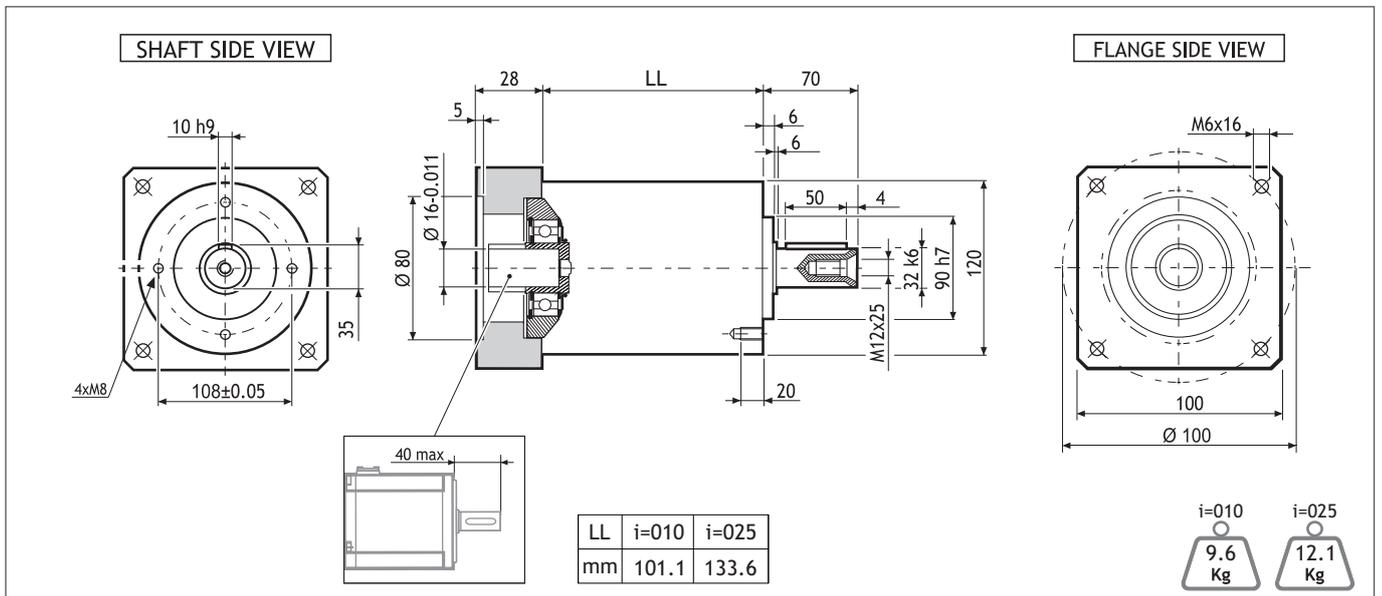
$\varphi=15'$

$\varphi=12'$

MADE IN ITALY

IP64

## Dimensions (Units:mm)



i=010  
9.6 Kg

i=025  
12.1 Kg

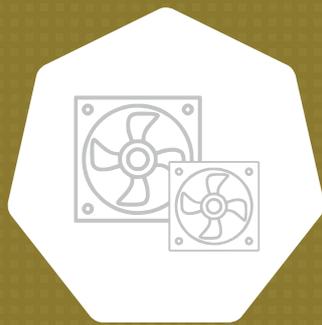
MODEL	Rated output torque [Nm]	Maximum acceleration output torque [Nm]	Emergency step output torque [Nm]	Backlash [arcmin]	Nominal input speed [min <sup>-1</sup> ]	Maximum momentary input speed [min <sup>-1</sup> ]	Torsional stiffness [Nm/arcmin]	Maximum radial force applying on output shaft [N]	Maximum axial force applying on output shaft [N]	Gear efficiency [%]	Gear moment of inertia [Kgm <sup>2</sup> ]
SG-P11-120-010-12-R2-1000-00000	95	160	300	12'	3500	5000	25	3500	3000	97	0.49x10 <sup>-4</sup>
SG-P11-120-025-15-R2-1000-00000	110	190	360	15'	3000	4500	22.5	3500	3000	94	0.71x10 <sup>-4</sup>

## Suggested motors



R2AAB8100 SERIES

MOUNTING OPERATION MODE: ■ Tightening torque M=11 Nm ■ Locking bolt M6 ■ R.T.A. Quality Control



## COOLING FANS





# COOLING FANS



## INDEX

DC AXIAL FANS	346
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## Key advantages



**SANYO DENKI**  
**San Ace**  
COOLING SYSTEMS

Exclusive Partnership with SANYO DENKI CO. since 1989, one of the main players in high quality cooling fans manufacturing in the world, with more than 2,500,000 fans/month.

- Japanese high quality and reliability, through automatized and robotized assembly line.
- Constantly evolving technologies ensuring excellent performances of San Ace products.
- Impressive products portfolio, with 5000+ models available from SANYO DENKI San Ace line-up.

## R.T.A. added value: the service

- Dedicated warehouse with quick restore.
- Wide stock of models always available.
- Pre- and post-sale professional consulting and service.
- A team fully dedicated to San Ace products management and sales.

## Main features

- Dual ball bearings.
- Voltage: **DC** | **AC** | **ACDC**
- Standard life expectancy: 60,000 hrs at 60°C.
- Standard operating temperature: -20°C to + 70°C.
- PWM control function, pulse, lock or low speed control sensors available.
- High performance even in harsh environments.
- Low power consumption and low noise.

## ◆ SANYO DENKI products line-up and solutions

**Axial DC Fans** Frame size from 36mm to 200mm.

**Axial and centrifugal Splash Proof Fans** Waterproof capability.

**Long Life Fans** Up to 180,000 hours of expected life at 60°C.

**Counter Rotating Fans** High airflow and high static pressure.

**Centrifugal Fans and Blowers** Air is blown in a centrifugal course.  
High static pressure.

**Reversible Flow Fans** The wind directions can be switched.  
Equivalent cooling performance can be obtained in both directions.

**G-Proof** Suitable for applications subject to high levels of G-Force or vibrations.

**Wide Temperature Range** Operating temperature range -40°C +85°C, with expected life 40,000 hrs at 85°C.

**Oil-Proof** Cooling Fans capable of operating in an oil-mist environment.

**Air-Flow Tester** A portable measuring device that enables you to easily measure the System Impedance and Operating Airflow of devices.

**CABLING  
&  
CONNECTORS**

*Customized  
versions  
available*

## ◆ IP68 versions: excellent water and dust protection

In order to obtain a real total water and dust protection, the windings and the printed circuit board are completely drowned into a resin, leaving only the cables out.



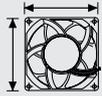
# R.T.A. selection: 3 families, 25 models

**5000+**  
MODELS  
AVAILABLE FROM  
**SANYODENKI**  
**San Ace**  
COOLING SYSTEMS

## 1 DC AXIAL FANS



Operating voltage 12VDC and 24 VDC



36 mm   40 mm   60 mm   80 mm   92 mm   120 mm   172 mm

Frame Size



0.18 m<sup>3</sup>/min → 8.5 m<sup>3</sup>/min

Air Flow

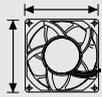


## 2 ACDC AXIAL FANS



ACDC fans operate by internally converting AC power into DC power, providing the superior performance of a DC fan with the flexibility of AC input.

Operating voltage range: from 100 VAC to 240 VAC



120 mm

Frame Size



3.0 m<sup>3</sup>/min

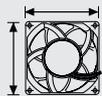
Air Flow



## 3 AC AXIAL FANS



Operating Voltage: 230 VAC



80 mm   120 mm   172 mm

Frame Size



0.9 m<sup>3</sup>/min → 5.3 m<sup>3</sup>/min

Air Flow



## Table of contents

### COOLING FANS

	VERSION	RATED VOLTAGE (V)	AIR FLOW (M <sup>3</sup> /MIN)	STATIC PRESSURE (PA)	NOISE-SPL [DB(A)]	DIMENSIONS (MM)	PAGE
<b>DC AXIAL FANS</b>							
<b>36 mm FRAME</b>							
9GV3612G301	STANDARD	12 VDC-0.34 A	0.4	275	52	36x36x28	347
<b>40 mm FRAME</b>							
109P0424H702	STANDARD	24 VDC-0.08 A	0.18	75.5	28	40x40x15	348
109P0412H602	STANDARD	12 VDC-0.11 A	0.225	65.7	33	40x40x20	349
109P0424H602	STANDARD	24 VDC-0.07 A	0.233	69.6	35	40x40x20	350
109P0424J3023	HIGH SPEED	24 VDC-0.18 A	0.46	210	44	40x40x28	351
<b>60 mm FRAME</b>							
109P0624H702	STANDARD	24 VDC-0.06 A	0.4	38.2	32	60x60x15	352
9A0612H402	STANDARD	12 VDC-0.11 A	0.53	40.2	28	60x60x25	353
9A0624H402	STANDARD	24 VDC-0.06 A	0.53	40.2	28	60x60x25	354
109R0624J402	HIGH SPEED	24 VDC-0.24 A	1.06	155	44	60x60x25	355
9WP0612H402	IP 68	12 VDC-0.11 A	0.53	40.2	28	60x60x25	356
9WP0624H402	IP 68	24 VDC-0.06 A	0.53	40.2	28	60x60x25	357
<b>80 mm FRAME</b>							
9A0812H402	STANDARD	12 VDC-0.13 A	1.03	35.3	29	80x80x25	358
9A0824H402	STANDARD	24 VDC-0.07 A	1.03	35.3	29	80x80x25	359
9A0824G402	HIGH SPEED	24 VDC-0.21 A	1.5	80.3	40	80x80x25	360
9G0824G102	HIGH SPEED	24 VDC-0.56 A	2.55	211	51	80x80x38	361
<b>92 mm FRAME</b>							
9A0912H402	STANDARD	12 VDC-0.21 A	1.45	44	33	92x92x25	362
9A0924H402	STANDARD	24 VDC-0.1 A	1.45	44	33	92x92x25	363
9A0912G4021	HIGH SPEED	12 VDC-0.39 A	1.76	66.5	43	92x92x25	364
<b>120 mm FRAME</b>							
9G1224H402	STANDARD	24 VDC-0.17 A	2.5	64	40	120x120x25	365
9G1224G102	HIGH SPEED	24 VDC-0.5 A	3.88	135	49	120x120x38	366
9GL1224J102	LONG LIFE HIGH SPEED	24 VDC-1 A	5.1	230	57	120x120x38	367
<b>172 mm FRAME</b>							
109E5724H502	HIGH SPEED	24 VDC-1.3 A	6.4	137.2	52	172x150x51	368
109E5724K501	HIGH SPEED	24 VDC-1.3 A	8.5	243	60	172x150x51	369
<b>ACDC AXIAL FANS</b>							
<b>120 mm FRAME</b>							
9AD1201H12	ACDC	100 to 240 VAC - 0.08 A	3	84	42	120x120x38	371
<b>AC AXIAL FANS</b>							
<b>80 mm FRAME</b>							
109-154	AC	230 VAC - 0.06 A	1.05	44.1	39	80x80x38	373
<b>120 mm FRAME</b>							
109-S072 UL	AC	230 VAC - 0.11 A	2.9	68.7	45	120x120x38	374
<b>172 mm FRAME Ø</b>							
109-313	AC	230 VAC- 0.14 A	6.4	196	51	Ø 172x51	375

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COOLING FANS

## DC AXIAL FANS



SANYODENKI  
San Ace

9GV3612G301

36x36x28 mm

12 V

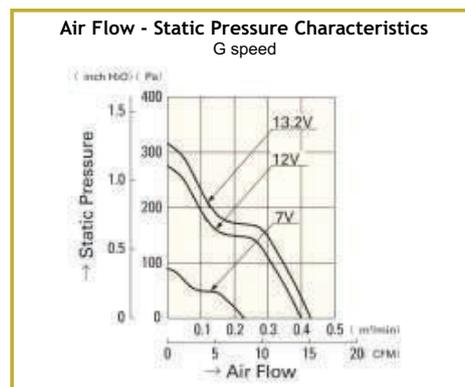
GV type



General Specifications

- **Material:**  
- Frame: Plastics (Flammability: UL 94V-0)  
- Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Tach output**
- **Lead Wire:** ⊕ red ⊖ black  Sensor  yellow
- **Storage Temperature:** -20 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

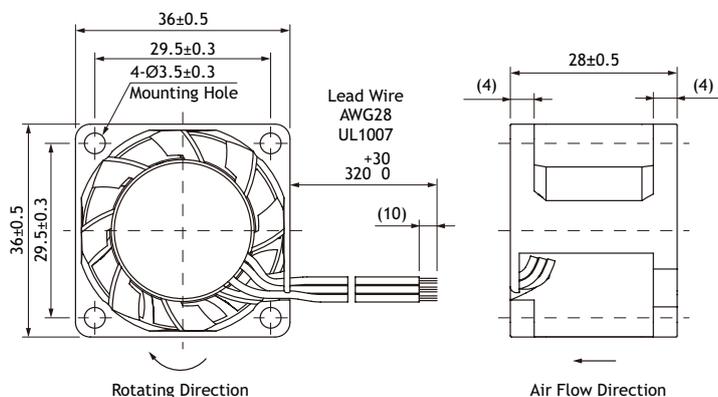
Air Flow - Static Pressure Characteristics



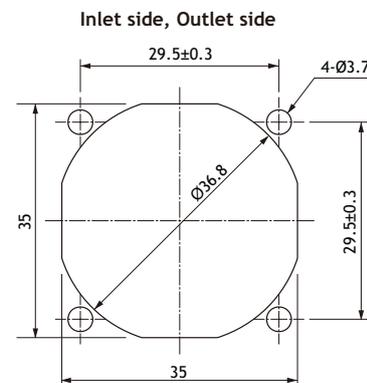
Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9GV3612G301	12	7.0 to 13.2	0.34	4.08	14,000	0.40	14.1	275	1.104	52.0	-20 to +60	40,000/60°

Dimensions (Unit:mm)



Reference dimension of mounting holes and vent opening (Unit: mm)



36 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

**40x40x15 mm**

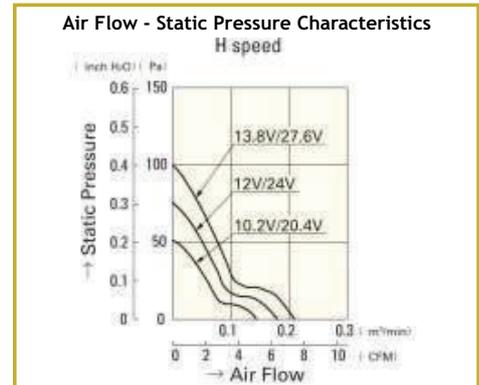
**24 V**



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 60,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

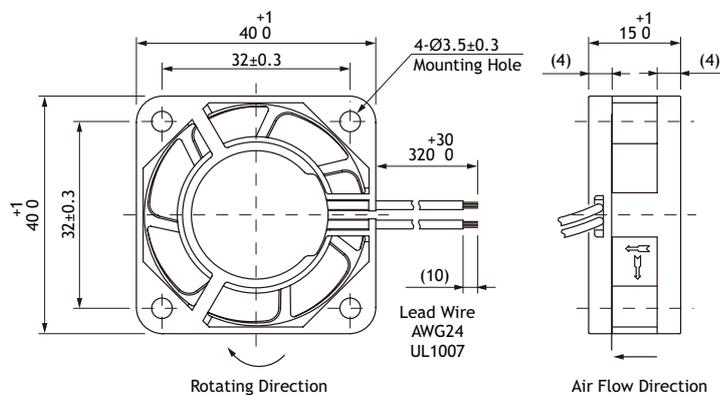
### Air Flow - Static Pressure Characteristics



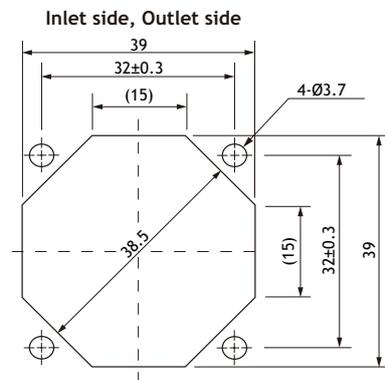
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109P0424H702	24	20.4 to 27.6	0.08	1.92	7,700	0.18	6.4	75.5	0.303	28	-20 to +70	60,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



**40 mm sq.**



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

SANYO DENKI  
San Ace

109P0412H602

40x40x20 mm

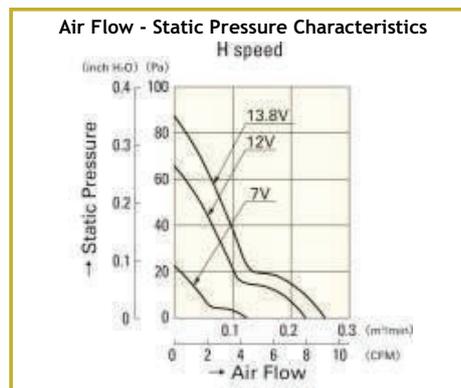
12 V



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 60,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

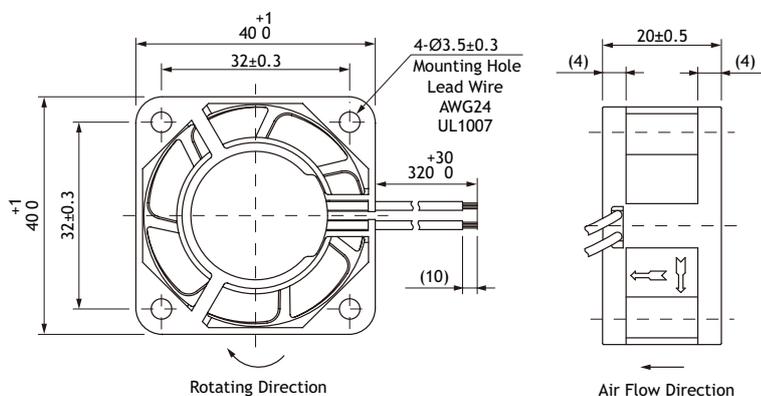
### Air Flow - Static Pressure Characteristics



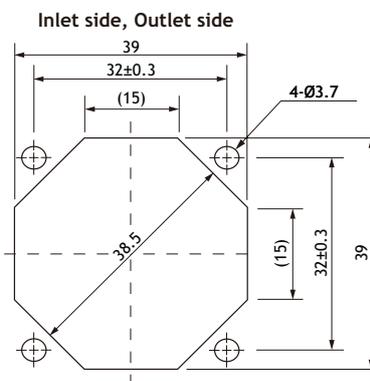
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109P0412H602	12	7 to 13.8	0.11	1.32	8,000	0.225	8.0	65.7	0.264	33	-20 to +70	60,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



40 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

40x40x20 mm

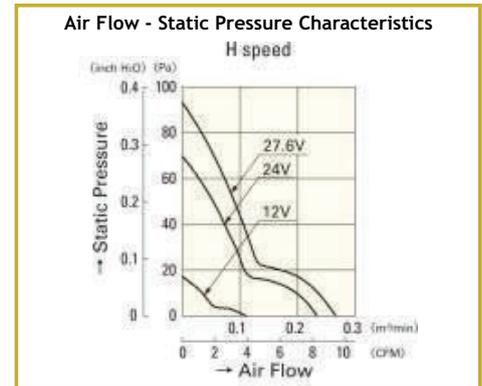
24 V



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 60,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

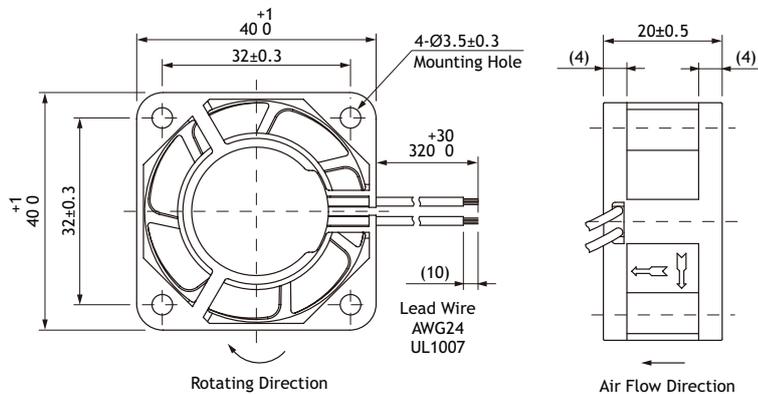
### Air Flow - Static Pressure Characteristics



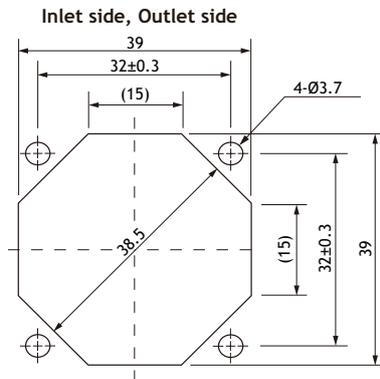
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109P0424H602	24	12 to 27.6	0.07	1.68	8,300	0.233	8.2	69.6	0.280	35	-20 to +70	60,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



40 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

SANYO DENKI  
San Ace

109P0424J3023

40x40x28 mm

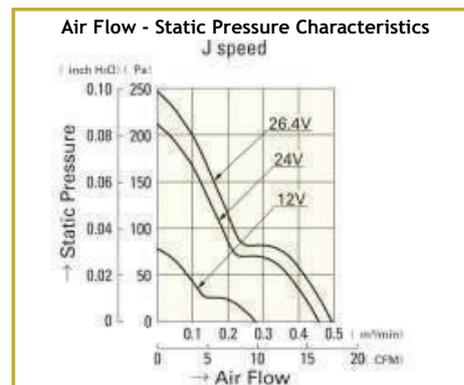
24 V



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

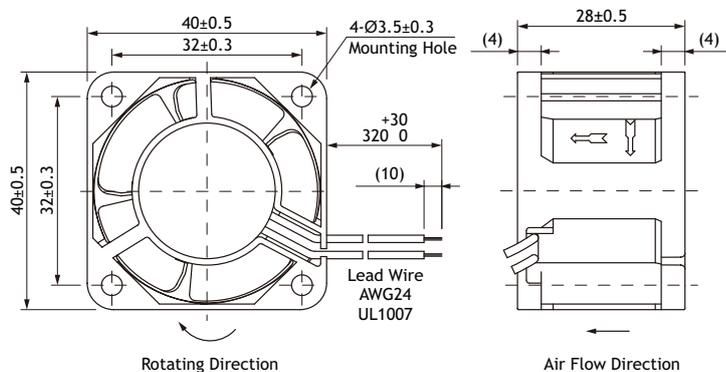
### Air Flow - Static Pressure Characteristics



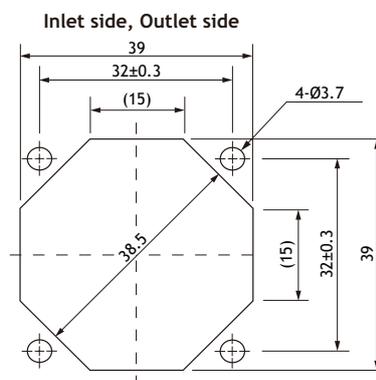
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109P0424J3023	24	12 to 26.4	0.18	4.32	12,500	0.46	16.2	210	0.843	44	-20 to +60	40,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



40 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

60x60x15 mm

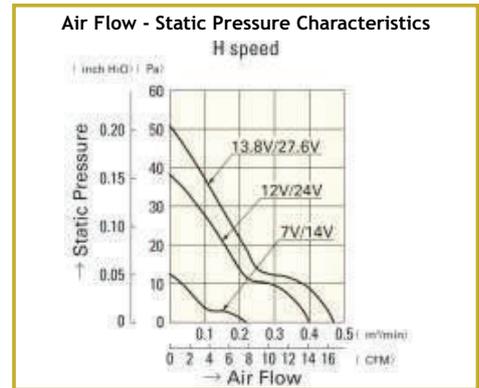
24 V



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 60,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

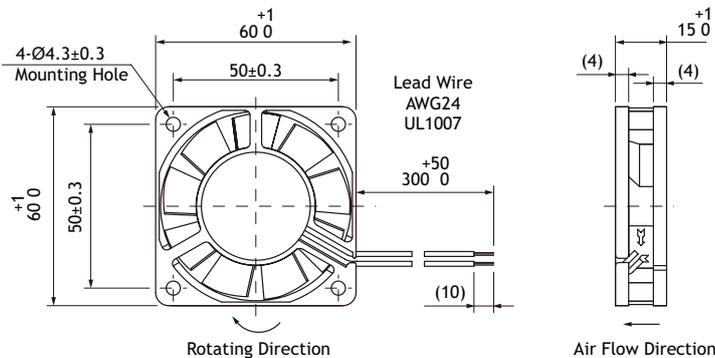
### Air Flow - Static Pressure Characteristics



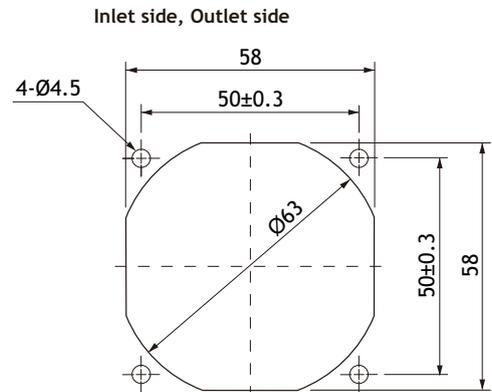
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109P0624H702	24	14 to 27.6	0.06	1.44	4,100	0.40	14.1	38.2	0.153	32	-20 to +70	60,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



60 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

SANYO DENKI  
San Ace

# 9A0612H402

60x60x25 mm

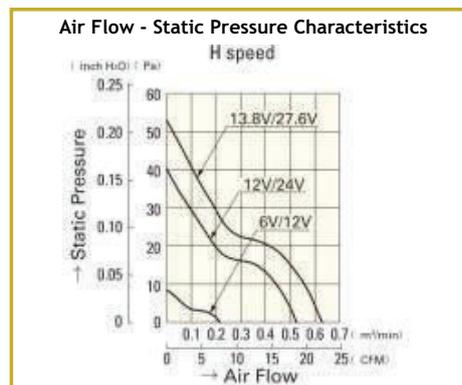
12 V



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60°C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30°C to +70°C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

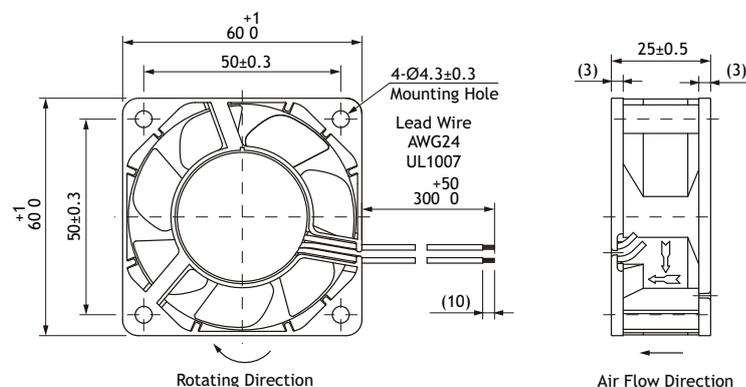
### Air Flow - Static Pressure Characteristics



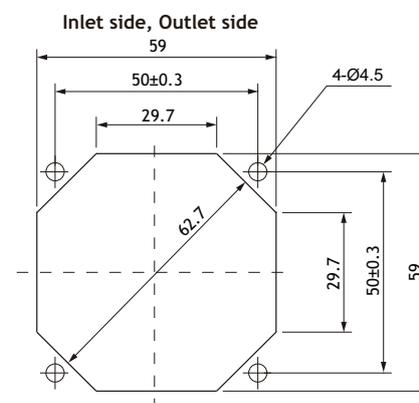
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m³/min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9A0612H402	12	6 to 13.8	0.11	1.32	3,800	0.53	18.7	40.2	0.161	28	-20 to +70	40,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



60 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

60x60x25 mm

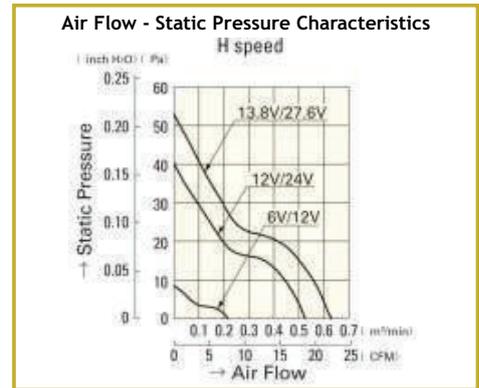
24 V



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

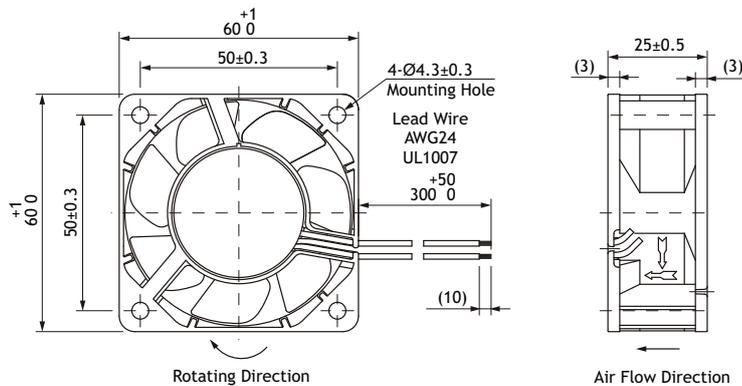
### Air Flow - Static Pressure Characteristics



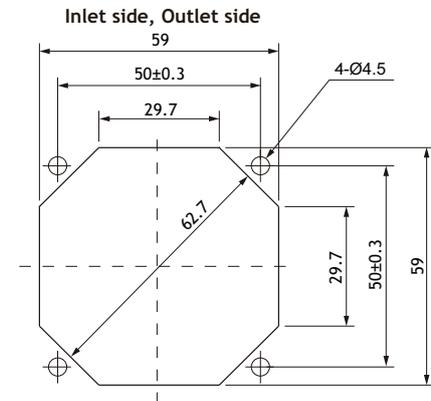
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9A0624H402	24	12 to 27.6	0.06	1.44	3,800	0.53	18.7	40.2	0.161	28	-20 to +70	40,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



60 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

**SANYO DENKI**  
San Ace

**109R0624J402**

**60x60x25 mm**

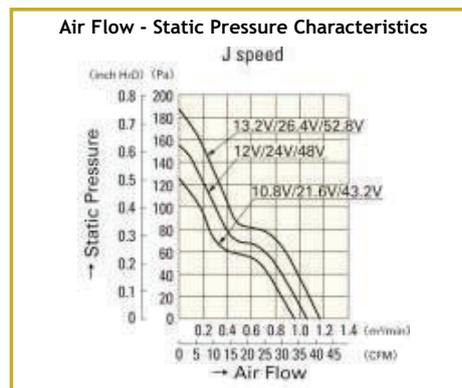
**24 V**



**General Specifications**

- **Material:**  
- Frame: Plastics (Flammability: UL 94V-0)  
- Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

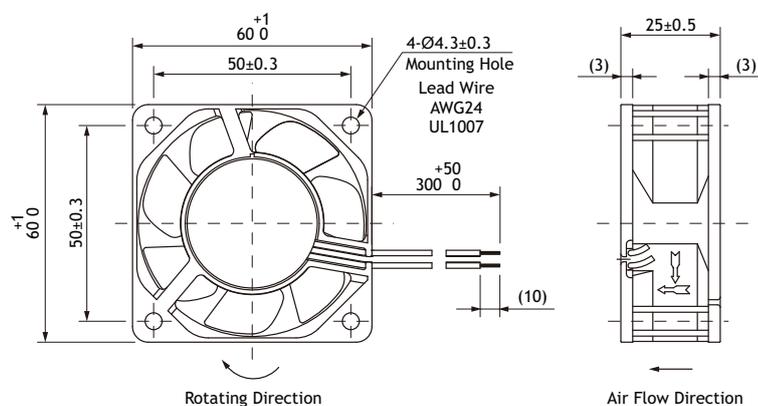
**Air Flow - Static Pressure Characteristics**



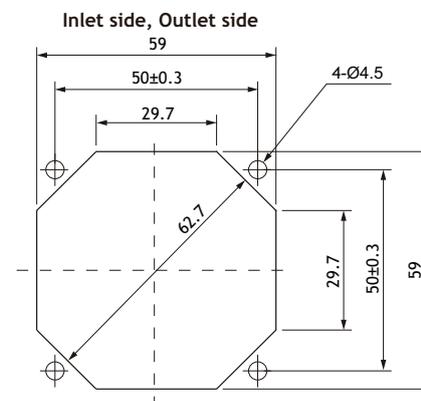
**Specifications**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109R0624J402	24	21.6 to 26.4	0.24	5.76	7,600	1.06	37.1	155.0	0.622	44	-20 to +60	40,000/60°

**Dimensions (Unit:mm)**



**Reference dimension of mounting holes and vent opening (Unit: mm)**



**60 mm sq.**



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

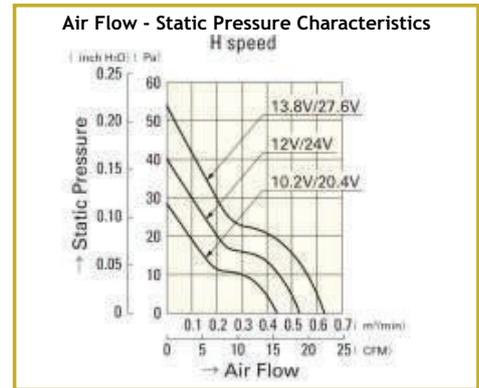
**60x60x25 mm** | **12 V** | **IP 68**



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 60,000 h (Indoor, L10:Survival rate: 90% at 60°C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black
- **Storage Temperature:** -30°C to +70°C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

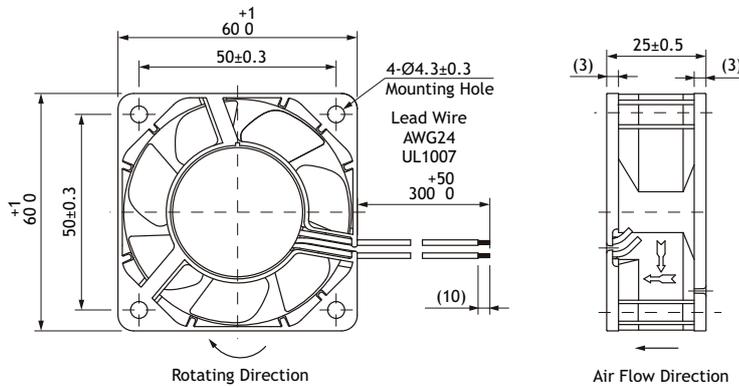
### Air Flow - Static Pressure Characteristics



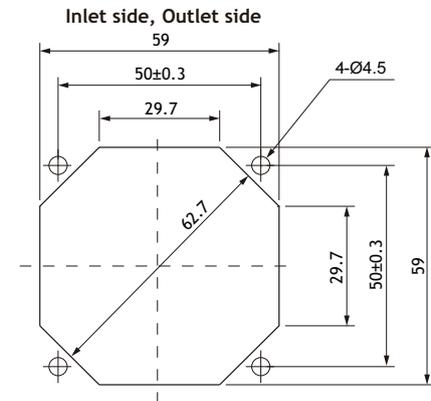
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WP0612H402	12	10.2 to 13.8	0.11	1.32	3,800	0.53	18.7	40.2	0.161	28	-20 to +70	60,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



**60** mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

SANYO DENKI  
San Ace

# 9WP0624H402

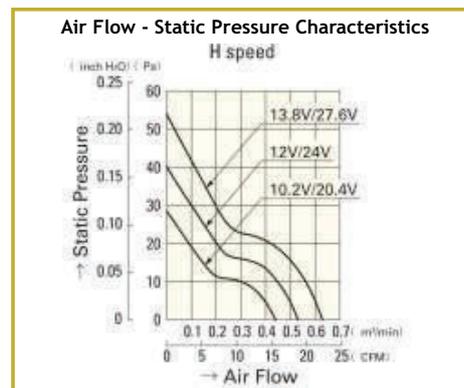
**60x60x25 mm** | **24 V** | **IP 68**



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 60,000 h (Indoor, L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

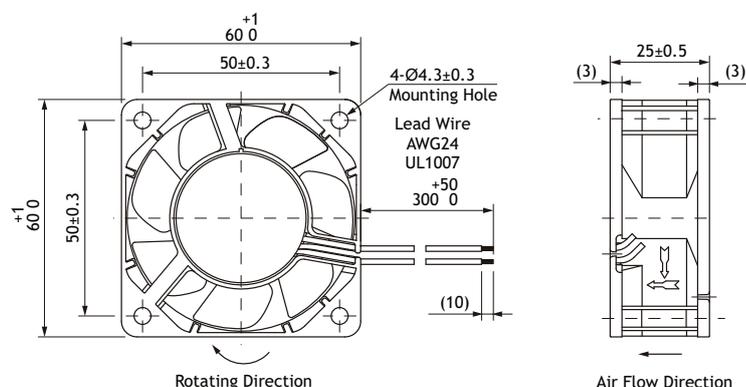
### Air Flow - Static Pressure Characteristics



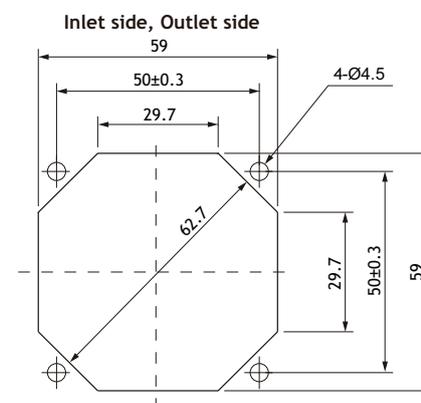
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m³/min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WP0624H402	24	20.4 to 27.6	0.06	1.44	3,800	0.53	18.7	40.2	0.161	28	-20 to +70	60,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



**60** mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

**80x80x25 mm**

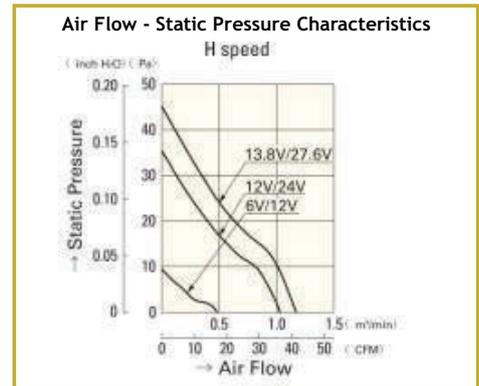
**12 V**



**General Specifications**

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

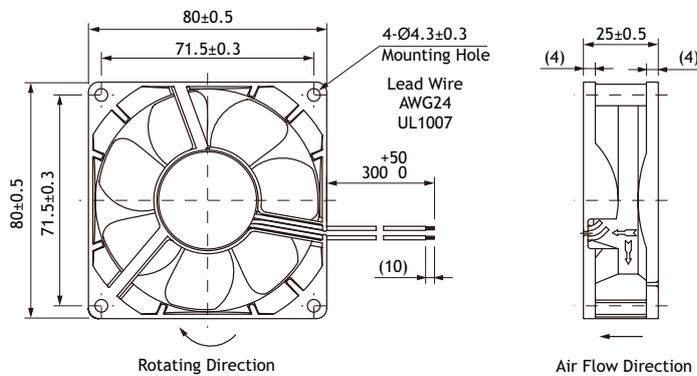
**Air Flow - Static Pressure Characteristics**



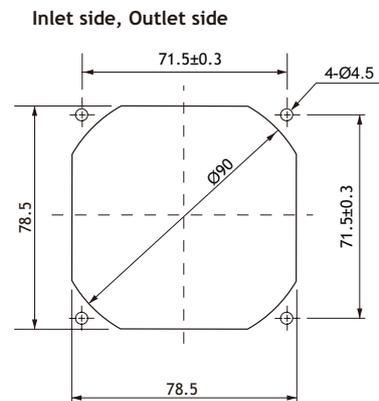
**Specifications**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9A0812H402	12	6 to 13.8	0.13	1.56	2,900	1.03	36.4	35.3	0.142	29	-20 to +70	40,000/60°

**Dimensions (Unit:mm)**



**Reference dimension of mounting holes and vent opening (Unit: mm)**



**80 mm sq.**



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

SANYO DENKI  
San Ace

9A0824H402

80x80x25 mm

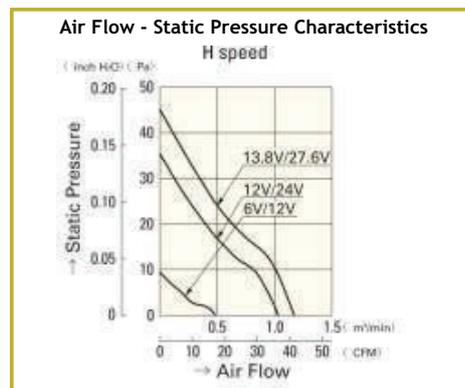
24 V



General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

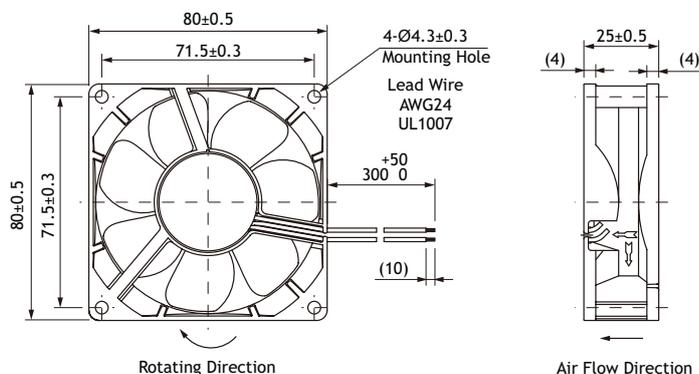
Air Flow - Static Pressure Characteristics



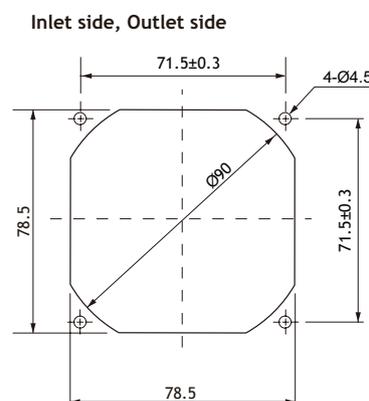
Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9A0824H402	24	12 to 27.6	0.07	1.68	2,900	1.03	36.4	35.3	0.142	29	-20 to +70	40,000/60°

Dimensions (Unit:mm)



Reference dimension of mounting holes and vent opening (Unit: mm)



80 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

80x80x25 mm

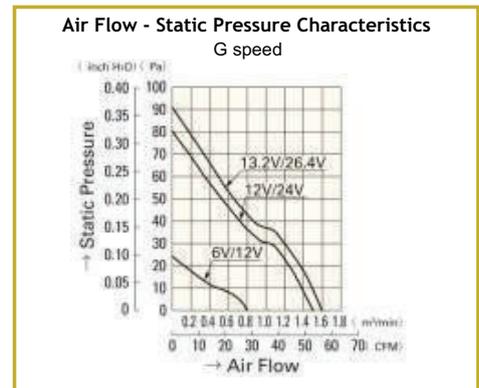
24 V



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 30,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

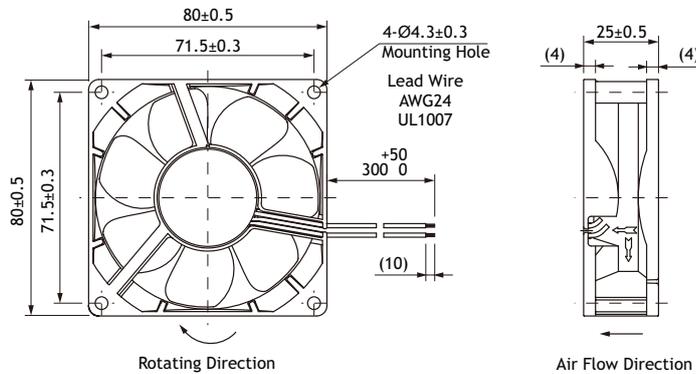
### Air Flow - Static Pressure Characteristics



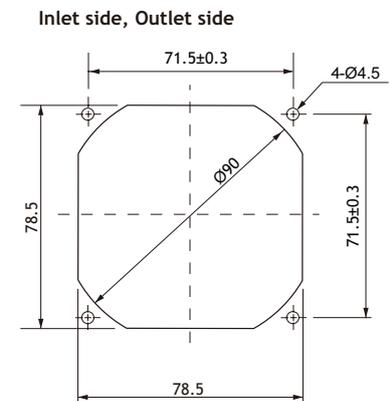
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9A0824G402	24	12 to 26.4	0.21	5.04	4,500	1.5	53.0	80.3	0.323	40	-20 to +60	30,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



80 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

80x80x38 mm

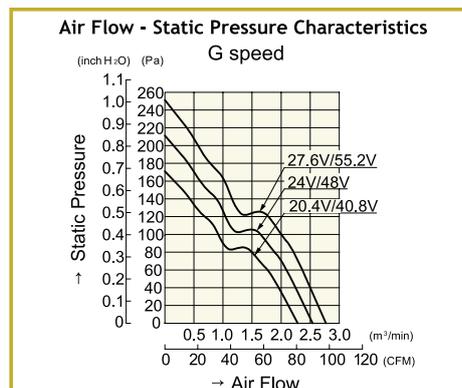
24 V



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

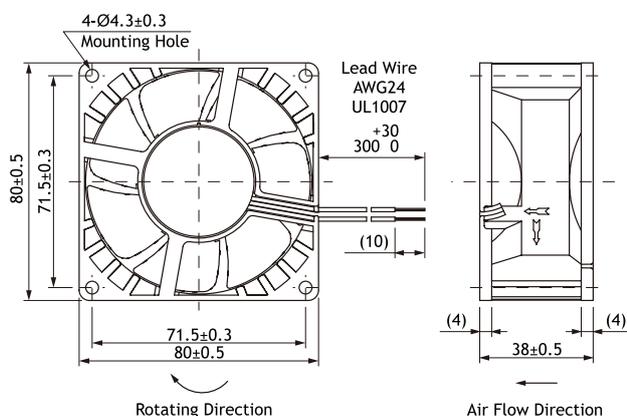
### Air Flow - Static Pressure Characteristics



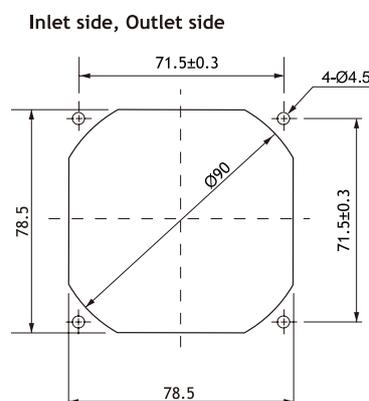
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min] [CFM]	Max. Static Pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9G0824G102	24	20.4 to 27.6	0.56	13.4	6,300	2.55 90	211 0.847	51	-20 to +70	30,000/60*

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



80 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

92x92x25 mm

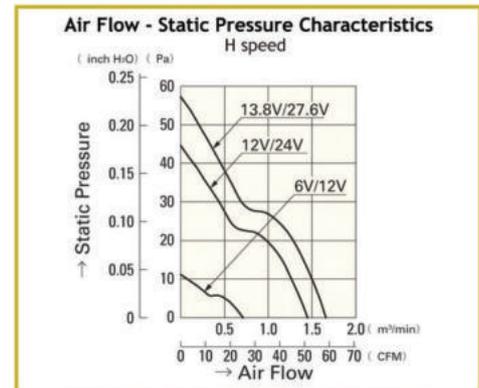
12 V



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

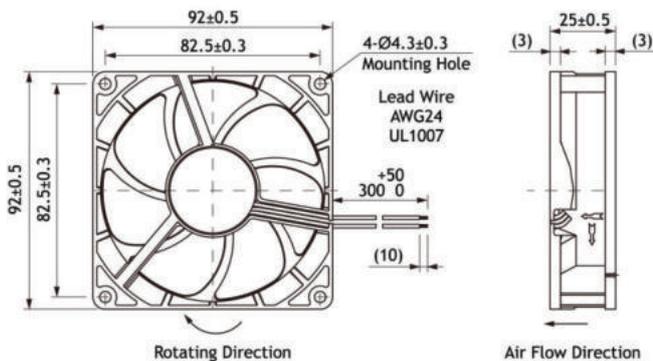
### Air Flow - Static Pressure Characteristics



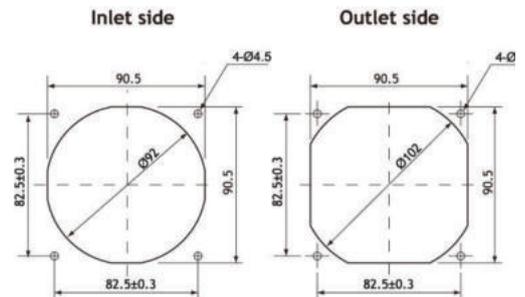
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min] [CFM]	Max. Static Pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9A0912H402	12	6 to 13.8	0.21	2.52	3,150	1.45 51.2	44 0.177	33	-20 to +70	40,000/60*

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



92 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

SANYO DENKI  
San Ace

# 9A0924H402

92x92x25 mm

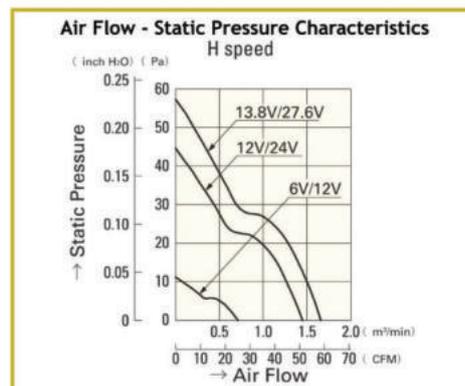
24 V



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

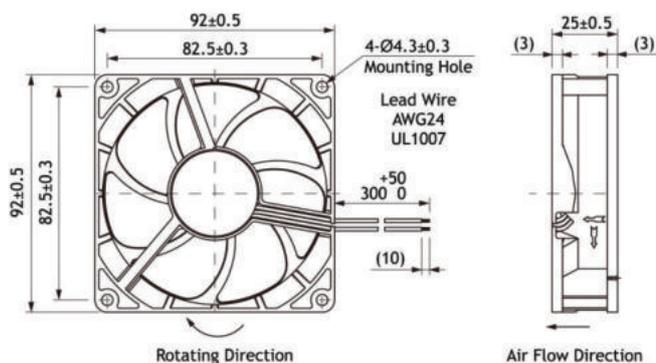
### Air Flow - Static Pressure Characteristics



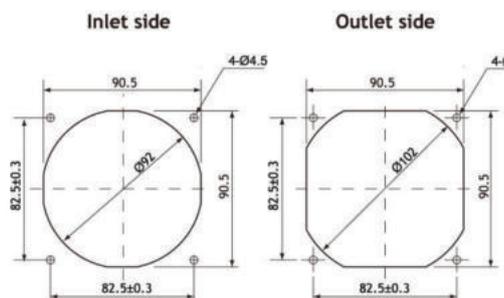
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min] [CFM]	Max. Static Pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9A0924H402	24	12 to 27.6	0.1	2.4	3,150	1.45 51.2	44 0.177	33	-20 to +70	40,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



92 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

**92x92x25 mm**

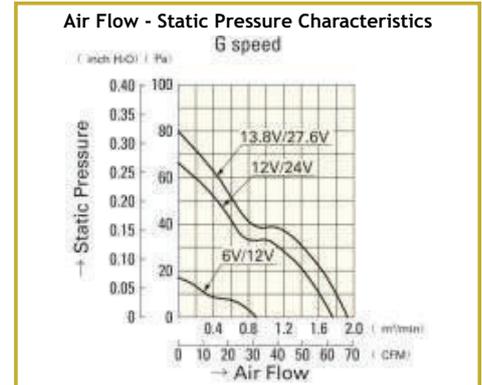
**12 V Ribless**



**General Specifications**

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 30,000 h (L10: Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

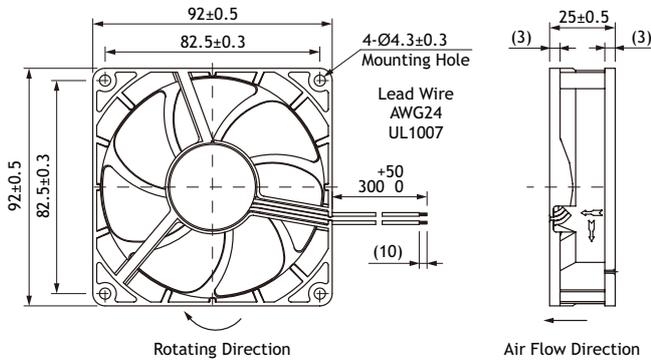
**Air Flow - Static Pressure Characteristics**



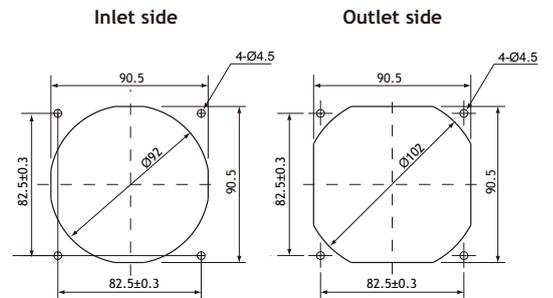
**Specifications**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9A0912G4021	12	6 to 13.8	0.39	4.68	3,900	1.76	62.1	66.5	0.267	43	-20 to +60	30,000/60*

**Dimensions (Unit:mm)**



**Reference dimension of mounting holes and vent opening (Unit: mm)**



**92 mm sq.**



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

SANYO DENKI  
San Ace

9G1224H402

120x120x25 mm

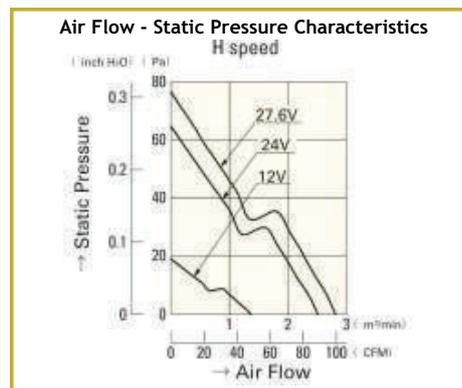
24 V



General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

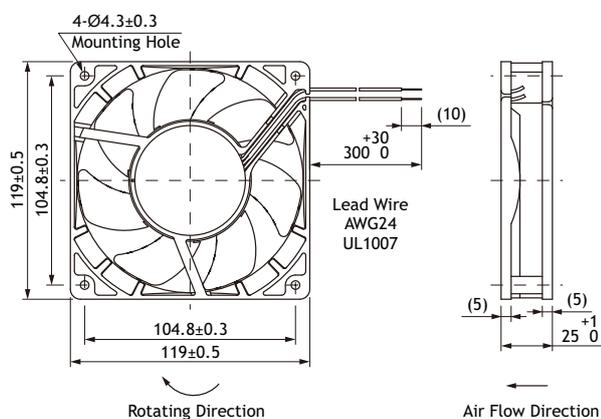
Air Flow - Static Pressure Characteristics



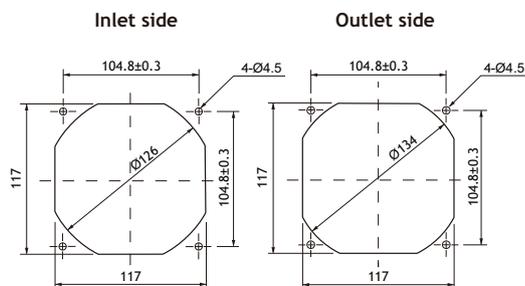
Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9G1224H402	24	12 to 27.6	0.17	4.08	2,850	2.50	88	64	0.257	40	-20 to +70	40,000/60°

Dimensions (Unit:mm)



Reference dimension of mounting holes and vent opening (Unit: mm)



120 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

120x120x38 mm

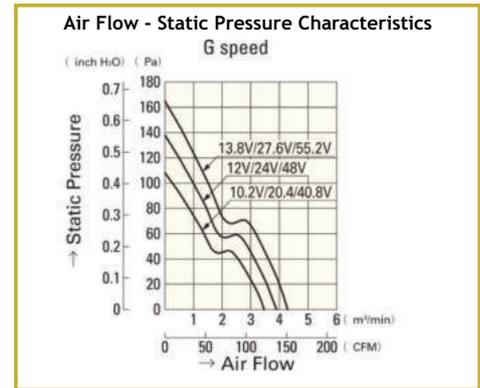
24 V



### General Specifications

- **Material:**
  - Frame: Plastics (Flammability: UL 94V-0)
  - Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

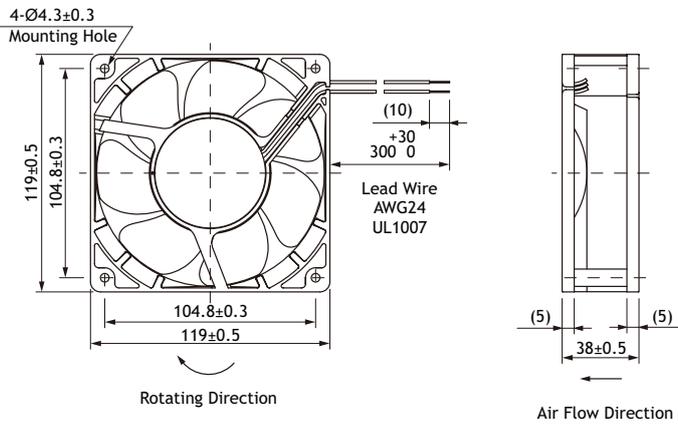
### Air Flow - Static Pressure Characteristics



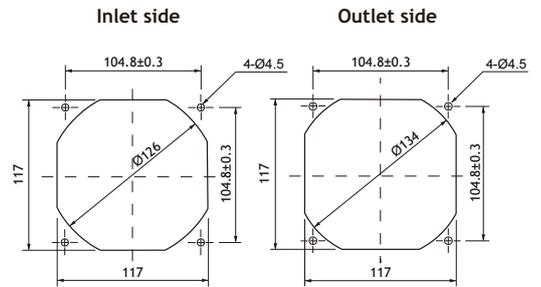
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9G1224G102	24	20.4 to 27.6	0.50	12	3,600	3.88	137	135	0.542	49	-20 to +70	40,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



120 mm sq.



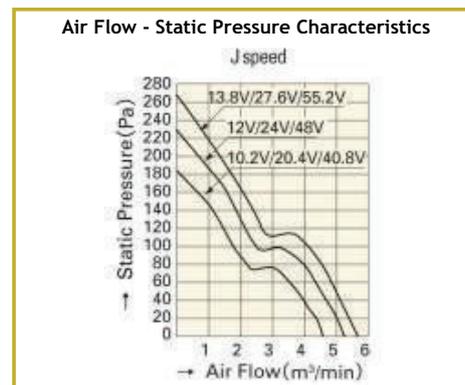
- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

## 120x120x38 mm 24 V | LONG LIFE

### General Specifications

- **Material:**
  - Frame: Aluminum
  - Impeller: Plastics (Flammability: UL94V-1)
- **Expected Life:** 60,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**

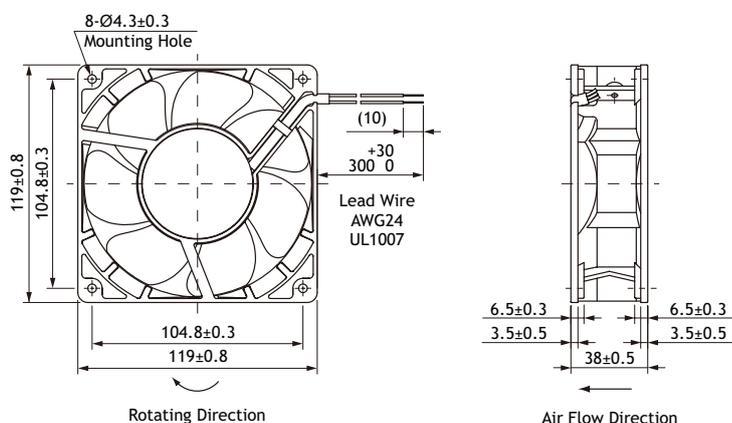
### Air Flow - Static Pressure Characteristics



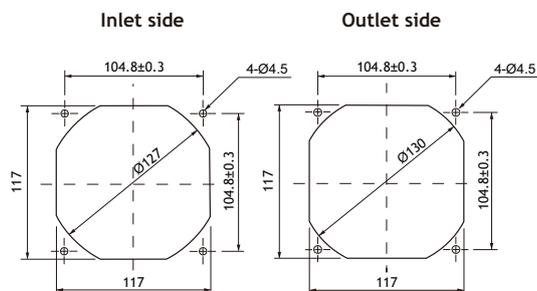
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9GL1224J102	24	20.4 to 27.6	1.0	24	4,800	5.10	180	230	0.924	57	-10 to +70	60,000/60°

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



120 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

**172x150x51 mm**

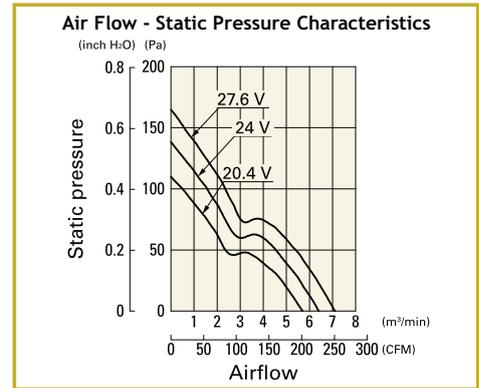
**24 V**



**General Specifications**

- **Material:**  
- Frame: Aluminum  
- Impeller: Plastics (Flammability: UL94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black or blue
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

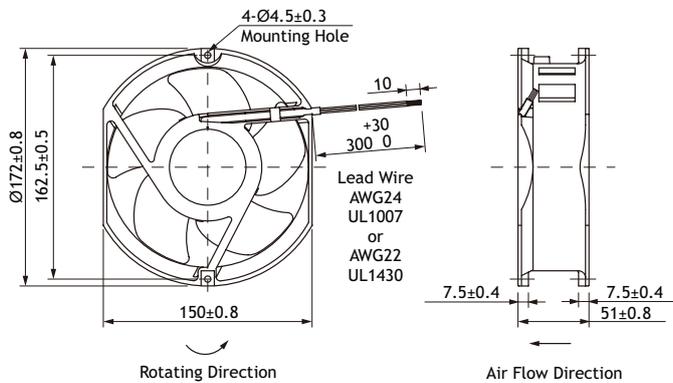
**Air Flow - Static Pressure Characteristics**



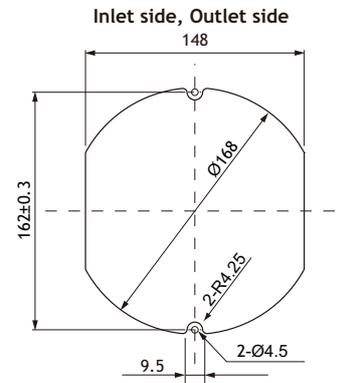
**Specifications**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109E5724H502	24	20.4 to 27.6	0.58	13.92	3,050	6.4	226	137.2	0.551	52	-20 to +70	40,000/60°

**Dimensions (Unit:mm)**



**Reference dimension of mounting holes and vent opening (Unit: mm)**



Ø **172** mm



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

SANYODENKI  
San Ace

109E5724K501

172x150x51 mm

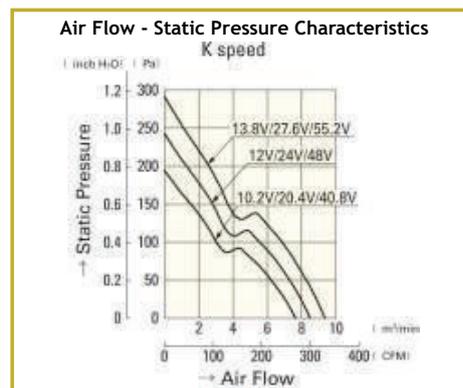
24 V



### General Specifications

- **Material:**
  - Frame: Aluminum
  - Impeller: Plastics (Flammability: UL94V-1)
- **Expected Life:** 40,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Tach output**
- **Lead Wire:** ⊕ red ⊖ black or blue (Sensor) yellow
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS

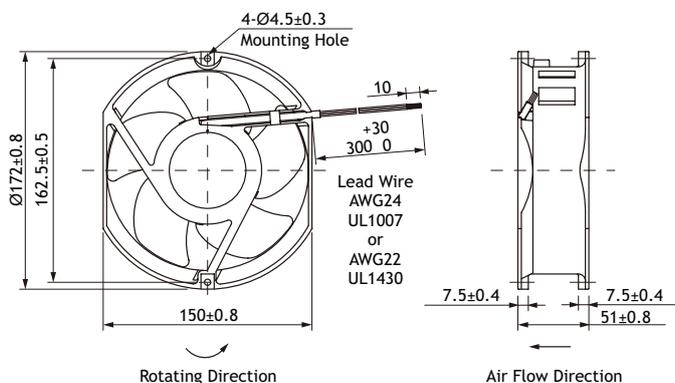
### Air Flow - Static Pressure Characteristics



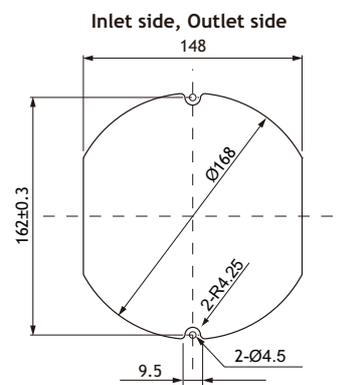
### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109E5724K501	24	20.4 to 27.6	1.3	31.2	4,100	8.5	300	243.0	0.976	60	-20 to +70	40,000/60

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



Ø 172 mm



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

COOLING FANS

## ACDC AXIAL FANS



**SANYO DENKI**  
San Ace

# 9AD1201H12

**120x120x38 mm**

**ACDC**



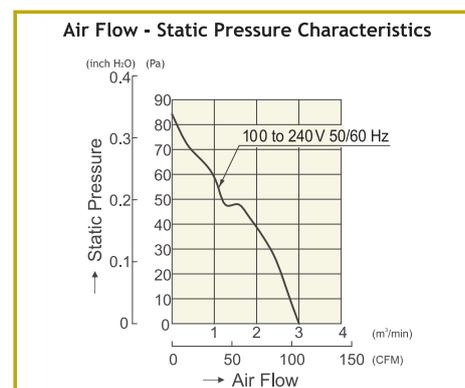
**UL** US



### General Specifications

- **Material:**  
- Frame: Plastics (Flammability: UL 94V-0)  
- Impeller: Plastics (Flammability: UL 94V-1)
- **Expected Life:** 60,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Motor construction:** Brushless DC motors
- **Motor Protection System:** Burnout protection at locked rotor condition
- **Ball bearings**
- **Dielectric Strength:** 50/60 Hz, 1,500 VAC, 1 minute (between power terminal and frame or between lead conductor and frame)
- **Insulation Resistance:** 10MΩ or more at 500 VDC megger (between lead conductor and frame)
- **Storage Temperature:** -30 °C to +75 °C (Non-condensing)
- **International Standards:** CE, UL/CSA, TÜV, RoHS

### Air Flow - Static Pressure Characteristics

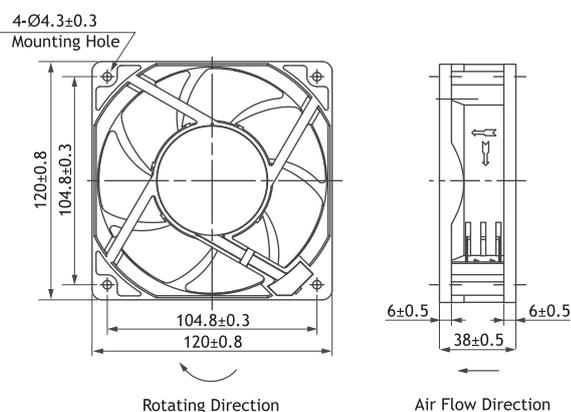


### Specifications

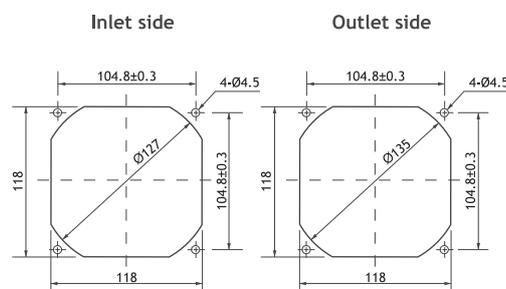
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Frequency * [Hz]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
<b>9AD1201H12</b>	100 to 240	90 to 264	50/60	0.08	4.4	3,250	3.0	106	84	0.34	42	-20 to +75	60,000/60*

\*NOTE: 50/60 Hz compatible.

### Dimensions (Unit:mm)



### Reference dimension of mounting holes and vent opening (Unit: mm)



**120** mm sq.



- Model always available on stock at R.T.A.

- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

COOLING FANS

## AC AXIAL FANS



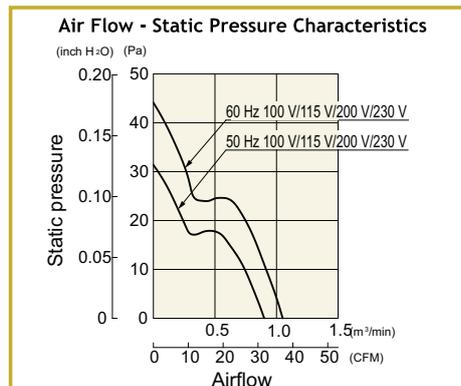
**80x80x38 mm**



**General Specifications**

- **Material:**  
- Frame: Aluminum  
- Impeller: Plastics (Flammability: UL94V-1)
- **Expected Life:** 25,000h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Lead Wire:** ⊕ red ⊖ black
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** CE,UL/CSA, TÜV, RoHS

**Air Flow - Static Pressure Characteristics**

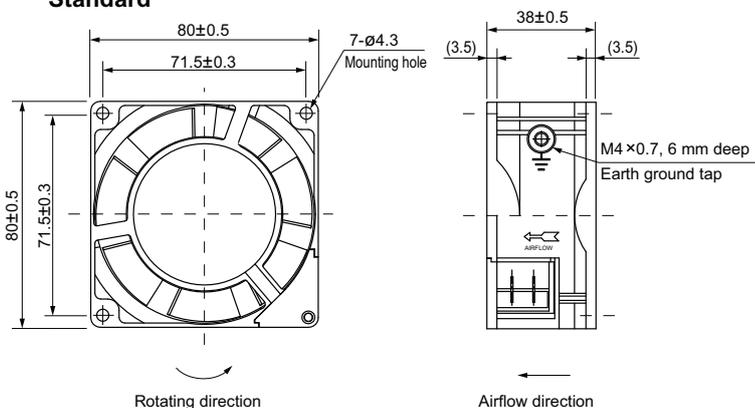


**Specifications**

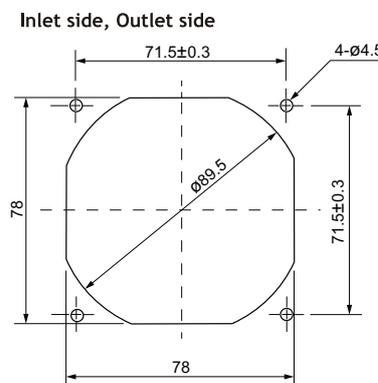
Model No.	Rated Voltage [V]	Frequency [Hz]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
<b>109-154</b>	230	50/60	0.06/0.05	9/8	2,700/3,150	0.9/1.05	31.8/37.1	31.4/44.1	0.126-0.177	35/39	-30 to +60	25,000/60°C

**Dimensions (Unit:mm)**

**Standard**



**Reference dimension of mounting holes and vent opening (Unit: mm)**



**80 mm sq.**



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

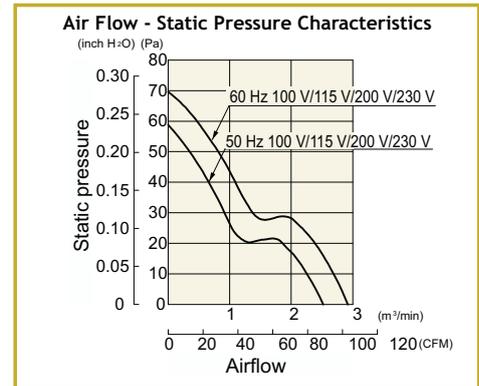
120x120x38 mm



### General Specifications

- **Material:**
  - Frame: Aluminum
  - Impeller: Plastics (Flammability: UL94V-1)
- **Expected Life:** 25,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS, CE

### Air Flow - Static Pressure Characteristics

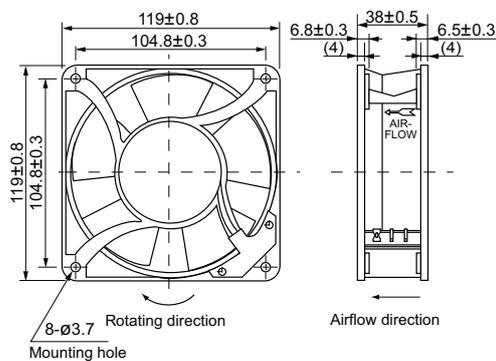


### Specifications

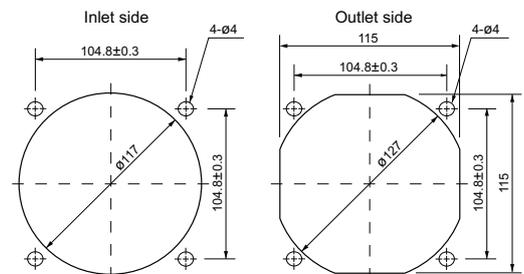
Model No.	Rated Voltage [V]	Frequency [Hz]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min] [CFM]	Max. Static Pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109S072-UL	230	50/60	0.11/0.9	18/16	2,700/3,100	2.5/2.9 88./102.5	57.9/68.7 0.233/0.276	42/45	-30 to +60	25,000/60 °C

### Dimensions (Unit:mm)

#### Standard



### Reference dimension of mounting holes and vent opening (Unit: mm)



120 mm sq.



- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

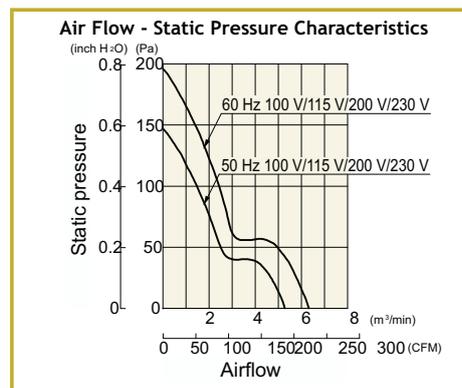
172x51 mm



General Specifications

- **Material:**  
- Frame: Aluminum  
- Impeller: Plastics (Flammability: UL94V-1)
- **Expected Life:** 25,000 h (L10:Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- **Storage Temperature:** -30 °C to +70 °C (Non-condensing)
- **Ball bearings**
- **International Standards:** UL/CSA, TÜV, RoHS, CE

Air Flow - Static Pressure Characteristics

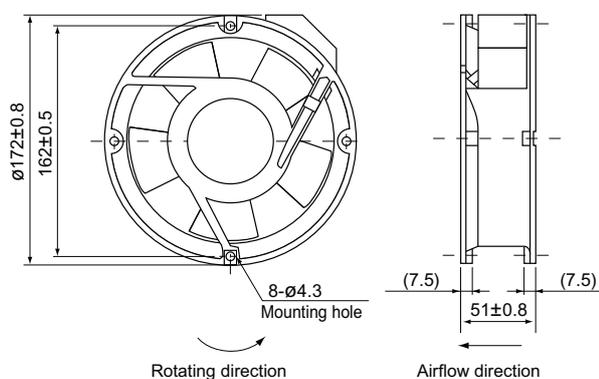


Specifications

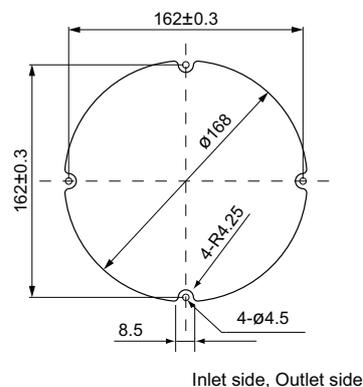
Model No.	Rated Voltage [V]	Frequency [Hz]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min]	Max. Air Flow [CFM]	Max. Static Pressure [Pa]	Max. Static Pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109-313	230	50/60	0.14/0.11	27/25	2,900/3,500	5.3/6.4	187.3/226.1	147/196	0.59/0.787	47/51	-30 to +70	25,000/60°C

Dimensions (Unit:mm)

Standard



Reference dimension of mounting holes and vent opening (Unit: mm)



Ø 172 mm

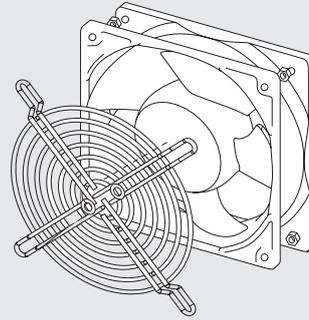


- Model always available on stock at R.T.A.
- Also available for online purchasing at [www.rta-store.com](http://www.rta-store.com)

# Cooling Fans accessories

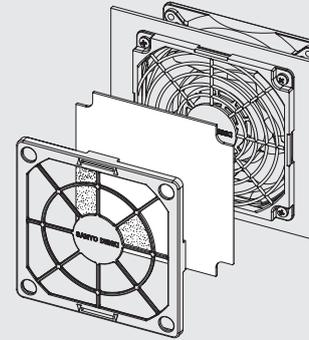
## 1 METAL FAN GUARDS

Fan Guards increases safety by preventing foreign objects from entering fans.



## 2 PLASTIC FAN FILTERS

Fan Filters assure protection to the fan blade allowing free passage of air with minimum resistance.



### Table of contents

#### ACCESSORIES

	DESCRIPTION	SUITABLE FOR FANS (mm)	MATERIALS	SURFACE TREATMENT
<b>METAL FAN GUARDS</b>				
MF-040-13	Metal Fan Guard	40x40	C1010 Bright Basic Wire	Bright Nickel Chrome
MF-060-09	Metal Fan Guard	60x60	C1010 Bright Basic Wire	Bright Nickel Chrome
MF-080-01	Metal Fan Guard	80x80	C1010 Bright Basic Wire	Bright Nickel Chrome
MF-120-05	Metal Fan Guard	120x120	C1010 Bright Basic Wire	Bright Nickel Chrome

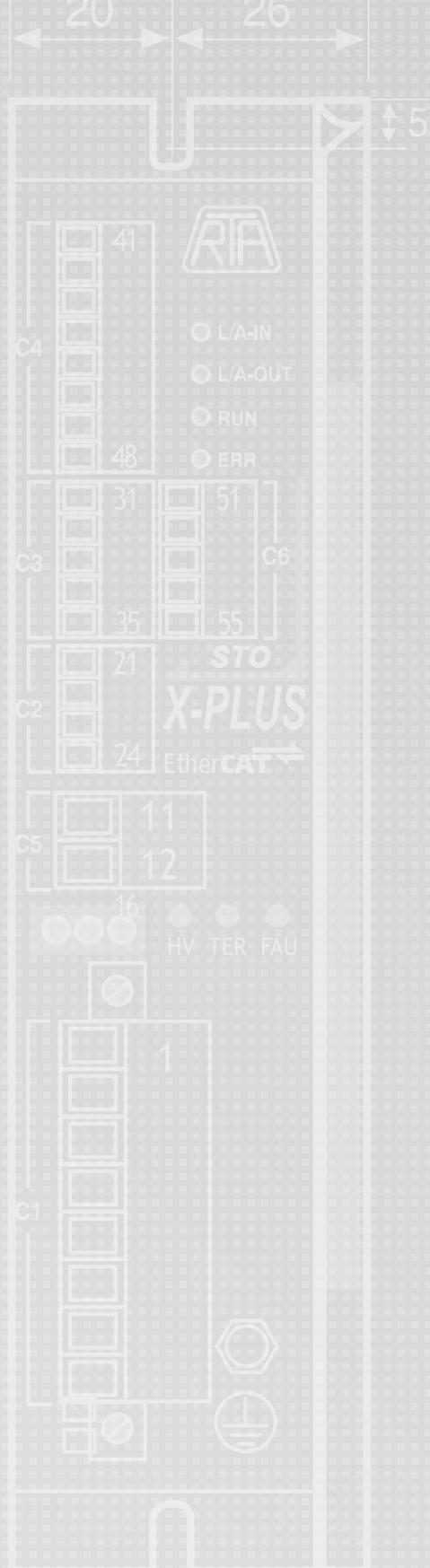
Other sizes Available

### Table of contents

#### ACCESSORIES

	DESCRIPTION	SUITABLE FOR FANS (mm)	MATERIALS	COLOR
<b>PLASTIC FAN FILTERS</b>				
FRM-325-A080	Plastic Fan Filter	80x80	Guard: Plastic Filter: PU Foam	Black
FRM-450-A120	Plastic Fan Filter	120x120	Guard: Plastic Filter: PU Foam	Black

Other sizes Available



**ITALY**

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 www.rta-india.in



**CATALOGUE  
 DIGITAL EDITION**



**Look Ahead!**