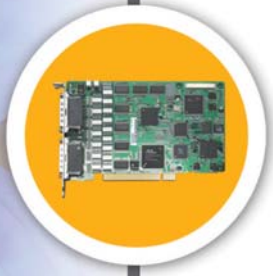
Reliable & Smart™

# AC SERVO SYSTEM & MOTION

## Top Performance General Servo and Controller for Various Motion Contorls

Servo Drive

Servo Motor

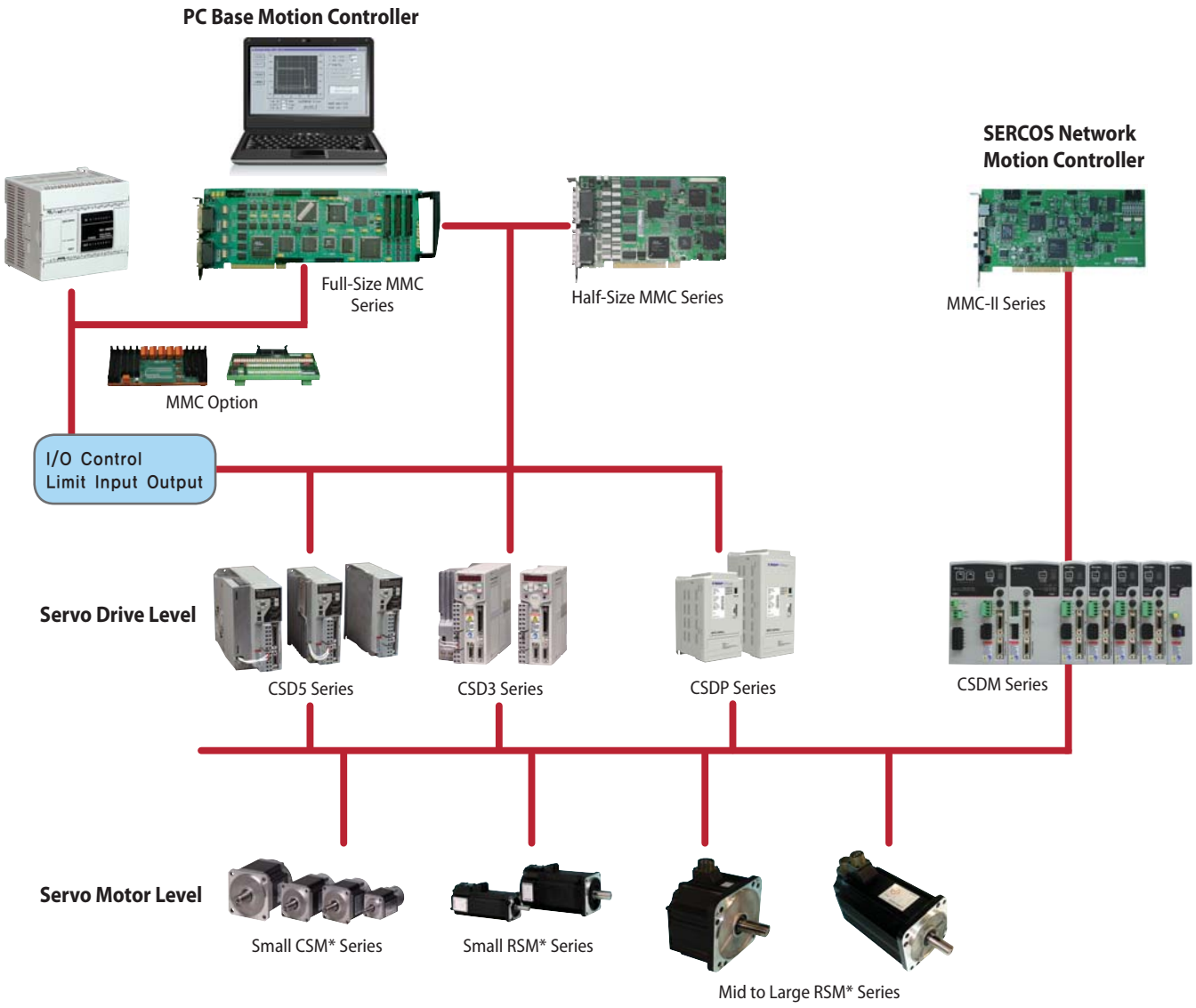


Motion Controller

RS Reliable & Smart Automation

# AC Servo and Motion product

**Provides a wide range of choices to customers with various products of Servo Drive and Motion Control.**



# Full Digital AC Servo System

The Full Digital AC Servo System supports high precision control with the high performance, highly functional servo. It's ultra miniaturized & ultra light weighted all-in-one type of design encompassing the source of electricity, you may implement the most optimal system in the world.

## Contents

# Servo Drive & Motor

The CSD Series and Motor Series, ultra-compact power built in servo drives for high precision control.

## ▶ Wide range multi-purpose servo drive CSD5

- Compatible with various motors from 50W to 1.5kW
- Improved performance
  - Online system vibration restraining feature
  - Speed response frequency: 800Hz
  - P/PI control auto switching feature
  - 3Mpps high-speed pulse input
- Enhanced user convenience
  - One parameter tuning
  - Powerful PC interface, Ultraware
  - Convenient RS485 communication cable connection
  - Supports Modbus-RTU protocol
- Indexing feature
- Linear motor solution
- Reduced inrush current (15.6APeak)
- Reduced leakage current (up to 10mA)

## ▶ Mid to large capacity servo drive CSDP

- Compatible with various motor capacities from 2kW to 5kW
- Stable PWM control using next generation IPM
- Equipped with high performance 32-bit DSP
- Speed monitoring system to prevent speed ripples during low speed driving
- Speed response frequency: 400Hz
- 17-bit serial encoder can be used

## ▶ Servo Motor

- Supports various capacities from 50W to 5kW
- Supports general incremental encoder and 17-bit serial encoder
- The motor is compatible with various dedicated devices series configuration
- Compatible with special custom made motors
- Conforms to fast delivery requests

# Drive and Motor Selection

## Drive Model Code Format

| C | S | D | 5 | _ | 0 | 1 | B | X | 1 |
|---|---|---|---|---|---|---|---|---|---|

**Model Name**

| |
|---|
| CSD5 Series |
| CSDP Series |

**Rated Output (W)**

| | |
|---|---|
| A5 | 50 W |
| 01 | 100 W |
| 02 | 200W |
| 04 | 400W |
| 08 | 800W |
| 10 | 1kW |
| 15 | 1.5kW |
| 20 | 2kW |
| 30 | 3kW |
| 40 | 4kW |
| 50 | 5kW |

**Input Voltage (V)**

| | |
|---|---|
| B | 220V |

**Designing Order**

| | |
|---|---|
| X1 | Ver.1 |

## Servo Motor Model Code Format

| R | S | M | R | _ | 0 | 1 | B | A | 1 | A | N | K | 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Motor Type**

| |
|---|
| CSMT Series |
| CSMR Series |
| RSMZ Series |
| RSMQ Series |
| RSMD Series |
| RSMH Series |
| RSMS Series |

**Rated Output (W)**

| | |
|---|---|
| A5 | 50 W |
| 01 | 100 W |
| : | : |
| 45 | 4.5kW |
| 50 | 5kW |

**Input Voltage (V)**

| | |
|---|---|
| B | 220V |

**Designing Order**

| | |
|---|---|
| 1 | Ver.1 |

**Encoder Type**

| | |
|---|---|
| B | 2048 P/R |
| A | 2500 P/R |
| Q | 17-bit Abs. |
| R | 17-bit inc. |

**Motor Axis Type**

| | |
|---|---|
| A | Key Type |

**Option**

| | |
|---|---|
| N | None |
| S | Oil seal |
| B | Brake |
| T | Oil seal, Brake |

**Motor Axis Specification**

| | |
|---|---|
| 3 | Key Type |

# CSD5 Specifications

| Items | | | | 50W,100W, 200W, 400W | 800W | 1kW, 1.5kW |
|---|---|---|---|---|---|---|
| Basic Specifications | Power Supply[1] | | Main Circuit Power | Single-phase 200 to 240V, 50/60Hz | 3-phase/Single-phase 200 to 240V (Default: 3-phase) | 3-phase 200 to 240V, 50/60Hz |
| | | | Control Power | Single-phase 200 to 240V, 50/60Hz | | |
| | Control Methods | | | SVPWM control via IPM | | |
| | Encoder [2] | | | 2048/2500 (Incremental type), 131072 P/R (17-bit serial incremental, absolute type) | | |
| | Ambient Temperature/Humidity for Use | | | 0°C to +50°C / 5% to 95% RH or below (non-condensing) | | |
| | Ambient Temperature/Humidity for Storage | | | -25°C to +85°C / 5% to 95% RH or below (non-condensing) | | |
| | Vibration / Impact Resistance | | | Vibration 2G / Shock 15G or less (1G equals gravity acceleration: 9.8m/s$^2$) | | |
| I/O Specifications | Position | | Output Specification | Encoder A, B, Z-phase output (line driver output) | | |
| | | | Freequency Division Ratio | N/M (N, M ≤ 32768) | | |
| | External Input | | | Allocation 10 points : servo ON/OFF, alarm reset, gain group shift, forward/reverse torque limit, forward/reverse revolution prohibition, P control shift, control mode shift, contact speed control instructions, zero-clamp, ignore pulse instructions, absolute value data transmission, position clear, contact mode start, Electronic gear rate shift, zero sensor, indexing pause, indexing stop, absolute value date reset, select index input 0 to 5, indexing start, homing start | | |
| | | | | Fixed 1 point : E-stop | | |
| | External Output | | | Allocation 3 points : positioning completion detection, position proximity detection, speed coincidence detection, rotation detection, torque limit detection, speed limit detection, brake control, warning, axis zero return, alarm, while in motion or Dwell, select index 0 to 5, sequence operation completion | | |
| | | | | Fixed 5 points: servo alarm code (3-bit), Z-pulse (open collector), servo alarm | | |
| Protective functions | Protective Function | | | Over-current, overload, overvoltage, over speed, IPM overheating, low voltage, CPU failure, encoder failure, communication disturbances, dynamic brake malfunction, etc. | | |
| | Dynamic Brake | | | Servo/control device,Off activated when the alarm goes off | | |
| | Regeneration [3] | | | For motors with 200 Watts or less, no neeed for regeneration resistance. For motors 400 Watt or more, it is mounted on the drive. | | |
| Monitoring | D/A 2CH | | | Position / speed / torque command, and feedback, position error (max, ±10V) | | |
| | LED | | | Charge (all models applied) | | |
| | 7. SEG LED | | | Monitoring error values, feedback values, Offset values, and command values of speed/torque/position/electrical angle/mechanical angle, load inertia ratio, and conditions of I/O. | | |
| | | | | Servo run, servo alarm | | |
| | External Communication, PC Software | | | RS-232/485, Modbus RTU, ASCII, RSWare | | |
| Speed control | Speed Input | Speed Control Range | | 1: 5,000 | | |
| | | Speed Change | Voltage Change | 220V, + 10 to -15%, 50/60Hz: 0.01% | | |
| | | | Load Change | 0 to100%; ±0.01% or less (at Rated Speed) | | |
| | | | Temperature Change | 25±25°; ±0.01% or less (at Rated Speed) | | |
| | | Frequency Characteristics | | 800Hz (JL = JM) | | |
| | | Acceleration/Deceleration Time constant setting | | 0 - 60 sec | | |
| | Rated Speed/ Torque Input | Speed [4] | Rated speed operation commend | DC ±10V (default is 6V at rated speed.) | | |
| | | | Input Impedance | Approx. 8.3MΩ | | |
| | | | Circuit Time Constant | Approx. 3.2μs | | |
| | | Torque | Rated Torque Command | DC ±10V (default is 3V at rated torque.) | | |
| | | | Input Impedance | Approx. 8.3MΩ | | |
| Position control | Feed Forward Compensatory | | | 0 ~ 100% (setting resolution: 1%) | | |
| | Input Signal | Commend Pulse | Types | CCW pulse + CW pulse, Sign+pulse, 90° phase difference 2-phase pulse (A-phase + B-phase) | | |
| | | | Pulse Type | Line drive (+5V), open collector (+5V, +12V, +24V), high frequency line drive (+5V) | | |
| | | | Pulse Frequency | 0 to 900 kpps (line drive), 0 to 250 kpps (open collector), 0 to 3MHz kpps (high frequency line drive) | | |
| | | | Control Signal | Clear, inhibit (pulse type) | | |
| Mounted type | | | | Base mounted | | |
| Others | | | | Torque control, position/speed mode, position/torque mode / indexing mode/combination control mode | | |
| | | | | Torque/Speed control mode, position/multi-level speed mode, zero-clamp drive, soft-start/stop, set speed, BrakeBrake control, JOG operation, auto tuning, reverse operation, etc. | | |

**PRECAUTIONS**

[1] Since CSD5 servo drive has a built-in DC power AMP, an additional DC power supply is not necessary. (DC 24V Power supply for external I/O is optional.)

[2] Output cannot be more than the number of Encoder pulses for one rotation of the motor.

[3] When the motor decelerates, regeneration energy is generated. Regeneration energy absorbed by the drive and the motor varies depending on the motor rotation speed and the load's inertia.

[4] In the speed control, it can rotate in one direction at the lowest speed due to the offset.

**NOTE:** Maximum allowed load inertia rate for RSMZ/Q motors is 30 for less than 200W, 15 for less than 1kW.
For RSMD/S/H motors, the rotor inertia is 10. Please be careful not to exceed the maximum allowed inertia for the motors.

# CSDP Specifications

| Classification | Items | Specification |
|---|---|---|
| Basic Specifications | Power Supply [1] | Input voltage(Vrms) 3-phase 200~230V, 50/60Hz |
| | | Control voltage(Vrms) single-phase 200~230V, 50/60Hz |
| | Control Method | PWM control via IPM |
| | Feedback Method [2] | 1000 / 2048 / 2500 / 10000 Inc Type, 17 bit Serial Inc/Abs type |
| | Ambient Temperature/Humidity for Use | 0℃ to +50℃ / 5% to 95% RH or below (non-condensing) |
| | Ambient Temperature/Humidity for Storage | -25℃ to +85℃ / 5% to 95% RH or below (non-condensing) |
| | Mounting Type | Base mounted type |
| Speed Torque Control Performance [3] | Speed Control Range | 1:5000 |
| | Rate of Load Change | Less than ±0.01% at the rated speed and load of 0 to100% |
| | Rate of Voltage Change | 0% at the rated speed and voltage of 220VAC |
| | Rate of Temperature Change | Less than 0.1% at the rated temperature and ambient temperature of 25°C |
| | Speed Response Frequency | 400 Hz |
| | Degree of Torque Control | ± 3% |
| | Acceleration/Deceleration Time | 0 - 60sec |
| Position Control Performance | Feed Forward | 0 - 100% |
| | Width of Position Determination | 0 - 250 pulse |
| Input Signal for Position Control Commands | Types of Command Pulse | CW+CCW, pulse row + sign row, Phase A+ Phase B (Phase difference of 90°) |
| | Types of Input Command | Line drive: level to level voltage 2.8 ~ 3.7V |
| | | Open collector: external voltage 24V, 12V, 5V |
| | Pulse Frequency | Line drive: max. 900kbpps |
| | | Open collector: max. 250kpps |
| | Control Signal | Position error clearance input (set to one of input terminals) |
| Input Signal for Speed, Torque Commands | Command Voltage | ± 10VDC (14-bit A/D conversion) |
| | Input Impedance | Approx. 8.3MΩ |
| | Circuit Constant | 35μs or below |
| Multi Stage Speed Command Input | Rotation Direction | The function should be assigned to the input terminal. |
| | Speed Selection | The function should be assigned to the input terminal. |
| Signal | Position Output Pattern | Line drive output: Phase A, B, Z, absolute encoder data |
| | | Open collector output: Phase Z |
| I/O Signal | Input | Servo on, alarm reset, gain group shift, forward/reverse torque limit, forward/reverse rotation prevention, P/PI control shift, control mode shift, multi stage speed command, zero clamp, position command pulse ignored, absolute encoder data transmission |
| | Output | Position determination complete, position proximity, in-speed, rotation detection, torque limit detection, speed limit detection, brake control output, servo alarm detection |
| Dynamic Brake | | When the servo power is off, the alarm is on, or overtravel occurs (depending on the condition) |
| Regenerative Resistance [4] | | Included in the drive |
| Protective Function | | Overcurrent, overvoltage, over speed, low voltage, CPU malfunction, communication failure |
| Monitoring | | 2CH D/A output for measuring errors in position/speed/torque command as well as feedback and position |

**PRECAUTIONS**

[1] Since CSDP servo drive has a built-in DC power AMP, an additional DC power supply is not necessary. (DC 24V Power supply for external I/O is optional.)

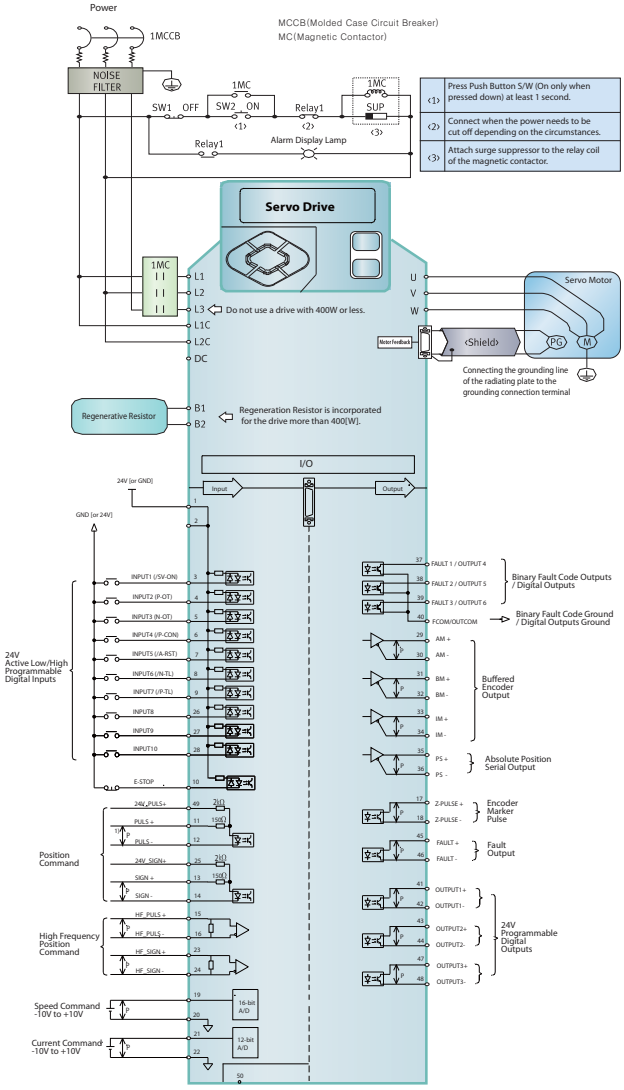
[2] Output cannot be more than the number of Encoder pulses for one rotation of the motor.

[3] When the motor decelerates, regeneration energy is generated. Regeneration energy absorbed by the drive and the motor varies depending on the motor rotation speed and the load's inertia.

[4] In the speed control, it can rotate in one direction at the lowest speed due to the offset.

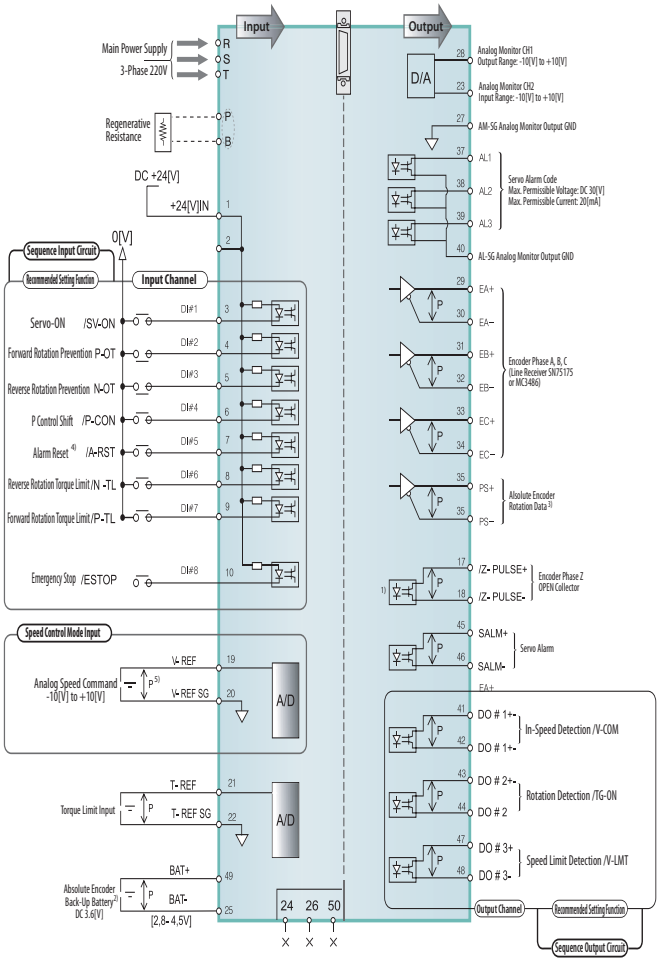
# Wiring Diagram

## CSD5 Series




1) Every ↕P represents a twisted pair of wire.

## CSDP Series

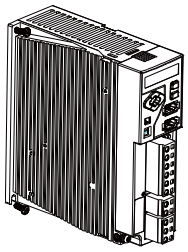



1) The capacity of the photo coupler at the output side is below DC 30V 50mA.
2) Please make a connection when you use the absloute encoder.
3) It is only valid for using an 11-bit absolute encoder.
4) The alarm reset is only valid when the contact point is turned on. (No level detection)
5) Every ↕P represents a twisted pair of wire.

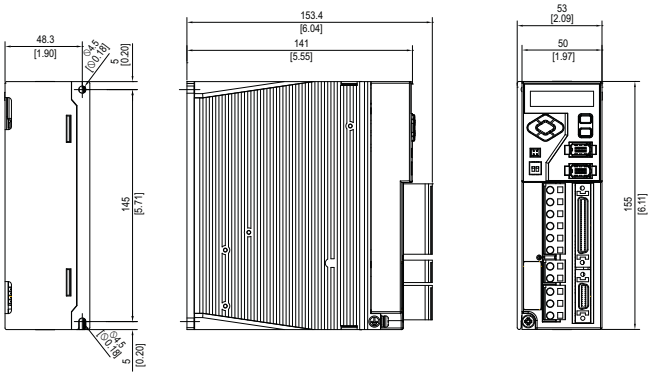
# Dimenstions

## CSD5 Series

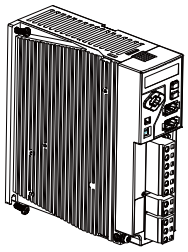
### 50W, 100W, 200W



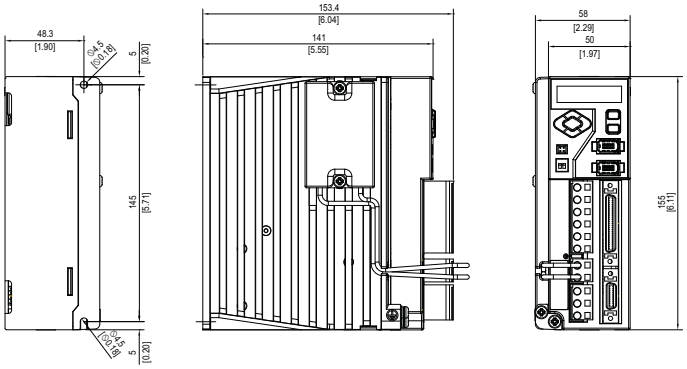
| Height | Width | Depth 1 |
|---|---|---|
| 155mm | 53mm | 153mm |



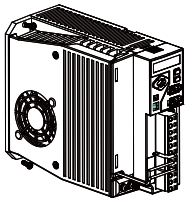

### 400W



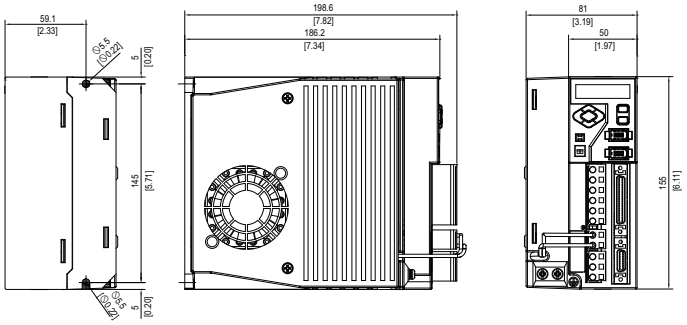
| Height | Width | Depth 1 |
|---|---|---|
| 155mm | 58mm | 153mm |




### 800W, 1kW, 1.5kW



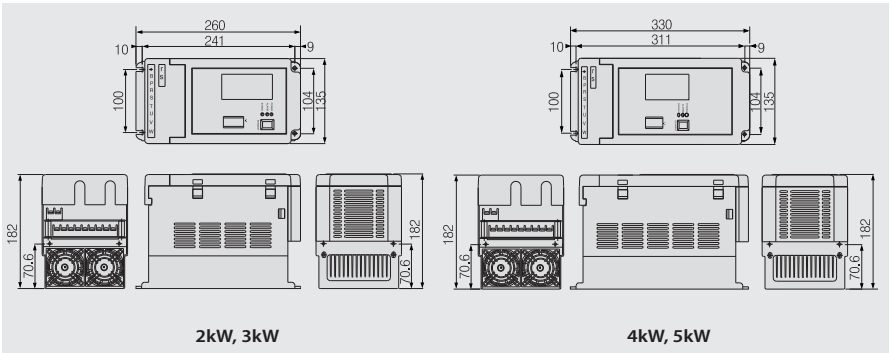
| Height | Width | Depth 1 |
|---|---|---|
| 155mm | 81mm | 198mm |




*CAD data of the above dimenstions are available to download at out company website (http://www.rsautoamtion.biz).

## CSDP Series

| Model | Rated Output | Voltage | Weight |
|---|---|---|---|
| CSDP_20BX2 | 2kW | 3Φ 200~230V 50/60Hz | 4.98kg |
| CSDP_30BX2 | 3kW | | |
| CSDP_40BX2 | 4kW | | 6.14kg |
| CSDP_50BX2 | 5kW | | |



# Combination of Motors and Controllers

| Servo Drive CSD5 | CSM Series | | RSM Series | | | |
|---|---|---|---|---|---|---|
| | CSMT | CSMR | RSMZ | RSMS | RSMD | RSMH |
| A5BX1 | _A5Bx | | _A5Bx | | | |
| 01BX1 | _01Bx | _01Bx | _01Bx | | | |
| 02BX1 | _02Bx | _02Bx | _02Bx | | | |
| 04BX1 | _04Bx | _04Bx | _04Bx | | | _05Bx |
| 08BX1 | _06Bx | | _06Bx | | | |
| | _08Bx | | _08Bx | | _08Bx | |
| 10BX1 | _10Bx | | _10Bx | _10Bx | _10Bx | _10Bx |
| 15BX1 | | | | _15Bx | _15Bx | _15Bx |

| Controller Type | Driving Motors (kW) | | |
|---|---|---|---|
| | RSMS | RSMD | RSMH |
| CSDP_20BX2 | _20Bx | _20Bx | _20Bx |
| CSDP_30BX2 | _25Bx | _25Bx | - |
| | _30Bx | _30Bx | _30Bx |
| CSDP_40BX2 | _35Bx | _35Bx | - |
| | _40Bx | _40Bx | _40Bx |
| CSDP_50BX2 | _45Bx | _45Bx | _50Bx |
| | _50Bx | _50Bx | |

# Servo Motor

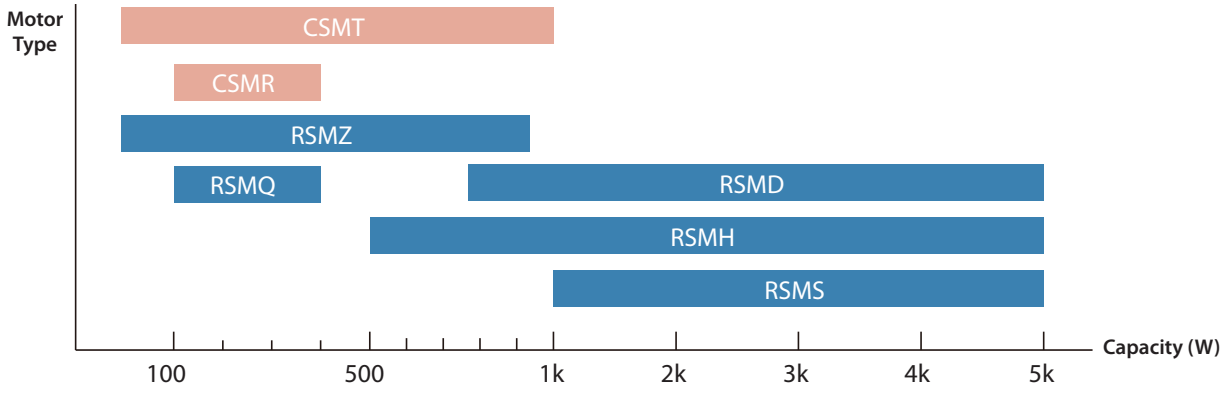
## Motor Classifications

| Motor Series | | Rated Output | Rated/ Maximum Speed [r/min] | Type | Encoder | | Protec-tion Degree | Features | Application Example |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2500p/r | 17bit serial Abs./Inc | | | |
| CSMT |  | 50W ~ 1kW | 3000/5000 | Cylinder | 2,048p/r Incremental | O | IP65[1] | Ultra low inertia | Robots, XY tables, Mounters, Semiconductor Equipments, Printing Machines |
| CSMR |  | 100W ~ 400W | 3000/5000 | Pan Cake | 2,048p/r Incremental | O | IP65[1] | Low inertia | Robot, XY tables, Mounter, Semiconductor Equipments, Printing Machines |
| RSMZ |  | 50W ~ 600W | 3000/5000 | Cylinder | O | O | IP65[2] | Ultra low inertia | Belt Drives, Robots, Mounters, Inserters, XY tables |
| | | 800W | 3000/4500 | | O | O | | | |
| | | 1kW | 3000/3500 | | O | O | | | |
| RSMQ |  | 100W ~ 400W | 3000/5000 | Pan Cake | O | O | IP65[2] | Low inertia | Robots, XY tables, Mounters, Sewing Machines, Food Processing Machines |
| RSMS |  | 1.0kW ~ 3.5kW | 3000/5000 | Cylinder | O | O | IP65[2] | Low inertia | High Frequency Positioning Equipments |
| | | 4.0kW ~ 5.0kW | 3000/4500 | | O | O | | | |
| RSMD |  | 0.8kW ~ 5kW | 2000/3000 | Cylinder | O | O | IP65[2] | Middle inertia | Conveyor Machines, Robots, XY tables |
| RSMH |  | 0.5kW ~ 5kW | 2000/3000 | Cylinder | O | O | IP65[2] | Ultra high inertia | Machine Tools, Winding Machines, Extruding Machines, Woodworking Machines |

1) Except axis penetration and connector.

2) Only for 'T' and 'S' of Option in Servo Motor Model Code Format, and except connector.

## Capacity according to Motor Type



# CSMT Motor Series

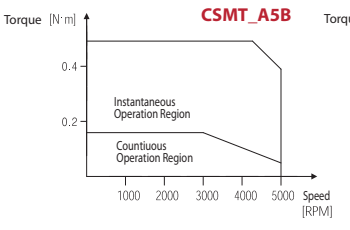
## Specifications

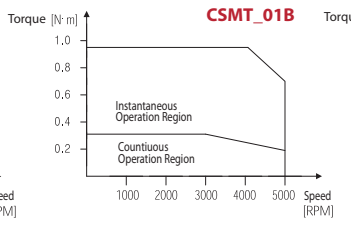
| Item | Unit | CSMT | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A5B | 01B | 02B | 04B | 06B | 08B | 10B |
| Flange Size | mm | 40 | 40 | 60 | 60 | 80 | 80 | 86 |
| Rated Output | W | 50 | 100 | 200 | 400 | 600 | 800 | 1000 |
| Rated Rotation Speed | r/min | 3000 | | | | | | |
| Max Rotation Speed | r/min | 5000 | | | | | | |
| Rated Torque | N·m | 0.159 | 0.318 | 0.64 | 1.27 | 1.91 | 2.39 | 3 |
| | kgf·cm | 1.62 | 3.25 | 6.5 | 13 | 19.5 | 24.4 | 30.9 |
| Max Instantaneous Torque | N·m | 0.48 | 0.95 | 1.91 | 3.82 | 5.73 | 7.16 | 9.1 |
| | kgf·cm | 4.9 | 9.7 | 19.5 | 39 | 58.5 | 73 | 92.6 |
| Rated Current | $A_{(rms)}$ | 0.6 | 1.1 | 1.7 | 3.3 | 4.4 | 5 | |
| Max Instantaneous Current | $A_{(rms)}$ | 1.6 | 3 | 5.0 | 9.7 | 12.9 | 14.5 | 20.4 |
| Rotator Inertia | gf·cm·sec² | 0.02 | 0.03 | 0.18 | 0.34 | 1 | 1.1 | 1.56 |
| | $\times 10^{-4}$kg·m² | 0.02 | 0.03 | 0.18 | 0.34 | 0.98 | 1.08 | 1.53 |
| Rotator Inertia (Brake) | gf·cm·sec² | 0.05 | 0.06 | 0.28 | 0.44 | 1.24 | 1.34 | 1.66 |
| | $\times 10^{-4}$kg·m² | 0.05 | 0.06 | 0.28 | 0.44 | 1.22 | 1.32 | 1.63 |
| Electrical Constant | ms | 0.9 | 0.6 | 0.9 | 0.6 | 0.6 | 0.6 | |
| Mechanical Constant | ms | 1.1 | 1.6 | 3.2 | 3.8 | 6 | 4.8 | 5.7 |
| Power Rating | kW/s | 12.9 | 34.5 | 23 | 48.7 | 37.3 | 51.3 | 56.4 |
| Shaft Friction Torque | kgf·cm MAX | 0.2 | | 0.4 | | 0.8 | | 1.5 |
| Shaft Direction Gap | mm MAX | 0.2 | | | | | | |
| Paint Color | | Black | | | | | | |
| Mass | Kg | 0.4 | 0.5 | 0.9 | 1.3 | 2.2 | 2.5 | 3.7 |
| Driving Power Supply Voltage | VAC | 220 | | | | | | |
| Allowable Radial Weight | Kgf | 8 | 8 | 20 | 20 | 35 | 35 | 35 |
| Allowable Thrust Weight | Kgf | 4 | 4 | 7 | 7 | 10 | 10 | 10 |

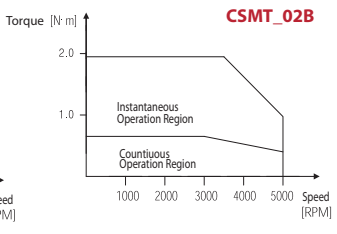
### PRECAUTIONS

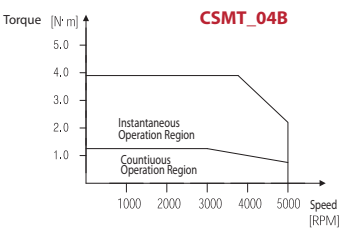
1. If you wish to use the rated torque, you need to attach a 200mm x 200mm x 12mm (100W or higher), 305mm x 305mm x 12mm (200W or higher) sluminum heat sink to the motor. Temperature should be 40°C.
2. Every measurement value was obtained at 20°C.
3. Each value is a value obtained by combining it to the driver.
4. If you use a brake, then the inertia weight is likely to increase.

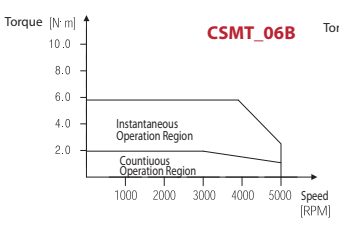
## Speed-Torque Curves

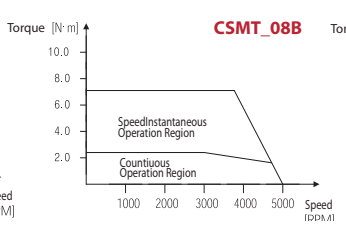


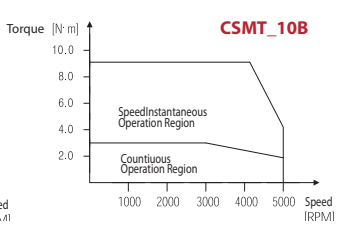



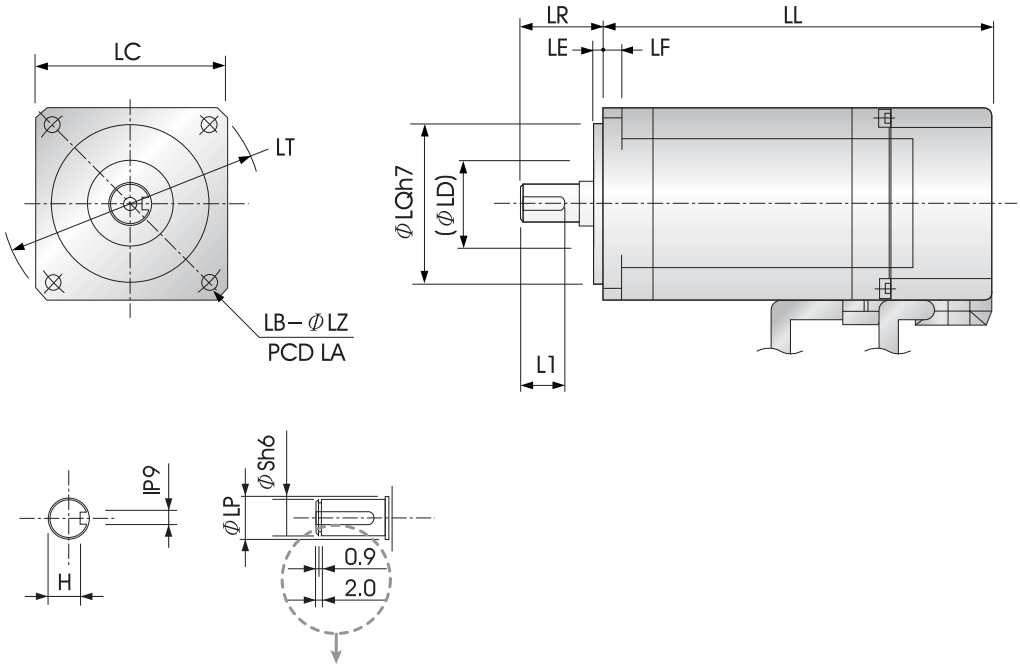



# CSMT Motor Series

## External Dimension




*Only valid for 100W or lower.

| Motor Type | | CSMT | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Rated Output (W) | | 50 | 100 | 200 | 400 | 600 | 800 | 1000 |
| LL | Brake (No) | 59.5 | 73.5 | 76.1 | 98.1 | 99.7 | 108.7 | 144.2 |
| | Brake (Yes) | 95.1 | 109.1 | 110.7 | 132.7 | 136.3 | 145.3 | 167.2 |
| LR | | 25 | | 30 | | 35 | | 35 |
| S | | 8 | | 12 | | 16 | | 16 |
| LA | | 46 | | 70 | | 90 | | 100 |
| LB | | 2 | | 4 | | 4 | | 4 |
| LC | | 40 | | 60 | | 80 | | 86 |
| LD | | 20 | | 27 | | 34 | | 34 |
| LE | | 2.5 | | 3 | | 3 | | 3 |
| LF | | 5 | | 6 | | 8 | | 8 |
| LZ | | 4.5 | | 5.5 | | 6.6 | | 6.6 |
| LH | | 4.5 | | 7 | | 7 | | 7 |
| LP | | 8.9 | | 14 | | 19.8 | | 19.8 |
| LQ | | 30 | | 50 | | 70 | | 80 |
| LT | | 55 | | 80 | | 105 | | 112 |
| L1 | | 17 | | 18 | | 23 | | 23 |
| H | | 6.2 | | 9.5 | | 13 | | 13 |
| I | | 3 | | 4 | | 5 | | 5 |

# CSMR Motor Series

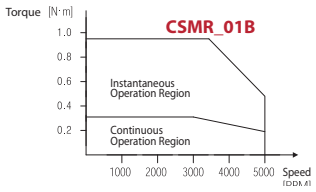
## Specifications

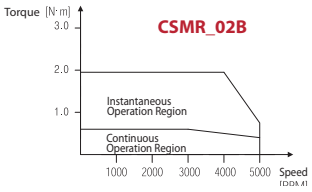
| Item | Unit | CSMR Series | | |
|---|---|---|---|---|
| | | 01B | 02B | 04B |
| Flange Size | mm | 60 | 80 | 80 |
| Rated Output | W | 100 | 200 | 400 |
| Rated Rotation Speed | r/min | 3000 | | |
| Max Rotation Speed | r/min | 5000 | | |
| Rated Torque | N·m | 0.318 | 0.64 | 1.27 |
| | kgf·cm | 3.25 | 6.5 | 13 |
| Max Instantaneous Torque | N·m | 0.95 | 1.91 | 3.82 |
| | kgf·cm | 9.7 | 19.5 | 39 |
| Rated Current | $A_{(rms)}$ | 0.9 | 1.5 | 2.8 |
| Max Instantaneous Current | $A_{(rms)}$ | 2.6 | 4.3 | 8.0 |
| Rotator Inertia | gf·cm·sec$^2$ | 0.09 | 0.3 | 0.57 |
| | $\times 10^{-4}$kg·m$^2$ | 0.09 | 0.3 | 0.56 |
| Rotator Inertia (Brake) | gf·cm·sec$^2$ | 0.19 | 0.53 | 0.8 |
| | $\times 10^{-4}$kg·m$^2$ | 0.19 | 0.53 | 0.79 |
| Electrical Constant | ms | 1.2 | 1 | 0.6 |
| Mechanical Constant | ms | 2.5 | 3.2 | 4.8 |
| Power Rating | kW/s | 11.5 | 13.8 | 29.1 |
| Shaft Friction Torque | kgf·cm MAX | 0.2 | 0.6 | 0.6 |
| Shaft Direction Gap | mm MAX | 0.2 | 0.2 | 0.2 |
| Paint Color | | Black | | |
| Mass | Kg | 0.6 | 1.1 | 1.6 |
| Driving Power Supply Voltage | $V_{AC}$ | 220 | | |
| Allowable Radial Weight | kgf | 8 | 20 | 20 |
| Allowable Thrust Weight | kgf | 4 | 7 | 7 |

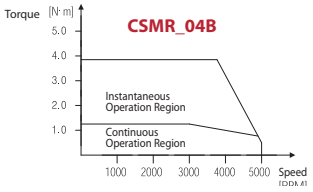
**PRECAUTIONS**

1. If you wish to use the rated torque, you need to attach a 305x305x12(mm) sluminum heat sink to the motor. Temperature should be 40°C.
2. Every measurement value was obtained at 20°C.
3. Each value is a value obtained by combining it to the driver.
4. If you use a brake, then the inertia weight is likely to increase.

## Speed-Torque Curves

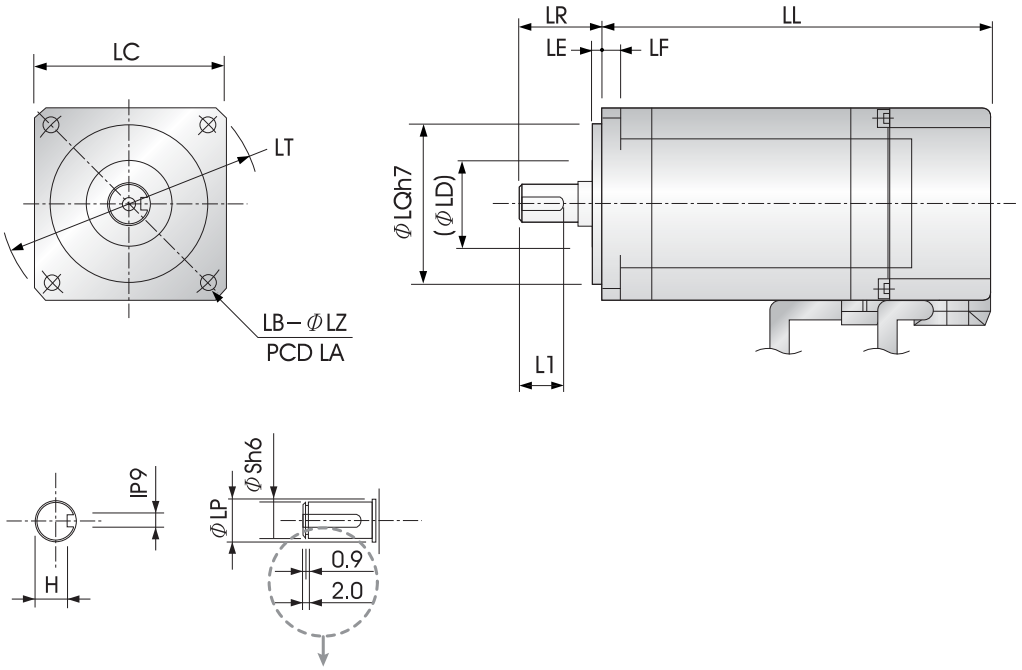


# CSMR Motor Series

## External Dimension




*Only valid for 100W or lower.

| Motor Type | | CSMR | | |
|---|---|---|---|---|
| Rated Output (W) | | 100 | 200 | 400 |
| LL | Brake (No) | 62.5 | 64.3 | 76.3 |
| | Brake (Yes) | 86.5 | 95.3 | 107.3 |
| LR | | 30 | 30 | |
| S | | 12 | 12 | |
| LA | | 70 | 90 | |
| LB | | 4 | 4 | |
| LC | | 60 | 80 | |
| LD | | 27 | 27 | |
| LE | | 3 | 3 | |
| LF | | 6 | 8 | |
| LZ | | 5.5 | 6.6 | |
| LH | | 7 | 7 | |
| LP | | 14 | 14 | |
| LQ | | 50 | 70 | |
| LT | | 80 | 105 | |
| L1 | | 18 | 18 | |
| H | | 9.5 | 9.5 | |
| I | | 4 | 4 | |

# RSMZ Motor Series

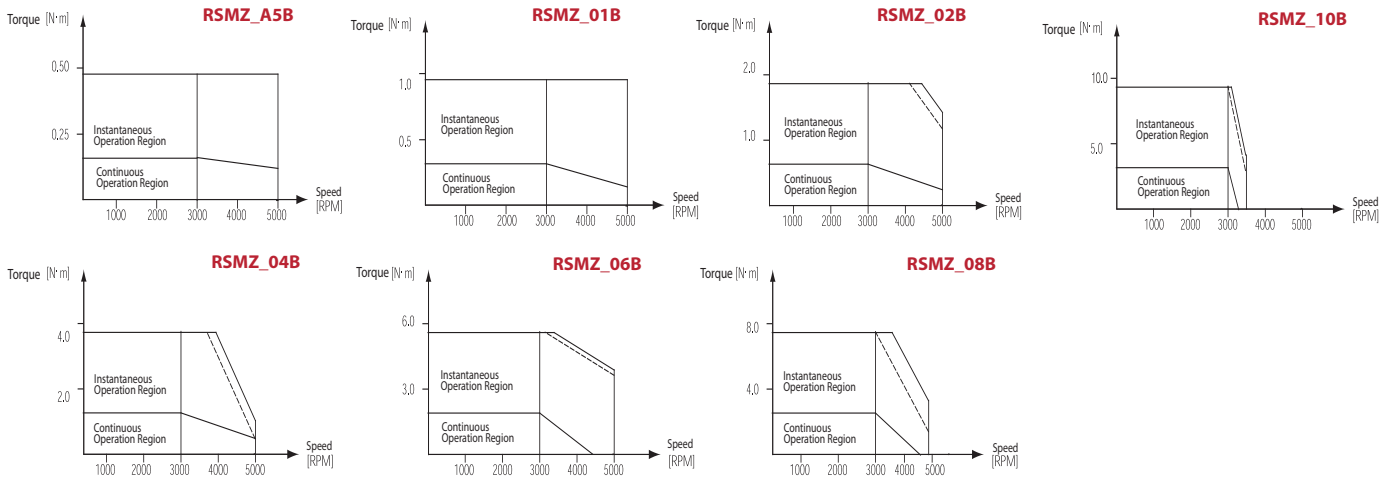
## Specifications

| Item | Unit | RSMZ Series | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A5B | 01B | 02B | 04B | 06B | 08B | 10B |
| Flange Size | mm | 40 | 40 | 60 | 60 | 80 | 80 | 80 |
| Rated Output | W | 50 | 100 | 200 | 400 | 600 | 750 | 950 |
| Rated Rotation Speed | r/min | 3000 | | | | | | |
| Max Rotation Speed | r/min | 5000 | | | | | 4500 | 3500 |
| Rated Torque | N·m | 0.16 | 0.32 | 0.64 | 1.3 | 1.91 | 2.4 | 3 |
| | kgf·cm | 1.62 | 3.24 | 6.5 | 13 | 19.49 | 24.3 | 30.9 |
| Max instantaneous Torque | N·m | 0.48 | 0.95 | 1.91 | 3.8 | 5.73 | 7.1 | 9.1 |
| | kgf·cm | 4.9 | 9.7 | 19.5 | 39 | 58.47 | 73 | 92.6 |
| Rated Current | A(rms) | 1 | 1 | 1.6 | 2.5 | 4.1 | 4.3 | 4.3 |
| Max Instantaneous Current | $A_{(O-P)}$ | 4.3 | 4.3 | 6.89 | 10.5 | 17.4 | 18.3 | 18.3 |
| Rated Inertia 2500P/R Inc./17-bit Abs. | $\times10^{-4}$kg·m$^2$ | 0.030/0.024 | 0.059/0.054 | 0.19/0.18 | 0.34/0.33 | 0.93/0.92 | 1.2 | 1.47 |
| | gf·cm·sec$^2$ | 0.031/0.024 | 0.060/0.055 | 0.19/0.18 | 0.35/0.34 | 0.95/0.94 | 1.22 | 1.5 |
| Rated Inertia (Brake) 2500P/R Inc./17-bit Abs. | $\times10^{-4}$kg·m$^2$ | 0.034/0.029 | 0.061/0.056 | 0.21/0.20 | 0.36/0.35 | 1.05/1.04 | 1.32 | 1.49 |
| | gf·cm·sec$^2$ | 0.035/0.030 | 0.062/0.057 | 0.21/0.20 | 0.37/0.36 | 1.07/1.06 | 1.35 | 1.52 |
| Electrical Constant | ms | 0.67 | 0.88 | 3.4 | 3.5 | 7.3 | 7.4 | 7.6 |
| Mechanical Constant 2500P/R Inc./17-bit Abs. | ms | 1.58/1.3 | 0.90/0.82 | 0.84/0.79 | 0.59/0.57 | 0.4/0.39 | 0.44 | 0.33 |
| | ms(Brake) | 1.80/1.5 | 0.93/0.85 | 0.92/0.88 | 0.63/0.61 | 0.45/0.44 | 0.5 | 0.34 |
| Power Rating 2500P/R Inc./17-bit Abs. | kW/s | 8.7/10.9 | 17.7/19.4 | 21.8/23.0 | 48.7/50.2 | 39.2/39.7 | 48.3 | 62.2 |
| | kW/s (Brake) | 7.7/8.9 | 17.1/18.7 | 19.7/20.7 | 46.0/47.4 | 34.7/35.1 | 43.9 | 61.4 |
| Insulation Class | | B | | | | | | |
| Vibration Class | | V-15 | | | | | | |
| Paint Color | | Black | | | | | | |
| Mass | kg | 0.39 | 0.66 | 1 | 1.7 | 2.9 | 3.5 | 4.1 |
| | kg(Brake) | 0.63 | 0.93 | 1.5 | 2.3 | 3.5 | 4.3 | 4.9 |
| Driving Power Supply Voltage | $V_{AC}$ | 200/220 | | | | | | |
| Allowable Radial Weight | N | 68 | 68 | 245 | 245 | 392 | 392 | 392 |
| Allowable Thrust Weight | N | | 58 | 98 | 98 | 147 | 147 | 147 |

**PRECAUTIONS**

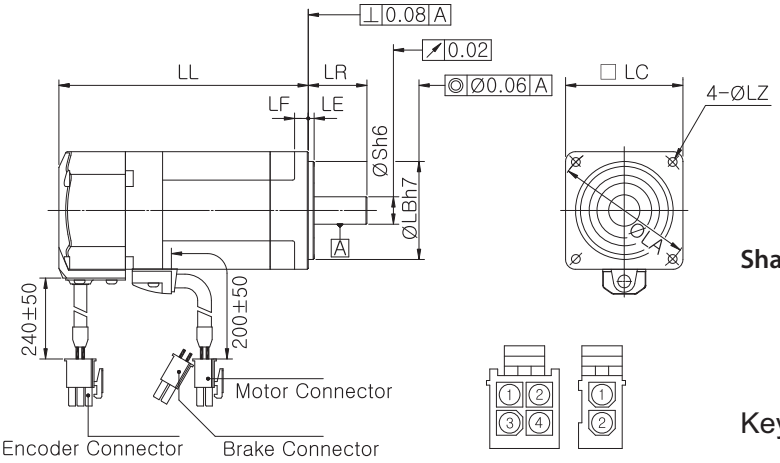
1. The above features are obtained from ideal sinusoids (typical value at 20°).
2. For IP65 (If the outgoing line is faced downward, excluding the connector part).
3. Temperature measured at the center of the motor frame should be below 65°C (40°C).

## Speed-Torque Curves



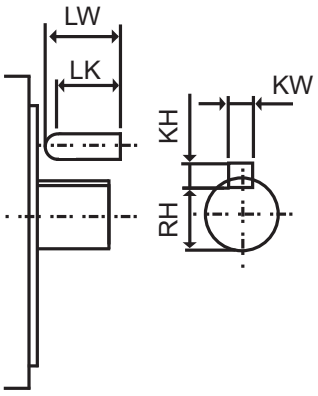
# RSMZ Motor Series

## External Dimenstion & Connector Specifications




### Shaft Specifications

Key




### Specifications of Motor/Brake Connector

| Brake | Standard | | With Brake | |
|---|---|---|---|---|
| Part no. | AMP/ 172167-1 | | AMP/ 172167-1<br>AMP/ 172165-1 | |
| Pin spec. | Pin no. | Signal | Pin no. | Signal |
| | 1 | U | 1 | U |
| | 2 | V | 2 | V |
| | 3 | W | 3 | W |
| | 4 | FG | 4 | FG |
| | | | 1 | BR |
| | | | 2 | BR |

### RSMZ Motor Series Shaft Specifications

| Motor | Size | | | | |
|---|---|---|---|---|---|
| | LK /LW/ LN (D-cut) | LK | KW | KH | RH/ LP (D-cut) |
| RSMZ_A5B | 14 | 12.5 | 3h9 | 3 | 6.2 |
| RSMZ_01B | 14 | 12.5 | 3h9 | 3 | 6.2 |
| RSMZ_02B | 20 | 18 | 4h9 | 4 | 8.5 |
| RSMZ_04B | 25 | 22.5 | 5h9 | 5 | 11 |
| RSMZ_06B | 25 | 22 | 6h9 | 6 | 12.5 |
| RSMZ_08B | 25 | 22 | 6h9 | 6 | 15.5 |
| RSMZ_10B | 25 | 22 | 6h9 | 6 | 15.5 |

| Series | | RSMZ | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | | A5 | | 01 | | 02 | | 04 | | 06 | | 08 | | 10 | |
| | | ABS | INC | ABS | INC | ABS | INC | ABS | INC | ABS | INC | ABS | INC | ABS | INC |
| LL | Standard | 81.5 | 68 | 111.5 | 98 | 98 | 84.5 | 127.5 | 114 | 128 | 115 | 146 | 133 | 164 | 151 |
| | With Brake | 112.5 | 100 | 142.5 | 130 | 130.5 | 118 | 160 | 147.5 | 163 | 150 | 181 | 168 | 199 | 186 |
| LR | | 25 | | 25 | | 30 | | 30 | | 35 | | 35 | | 35 | |
| S | | 8 | | 8 | | 11 | | 14 | | 16 | | 19 | | 19 | |
| LA | | 45 | | 45 | | 70 | | 70 | | 90 | | 90 | | 90 | |
| LB | | 30 | | 30 | | 50 | | 50 | | 70 | | 70 | | 70 | |
| LC | | 40 | | 40 | | 60 | | 60 | | 80 | | 80 | | 80 | |
| LE | | 3 | | 3 | | 3 | | 3 | | 3 | | 3 | | 3 | |
| LF | | 6 | | 6 | | 7 | | 7 | | 8 | | 8 | | 8 | |
| LZ | | 3.6 | | 3.6 | | 5.5 | | 5.5 | | 6.6 | | 6.6 | | 6.6 | |

# RSMQ Motor Series

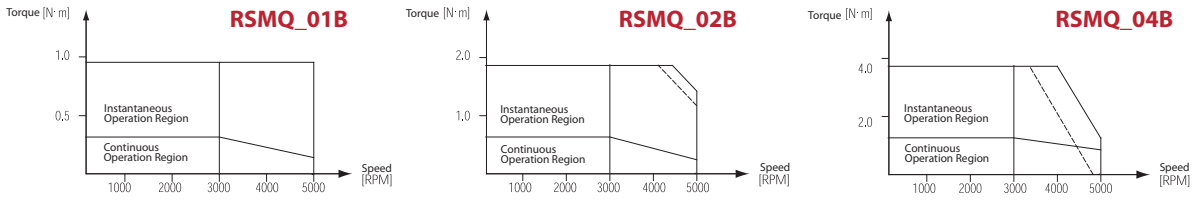
## Specifications

| Item | Unit | RSMQ | | |
|---|---|---|---|---|
| | | 01B | 02B | 04B |
| Flange Size | mm | 60 | 80 | 80 |
| Rated Output | W | 100 | 200 | 400 |
| Rated Rotation Speed | r/min | 3000 | | |
| Max Rotation Speed | r/min | 5000 | | |
| Rated Torque | N·m | 0.32 | 0.64 | 1.3 |
| | kgf·cm | 3.24 | 6.5 | 13 |
| Max Instantaneous Torque | N·m | 0.95 | 1.91 | 3.82 |
| | kgf·cm | 9.7 | 19.5 | 39 |
| Rated Current | A(rms) | 1.0 | 1.6 | 2.5 |
| Rotator Inertia 2500P/R Inc./17-bit Abs. | $\times 10^{-4}$kg·m$^2$ | 0.11/0.10 | 0.36/0.35 | 0.62/0.61 |
| | gf·cm·sec$^2$ | 0.11/0.10 | 0.37/0.36 | 0.63/0.62 |
| Rotator Inertia (Brake) 2500P/R Inc./17-bit Abs. | $\times 10^{-4}$kg·m$^2$ | 0.14/0.13 | 0.49/0.48 | 0.74/0.74 |
| | gf·cm·sec$^2$ | 0.14/0.13 | 0.50/0.49 | 0.76/0.76 |
| Electrical Constant | ms | 2.9 | 5.6 | 6.6 |
| Mechanical Constant 2500P/R Inc./17-bit Abs. | ms | 1.35/1.22 | 0.87/0.85 | 0.62/0.61 |
| | ms(Brake) | 1.71/1.56 | 1.17/1.15 | 0.74/0.74 |
| Power Rating 2500P/R Inc./17-bit Abs. | kW/s | 9.4/10.3 | 11.5/11.8 | 26.7/27.2 |
| | kW/s(Brake) | 7.4/8.04 | 8.5/8.6 | 22.4/22.4 |
| Max Instantaneous Current | $A_{(O-P)}$ | 4.30 | 6.9 | 10.49 |
| Insulation Class | | B | | |
| Vibration Class | | V-15 | | |
| Paint Color | | Black | | |
| Mass | kg | 0.78 | 1.5 | 2.1 |
| | kg(Brake) | 1.2 | 2.3 | 3.0 |
| Driving Power Supply Voltage | $V_{AC}$ | 200/220 | | |
| Allowble Radial Weight | N | 68 | 245 | 245 |
| Allowble Thrust Weight | N | 58 | 98 | 98 |

**Precautions**

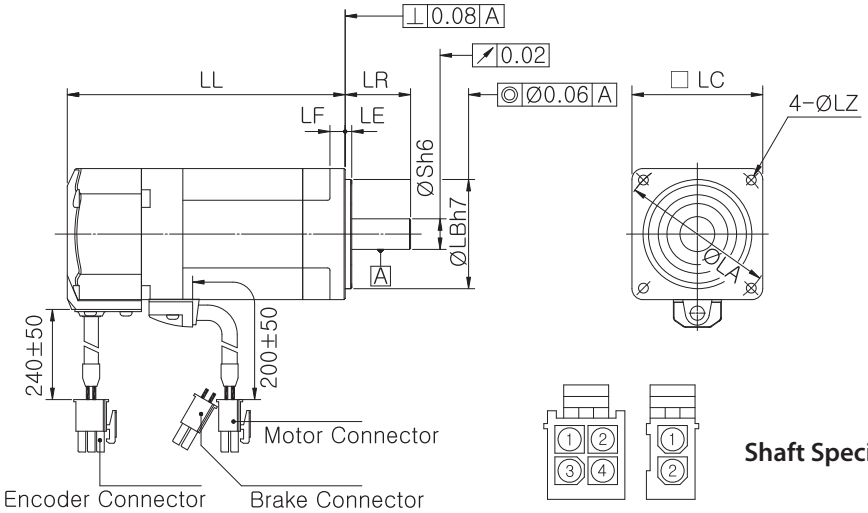
1. The above features are obtained from ideal sinusoids (typical value at 20°).
2. For IP65 (If the outgoing line is faced downward, excluding the connector part).
3. Temperature measured at the center of the motor frame should be below 65°C (40°C).

## Speed-Torque Curves

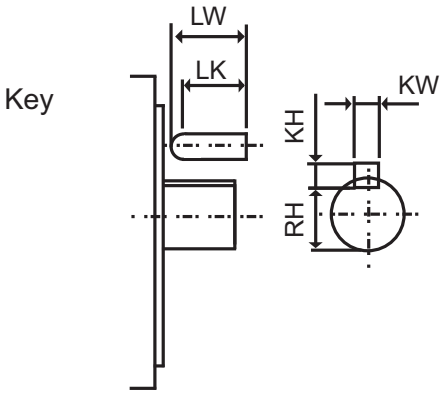


# RSMQ Motor Series

## External Dimention & Connector Specifications




### Shaft Specifications




### Specifications of Motor/Brake Connector

| Brake | Standard | | With Brake | |
|---|---|---|---|---|
| Part no. | AMP/ 172167-1 | | AMP/ 172167-1<br>AMP/ 172165-1 | |
| Pin spec. | Pin no. | Signal | Pin no. | U |
| | 1 | U | 1 | V |
| | 2 | V | 2 | W |
| | 3 | W | 3 | FG |
| | 4 | FG | 4 | BR |
| | | | 1 | BR |
| | | | 2 | BR |

### RSMQ Motor Series Shaft Specifications

| Motor | Size | | | | |
|---|---|---|---|---|---|
| | LW/ LN (D-cut) | LK | KW | KH | RH/ LP (D-cut) |
| RSMQ_01B | 14 | 12.5 | 3h9 | 3 | 6.2 |
| RSMQ_02B | 20 | 18 | 4h9 | 4 | 8.5 |
| RSMQ_04B | 25 | 22.5 | 5h9 | 5 | 11 |

| Series | | RSMQ | | | | | |
|---|---|---|---|---|---|---|---|
| Model | | 01B | | 02B | | 04B | |
| | | ABS | INC | ABS | INC | ABS | INC |
| LL | Standard | 85.5 | 72 | 96 | 83 | 111 | 98 |
| | With Brake | 118 | 105.5 | 131 | 118 | 146 | 133 |
| LR | | 25 | | 30 | | 30 | |
| S | | 8 | | 11 | | 14 | |
| LA | | 70 | | 90 | | 90 | |
| LB | | 50 | | 70 | | 70 | |
| LC | | 60 | | 80 | | 80 | |
| LE | | 3 | | 3 | | 3 | |
| LF | | 7 | | 8 | | 8 | |
| LZ | | 5.5 | | 6.6 | | 6.6 | |

# RSMS Motor Series

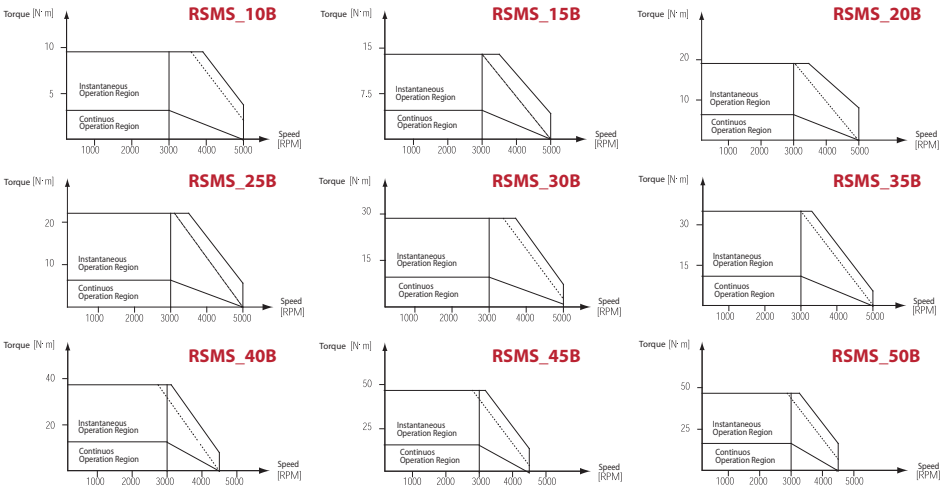
## Specifications

| Item | Unit | RSMS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 10B | 15B | 20B | 25B | 30B | 35B | 40B | 45B | 50B |
| Flange Size | mm | 100 | 100 | 100 | 100 | 120 | 120 | 130 | 130 | 130 |
| Rated Output | W | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 |
| Rated Rotation Speed | r/min | 3000 | | | | | | | | |
| Max Rotation Speed | r/min | 5000 | | | | | | 4500 | | |
| Rated Torque | N·m | 3.18 | 4.77 | 6.37 | 7.96 | 9.54 | 11.14 | 12.7 | 14.3 | 15.9 |
| | kgf·cm | 32.45 | 48.7 | 65 | 81.2 | 97.35 | 113.7 | 130 | 146 | 162 |
| Max Instantaneous Torque | N·m | 9.5 | 14.5 | 19.24 | 23.8 | 28.59 | 33.3 | 37.9 | 42.9 | 47.6 |
| | kgf·cm | 96.94 | 148 | 196.3 | 242.9 | 291.7 | 339.8 | 387 | 438 | 486 |
| Rated Current | A(rms) | 7.2 | 9.4 | 13 | 15.9 | 20 | 21.6 | 24.7 | 29 | 28.5 |
| Rotator Inertia | $\times 10^{-4}$kg·m$^2$ | 2.06 | 2.39 | 3.04 | 3.78 | 5.99 | 6.93 | 12.4 | 13.6 | 16 |
| | gf·cm·sec$^2$ | 2.1 | 2.44 | 3.1 | 3.86 | 6.11 | 7.07 | 12.7 | 13.9 | 16.3 |
| Rotator Inertia(Brake) | $\times 10^{-4}$kg·m$^2$ | 2.5 | 2.84 | 3.49 | 4.23 | 6.44 | 7.38 | 13.7 | 14.9 | 17.3 |
| | gf·cm·sec$^2$ | 2.55 | 2.9 | 3.56 | 4.32 | 6.57 | 7.53 | 14 | 15.2 | 17.7 |
| Electrical Constant | ms | 9.19 | 10.49 | 11.17 | 11.1 | 16.35 | 20.2 | 20 | 25.7 | 20 |
| Mechanical Constant | ms | 0.87 | 0.54 | 0.53 | 0.52 | 0.42 | 0.38 | 0.58 | 0.45 | 0.48 |
| | ms(Brake) | 1.05 | 0.64 | 0.6 | 0.59 | 0.44 | 0.41 | 0.64 | 0.49 | 0.52 |
| Power Rating | kW/s | 50.08 | 97.21 | 136.29 | 171.16 | 155.1 | 183 | 134 | 154 | 161 |
| | kW/s(Brake) | 41.3 | 81.81 | 118.72 | 152.95 | 144.3 | 172 | 121 | 140 | 149 |
| Max Instantaneous Current | $A_{(O-P)}$ | 29.7 | 40.02 | 56 | 68.01 | 79.6 | 86.25 | 105 | 118 | 120 |
| Insulation Class | | F | | | | | | | | |
| Vibration Class | | V-15 | | | | | | | | |
| Paint Color | | Black | | | | | | | | |
| Mass | (kg) | 4.5 | 5.1 | 6.5 | 7.5 | 9.3 | 10.9 | 12.9 | 15.1 | 17.3 |
| | kg(Brake) | 5.1 | 6.4 | 7.8 | 8.8 | 10.6 | 12.2 | 14.8 | 17 | 19.2 |
| Driving Power Supply Voltage | $V_{AC}$ | 200/220 | | | | | | | | |
| Allowble Radial Weight | N | 490 | 490 | 490 | 490 | 784 | 784 | 784 | 784 | 784 |
| Allowble Thrust Weight | N | 196 | 196 | 196 | 196 | 343 | 343 | 343 | 343 | 343 |

**PRECAUTIONS**

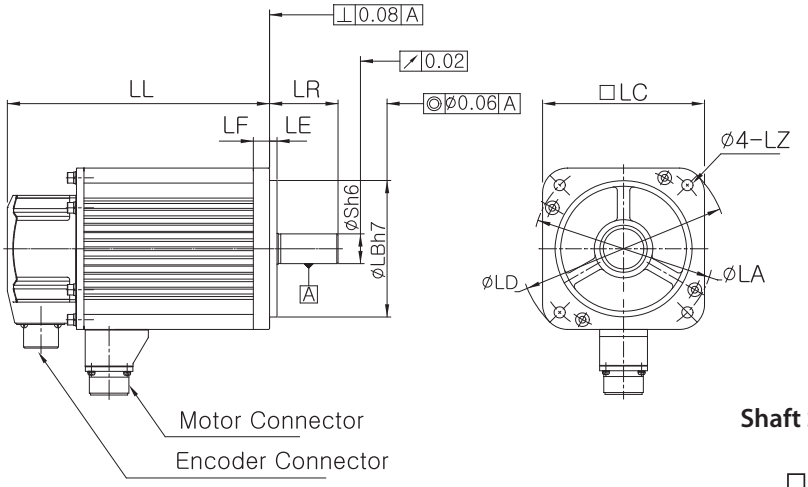
1. The above features are obtained from ideal sinusoids (typical value at 20°).
2. For IP65 (If the outgoing line is faced downward, excluding the connector part).
3. Temperature measured at the center of the motor frame should be below 65°C (40°C).

## Speed-Torque Curves

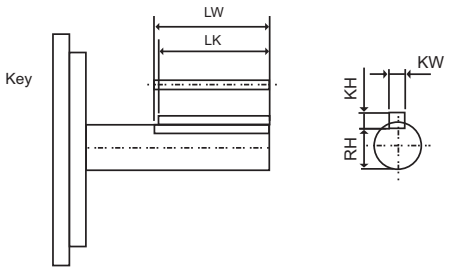


# RSMS Motor Series

## External Dimension & Connector Specifications




### Shaft Specifications




### Specifications of Motor/Brake Connector

| Brake | Standard | | With Brake | | |
|---|---|---|---|---|---|
| Part no. | MS 3102A 20-4P<br>MS 3102A 22-22P | | MS 3102A 20-18P | MS 3102A 24-11P | |
| Pin spec. | Pin no. | Signal | Pin no. | | Signal |
| | A | U | G | A | BR |
| | B | V | H | B | BR |
| | C | W | A | C | |
| | D | FG | F | D | U |
| | | | I | E | V |
| | | | B | F | W |
| | | | E | G | FG |
| | | | D | H | FG |
| | | | C | I | |
| Outlines | MS 3102A<br>20-4P, 22-22P | | MS 3102A<br>20-18P | | MS 3102A<br>24-11P |

### RSMS Motor Series Shaft Specifications

| Motor | Size | | | | |
|---|---|---|---|---|---|
| | LW | LK | KW | KH | RH |
| RSMS_10B ~ 25B | 45 | 42 | 6h9 | 6 | 15.5 |
| RSMS_30B ~ 35B | 45 | 41 | 8h9 | 7 | 18 |
| RSMS_40B ~ 50B | 55 | 51 | 8h9 | 7 | 20 |

### Motor Connector (MS 3102A)

| Series | RSMS | |
|---|---|---|
| Model | 10~25 | 30~50 |
| Standard | 20-4P | 22-22P |
| With Brake | 20-18P | 24-11P |

| Series | | RSMS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Model | | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| LL | Standard | 162.5 | 187.5 | 210.5 | 235.5 | 214.5 | 234.5 | 248 | 268 | 288 |
| | With Brake | 182.5 | 207.5 | 230.5 | 255.5 | 239.5 | 259.5 | 273 | 293 | 313 |
| LR | | 55 | 55 | 55 | 55 | 55 | 55 | 65 | 65 | 65 |
| S | | 19 | 19 | 19 | 19 | 22 | 22 | 24 | 24 | 24 |
| LA | | 115 | 115 | 115 | 115 | 130/145 | 130/145 | 145 | 145 | 145 |
| LB | | 95 | 95 | 95 | 95 | 110 | 110 | 110 | 110 | 110 |
| LC | | 100 | 100 | 100 | 100 | 120 | 120 | 130 | 130 | 130 |
| LD | | 135 | 135 | 135 | 135 | 162 | 162 | 165 | 165 | 165 |
| LE | | 3 | 3 | 3 | 3 | 3 | 3 | 6 | 6 | 6 |
| LF | | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 |
| LZ | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |

# RSMD Motor Series

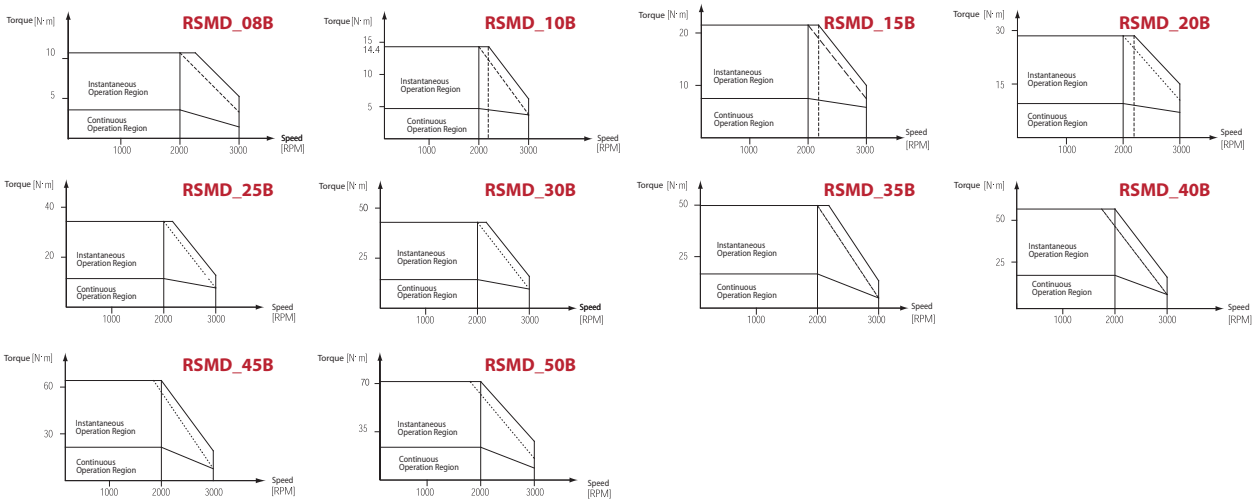
## Specifications

| Item | Unit | RSMD | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 08B | 10B | 15B | 20B | 25B | 30B | 35B | 40B | 45B | 50B |
| Flange Size | mm | 120 | 130 | 130 | 130 | 130 | 130 | 180 | 180 | 180 | 180 |
| Rated Output | W | 0.75 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 |
| Rated Rotation Speed | r/min | 2000 | | | | | | | | | |
| Max Rotation Speed | r/min | 3000 | | | | | | | | | |
| Rated Torque | N·m | 3.58 | 4.77 | 7.15 | 9.55 | 11.9 | 14.3 | 16.7 | 19.1 | 21.5 | 23.9 |
| | kgf·cm | 36.5 | 48.6 | 72.9 | 97.4 | 121 | 146 | 170.4 | 195 | 219 | 244 |
| Max Instantaneous Torque | N·m | 10.85 | 14.4 | 21.5 | 28.5 | 35.5 | 42.9 | 50 | 56.4 | 64.3 | 71.4 |
| | kgf·cm | 110.7 | 147 | 219.2 | 292 | 363 | 437 | 510.2 | 576 | 657 | 729 |
| Rated Current | $A_{(rms)}$ | 5 | 5.8 | 9.4 | 12.3 | 14 | 17.8 | 19.6 | 23.4 | 26.2 | 28 |
| Rotator Inertia | $\times 10^{-4}$kg·m$^2$ | 2.67 | 4.82 | 7 | 9.3 | 11.5 | 13.8 | 31.49 | 33.5 | 37.7 | 45.5 |
| | gf·cm·sec$^2$ | 2.72 | 4.92 | 7.1 | 9.5 | 11.7 | 14.1 | 32.13 | 34.2 | 38.5 | 46.4 |
| Rotator Inertia (Brake) | $\times 10^{-4}$kg·m$^2$ | 3.12 | 6.1 | 8.3 | 10.5 | 12.8 | 15 | 36.19 | 38.7 | 42.9 | 50.7 |
| | gf·cm·sec$^2$ | 3.18 | 6.2 | 8.5 | 10.7 | 13.1 | 15.3 | 36.93 | 39.5 | 43.8 | 51.7 |
| Electrical Constant | ms | 15.76 | 18 | 22 | 21 | 21 | 20 | 28.27 | 28 | 30 | 32 |
| Mechnical Constant | ms | 0.56 | 0.62 | 0.59 | 0.53 | 0.5 | 0.48 | 0.84 | 0.83 | 0.8 | 0.74 |
| | ms(Brake) | 0.65 | 0.78 | 0.697 | 0.6 | 0.56 | 0.52 | 0.97 | 0.96 | 0.9 | 0.83 |
| Power Rating | kW/s | 49.1 | 48.8 | 74.6 | 100 | 124.9 | 151.2 | 90.66 | 111 | 124.8 | 128.3 |
| | kW/s | 41.94 | 38.6 | 62.9 | 88.6 | 112.2 | 139.4 | 78.9 | 96 | 109.6 | 115.2 |
| Max Instantaneous Current | $A_{(O-P)}$ | 21.2 | 24 | 40 | 52 | 60 | 76 | 79.3 | 100 | 111 | 120 |
| Insulation Class | | F | | | | | | | | | |
| Vibration Class | | V-15 | | | | | | | | | |
| Paint Color | | Black | | | | | | | | | |
| Mass | kg | 4.8 | 6.8 | 8.5 | 10.6 | 12.8 | 14.6 | 16.2 | 19.75 | 21.5 | 25 |
| | kg(Brake) | 6.1 | 8.7 | 10.1 | 12.5 | 14.7 | 16.5 | 18.7 | 23.25 | 25 | 28.5 |
| Driving Power Supply Voltage | $V_{AC}$ | 200/220 | | | | | | | | | |
| Allowable Radial Weight | N | 392 | 490 | 490 | 490 | 784 | 784 | 784 | 784 | 784 | 784 |
| Allowable Thrust Weight | N | 147 | 196 | 196 | 196 | 343 | 343 | 343 | 343 | 343 | 343 |

**PRECAUTIONS**

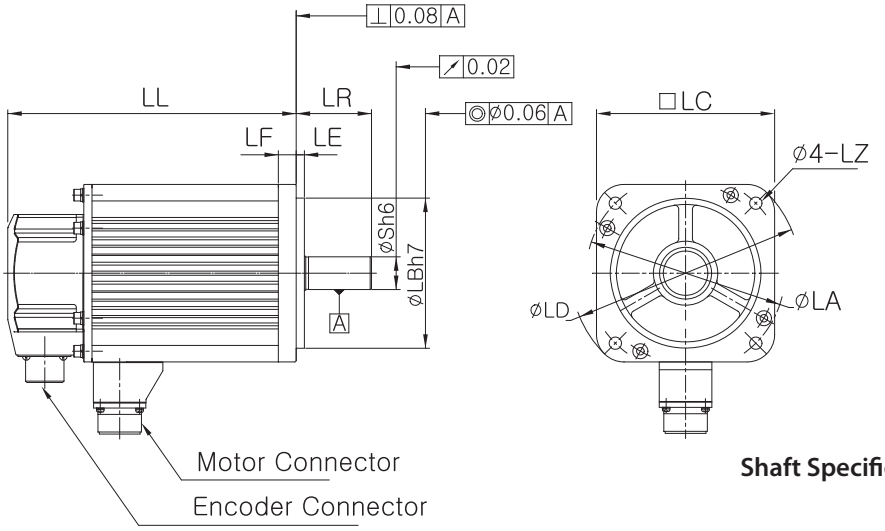
1. The above features are obtained from ideal sinusoids (typical value at 20°).
2. For IP65 (If the outgoing line is faced downward, excluding the connector part).
3. Temperature measured at the center of the motor frame should be below 65°C (40°C).

## Speed-Torque Curves

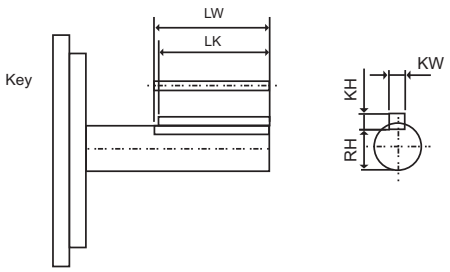


# RSMD Motor Series

## External Dimentions & Connector Specifications




### Shaft Specifications




### Specifications of Motor/Brake Connector

| Brake | Standard | | With Brake | | |
|---|---|---|---|---|---|
| Part no. | MS 3102A 20-4P<br>MS 3102A 22-22P | | MS 3102A 20-18P | MS 3102A 24-11P | |
| Pin spec. | Pin no. | Signal | Pin no. | | Signal |
| | A | U | G | A | BR |
| | B | V | H | B | BR |
| | C | W | A | C | |
| | D | FG | F | D | U |
| | | | I | E | V |
| | | | B | F | W |
| | | | E | G | FG |
| | | | D | H | FG |
| | | | C | I | |
| Outlines | MS 3102A 20-4P, 22-22P | | MS 3102A 20-18P | | MS 3102A 24-11P |

### RSMD Motor Series Shart Specifications

| Motor | Size | | | | |
|---|---|---|---|---|---|
| | LW | LK | KW | KH | RH |
| RSMD-08B | 45 | 42 | 6h9 | 6 | 15.5 |
| RSMD_10B to 20B | 45 | 41 | 8h9 | 7 | 18 |
| RSMD_25B to 30B | 55 | 51 | 8h9 | 7 | 20 |
| RSMD_35B to 40B | 55 | 51 | 8h9 | 7 | 24 |
| RSMD_45B to 50B | 55 | 50 | 10h9 | 8 | 30 |

### Motor Connector (MS 3102A)

| Series | Size | |
|---|---|---|
| Model | 08~25 | 30~50 |
| Standard | 20-4P | 22-22P |
| With Brake | 20-18P | 24-11P |

| Series | | RSMD | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mode | | 08 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| LL | Standard | 144.5 | 158 | 183 | 208 | 233 | 258 | 198 | 203 | 213 | 233 |
| | With Brake | 169.5 | 183 | 208 | 233 | 258 | 283 | 223 | 228 | 238 | 258 |
| LR | | 55 | 55 | 55 | 55 | 65 | 65 | 65 | 65 | 70 | 70 |
| S | | 19 | 22 | 22 | 22 | 24 | 24 | 28 | 28 | 35 | 35 |
| LA | | 130/145 | 145 | 145 | 145 | 145 | 145 | 200 | 200 | 200 | 200 |
| LB | | 110 | 110 | 110 | 110 | 110 | 110 | 114.3 | 114.3 | 114.3 | 114.3 |
| LC | | 120 | 130 | 130 | 130 | 130 | 130 | 180 | 180 | 180 | 180 |
| LD | | 162 | 165 | 165 | 165 | 165 | 165 | 230 | 230 | 230 | 230 |
| LE | | 3 | 6 | 6 | 6 | 6 | 6 | 3.2 | 3.2 | 3.2 | 3.2 |
| LF | | 12 | 12 | 12 | 12 | 12 | 12 | 18 | 18 | 18 | 18 |
| LZ | | 9 | 9 | 9 | 9 | 9 | 9 | 13.5 | 13.5 | 13.5 | 13.5 |

# RSMH Motor Series

## Specifications

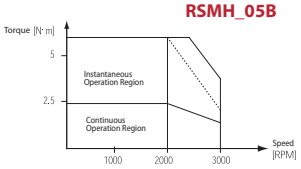
| Item | Unit | RSMH | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 05B | 10B | 15B | 20B | 30B | 40B | 50B |
| Flange Size | mm | 130 | 130 | 130 | 180 | 180 | 180 | 180 |
| Rated Output | W | 0.5 | 1 | 1.5 | 2 | 3 | 4 | 5 |
| Rated Rotation Speed | r/min | 2000 | | | | | | |
| Max Rotation Speed | r/min | 3000 | | | | | | |
| Rated Torque | N·m | 2.39 | 4.77 | 7.15 | 9.55 | 14.32 | 19.1 | 23.87 |
| | kgf·cm | 24.4 | 48.6 | 72.9 | 97.4 | 146 | 195 | 243 |
| Max Instantaneous Torque | N·m | 6 | 14.4 | 21.5 | 28.5 | 42.9 | 56.4 | 71.4 |
| | kgf·cm | 61 | 147 | 219.2 | 291 | 437 | 576 | 729 |
| Rated Current | $A_{(rms)}$ | 3.2 | 5.6 | 9.4 | 12.3 | 17.8 | 23.4 | 28 |
| Rotator Inertia | $\times 10^{-4}$kg·m$^2$ | 14 | 26 | 42.9 | 62 | 94.1 | 120 | 170 |
| | gf·cm·sec$^2$ | 14.3 | 26.5 | 43.8 | 63.3 | 96 | 122.4 | 173.5 |
| Rotator Inertia(Brake) | $\times 10^{-4}$kg·m$^2$ | 15.2 | 27.2 | 44.1 | 67.9 | 100 | 126 | 176 |
| | gf·cm·sec$^2$ | 15.5 | 27.8 | 45 | 69.3 | 102 | 128.6 | 179.6 |
| Electrical Constant | ms | 17 | 18 | 22 | 26 | 26 | 30 | 31 |
| Mechanical Constant | ms | 4.8 | 3.4 | 3.5 | 2.5 | 2.9 | 2.6 | 2.6 |
| | ms(Brake) | 5.2 | 3.6 | 3.6 | 2.7 | 3.1 | 2.7 | 2.7 |
| Power Rating | kW/s | 4.1 | 8.9 | 12.2 | 15 | 22.2 | 31.1 | 34.1 |
| | kW/s(Brake) | 3.8 | 8.5 | 11.8 | 13.7 | 20.9 | 29.6 | 32.9 |
| Max Instantaneous Current | $A_{(O-P)}$ | 11.5 | 23.8 | 40 | 51.9 | 75.8 | 100 | 120 |
| Insulation Class | | F | | | | | | |
| Vibration Class | | V-15 | | | | | | |
| Paint Color | | Black | | | | | | |
| Mass | (kg) | 5.3 | 8.5 | 10 | 16 | 18.2 | 22 | 26.7 |
| | kg(Brake) | 6.9 | 9.5 | 11.6 | 19.5 | 21.7 | 25.5 | 30.2 |
| Driving Power Supply Voltage | $V_{AC}$ | 200/220 | | | | | | |
| Allowable Radial Weight | N | 490 | 490 | 490 | 784 | 784 | 784 | 784 |
| Allowable Thrust Weight | N | 196 | 196 | 196 | 343 | 343 | 343 | 343 |

**PRECAUTIONS**

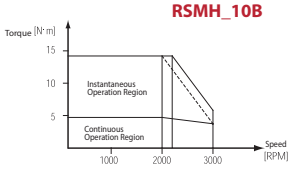
1. The above features are obtained from ideal sinusoids (typical value at 20°).
2. For IP65 (If the outgoing line is faced downward, excluding the connector part).
3. Temperature measured at the center of the motor frame should be below 65°C (40°C).

## Speed-Torque Curves

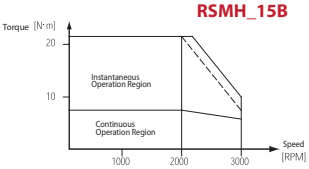
RSMH_05B



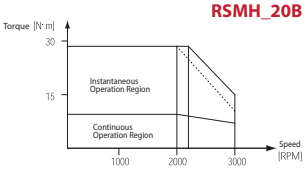

RSMH_10B



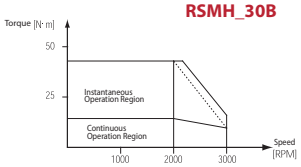

RSMH_15B



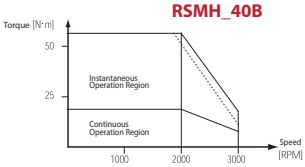

RSMH_20B



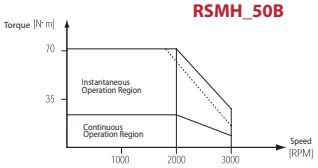

RSMH_30B




RSMH_40B

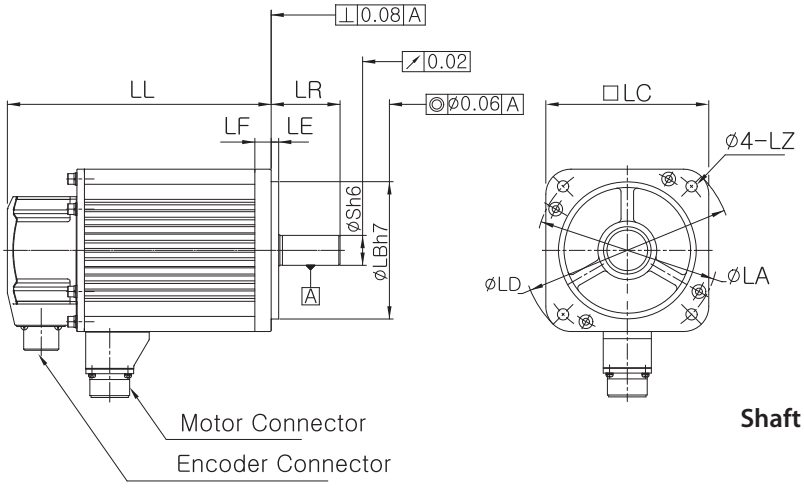



RSMH_50B

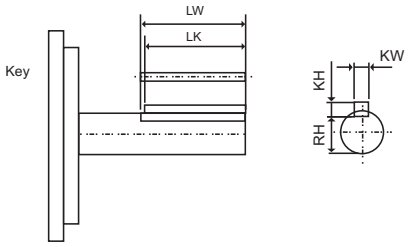


# RSMH Motor Series

## External Dimention & Connector Specification




### Shaft Specifications




### Specifications of Motor/Brake Connector

| Brake | Standard | | With Brake | | |
|---|---|---|---|---|---|
| Part no. | MS 3102A 20-4P<br>MS 3102A 22-22P | | MS 3102A 20-18P | MS 3102A 24-11P | |
| Pin spec. | Pin no. | Signal | Pin no. | | Signal |
| | A | U | G | A | BR |
| | B | V | H | B | BR |
| | C | W | A | C | |
| | D | FG | F | D | U |
| | | | I | E | V |
| | | | B | F | W |
| | | | E | G | FG |
| | | | D | H | FG |
| | | | C | I | |
| Outlines | MS 3102A 20-4P, 22-22P | | MS 3102A 20-18P | | MS 3102A 24-11P |

### RSMH Motor Series Shaft Specifications

| Motor | Size | | | | |
|---|---|---|---|---|---|
| | LW | LK | KW | KH | RH |
| RSMH_05B ~ 15B | 45 | 41 | 8h9 | 7 | 18 |
| RSMH_20B ~ 50B | 55 | 50 | 10h9 | 8 | 30 |

### Motor Connector (MS 3102A)

| Series | RSMH | |
|---|---|---|
| Model | 05~15 | 20~50 |
| Standard | 20-4P | 22-22P |
| With Brake | 20-18P | 24-11P |

| Series | | RSMH | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Model | | 05 | 10 | 15 | 20 | 30 | 40 | 50 |
| LL | Standard | 158 | 183 | 208 | 200 | 215 | 230 | 260 |
| | With Brake | 183 | 208 | 233 | 225 | 240 | 255 | 285 |
| LR | | 70 | 70 | 70 | 80 | 80 | 80 | 80 |
| S | | 22 | 22 | 22 | 35 | 35 | 35 | 35 |
| LA | | 145 | 145 | 145 | 200 | 200 | 200 | 200 |
| LB | | 110 | 110 | 110 | 114.3 | 114.3 | 114.3 | 114.3 |
| LC | | 130 | 130 | 130 | 180 | 180 | 180 | 180 |
| LD | | 165 | 165 | 165 | 230 | 230 | 230 | 230 |
| LE | | 6 | 6 | 6 | 3.2 | 3.2 | 3.2 | 3.2 |
| LF | | 12 | 12 | 12 | 18 | 18 | 18 | 18 |
| LZ | | 9 | 9 | 9 | 13.5 | 13.5 | 13.5 | 13.5 |

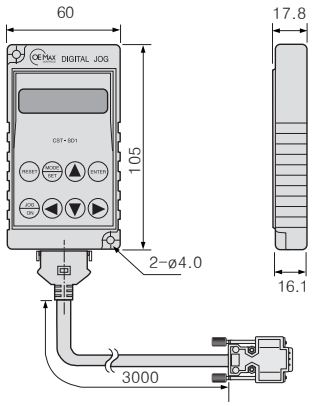
# Option

## ■ Model Name

– CST_SDC: CSDP Series Operator

## ■ Specifications

| Item | Specifications |
|---|---|
| Key Pad | 8 Key |
| Display | 7-segment LED×6 |
| Serial Interface | RS-232C |
| Power | DC 5V(Servo Drive uses a built-in power supply) |
| Exterior(mm) | 60×105×17.8(W×H×D) |
| Weight | 75g(Excluding the Cable) |
| Cable Length | 3m |

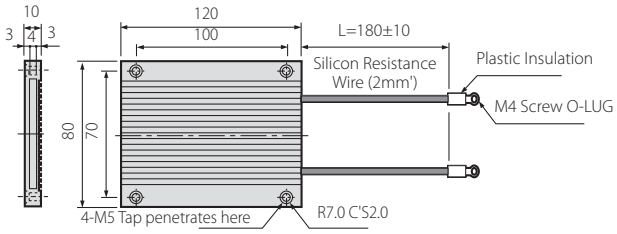



## ■ Model Name

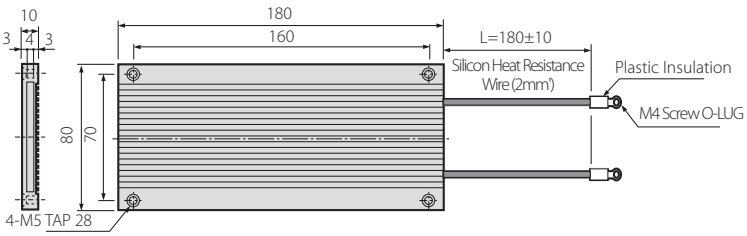
– Regenerative Resistance

## ■ Specifications

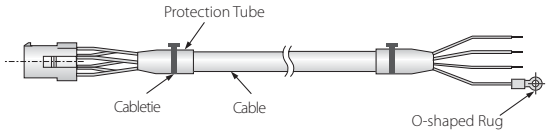
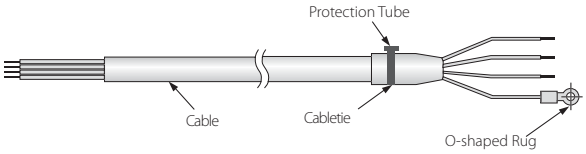
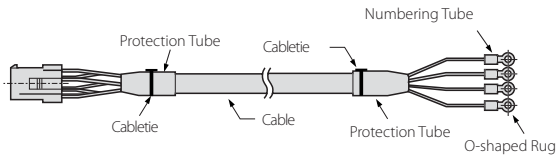
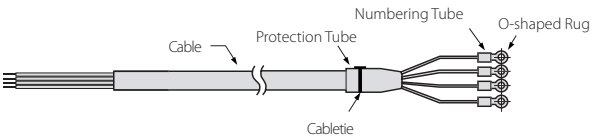
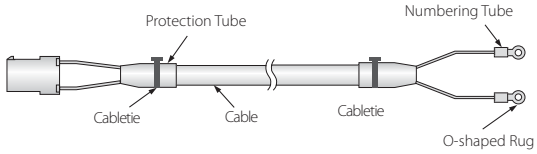
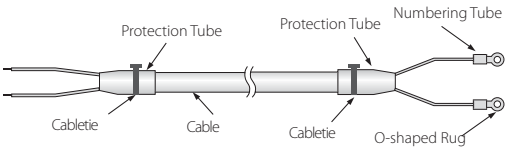
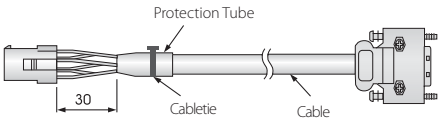
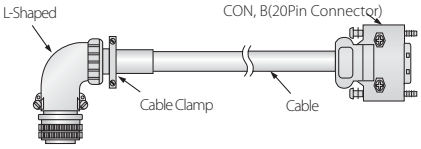
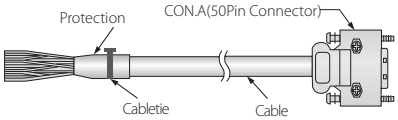
**50Ω 150W** RES-S500R151SN



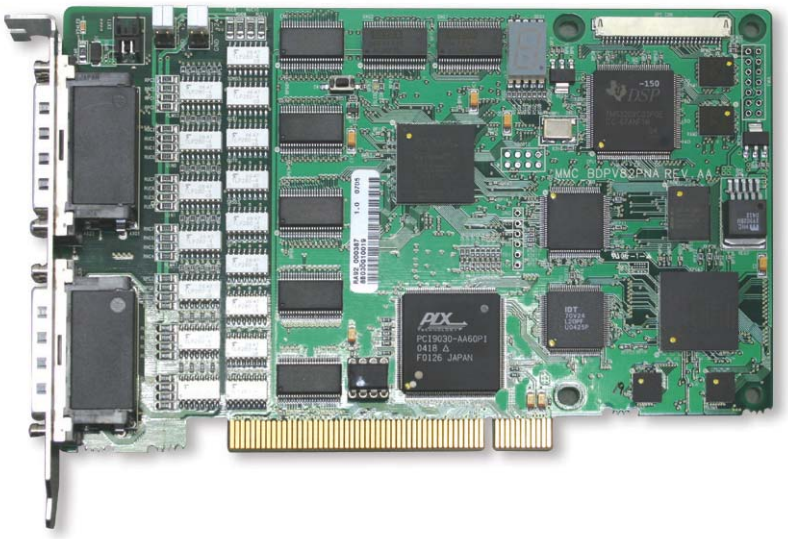

**25Ω 250W** RES-S250R251SN

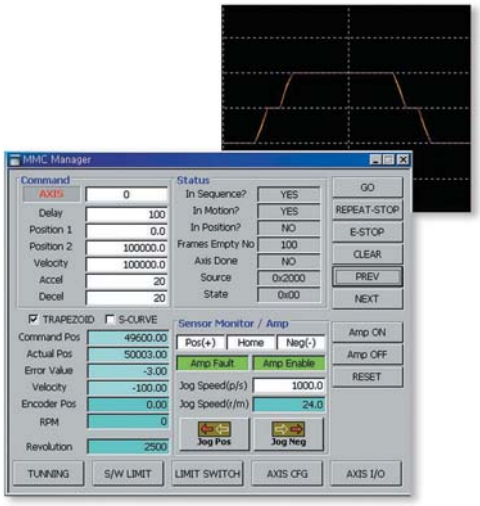


# Option

| | Small Capacity (CSMT/R,RSMZ/Q Motor) | Mid-to-Large Capacity (RSMD/H/F/S/K/L Motor) |
|---|---|---|
| Power Cable |  <br>**CSD5/CSD3:** POW - SL __ __ P010FH<br>Cable Length 03, 05, 10m |  <br>**CSD5/CSD3:** POW - SH __ __ P015FH<br>Cable Length 03, 05, 10m<br>Motor Capacity |
| |  <br>**CSDP:** POW - SL __ __ P010FA<br>Cable Length 03, 05, 10m |  <br>**CSDP:** POW - SH __ __ P__ __ __ FA<br>Cable Length 03, 05, 10m<br>Motor Capacity<br>035 : 3.5kW or below<br>050 : 5.0kW or below |
| Brake Cable |  <br>BRK - SL __ __ BRAKFA<br>Cable Length 03, 05, 10m |  <br>BRK - SH __ __ BRAKFA<br>Cable Length 03, 05, 10m |
| Encoder Cable |  <br>ENC - SL __ __ E __ __ SFA<br>Cable Length 03, 05, 10m<br>Applicable Motors<br>CH : 17-Bit Serial Encoder Cable<br>CN : CSMT/MR(9 wire)<br>CK : RSM Series(9 wire) |  <br>ENC - SH __ __ E__ __ LFA<br>Cable Lenth 03, 05, 10m<br>Applicable Motors<br>CH : 17-Bit Serial Encoder Cable<br>CK : RSM Series (9 wire) |
| I/O Cable |  | IOC - SH __ __ U50CNA<br>Cable Length 03, 05, 10m |

# Multi Motion Controller



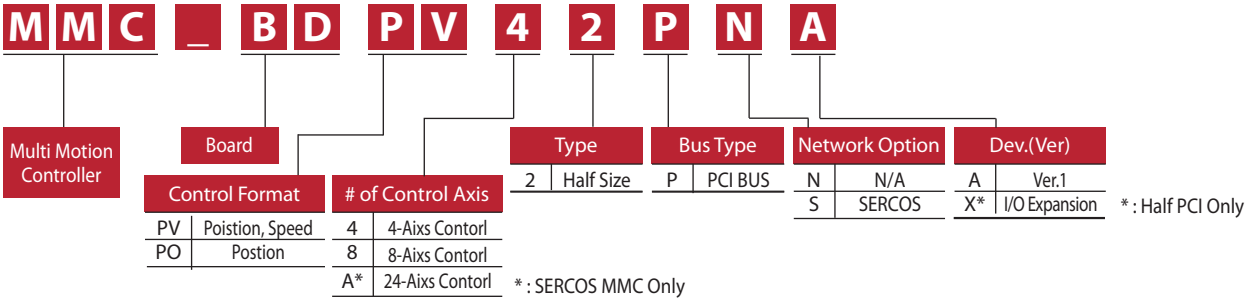



## Multi Motion Controller MMC SERIES

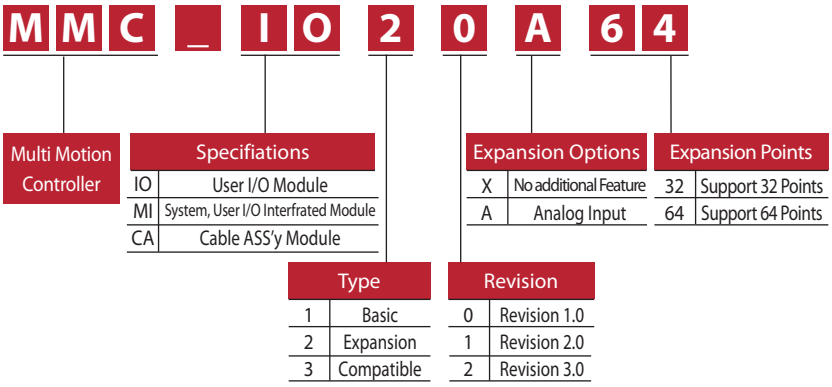
The Motion Controller MMC Series are global high-speed, high-performance multi-axis motion controllers that were mounted on a PC to provide various flexible motion controls. It supports various operating system and development environments; numerous user function support allows an optimized motion solution. A greater choice is available for the user's convenience such as ISA, PCI, full size, and half size.

# Model Code Format

## MMC Board




## MMC Option Module



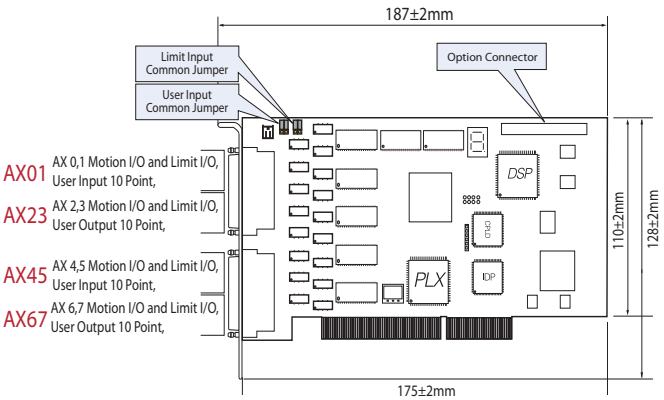

## MMC Cable Option

| | |
|---|---|
| MMC_CAAI3P22□□ | 2-Axis cable for connecting MMC and MI10 |
| MMC_CAOP3P21□□ | 1-Axis cable for connecting M10 and CSDx Servo Drive |
| □□ | Cable Length (Unit: m)<br>B1:1.5, 02:2, B2:2.5, 03:3, B3:3.5, 05:5 |
| Legend | 1-Axis 2 m cable for connecting Half PCI and CSDx ServorMMC-CAOP3P2102 |

# MMC Specification, Exterior

## MMC_BDP□□2PN□

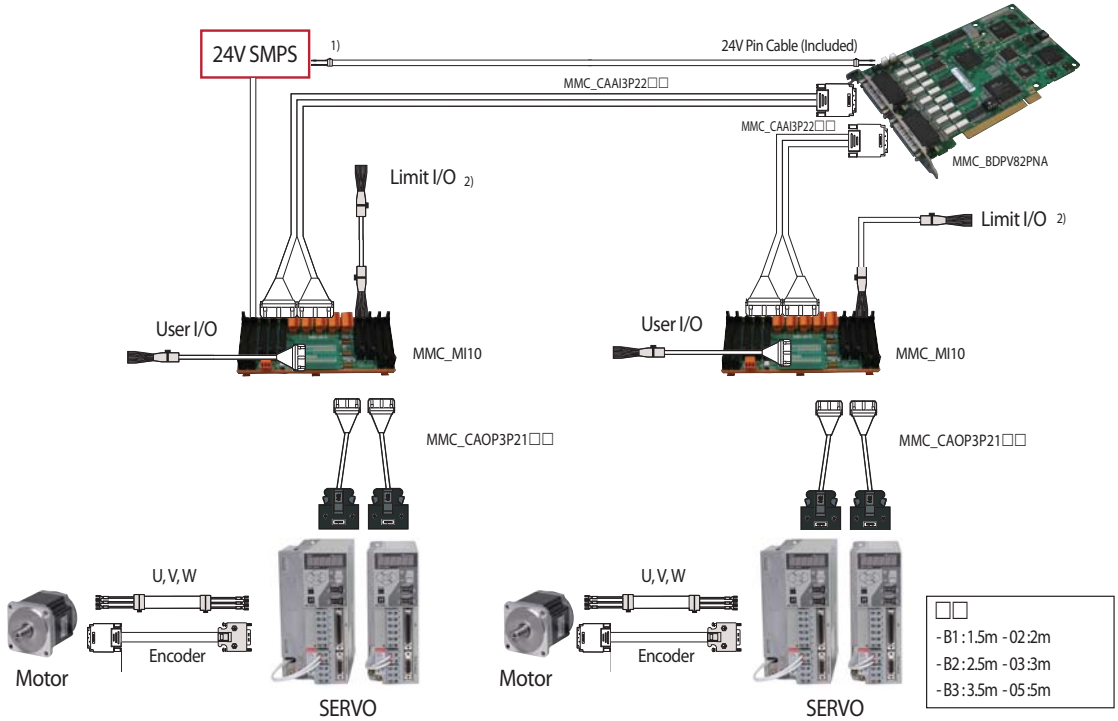
## External Dimension




## Half Size PCI Series

| Item | Specification |
|---|---|
| CPU | TMS320VC33 - 128MHz |
| Operation Method | PTP, Arc interpolation, linear interpolation, spline interpolation, Synchronized Control |
| Interface | PC/AT/industrial computer |
| Sampling Rate | Standard 2msec, 0.5msec ~ 4msec Variable Possible (Based upon 8-Axis) |
| Analog Output | ±10V, @16-bit resolution |
| Pulse Output | Max frequency=16MHz, 50% Duty Cycle, Frequency Unit=250Hz(based on 4msec) |
| Operation Range | 32-bit, ± 2147483647 |
| Acceleration/deceleration setting | 0 to 25000(0 ~ 100 sec):based on 4msec sampling time |
| Position Feedback | Input frequency= 32MHz(max), digital noise filter |
| Velocity Profiles | Trapezoid, Asymmetric. S_Curve, Symmetric S_Curve Acceleration/Deceleration |
| System I/O Input(per axis) | AMP Fault Input, Position-Clear |
| System I/O Output(per axis) | AMP-Enable, Amp-Fault Reset, Position-Clear, |
| Limit Sensor Output | 3 (Positive, Negative, Home) |
| User I/O | Photo-Coupler Isolated Input/Ouput 20/20 point<br>Position-Compare (4096/axis) |
| Analog Input | 8 channel @16-bit resolution, 5㎲ Conversion rate (Option) |
| Power consumption(Max Consumtion Current) | +5V≒2A, +12V≒0.5A,-12V≒0.5A |
| Environment | 0 to 50°C, 20 to 90% RH, Non-condensing |
| Size | 187 x 128 |
| Catalog | MMC-BDPO42PNA MMC-BDPO82PNA<br>MMC-BDPV42PNA MMC-BDPV82PNA<br>MMC-BDPO42PNX<br>MMC-BDPV42PNX |

# System Configuration




1) Either MMC-MI10 or Half Size PCI needs to be connected to 24V power.
2) Each MMC-MI10 supports connecting up to 4-axis.

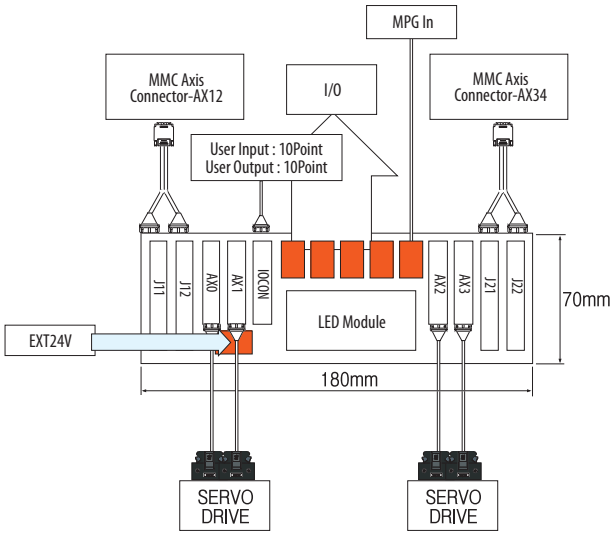
# MMC Option Specification

## MMC_MI10 (Limit, I/O, AMP Connector Integrated Module: Half PCI Only)

### 1. Product

* One MMC-MI10 supports up to 4-Axis.

### 2. Product Configuration




### 3. Pin MAP

* MMC Connector (J11, J12, J21, J22) Pin MAP

| MMC to MI10 Connector J11~J22 Pin MAP | | | | | | |
|---|---|---|---|---|---|---|
| MMC Con (34pin) | Signal | | | | Group | Description |
| | J11(Axis 0) | J12(Axis 1) | J21(Axis 2) | J22(Axis 3) | | |
| 1 | GND | GND | GND | GND | Power Source | 5V GND |
| 2 | VCC | VCC | VCC | VCC | Power Source | 5V GND |
| 3 | A0-Z | A1-Z | A2-Z | A3-Z | Encoder | Encoder Z- |
| 4 | A0+Z | A1+Z | A2+Z | A3+Z | Encoder | Encoder Z+ |
| 5 | A0-B | A1-B | A2-B | A3-B | Encoder | Encoder B- |
| 6 | A0+B | A1+B | A2+B | A3+B | Encoder | Encoder B+ |
| 7 | A0-A | A1-A | A2-A | A3-A | Encoder | Encoder A |
| 8 | A0+A | A1+A | A2+A | A3+A | Encoder | Encoder A+ |
| 9 | ABS0- | ABS1- | ABS2- | ABS3- | Encoder | Encoder Abs |
| 10 | ABS0+ | ABS1+ | ABS2+ | ABS3+ | Encoder | Encoder Abs |
| 11 | Input 0 | Input 1 | Output 0 | Output 1 | I/O | User I/O |
| 12 | HOME0 | HOME1 | HOME2 | HOME0 | Sensor | Home sensor Input |
| 13 | G24V | G24V | G24V | G24V | Power Source | External 24V GND |
| 14 | SV0ERR | SV1ERR | SV2ERR | SV3ERR | Motion I/O | AMP Fault Input |
| 15 | PCIN0 | PCIN1 | PCIN2 | PCIN3 | Motion I/O | In-Position Input |
| 16 | PLIM0 | PLIM1 | PLIM2 | PLIM3 | Sensor | Positive Limit Input |
| 17 | +24V | +24V | +24V | +24V | Power Source | External 24V Power |
| 18 | GND | GND | GND | GND | Power Source | 5V GND |
| 19 | SV0AO | SV1AO | SV2AO | SV3AO | I/O | Analog Signal Output |
| 20 | Input 2 | Input 3 | Output 2 | Output 3 | I/O | User I/O |
| 21 | Input 4 | Input 5 | Output 4 | Output 5 | I/O | User I/O |
| 22 | A0-DIR | A1-DIR | A2-DIR | A3-DIR | Pulse Output | CCW Pulse & Direction Signal Output(/CCW) |
| 23 | A0+DIR | A1+DIR | A2+DIR | A3+DIR | Pulse Output | CCW Pulse & Direction Signal Output(CCW) |
| 24 | A0-CLK | A1-CLK | A2-CLK | A3-CLK | Pulse Output | CW Pulse & Pulse Output(/CW) |
| 25 | A0+CLK | A1+CLK | A2+CLK | A3+CLK | Pulse Output | CW Pulse & Pulse Signal Output(CW) |
| 26 | PCLR0- | PCLR1- | PCLR2- | PCLR3- | Pulse Output | Position Clear Output(/P-CLR) |
| 27 | PCLR0+ | PCLR1+ | PCLR2+ | PCLR3+ | Pulse Output | Position Clear Output(P-CLR) |
| 28 | Input 6 | Input 7 | Output 6 | Output 7 | I/O | User I/O |
| 29 | Input 8 | Input 9 | Output 8 | Output 9 | I/O | User I/O |
| 30 | G24V | G24V | G24V | G24V | Power Source | External 24V GND |
| 31 | SV0ON | SV1ON | SV2ON | SV3ON | Motion I/O | AMP Enable(Servo On) Output |
| 32 | SV0RST | SV1RST | SV2RST | SV3RST | Motion I/O | AMP Fault Reset Output |
| 33 | NLIM0 | NLIM1 | NLIM2 | NLIM3 | Sensor | Negative Limit Input |
| 34 | +24V | +24V | +24V | +24V | Power Source | External 24V Power |

* AMP(Servo) Connector (AX0, AX1, AX2, AX3) Pin MAP

| MI10 to AMP(Servo) Connector AX0 ~ AX3 Pin MAP | | | | | | |
|---|---|---|---|---|---|---|
| MI10 Con' (26pin) | Connector | | | | Group | Description |
| | AX0 | AX1 | AX2 | AX3 | | |
| 1 | SV0AO | SV1AO | SV2AO | SV3AO | Motion I/O | Analog Signal Output |
| 2 | GND | GND | GND | GND | Power Source | 5V GND |
| 3 | A0+Z | A1+Z | A2+Z | A3+Z | Encoder | Encoder Z+ |
| 4 | A0-Z | A1-Z | A2-Z | A3-Z | Encoder | Encoder Z- |
| 5 | A0+B | A1+B | A2+B | A3+B | Encoder | Encoder B+ |
| 6 | A0-B | A1-B | A2-B | A3-B | Encoder | Encoder B- |
| 7 | A0+A | A1+A | A2+A | A3+A | Encoder | Encoder A+ |
| 8 | A0-A | A1-A | A2-A | A3-A | Encoder | Encoder A- |
| 9 | ABS0+ | ABS1+ | ABS2+ | ABS3+ | Encoder | Encoder Abs |
| 10 | ABS0- | ABS1- | ABS2- | ABS3- | Encoder | Encoder Abs |
| 11 | PCLR0+ | PCLR1+ | PCLR2+ | PCLR3+ | Pulse Output | Position Clear Output(P-CLR) |
| 12 | PCLR0- | PCLR1- | PCLR2- | PCLR3- | Pulse Output | Position Clear Output(/P-CLR) |
| 13 | A0+DIR | A1+DIR | A2+DIR | A3+DIR | Pulse Output | CCW Pulse & Direction Signal Output(CCW) |
| 14 | A0-DIR | A1-DIR | A2-DIR | A3-DIR | Pulse Output | CCW Pulse & Direction Signal Output(/CCW) |
| 15 | A0+CLK | A1+CLK | A2+CLK | A3+CLK | Pulse Output | CW Pulse & Pulse Signal Output(CW) |
| 16 | A0-CLK | A1-CLK | A2-CLK | A3-CLK | Pulse Output | CW Pulse & Pulse Output(/CW) |
| 17 | - | - | - | - | - | Non Connection |
| 18 | - | - | - | - | - | Non Connection |
| 19 | SV0ON | SV1ON | SV2ON | SV3ON | Motion I/O | AMP Enable(Servo On) Output |
| 20 | SV0ERR | SV1ERR | SV2ERR | SV3ERR | Motion I/O | AMP Fault Input |
| 21 | SV0RST | SV1RST | SV2RST | SV3RST | Motion I/O | AMP Fault Reset Output |
| 22 | PCIN0 | PCIN1 | PCIN2 | PCIN3 | I/O | In-Position Input |
| 23 | - | - | - | - | - | Non Connection |
| 24 | - | - | - | - | - | Non Connection |
| 25 | G24V | G24V | G24V | G24V | Power Source | External 24V GND |
| 26 | +24V | +24V | +24V | +24V | Power Source | External 24V Power |

* Limit Connector Pin MAP (LIMIT0, LIMIT1, LIMIT2, LIMIT3)

| MI10 to Limit Sensor Connector LIMT0~LIMT3) Pin MAP | | | | | |
|---|---|---|---|---|---|
| Limit Con (5Pin) | Connector | | | | Description |
| | Limit0 | Limit1 | Limit2 | Limit3 | |
| 1 | +24V | +24V | +24V | +24V | Ext 24V |
| 2 | PLMT0 | PLMT1 | PLMT2 | PLMT3 | Positive Limit |
| 3 | HOME0 | HOME1 | HOME2 | HOME3 | Home Sensor |
| 4 | NLMT0 | NLMT1 | NLMT2 | NLMT3 | Negative Limit |
| 5 | GND | GND | GND | GND | 24V GND |

* User I/O Connector Pin MAP (IOCON)

| IOCON Connector Pin MAP | | | | | | | |
|---|---|---|---|---|---|---|---|
| Pin No. | User I/O | Pin No. | User I/O | Pin No. | User I/O | Pin No. | User I/O |
| 1 | User Out 0 | 8 | User Out 7 | 15 | User In 4 | 22 | Non Connection |
| 2 | User Out 1 | 9 | User Out 8 | 16 | User In 5 | 23 | 24V GND |
| 3 | User Out 2 | 10 | User Out 9 | 17 | User In 6 | 24 | EXT 24V |
| 4 | User Out 3 | 11 | User In 0 | 18 | User In 7 | 25 | 24V GND |
| 5 | User Out 4 | 12 | User In 1 | 19 | User In 8 | 26 | EXT 24V |
| 6 | User Out 5 | 13 | User In 2 | 20 | User In 9 | | |
| 7 | User Out 6 | 14 | User In 3 | 21 | Non Connection | | |

* MPG Input Pin MAP (MPGA)

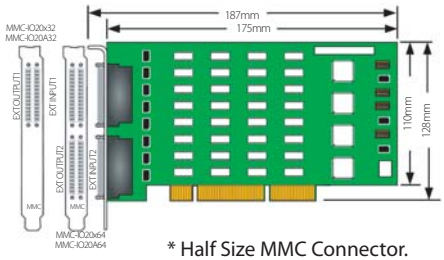
| MPG Input Pin MAP (In MPG, User In 8 and 9 can be used with only MPG pulse input) | | | | | |
|---|---|---|---|---|---|
| Limit Con (5Pin) | Connector | Description | MPGA Con (5Pin) | Connector | Description |
| | Limit0 | | | Limit0 | |
| 1 | +24V | Ext 24V | 4 | - | Non Connection |
| 2 | User In 8 | MPG Input Phase-A(or B) | 5 | GND | 24V GND |
| 3 | User In 9 | MPG Input Phase-B(or A) | | | |

# MMC Option Specification

## MMC_IO20□□□ Option Module

(Module for isolated Digital I/O Expansion or Analog Input, for Half PCI only)

### External Dimension




* Half Size MMC Connector.

### Specifications

| Item | Specification |
|---|---|
| Analog Input | |
| Channel | 4CH, 8CH |
| Resolution | 16 bit |
| Conversion | 5 μs |
| Voltage Range | 0~10V, 0~5V, 0~4V |
| Digital IO | |
| Point | 32/32, 64/64 |
| Out Current | 10mA @ 24V |
| Catalog | |
| MMC_IO20X32 | 32/32 IO |
| MMC_IO20A32 | 32/32 IO, 4CH Analog In |
| MMC_IO20X64 | 64/64 IO |
| MMC_IO20A64 | 64/64 IO, 8CH Analog In |

### Connector Information

Hood : HDRA-E68LGKPE (HONDA)

Connector : HDRA-E68MA1 (HONDA)

### pin Map

EXT INPUT1, EXT INPUT2 Wiring Specification

| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| 1 | INPUT COM 1 (3) | 2 | INPUT COM 1 (3) |
| 3 | G24V | 4 | G24V |
| 5 | EXT IN0 (32) | 6 | EXT IN1 (33) |
| 7 | EXT IN2 (34) | 8 | EXT IN3 (35) |
| 9 | EXT IN4 (36) | 10 | EXT IN5 (37) |
| 11 | EXT IN6 (38) | 12 | EXT IN7 (39) |
| 13 | EXT IN8 (40) | 14 | EXT IN9 (41) |
| 15 | EXT IN10 (42) | 16 | EXT IN11 (43) |
| 17 | EXT IN12 (44) | 18 | EXT IN13 (45) |
| 19 | EXT IN14 (46) | 20 | EXT IN15 (47) |
| 21 | INPUT COM 2 (4) | 22 | INPUT COM 2 (4) |
| 23 | G24V | 24 | G24V |
| 25 | - | 26 | - |
| 27 | Analog IN0 (-) | 28 | GND (-) |
| 29 | Analog IN1 (-) | 30 | GND (-) |
| 31 | Analog IN2 (-) | 32 | GND (-) |
| 33 | Analog IN3 (-) | 34 | GND (-) |
| 35,37 | - | 36,38 | - |
| 39 | EXT IN16 (48) | 40 | EXT IN17 (49) |
| 41 | EXT IN18 (50) | 42 | EXT IN19 (51) |
| 43 | EXT IN20 (52) | 44 | EXT IN21 (53) |
| 45 | EXT IN22 (54) | 46 | EXT IN23 (55) |
| 47 | EXT IN24 (56) | 48 | EXT IN25 (57) |
| 49 | EXT IN26 (58) | 50 | EXT IN28 (59) |
| 51,53 | - | 52,54 | - |
| 55 | EXT IN28 (60) | 56 | EXT IN29 (61) |
| 57 | EXT IN30 (62) | 58 | EXT IN31 (63) |
| 59 | - | 60 | GND (-) |
| 61 | Analog IN4 (-) | 62 | GND (-) |
| 63 | Analog IN5 (-) | 64 | GND (-) |
| 65 | Analog IN6 (-) | 66 | GND (-) |
| 67 | Analog IN7 (-) | 68 | GND (-) |

EXT OUTPUT1, EXT OUTPUT2 Wiring Specification

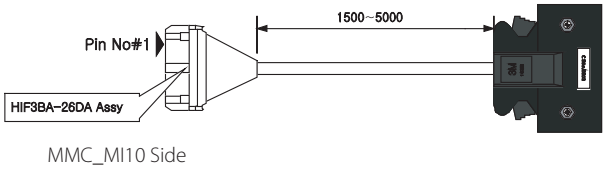
| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| 1 | +24V | 2 | +24V |
| 3 | G24V | 4 | G24V |
| 5 | EXT OUT0 (32) | 6 | EXT OUT1 (33) |
| 7 | EXT OUT2 (34) | 8 | EXT OUT3 (35) |
| 9 | EXT OUT4 (36) | 10 | EXT OUT5 (37) |
| 11 | EXT OUT6 (38) | 12 | EXT OUT7 (39) |
| 13 | EXT OUT8 (40) | 14 | EXT OUT9 (41) |
| 15 | EXT OUT10 (42) | 16 | EXT OUT11 (43) |
| 17 | EXT OUT12 (44) | 18 | EXT OUT13 (45) |
| 19 | EXT OUT14 (46) | 20 | EXT OUT15 (47) |
| 21 | 11 kV | 22 | 11 kV |
| 23 | G24V | 24 | G24V |
| 25 | - | 26 | - |
| 27 | - | 28 | - |
| 29 | - | 30 | - |
| 31 | - | 32 | - |
| 33 | - | 34 | - |
| 35,37 | - | 36,38 | - |
| 39 | EXT OUT16 (48) | 40 | EXT OUT17 (49) |
| 41 | EXT OUT18 (50) | 42 | EXT OUT19 (51) |
| 43 | EXT OUT20 (52) | 44 | EXT OUT21 (53) |
| 45 | EXT OUT22 (54) | 46 | EXT OUT23 (55) |
| 47 | EXT OUT24 (56) | 48 | EXT OUT25 (57) |
| 49 | EXT OUT26 (58) | 50 | EXT OUT28 (59) |
| 51,53 | - | 52,54 | - |
| 55 | EXT OUT28 (60) | 56 | EXT OUT29 (61) |
| 57 | EXT OUT30 (62) | 58 | EXT OUT31 (63) |
| 59 | - | 60 | - |
| 61 | - | 62 | - |
| 63 | - | 64 | - |
| 65 | - | 66 | - |
| 67 | - | 68 | - |

* Analog Input can wired only to EXT INPUT1.

# Axis Cable Specification

## Half Size PCI - AMP Connector Pin Specification

### 1. MMC_CAOP3P21□□ Configuration




MMC_MI10 Side

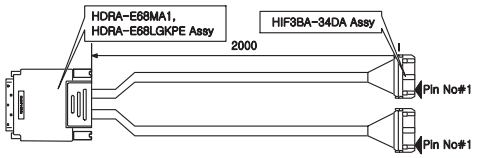
□□
- B1(1.5)m - 02(2m)
- B2(2.5)m - 03(3m)
- B3(3.5)m - 05(5m)

### 2. Pin MAP

| I/F Board Connector (26Pin) Axis 1 | Signal | Servo Connector (3M 50Pin) |
|---|---|---|
| 1 | SV0AO | 19, 21 |
| 2 | GND | 20, 22 |
| 3 | CA0+Z | 33 |
| 4 | CA0-Z | 34 |
| 5 | CA0+B | 31 |
| 6 | CA0-B | 32 |
| 7 | CA0+A | 29 |
| 8 | CA0-A | 30 |
| 9 | CABS0+ | 35 |
| 10 | CABS0- | 36 |
| 11 | PCLR0+ | 15 |
| 12 | PCLR0- | 16 |
| 13 | A0+DIR | 13 |
| 14 | A0-DIR | 14 |
| 15 | A0+CLK | 11 |
| 16 | A0-CLK | 12 |
| 17 | --- | |
| 18 | --- | |
| 19 | SV0ON | 3 |
| 20 | SV0ERR | 45 |
| 21 | SV0RST | 7 |
| 22 | PCIN0 | 41 |
| 23 | --- | |
| 24 | --- | |
| 25 | G24V | 42, 46 |
| 26 | +24V | 1, 2 |
| | Shield | Con cell |

* Twisted pair of the same colors.

### 1. MMC_CAAI3P2202 Configuration




### 2. Pin MAP

| MMC Axis Connector (68Pin) | Signal | MMC-MI10 Connector (34pin)Axis 0 | MMC Axis Connector (68Pin) | Signal | MMC-MI10 Connector (34Pin) Axis 0 |
|---|---|---|---|---|---|
| 1 | GND | 1 | 2 | GND | 1 |
| 3 | VCC | 2 | 4 | VCC | 2 |
| 5 | CA0-Z | 3 | 6 | CA1-Z | 3 |
| 7 | CA0+Z | 4 | 8 | CA1+Z | 4 |
| 9 | CA0-B | 5 | 10 | CA1-B | 5 |
| 11 | CA0+B | 6 | 12 | CA1+B | 6 |
| 13 | CA0-A | 7 | 14 | CA1-A | 7 |
| 15 | CA0+A | 8 | 16 | CA1+A | 8 |
| 17 | CABS0- | 9 | 18 | CABS1- | 9 |
| 19 | CABS0+ | 10 | 20 | CABS1+ | 10 |
| 21 | UIO0 1) | 11 | 22 | UIO1 1) | 11 |
| 23 | HOME0 | 12 | 24 | HOME1 | 12 |
| 25 | G24V | 13 | 26 | G24V | 13 |
| 27 | SV0ERR | 14 | 28 | SV1ERR | 14 |
| 29 | PCIN0 | 15 | 30 | PCIN1 | 15 |
| 31 | PLIM0 | 16 | 32 | PLIM1 | 16 |
| 33 | +V24 | 17 | 34 | +V24 | 17 |
| 35 | GND | 18 | 36 | GND | 18 |
| 37 | SV0AO | 19 | 38 | SV1AO | 19 |
| 39 | UIO2 1) | 20 | 40 | UIO2 1) | 20 |
| 41 | UIO4 1) | 21 | 42 | UIO5 1) | 21 |
| 43 | A0-DIR | 22 | 44 | A1-DIR | 22 |
| 45 | A0+DIR | 23 | 46 | A1+DIR | 23 |
| 47 | A0-CLK | 24 | 48 | A1-CLK | 24 |
| 49 | A0+CLK | 25 | 50 | A1+CLK | 25 |
| 51 | PCLR0- | 26 | 52 | PCLR1- | 26 |
| 53 | PCLR0+ | 27 | 54 | PCLR1+ | 27 |
| 55 | UIO6 1) | 28 | 56 | UIO7 1) | 28 |
| 57 | UIO8 1) | 29 | 58 | UIO9 1) | 29 |
| 59 | G24V | 30 | 60 | G24V | 30 |
| 61 | SV0ON | 31 | 62 | SV1ON | 31 |
| 63 | SV0RST | 32 | 64 | SV1RST | 32 |
| 65 | NLIM0 | 33 | 66 | NLIM1 | 33 |
| 67 | +24V | 34 | 68 | +24V | 34 |

* Twisted pair of the same colors.

*1) In or out position depending on how it's inserted to MMCMI10. In when connected to axis 0, 1, 4 and 5, and Out when connected to 2, 3, 6, and 7.

# CSDM

## Easy Setup with an upper center focus setting that doesn't require separate setup.

### Product Introduction

CSDM adopts the SERCO network enabling real-time motion control.

Modular type, mounting up to 8-axis, saves space and provides easy setup with an upper center focus setting that doesn't require separate individual setup.

### Power Rail

A simple mounting and connecting system function with a single power rail allows easy and fast designing and installation resulting in wiring and repair cost reduction.

### SERCOS Interface

To realize multi-axis integrated motion solution, a single digital fiberoptic link provides seamless integration with the MMC-II controller.

### Motor Support

- Encoder 17-bit Serial Abs./Inc. & 9wire Inc.
- Motor Series
  CSMT/R Series & RSMZ/Q Series
  RSMD/H/S Series (less than1.5kW)
  3rd Party Linear Motor (Inc Type Encoder)

### CSDM Moduler Servo Drive

- SERCOS Network
- Saves space with modularity
- Supports wide applicable 100W to 1.5kW
- Mount up to 8-Axis per rail
- DC Link sharing, integrated modularize regeneration resistance
- Reduce costs utilizing multi-axis equipment
- Real-time status display
- High resolution 17-bit serial encoder support
- Various motor series applicable
- Linear motor support (#Encoder Input Freq:16 MHz)
- External high speed pulse counter (MPG) input support

### Application Profiles

- Provides SERCOS MMC-II and integrated motion solution
- Applicable to semiconductor, LCD, precision equipment, and detailed processes in the cellphone assembly line
- Reduce costs when using multi-axis equipment
- OLB, chip mounter, screen printer, handler, SMT, and etc.

### Detailed Product Name

| Catalog No. | Description |
|---|---|
| CSDM_IAM_01BX1 | IAM/Power + 100W Drive |
| CSDM_IAM_02BX1 | IAM/Power + 200W Drive |
| CSDM_IAM_04BX1 | IAM/Power + 400W Drive |
| CSDM_AM_01BX1 | 100W Drive |
| CSDM_AM_02BX1 | 200W Drive |
| CSDM_AM_04BX1 | 400W Drive |
| CSDM_AM_08BX1 | 800W Drive |
| CSDM_AM_15BX1 | 1.5kW Drive |
| CSDM_SMA | Shunt Module |
| CSDM_PRA1 ~ PRA8 | Power Rail(7 Type) |
| CSDM_SFA | Slot filler (Safety cover) |
| CSDM_PMA | Pulse Module (2-Axis/Module) |

## Technical Specification

AC Input Voltage: 170~253Vrms/43~63Hz

Authentication: CE, UL

SERCOS interface V 2.2

Temperature: 0° to 50°C(32 to122°F)

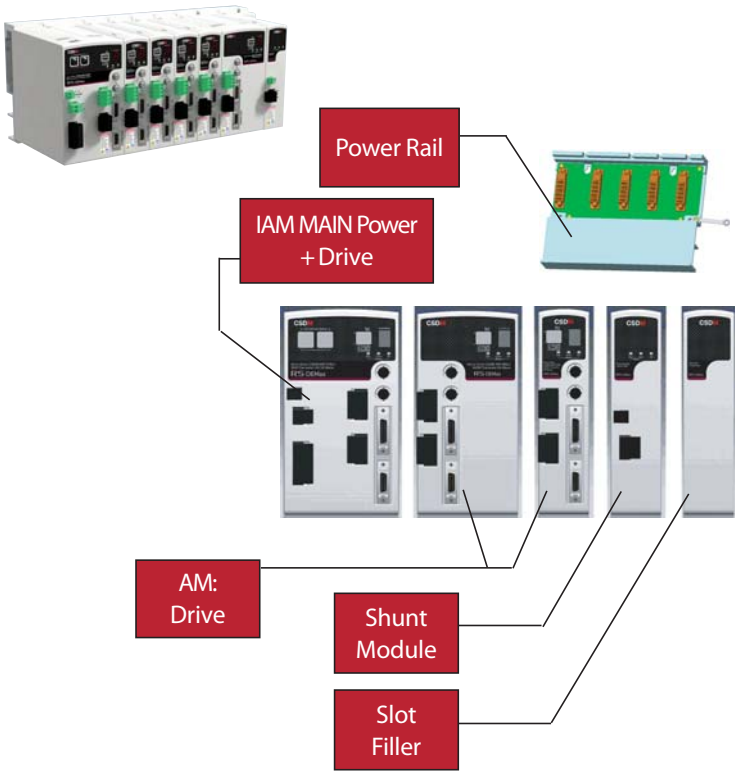
Storage Temperature: -40° to 85°C (-40 to 185°F)

Relative Humidity: 5 to 95%, non-condensing

## Servo Drive Rating Specifications

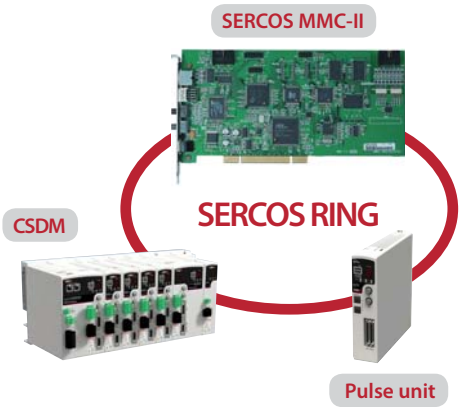
| Attribute | IAM,AM _01BX1 | IAM,AM _02BX1 | IAM,AM _04BX1 | IAM,AM _08BX1 | IAM,AM _15BX1 |
|---|---|---|---|---|---|
| PWM Frequency | 8 kHz | | | | |
| Nominal Input Voltage | 325V dc | | | | |
| Continuous current (rms) | 1.0 A | 2.0 A | 3.0 A | 6.0 A | 9.5 A |
| Continuous current (0-pk) | 1.41 A | 2.83 A | 4.24 A | 8.48 A | 13.4 A |
| Peak Current (rms) | 3.0 A | 6.0 A | 9.0 A | 18 A | 28.5 A |
| Peak Current (0-pk) | 4.20 A | 8.48 A | 12.7 A | 25.5 A | 40.3 A |
| Peak output current time | 3 Sec (300% of rated) | | | | |
| Continuous Power | 0.12 kW | 0.24kW | 0.48kW | 0.96kW | 1.8kW |
| Efficiency | 98% | | | | |

## Product Content



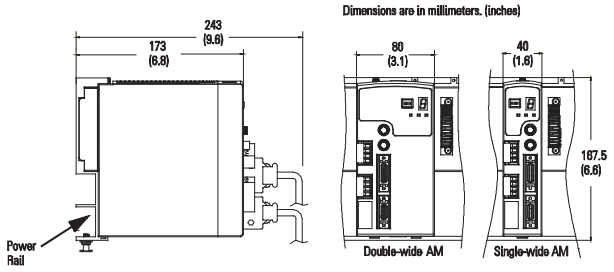

## SERCOS

- SErial
- Real time
- COmmunication
- System

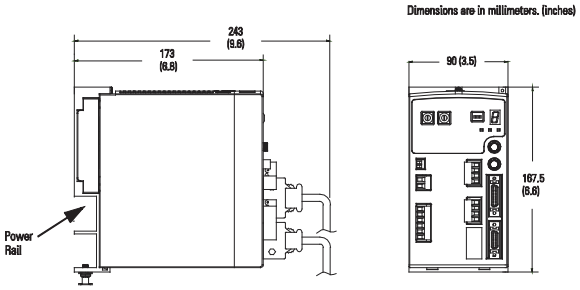


# CSDM Dimensions

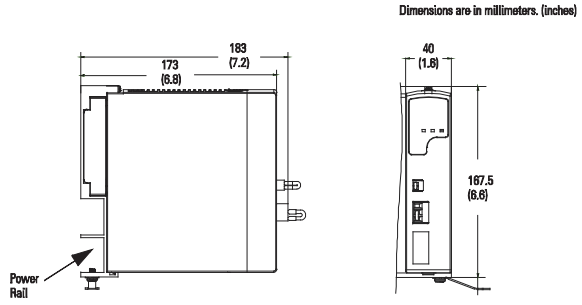
## CSDM_AM_xxBX1



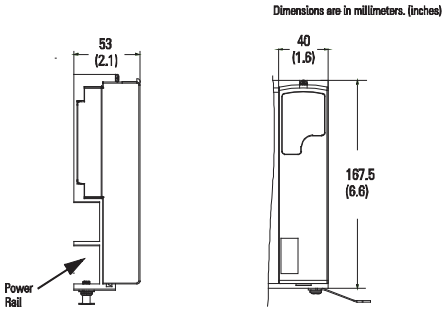

## CSDM_IAM_xxBX1



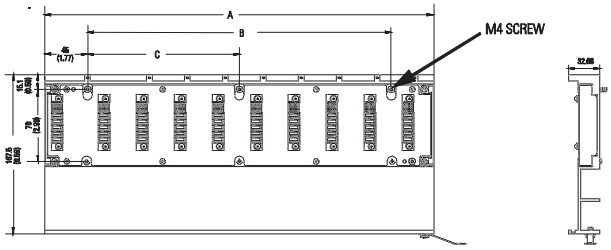

## CSDM_SMA




## CSDM_SFA




## CSDM Power Rail Mounted Specifications




| Catalog No. | Description | Dimension A mm(in.) | Dimension B mm(in.) | Dimension C mm(in.) |
|---|---|---|---|---|
| CSDM_PRA1 | 1-Axis Power Rail | 90(3.54) | N/A | N/A |
| CSDM_PRA2 | 2-Axis Power Rail | 130(5.12) | 40(1.58) | N/A |
| CSDM_PRA3 | 3-Axis Power Rail | 170(6.69) | 80(3.15) | N/A |
| CSDM_PRA4 | 4-Axis Power Rail | 210(8.27) | 120(4.72) | N/A |
| CSDM_PRA5 | 5-Axis Power Rail | 250(9.84) | 160(6.30) | N/A |
| CSDM_PRA7 | 7-Axis Power Rail | 330(12.99) | 240(9.45) | 120(4.72) |
| CSDM_PRA8 | 8-Axis Power Rail | 410(16.14) | 320(12.60) | 160(6.30) |

## SERCOS Option

### - Pulse Module & I/O Adapter

### CSDM PMA

### Pulse Module Adapter

For Global Servo/Step Drive Control

Support 2-Axis

MPG Input (Open Collector)

+/- Limits, HOME Input/Axis

5/5 User I/O

CE Authentication

# MMC-II

## MMC-II, High speed/High performance multi-axis motion controller adopting SERCOS

### Main Features

- 32-bit DSP TMS320VC33 150MHz, PCI Bus
- SERVO Interface: SERCOS
- Maximum Axis Support: 24-Axis
- On-Line Data Monitoring
- Easy Wiring
- User Friendly GUI and VariousFunction Libraries
- Easy setup for machine
- 12-Axis Synchronized Control

### Product Introduction

MMC-II is a High speed/High performance multi-axis motion controller adopting the SERCOS Network. A maximum 24-axis control is available, and the Axis Channel can be changed to I/O. Also, the PCI 2.3 Bus design enables it to be used for both industrial computers and personal computers. For the convenience of the existing MMC users, basic library is applied identically making movements easy.

RING type connection enables a wiring costs reduction and easy wiring. Optimized for high precision equipment; Optical communication realizing synchronized real-time network minimizes noise interruption and allows fast response and precision.

### Driver/Motor Support

Supports CSDM modular servo drive for the SERCOS network, and Servo motor adopts a 17-bit Serial encoder by default. An applicable 9-line Inc. supports CSMT/R series and RSMZ/Q series motors and linear motors.

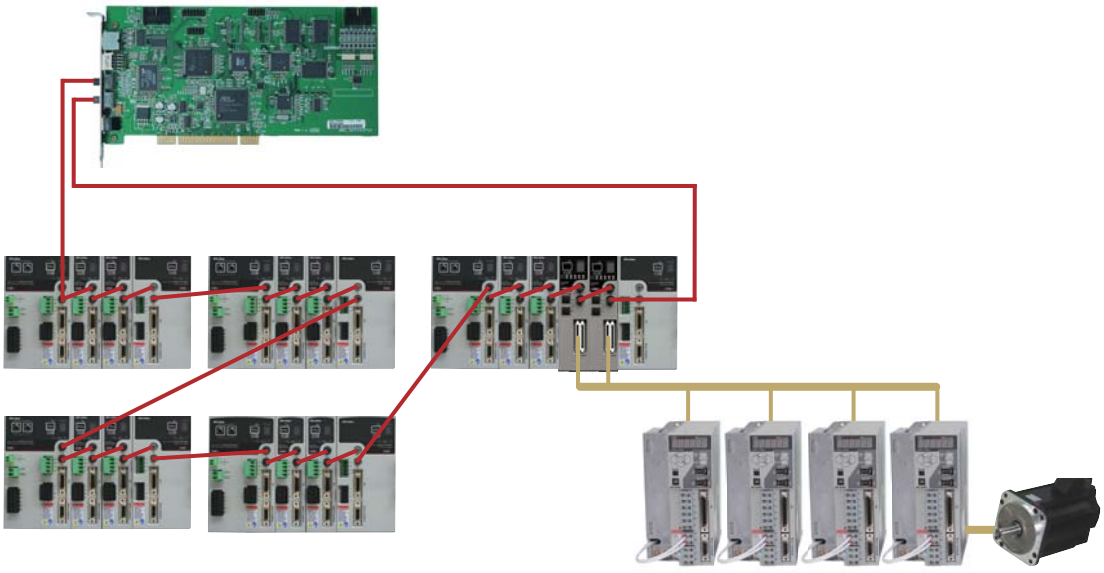
### Application Profiles

- LCD equipment (Bonder, Tester)
- Semiconductor Equipment
- General Machinery

### Detailed Model Name

- MMC_BDPOA2PSA
- SECOS MMC-II, Max 24-Axis, PCI Interface

### SERCOS Wiring Diagram



## Technical Specification

Linear Interpolation, Circular Interpolation, Abbreviated Movement

Multi-axis Movement, Spline, Speed Override

DSP 32bit, TMS320VC33 - 150MHz

PCI Interface: PCI Bus 2.3

Standard 2msec (per 8-Axis), variable 500usec to 32msec

SERCOS baud rate 4/ 8 Mbps (Auto Detection)

Operation Range: 32-bit

Trapezoid/Asymmetry/S-Curve/Jerk setting available

Max 24 node/Axis

SERCOS interface V 2.2

Temperature: 0° to 50°C(-20° to 80°F),

Storage Temperature : -40° to 85°C (-40° to 185°F)

Relative Humidity: 20 to 95%RH

## MMC-II Win Software Support

Support Windows 2000/XP

MMI Utility for Machine Testing

Parameter Adjustment and Gain Turning

Without and programming efforts

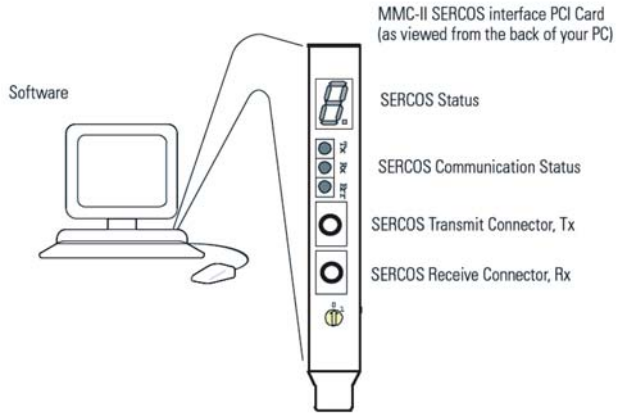
## Motion Menu

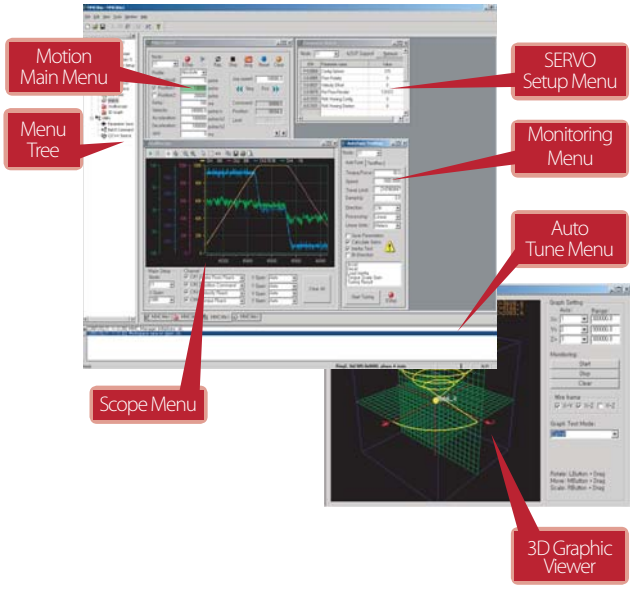
- Operation Test by node
- 3 Position Control
- Delay, Speed, Vel Set
- ACC, DCC Set
- Jog
- Axis Status

## Scope Menu

- Max 4 Channel Support
- Sampling Rate: 2 msec
- Auto Scale/Save, Print
- Zoom Function

## Wiring




## Servo Setup Menu

- Drive/Motor Setup
- Gain Tune, Auto Tune
- Limits Setup
- I/O Configurations (Limit Switch)
- Homing
- Fault Action Define.
- Parameter Save/Load/Init

## Auto Tune Menu

- Auto Tune / Test Run Tab Content
- Scope and Auto Tune optimized at 1024 * 768 Size
- Manual Gain Tune available on Test Run screen

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