

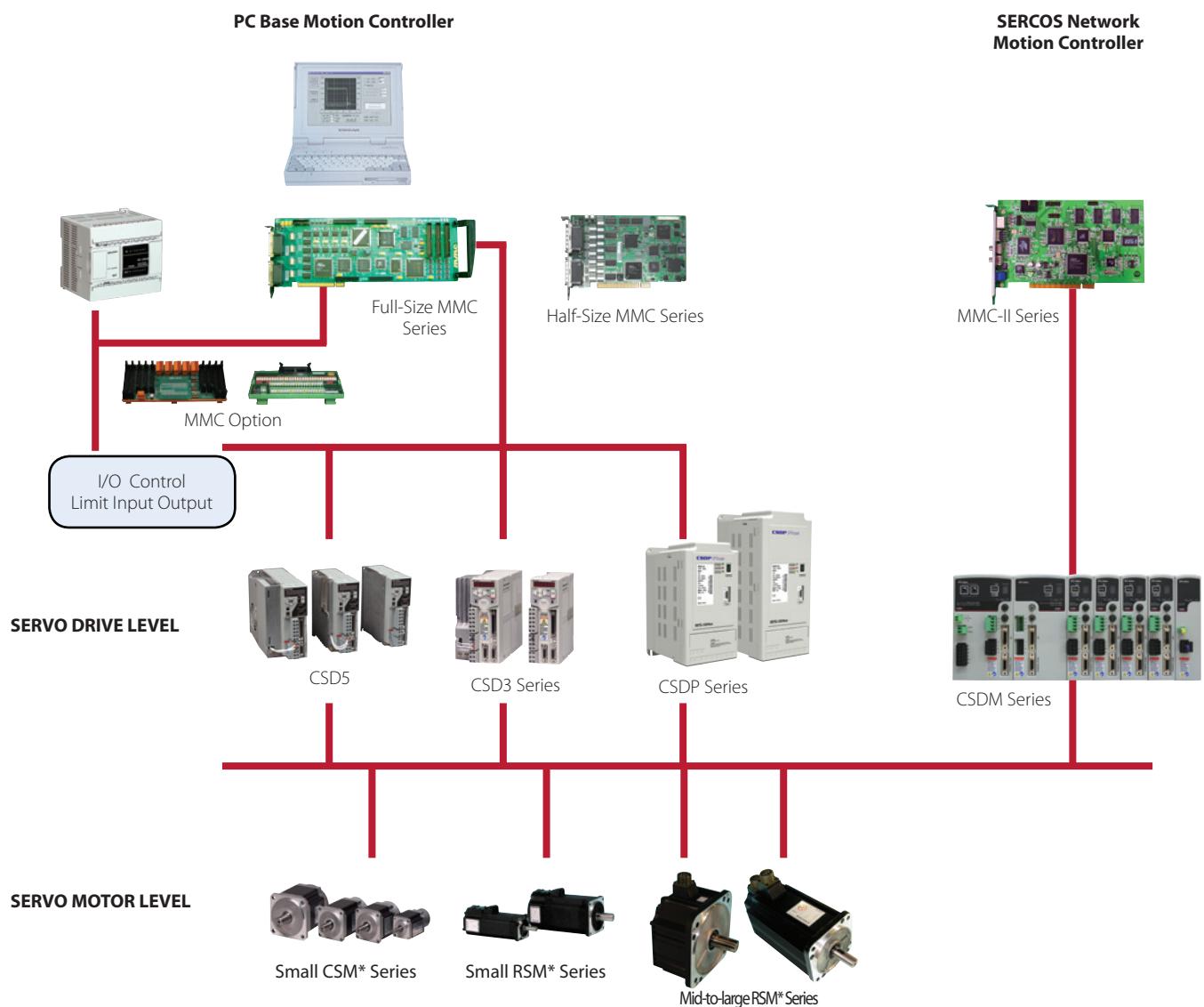
# RS OEMax AC SERVO SYSTEM & MOTION



**Top performance General Servo and  
Controller for Various Motion Controls**

# AC Servo & Motion Product

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



# OEMax Full Digital AC SERVO System

The OEMax 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.



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- Model Designation
- Servo Drive Specifications

### OEMax Servo Motor

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- CSM Servo Motor series

### Option

## SERVO DRIVE & MOTOR

The RS OEMax CSD Series and the 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 (21.9Apeak, 22.6APeak)
- Reduced leakage current (up to 10mA)



### ► Mid & large class 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 (TMS320VC33)
- 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

<b>C</b>	<b>S</b>	<b>D</b>	<b>5</b>	<b>_</b>	<b>0</b>	<b>1</b>	<b>B</b>	<b>X</b>	<b>1</b>
Rated output (W)				Input voltage(V)			Designing order		
A5	50W	B	220V	X1	Ver.1				
01	100W								
02	200W								
04	400W								
08	800W								
10	1kW								
15	1.5kW								

Servo motor model code format

<b>R</b>	<b>S</b>	<b>M</b>	<b>Z</b>	<b>_</b>	<b>0</b>	<b>1</b>	<b>B</b>	<b>A</b>	<b>1</b>	<b>A</b>	<b>N</b>	<b>K</b>	<b>3</b>	
Motor format				Rated output (W)			Input voltage(V)			Designing order			Motor axis specification	
CSMT Series	A3	30W	B	220V						1	Ver.1		3	Key type
CSMR Series	A5	50W												
RSMZ Series	01	100W												
RSMQ Series	:	:												
RSMD Series	45	4.5kW												
RSMH Series	50	5kW												
RSMS Series														
Encoder type														
	B	2048 p/r			A	YES								
	A	2500 p/r			B	NO								
	Q	17bit Abs.												
	R	17bit inc.												
Option														
	N	None												
	S	Oil seal												
	B	Brake												
	T	Oil seal, Brake												

# CSD5 Specifications

Items			50W,100W, 200W, 400W	800W	1KW, 1.5KW		
Basic specifications	Power <sup>1)</sup>	Main circuit power	Single-phase 200 to 240V, +10 to -15%, 50/60Hz	3-phase/Single-phase 200 to 240V (Default : 3-phase)	3-phase 200 to 230V, +10% to -15%, 50/60Hz50/60 Hz		
		Control power	Single-phase 220 to 240V, +10 to -15%, 50/60Hz				
	Control methods		SVPWM control via IPM				
	Encoder <sup>2)</sup>		2048/2500/10000 P/R (Incremental type), 131072 P/R (17bit serial incremental, absolute type)				
	Operating environment temperature / Humidity		0° to +50° / 90% or less (non-condensing)				
	Storage / Humidity		-20° to +85° / 90% or less (non-condensing)				
	Vibration / Shock resistance		Vibration 2G / Shock 15G or less (1G equals gravity acceleration : 9.8m/s <sup>2</sup> )				
I/O specifications	Position	Output specification	Encoder A, B, Z-phase output (line driver output)				
		Division ratio	N/M (N, M ≤ 32768)				
	External Input		Allocation 10 points : servo ON/OFF, servo on, 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				
			Fixed 1 point : E-stop(option)				
	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 While in Motion or Dwell, select Index 0 to 5				
			Fixed 5 points : servo alarm mode (3bit), Z-pulse (open collector), servo alarm				
Protective functions	Protective functions		Over-current, overload, overvoltage, over speed, IPM overheating, low voltage, CPU failure, encoder failure, communication disturbances, dynamic brake malfunction, etc.				
	Dynamic brake		Off servo/control device, activated when the alarm goes off				
	Regeneration <sup>3)</sup>		For motors with 200 Watts or less, no need for regeneration resistance. For motors 400 Watts or more, external regeneration resistance attachable when needed.				
Monitoring	D/A output		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			
		Voltage fluctuation rate		0 to 100% : or less (at Rated Speed)			
		Speed states	Load fluctuation rate	220V, +10 to -15%, 50/60Hz : 0.01%			
		Temperature fluctuation rate		25±25° : ±0.01% or less (at rated speed)			
		Frequency		800Hz (JL = JM)			
		Acceleration/Deceleration time constant setting		0 - 60 sec			
	Rated speed/Torque input	Speed <sup>4)</sup>	Rated speed operation command	DC ±10V (default is 6V at rated speed.)			
			Input impedance	Approx. 8.3MΩ			
		Torque	Circuit time constant	Approx. 3.2μ			
			Rated torque instruction	DC ±10V (default is 3V at rated torque.)			
		Input impedance		Approx. 8.3MΩ			
Position control	Feed forward compensatory		0 to 100% (setting resolution: 1%)				
	Input signal	Command 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)			
	Capsuling		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,				
			Brake control, JOG operation, auto tuning, reverse operation, etc.				

**PRECAUTIONS**

- <sup>1)</sup> 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.)
- <sup>2)</sup> Output cannot be more than the number of Encoder pulses for one rotation of the motor.
- <sup>3)</sup> 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.
- <sup>4)</sup> 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 RSMD/S/H 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 Specification

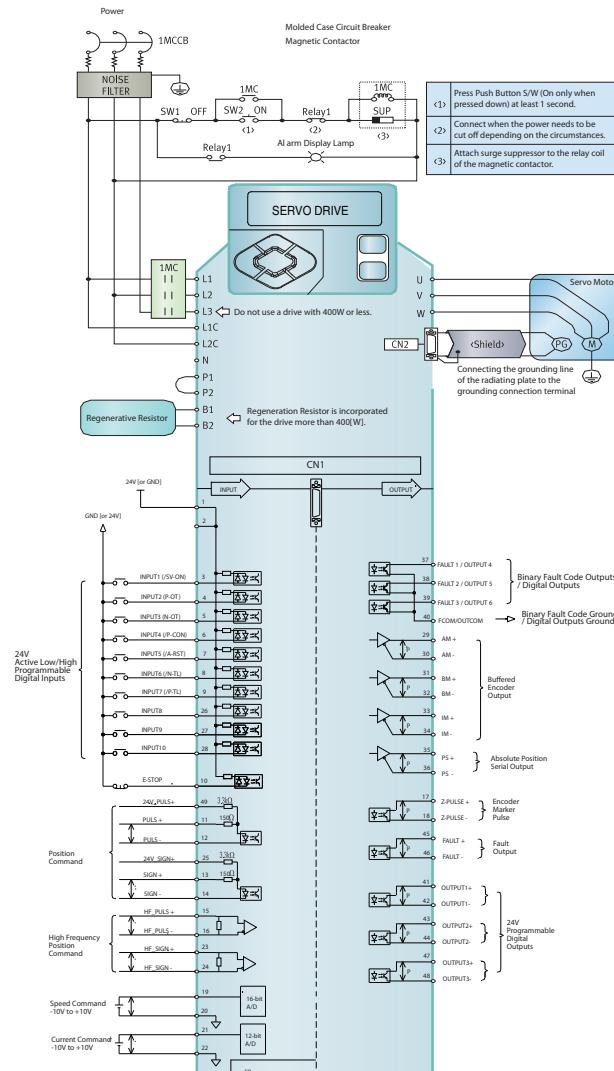
Classification	Item	Specification
Basic Specification	Power Supply <sup>1)</sup>	Input voltage(Vrms) Triple phase 200~230V, +10~ -15%, 50/60Hz Control voltage(Vrms) Single phase 200~230V, +10~ -15%, 50/60Hz
	Control Method	PWM control using IPM
	Feedback Method <sup>2)</sup>	1000 / 2048 / 2500 / 10000 Inc Type, 17 bit Serial Inc/Abs type
	Ambient temperature/humidity for use	0 ~ 55°C / 90% RH or below
	Ambient temperature/humidity for storage	-25 ~ 80°C / 90% RH or below
	Mounting type	Base mounted type
	Speed control range	1:5000
Speed torque control performance <sup>3)</sup>	Rate of load change	Less than ±0.01% at the rated speed and load of 0 to 100%
	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	± 2%
	Acceleration/deceleration Time	0 ~ 60sec
	Feed forward	0 ~ 100%
Position control performance	Width of position determination	0 ~ 250 pulse
	Types of command pulses	CW+CCW, pulse row + sign row, Phase A+ phase B(phase difference of 90°)
	Types of input commands	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)
	Command voltage	± 10VDC(14 bit A/D conversion)
	Input impedance	About 8.3M ohms
Multi stage speed command input	Circuit constant	35 μs or below
	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 <sup>4)</sup>		Included in the drive
Protection function		Overcurrent, overvoltage, overload, over speed, low voltage, CPU malfunction, communication failure
Monitoring		Two channel D/A output for measuring errors in position/speed/torque command as well as feedback and position

## Cautions

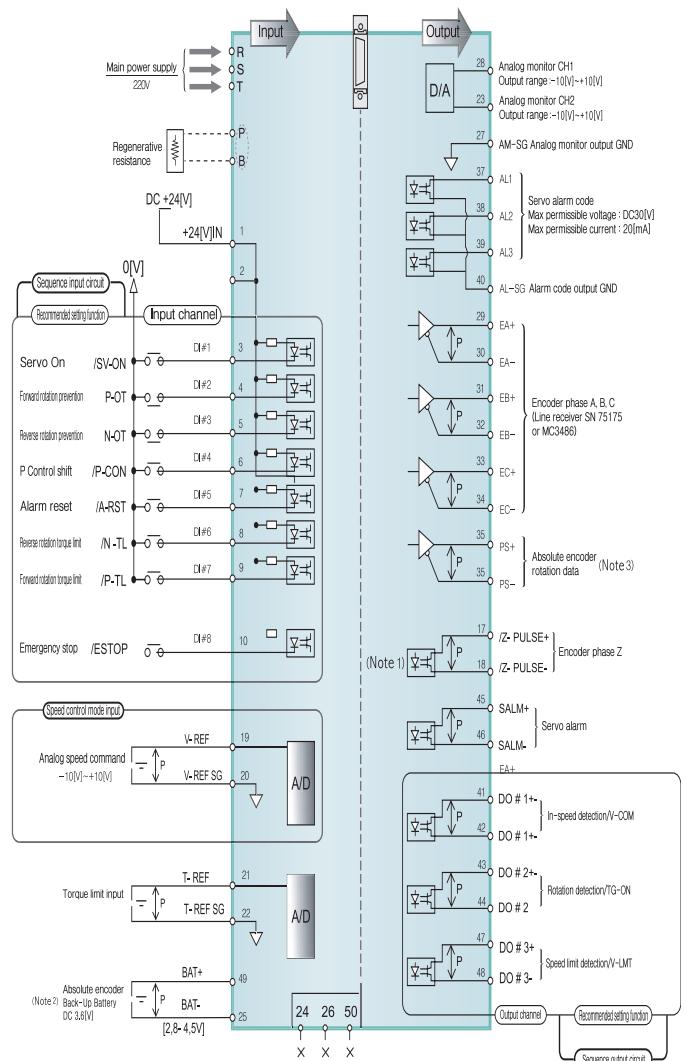
- <sup>1)</sup> Our servo motor includes a built-in DC power supply inside the amp(300V) and it does not require an additional DC power supply. (But it requires a separate DC 24V power supply to the external I/O.)
- <sup>2)</sup> It is not possible to generate a number of pulses exceeding the number of encoder pulse per each rotation of the motor.
- <sup>3)</sup> As the motor decelerates, regenerative energy is created. The regenerative energy that can be absorbed by the drive and the motor depends on the speed of motor's rotation and the load inertia.
- <sup>4)</sup> In case of speed control, it is possible to rotate in one direction due to the offset at the minimum speed.

# Wiring Diagram

## CSD5 Series



## CSDP Series



Note 1. P stands for twisted pair line.

Note 1. The capacity of the photo coupler at the output side is below DC30V 50mA.

Note 2. Please make a connection when you use the absolute encoder.

Note 3. It is only good for using an 11 bit absolute encoder.

Note 4. If the external voltate is above 5V, please connect an external trsistance be referring to the manual. (If possible, use 24V)

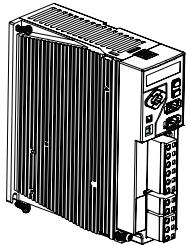
Note 5. The alarm reset is only good when the contact point is turned on. (No level detection)

Note 6. P represents a twisted pair of wire.

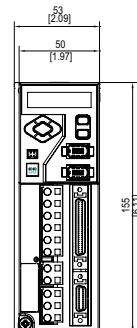
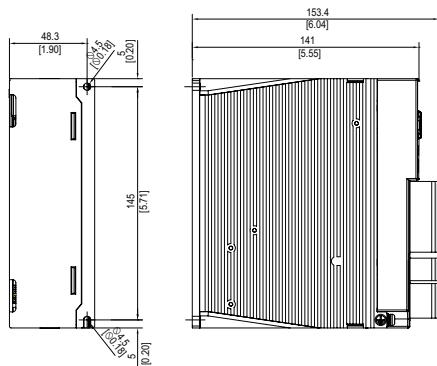
# Dimensions

## CSD5 Series

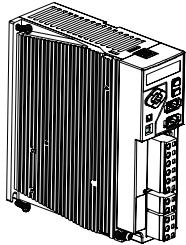
**500W, 100W, 200W**



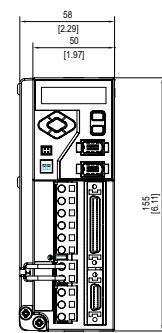
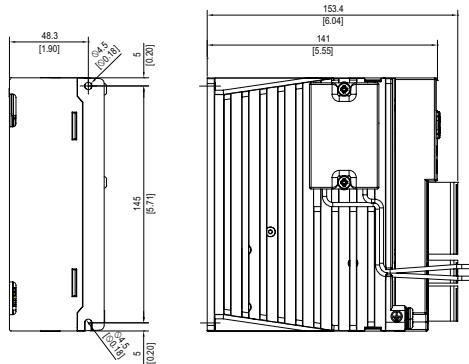
Height	Width	Depth 1
155mm	53mm	153mm



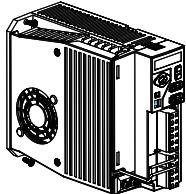
**400W**



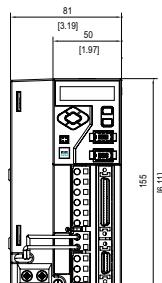
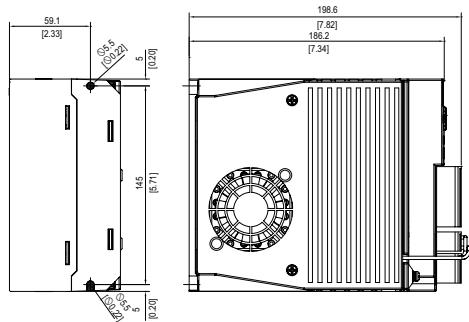
Height	Width	Depth 1
155mm	58mm	153mm



**800W, 1KW, 1.5W**



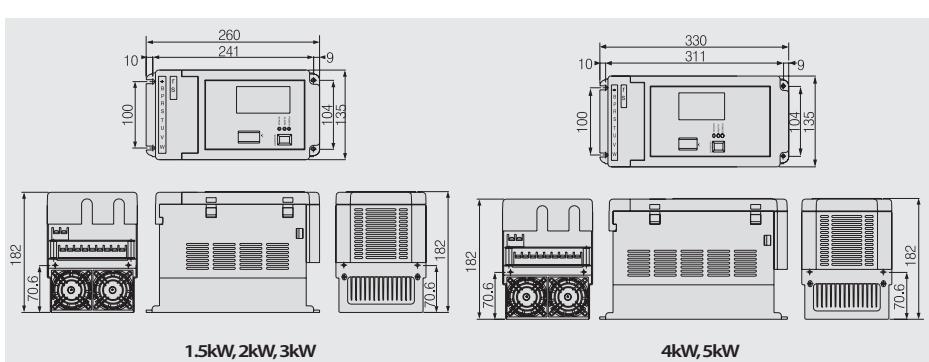
Height	Width	Depth 1
155mm	81mm	198mm



\*CAD Data of the above dimensions are available to download at our company website ([rsautomation.biz](http://rsautomation.biz)).

## CSDP Series

Model	Rated output	Voltage	Weight
CSDP-15BX2	1.5kW	3Φ 200~230V 50/60Hz	4.98kg
CSDP-20BX2	2kW		
CSDP-30BX2	3kW		
CSDP-40BX2	4kW		
CSDP-50BX2	5kW		6.14kg



# Combination of Motors and Controllers

Servo drive CSD5	RSM series			
	RSMZ	RSMS	RSMD	RSMH
01BX1	-A3Bx			
	-A5Bx			
	-A8Bx			
	-01Bx			
-02BX1	-02Bx			
-04BX1	-04Bx			-05Bx
-08BX1	-06Bx			
	-08Bx		-08Bx	
	-10Bx			
10BX1			-10Bx	-10Bx
15BX1		-10Bx		
		-15Bx	-15Bx	-15Bx

Controller type	Driving Motors(kW)				
	RSMD	RSM	RSMF	RSMS	RSML
CSDP-15BX2	1.0	1.0	-	0.9	0.9
	1.5	1.5	1.5	1.2	1.2
CSDP-20BX	2.0	2.0	-	2.0	2.0
CSDP-30BX	2.5	-	2.5	-	-
	3.0	3.0	-	3.0	3.0
CSDP-40BX	3.5	-	3.5	-	-
	4.0	4.0	-	-	-
CSDP-50BX2	4.5	5.0	4.5	4.5	4.5
	5.0			5.0	

# Servo motor

## Motor classifications

Motor series		Rated output	Rated/Maximum speed	Motor structure	Encoder		Enclosure	Feature	Main applications
					2500p/r	17bit serial Abs./Inc			
RSMZ		30W ~ 600W	3000/5000	Cylinder	O	O	IP 65 <small>Note1)</small>	Ultra low inertia	Belt drives, Robots, Mounters, Inserters, XY tables
		750W	3000/4500		O	O			
		950W	3000/3500		O	O			
RSMD		0.75kW ~ 5kW	2000/3000	Cylinder	O	O	IP 65	Middle inertia	Conveyor machines, Robots, XY tables
RSMH		0.5kW ~ 5kW	2000/3000	Cylinder	O	O	IP 65	Ultra high inertia	High frequency positioning equipments
RSMS		1.0kW ~ 3.5kW	3000/5000	Cylinder	O	O	IP 65	Low inertia	Machine tools, Winding machines, Press feeders, Woodworking machines
		4.0kW ~ 5.0kW	3000/4500		O	O			
CSMT		30W ~ 1kW	3000/5000	Cylinder	2,048p/r Incremental	O	IP 65	Ultra low inertia	Machine tools, Transfer machines, Woodworking machines
CSMR		100W ~ 400W	3000/5000	Pan Cake	2,048p/r Incremental	O	IP 65	Low inertia	Machine tools, Transfer machines, Woodworking machines, Spring forming machines

Note.1 Support with oil seal type motor.

# RSMZ Motor Series

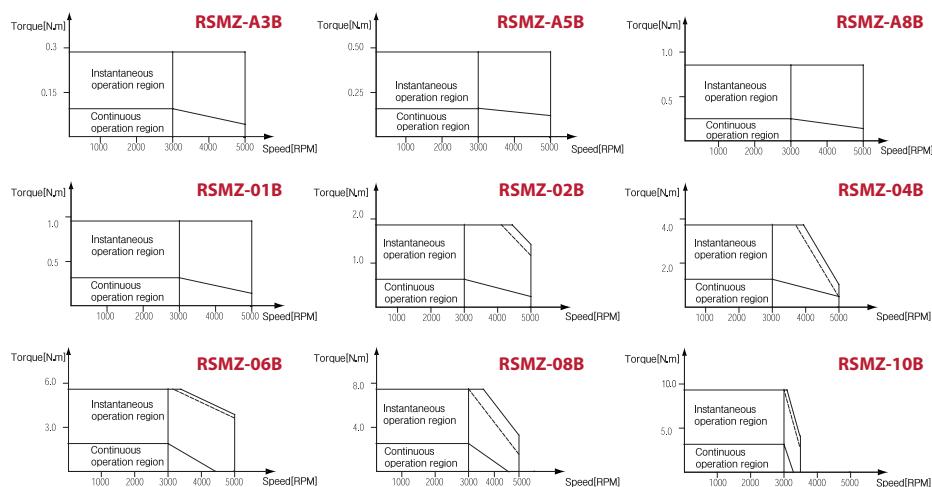
## Specifications

Item	Unit	RSMZ								
		A3B	A5B	A8B	01B	02B	04B	06B	08B	10B
Flange Size	mm	40	40	40	40	60	60	80	80	80
Rated output	W	30	50	80	100	200	400	600	750	950
Rating	%					100				
Rated rotation speed	r/min					3000				
Max rotation speed	r/min				5000				4500	3500
Rated torque	N·m	0.095	0.16	0.255	0.32	0.64	1.3	1.91	2.4	3
	kgf·cm	0.97	1.62	2.6	3.24	6.5	13	19.49	24.3	30.9
Max instantaneous	N·m	0.28	0.48	0.76	0.95	1.91	3.8	5.73	7.1	9.1
	kgf·cm	2.9	4.9	7.8	9.7	19.5	39	58.47	73	92.6
Rated current	A <sub>(rms)</sub>	1	1	1	1	1.6	2.5	4.1	4.3	4.3
Rotator inertia 2500P/R Inc./17bit Abs.	×10 <sup>-4</sup> kg·m <sup>2</sup>	0.021/0.015	0.030/0.024	0.039/0.034	0.059/0.054	0.19/0.18	0.34/0.33	0.93/0.92	1.2	1.47
	gf·cm·sec <sup>2</sup>	0.021/0.015	0.031/0.024	0.040/0.035	0.060/0.055	0.19/0.18	0.35/0.34	0.95/0.94	1.22	1.5
Rotator inertia(Brake) 2500P/R Inc./17bit Abs.	×10 <sup>-4</sup> kg·m <sup>2</sup>	0.025/0.019	0.034/0.029	0.049/0.046	0.061/0.056	0.21/0.20	0.36/0.35	1.05/1.04	1.32	1.49
	gf·cm·sec <sup>2</sup>	0.026/0.019	0.035/0.030	0.050/0.047	0.062/0.057	0.21/0.20	0.37/0.36	1.07/1.06	1.35	1.52
Electrical constant	ms	0.6	0.67	0.96	0.88	3.4	3.5	7.3	7.4	7.6
Mechanical constant 2500P/R Inc./17bit Abs.	ms	2.74/1.9	1.58/1.3	0.85/0.74	0.90/0.82	0.84/0.79	0.59/0.57	0.4/0.39	0.44	0.33
	ms(Brake)	3.27/2.5	1.80/1.5	1.07/1.0	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./17bit Abs.	kW/s	4.4/6.2	8.7/10.9	17.0/19.5	17.7/19.4	21.8/23.0	48.7/50.2	39.2/39.7	48.3	62.2
	kW/s(Brake)	3.7/4.9	7.7/8.9	13.6/14.4	17.1/18.7	19.7/20.7	46.0/47.4	34.7/35.1	43.9	61.4
Max instantaneous current	A <sub>(O.P.)</sub>	4.3	4.3	4.3	4.3	6.89	10.5	17.4	18.3	18.3
Insulation class						B				
Vibration class						V-15				
Paint color						Black				
Mass	kg	0.32	0.39	0.5	0.66	1	1.7	2.9	3.5	4.1
	kg(Brake)	0.54	0.63	0.77	0.93	1.5	2.3	3.5	4.3	4.9
Driving power supply voltage	V <sub>AC</sub>				200/220					

### Cautionary Items

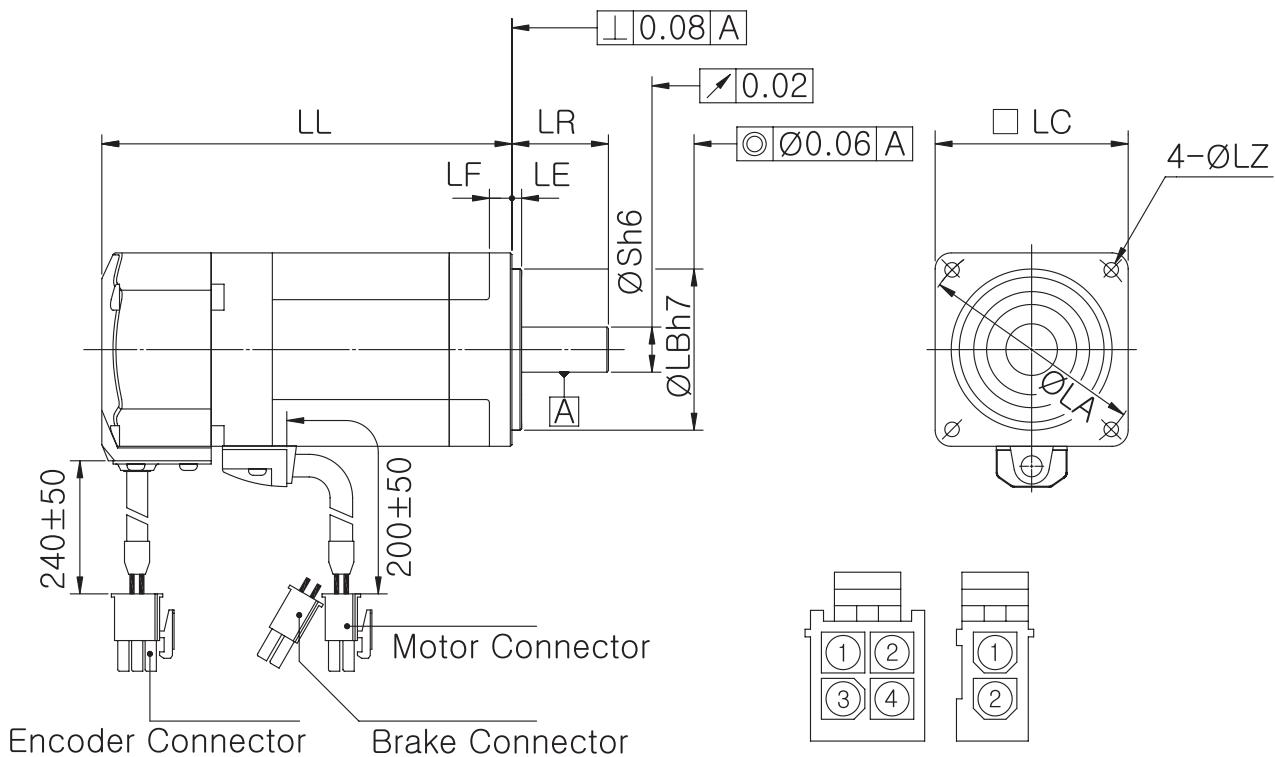
- The above characteristics are obtained from ideal sinusoids. (typical value at 20 degrees).
- For IP65 (If the outgoing line is faced downward, excluding the connector part)
- Temperature measured at the center of the motor frame should be below 65 degrees in celcius.(at 40 degrees in celcius)

### Speed-Torque curves



# RSMZ Motor Series

## External Dimension & Connector Specifications



### Specifications of motor/brake connector

Brake		Standard		With brake	
Part no.	AMP/ 172167-1			AMP/ 172167-1 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	

Series		RSMZ																	
Model		A3		A5		A8		01		02		04		06		08		10	
		ABS	INC	ABS	INC	ABS	INC	ABS	INC	ABS	INC								
LL	Standard	73.5	60	81.5	68	101.5	88	111.5	98	98	84.5	127.5	114	128	115	146	133	164	151
	With brake	104.5	92	112.5	100	132.5	120	142.5	130	130.5	118	160	147.5	163	150	181	168	199	186
LR		25		25		25		25		30		30		35		35		35	
S		7		8		8		8		11		14		16		19		19	
LA		45		45		45		45		70		70		90		90		90	
LB		30		30		30		30		50		50		70		70		70	
LC		40		40		40		40		60		60		80		80		80	
LE		3		3		3		3		3		3		3		3		3	
LF		6		6		6		6		7		7		8		8		8	
LZ		3.6		3.6		3.6		3.6		5.5		5.5		6.6		6.6		6.6	

# RSMD Motor Series

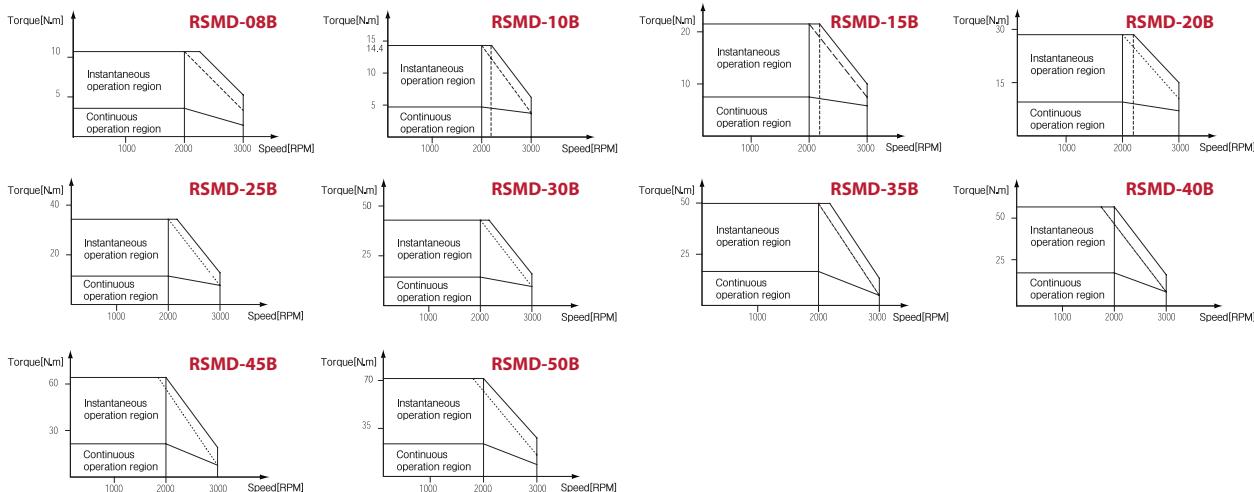
## Specifications

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
Rating	%					100					
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 <sub>(rms)</sub>	5	5.8	9.4	12.3	14	17.8	19.6	23.4	26.2	28
Rotator inertia	×10 <sup>-4</sup> kg·m <sup>2</sup>	2.67	4.82	7	9.3	11.5	13.8	31.49	33.5	37.7	45.5
	gf·cm·sec <sup>2</sup>	2.72	4.92	7.1	9.5	11.7	14.1	32.13	34.2	38.5	46.4
Rotator inertia (Brake)	×10 <sup>-4</sup> kg·m <sup>2</sup>	3.12	6.1	8.3	10.5	12.8	15	36.19	38.7	42.9	50.7
	gf·cm·sec <sup>2</sup>	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
Mechanical 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(Brake)	41.94	38.6	62.9	88.6	112.2	139.4	78.9	96	109.6	115.2
Max instantaneous current	A <sub>(O-P)</sub>	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 <sub>AC</sub>					200/220					

### Cautionary Items

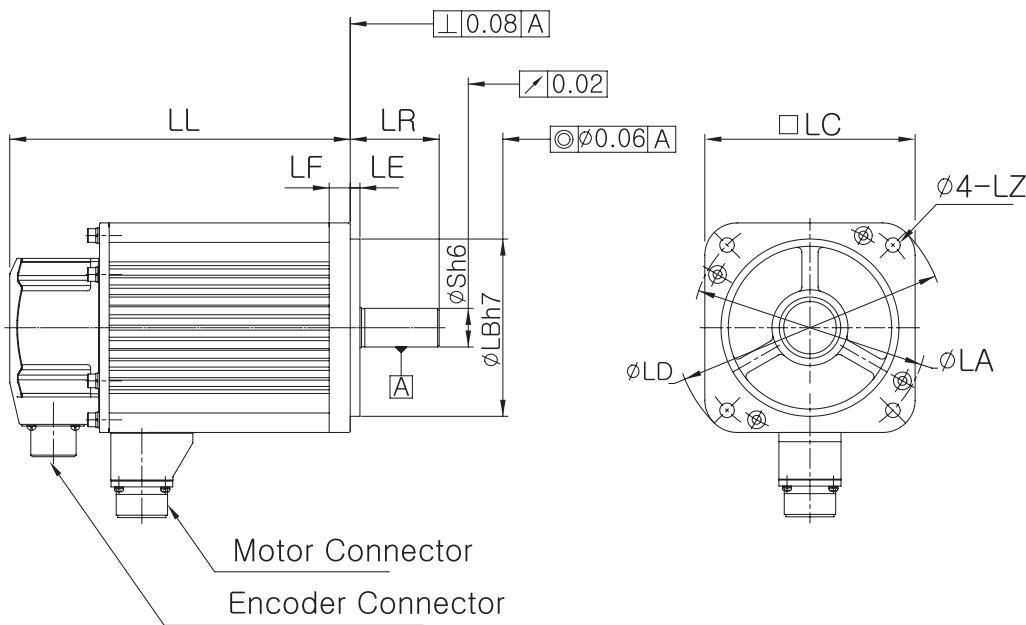
- The above characteristics are obtained from ideal sinusoids. (typical value at 20 degrees).
- For IP65 (If the outgoing line is faced downward, excluding the connector part)
- Temperature measured at the center of the motor frame should be below 65 degrees in celcius.(at 40 degrees in celcius)

### Speed-Torque curves



# RSMD Motor Series

## External Dimension & Connector Specifications



Specifications of motor/brake connector

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

## Motor connector (MS 3102A)

Series	RSMD	
Model	08~25	30~50
Standard	20-4P	22-22P
With brake	20-18P	24-11P

Series	RSMD										
LL	Mode	08	10	15	20	25	30	35	40	45	50
	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

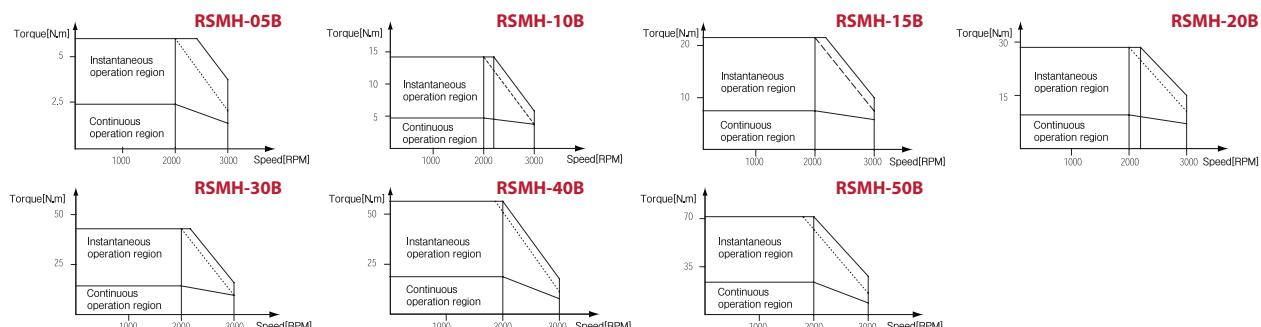
## Specifications

Item	Unit	RSMH					
		05B	10B	15B	20B	30B	40B
Flange Size	mm	130	130	130	180	180	180
Rated output	W	0.5	1	1.5	2	3	4
Rating	%				100		
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
	kgf·cm	24.4	48.6	72.9	97.4	146	195
Max instantaneous torque	N·m	6	14.4	21.5	28.5	42.9	56.4
	kgf·cm	61	147	219.2	291	437	729
Rated current	A <sub>(rms)</sub>	3.2	5.6	9.4	12.3	17.8	23.4
Rotator inertia	$\times 10^4 \text{kg}\cdot\text{m}^2$	14	26	42.9	62	94.1	120
	gf·cm·sec <sup>2</sup>	14.3	26.5	43.8	63.3	96	122.4
Rotator inertia (Brake)	$\times 10^4 \text{kg}\cdot\text{m}^2$	15.2	27.2	44.1	67.9	100	126
	gf·cm·sec <sup>2</sup>	15.5	27.8	45	69.3	102	128.6
Electrical constant	ms	17	18	22	26	26	31
Mechanical constant	ms	4.8	3.4	3.5	2.5	2.9	2.6
	ms(Brake)	5.2	3.6	3.6	2.7	3.1	2.7
Power rating	kW/s	4.1	8.9	12.2	15	22.2	31.1
	kW/s(Brake)	3.8	8.5	11.8	13.7	20.9	29.6
Max instantaneous current	A <sub>(O-P)</sub>	11.5	23.8	40	51.9	75.8	100
Insulation class					F		
Vibration class					V-15		
Paint color					Black		
Mass	kg	5.3	8.5	10	16	18.2	22
	kg(Brake)	6.9	9.5	11.6	19.5	21.7	25.5
Driving power supply voltage	V <sub>AC</sub>				200/220		

### Cautionary Items

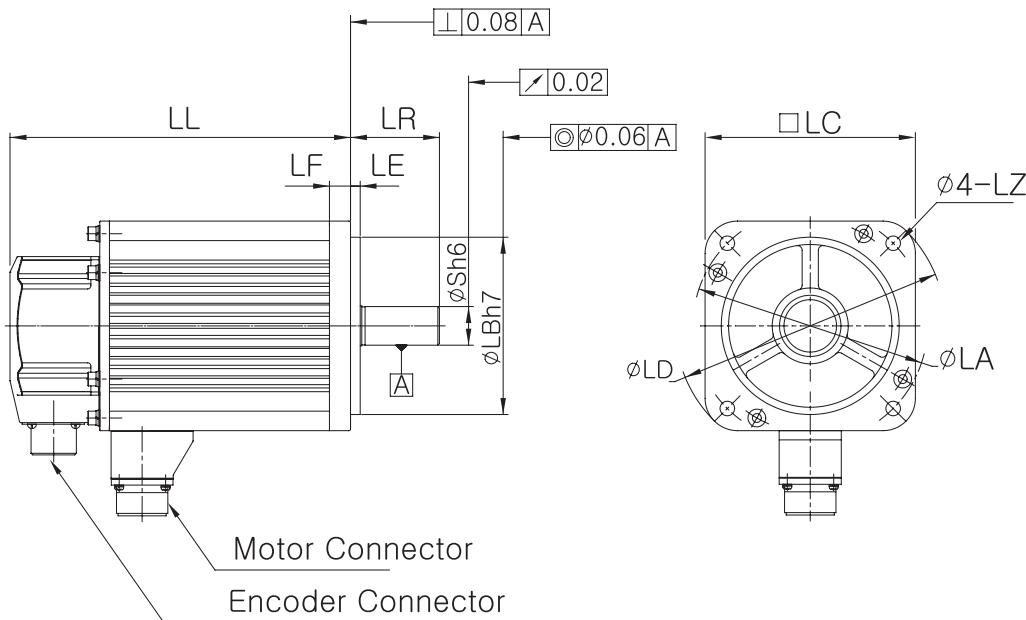
- The above characteristics are obtained from ideal sinusoids. (typical value at 20 degrees).
- For IP65(If the outgoing line is faced downward, excluding the connector part)
- Temperature measured at the center of the motor frame should be below 65 degrees in celcius.(at 40 degrees in celcius)

### Speed-Torque curves



# RSMH Motor Series

## External Dimension & Connector Specifications



Specifications of motor/brake connector

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

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	13.5	13.5	13.5	

# RSMS Motor Series

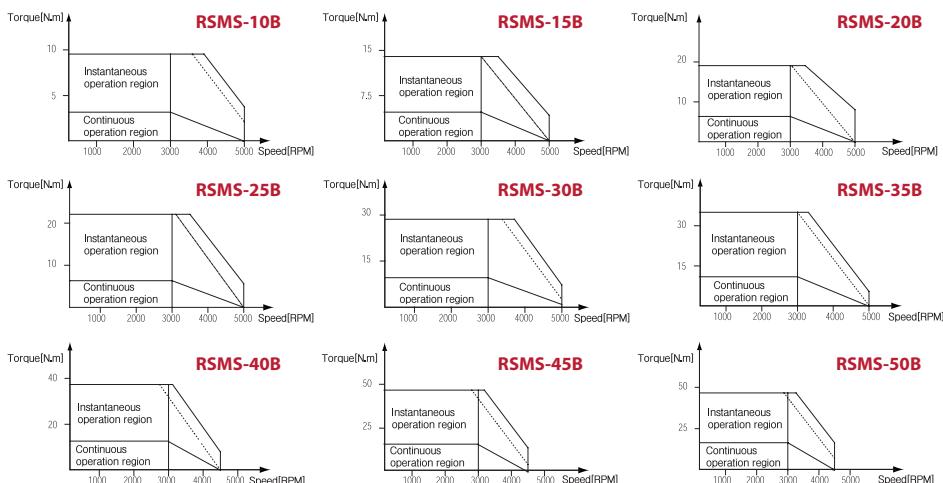
## Specifications

Item	Unit	RSMS								
		10B	15B	20B	25B	30B	35B	40B	45B	508B
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
Rating	%					100				
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	$\times 10^4 \text{kg}\cdot\text{m}^2$	2.06	2.39	3.04	3.78	5.99	6.93	12.4	13.6	16
	$\text{gf}\cdot\text{cm}\cdot\text{sec}^2$	2.1	2.44	3.1	3.86	6.11	7.07	12.7	13.9	16.3
Rotator inertia (Brake)	$\times 10^4 \text{kg}\cdot\text{m}^2$	2.5	2.84	3.49	4.23	6.44	7.38	13.7	14.9	17.3
	$\text{gf}\cdot\text{cm}\cdot\text{sec}^2$	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 <sub>(O-P)</sub>	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 <sub>AC</sub>				200/220					

### Cautionary Items

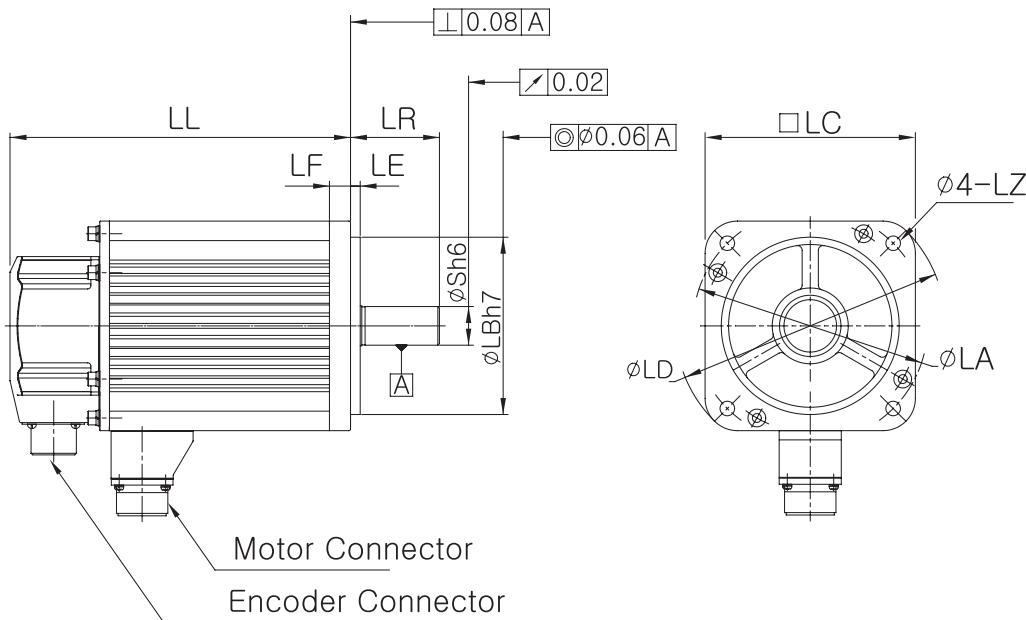
- The above characteristics are obtained from ideal sinusoids. (typical value at 20 degrees).
- For IP65 (If the outgoing line is faced downward, excluding the connector part)
- Temperature measured at the center of the motor frame should be below 65 degrees in celcius.(at 40 degrees in celcius)

## Speed-Torque curves



# RSMS Motor Series

## External Dimension & Connector Specifications



### Specifications of motor/brake connector

Brake	Standard		With brake		
	Part no.	MS 3102A 20-4P MS 3102A 22-22P	MS 3102A 20-18P	MS 3102A 24-11P	Signal
Pin spec.	Pin no.	Signal	Pin no.		
	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
Outlines		MS 3102A 20-4P, 22-22P	MS 3102A 20-18P	MS 3102A 24-11P	

### Motor connector (MS 3102A)

Series	RSMD	
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	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

# CSMT Motor Series

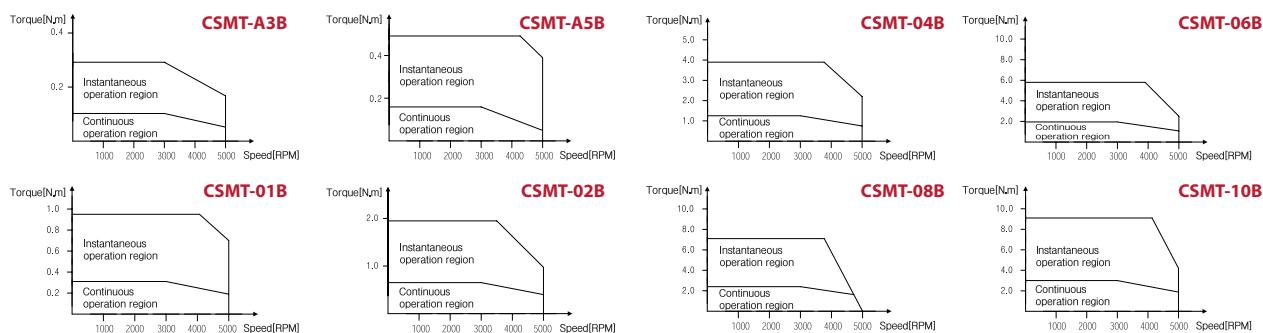
## Specifications

Item	Unit	CSMT							
		A3B	A5B	01B	02B	04B	06B	08B	10B
Flange Size	mm	40	40	60	60	60	80	80	86
Rated output	W	30	50	100	200	400	600	800	1000
Rating	%				100				
Rated rotation speed	r/min				3000				
Max rotation speed	r/min				5000				
Rated torque	N·m	0.095	0.159	0.318	0.64	1.27	1.91	2.39	3
	kgf·cm	0.97	1.62	3.25	6.5	13	19.5	24.4	30.9
Max instantaneous torque	N·m	0.29	0.48	0.95	1.91	3.82	5.73	7.16	9.1
	kgf·cm	2.9	4.9	9.7	19.5	39	58.5	73	92.6
Rated current	A <sub>(rms)</sub>	0.3	0.6	1.1	1.7	3.3	4.4	5	5.4
Max instantaneous current	A <sub>(rms)</sub>	0.9	1.5	3	4.9	9.6	12.8	14.1	15.3
Rotator inertia	gf·cm·sec <sup>2</sup>	0.01	0.02	0.03	0.18	0.34	1	1.1	1.56
	×10 <sup>4</sup> kg·m <sup>2</sup>	0.01	0.02	0.03	0.18	0.34	0.98	1.08	1.53
Rotator inertia (Brake)	gf·cm·sec <sup>2</sup>	0.04	0.05	0.06	0.28	0.44	1.24	1.34	1.66
	×10 <sup>4</sup> kg·m <sup>2</sup>	0.04	0.05	0.06	0.28	0.44	1.22	1.32	1.63
Electrical constant	ms	1.1	0.9	0.6	0.9	0.7		0.6	
Mechanical constant	ms	0.8	1.1	1.6	3.2	3.5	6	4.8	5.6
Power rating	kW/s	9.2	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 torque	mm MAX			0.2					0.5
Allowable thrust weight	kgf MAX	4	4	4	7	7	10		
Allowable radial weight	kgf MAX	8			20		35		
Paint color					Black				
Mass	Kg	0.3	0.4	0.5	0.9	1.3	2.2	2.5	3.7
Driving power supply voltage	VAC				220				

### Cautionary Items

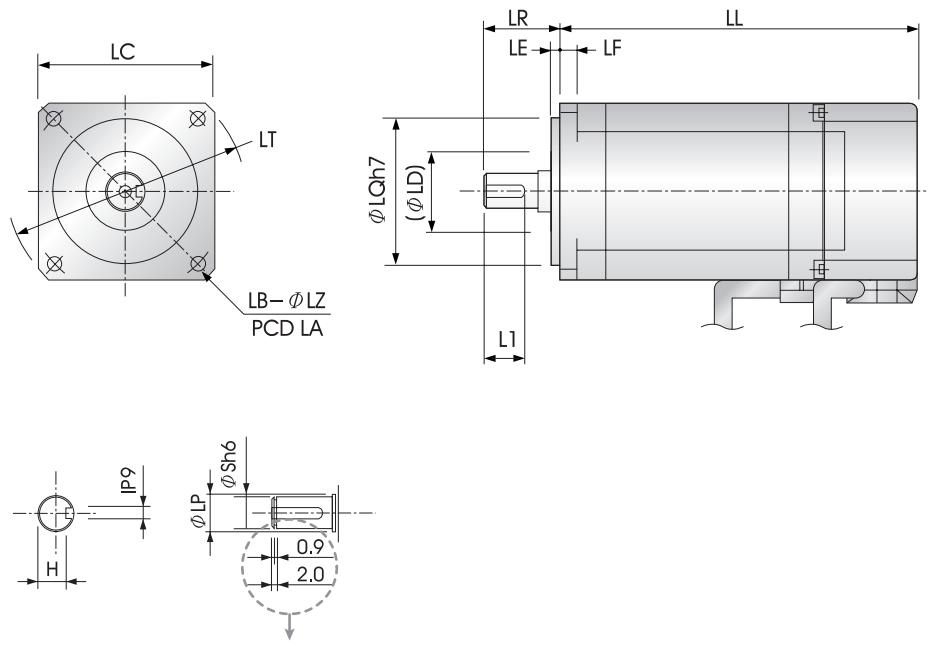
- If you wish to use the rated torque, you need to attach a 200x200x6(mm) aluminum heat sink to the motor. Temperature should be 40 degrees in Celsius.
- Every measurement value was obtained at 20 degrees in Celsius.
- Each value is a value obtained by combining it to the driver.
- If you use a brake, 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 Series							
Rated Output(W)	30	50	100	200	400	600	800	950
LL	Brake (No)	53.5	187.5	210.5	235.5	214.5	234.5	248
	Brake (Yes)	89.1	95.1	109.1	110.7	132.7	136.3	145.3
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		6.5		6.6
LH	4.5			7		7		7
LP	9			14		20		20
LQ	30			50		70		80
LT	55			80		105		112
L1	17			18		23		23
H	6.2			9.5		13.0		13.0
I	3			4		5		5

# CSMR Motor Series

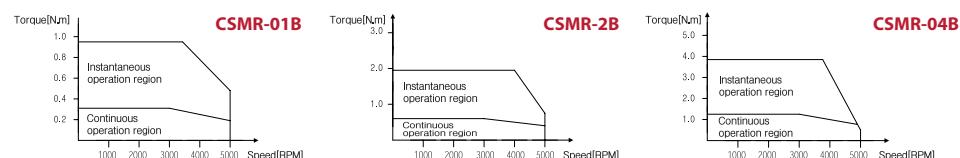
## Specifications

Item	Unit	CSMR		
		01B	02B	04B
Flange Size	mm	60	80	80
Rated output	W	100	200	400
Rating	%		100	
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 <sub>(rms)</sub>	0.9	1.5	2.7
Max instantaneous current	A <sub>(rms)</sub>	2.5	4.2	7.8
Rotator inertia	gf·cm·sec <sup>2</sup>	0.09	0.3	0.57
	×10 <sup>4</sup> kg·m <sup>2</sup>	0.09	0.3	0.56
Rotator inertia (Brake)	gf·cm·sec <sup>2</sup>	0.19	0.53	0.8
	×10 <sup>4</sup> kg·m <sup>2</sup>	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 torque	mm MAX	0.2	0.2	0.2
Allowable thrust weight	kgf MAX	4	7	7
Allowable radial weight	kgf MAX	8	20	20
Paint color			Black	
Mass	Kg	0.6	1.1	1.6
Driving power supply voltage	V <sub>AC</sub>		220	

### Cautionary Items

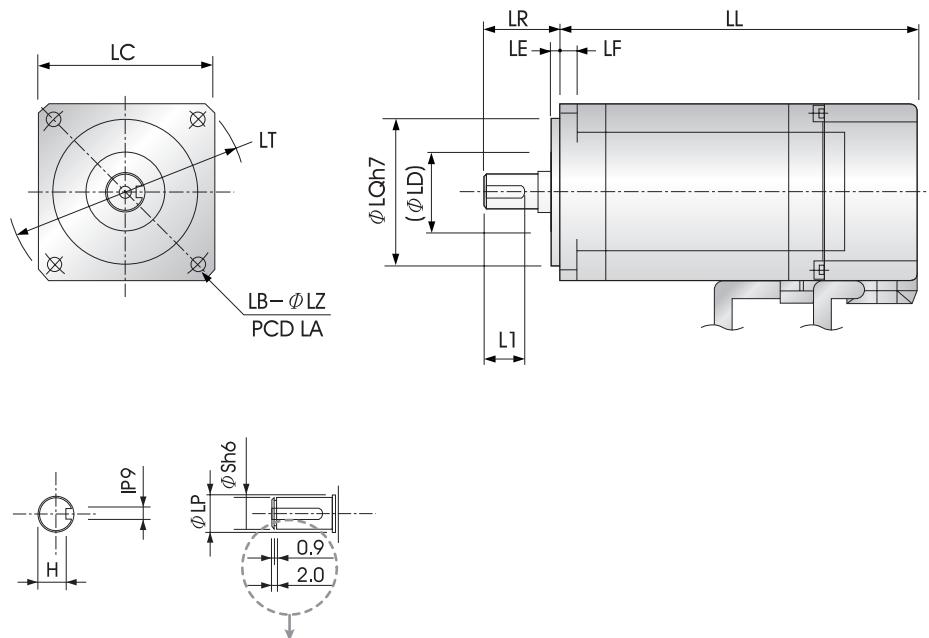
- If you wish to use the rated torque, you need to attach a 200x200x6(mm) aluminum heat sink to the motor. Temperature should be 40 degrees in Celsius.
- Every measurement value was obtained at 20 degrees in Celsius.
- Each value is a value obtained by combining it to the driver.
- If you use a brake, 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 Series		
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	

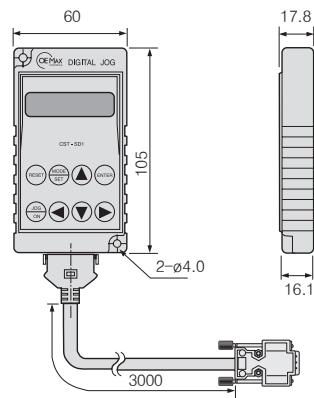
# Option

## ■ Model Name

- CST-SDC: CSDJ, CSDP Series Operator

## ■ Specification

Item	SPEC
Key Pad	8 Key
Display	7-segment LED×6
Serial Interface	RS-232C
Power Supply	DC 5V(Servo drive uses a built-in power supply)
Exterior(mm)	60×105×17.8(w×HxD)
Weight	75g(excluding the cable)
Cable length	3m

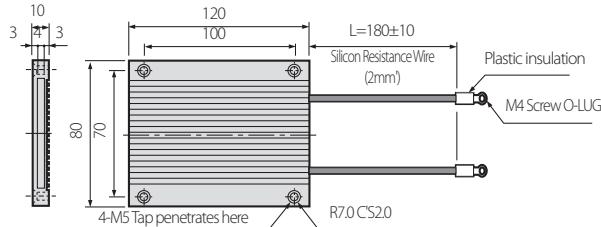


## ■ Model Name

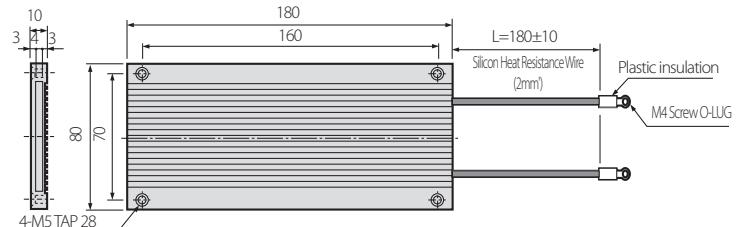
- Regenerative resistance

## ■ Specification

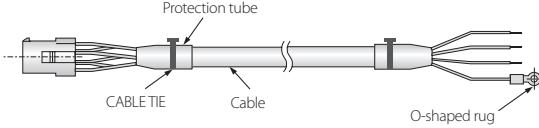
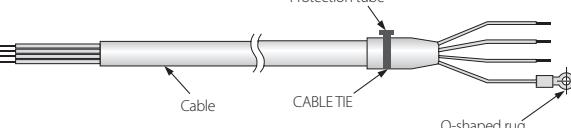
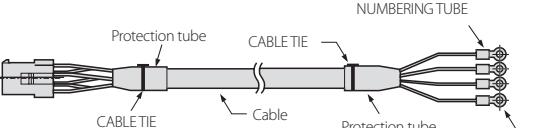
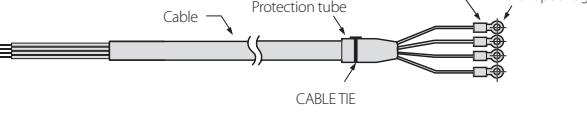
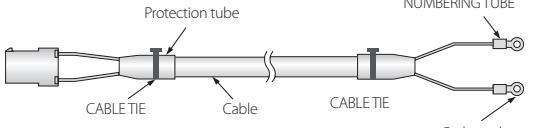
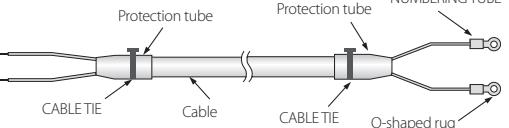
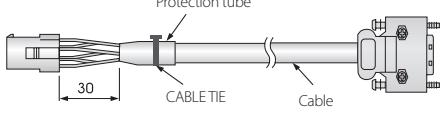
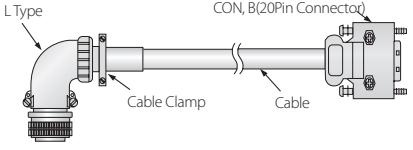
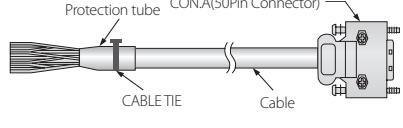
**50Ω 150W** RES-S500R151SN



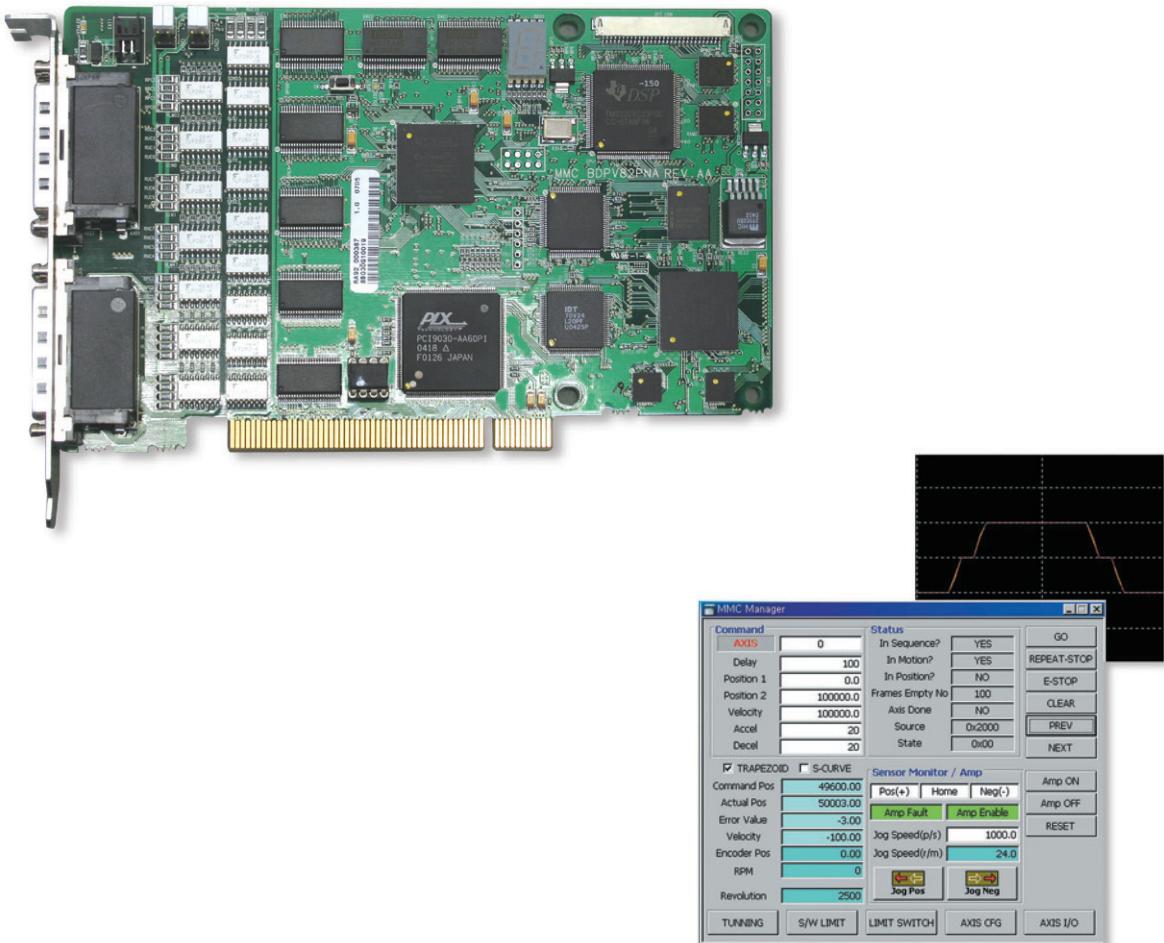
**25Ω 250W** RES-S250R251SN



# Option

		Small capacity(CSMT/R,RSMZ/Q Motor)	Middle & Large Capacity(RSMD/H/F/S/K/L Motor)
Power Cable	Protection tube CABLE TIE Cable O-shaped rug	 <b>CSD5/CSD3: POW - SL</b> ____ <b>PO10H</b> Cable length 03, 05, 10, 15, 20m	 <b>CSD5/CSD3: POW - SH</b> ____ <b>P015H</b> Cable length 03, 05, 10, 15, 20m Motor capacity
	NUMBERING TUBE Protection tube CABLE TIE Cable O-shaped rug	 <b>CSDP: POW - SL</b> ____ <b>PO10A</b> Cable length 03, 05, 10, 15, 20m	 <b>CSDP: POW - SH</b> ____ <b>P</b> ____ <b>A</b> Cable length 03, 05, 10, 15, 20m Motor capacity 015 : 1.5kW or below 035 : 3.5kW or below 050 : 5.5kW or below
Brake Cable	Protection tube CABLE TIE Cable NUMBERING TUBE O-shaped rug	 <b>BRK - SL</b> ____ <b>BRAKA</b> Cable length 03, 05, 10, 15, 20m	 <b>BRK - SH</b> ____ <b>BRAK</b> Cable length 03, 05, 10, 15, 20m
Encoder Cable	Protection tube CABLE TIE Cable 30	 <b>ENC - SL</b> ____ <b>E</b> ____ <b>SA</b> Cable length 03, 05, 10, 15, 20m Applicable motors CH: 17 Bit serial encoder cable CN: CSMT/MR(9 wire) CK: RSM Series(9 wire)	 <b>ENC - SH</b> ____ <b>E</b> ____ <b>LA</b> Cable length 03, 05, 10, 15, 20m Applicable motors SN: 15 wire(CSMK) CH: 17bit Serial encoder cable CK: RSM Series(9 wire)
I/O Cable	Protection tube CON A(50Pin Connector) CABLE TIE Cable		 <b>IOC - SH</b> ____ <b>U50CA</b> Cable length 03, 05, 10, 15, 20m

# 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

M	M	C	-	B	D	P	V	4	2	P	N	A
Multi Motion Controller				Board				Type	BUS TYPE		Network Option	Dev.(Ver)
								1 FullSize	P PCI BUS	N n/a	A Ver.1	
								2 HalfSize	I ISA BUS	S SERCOS	B Ver.2	
				Control format	# of Control Axis						X I/O expansion	*:Half PCI only
				PV Position, Speed	4 4-axis control							
				PO Position	8 8axis control							
				A	24axis control							

\*:SERCOS MMC only

## MMC Option Module

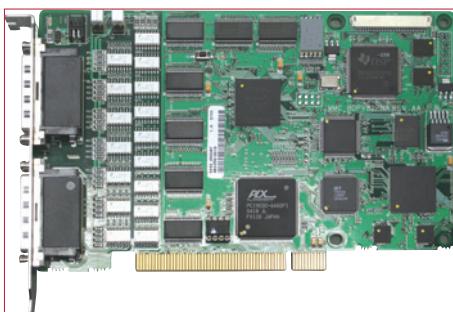
M	M	C	-	I	O	2	0	A	6	4
Multi Motion Controller				Specifications						
				IO User I/O module						
				MI System, User I/O integrated module						
				CA Cable ASSy module						
				Expansion options				Expansion points		
				X No additional feature				32 Support 32 points		
				A Analog Input				64 Support 64 points		
				Type				Revision		
				1 Basic				0 Revision 1.0		
				2 Expansion				1 Revision 2.0		
				3 Compatible				2 Revision 3.0		

## MMC Cable Option

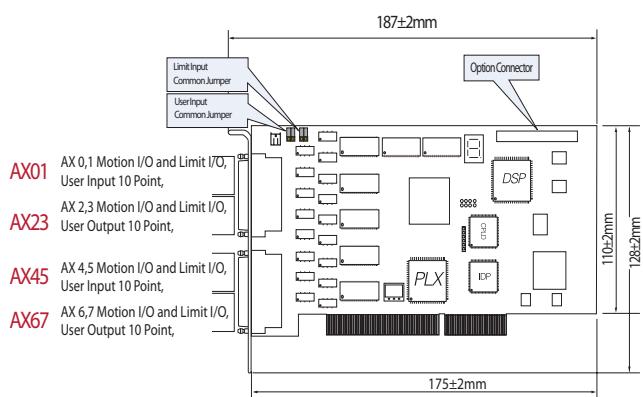
MMC-CAA13P22□□	2-axis cable for connecting MMC and MI10
MMC-CAOP3P21□□	1-axis cable for connecting M10 and CSDx Servo Drive
□□	Cable Length (Unit : m) B1: 1.5, 02: 2, B2: 2.5, 03:3, B3: 3.5, 05:5
Legend	1-axis 2 m cable for connecting Half PCI and CSDx Servor MMC-CAOP3P2102

# MMC Specification, Exterior

## MMC-BDP□□2PNA



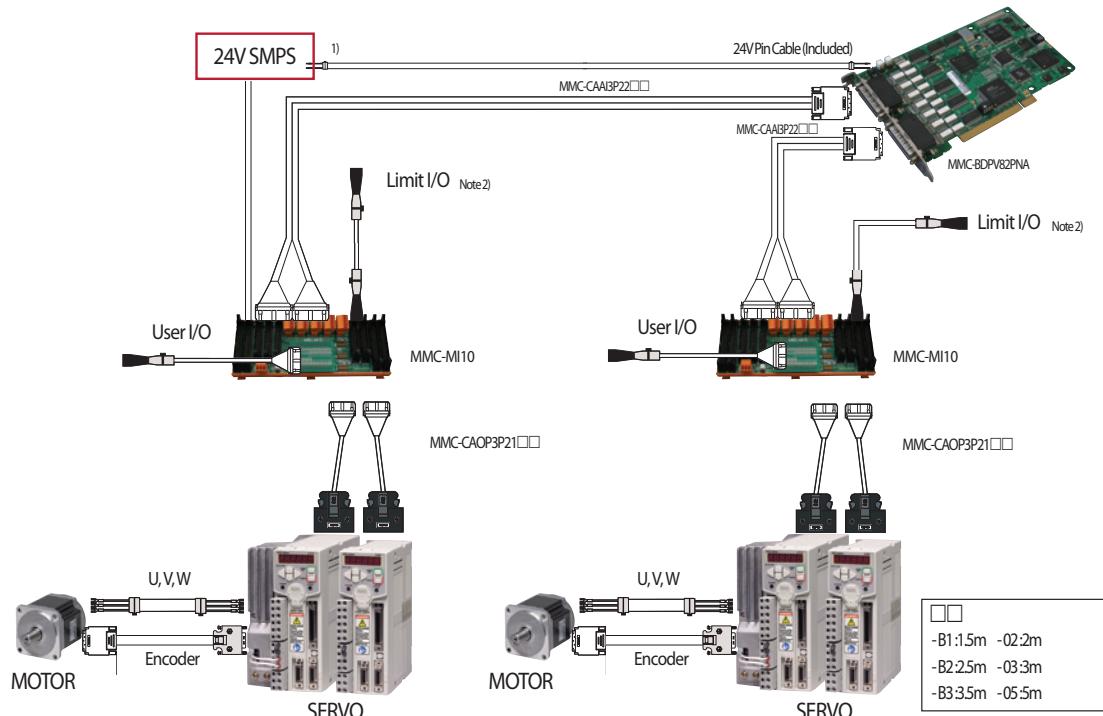
## External Dimension



## Half Size PCI Series

Items	Specification
CPU	TMS320VC33 - 128MHz
OPERATION	PTP, Circular 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	Maximum Frequency=16MHz, 50% Duty Cycle, Frequency Unit=250Hz(based on 4msec)
OPERATION RANGE	32-bit, ± 2147483647
ACCELERATION/DECELERATION SETTING	0 ~ 25000(0 ~ 100 sec) : based on 4msec sampling time
POSITION FEEDBACK	Input Frequency= 32MHz(max), Digital Noise Filter
SPEED PROFILES	Trapezoid, Asymmetrical Trapezoid, S-Curve, Asymmetrical S-Curve Acceleration/Deceleration
SYSTEM I/O INPUT (Per Axis)	AMP Fault Input, Positioning Completion Signal
SYSTEM I/O OUTPUT (Per Axis)	Amp-Enable, Amp-Fault Reset, Position-Clear,
LIMIT SENSOR INPUT	3 (Positive, Negative, Home)
USER INPUT/OUTPUT	Photo-Coupler Isolated Input, Output 20/20 point Position-Compare (4096/Axis)
ANALOG INPUT	8 Channels @16bit Resolution, 5μs Conversion rate (Option)
CURRENT CONSUMPTION (MAXIMUM CURRENT CONSUMPTION LIMITS)	+5V ≈ 2A, +12V ≈ 0.5A, -12V ≈ 0.5A
ENVIRONMENTAL REQUIREMENT	0 - 50°C, 20 - 90 % RH, Non-condensing
SIZE	187 x 128
CATALOG	MMC-BDPO42PNA MMC-BDPO82PNA MMC-BDPV42PNA MMC-BDPV81PNA MMC-BDPO42PNX MMC-BDPV42PNX MMC-BDPV42PNX

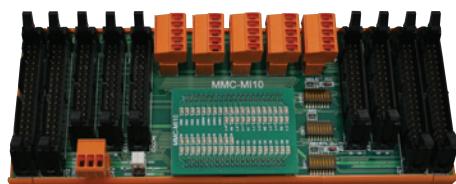
## System Configuration



# MMC OPTION SPECIFICATION

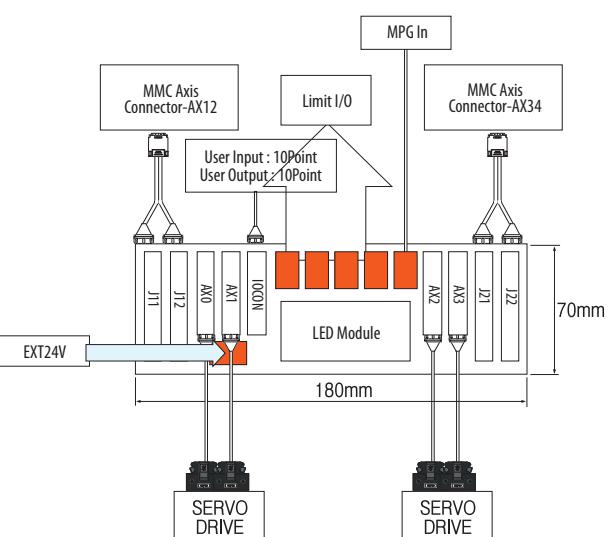
**MMC\_MI10 (Limit, I/O, AMP Connector Integrated Module: for Half PCI only)**

## 1. Product



\* One MMC-MI10 supports up to 4 axes.

## 2. Product Content



## 3. Pin MAP

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

**MMC to MI 10 Connector J11~J22 Pin MAP**

MMC Con (34pin)	Signal Name				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	PLIMO	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	Motion 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

# AC SERVO SYSTEM & MOTION

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

MI 10 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	SVOERR	SV1ERR	SV2ERR	SV3ERR	Motion I/O	AMP Fault Input
21	SV0RST	SV1RST	SV2RST	SV3RST	Motion I/O	AMP Fault Reset Output
22	PCINO	PCIN1	PCIN2	PCIN3	Motion 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 LIMIT0~LIMIT3) Pin MAP					Description	
Limit Con (5Pin)	Connector					
	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)

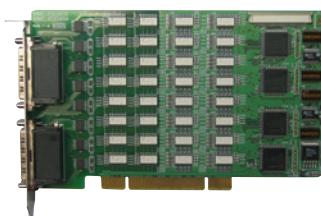
IOCON Connector Pin MAP							
Pin No.	User I/O	Pin No.	User I/O	Pin No.	User I/O	Pin No.	User I/O
1	User Out 0	8	User Out 7	15	User In 4	22	Non Connection
2	User Out 1	9	User Out 8	16	User In 5	23	24V GND
3	User Out 2	10	User Out 9	17	User In 6	24	EXT 24V
4	User Out 3	11	User In 0	18	User In 7	25	24V 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)

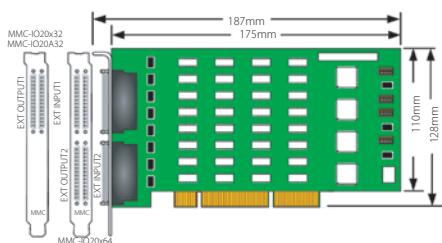
MPG Input Pin MAP (In MPG, User In 8 and 9 can be used with only MPG pulse input)					
Limit Con (5Pin)	Connector	Description	MPGA Con (5Pin)	Connector	Description
	Limit0			Limit0	
1	+24V	Ext 24V	4	-	Non Connection
2	User In 8	MPG Input Phase-A(or B)	5	GND	24V GND
3	User In 9	MPG Input Phase-B(or A)			

# MMC OPTION SPECIFICATIONS

**MMC-IO20□□□ Option Module (Module for isolated Digital I/O Expansion or Analog Input, for Half PCI only)**



**External Dimension**



## Cable Information



Hood : HDRA-E68LGKPE (HONDA)



Connector : HDRA-E68MA1 (HONDA)

## Connection Information (PIN Map)

EXT INPUT1, EXT INPUT2 Wiring Specification

Pin Number	Signal Name	Pin Number	Signal Name
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 (-)

## Spec

Items	Specification
<b>Analog Input</b>	
Channel	4CH, 8CH
Resolution	16 bit
Conversion	5
Voltage Range	0~10V, 0~5V, 0~4V
<b>Digital IO</b>	
Points	32/32, 64/64
Out Current	10mA @24V
<b>Catalog</b>	
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

EXT OUTPUT1, EXT OUTPUT2 Wiring Specification

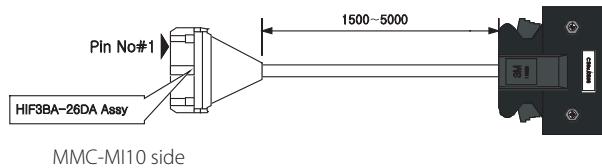
PIN Number	Signal Name	PIN Number	Signal Name
1	+24V	2	+24V
3	G24V	4	G24V
5	EXT OUT0 (32)	6	EXT OUT1 (33)
7	EXT OUT2 (34)	8	EXT OUT3 (35)
9	EXT OUT4 (36)	10	EXT OUT5 (37)
11	EXT OUT6 (38)	12	EXT OUT7 (39)
13	EXT OUT8 (40)	14	EXT OUT9 (41)
15	EXT OUT10 (42)	16	EXT OUT11 (43)
17	EXT OUT12 (44)	18	EXT OUT13 (45)
19	EXT OUT14 (46)	20	EXT OUT15 (47)
21	+24V	22	+24V
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

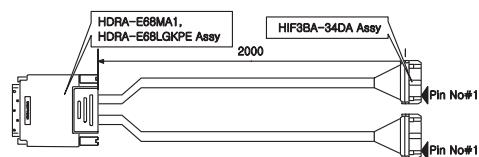
## Half Size PCI - AMP Connector Pin specification

### 1. MMC\_CAO3P21□□ Configuration



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

### 1. MMC\_CAAI3P2202 Diagram



### 2. Pin MAP

I/F Board Connector (26pin) Axis1	Signal Name	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	CABSO+	35
10	CABSO-	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.

### 2. Pin MAP

MMC Axis Connector (68pin)	Signal Name	MMC-MI10 Connector (34pin) Axis0	MMC Axis Connector (68pin)	Signal Name	MMC-MI10 Connector (34pin) Axis0
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	CABSO-	9	18	CABS1-	9
19	CABSO+	10	20	CABS1+	10
21	UIO0 <sub>Note 1</sub>	11	22	UIO1 <sub>Note 1</sub>	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 <sub>Note 1</sub>	20	40	UIO3 <sub>Note 1</sub>	20
41	UIO4 <sub>Note 1</sub>	21	42	UIO5 <sub>Note 1</sub>	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 <sub>Note 1</sub>	28	56	UIO7 <sub>Note 1</sub>	28
57	UIO8 <sub>Note 1</sub>	29	58	UIO9 <sub>Note 1</sub>	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.

\*Note1) In or Out position depending on how it's inserted to MMC-MI10.

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 fiber-optic link provides seamless integration with the MMC-II controller.

## Motor Support

- Encoder 17bit Serial Abs./Inc. & 9wire Inc.
- Motor Series  
CSMT/R Series & RSMZ/Q Series  
RSMD/H/F/S/K/L Series (less than 1.5kW)  
3rd Party Linear Motor (Inc Type Encoder)

## CSDM Modular Servo Drive

- SERCOS Network
- Saves space with modularity
- Supports various capacity from 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 17bit 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 Number	Description
2003-CSDM-IAM-01BX1 ~ 04BX1	IAM / Power + Drive(01~04)
2003-CSDM-AM-01BX1	100W Drive
2003-CSDM-AM-02BX1	200W Drive
2003-CSDM-AM-04BX1	400W Drive
2003-CSDM-AM-08BX1	800W Drive
2003-CSDM-AM-15BX1	1.5kW Drive
2003-CSDM-SMA	Shunt Module
2003-CSDM-PRA1 ~ PRA8	Power Rail(7 Type)
2003-CSDM-SFA	Slot filler (Safety cover)

## Technical Specification

AC input voltage : 170~253Vrms/43~63Hz

Certifications : CE, UL

SERCOS interface V 2.2

Temperature : 0~50°C(32~122°F)

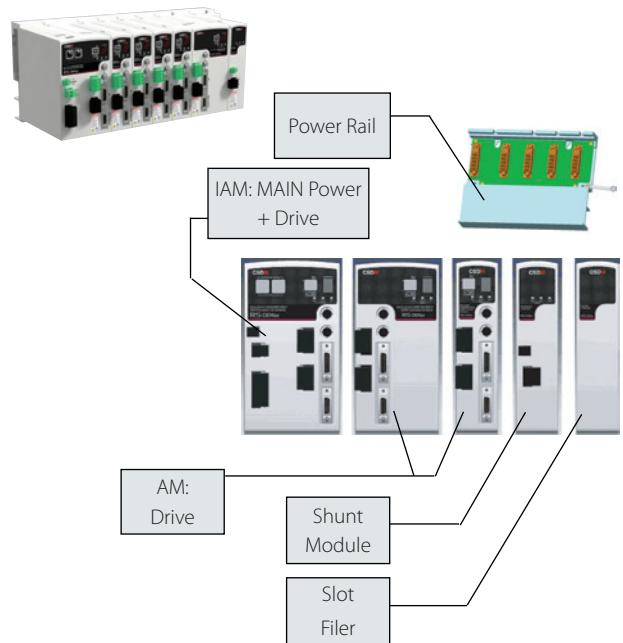
Storage temperature : -40 to 85°C (-40 to 185°F)

Relative Humidity : 5~95% non-condensing

## Servo Drive Ratings Specification

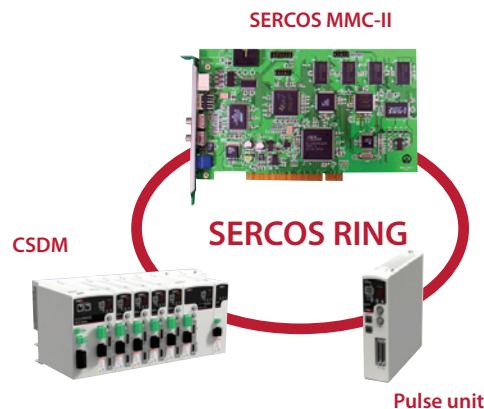
Attribute	IAM,AM-01BX1	IAM,AM-02BX1	IAM,AM-04BX1	IAM,AM-08BX1	IAM,AM-15BX1
Bandwidth Velocity Loop Current Loop			500 Hz	1300 Hz	
PWM frequency			8 kHz		
Nominal input voltage			325V dc		
Continuous current (rms)	1.0 A	2.0 A	3.0 A	6.0 A	9.5 A
Continuous current (0-pk)	1.41 A	2.83 A	4.24 A	8.48 A	13.4 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 (max)	3 s from 0% drive utilization (0% soak)				
Continuous power	0.12 kW	0.24 kW	0.48 kW	0.96kW	1.8 kW
Efficiency	98%				
Capacitance	200 $\mu$ F		540 $\mu$ F		
Capacitive energy absorption	200 $\mu$ F		20 J		
Inverter PCB leakage current	1mA				

## Product Content

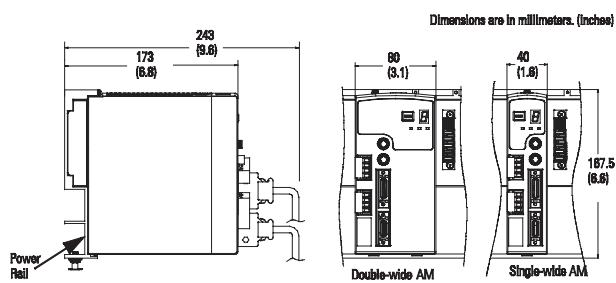
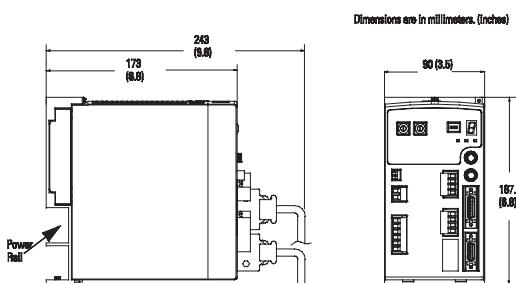
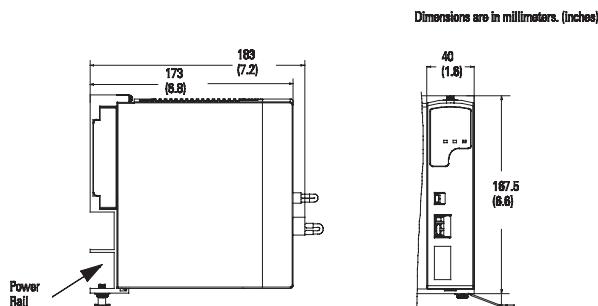
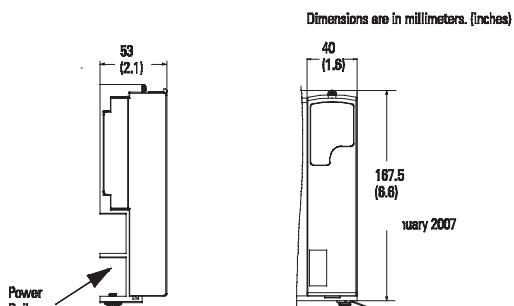


## SERCOS

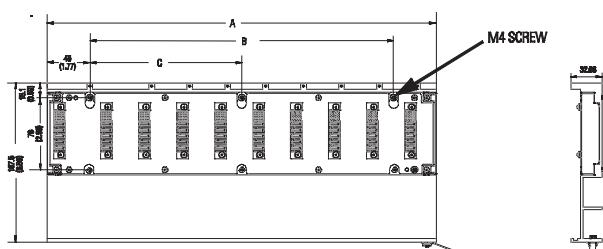
- **SErial**
- **Real time**
- **COmmunication**
- **System**



# CSDM DIMENSIONS

**CSDM-AM-xxBX1****CSDM-IAM-xxBX1****CSDM-SMA****CSDM-SFA**

## CSDM Power Rail Mounting Specification



Catalog Number	Description	Dimension A mm(in.)	Dimension B mm(in.)	Dimension C mm(in.)
2003-CSDM-PRA1	1 axis power rail	90(3.54)	N/A	N/A
2003-CSDM-PRA2	2 axis power rail	130(5.12)	40(1.58)	N/A
2003-CSDM-PRA3	3 axis power rail	170(6.69)	80(3.15)	N/A
2003-CSDM-PRA4	4 axis power rail	210(8.27)	120(4.72)	N/A
2003-CSDM-PRA5	5 axis power rail	250(9.84)	160(6.30)	N/A
2003-CSDM-PRA7	7 axis power rail	330(12.99)	240(9.45)	120(4.72)
2003-CSDM-PRA8	8 axis power rail	410(16.14)	320(12.60)	160(6.30)

## Sercos option

### -Pulse Module & I/O Adaptor

#### CSDM PMA



#### Pulse Module Adaptor

For Global Servo/Step Drive Control

Support 2-axis

MPG Input (Open Collector)

+/- Limits, HOME Input/Axis

5/5 User I/O

Target Sales : Jun. 2008

CE Certified

# MMC-II

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

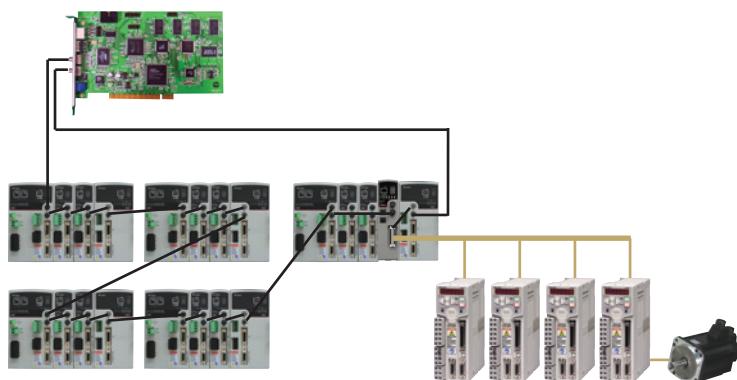


### Product Introduction

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.

**A 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.**

### SERCOS Wiring Diagram



### Main Features

- 32bit DSP TMS320VC33 150MHz,PCI Bus
- SERVO Interface: SERCOS
- Maximum Axis Support: 24 Axes
- On-Line Data Monitoring
- Easy wiring
- User Friendly GUI and Various function libraries
- Easy setup for machine
- 12-axis synchronized control

### Driver/Motor Support

Supports CSDM modular servo drive for the SERCOS network, and Servo motor adopts a 17bit 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
- SERCOS MMC-II, Max 24Axes, PCI Interface

## 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 ~ 32msec

SERCOS baud rate 4/ 8 Mbps (auto detection)

Operation Range : 32bit

Trapezoid/Asymmetry/S-Curve/Jerk setting available

Max 24 node/Axis

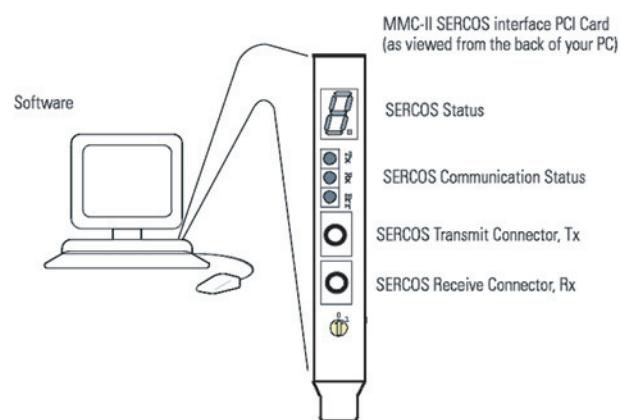
SERCOS interface V 2.2

Temperature : 0~50°C(-20~80°F),

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

Relative Humidity : 20~95%RH,

## Wiring



## MMC-II Win Software Support

Support Windows 2K/XP

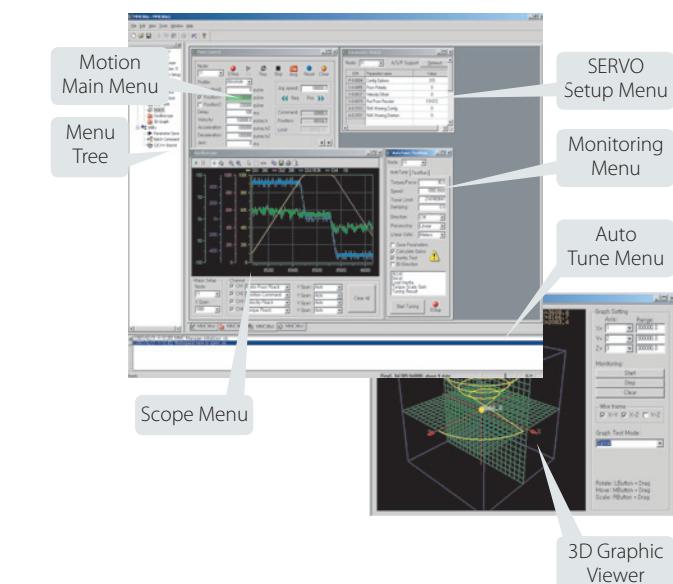
MMI utility for machine testing,  
parameter adjustment and gain tuning  
Without and programming efforts

### 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



### 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





**RS Automation Co., Ltd.**  
[www.oemax.com](http://www.oemax.com)

RS Automation Building, 32-1-1 Block, Jinwi Industrial Complex, Cheongho-ri, Jinwi-myeon,  
Pyeongtaek-si, Gyeonggi-do, Korea, zip code : 451-862

T 82-31-685-9300, F 82-31-685-9500

RS Automation Global Business Support  
[rsagbs@rsautomation.co.kr](mailto:rsagbs@rsautomation.co.kr)

韩国京畿道平泽市振威面清湖里振威工业园32-1-1区RS自动化大厦 邮编：451-862  
T 82-31-685-9300, F 82-31-685-9500

RS自动化全球商户支持  
[rsagbs@rsautomation.co.kr](mailto:rsagbs@rsautomation.co.kr)