

Reliable
& Smart™

CSD7 Series

High Performance & Powerful Servo Drives
for General Purpose



EtherCAT®
Conformance tested

Provide two Kinds of Models

- EtherCAT Network type
- Pulse/Analog command type



CSM Motor Series

High Performance AC Servo Motor

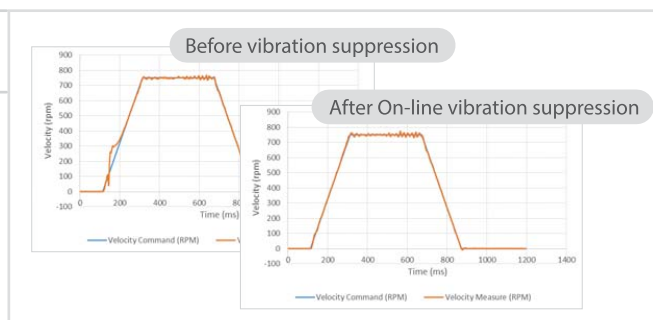
CSD7 Series

CSD7 Series is the Servo Drive that has been developed based on the technical skills through 30 years' experience, and represents Korean servo drive. It provides smaller, stronger and more comfortable functions for our customers' systems.

Offering improved basic functions

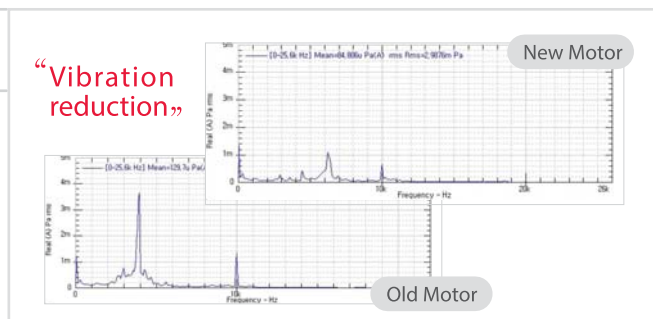
- Enhanced Velocity Bandwidth : Up to 2kHz ¹⁾
- H/W based current controller with minimized delay and enhanced current detection circuit.
- Real Time Vibration Suppression Function (Adaptive Notch Filter)
- 3rd Party Linear Motor support
- Offering index function in standard model
- Supporting 2 channels of high-speed Registration input

1) Result of our evaluation criteria.



Provide high resolution motor with 23bit Encoder

- CSD7 Series support a 23bit Encoder, so its motion profile is high-resolution and smooth with fast position settling time. Vibration/noise has been improved as well for system stability.



EtherCAT
Conformance tested

Smallest footprint, built-in Power,
Servo Drive with high precision
control

CSD7 Series

- EtherCAT Network type
- Pulse/Analog command type

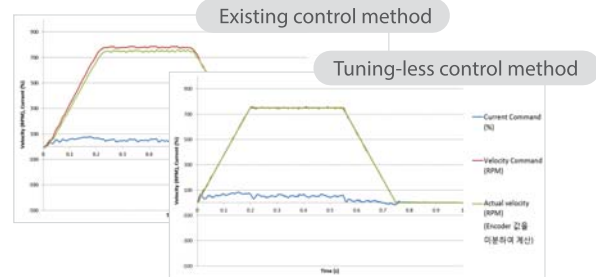




Reliable & Smart · Global brand with the highest quality and performance.

Gain Tuning-less Function

- It is able to optimal control and stable system control without Gain Tuning. Which shorten the setup time of the equipment and also reduce maintenance costs.



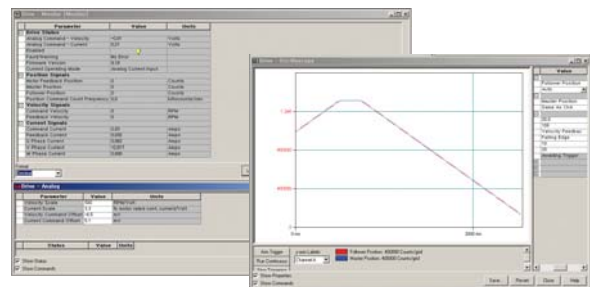
A design considering safety and environment

- CSD7 Series obtains safety standards such as STO(Safe Torque Off), CE, NRTL/C, etc to take into the customer's safety. Also, it was created into the product that considered the environment of RoHS application.



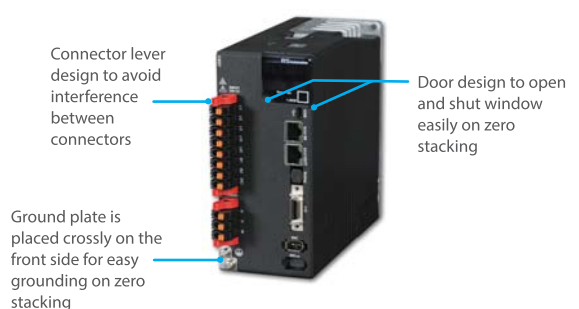
More comfortable and refined RSWare

- It now fits for precise tuning with improved oscilloscope function, easy to verify control status, and quick to analyze system. It is now able to run Network products and Pulse/ Analog products on the same program.



Supports close installation between products

- Minimizes Installation Space through Reduced Product Size and Zero Stacking Installation Capability.
- Supports Base Mounting and Rack Mounting.
- Removable Locking Type Connectors
- Provides Two Frame Ground Points for Easy Wiring.



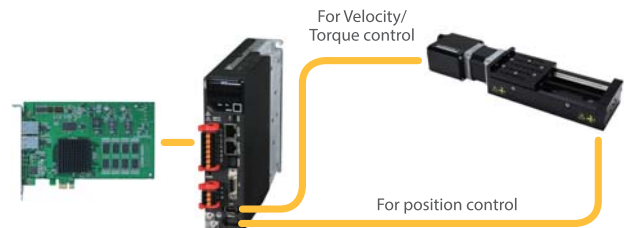


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Full Closed Loop Control

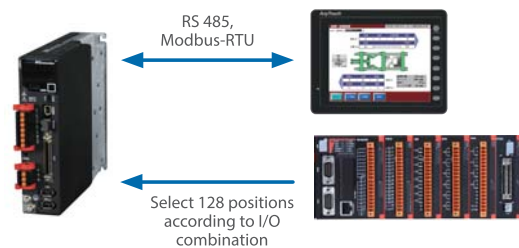
- It is now possible to reduce mechanical position error because rotary motor is used for speed/torque control and linear scale is used for position control. ²⁾

2) Full Closed Loop control will be released in 2018.



Index function (Pulse/Analog command type)

- Through a simple programming, you can configure the system even without expensive controller. For example, it is able to operate the servo drive by choosing several I/Os or serial communication. Also it can implement cost effective system with low cost.
 - Trapezoid, S-curve motion profile
 - Control with Absolute position, Relative position
 - 128 Point Index
 - Support 11 Homing function
 - 32 axis controls are available through the Modbus communication



EtherNet-based real time motion network

- Support application of EtherCAT CoE communication system and CiA402 drive profile functions.
 - Enable to connect with the host controller which support EtherCAT CoE, CiA402 Profile
 - Real-time motion control applied to the communication speed of 100Mbps
 - Apply RJ45 type of connector, use of STP cable which is higher than CAT5(Category 5), Up to 100m between nodes

EtherCAT
Conformance tested



EtherCAT CSD7

CSD7 Series Product Composition

There are two types of CSD7 series. (Pulse/Analog model, EtherCAT Network model)

■ Pulse/Analog model

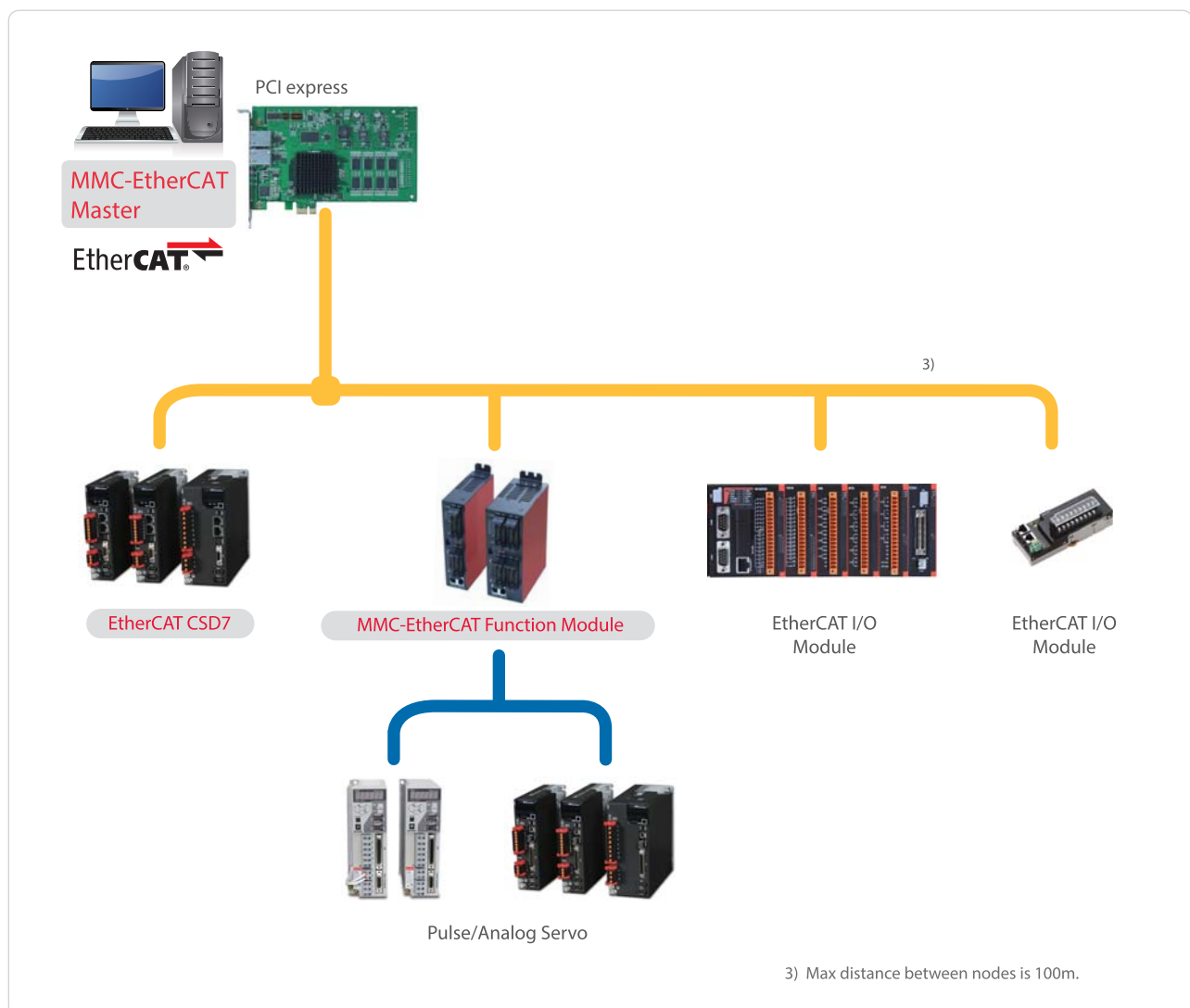


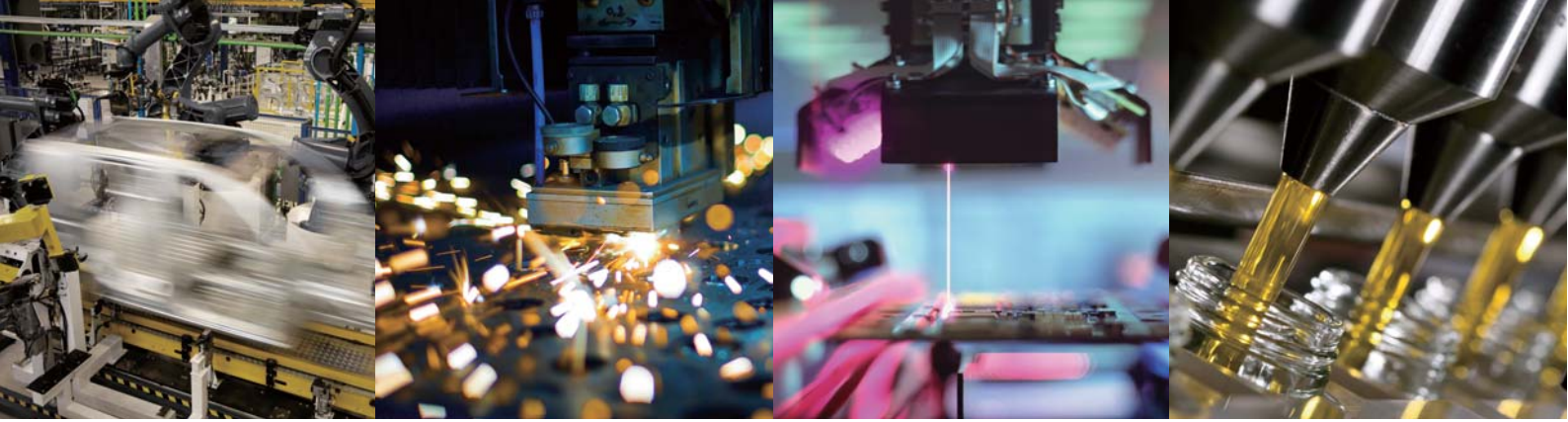
■ EtherCAT Network model



EtherNet-based real time motion control

You can build a real time EtherNet-based system at a lowest cost using various EtherCAT products, so that we offer EtherCAT solution together with MMC-EtherCAT Series, PC-based master. Choose from a wide range of choices not only including Pulse/Analog servo drive, but also networks.





Drive and Motor Selection

■ Servo Drive Model Designations

C	S	D	7	-	0	1	B	X	F	1
Drive Series		Rated Output(W)		Input Voltage(Vac)		Option		Design Order		
CSD7 Series		01	100W	B	220V	Blank	Standard Model	1	Ver.1	
		02	200W			F	Advanced Model			
		04	400W							
		08	800W							
		10	1kW							
		15	1.5kW							
		25	2.5kW							
		35	3.5kW							
		50	5.0kW							
		Drive Type								
		X	Pulse / Analog							
		N	EtherCAT							

• For models over 2.5kW, only advanced models are available.

■ Servo Motor Model Designations

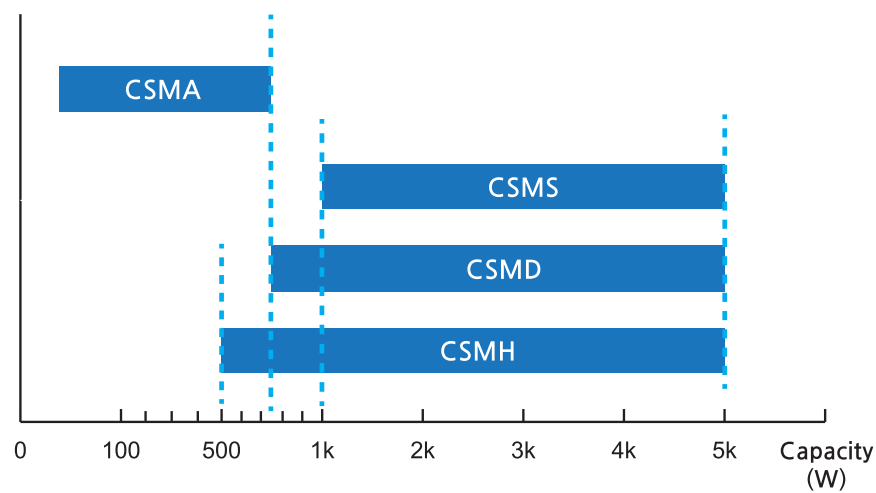
C	S	M	T	-	0	1	B	R	1	A	N	T	3
Motor Type		Rated Output(W)		Input Voltage(Vac)		Encoder Type		Motor Shaft Specification					
CSMT Series	50~1kW	A5	50W	B	AC 220V	1	LBY Type	3	Key Type				
CSMR Series	50~400W	01	100W			3	SBY Type						
CSMA Series	50~750W	02	200W										
CSMS Series	1~5kW	04	400W										
CSMD Series	0.75~5kW	06	600W										
CSMH Series	0.5~5kW	08	750W										
		10	1kW										
		15	1.5kW										
		20	2kW										
		25	2.5kW										
		30	3kW										
		40	4kW										
		50	5kW										
		Encoder Form		Option									
		R	17bit Incremental										
		Q	17bit Absolute										
		T	23bit Inc/Abs common										
		NT	None										
		BT	Brake										
		ST	Oil Seal										
		TT	Oil Seal, Brake										

Available Motor Series

Motor Series		Items	Rated Output(W)	Rated Speed/ Max. Speed (rpm)	Motor Type	Encoder	Protection Degree	Inertia
CSMA		50W~750W	3000/6000 (100W or less) 3000/5000 (200W or more)	Cylinder	23bit serial Abs./Inc	IP 67	Ultra low inertia	
CSMT		50W~1kW	3000/5000		17bit serial Abs./Inc	IP 65		
CSMS		1kW~5kW			Low inertia			
CSMD		750W~5kW	2000/3000		23bit serial Abs./Inc		Medium inertia	
CSMH		500W~5kW				High inertia		

Motor Line-up

The line-up of CSMA · CSMS · CSMD · CSMH motor series are wide range of capacities, therefore available to choose the best product for applications.



Motor - Drive Matching Table

* X : No motor available for the capacity.

Capacity \ Motor	Motor Series			
	CSMA (Ultra Low Inertia)	CSMS (Low Inertia)	CSMD (Medium Inertia)	CSMH (High Inertia)
50W	CSD7_01B**1	X	X	X
100W	CSD7_01B**1	X	X	X
200W	CSD7_02B**1	X	X	X
400W	CSD7_04B**1	X	X	X
500W	X	X	X	CSD7_04B**1 or CSD7_08B**1
600W	CSD7_08B**1	X	X	X
750W	CSD7_08B**1	X	CSD7_08B**1	X
1kW	X	CSD7_10B**1	CSD7_08B**1 or CSD7_10B**1	CSD7_08B**1 or CSD7_10B**1
1.5kW	X	CSD7_15B**1	CSD7_15B**1	CSD7_15B**1
2kW	X	CSD7_15B**1 or CSD7_25B**1	CSD7_25B**1	CSD7_25B**1
2.5kW	X	CSD7_25B**1	CSD7_25B**1	X
3kW	X	CSD7_35B**1	CSD7_35B**1	CSD7_35B**1
4kW	X	CSD7_35B**1 or CSD7_50B**1	CSD7_35B**1 or CSD7_50B**1	CSD7_50B**1
5kW	X	CSD7_50B**1	CSD7_50B**1	CSD7_50B**1

CSD7 Series Specifications

Common Specifications

Item		Catalog No.	01B**1	02B**1	04B**1	08B**1	10B**1	15B**1	25B**1	35B**1	50B**1
Output	Rated Current [Arms]		1.1	1.8	3.3	6.2	8.0	11.0	16.0	22.0	32.1
	Maximum Current [Arms]		3.3	5.4	9.9	18.6	24.0	33.0	48.0	66.0	96.3
Main Power Supply	Voltage Range		Single-phase AC 200 ~ 230Vrms, +10%, -15%, 50/60Hz					3-phase AC 200 ~ 230 Vrms, +10%, -15%, 50/60Hz For 800w, single-phase can be used by changing parameter			
	Input Current [Arms]		1.1	2.1	4.0	5.5/7.8	7.7	11.1	17.1	23.9	33.8
Control Power Supply			Single-phase AC 200 ~ 230 Vrms, +10%, -15%, 50/60Hz								
Encoder, Auxiliary Encoder			17 & 23 Bit Serial Absolute/Incremental, 21Bit Biss								
Internal Shunt Resistor			-	-	50Ω/30W	30Ω/100W			12Ω/150W		8Ω/250W
Dynamic Brake			Provide built-in circuit that shorts two phase(U,W) of motor						Support built-in circuit, 3-phase(U,V,W) the short-circuited via a resistor of 0.5Ω/100W		
Communication	USB		Connect to PC to use serial communication. RSWare should be used through this port.								
Environment	Operating Temperature/ Humidity		0°C ~ 50°C/90% RH or below (Non-condensing)								
	Storage Temperature/ Humidity		-20°C ~ 85°C/90% RH or below (Non-condensing)								
	Vibration/Shock		Vibration : 2G or below, Shock : 15G or below (1G = Gravity Acceleration, 9.8m/s ²)								
	IP Rating/Pollution Degree		IP20 / Pollution Degree 2								
	Allowed Altitude		Max. 1000m above sea level								
Protective Function			Over Current, Motor Overload, Drive Overload, Regeneration Overload, Over Voltage, Low Voltage, Over Speed, Over Heat, CPU Fault, Encoder Fault, Communication Fault, IPM Fault, Abnormal Motor Speed Setting, Excessive Position Error, AC Line Phase Loss, Motor Cable Open, etc.								
Functional Safety*	Functions		STO(Safe Torque Off, IEC/EN 61800-5-2), MTTFd:3,830Years, DC:Low, 69.4%, PFH:6.3257x10e-8(1/h)								
	Standards		IEC/EN 61508 SIL2, EN ISO 13849-1 PL d, Certified by TUV SUD								
Certification	CE Standard		LVD:EN61800-5-1:2007, EMC:EN61800-3:2004+A1:2012, Certified by TUV SUD								
	NRTL/C standard		UL508C:2013, CSA C22.2 No.14:2013, Certified by TUV SUD								
	KC		KN 61800-3:2014								
Cooling method			Fan Cooling								
Installation	Mounting Method		Base Mounted (Standard), Rack Mounted(Need Optional Mechanical Parts)						Base Mounted		
	Zero Stacking		It can be mounted without space between products.						-		

Pulse/Analog Model

Item		Catalog No.	01BX(F)1	02BX(F)1	04BX(F)1	08BX(F)1	10BX(F)1	15BX(F)1	25BX(F)1	35BX(F)1	50BX(F)1
Communication	RS-485		Support 1: N Multi-Drop function and 32-axis operation, set the axis number by a parameter								
I/O Spec.	Encoder Output		A, B and Z pulse output, Line Driver output, Division ratio: N/M (N,M≤32768), Absolute position can be sent by serial data.								
	Digital Input		Function allocable 8 points; fixed 1 point (emergency stop); input response time: 6ms to 8ms								
	Output		High speed allocable 2 points: general function allocation allowed, position registration, input response time: 5us or under								
Position Control	Position Command Type		CCW+CW pulse train, Sign+Pulse train, A+B pulse train (90° phase difference between A and B)								
	Command Input Circuit		Line Driver(5V), Open Collector (5V-external resistor required, 24V-need not external resistor)								
	Maximum Input Frequency		4Mpps (Line Driver), 250Kpps (Open Collector)								
	Electronic Gear Ratio		3 sets of electronic gears provided								
	Feedforward Compensation		0 - 100% (Setting Unit : 1%)								
Velocity control	Command Type		Analog Velocity Command, Preset Velocity Command								
	Range of Control		Analog Velocity Command (1 : 2000), Preset Velocity Command (1 : 5000)								
	Velocity Variation		Input voltage variation (AC 170 ~ 253 Vrms AC): 0%, Load variation (0-100%): ±0.01% Max, Temperature variation (25°C±25°C):±0.1%								
	Acceleration/Deceleration Setting Range		0 - 60 sec								
	Analog Velocity Command*		DC 0V - ± 10V (For default value, 6V is set as a rated speed.)								
Torque Control	Command Type		Analog Torque Command								
	Analog Torque Command*		DC 0V - ±10V (For default value, 3V is set as a rated torque.)								
	Control Accuracy (Repeatability)		± 1%								
Built-in Operator			1. Six 7-segment LED; 2. Four buttons for Parameter setting								
Analog Monitor Function*			2 Points, DC ± 10V, max current : ± 10mA, 12Bit resolution								

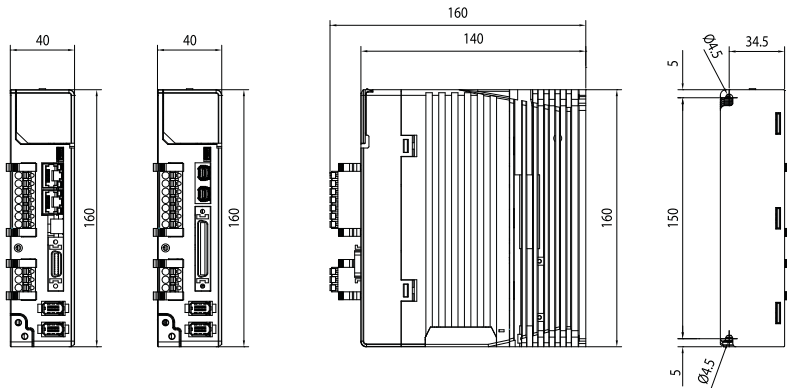
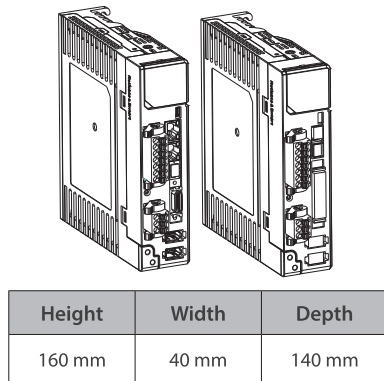
Network Model

Item		Catalog No.	01BN(F)1	02BN(F)1	04BN(F)1	08BN(F)1	10BN(F)1	15BN(F)1	25BN(F)1	35BN(F)1	50BN(F)1
Communication	EtherCAT		IEC 61800-7 CiA 402 Drive Profile, CoE, 100BASE-TX(IEEE802.3) EtherCAT CoE, Max. 100m distance between nodes.								
I/O Spec.	Encoder Output		A,B Pulse Output, Line Driver Output, Division Ratio : N/M(N,M≤32768)								
	Digital Input		Function allocable 4 points, Fixed 1 point(Emergency Stop), Response Time : 6ms ~ 8ms								
	Digital Output		High Speed Input 2 points, Position Registration (Touch Probe), Response Time : 5us or under								
Built-in Operator			1. Six 7-segment LED for display, 2. Four buttons for parameter editing, 3. Two LED for Indicating EtherCAT communication status								

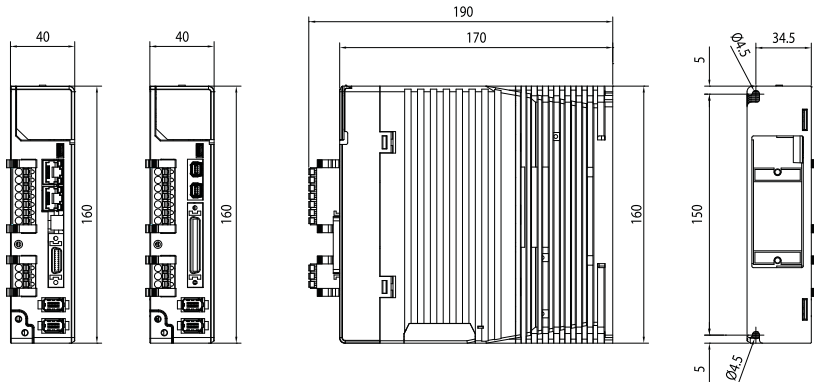
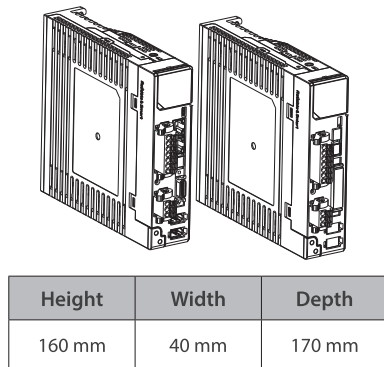
* This function is applied only on CSD7 Advanced models.

Dimensions

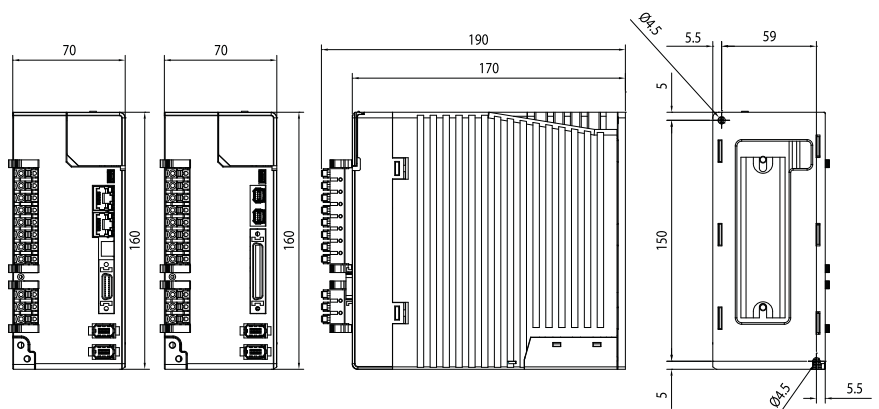
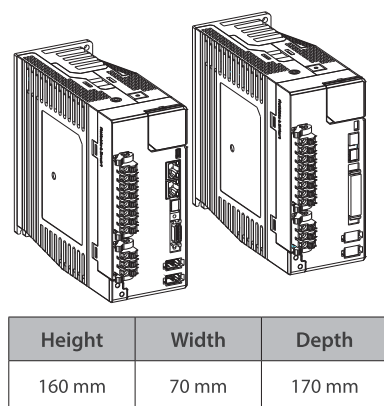
■ 100W - 200W



■ 400W



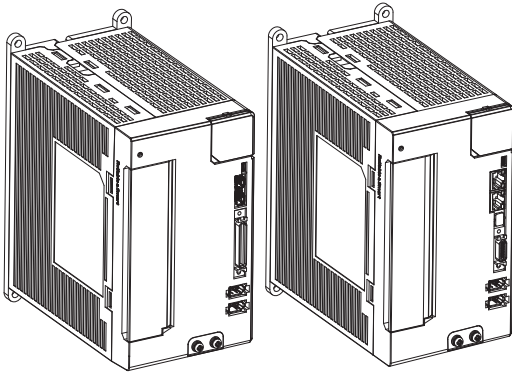
■ 800W - 1.5KW



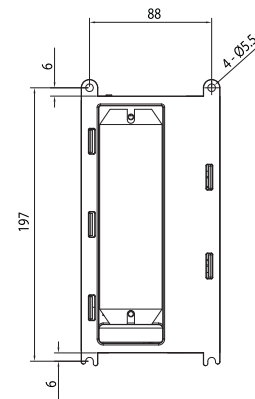
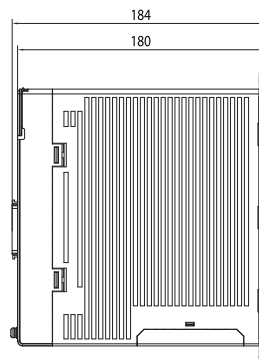
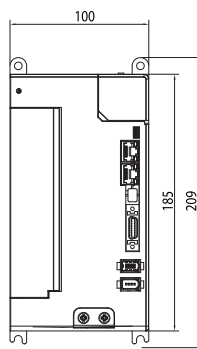
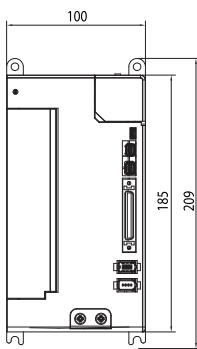
[Notice]

- The CAD data of the above dimensions are available to download from our company website. (<http://www.rsautomation.co.kr> or <http://www.rsautomation.biz>)

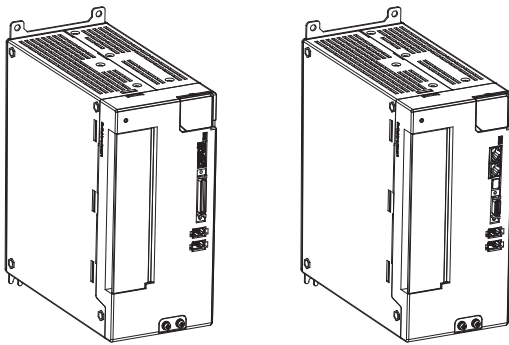
2.5kW ~ 3.5kW



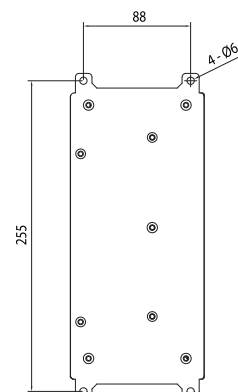
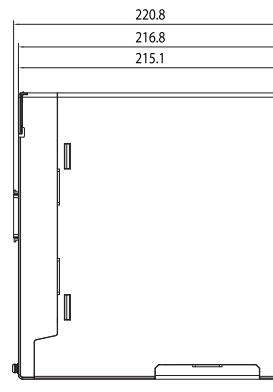
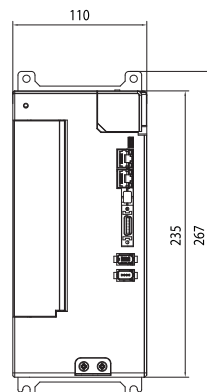
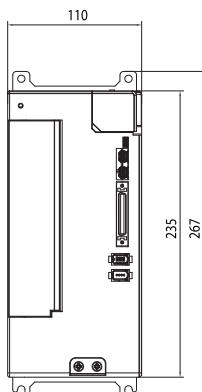
Height	Width	Depth
185 mm	100 mm	180 mm



5kW



Height	Width	Depth
235 mm	110 mm	215.1 mm

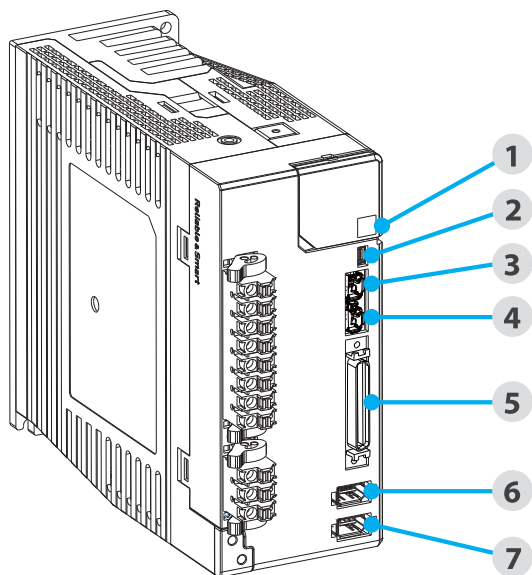


Product Interface

■ Pulse / Analog Model

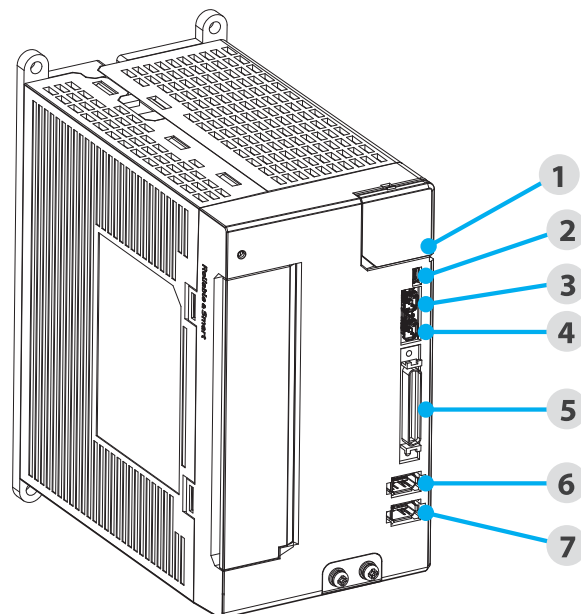
• Rated Output (Small-Capacity)

- 100W ~ 200W
- 400W
- 800W ~ 1.5kW



• Rated Output (Medium-Capacity)

- 2.5kW ~ 3.5kW
- 5kW

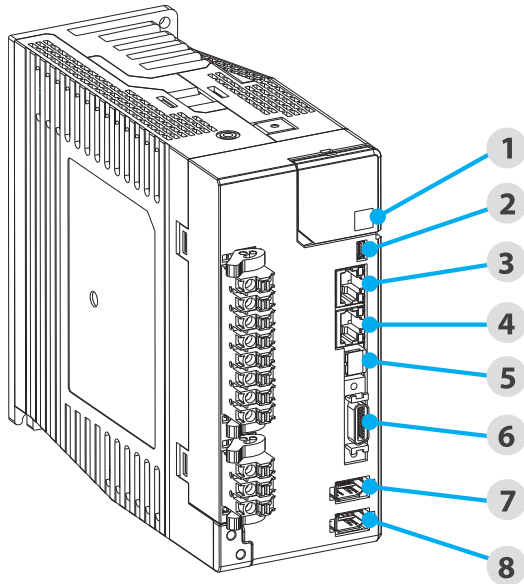


N0.	Item	Function
1	Built-in Operator	It consist of six 7-segments and four push buttons. It provide some functions such as parameter editing, status display, monitoring, Run functions.
2	USB	Connect to the PC Software, RSWare
3	COMM	Connect to the Modbus-RTU(RS-485) communication
4	Safety	Safety function (STO)
5	I/O	This 50 pin connector is for interface with external device. The functions are command input, System Input/Output, User Input/Output, fault output, Encoder output. For more detail, refer to the wiring diagram.
6	ENC	Encoder signal is fed into this connector. (17bit serial encoder, 23bit serial encoder, 21bit Biss encoder)
7	ENC ^{AUX}	This is for full closed control which is aimed at adjusting mechanical position error. Linear scale signal is fed into this connector.

■ EtherCAT Model

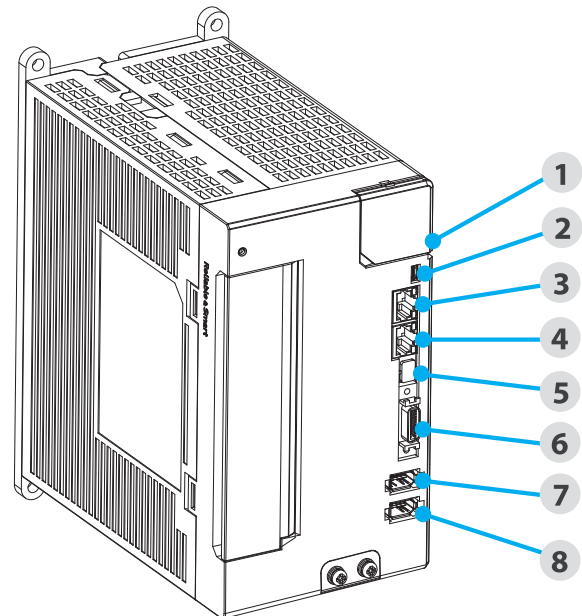
• Rated Output (Small-Capacity)

- 100W ~ 200W
- 400W
- 800W ~ 1.5kW



• Rated Output (Medium-Capacity)

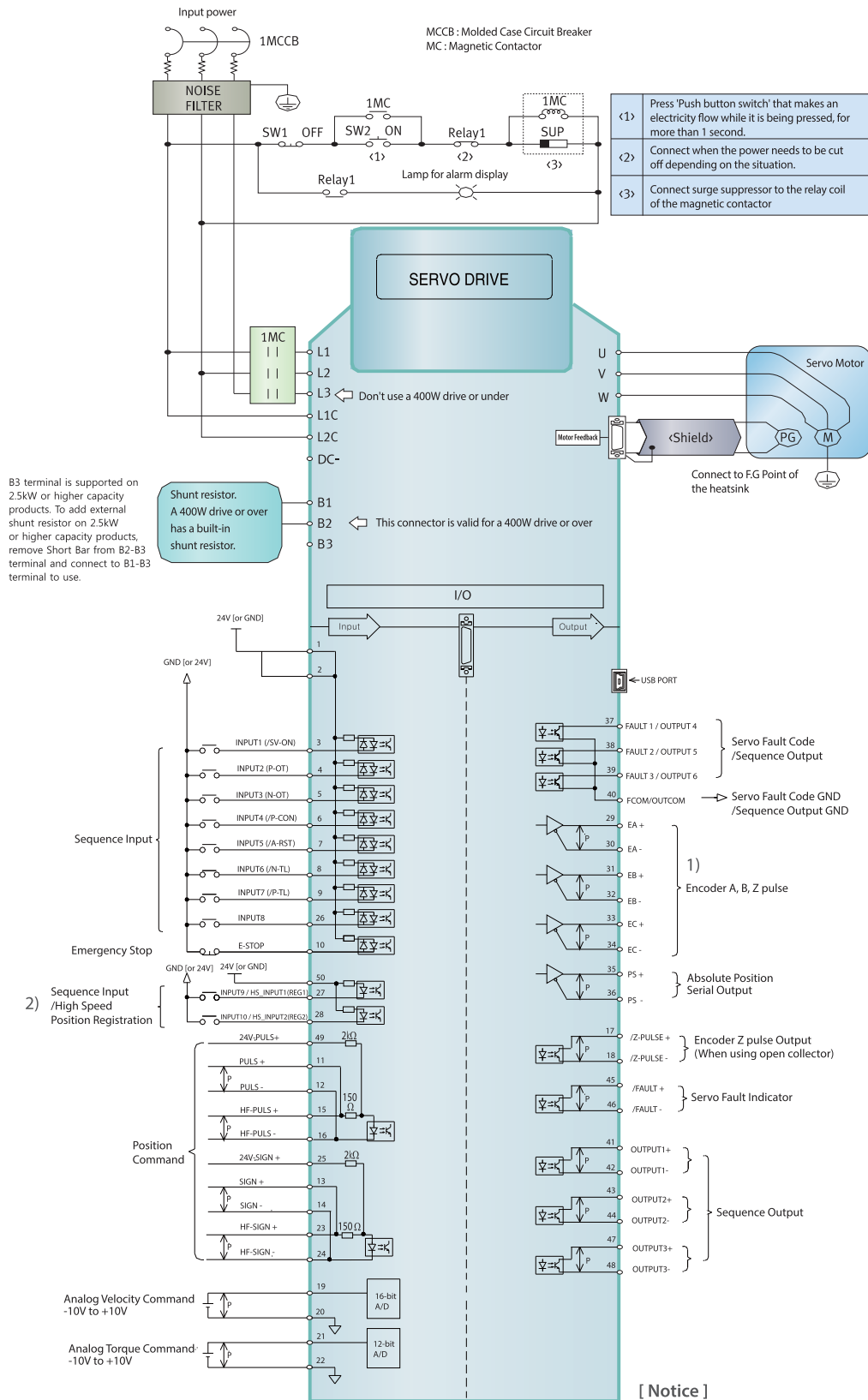
- 2.5kW ~ 3.5kW
- 5kW



N0.	Item	Function
1	Built-in Operator	It consist of six 7-segments, four push buttons and two LEDs. It provide some functions such as parameter editing, status display, monitoring, Run functions, EtherCAT communication status.
2	USB	Connect to the PC Software, RSWare
3	ECAT IN	EtherCAT communication signal Input
4	ECAT OUT	EtherCAT communication signal Output
5	Safety	Safety function (STO)
6	I/O	This 20 pin connector is for interface with external device. The functions are System Input/Output, User Input/Output, fault output, Encoder output. For more detail, refer to the wiring diagram.
7	ENC	Encoder signal is fed into this connector. (17bit serial encoder, 23bit serial encoder, 21bit Biss encoder)
8	ENC _{AUX}	This is for full closed control which is aimed at adjusting mechanical position error. Linear scale signal is fed into this connector.

Wiring Diagram (1)

■ Pulse / Analog Model



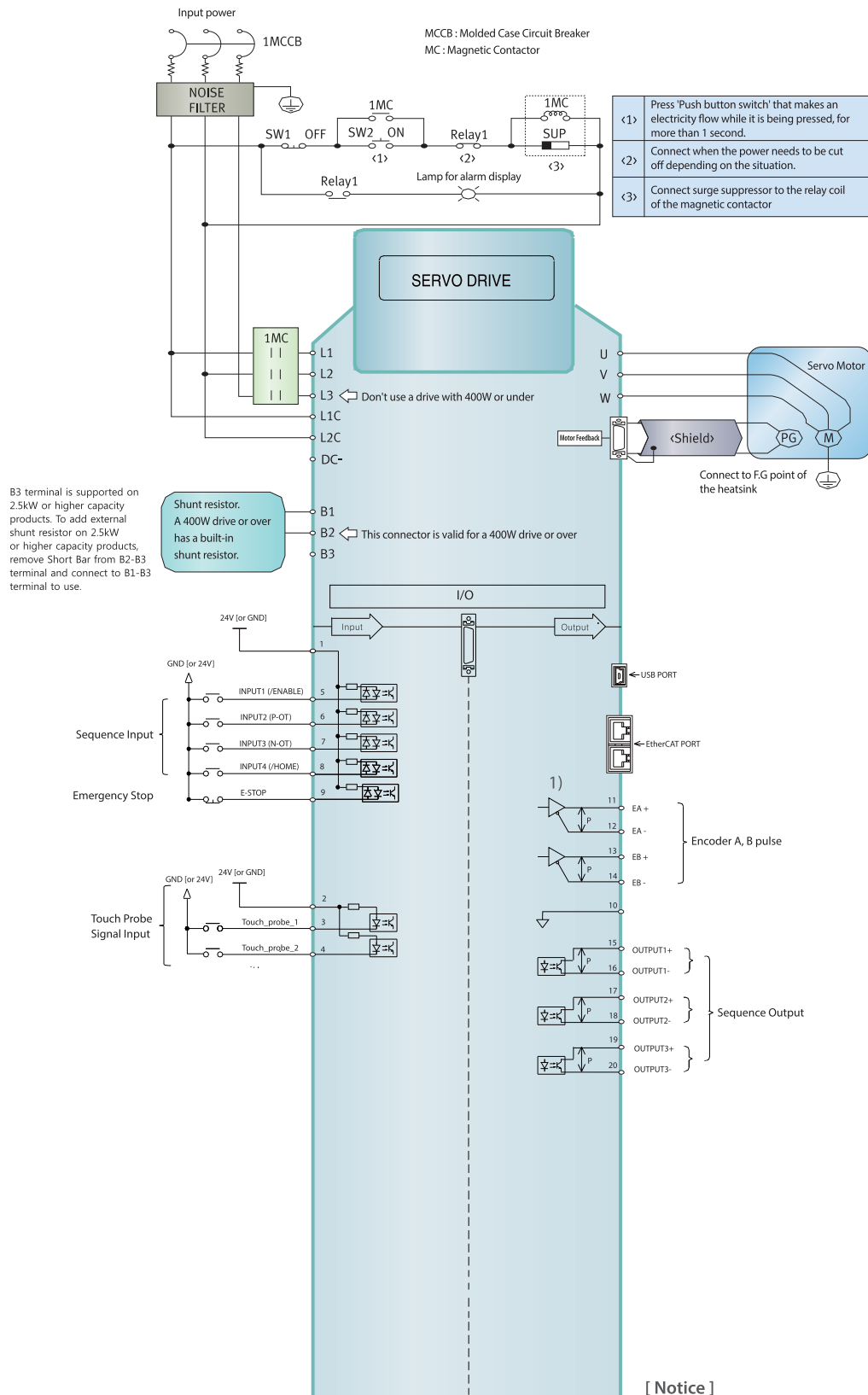
[Notice]

- Use shield cable
- Separate Servo drive from noise source when installing or setting

- 1) Every $\updownarrow$ P represents a twisted pair of the wire.
- 2) HS_INPUT1 and HS_INPUT2 are for high speed input that can read position data less than 3 μ s after signal input.

Wiring Diagram (2)

■ EtherCAT Model



CSMA Motor

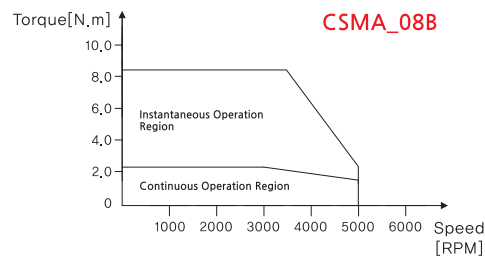
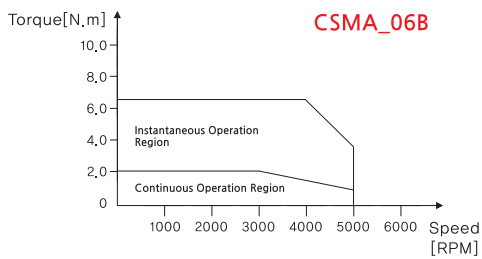
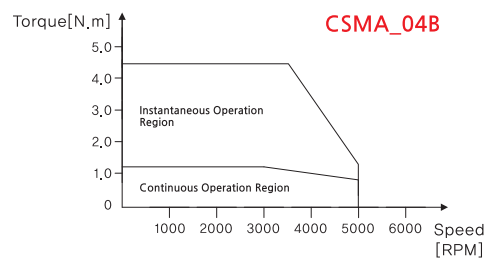
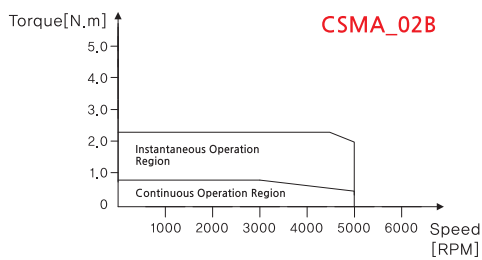
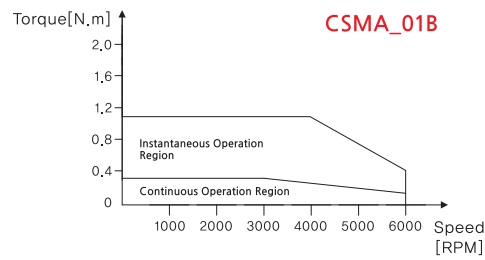
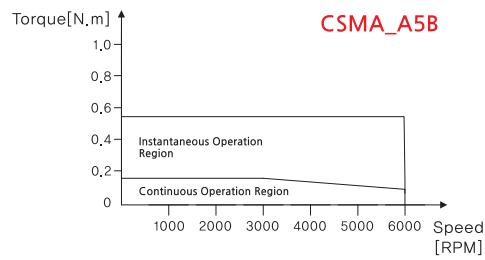
■ Basic Specifications

Item	Category	Unit	CSMA_					
			A5B	01B	02B	04B	06B	08B
Flange Size		mm	40	40	60	60	80	80
Rated Output		W	50	100	200	400	600	750
Rated Speed		r/min	3,000	3,000	3,000	3,000	3,000	3,000
Max. Speed		r/min	6,000	6,000	5,000	5,000	5,000	5,000
Rated Torque		N·m	0.159	0.318	0.64	1.27	1.91	2.39
		kgf·cm	1.62	3.25	6.5	13.0	19.5	24.4
Max. Instantaneous Torque		N·m	0.56	1.11	2.24	4.46	6.69	8.36
		kgf·cm	5.7	11.4	22.9	45.5	68.2	85.3
Rated Current		A(rms)	0.7	0.9	1.7	2.8	4.4	4.9
Max. Instantaneous Current		A(rms)	2.4	3.0	5.9	9.5	15.1	16.6
Rotor Moment of Inertia		X10 ⁻⁴ kg·m ²	0.019	0.035	0.15	0.27	0.71	0.86
		gf·cm·sec ²	0.020	0.036	0.15	0.28	0.73	0.88
Rotor Moment of Inertia (Brake)		X10 ⁻⁴ kg·m ²	0.024	0.039	0.20	0.35	0.88	1.04
		gf·cm·sec ²	0.024	0.040	0.20	0.36	0.90	1.06
Electrical Time Constant		ms	0.8	0.9	2.8	3.2	4.3	4.7
Mechanical Time Constant (Non Brake)		ms	0.6	0.5	0.4	0.4	0.4	0.4
Mechanical Time Constant (Brake)		ms	0.8	0.6	0.6	0.5	0.5	0.4
Power Rate (Non Brake)		kW/s	12.9	28.7	27.4	59.2	51.2	65.9
Power Rate (Brake)		kW/s	10.8	25.8	20.7	46.2	41.4	55.0
Dielectric Withstand Voltage		-	AC1500V, 60s					
Input Voltage		VAC	AC 200					
Insulation Class		-	Class F					
Insulation Resistance		MΩ MIN	100 (at DC 500V)					
Shaft Friction Torque		N·m Max	0.02		0.04		0.08	
		kgf·cm Max	0.2		0.4		0.8	
Allowable Thrust Shaft Load		N	39.2		68.6		98	
		kgf	4		7		10	
Allowable Radial Shaft Load		N	78.4		196		343	
		kgf	8		20		35	
Shaft End Play		mm Max	0.2					
Color		-	Black					
Weight (Non Brake)		kg	0.4	0.5	0.9	1.3	2.2	2.5
Weight (Brake)		kg	0.6	0.7	1.4	1.8	3.1	3.4

[Caution]

1. Suppose to attach Aluminum Heat Sink(305x305xT12mm) on Motor when using the rated torque. Ambient temperature should be below 40°C.
2. All values were measured between 20~30°C.
3. Each value is derived when the motor is used with matched drive.
4. Inertia, Rated Current, Instantaneous Maximum Current, Electrical Time Constant, Mechanical Time Constant, Power Rate, Shaft Friction Torque and Product weight might change by using Brake, Oil Seal Type.

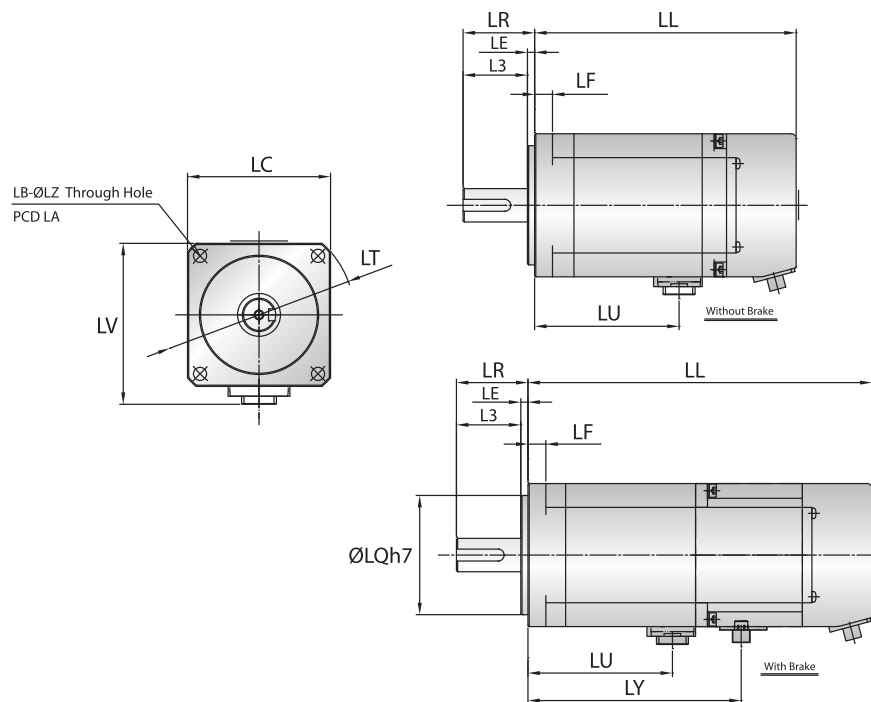
CSMA Motor - Torque Speed Curves



CSMA Motor - Holding Brake Specification

Item	Category	Unit	CSMA_					
			A5B	01B	02B	04B	06B	08B
Rated Voltage		VDC	DC 24V ±10%					
Static Friction Torque		N·m MIN (kgf·cm MIN)	0.318 (3.24)		1.27 (13)		2.39 (24.4)	
Power Consumption (20 °C)		W	4		8		8	
Brake Absorbing Time		ms MAX	40		50		60	
Brake Releasing Time		ms MAX	20		20		30	

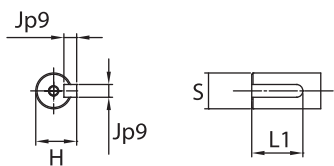
CSMA



CSMA Motor - External Dimension

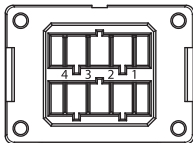
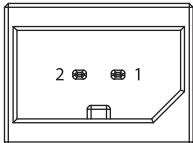
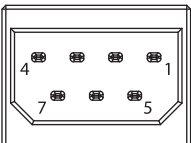
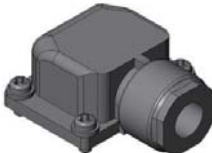
Item \ Motor	Unit	CSMA_					
		A5B	01B	02B	04B	06B	08B
LL	Non Brake	76.5	90.5	87.7	109.7	109.8	116.8
	Brake	112	126	122.3	144.3	147.9	154.9
LU	Non Brake	30.15	44.15	38.1	60.1	59.55	66.55
	Brake	30.15	44.15	38.1	60.1	58.15	65.15
LY	Brake Only	-	-	-	-	-	-
LR		25	25	30	30	35	35
L3		22.5	22.5	27	27	32	32
LE		2.5	2.5	3	3	3	3
LF		6.5	6.5	7.5	7.5	12	12
LQ		30	30	50	50	70	70
LC		40	40	60	60	80	80
LV		48.3	48.3	67.5	67.5	87.4	87.4
LT		-	-	80	80	105	105
LB		2	2	4	4	4	4
LZ		4.5	4.5	5.5	5.5	6.6	6.6
LA		46	46	70	70	90	90

CSMA Motor - Shaft Dimension



Item	Motor	CSMA_					
		A5B	01B	02B	04B	06B	08B
	S	8	8	14	14	19	19
	L1	16	16	20	20	25	25
	J	3	3	5	5	6	6
	H	9.2	9.2	16	16	21.5	21.5

CSMA Motor - Connector Specifications

Item \ Category	Motor		Brake		Encoder	
Pin spec.	Pin no.	Function	Pin no.	Function	Pin no.	Function
	1	F.G	1	Brake	1	BAT+
	2	U	2	Brake	2	BAT-
	3	V	-		3	SD
	4	W			4	/SD
	-				5	Vcc (+5V)
					6	GND (0V)
		7	-			
Outline						
	JN6AS04NJ1(JAE)		JN6CR02PM1(JAE)		JN6CR07PM1(JAE)	
Mating plug						
	JN6FS04SJ2(JAE)		JN6FR02SM1(JAE)		JN6FR07SM1(JAE)	
	ST-JN5-S-C1B-2500		LY10-C2-A1-10000		LY10-C2-A1-10000	

CSMS Motor

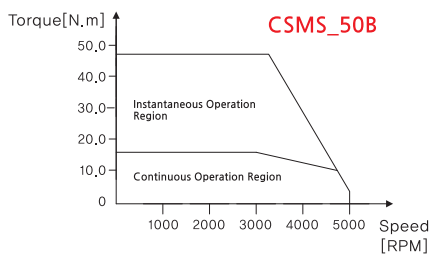
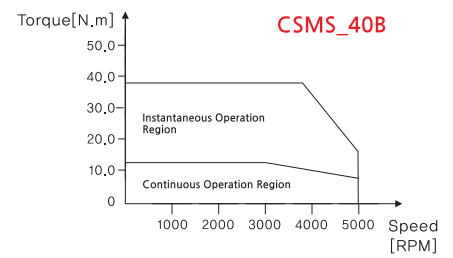
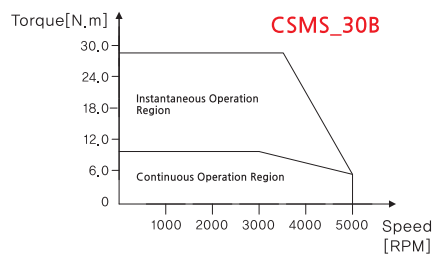
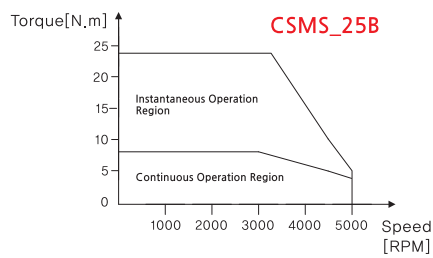
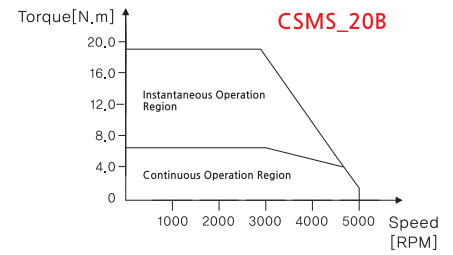
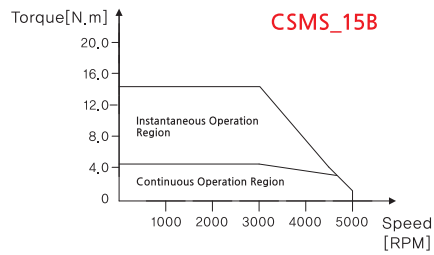
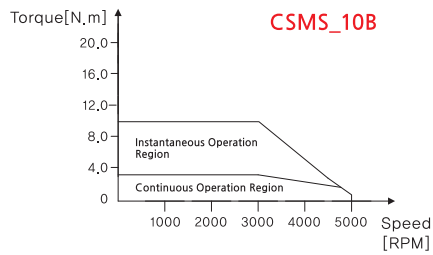
■ Basic Specifications

Item	category	Unit	CSMS_						
			10B	15B	20B	25B	30B	40B	50B
Flange Size		mm	100	100	100	100	130	130	130
Rated Output		kW	1	1.5	2	2.5	3	4	5
Rated Speed		r/min	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Max. Speed		r/min	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Rated Torque		N·m	3.2	4.8	6.4	7.9	9.6	12.7	15.9
		kgf·cm	32.7	48.7	65.3	80.6	97.4	129.6	162.2
Max. Instantaneous Torque		N·m	9.6	14.3	19.2	23.7	28.5	37.9	47.6
		kgf·cm	98	145.9	195.9	241.8	290.8	386.7	485.7
Rated Current		A(rms)	6.8	9.3	11.6	15.7	18.5	22.9	27.8
Max. Instantaneous Current		A(rms)	20.5	28.7	33.1	45	53.7	65.9	81.2
Rotor Moment of Inertia		X10 ⁻⁴ kg·m ²	1.99	2.85	3.7	4.57	7.71	12.63	12.63
		gf·cm·sec ²	2.03	2.91	3.78	4.66	7.87	12.89	12.89
Rotor Moment of Inertia (Brake)		X10 ⁻⁴ kg·m ²	2.34	3.17	4.02	4.88	8.59	13.52	13.52
		gf·cm·sec ²	2.36	3.23	4.11	4.98	8.77	13.8	13.8
Electrical Time Constant		ms	5.6	6.1	6.1	6.4	7.7	8.4	9.5
Mechanical Time Constant (Non Brake)		ms	0.9	0.74	0.66	0.66	0.68	0.57	0.51
Mechanical Time Constant (Brake)		ms	1.05	0.82	0.72	0.72	0.76	0.61	0.54
Power Rate (Non Brake)		kW/s	51.6	79.9	110.6	136.6	118.1	127.7	200
Power Rate (Brake)		kW/s	44.4	72	101.7	127.8	106	119.3	186.8
Dielectric Withstand Voltage		-	AC1500V, 60s						
Input Voltage		VAC	AC 200						
Insulation Class		-	Class F						
Insulation Resistance		MΩ MIN	100 (at DC500V)						
Shaft Friction Torque		N·m Max	0.49			0.59	0.49		
		kgf·cm Max	5.0			6.0	5.0		
Allowable Thrust Shaft Load		N	98						
		kgf	10						
Allowable Radial Shaft Load		N	490						
		kgf	50						
Shaft End Play		mm Max	0.5						
Color		-	Black						
Weight (Non Brake)		kg	3.4	4.2	5	5.8	8.3	9.4	9.4
Weight (Brake)		kg	5.3	6.1	6.9	7.7	10.6	11.7	11.7

[Caution]

1. Suppose to attach Aluminum Heat Sink(450x450xT25mm) on Motor when using the rated torque. Ambient temperature should be below 40°C.
2. All values were measured between 20~30°C.
3. Each value is derived when the motor is used with matched drive.
4. Inertia, Mechanical Time Constant, Power Rate and Product weight might change by using Brake Type.

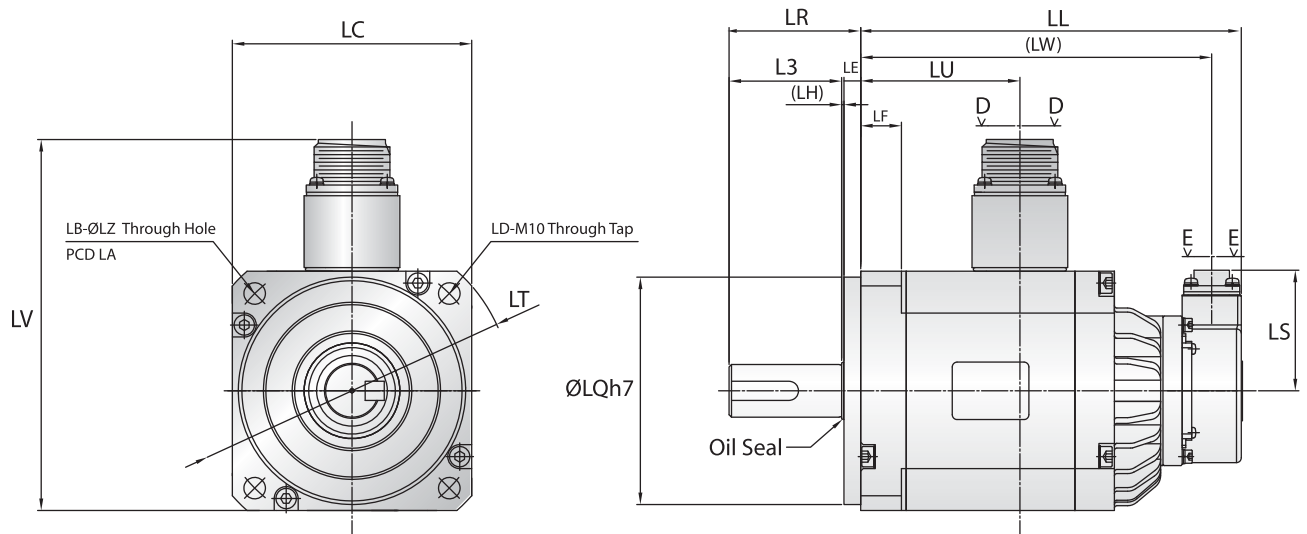
CSMS Motor - Torque Speed Curves



CSMS Motor - Holding Brake Specification

Item \ Category	Unit	CSMS_						
		10B	15B	20B	25B	30B	40B	50B
Rated Voltage	VDC	DC 24V ±10%						
Static Friction Torque	N·m MIN (kgf·cm MIN)	8.0 (81.6)				12.5 (127.6)	17.0 (173.5)	
Power Consumption (20 °C)	W	12.8				22		
Moment of Rotor Inertia	[GD²/4] kg·m² x10 ⁻⁴ (gf·cm·s²)	0.45 (0.46)				1.8 (1.8)		
Brake Absorbing Time	ms MAX	90				90		
Brake Releasing Time	ms MAX	20				40		

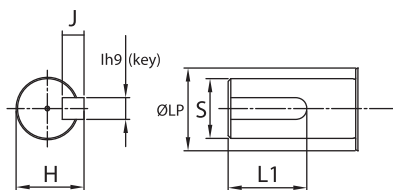
CSMS Motor - External Dimension outline



CSMS Motor - External Dimension

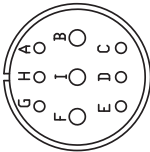
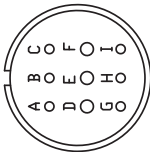
Item	Motor	Unit	CSMS_						
			10B	15B	20B	25B	30B	40B	50B
LL	Non Brake		159	174	189	204	172.5	200.5	200.5
	Brake		203	218	233	248	193.5	221.5	221.5
LW	Non Brake		146.6	161.6	176.6	191.6	160	188	188
	Brake		190.6	205.6	220.6	235.6	181	209	209
LU	Non Brake		58.5	73.5	88.5	103.5	104.5	132.5	132.5
	Brake		66.5	81.5	96.5	111.5	125.5	153.5	153.5
LR			55	55	55	55	55	65	65
L3			47	47	47	47	47	61	61
LH			1	1	1	1	4	0	0
LE			7	7	7	7	4	4	4
LF			17	17	17	17	15	15	15
LQ			95	95	95	95	110	110	110
LS			50.4	50.4	50.4	50.4	50.5	50.5	50.5
LC			100	100	100	100	130	130	130
LV			155	155	155	155	185	185	185
LT			133	133	133	133	164	164	164
LB			4	4	4	4	2	2	2
LZ			9	9	9	9	9	9	9
LA			115	115	115	115	145	145	145
LD			0	0	0	0	2	2	2

CSMS Motor - Shaft Dimension



Item	Motor	CSMS_						
		10B	15B	20B	25B	30B	40B	50B
	LP	24	24	24	24	24	-	-
	S	19	19	19	19	22	24	24
	L1	45				45	55	
	I	6				8	8	
	J	6				7	7	
	H	21.5				25	27	

CSMS Motor - Connector Specification

Item	Category	Motor				Encoder	
Part no.	CSMS_				All Catalog		
	10B,15B,20B,25B		30B,40B,50B				
	N/MS3102A20-18P		N/MS3102A24-11P		JN2AS10ML2-R		
Pin spec.	Pin no.	Function	Pin no.	Function	Pin no.	Function	
	A	-	A	(Brake)	1	GND (0V)	
	B	W-phase	B	(Brake)	2	-	
	C	-	C	-	3	SD	
	D	-	D	U-phase	4	Vcc (+5V)	
	E	F.G	E	V-phase	5	BAT-	
	F	U-phase	F	W-phase	6	BAT+	
	G	(Brake)	G	F.G	7	/SD	
	H	(Brake)	H	-	8	-	
	I	V-phase	I	-	9	Shield	
	-		-		10	-	
Outline							
	Viewed from D - D		Viewed from D - D		Viewed from E - E		

CSMD Motor

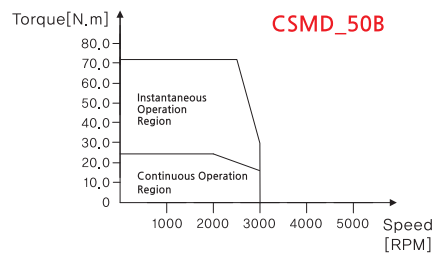
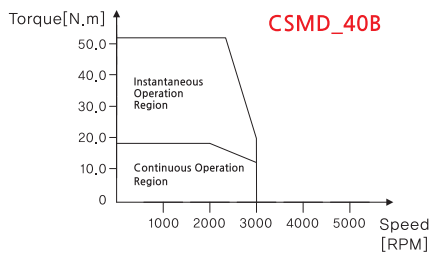
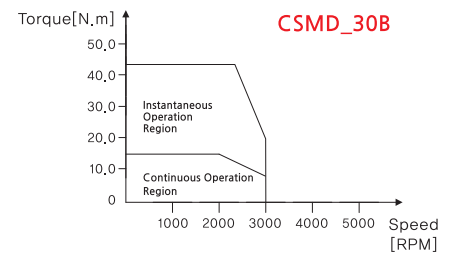
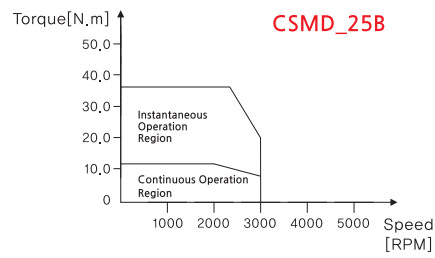
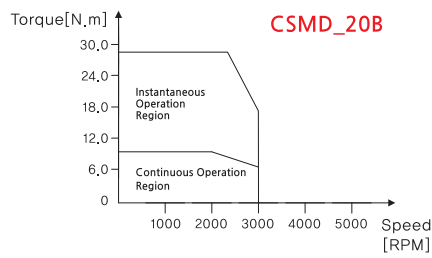
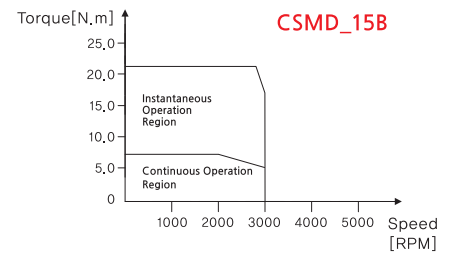
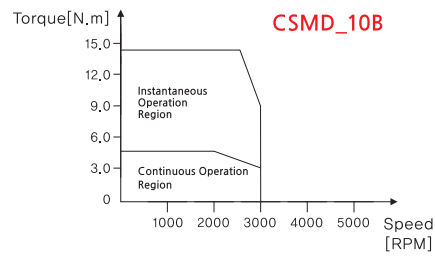
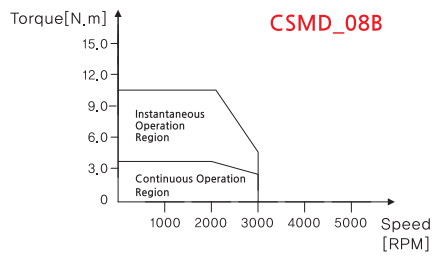
Basic Specifications

Item \ Category	Unit	CSMD_							
		08B	10B	15B	20B	25B	30B	40B	50B
Flange Size	mm	130	130	130	130	130	130	180	180
Rated Output	kW	0.75	1.00	1.50	2.00	2.50	3.00	4.00	5.00
Rated Speed	r/min	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Max. Speed	r/min	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Rated Torque	N·m	3.6	4.8	7.2	9.6	11.9	14.3	19.1	23.9
	kgf·cm	36.5	48.7	72.9	97.4	121.4	145.9	194.9	243.9
Max. Instantaneous Torque	N·m	10.6	14.4	21.5	28.5	35.5	42.9	56.4	71.4
	kgf·cm	108.1	146.9	219.4	290.8	362.2	437.7	575.5	728.6
Rated Current	A(rms)	5.0	6.4	9.8	12.9	15.1	17.2	23.0	31.5
Max. Instantaneous Current	A(rms)	13.5	18.2	28.2	37.2	43.9	50.5	65.9	91.4
Rotor Moment of Inertia	X10 ⁻⁴ kg·m ²	3.49	5.60	7.71	7.71	10.17	12.63	41.30	56.80
	gf·cm·sec ²	3.56	5.71	7.87	7.87	10.38	12.89	42.10	58.00
Rotor Moment of Inertia (Brake)	X10 ⁻⁴ kg·m ²	4.37	6.49	8.59	8.59	11.05	13.52	43.10	58.70
	gf·cm·sec ²	4.46	6.62	8.77	8.77	11.28	13.80	44.00	59.90
Electrical Time Constant	ms	6.0	7.4	7.8	7.8	9.3	9.8	16.7	14.2
Mechanical Time Constant (Non Brake)	ms	1.07	0.75	0.66	0.66	0.53	0.49	0.58	0.54
Mechanical Time Constant (Brake)	ms	1.33	0.87	0.74	0.74	0.58	0.53	0.60	0.56
Power Rate (Non Brake)	kW/s	36.6	40.7	66.2	118.1	139.1	161.8	88.4	93.2
Power Rate (Brake)	kW/s	29.2	35.1	59.3	106.0	128.0	151.2	84.6	97.3
Dielectric Withstand Voltage	-	AC1500V, 60s							
Input Voltage	VAC	AC 200							
Insulation Class	-	Class F							
Insulation Resistance	MΩ MIN	100 (at DC500V)							
Shaft Friction Torque	N·m Max	0.49						0.98	
	kgf·cm Max	5						10	
Allowable Thrust Shaft Load	N	98						392	
	kgf	10						40	
Allowable Radial Shaft Load	N	490						784	
	kgf	50						80	
Shaft End Play	mm Max	0.5							
Color	-	Black							
Weight (Non Brake)	kg	6.50	7.40	8.30	8.30	8.90	9.40	14.50	20.00
Weight (Brake)	kg	8.80	9.70	10.60	10.60	11.20	11.70	20.50	26.00

[Caution]

1. Suppose to attach Aluminum Heat Sink(Less than 3kw : 450x450xT25mm , Higher than 4kW : 600x600xT25mm) on Motor when using the rated torque.
Ambient temperature should be below 40°C.
2. All values were measured between 20~30°C.
3. Each value is derived when the motor is used with matched drive.
4. Inertia, Mechanical Time Constant, Power Rate and Product weight might change by using Brake Type.

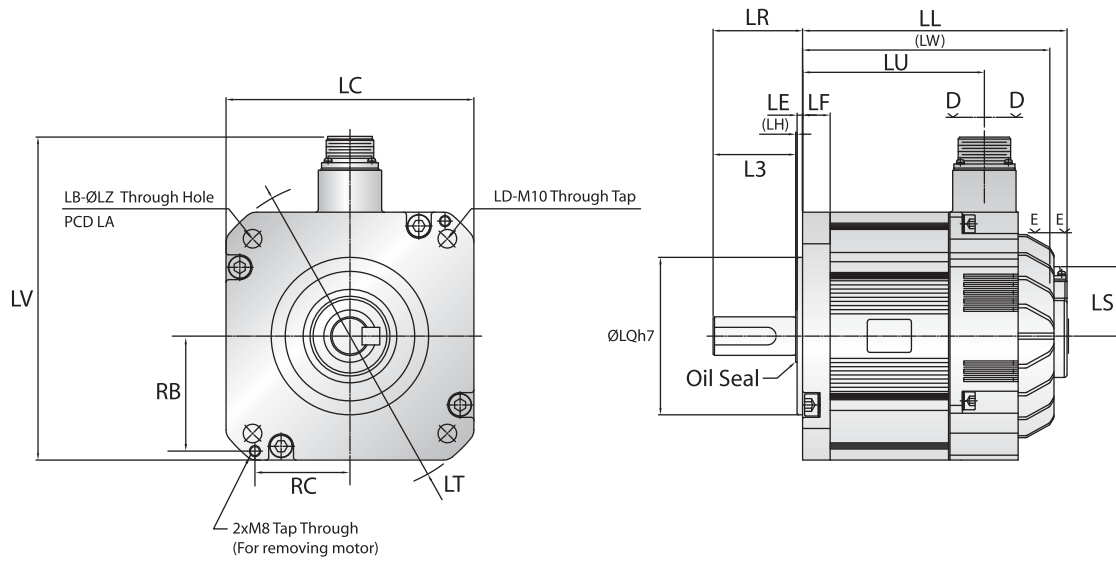
CSMD Motor - Torque Speed Curves



CSMD Motor - Holding Brake Specification

Item	Category	Unit	CSMD_							
			08B	10B	15B	20B	25B	30B	40B	50B
Rated Voltage		VDC	DC 24V ±10%							
Static Friction Torque		N·m MIN (kgf·cm MIN)	12.5 (127.6)					17.0 (173.5)	30.0 (306)	
Power Consumption (20 °C)		W	22						26	
Moment of Rotor Inertia		[GD ² /4] kg·m ² ×10 ⁻⁴ (gf·cm·s ²)	1.8 (1.8)						6.6 (6.7)	
Brake Absorbing Time		ms MAX	90						200	
Brake Releasing Time		ms MAX	40						100	

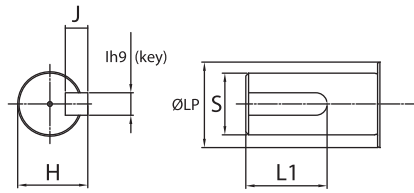
CSMD Motor - External Dimension outline



CSMD Motor - External Dimension

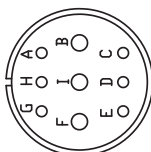
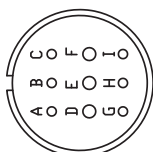
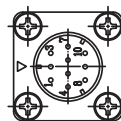
Item \ Motor	Unit	CSMD_							
		08B	10B	15B	20B	25B	30B	40B	50B
LL	Non Brake	148.5	160.5	172.5	172.5	186.5	200.5	192	216
	Brake	169.5	181.5	193.5	193.5	207.5	221.5	223.5	247.5
LW	Non Brake	136	148	160	160	174	188	179.5	203.5
	Brake	157	169	181	181	195	209	211	235
LU	Non Brake	80.5	92.5	104.5	104.5	118.5	132.5	132	156
	Brake	101.5	113.5	125.5	125.5	139.5	153.5	163.5	187.5
LR		55	55	55	55	65	65	65	70
L3		47	47	47	47	61	61	60	65
LH		4	4	4	4	0	0	1	1
LE		4	4	4	4	4	4	4	4
LF		15	15	15	15	15	15	20	20
LQ		110	110	110	110	110	110	114.3	114.3
LS		50.5	50.5	50.5	50.5	50.5	50.5	50.4	50.4
LC		130	130	130	130	130	130	180	180
LV		185	185	185	185	185	185.5	234.5	234.5
LT		164	164	164	164	164	164	230	230
LB		2	2	2	2	2	2	4	4
LZ		9	9	9	9	9	9	13.5	13.5
LA		145	145	145	145	145	145	200	200
LD		2	2	2	2	2	2	0	0
RB		-	-	-	-	-	-	83.5	83.5
RC		-	-	-	-	-	-	69	69

CSMD Motor - Shaft Dimension



Item	Motor	CSMD_							
		08B	10B	15B	20B	25B	30B	40B	50B
LP		24	24	24	24	-	-	38	38
S		19	22	22	22	24	24	28	35
L1		45	45			55		55	55
I		6	8			8		8	10
J		6	7			7		7	8
H		21.5	25			27		31	38

CSMD Motor - Connector Specifications

Item \ Category	Motor				Encoder	
Part no.	CSMD_				All Catalog	
	08B,10B,15B,20B,25B		30B,40B,50B			
	N/MS3102A20-18P		N/MS3102A24-11P		JN2AS10ML2-R	
Pin spec.	Pin no.	Function	Pin no.	Function	Pin no.	Function
	A	-	A	(Brake)	1	GND (0V)
	B	W-phase	B	(Brake)	2	-
	C	-	C	-	3	SD
	D	-	D	U-phase	4	Vcc (+5V)
	E	F.G	E	V-phase	5	BAT-
	F	U-phase	F	W-phase	6	BAT+
	G	(Brake)	G	F.G	7	/SD
	H	(Brake)	H	-	8	-
	I	V-phase	I	-	9	Shield
	-	-	-	-	10	-
Outline						
	Viewed from D - D		Viewed from D - D		Viewed from E - E	

CSMH Motor

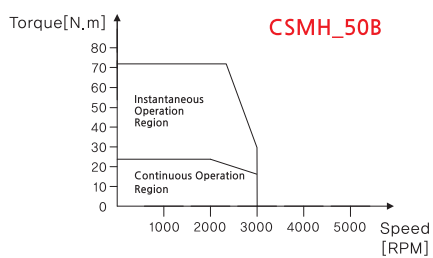
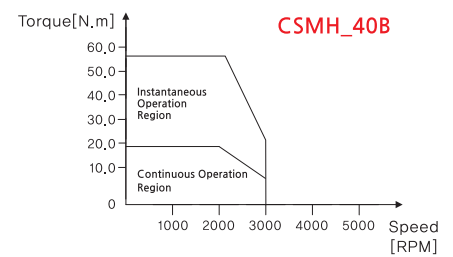
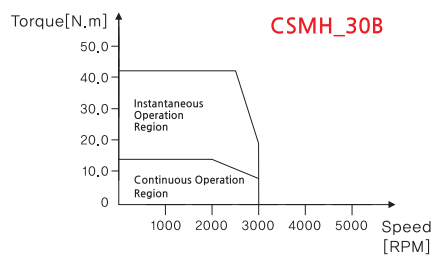
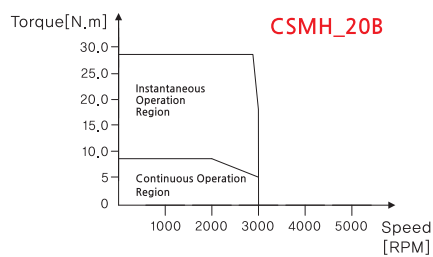
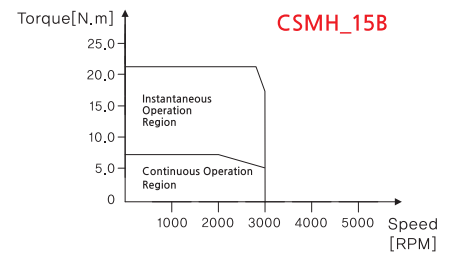
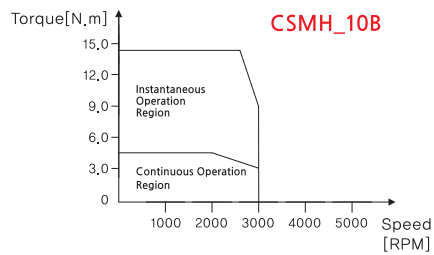
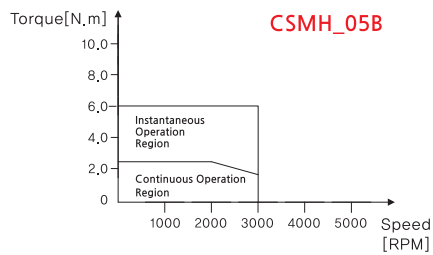
■ Basic Specifications

Item	Category	Unit	CSMH_						
			05B	10B	15B	20B	30B	40B	50B
Flange Size		mm	130	130	130	180	180	180	180
Rated Output		kW	0.5	1.0	1.5	2.0	3.0	4.0	5.0
Rated Speed		r/min	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Max. Speed		r/min	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Rated Torque		N·m	2.4	4.8	7.2	9.6	14.3	19.1	23.9
		kgf·cm	24.4	48.7	72.9	97.4	145.9	194.9	243.9
Max. Instantaneous Torque		N·m	6.0	14.4	21.5	28.5	42.9	56.4	71.4
		kgf·cm	61.2	146.9	219.4	290.8	437.8	575.5	728.6
Rated Current		A(rms)	3.4	6.4	9.8	13.3	17.5	23.0	31.5
Max. Instantaneous Current		A(rms)	7.6	18.2	28.2	37.3	50.4	65.9	91.4
Rotor Moment of Inertia		X10 ⁻⁴ kg·m ²	12.63	26.1	42.7	61.70	92.50	115.80	170.10
		gf·cm·sec ²	12.89	26.60	43.60	63.00	94.40	118.20	173.60
Rotor Moment of Inertia (Brake)		X10 ⁻⁴ kg·m ²	13.52	27.00	43.60	63.90	94.40	117.70	172.00
		gf·cm·sec ²	13.8	27.5	44.5	65.0	96.3	120.1	175.5
Electrical Time Constant		ms	9.8	7.4	7.8	15.6	16.7	16.7	14.2
Mechanical Time Constant (Non Brake)		ms	0.49	3.50	3.68	0.87	1.29	1.62	1.63
Mechanical Time Constant (Brake)		ms	0.53	3.62	3.75	0.90	1.32	1.64	1.65
Power Rate (Non Brake)		kW/s	4.53	8.74	11.90	14.80	22.10	31.50	33.60
Power Rate (Brake)		kW/s	4.23	8.45	11.70	14.30	21.70	31.00	33.20
Dielectric Withstand Voltage		-	AC1500V, 60s						
Input Voltage		VAC	AC 200						
Insulation Class		-	Class F						
Insulation Resistance		MΩ MIN	100 (at DC500V)						
Shaft Friction Torque		N·m Max	0.49			0.98			
		kgf·cm Max	5			10			
Allowable Thrust Shaft Load		N	98			392			
		kgf	10			40			
Allowable Radial Shaft Load		N	490			784			
		kgf	50			80			
Shaft End Play		mm Max	0.5						
Color		-	Black						
Weight (Non Brake)		kg	9.4	9.2	11.1	18.0	20.0	21.0	24.8
Weight (Brake)		kg	11.7	11.5	13.4	24.5	26.5	27.5	30.8

[Caution]

1. Suppose to attach Aluminum Heat Sink(Less than 1.5kw : 450x450xT25mm , Higher than 2kW : 600x600xT25mm) on Motor when using the rated torque.
Ambient temperature should be below 40°C.
2. All values were measured between 20~30°C.
3. Each value is derived when the motor is used with matched drive.
4. Inertia, Mechanical Time Constant, Power Rate and Product weight might change by using Brake Type.

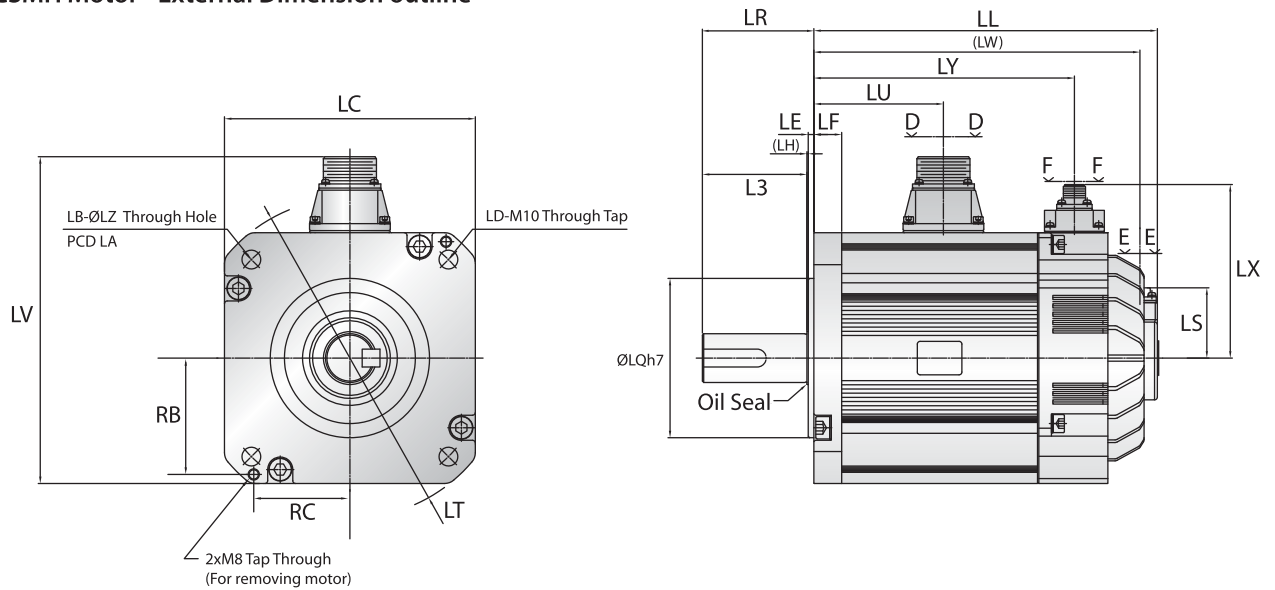
CSMH Motor - Torque Speed Curves



CSMH Motor - Holding Brake Specification

Item	Category	Unit	CSMH_						
			05B	10B	15B	20B	30B	40B	50B
Rated Voltage		VDC	DC 24V $\pm 10\%$						
Static Friction Torque		N·m MIN (kgf·cm MIN)	12.5 (127.6)			30.0 (306)			
Power Consumption (20 °C)		W	22			26			
Moment of Rotor Inertia		$[GD^2/4]$ kg·m ² $\times 10^{-4}$ (gf·cm·s ²)	1.8 (1.8)			6.6 (6.7)			
Brake Absorbing Time		ms MAX	90			200			
Brake Releasing Time		ms MAX	40			100			

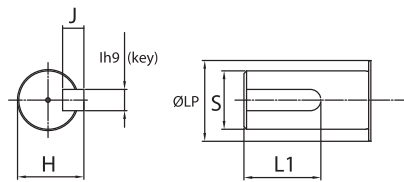
CSMH Motor - External Dimension outline



CSMH Motor - External Dimension

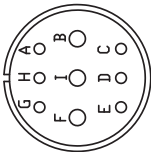
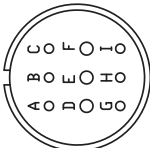
Item \ Motor	Unit	CSMH_						
		05B	10B	15B	20B	30B	40B	50B
LL	Non Brake	200.5	182.5	197.5	210	221	227	253
	Brake	221.5	232.5	247	246.5	249.5	263.5	297.5
LW	Non Brake	188	170	185	197.5	208.5	214.5	240.5
	Brake	209	220	234.5	234	237	251	285
LY		-	163	178	187	190	204	238
LU	Non Brake	132.5	69	81	88	99	99	123
	Brake	153.5	69	81	93	99	99	123
LR		70	70	70	80	80	80	80
L3		62	62	62	75	75	75	75
LH		4	4	4	1	1	1	1
LE		4	4	4	4	4	4	4
LF		15	15	15	20	20	20	20
LQ		110	110	110	114.3	114.3	114.3	114.3
LS		50.5	50.5	50.5	50.4	50.4	50.4	50.4
LC		130	130	130	180	180	180	180
LV		185	185	185	234.5	234.5	234.5	234.5
LT		164	164	164	230	230	230	230
LB		2	2	2	4	4	4	4
LZ		9	9	9	13.5	13.5	13.5	13.5
LA		145	145	145	200	200	200	200
LD		2	2	2	-	-	-	-
RB		-	-	-	83.5	83.5	83.5	83.5
RC		-	-	-	69	69	69	69

CSMH Motor - Shaft Dimension



Item	Motor	CSMH_						
		05B	10B	15B	20B	30B	40B	50B
LP		24	24	24	38	38	38	38
S		22	22	22	35	35	35	35
L1		45			55			
I		8			10			
J		7			8			
H		25			38			

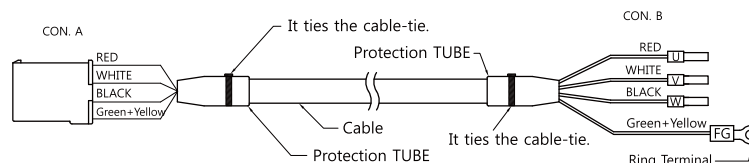
CSMH Motor - Connector Specifications

Item \ Category	Motor				Encoder		Brake	
Part no.	CSMH_				All Catalog		CSMH_	
	05B · 10B · 15B		20B · 30B · 40B · 50B				05B	10B · 15B · 20B · 30B · 40B · 50B
	N/MS3102A20-18P		N/MS3102A24-11P		JN2AS10ML2-R		Included in Motor connector	N/MS3102A10SL-4P
Pin spec.	Pin no.	Function	Pin no.	Function	Pin no.	Function	Pin no.	Function
	A	-	A	-	1	GND (0V)	A	Brake
	B	W-phase	B	-	2	-	B	Brake
	C	-	C	-	3	SD	-	
	D	-	D	U-phase	4	Vcc (+5V)		
	E	F.G	E	V-phase	5	BAT-		
	F	U-phase	F	W-phase	6	BAT+		
	G	(Brake)	G	F.G	7	/SD		
	H	(Brake)	H	-	8	-		
	I	V-phase	I	-	9	Shield		
	-		-		10	-		
Outline								
	Viewed from D - D		Viewed from D - D		Viewed from E - E		Viewed from F - F	

Cable Specifications

■ Motor Power Cable - CSMT

• Outline



• Wiring Specification (Wire Gauge : AWG 18)

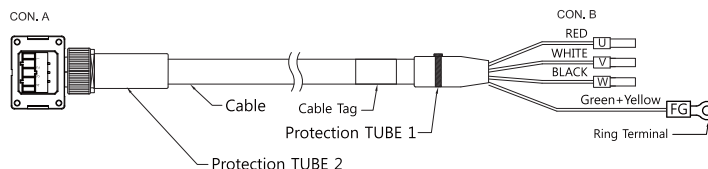
PIN	Function	Color
1	U phase	3 core cable : Red
2	V phase	3 core cable : White
3	W phase	3 core cable : Black
4	Frame GND	FG Wire (Green+Yellow)

• Connector Specification

Remark	Description	Specification	Marker
CON.A	Connector	172159-1	TE
	Terminal	170362-1	
CON.B	RING Terminal	GP-140078	KET or Equivalent product
	Ferrule Terminal	CE010012	Dong-A Bestech

■ Motor Power Cable - CSMA

• Outline



• Wiring Specification (Wire Gauge : AWG 18)

PIN	Function	Color
1	Frame GND	FG Wire (Green+Yellow)
2	U Phase	3 core cable : Red
3	V Phase	3 core cable : White
4	W Phase	3 core cable : Black

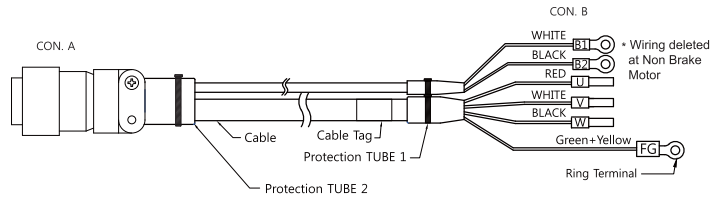
• Connector Specification

Remark	Description	Specification	Marker
CON.A	Connector	JN6FS045J2	JAE
	Terminal	ST-JN5-S-C1B-2500	
CON.B	RING Terminal	GP-140078	KET or Equivalent product
	Ferrule Terminal	CE010012	Dong-A Bestech

Motor Power Cable - CSMS, CSMD, CSMH

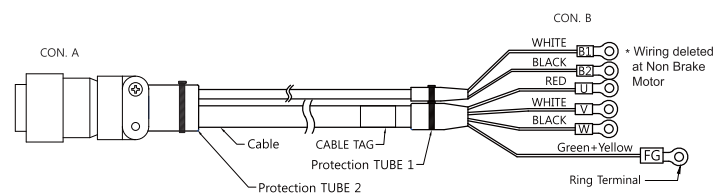
• 1.5kW or less

- CSMS, CSMD and CSMH Motor
- Wire Gage : Power (AWG 14), Brake (AWG 20)
- Apply on 1.5kW or less of CSD7 drive
- CSMH motor brake cable is provided separately from 1kW.



• 2.5kW or less

- CSMS, CSMD Motor (2kW ~ 2.5kW)
- Wire Gage : Power (AWG 12), Brake (AWG 20)
- Apply on 2.5kW or higher of CSD7 drive
- CSMH motor brake cable is provided separately from 1kW.



• Wiring Specification

PIN	Function	Color
A	-	-
B	W phase	3 core cable : Black
C	-	-
D	-	-
E	Frame GND	FG Wire (Green+Yellow)
F	U phase	3 core cable : Red
G	Brake (B1)	2 core cable : White, Brake Motor Only
H	Brake (B2)	2 core cable : Black, Brake Motor Only
I	V phase	3 core cable : White

• Connector Specification

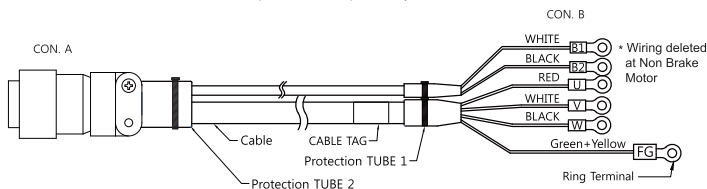
Remark	Description	Specification	Marker
CON.A	MS Connector	MS3106A20-18S, RoHs	Military Standard Compliance product
CON.B	1.5kW or less	RING Terminal (B1, B2)	GP-140078
		Ferrule Terminal	CE025012
	CSMS, CSMD 2kW ~ 2.5kW	RING Terminal (B1, B2)	GP-140078
		RING Terminal (U, V, W, FG)	4SQ-Ø4

• 3kW or more

- CSMS, CSMD Motor(Applied to 3kW ~ 5kW)
- Wire Gage :
 - Power : AWG 12 (3.5kW or less), AWG 10 (5kW or less)
 - Brake : AWG 20

• 2kW or more

- CSMH Motor(Applied to 2kW ~ 5kW)
- Wire Gage :
 - Power : AWG 12 (3.5kW or less), AWG 10 (5kW or less)
 - CSMH motor brake cable is provided separately from 1kW.



• Wiring Specification

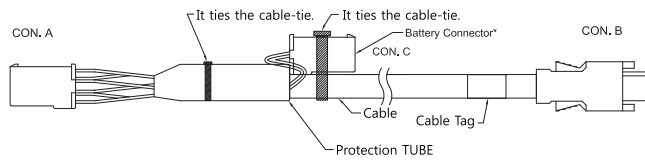
PIN	Function	Color
A	Brake (B1)	2 core cable : White, Brake Motor Only
B	Brake (B2)	2 core cable : Black, Brake Motor Only
C	-	-
D	U Phase	3 core cable : Red
E	V Phase	3 core cable : White
F	W Phase	3 core cable : Black
G	Frame GND	FG Wire (Green+Yellow)
H	-	-
I	-	-

• Connector Specification

Remark	Description	Specification	Marker
CON.A	MS Connector	MS3106A24-11S, RoHS	Military Standard Compliance product
CON.B	3.5kW or less (CSMH Motor : 2kW ~ 3kW)	RING Terminal (B1, B2)	GP-140078
		RING Terminal (U, V, W, FG)	4SQ-Ø4
	4kW ~ 5kW	RING Terminal (B1, B2)	GP-140078
		RING Terminal (U, V, W, FG)	5.5SQ-Ø4

Motor Encoder Cable - CSMT

Outline



Connector Specification

Remark	Description	Specification	Marker
CON.A	Connector	172161-1	TE
	Terminal	170361-1	
CON.B	Plug	3E206-0100KV	3M
	Cover	3E306-3200-008	
CON.C	Connector	DF1B-2ES-2.5RC	HRS
	Terminal	DF1B-2428SCF	

Wiring Specification (Wire Gage: AWG 24)

Motor Side(CON.A)		Drive Side(CON.B)	
TE(172161-1)		3M(3E306-3200-008)	
No	Name	No	Name
4	SD+	1	SD+
5	SD-	2	SD-
7	VCC	3	VCC
8	GND	4	GND
3	Shield	Case	Shield
1	BAT+		
2	BAT-		
6	NC		
9	NC		

Twist pair
Below 15m : Single Line
Over 20m : Two Line

Shield type Cable

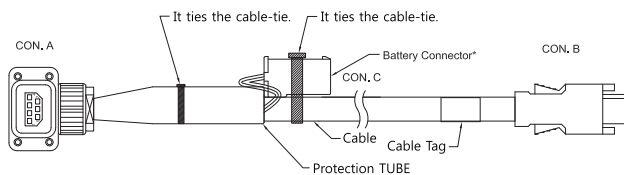
Battery Connector (CON.C)*	
HRS (DF1B-2ES-2.5RC)	
No	Name
1	BAT+
2	BAT-

[Notice]

When Absolute Encoder is used, Battery Connection(CON.C) needs to be used.
Connector type must be changed and used according to the connector of Battery.

Motor Encoder Cable - CSMA

Outline



Connector Specification

Remark	Description	Specification	Marker
CON.A	Connector	JN6FR07SM1	JAE
	Terminal	LY10-C2-A1-10000	
CON.B	Plug	3E206-0100KV	3M
	Cover	3E306-3200-008	
CON.C	Connector	DF1B-2ES-2.5RC	HRS
	Terminal	DF1B-2428SCF	

Wiring Specification (Wire Gage: AWG 24)

Motor Side(CON.A)		Drive Side(CON.B)	
JAE(JN6FR07SM1)		3M(3E306-3200-008)	
No	Name	No	Name
3	SD+	1	SD+
4	SD-	2	SD-
5	VCC	3	VCC
6	GND	4	GND
7	NC	Case	Shield
1	BAT+		
2	BAT-		

Twist pair
Below 15m : Single Line
Over 20m : Two Line

Shield type Cable

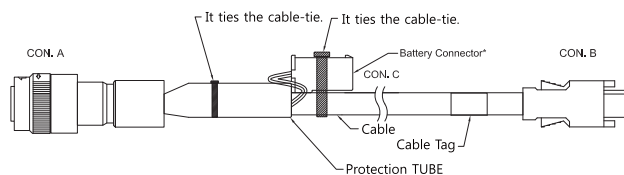
Battery Connector (CON.C)*	
HRS (DF1B-2ES-2.5RC)	
No	Name
1	BAT+
2	BAT-

[Notice]

When Absolute Encoder is used, Battery Connection(CON.C) needs to be used.
Connector type must be changed and used according to the connector of Battery.

Motor Encoder Cable - CSMS, CSMD, CSMH

Outline



Connector Specification

Remark	Description	Specification	Marker
CON.A	Connector	JN2DS10SL1-R	JAE
	Terminal	JN1-22-22S	
CON.B	Plug	3E206-0100KV	3M
	Cover	3E306-3200-008	
CON.C	Connector	DF1B-2ES-2.5RC	HRS
	Terminal	DF1B-2428SCF	

Wiring Specification (Wire Gage : AWG 24)

Motor Side(CON.A)		Drive Side(CON.B)	
JAE(JN2DS10SL1-R)		3M(3E306-3200-008)	
No	Name	No	Name
3	SD+	1	SD+
7	SD-	2	SD-
4	VCC	3	VCC
1	GND	4	GND
9	Shield	Case	Shield
6	BAT+		
5	BAT-		
2	NC		
8	NC		
10	NC		

Twist pair
Below 15m : Single Line
Over 20m : Two Line

Shield type Cable

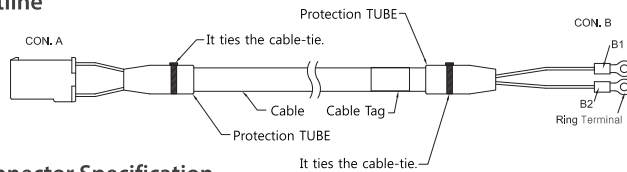
Battery Connector (CON.C)*	
HRS (DF1B-2ES-2.5RC)	
No	Name
1	BAT+
2	BAT-

[Notice]

When Absolute Encoder is used, Battery Connection(CON.C) needs to be used.
Connector type must be changed and used according to the connector of Battery.

Motor Brake Cable - CSMT

Outline



Connector Specification

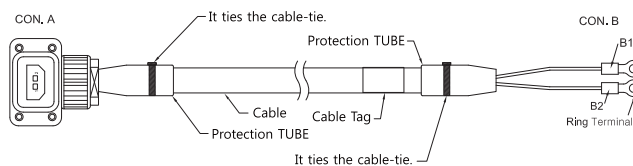
Remark	Description	Specification	Marker
CON.A	Connector	172233-1	TE
	Terminal	170362-1	
CON.B	RING Terminal	GP-140078	KET or Equivalent product

Wiring Specification (Wire Gage : AWG 20)

PIN	Function	Color
1	B1	2 core cable : White
2	B2	2 core cable : Black

Motor Brake Cable - CSMA

Outline



Connector Specification

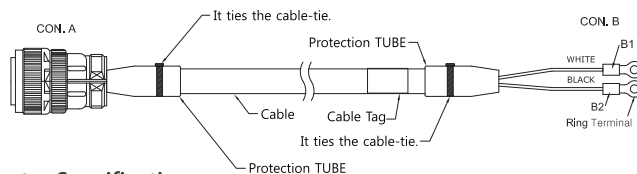
Remark	Description	Specification	Marker
CON.A	Connector	JN6FR02SM1	JAE
	Terminal	LY10-C2-A1-10000	
CON.B	RING Terminal	GP-140078	KET or Equivalent product

Wiring Specification (Wire Gage : AWG 20)

PIN	Function	Color
1	B1	2 core cable : White
2	B2	2 core cable : Black

Motor Brake Cable - CSMH (Over 1.0kW)

Outline



Connector Specification

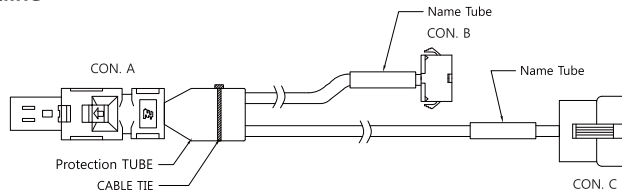
Remark	Description	Specification	Marker
CON.A	Connector	MS3106B10SL-4S	Military Standard Compliance product
CON.B	RING Terminal	GP-140078	KET or Equivalent product

Wiring Specification (Wire Gage : AWG 20)

PIN	Function	Color
A	B1	2 core cable : White
B	B2	2 core cable : Black

RS485 Cable - 1) Drive To Drive

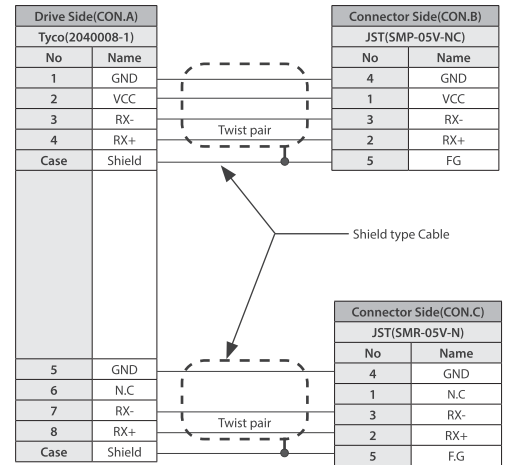
Outline



Connector Specification

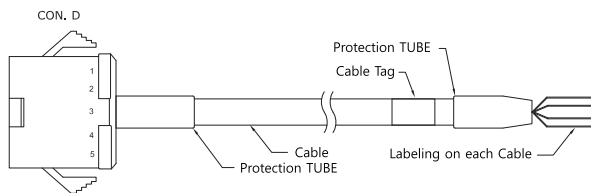
Remark	Description	Specification	Marker
CON.A	Industry mini I/O Kit	2040008-1	TE
CON.B	Connector	SMP-05V-NC	JST
	Terminal	SHF-001T-0.8BS	
CON.C	Connector	SMR-05V-N	JST
	Terminal	SYM-001T-P0.6	

Wiring Specification (Wire Gage : AWG 26)



RS485 Cable - 2) Drive To Controller

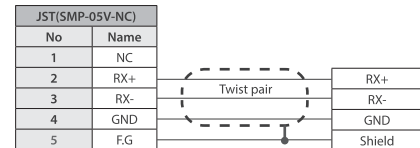
Outline



Connector Specification

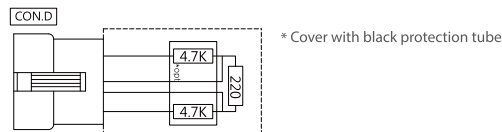
Remark	Description	Specification	Marker
CON.D	Connector	SMP-05V-NC	JST
	Terminal	SHF-001T-0.8BS	

Wiring Specification (Wire Gage : AWG 26)



RS485 Termination Connector

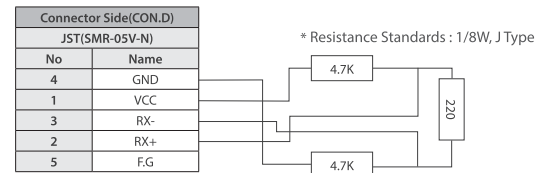
Outline



Connector Specification

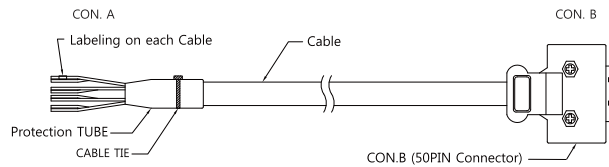
Remark	Description	Specification	Marker
CON.D	Connector	SMR-05V-N	JST
	Terminal	SYM-001T-P0.6	

Wiring Specification



I/O Cable - Pulse/Analog Model

Outline



Connector Specification

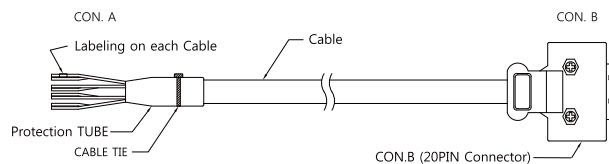
Remark	Description	Specification	Marker
CON.B	Plug	10150-3000 VE	3M
	Cover	10350-52F0-008(LATCH)	3M

Wiring Specification (Wire Gage: AWG 26)

The wiring specifications, refer to the CSD7 User Manual.

I/O Cable - Network Model

Outline



Connector Specification

Remark	Description	Specification	Marker
CON.B	Plug	10120-3000 VE	3M
	Cover	10320-52F0-008(LATCH)	3M

Wiring Specification (Wire Gage : AWG 26)

The wiring specifications, refer to the CSD7 User Manual.

EtherCAT Cable

Outline



Connector Specification

Remark	Description	Specification	Marker
CON.A/B	Plug	5-569530-2	AMP
Cable	-	S05E004	LS

[Notice]

- Cable : At least higher than Category 5(CAT.5), (EN50173 or ISO/IEC 11801).
- Connector : RJ45 Type, Pin Map should be correspondingly wiring on EtherCAT Standard(ISO/IEC8802-3).
- Distance between EtherCAT products should be maximum 100m.
- Use of Shield Twisted Pair(STP) Cable and Shield RJ45 Type Connector.

Wiring Specification (Wire Gage)

No		No	Color	Signal	Remark
1	-----	1	ORG / WHT	Tx+	Pair
2	-----	2	ORG	Tx-	
5	-----	5	BLU / WHT	NC	Pair
4	-----	4	BLU	NC	
3	-----	3	GRN / WHT	Rx+	Pair
6	-----	6	GRN	Rx-	
7	-----	7	BRN / WHT	NC	Pair
8	-----	8	BRN	NC	
Frame	Shield	Frame	-	-	-

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