Ezi-STEP®

Micro Stepping System

CC-Link IE TSN ALL

- CC-Link IE TSN-compatible Microstepper System
- CiA402 Drive Profile
- Software Damping (Resonance & Vibration Suppression)
- Motor + Drive Integrated
- Space Saving, Reduced Wiring



FASTECH

Fast Accurate Smooth Motion

Ezi-STEP®

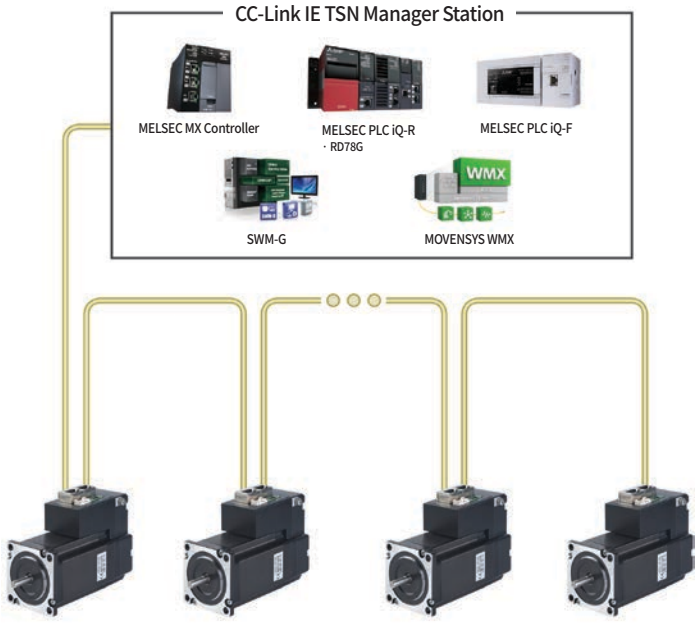
Micro Stepping System

CC-LínkIE TSN ALL



CC-Link IE TSN-compatible Motion Control

Ezi-STEP CC-Link IE TSN ALL is stepper motor control system that supports CC-Link IE TSN, an industrial network based on high-speed Ethernet (1 Gbps, full-duplex communication). Ezi-STEP CC-Link IE TSN ALL employs CiA402 drive profile and supports Cyclic Synchronous Position Mode (CSP Mode), Profile Position Mode (PP Mode) and Homing Mode (HM Mode).

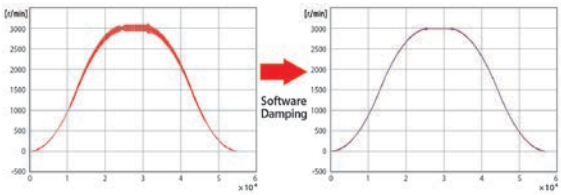


Microstep and Filtering

Ezi-STEP adopts a microstepping drive method, allowing the basic step angle of 1.8° to be subdivided up to 1/250 (0.0072°) for high-precision control. Unlike conventional drives, it performs PWM control every 50 µs, enabling enhanced current control for even more precise motion.
In addition, Ezi-STEP incorporates filtering control technology, ensuring smooth operation even at very low speeds.

Software Damping

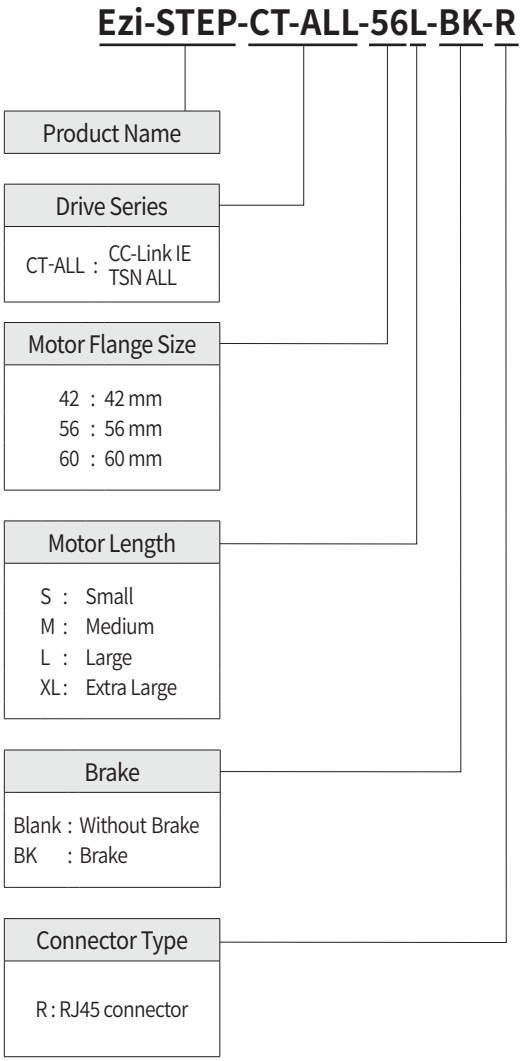
Motor vibration is created by magnetic flux ariations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive. Ezi-STEP drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF **Software Damping ON**

※ This is real measured speed that using 100,000 P/R encoder.

Ezi-STEP-CT-ALL Part Numbering



Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-CT-ALL-42M-R	Integrated Motor and Drive Unit	
Ezi-STEP-CT-ALL-42L-R		
Ezi-STEP-CT-ALL-42XL-R		
Ezi-STEP-CT-ALL-56S-R		
Ezi-STEP-CT-ALL-56M-R		
Ezi-STEP-CT-ALL-56L-R		
Ezi-STEP-CT-ALL-60S-R		
Ezi-STEP-CT-ALL-60M-R		
Ezi-STEP-CT-ALL-60L-R		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-CT-ALL-42M-BK-R	Integrated Motor and Drive Unit	
Ezi-STEP-CT-ALL-42L-BK-R		
Ezi-STEP-CT-ALL-42XL-BK-R		
Ezi-STEP-CT-ALL-56S-BK-R		
Ezi-STEP-CT-ALL-56M-BK-R		
Ezi-STEP-CT-ALL-56L-BK-R		
Ezi-STEP-CT-ALL-60S-BK-R		
Ezi-STEP-CT-ALL-60M-BK-R		
Ezi-STEP-CT-ALL-60L-BK-R		

Specifications of Drive

Model		Ezi-STEP-CT-ALL-42 series	Ezi-STEP-CT-ALL-56 series	Ezi-STEP-CT-ALL-60 series
Input Voltage		24 V DC ± 10 %		
Control Method		Bipolar PWM drive with 32 bit MCU		
Current Consumption		Max. 500 mA (Except motor current)		
Operating Condition	Ambient Temperature	· In Use: 0 ~ 50°C · In Storage: -20 ~ 70°C		
	Humidity	· In Use: 35 ~ 85 % RH (Non-Condensing) · In Storage: 10 ~ 90 % RH (Non-Condensing)		
	Vib. Resist.	0.5 g		
Function	Rotation Speed	0 ~ 3,000 r/min		
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter)		
	Error Type	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerative Voltage Error, Motor Connection Error, ROM Error		
CC-Link IE TSN	Communication Protocol	CC-Link IE TSN Class B		
	Operation Mode	CiA402 Drive Profile: Cyclic Synchronous Position Mode(CSP), Profile Position Mode(PP), Homing Mode(HM)		
	Synchronization	Minimum Cycle Time: 250 µs / Synchronous Comm. (CSP, PP, HM) / Asynchronous Comm. (PP, HM)		
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 user inputs (photocoupler inputs)		
	Output Signals	2 user outputs (photocoupler outputs), 1 brake signal output		

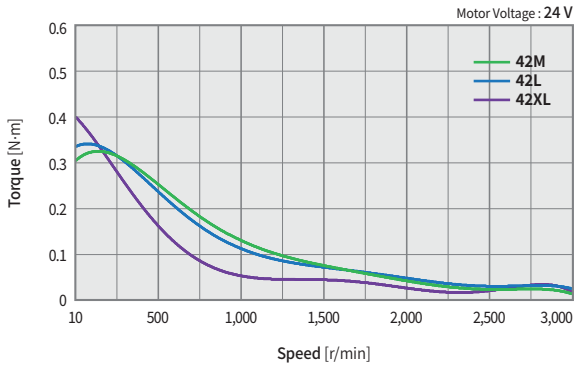
Specifications of Motor

Model			UNIT	Ezi-STEP-CT-ALL-42 Series			Ezi-STEP-CT-ALL-56 Series		
				42M	42L	42XL	56S	56M	56L
Drive Method			-	Bipolar					
Number Of Phases			-	2 Phase					
Current per Phase			A/Phase	1.2	1.2	1.2	3.0	3.0	3.0
Maximum Holding Torque			N·m	0.44	0.5	0.65	0.64	1.0	1.5
Rotor Inertia			g·cm²	54	77	114	180	280	520
Motor Weight			kg	0.440	0.520	0.660	0.760	0.920	1.360
Length(L)			mm	40	48	60	46	55	80
Permissible Radial Load	Distance From End Of Shaft	3 mm	N	22	22	22	52	52	52
		8 mm		26	26	26	65	65	65
		13 mm		33	33	33	85	85	85
		18 mm		46	46	46	123	123	123
Permissible Axial Load			N	Must be less than the motor weight					
Insulation Resistance			MΩ	Min. 100 (When measured with a 500 V DC insulation resistance meter)					
Insulation Class			-	Class B (130 °C)					
Operating Temperature			°C	0 ~ 55					

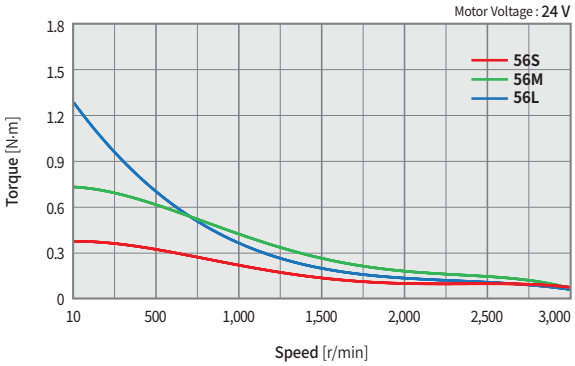
Model			UNIT	Ezi-STEP-CT-ALL-60 Series		
				60S	60M	60L
Drive Method			-	Bipolar		
Number Of Phases			-	2 Phase		
Current per Phase			A/Phase	4.0	4.0	4.0
Maximum Holding Torque			N·m	0.88	1.28	2.4
Rotor Inertia			g·cm²	240	490	690
Motor Weight			kg	0.840	0.980	1.540
Length(L)			mm	47	56	85
Permissible Radial Load	Distance From End Of Shaft	3 mm	N	70	70	70
		8 mm		87	87	87
		13 mm		114	114	114
		18 mm		165	165	165
Permissible Axial Load			N	Must be less than the motor weight		
Insulation Resistance			MΩ	Min. 100 (When measured with a 500 V DC insulation resistance meter)		
Insulation Class			-	Class B (130 °C)		
Operating Temperature			°C	0 ~ 55		

Torque Characteristics of Motor

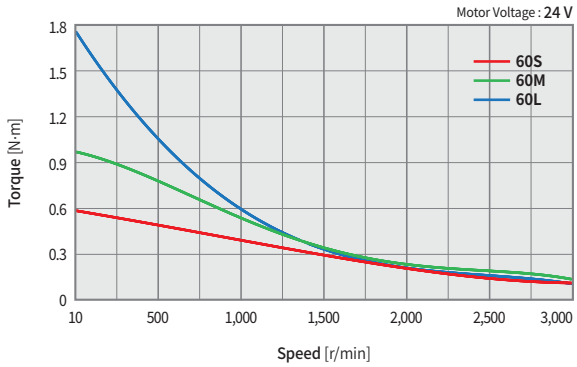
Ezi-STEP-CT-ALL-42 series



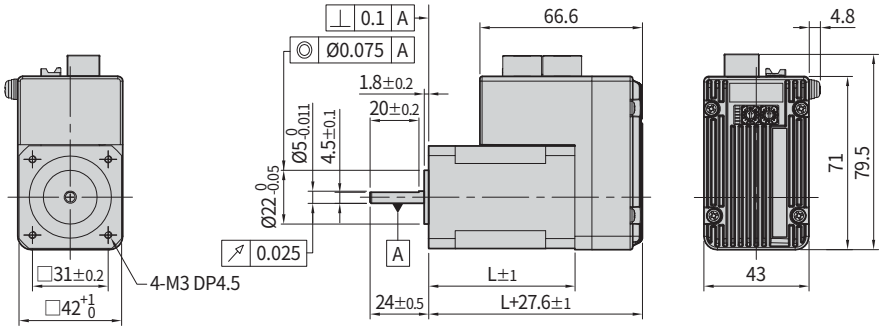
Ezi-STEP-CT-ALL-56 series



Ezi-STEP-CT-ALL-60 series

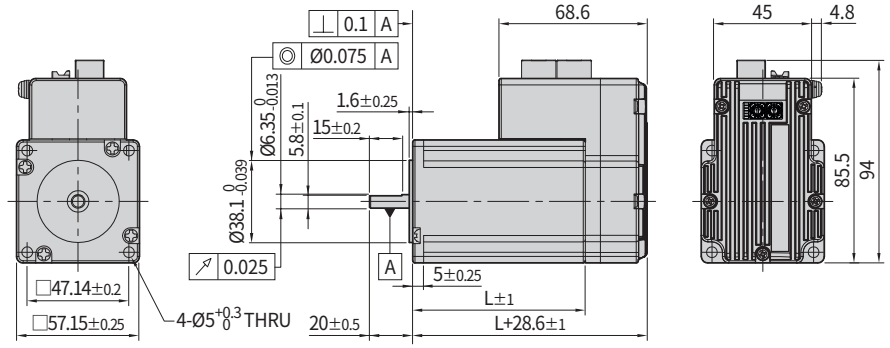


Dimensions of Motor [mm]



42 mm

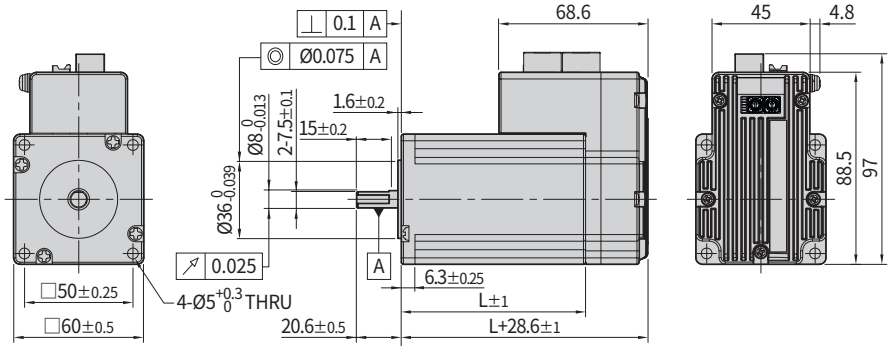
Model Name	Length(L)
42M	40
42L	48
42XL	60



56 mm

Model Name	Length(L)
56S	46
56M	55
56L	80

※ There are 2 kinds size of front shaft diameter for Ezi-STEP-CT-ALL-56 type as Ø 6.35 and Ø 8.0.



60 mm

Model Name	Length(L)
60S	47
60M	56
60L	85

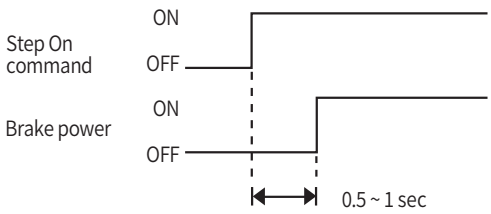
Specifications of Motor with Brake

Unit Part Number	Motor Model Number	Electromagnetic Brake					Motor Weight [kg]	Permissible Radial Load [N]				Permissible Axial Load [N]
		Type	Voltage Input [V]	Rated Current [A]	Power Consumption [W]	Static Friction Torque [N·m]		Distance from End of Shaft [mm]				
								3	8	13	18	
Ezi-STEP-CT-ALL-42M-BK-▲	Motor & Drive Integrated	Non-excitation run Series	24 V DC ± 10 %	0.2	5	0.2	0.700	22	26	33	46	Must be less than the motor weight
Ezi-STEP-CT-ALL-42L-BK-▲							0.780					
Ezi-STEP-CT-ALL-42XL-BK-▲							0.920					
Ezi-STEP-CT-ALL-56S-BK-▲				0.27	6.6	0.7	1.180	52	65	85	123	
Ezi-STEP-CT-ALL-56M-BK-▲							1.340					
Ezi-STEP-CT-ALL-56L-BK-▲							1.780					
Ezi-STEP-CT-ALL-60S-BK-▲							1.280	70	87	114	165	
Ezi-STEP-CT-ALL-60M-BK-▲							1.420					
Ezi-STEP-CT-ALL-60L-BK-▲							1.980					

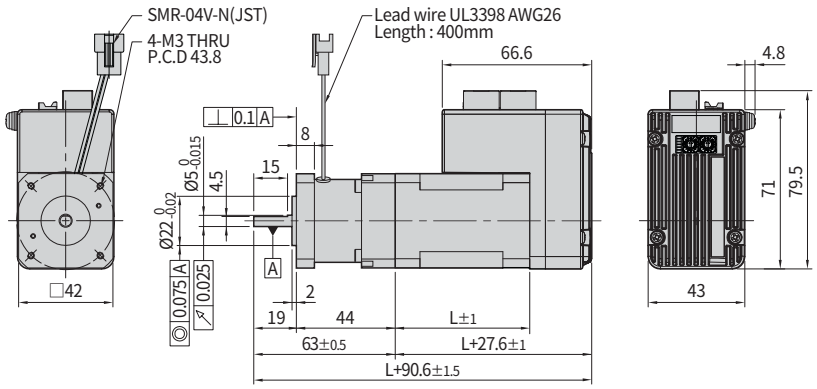
* The code of connector type will be marked in "▲".
* Electronic Brake cannot be used for braking. Position hold purpose only when power OFF.
* The motor weight refers to the total weight of the motor, including the integrated electromagnetic brake.
* Motor specification and torque characteristic are same as Standard Motor.

* Brake Operation Timing Chart

Ezi-STEP CC-Link IE TSN ALL controls Brake by Drive automatically.Please refer to Timing Chart on the right when Brake is controlled by the upper controller other than using Ezi-STEP CC-Link IE TSN ALL Brake control. Otherwise, Drive might malfunction and loads might fall down.Also, please do not operate Brake during motor operation to prevent damage.

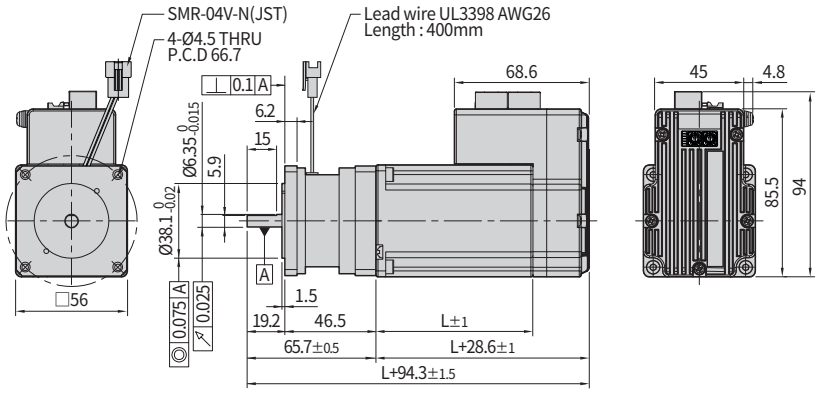


Dimensions of Motor with Brake [mm]



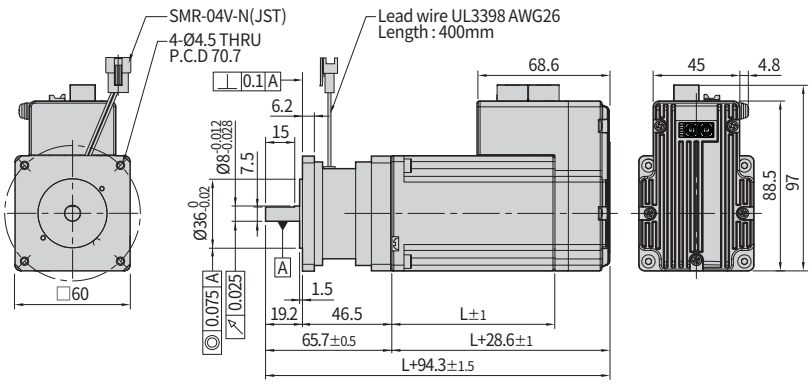
42 mm

Model Name	Length(L)
42M	40
42L	48
42XL	60



56 mm

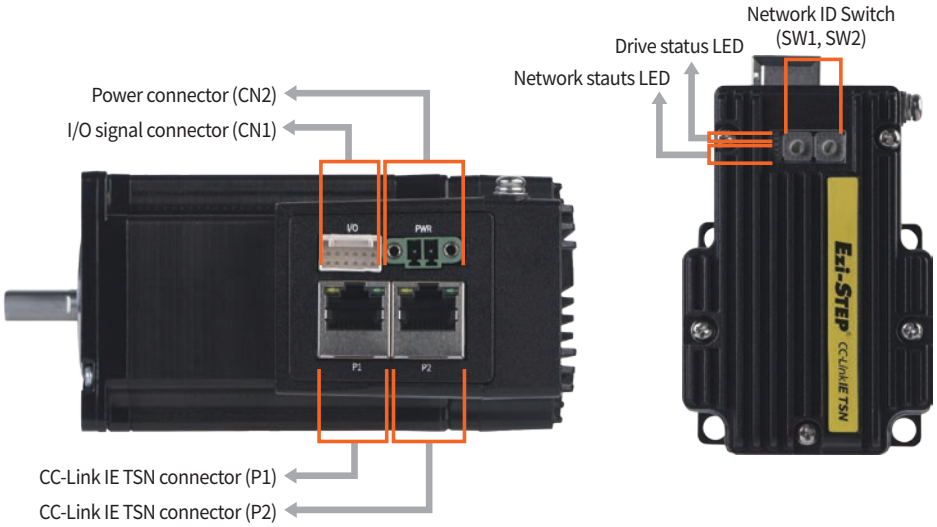
Model Name	Length(L)
56S	46
56M	55
56L	80



60 mm

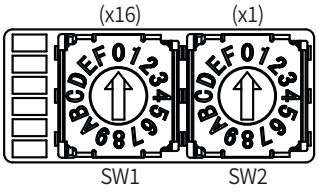
Model Name	Length(L)
60S	47
60M	56
60L	85

Settings and Operation



1. Network ID Switch

These switches are used to configure the fourth octet of the IP address.
SW1 sets the X16 digit, and SW2 sets the X1 digit.
(For more details, please refer to the relevant user manual.)



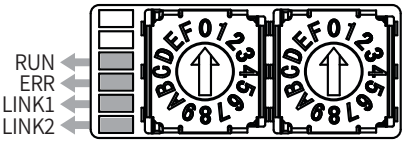
2. Network Status LED

LED indicates communication status of CC-Link IE TSN.

Indicator	Color	Status	Description
RUN	Green	OFF	Power off
		Single Flash	Not connected to master
		Double Flash	Pre-operational state
		Blinking	Safe-operational state
		Interval Off	Operational state

Indicator	Color	Status	Description
ERR	Red	OFF	No error or power off
		Blinking	Drive error
		Single Flash	CC-Link IE TSN communication error
		Double Flash	IP address conflict error

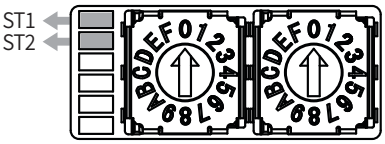
Indicator	Color	Status	Description
LINK1/ LINK2	Green	OFF	Link inactive
		ON	Link active



3. Drive Status LED

LED informs operation status of the drive.

LED Indicator	LED Status	Description
ST1 : ST2 :	ST1 blinks, ST2 is OFF.	STEP Off
ST1 : ST2 :	ST1 is ON, ST2 is OFF.	STEP On
ST1 : ST2 :	ST1 and ST2 are ON.	In Motion
ST1 : ST2 :	ST1 is OFF, ST2 blinks repeatedly for a set number of times depending on the type of error.	Error



List of error types by the number of ST2 LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	Over Speed Error	The motor speed exceeds 3,000 r/min
5	Over Temperature Error	Internal temperature of the drive exceeds 85 °C
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value*2
7	Motor Connect Error	There is a problem with the connection between the drive and the motor
12	ROM Error	Error occurs in parameter storage device (ROM)

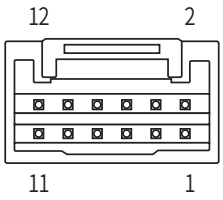
*1: Limit value depends on motor model. (Refer to the Manual)
*2: Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)



Alarm LED flash (e.g., Over Speed Error)

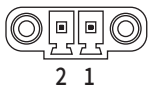
4. I/O Signal Connector (CN1)

No.	Function	I/O
1	EXT_24 V DC	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE-	Output
5	LIMIT+	Input
6	LIMIT-	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital Out1	Output
12	Digital Out2	Output



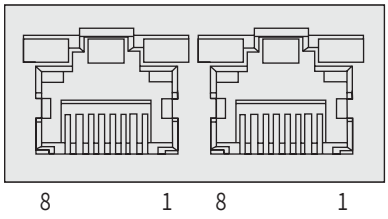
5. Power Connector (CN2)

No.	Function	I/O
1	24 V DC	Input
2	GND	Input

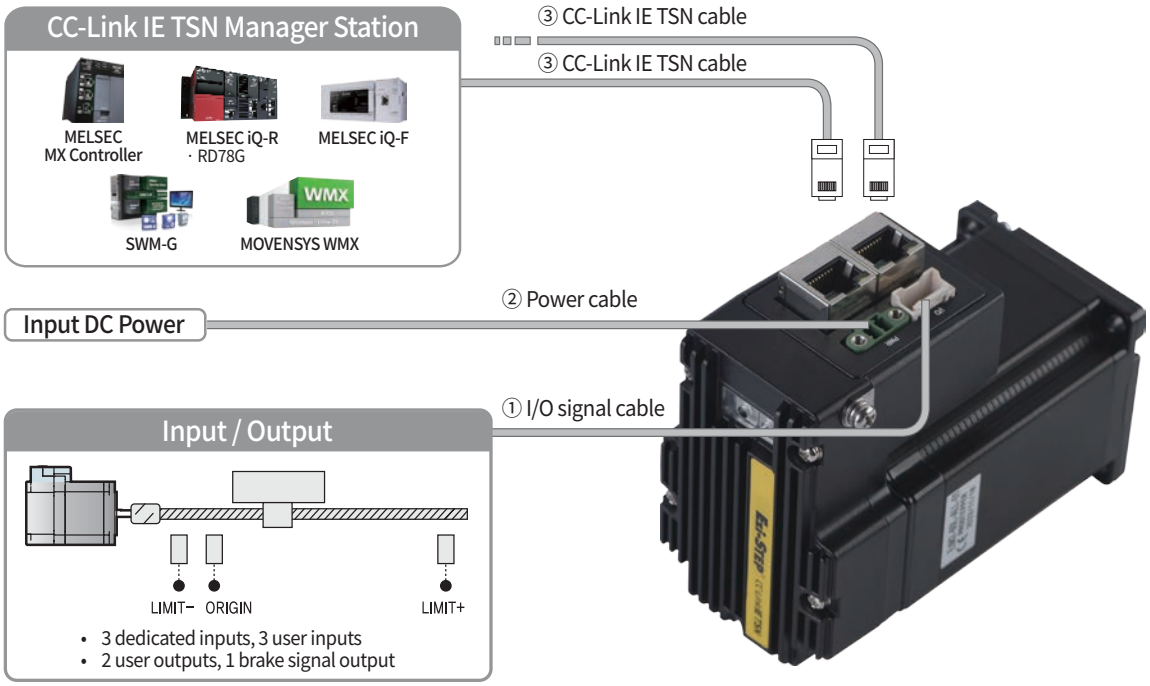


6. CC-Link IE TSN Connector (P1, P2)

No.	Function	No.	Function
1	DA+	6	DB-
2	DA-	7	DD+
3	DB+	8	DD-
4	DC+	Connector hood	F.GND
5	DC-		



System Configuration



Cable Type	Max. Cable Length	Remarks
① I/O Signal Cable	20 m	Options (Sold separately)
② Power Cable	2 m	
③ CC-Link IE TSN Cable	100 m	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose	Item	Part Number	Manufacturer
I/O Signal (CN1)	Terminal Block	MC421-38102	DECA
Power (CN2)	Housing	501646-1200	MOLEX
	Terminal	501648-1000 (AWG 26 ~ 28)	

The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① I/O Signal Cable

These are the cables to connect Ezi-STEP CC-Link IE TSN ALL drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive - I/O Device Connection	CSNR-S-001F	1	Fixed Cable	Max. Cable Length: 20 m
	CSNR-S-002F	2		
	CSNR-S-003F	3		
	CSNR-S-005F	5		
	CSNR-S-001M	1	Flexible Cable	
	CSNR-S-002M	2		
	CSNR-S-003M	3		
	CSNR-S-005M	5		

* If you need cables with length(in units of 1 m) not listed on the table, please contact FASTECH for more information.

② Drive Power Cable

These are the cables to connect Ezi-STEP CC-Link IE TSN ALL drive and the power.

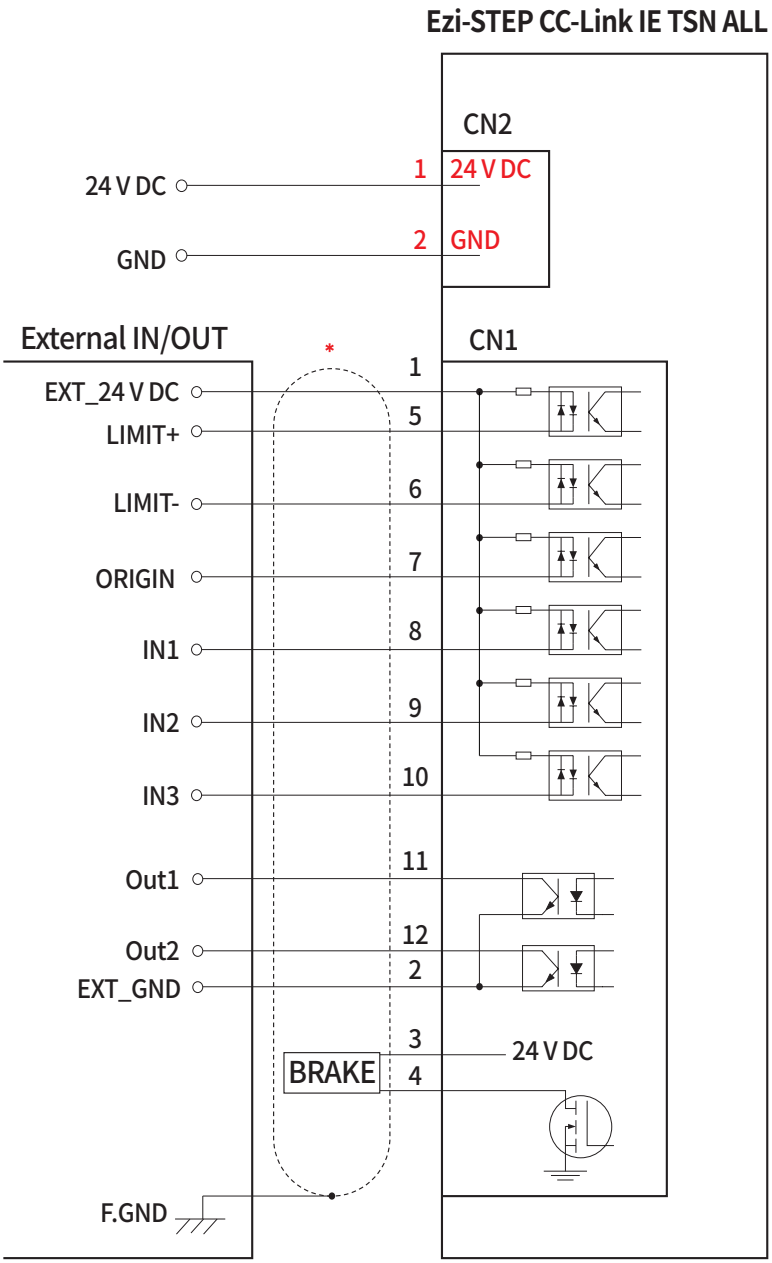
Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive - Power Connection	CSVA-P-001F	1	Fixed Cable	Max. Cable Length: 2 m
	CSVA-P-002F	2		
	CSVA-P-001M	1	Flexible Cable	
	CSVA-P-002M	2		

③ CC-Link IE TSN Cable

Purpose	Part Number	Length [m]	Cable Type	Remarks
CC-Link IE TSN Connection	CGNR-EC-001F	1	Fixed Cable	• STP(Shielded Twisted Pair) Cable • Category 5e higher • Max. Cable Length: 100 m
	CGNR-EC-002F	2		
	CGNR-EC-003F	3		
	CGNR-EC-005F	5		
	CGNR-EC-001M	1	Flexible Cable	
	CGNR-EC-002M	2		
	CGNR-EC-003M	3		
	CGNR-EC-005M	5		

* If you need cables with length(in units of 1 m) not listed on the table, please contact FASTECH for more information.

External Wiring Diagram



* Shielded Cable

※ When connecting the I/O cable between the drive and the master controller, be sure to turn off the power to both the master controller and the drive. Failure to do so may result in electric shock or product damage.

CAUTION

To ensure the safe and proper use of the products listed in this catalog, please be sure to read the user manual thoroughly before use.

FASTECH

Fast Accurate Smooth Motion

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※ Please note that the color and size of the products in this catalog may differ depending on the measurement method and the specifications can be changed without prior notice for quality improvement.

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