JXD1M-TF223-090EN-A

ORIGINAL INSTRUCTIONS

Instruction Manual
Manifold Controller for Electric Actuators
Series JXD1-M#

The intended use of the manifold controller is to control the movement of an electric actuator while connected to a fieldbus protocol.

1 Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.”
They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) *1), and other safety regulations.
These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.”
They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) *1), and other safety regulations.

*1) ISO 4414: Pneumatic fluid power — General rules and safety requirements for systems and their components.
ISO 4413: Hydraulic fluid power — General rules and safety requirements for systems and their components.
IEC 60204-1: Safety of machinery - Electrical equipment of machines. Part 1: General requirements.
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots.

- Refer to the product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

⚠ **Danger**	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
⚠ **Warning**	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ **Caution**	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

⚠ Warning

- Always ensure compliance with relevant safety laws and standards.
  All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.
- Electromagnetic compatibility
  This product is class A equipment intended for use in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbances.

2 Specifications

- The manifold controller must comprise of three different units, a Gateway unit, Driver unit and Termination unit.
- The unit connection method is identical regardless of the type of unit.
- Always connect the units together before DIN rail mounting or Direct mounting.
  The configuration of the units in the controller must be as follows:
  1) Up to 8 x Driver units maximum.
  2) Only 1 x Gateway unit and 1 x Termination unit.

2 Specifications (continued)

2.1 Basic Controller specifications

Item	Specifications
Power supply voltage	24 VDC ±10%
Current consumption	Determined by unit configuration, actuator type and number of axes connected. (refer to the "Electric Actuator Selection Software" on the SMC website)
Number of Control axes	16 axes maximum (8 driver units max.) can be connected.
Applicable Encoders	Battery-less Absolute.
Unit Configuration	Gateway unit, Driver units (for 1 or 2 axes each), Termination Unit.
Communication with PC	USB (type C) connector / connected to gateway unit.
Stop input	Gateway unit: Stop input for all axes. Driver unit: power supply blocking for each axis.
Protection function	Overcurrent, overspeed, encoder disconnection, overload, temperature abnormality.
Predictive maintenance function	Cumulative number of movement instructions, Cumulative distance travelled, Check life of electrolytic capacitors.
Operating temperature range [°C]	0 to 55 (no freezing).
Operating humidity range [%RH]	35 to 85 (no condensation).
Insulation resistance	50 MΩ (500 VDC) between external terminals and case.
Protection class	Equivalent to IP20.
Cooling method	Air-cooled, no fan.
Installation method	DIN rail (35 mm) or Direct mounting.

2.2 Gateway unit (CC-Link) specifications

Item			Specifications
Model			JXD1-MGW-CC-#
Control power current consumption (Gateway unit only)			350 [mA] max.
Communication	Applicable system	Protocol	CC-Link
		Version*1)	Ver 1.10, Ver 2.00
	Communication speed		156 kbps, 625 kbps, 2.5 Mbps, 5 Mbps, 10 Mbps.
	Configuration file *2)		CSP+ file
	Occupied area		2 stations, 4 stations
	Termination Resistor		Not included
LED indication			PWR, ALM, L RUN, L ERR
Accessories			Control power supply plug (x1), Motor power supply plug (x1)
Weight			250 [g] max.

*1) Please note that the version information is subject to change.
*2) Configuration files can be downloaded from the SMC website (URL: https://www.smcworld.com).

2.3 Gateway unit (EtherNet/IP) specifications

Item			Specifications
Model			JXD1-MGW-EN-#
Control power current consumption (Gateway unit only)			350 [mA] max.
Communication	Applicable system	Protocol	EtherNet/IP™ *3)
		Version*1)	CT19
	Communication speed		10 / 100 Mbps. (Auto-negotiation)
	Configuration file *2)		EDS file
	Occupied area		Input / Output ：18 bytes to 272 bytes (16 bytes + 2 bytes x 1 axis ～ 16 bytes + 16 bytes x 16 axes).
LED indication			PWR, ALM, MS, NS
Accessories			Control power supply plug (x1), Motor power supply plug (x1)
Weight			250 [g] max.

*1) Please note that the version information is subject to change.
*2) Configuration files can be downloaded from the SMC website (URL: https://www.smcworld.com).
*3) For EtherNet/IP™ use shielded CAT5 cable or better.
EtherNet/IP™ is a trademark of ODVA.

2.4 Gateway unit (EtherCAT) specifications

Item			Specifications
Model			JXD1-MGW-EC-#
Control power current consumption (Gateway unit only)			350 [mA] max.
Communication	Applicable system	Protocol	EtherCAT *3)
		Version*1)	Conformance Test Record Ver.1.2.9
	Communication speed		100 Mbps. (Auto-negotiation)
	Configuration file *2)		ESI file
	Occupied area		Input / Output ：18 bytes to 272 bytes (16 bytes + 2 bytes x 1 axis ～ 16 bytes + 16 bytes x 16 axes).
LED indication			PWR, ALM, ERR, RUN
Accessories			Control power supply plug (x1), Motor power supply plug (x1)
Weight			250 [g] max.

*1) Please note that the version information is subject to change.
*2) Configuration files can be downloaded from the SMC website (URL: https://www.smcworld.com).
*3) For EtherCAT® use shielded CAT5 cable or better.
EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

2.5 Gateway unit (PROFINET) specifications

Item			Specifications
Model			JXD1-MGW-PN-#
Control power current consumption (Gateway unit only)			350 [mA] max.
Communication	Applicable system	Protocol	PROFINET *3)
		Version*1)	Ver 2.44
	Communication speed		100 Mbps. (Auto-negotiation)
	Configuration file *2)		GSDML file
	Occupied area		Input / Output ：18 bytes to 272 bytes (16 bytes + 2 bytes x 1 axis ～ 16 bytes + 16 bytes x 16 axes).
LED indication			PWR, ALM, SF, BF
Accessories			Control power supply plug (x1), Motor power supply plug (x1)
Weight			250 [g] max.

*1) Please note that the version information is subject to change.
*2) Configuration files can be downloaded from the SMC website (URL: https://www.smcworld.com).
*3) For PROFINET use shielded CAT5 cable or better.
PROFINET is a registered trademark of PROFIBUS Nutzerorganisation e.V.

2.6 Driver unit specifications

Item	Specifications	
Model	JXD1-MDP1	JXD1-MDP2
Connecting actuator	LE2* Series	
Actuator cable length	20 [m] max.	
Control power consumption current (driver unit only)	200 [mA] max.	200 [mA] max.
Number of control axes	1 axis	2 axes
LED indication	Indication by Servo motor ON (green), ALARM (red) *2-colour LED for each axis	
Accessories	Motor power supply blocking plug (x1)	
Weight	180 [g] max.	200 [g] max.

2.7 Termination unit specifications

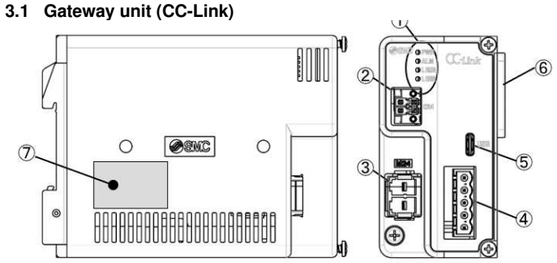
Item	Specifications
Model	JXD1-MTR
Weight	100 [g] max.

⚠ Warning

For special products which include a suffix of “-X#”, “-D#”, please refer to the customer drawing of that specific product for specifications.

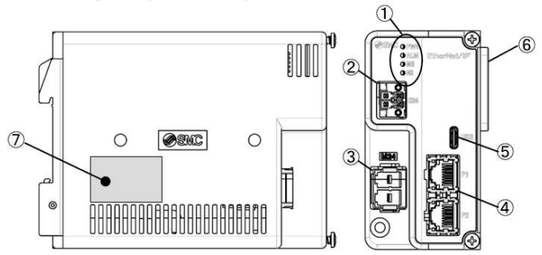
3 Name and function of parts

3.1 Gateway unit (CC-Link)



No.	Name	Details
1	PWR LED	Indicates Power-on and EEPROM write status.
	ALM LED	Indicates Controller alarm status.
	LRUN LED	Indicates CC-Link Communication status.
	LERR LED	Indicates CC-Link Error status.
2	C24 - Control power supply connector	Connector for the controller power supply.
3	M24 - Motor power supply connector	Connector for the power supply of the actuator.
4	CC-Link communication connector	Connector for the CC-Link communication.
5	USB connector	USB connector for connection to a PC.
6	Connector for unit-to-unit connection	Connectors between units.
7	Nameplate	Label with product information.

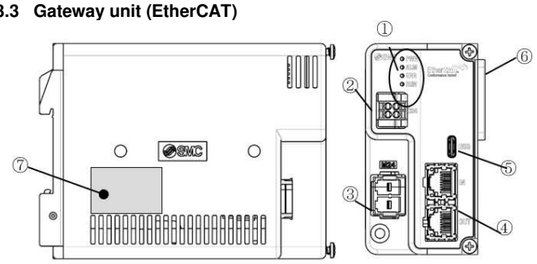
3.2 Gateway unit (EtherNet/IP)



No.	Name	Details
1	PWR LED	Indicates Power-on and EEPROM write status.
	ALM LED	Indicates Controller alarm status.
	MS LED	Indicates EtherNet/IP controller status.
	NS LED	Indicates EtherNet/IP communication status.
2	C24 - Control power supply connector	Connector for the controller power supply.
3	M24 - Motor power supply connector	Connector for the power supply of the actuator.
4	P1 / P2 EtherNet/IP communication connector	Connector for the EtherNet/IP communication.
5	USB connector	USB connector for connection to a PC.
6	Connector for unit-to-unit connection	Connectors between units.
7	Nameplate	Label with product information.

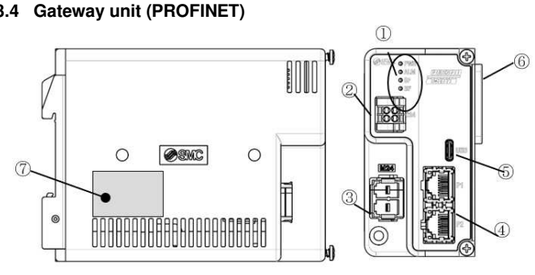
3 Name and function of parts (continued)

3.3 Gateway unit (EtherCAT)



No.	Name	Details
1	PWR LED	Indicates Power-on and EEPROM write status.
	ALM LED	Indicates Controller alarm status.
	ERR LED	Indicates an EtherCAT error condition.
	RUN LED	Indicates EtherCAT communication status.
2	C24 - Control power supply connector	Connector for the controller power supply.
3	M24 - Motor power supply connector	Connector for the power supply of the actuator.
4	IN / OUT EtherCAT communication connector	Connector for the EtherCAT communication. LED's indicating Link / Activity are included.
5	USB connector	USB connector (type C) for connection to a PC.
6	Connector for unit-to-unit connection	Connectors between units.
7	Nameplate	Label with product information.

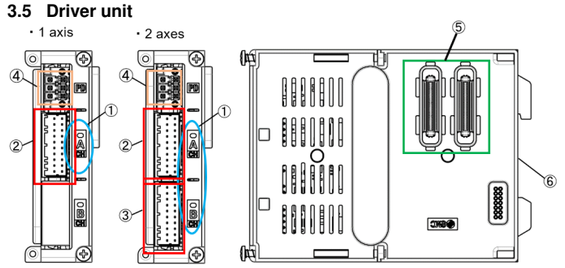
3.4 Gateway unit (PROFINET)



No.	Name	Details
1	PWR LED	Indicates Power-on and EEPROM write status.
	ALM LED	Indicates Controller alarm status.
	SF LED	Indicates PROFINET controller status.
	BF LED	Indicates PROFINET communication status.
2	C24 - Control power supply connector	Connector for the controller power supply.
3	M24 - Motor power supply connector	Connector for the power supply of the actuator.
4	P1 / P2 PROFINET communication connector	Connector for the PROFINET communication. LED's indicating Link / Activity are included.
5	USB connector	USB connector(type C) for connection to a PC.
6	Connector for unit-to-unit connection	Connectors between units.
7	Nameplate	Label with product information.

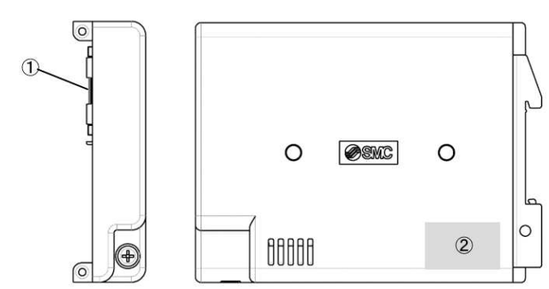
3 Name and function of parts (continued)

3.5 Driver unit



No.	Name	Details
1	CH A LED	LED for status indication. 2-colour LED indicates the Servo motor is ON (Green) and ALARM (Red).
	CH B LED	
2	CH A - 1st axis motor / Encoder connector	Connector for the actuator of the first axis.
3	CH B - 2nd axis motor / Encoder connector	Connector for the actuator of the 2nd axis (2-axis model only).
4	PD - Motor power supply blocking connector	Connector used to connect the power supply shutdown contacts for each actuator.
5	Connector for unit-to-unit connection	Connectors between units.
6	Nameplate	A nameplate label with product information.

3.6 Termination unit



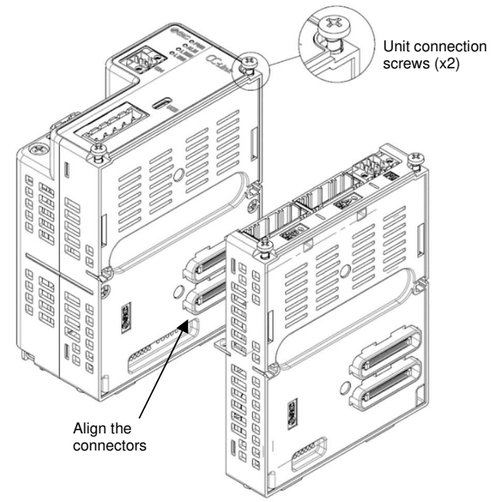
No.	Name	Details
1	Connector for unit-to-unit connection	Connectors between units.
2	Nameplate	A nameplate label with product information.

4 Assembly

4.1 Assembling the Controller

- The manifold controller connects units together in the same way, regardless of the type of unit.
- The following is an example of a unit-to-unit connection when connecting a Gateway unit ⇔ Driver unit.

(1) After checking that the unit connection screws (2 places) are up (raised), connect the units together while aligning the connectors.



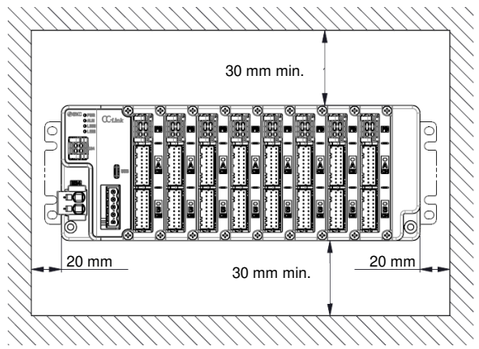
(2) Press down the unit connection screws (2 places) and tighten the screws.
The recommended tightening torque is 0.4 N•m ±10%.

5 Installation

5.1 Installation

⚠ Warning

- Do not install the product unless the safety instructions have been read and understood.
- Do not use the product outside of its allowable specification.
- Design the size and mounting location of the control cabinet so that it remains within the operating temperature range of the controller.
- The controller and its peripheral devices should be installed on a flat surface. If the mounting surface for the controller is not flat or is uneven, excessive stress may be applied to the enclosure, which can cause failure.
- The controller and its peripheral devices should be installed on a fire-proof material.
- Mount the controller vertically with 30 mm minimum space on the top and bottom of the controller and at least 20 mm to the left and right.
- Allow 85 mm min. space between the front of the controller and a door (lid) so that the connectors can be connected and disconnected.



5 Installation (continued)

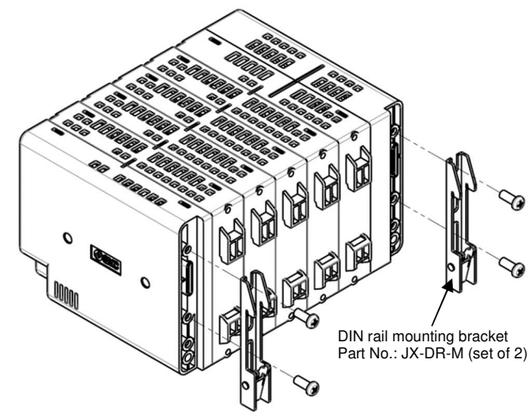
5.2 Mounting

- The Controller can be DIN rail mounted or Direct mounted.

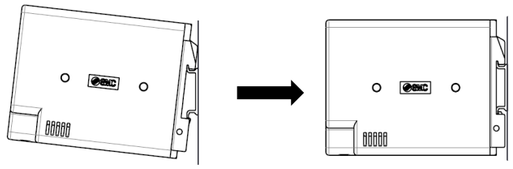
5.2.1 DIN rail mounting

Attach DIN rail mounting brackets to the rear of the Gateway unit and the Termination unit so that the controller can be mounted on a DIN rail. Be sure to use the self-tapping screws supplied.

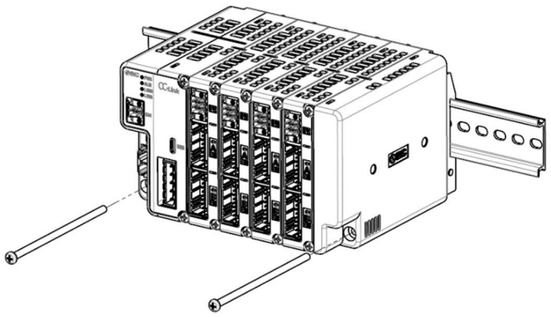
(1) Attach the DIN rail mounting bracket to the rear of the Gateway unit and the Termination unit using four M4 x 10 mm self-tapping screws supplied.
The recommended tightening torque is 1.4 N•m ±10%.



(2) Mount the Controller on to the DIN rail as shown.



(3) Attach the controller to the DIN rail using two M4 x 95 mm screws.
The recommended tightening torque is 1.4 N•m ±10%.

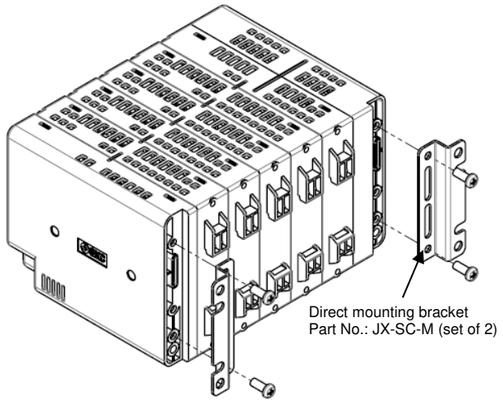


5 Installation (continued)

5.2.2 Direct mounting

Attach the direct mounting brackets to the rear of the Gateway unit and the Termination unit so that the controller can be mounted directly to a panel or similar using the self-tapping screws supplied.

Attach the Direct mounting brackets to the rear of the Gateway unit and Termination unit using four M4 x 10 mm self-tapping screws.
The recommended tightening torque is 1.4 N•m ±10%.



5.3 Environment

⚠ Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.
- Avoid mounting the controller near a vibration source, such as a large electromagnetic contactor or circuit breaker on the same panel.
- Do not use in an environment with strong magnetic fields present.

6 Wiring

⚠ Warning

- Adjustment, installation, inspection, or wiring changes should be conducted with the power supply turned OFF.
  Never connect or disconnect the cables with the power supply ON.
- Do not disassemble the cables.

⚠ Caution

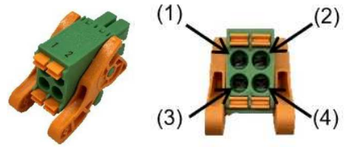
- Wire the connector correctly and securely.
- Take appropriate measures against electrical noise.
  Noise in a signal line may cause malfunction. As a countermeasure separate the high voltage and low voltage cables and keep wiring lengths short.
- Do not route wires or cables together with power or high voltage cables.
  The product may malfunction due to noise interference and surge voltages. Route the wires of the product separately from power or high voltage cables.

6 Wiring (continued)

- Confirm correct insulation.
  Poor insulation of cables and connectors etc. can cause interference with other circuits. Also there is the possibility that excessive voltage or current may be applied to the product causing damage.
- Use a power supply with low noise between lines and between the power and ground. In cases where noise is high, an isolation transformer should be used.

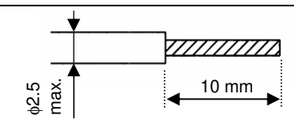
6.1 Control Power supply connector

- The control power supply connector specification is shown below.



Pin No.	Terminal	Function	Description
1	NC	Not used	Wiring prohibited
2	C24V	Control power supply (+)	The positive control power.
3	FG	Frame Ground	Ground terminal.
4	EMG	Release lock (+)	Connection for external stop circuit for all axes. When 24 VDC is input, stop of all axes is released. When open, all axes (deceleration) stop.

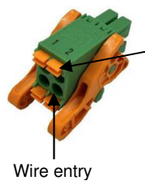
Prepare the wire according to the following specifications.

Item	Specifications
Applicable wire size	Single, Stranded wire → AWG20 (0.5 mm²), Rated temperature of the insulation should be 60ºC min.
Stripped wire length	

⚠ Caution

- Do not connect multiple wires to one terminal. Use one wire only.
- Arrange wiring so that conductors of each terminal do not contact another.

6.1.1 Wiring of the connector



- Open/close lever
  Press the open / close lever using a dedicated screwdriver and insert the wire into the wire entry.
- Dedicated screwdriver (recommended)
  Phoenix Contact No. SZS 0,4X2,5 VDE.

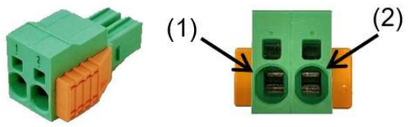
Wire entry

After wiring, connect the control power supply plug to the control power supply connector in the Gateway unit of the Controller.

6 Wiring (continued)

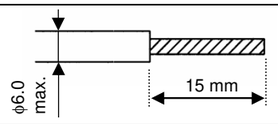
6.2 Motor power supply connector

- The motor power supply connector specification is shown below.



Pin No.	Terminal	Function	Description
1	0V	Common power supply (-)	Negative common power supply. M24V terminal / C24V terminal / EMG terminal (Control power supply plug). LKRLS terminal (Motor power supply blocking plug).
2	M24V	Motor power supply (+)	Positive power for the actuator motor supplied by the controller.

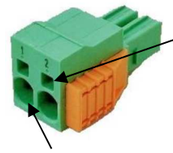
Prepare the wire according to the following specifications.

Item	Specifications
Applicable wire size	Single strand → AWG22 to AWG 8 (0.3 to 10 mm²) Stranded wire → AWG22 to AWG 10 (0.3 to 6 mm²), Rated temperature of the insulation should be 60ºC min.
Stripped wire length	

⚠ Caution

- Do not connect multiple wires to one terminal. Use one wire only.
- Arrange wiring so that conductors of each terminal do not contact another.

6.2.1 Wiring of the connector



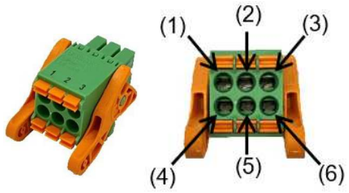
- Open/close lever
  Press the open / close lever using a dedicated screwdriver and insert the wire into the wire entry.
- Dedicated screwdriver (recommended)
  Phoenix Contact No. SZF1-0,6X3,5).

Wire entry

After wiring, connect the Motor power supply plug to the motor power supply connector in the Gateway unit of the Controller.

6.3 Motor power supply blocking plug

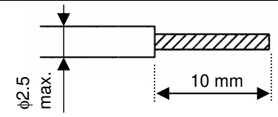
- The motor power supply blocking plug specification is shown below.



6 Wiring (continued)

Pin No.	Terminal	Function	Description
1	LKRLS1	CH A Unlock (+)	Connection for lock release signal for CH A.
2	M24VIN1	Motor power supply input CH A	Input terminal for motor power supply for CH A. * When open, turns off motor power supply for CH A.
3	M24V OUT1	Motor power supply output CH A	Output terminal of motor power supply for CH A. * Connect to motor power input terminal for CH A and supply power to CH A.
4	LKRLS2	CH B Unlock (+)	Connection for lock release signal for CH B.
5	M24VIN2	Motor power supply input CH B	Input terminal of motor power supply for CH B. * When open, turns off motor power supply for CH B.
6	M24V OUT2	Motor power supply output CH B	Output terminal of motor power supply for CH B. *Connect to motor power input terminal for CH B and supply power to CH B.

Prepare the wire according to the following specifications.

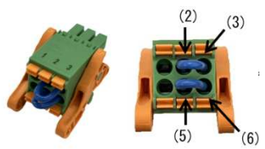
Item	Specifications
Applicable wire size	Single, Stranded wire → AWG22 to AWG 20 (0.3 to 0.5 mm^2), Rated temperature of the insulation should be 60ºC min.
Stripped wire length	

6.3.1 Wiring of the connector

- Open/close lever
  Press the open / close lever using a dedicated screwdriver and insert the wire into the wire entry.
- Dedicated screwdriver (recommended)
  Phoenix Contact No. SZS 0,4X2,5 VDE).

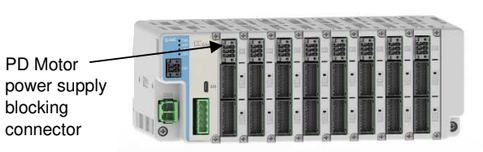
Wire entry

- The motor power supply blocking plug at the time of shipment has the following terminals connected.
  Connection between M24VIN1 (2) and M24VOUT1 (3)
  Connection between M24VIN2 (5) and M24VOUT2 (6)



- To operate the actuator connected to CH A, connect M24VIN1 and M24VOUT1 of the motor power supply blocking plug.
- To operate the actuator connected to CH B, connect M24VIN2 and M24VOUT2 of the motor power supply blocking plug.

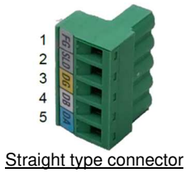
After wiring, connect the Motor power supply blocking plug to the motor power blocking connector (PD) in the Driver unit of the Controller.



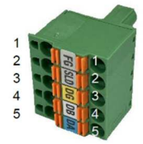
6 Wiring (continued)

6.4 Communication Connector (CC-Link)

- The Communication connector for CC-Link is shown below. The connector can be either a Straight type or T-branch type connector.



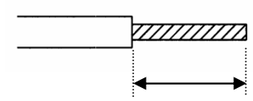
Straight type connector
SMC part No. LEC-CMJ-S



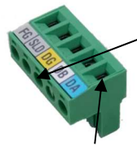
T-branch type connector
SMC part No. JX-NT-M

Pin No.	Function	Description
1	FG	Frame Ground
2	SLD	CC-Link shield
3	DG	CC-Link Ground line
4	DB	CC-Link communication line B
5	DA	CC-Link communication line A

Prepare the wire according to the following specifications.

Item	Specifications
Applicable wire size	Single, Stranded wire → AWG24 to AWG 12 (0.2 to 2.5 mm^2), Rated temperature of the insulation should be 60ºC min.
Stripped wire length	

6.4.1 Wiring of the connector



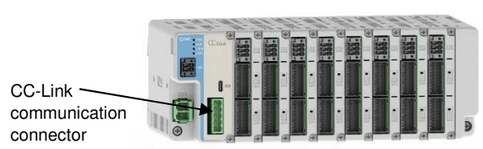
- Screw connection type
  Turn the M2.5 screw using a special screwdriver, etc. and insert the wires into the wire entry.
- Dedicated screwdriver (recommended)
  Phoenix Contact No. SZS0.6×3.5).
  Tightening torque: 0.5 to 0.6 N•m.

Wire entry

- Open/close lever
  Press the open / close lever using a dedicated screwdriver and insert the wire into the wire entry.
- Dedicated screwdriver (recommended)
  Phoenix Contact No. SZS0.6×3.5).

Wire entry

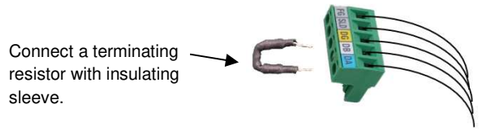
After wiring, connect the CC-Link communication connector to the CC-Link connector in the Gateway unit of the Controller.



6 Wiring (continued)

6.4.2 CC-Link Terminating Resistor

- In the CC-Link system, a terminating resistor must be connected between terminals 4 and 5 on the communication connector.



The terminating resistor value varies depending on the cable used. Prepare a terminating resistor to suit the application.

Type of cable	Resistance
CC-Link Communication cable	110Ω ±5% 1/2 W
CC-Link dedicated High-performance cable	130Ω ±5% 1/2 W

6.5 Communication connector (EtherNet/IP, EtherCAT or PROFINET)

- Using standard CAT5 cable (or better) connect the EtherNet/IP, EtherCAT or PROFINET communication to the connectors (P1 / P2 or IN / OUT) in the Gateway unit of the Controller.
- Connections to P1 and P2 can be made either way round.
- Connections to IN / OUT (EtherCAT) must be the correct way round.

6.6 Ground connection

- Ensure that the controller is connected to ground to improve the noise immunity.
- A dedicated ground connection must be used for the controller.
- The ground connection should be to a D-class ground (resistance 100 Ω or less). Wire size should be AWG20 (0.5 mm^2) minimum.
- The grounding point should be as near as possible to the controller to keep the wire length short.
- The controller provides the connection to ground via the Control power supply plug (refer to section 6.1).

7 LED Display

7.1 Gateway unit (CC-Link) LED display

LED	Contents
PWR	Indicates power-on status and EEPROM write status.
ALM	Indicates the alarm status of the controller.
L RUN	Indicates the CC-Link communication status.
L ERR	Indicates CC-Link error status.

7.1.1 Gateway LED indications

Gateway unit status		LED status			
		PWR	ALM	L RUN	L ERR
Power-on		-	-	OFF	OFF
ROM and RAM of CPU for CC-Link communication abnormal		-	-	Green ON	Red ON
Normal CC-Link communication		-	-	Green ON	OFF
Address setting changes during power-on		-	-	OFF	Red ON
CC-Link communication	CC-Link communication stopped	-	-	OFF	OFF
	CC-Link CRC error	-	-	OFF	Red ON
	Incorrect station number error	-	-	Flashing Green	Red ON
	Communication speed error (unused range)	-	-	Green ON	Flashing Red
	WDT timeout error	-	-	Flashing Green	Flashing Red
System error has occurred		Green ON	Red ON	-	-
Alarm in progress		OFF	Red ON	-	-
Normal operation		Green ON	OFF	-	-
Driver unit not connected		Green flashing	Red flashing	-	-
Writing to EEPROM in progress		Green flashing	-	-	-

7 LED Display (continued)

7.2 Gateway unit (EtherNet/IP) LED display

LED	Contents		
PWR	Indicates power-on status	OFF	Power not supplied
		Green ON	Power supplied
		Green flashing	Writing to EEPROM in progress
ALM	Indicates an alarm condition on the gateway unit	OFF	Normal operation
		Red ON	Alarm in progress
MS	Indicates the status of the gateway unit.	OFF	Power is off
		Green ON	Normal operation
		Green flashing	Incorrect communication setting or scanner is idle
		Red flashing	Recoverable internal error
		Red ON	Non-recoverable internal error
NS	Indicates the communication status of EtherNet/IP.	OFF	Power off or IP address not configured
		Green ON	EtherNet/IP connection being established.
		Green flashing	EtherNet/IP connection not established
		Red flashing	EtherNet/IP connection timeout
		Red ON	IP address duplication detected
P1 / P2	Indicates the EtherNet/IP communication status.	OFF	Link not established
		Green ON	Link (100 Mbps) established
		Green flashing	Link (100 Mbps) established and data being sent / received
		Orange ON	Link (10 Mbps) established
		Orange flashing	Link (10 Mbps) established and data being sent/received

7.2.1 Gateway LED indications

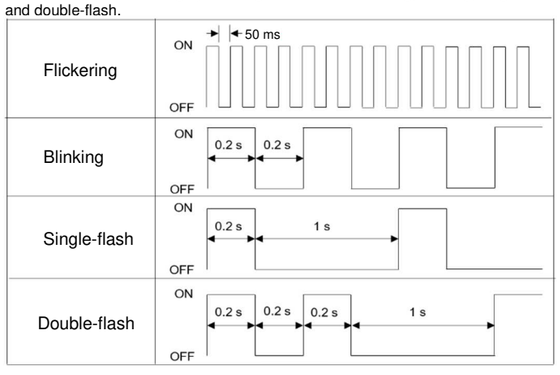
Gateway unit status	LED status			
	PWR	ALM	MS	NS
Normal communication	-	-	Green ON	Green ON
System error has occurred	Green ON	Red ON	-	-
Alarm in progress	OFF	Red ON	-	-
Normal operation	Green ON	OFF	-	-
Driver unit not connected	Green flashing	Red flashing	-	-
Writing to EEPROM in progress	Green flashing	-	-	-

7 LED Display (continued)

7.3 Gateway unit (EtherCAT) LED display

LED	Contents		
PWR	Indicates power-on status	OFF	Power not supplied
		Green ON	Power supplied
		Green flashing	Writing to EEPROM in progress
ALM	Indicates an alarm condition on the gateway unit	OFF	Normal operation
		Red ON	Alarm in progress
ERR	Indicates the error status of the EtherCAT communication.	OFF	No error in EtherCAT communication.
		Red blinking	Error in EtherCAT communication setting.
		Red single flashing	Abnormal synchronization, abnormal EtherCAT communication data.
		Red double flash	Error in EtherCAT Communication setting (application watch dog timeout).
		Red ON	Non-recoverable internal error (RUN is also Red ON).
RUN	Indicates the communication status of EtherCAT.	OFF	Init state
		Green flickering	Bootstrap state
		Green blinking	Pre-operational state
		Green single flash	Safe operational state
		Green ON	Operational state
		Red ON	Non-recoverable internal error (ERR is also Red ON).
IN / OUT	Indicates the EtherCAT communication status.	OFF	Link not established
		Green ON	Link (100 Mbps) established
		Green flickering	Link (100 Mbps) established and data being sent / received

* Diagram for LED flashing cycle using descriptions flickering, blinking, single-flash and double-flash.



7.3.1. Gateway LED indications

Gateway unit status	LED status			
	PWR	ALM	ERR	RUN
Normal communication	-	-	OFF	Green ON
System error has occurred	Green ON	Red ON	-	-
Alarm in progress	OFF	Red ON	-	-
Normal operation	Green ON	OFF	-	-
Driver unit not connected	Green flashing	Red flashing	-	-
Writing to EEPROM in progress	Green flashing	-	-	-

7 LED Display (continued)

7.4 Gateway unit (PROFINET) LED display

LED	Contents		
PWR	Indicates power-on status	OFF	Power not supplied
		Green ON	Power supplied
		Green flashing	Writing to EEPROM in progress
ALM	Indicates an alarm condition on the gateway unit	OFF	Normal operation
		Red ON	Alarm in progress
SF	Indicates the status of the gateway unit.	OFF	Power is off
		Green ON	Normal operation
		Red ON	Non-recoverable internal error (BF also Red ON).
BF	Indicates the communication status of PROFINET.	OFF	Power OFF or PROFINET connection not established.
		Green ON	PROFINET connection being established. Controller is in RUN state.
		Green single flash	PROFINET connection being established. Controller in STOP state.
		Red single flash	Device Name error.
		Red double flash	IP address error.
		Red triple flash	Configuration error.
		Red ON	Non-recoverable internal error (SF also Red ON).
P1 / P2	Indicates the PROFINET communication status.	OFF	Link not established
		Green ON	Link (100 Mbps) established
		Green flickering	Link (100 Mbps) established and data being sent / received

7.4.1. Gateway LED indications

Gateway unit status	LED status			
	PWR	ALM	SF	BF
Normal communication	-	-	Green ON	Green ON
System error has occurred	Green ON	Red ON	-	-
Alarm in progress	OFF	Red ON	-	-
Normal operation	Green ON	OFF	-	-
Driver unit not connected	Green flashing	Red flashing	-	-
Writing to EEPROM in progress	Green flashing	-	-	-

⚠ Caution

- Do not turn off the controller input power supply or disconnect the cable during EEPROM writing. Data (parameters) may not be written correctly.

7 LED Display (continued)

7.5 Driver unit LED display

LED	Contents
CH A	Axis 1 servo ON / alarm LED
CH B	Axis 2 servo ON / alarm LED

7.5.1. Driver unit LED indications

Driver unit status		LED status		
		Green	Red	Orange
RAM memory error (only at power-on)		Flashing (0.2 s)	Flashing (0.2 s)	OFF
Alarm	Servo OFF	OFF	ON	OFF
	Servo ON	OFF	ON	OFF
No alarm	Servo OFF	Flashing (2 s)	OFF	OFF
	Servo ON	ON	OFF	OFF
Writing to EEPROM in progress	No alarm	Flashing (0.4 s)	OFF	OFF
	Alarm	OFF	Flashing (0.4 s)	Flashing (0.4 s)

8 How to Order

Refer to the catalogue on the SMC website.
(URL: https://www.smcworld.com) for the How to Order information.

9 Outline Dimensions (mm)

Refer to the drawings / operation manual on the SMC website.
(URL: https://www.smcworld.com) for outline dimensions.

10 Maintenance

10.1 General Maintenance

⚠ Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly electricity and compressed air can be dangerous.
- Maintenance of electromechanical and pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn OFF the power supply.
- After installation and maintenance, apply power to the equipment and perform appropriate functional tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

11 Limitations of Use

11.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

12 Product disposal

This product should not be disposed of as municipal waste. Check your local regulations and guidelines to dispose of this product correctly, in order to reduce the impact on human health and the environment.

13 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor / importer.

SMC Corporation

URL: http// www.smcworld.com (Global) http// www.smceu.com (Europe)
'SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan

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