

Installation & Maintenance Manual

SI unit for ControlNet

Type EX250-SCN1



Safety Instructions

The SI unit and this manual contain essential information to protect users and others from possible injury and property damage and to ensure correct handling.

Please check that you fully understand the definition of the following messages (signs) before going on to read the text, and always follow the instructions.

Please read the Installation & Maintenance Manual of related apparatus and understand it before operating the actuator.

IMPORTANT MESSAGES

Read this manual and follow its instructions. Signal words such as WARNING, CAUTION and NOTE, will be followed by important safety information that must be carefully reviewed.

⚠WARNING	Indicates a potentially hazardous situation which could result in death or serious injury if you do not follow instructions.
⚠CAUTION	Indicates a potentially hazardous situation which if not avoided, may result in minor injury or moderate injury.
NOTE	Gives you helpful information.

⚠WARNING

Do not disassemble, modify (including change of printed circuit board) or repair.

An injury or failure can result.

Do not operate outside of the specification range.

Fire, malfunction or SI unit damage can result. Please use it after confirming the specification.

Do not use the product in environments with possible presence of flammable, explosive or corrosive gas.

Otherwise fire, explosion or corrosion can result. The product is not designed to be explosion proof.

Do not apply voltages exceeding 250V between a lead wire and a metal fitting.

Pay attention to perform an insulation test because it could damage the insulation of the lead wire and cause failure.

These instructions must be followed when using the product in an interlocking circuit:

- Provide double interlocking through another system such as mechanical protection
 - Check the product regularly to ensure proper operation
- Otherwise malfunction can cause an accident.

These instructions must be followed while in maintenance:

- Turn off the power supply
 - Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance work.
- Otherwise it can cause injury.

Safety Instructions (continued)

⚠CAUTION

Perform a proper functional check after completing maintenance work.

Stop operation when an abnormality is observed or the product is not working properly.

Safety cannot be secured due to unexpected malfunctions.

NOTE

The direct-current power supply to combine should be UL authorization power supply.

1.A limited voltage current circuit which conforms to UL508

A circuit to which power is supplied by the secondary coil of a transformer that meets the following conditions.

- Maximum voltage (with no load) : less than 30Vrms (42.4V peak)
- Maximum current : (1) less than 8A (including when short circuited)
(2) limited by circuit protector (such as fuse) with the following ratings

No load voltage (V peak)	Max. current rating (A)
0 to 20 [V]	5.0
20 to 30 [V]	100 / peak voltage

2.A circuit using max. 30 Vrms or less (42.4V peak), which is powered by UL1310 or UL1585 compatible Class-2 power supply.

Follow the instructions given below when handling your reduced wiring system.

Failure to follow instructions may damage the unit.

- Operate the product within the specified voltage range.
- Reserve a space around the unit for maintenance.
- Do not remove labels.
- Do not drop, hit or apply excessive shock to the product.
- Do not bend or apply tensile force to cables, or apply force by placing heavy load on them.

- Connect wires and cables correctly.
- Do not connect wires while the power is on.
- Do not lay wires or cables in the same wiring route as a power line or high-voltage line.
- Verify the insulation of wiring.
- Take proper measurements against noise such as noise filter when the product is incorporated in equipment or devices.
- Select an operation environment according to enclosure. (IP40)
- Take sufficient shielding measures when installing the product at the following place.
 - (1) A place where noise due to static electricity is generated
 - (2) A place where electric field strength is high
 - (3) A place where there is radioactive irradiation
 - (4) A place near power line
- Do not use the product nearby a place where electric surges are generated.
- Use the product equipped with surge absorber when a surge-generating load such as a solenoid valve is driven directly.
- Prevent foreign matter such as remnant of wires from entering this product.
- Do not expose the product to vibration and impact.
- Keep the specified ambient temperature range (-10 to 50 °C).
- Do not expose the product to heat radiation from a heat source located nearby.
- Perform maintenance and check regularly.
- Perform a proper functional check after completing maintenance work.
- Do not clean the product with chemicals such as benzene and thinner.

Specifications

General specifications

Item	Specification
Operating ambient temp.	+5 to +45 °C
Storage ambient humidity	35 to 85%RH (No condensation)
Storage ambient temp.	-20 to 60 °C
Vibration proof	10 to 57Hz 0.35mm(Constant amplitude) 57 to 150Hz 50m/s ² (Constant acceleration)
Impact proof	150m/s ² (peak), 11ms x three times in each direction +/- X, Y and Z.
Withstand voltage	500VAC for 1min. Between body and external terminals.
Insulation resistance	500VDC 10M ohm or more. Between body and external terminals.
Operating environment	No corrosive gas
Weight	250g or less
Enclosure	IP40

Network specifications

Item	Specification
Applicable system	ControlNet Version 2.0 Errata 3 adapter class
Address setting range	1 to 99 (Setting by rotary switch)
Communication speed	5Mbps fixed
Network update time (NUT)	Min.2ms applicable
Device type	7 (General Purpose Discrete I/O)
Product code	2501
Revision	Refer to EDS file
Vendor ID	7
Consumed I/O connection size	4 bytes
Produced I/O connection size	6 bytes
Support Message	Cyclic I/O message, CiP message
Redundancy media	Not provided

Electrical specifications

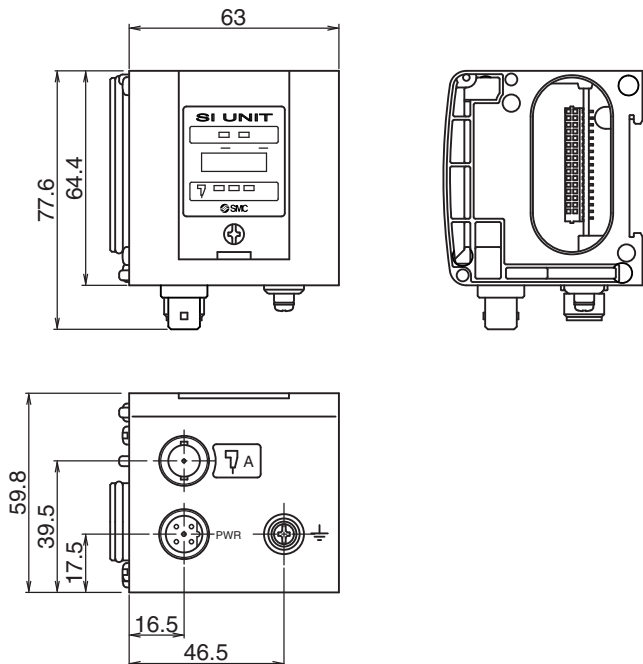
Item	Specification	
Power supply voltage	Power supply for SI unit/ Input block	24VDC±20%
	Power supply for output equipment	24VDC +10% -5%
Current consumption	100mA Max. *1	
Input spec.	No. of Inputs	32 points
	Input type	TTL
	Connected input equipment	Input block *3
	Input block supply voltage	24VDC±20%
Output spec.	Block supply current	Total 1A Max.
	No. of Outputs	32 points
	Output type	N-ch MOS-FET High side switch (PNP output)
	Connected output equipment	Solenoid valve (24VDC, 1.5W or less, With light surge suppressor), Output block
	Output block supply voltage	24VDC±10%
	Residual voltage	0.3V or less
Load current consumption *2	Total 2A Max.	

*1 : Current consumption by SI unit internal power supply

*2 : Maximum load current supplied by output equipment power supply

*3 : See the following table for the applicable blocks.

Outline with Dimensions (in mm)



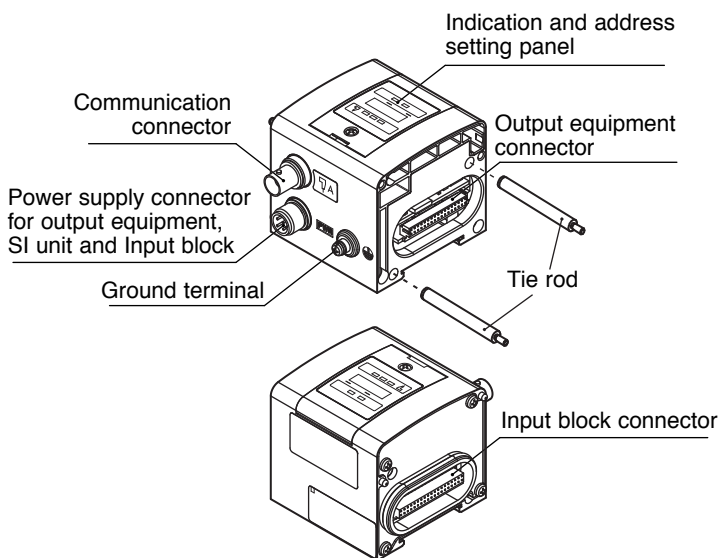
Name of parts/ Accessories

Body

- Communication connector
To send and receive communication signals through ControlNet line.
- Power supply connector for output equipment, SI unit and Input block
To supply power to the output equipment such as a solenoid valve, and Output block, SI unit and Input block.
- Output equipment connector
To connect the output equipment such as a solenoid valve and Output block.
- Input block connector
To connect the Input block.
- Indication and address setting panel
To provide LED's to indicate the condition of the unit, and the setting of address and HOLD/CLEAR functions.
- Ground terminal
To be connected to ground.

Accessory

- Tie rod (Part no. : VVQ1000W-27-6 (2pcs))
They are used for assembly and disassembly.



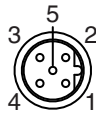
Wiring

Communication connector : BNC Jack Connector



No.	Description	Function
1	Signal+	Positive side of communication signal
2	Signal-	Negative side of communication signal

Communication connector : BNC Jack Connector

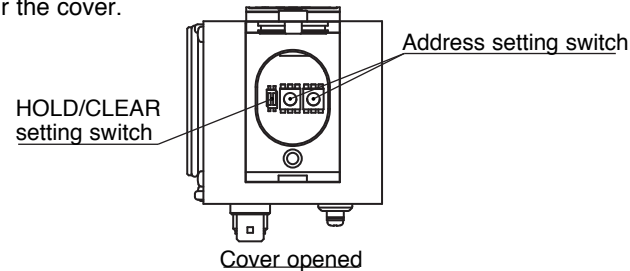


No.	Description	Function
1	SV24V	Positive side of power supply for output equipment
2	SV0V	Negative side of power supply for output equipment
3	SW24V	Positive side of power supply for SI unit and Input block
4	SW0V	Negative side of power supply for SI unit and Input block
5	E	Ground

SW Setting

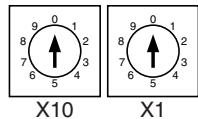
Setting of address and HOLD/CLEAR of output

The setting for the address and HOLD/CLEAR of output can be performed with 2 rotary switches and 1 DIP switch located under the cover.

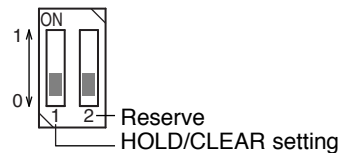


Each address is assigned to the unit with an address setting switch. The address setting switch is a decimal rotary switch and two switches are provided to specify the first and second digit of the address respectively. The setting range is from 1 to 99 (decimal). At the time of shipment from the factory, the address is set to "00" as shown in the figure below.

Address setting switch



The HOLD/CLEAR of output setting is performed with the HOLD/CLEAR setting switch. The setting value is obtained from the following table.



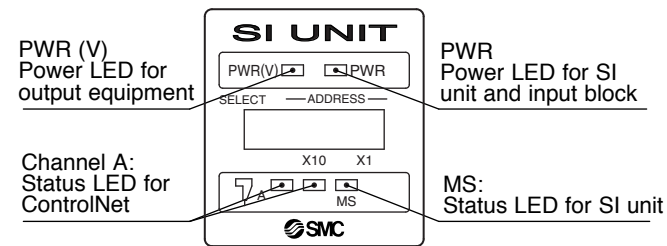
HOLD/CLEAR	No.1	Function
CLEAR	0	To clear the output when an error occurs
HOLD	1	To hold the output when an error occurs

At the time of shipment from the factory, the default setting is "0", which means "CLEAR" is selected.

*Be sure to turn off the power supply when any setting is performed in the SI unit.

Display

LED indication



LED	Display	Status of LED	Description
PWR(V)		Green LED Light ON	The power is supplied to the output equipment.
PWR		Green LED Light ON	The power is supplied to the SI unit and Input block.
MS		Green LED Light ON	The device is operating normally.
Channel A		Green LED Light ON	Channel operational.

LED	Display	Status of LED	Description
MS		No LED Light ON	No power.
		Green LED flashes	The device is performing self-diagnosis or a connection with a network is being established.
		Red LED flashes	A minor error (recoverable fault) has occurred.
		Red LED Light ON	A serious error (unrecoverable fault) has occurred.
Channel A		Red LED Light ON	Failed Link interface.
		Red/Green LED flashes alternately	Channel disabled.
		Red LEDs alternately Light ON	Bad node configuration. (Such as duplicate address, etc.)
Viewed together		No LED Light ON	No power.
		No LED Light ON	Channel disabled.
		Green LED flashes	Temporary channel errors.
Viewed independently		Red LED flashes	Cable fault, broken cable.
		Red/Green LED flashes	Invalid link configuration.
		No LED Light ON	Channel disabled.

No LED Light ON
 Light ON
 LED flashes by turn
 LED flashes

Contact

AUSTRIA	(43) 2262 62280	NETHERLANDS	(31) 20 531 8888
BELGIUM	(32) 3 355 1464	NORWAY	(47) 67 12 90 20
CZECH REP.	(420) 541 424 611	POLAND	(48) 22 211 9600
DENMARK	(45) 7025 2900	PORTUGAL	(351) 21 471 1880
FINLAND	(358) 207 513513	SLOVAKIA	(421) 2 444 56725
FRANCE	(33) 1 6476 1000	SLOVENIA	(386) 73 885 412
GERMANY	(49) 6103 4020	SPAIN	(34) 945 184 100
GREECE	(30) 210 271 7265	SWEDEN	(46) 8 603 1200
HUNGARY	(36) 23 511 390	SWITZERLAND	(41) 52 396 3131
IRELAND	(353) 1 403 9000	UNITED KINGDOM	(44) 1908 563888
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