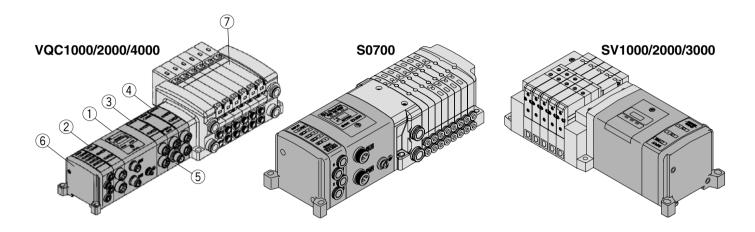
Integrated Type/ For Input/Output Series EX250



- **★Enclosure IP67**
- **★**Maximum 32 inputs/32 outputs
- **★**Connection of sensors with M8/M12 connectors is possible



No.	Туре	Function
1	SI unit	Compatible with various field buses
2	Input block	Connection of sensors with M8, M12 connectors
3	Output block Note 1)	Output equipment connection with M12 connectors (For low watt load)
4	Output block Note 1)	Output equipment connection with M12 connectors (For high watt load)
5	Power block Note 1)	Power supply for output block (For high watt load)
6	End plate assembly	Direct mounting, DIN rail mounting
7	Manifold valve	Max. 32 points actuation

Note 1) A manifold part number is not specified for the output block and power block. Please consult SMC for the manifold integrated type.

How to Order SI Unit

EX250-S DN1

♦ Communication protocol

DN1	DeviceNet
DN1-X102 Note 1)	DeviceNet
PR1	PROFIBUS DP
MJ2	CC-Link
AS3	AS-i (8in/8out 31Slave Mode, 2 power supply systems)
AS5	AS-i (4in/4out 31Slave Mode, 2 power supply systems)
AS7	AS-i (8in/8out 31Slave Mode, 1 power supply system)
AS9	AS-i (4in/4out 31Slave Mode, 1 power supply system)
CA1A	CANopen
CN1 Note 2)	ControlNet
EN1	EtherNet/IP

Note 1) Refer to the SI unit specifications on page 1665 for the special order specifications.

Note 2) The enclosure rating is IP40 for the SI unit compatible with ControlNet.

Note 3) Please consult SMC for the applicable networks other than the above.



SI Unit Specifications

	Model		EV250 CDN1	Note 1) EX250-SDN1-X102	EV250 CDD1	EV250 CM I2	EX250-SCA1A	EX250-SCN1	EX250-SEN1	EX250-SAS3/5	EV250 CAC7/0
	IVIOGO!	Dt.									
	Applicable	Protocol	Devi	ceNet	PROFIBUS DP	CC-Link	CANopen	ControlNet	EtherNet/IP	AS-Interface	
tion	system	Version Note 2)	Relea	se 2.0	DP-V0	Ver.1.10	CiA DS-301 V4.02 CiA DS-401	V2.0 Errata 3 adapter class	Release 1.0		n 2.11 Idress Mode
Communication specification	Communication speed		125 k/250	k/500 kbps	9.6 k/19.2 k/ 45.45 k/93.75 k/ 187.5 k/500 k/ 1.5 M/3 M/6 M/ 12 Mbps	156 k/625 k/ 2.5 M/5 M/ 10 Mbps	10 k/20 k/50 k/ 125 k/250 k/ 500 k/800 k/ 1 Mbps	5 Mbps	10 M/100 Mbps	167	kbps
Ē	Specified f	ile Note 3)	EDS file	EDS file	GSD file	_	EDS file	EDS file	EDS file	_	_
Сошш	Occupied a of inputs/o	area (Number utputs)	32/32	48/32	32/32	64/64 (2 stations, remote device station)	32/32	48/32	48/32	SAS3: 8/8 (2 slave units) SAS5: 4/4	SAS7: 8/8 (2 slave units) SAS9: 4/4
	Terminal re	esistor				ı	Not applicable	9			
Power supply	For unit		(Supp	25 VDC lied by et circuit)	24 VD	C±20%	18 V to 30 VDC (Supplied by CANopen circuit)	24 VD0	C±20%	26.5 to 31.6 VDC (Supplied by	Note 4) 26.5 to 31.6 VDC
Supply	For sensor	rs .	24 VD	C±20%		24 VDC±20%				, , , , , , , , , , , , , , , , , , , ,	(Supplied by AS-i circuit)
	For valve					24 VDC+	10%/–5%				710 Tollouity
Internal current consumption (Unit)		100 ma or less					SAS3: 100 mA or less SAS5: 65 mA or less	SAS7: 100 mA or less SAS9: 65 mA or less			
Number of inputs		32 points (Based on input block connection) SAS3: 8 points SAS7: 8 points SAS9: 4 points SAS9: 4 points									
Input	၌ Supply voltage		24 VDC								
sbec	Supply current Number of inputs Supply voltage		1 114 Or 1000				SAS3: 240 mA or less SAS5: 120 mA or less	Note 5)			
	Output typ	е		PNP output (+COM.) PNP output PNP output (+COM.)			PNP output (-COM.)				
io	Number of	outputs							SAS7: 8 points SAS9: 4 points		
Output specification	Connection load			SMC: Solenoid valve with light/surge voltage suppressor (24 VDC, 1.5 W or less) Output block Power block							
but	Supply vol	tage	24 VDC								
Out	Supply cui	rrent	2.0 A or less SAS3: 500 mA or less SAS5: 250 mA or less					Note 5)			
	Output who	en communi- or occurs	ni- Hold/Clear Clear Hold/Clear (Switch setting)				a)				
	Enclosure				IP67			IP40		IP67	
la t	Operating ter	nperature range		5 to	45°C		-10 to 50°C		5 to	45°C	
neu	Operating h	umidity range				35 to 85%R	H (With no co	ndensation)			
onr	Withstand					C for 1 min. b					
Environmental resistance		resistance				nore (500 VD					
ū	Vibration r		10 1	o 150 Hz with		•				rs (De-energi	zed)
Chair de l	Impact res	istance	147 m/s² in each X, Y, Z direction, 3 times (De-energized)								
Standard Accessor							narking, UL (
Accessor	y Note of						Tie-rod 2 pcs	-			

Note 1) This is a specification to transmit the diagnostic information of voltage drop of the valve power supply and input block fuse blowout as an input data to the master. EX250-SDN1 becomes I/O connection time out when the diagnostic information is detected, but not EX250-SDN1-X102.

Since this is a special product, a manifold part number is not specified. Please consult SMC for the manifold integrated type.

Note 2) Please note that the version is subject to change.

Note 3) Each file can be downloaded from SMC's website (http://www.smcworld.com/).

Note 4) Since EX250-SAS7/9 is compatible with the 1 power supply system, the power supply for units is divided into two: the power supply for sensors and for valves.

Note 5) Since EX250-SAS7/9 is compatible with the 1 power supply system, the power supply must be divided in accordance with the values below. (Refer to page 1667 for details.)

(EX250-SAS7 ··· Max. 240 mA, EX250-SAS9 ··· Max. 120 mA)

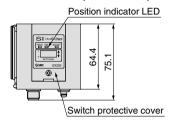
Note 6) When the SI unit is mounted to the manifold when shipped, accessories are shipped together with it.

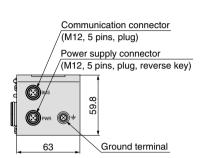
Note 7) For detailed specifications other than the above, refer to the separate technical operation manual that can be downloaded from SMC's website (http://www.smcworld.com/).



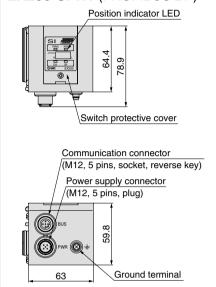
SI Unit Dimensions / Parts Description

EX250-SDN1 (DeviceNet)

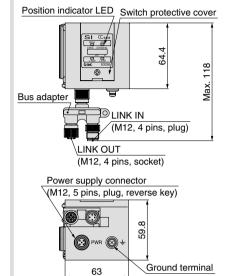




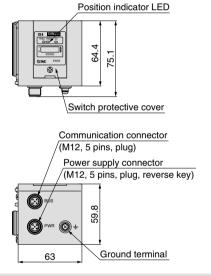
EX250-SPR1 (PROFIBUS DP)



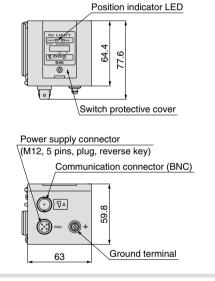
EX250-SMJ2 (CC-Link)



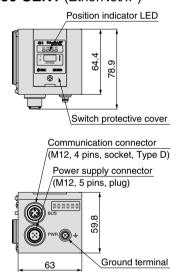
EX250-SCA1A (CANopen)



EX250-SCN1 (ControlNet)

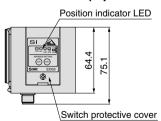


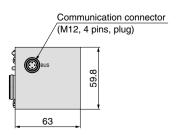
EX250-SEN1 (EtherNet/IP)



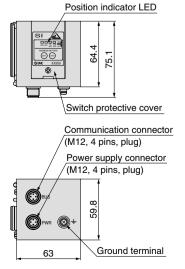
AS-Interface

EX250-SAS7/9 (1 power supply system)





EX250-SAS3/5 (2 power supply systems)







When one AS-Interface power supply system is used

		EX250-SAS7	EX250-SAS9	
Power supply voltage		Supplied from AS-Interface circuit, 26.5 to 31.6 VDC Note		
Inte	ernal current consumption	Max. 100 mA	Max. 65 mA	
a E	Number of inputs	8	4	
Sati	Number of outputs	8	4	
Supply voltage		24 \	/DC	
⊑ &	Supply current Note 2)	Max. 240 mA	Max. 120 mA	

- Note 1) For communication power supply, use a power supply dedicated to AS-Interface. For details, please refer to instruction manuals provided by the respective manufacturers.
- Note 2) The AS-Interface circuit provides current to the internal parts of the SI unit and all connected equipment.

 Since there is a limit on the possible supply.

Since there is a limit on the possible supply current to all connected equipment, select the equipment connected to the input/output device to stay within the possible supply current.

Example) When EX250-SAS9 is used

Valve: VQC1100NY - 5 (low-wattage type of 0.5 W) x 4 pcs.

0.5 [W] ÷ 24 [V] x 4 [pcs.] = 84 [mA] (4 outputs simultaneously ON)

The maximum possible supply current of EX250-SAS9 is 120 mA. Therefore, the possible supply current to the sensor is 120 [mA] – 84 [mA] = 36 [mA]

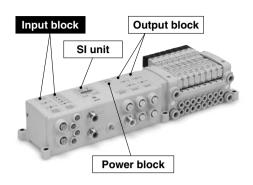
Use of low-wattage type valves by minimizing the maximum number of simultaneous outputs, and low current consumption sensors (2-wire sensor, etc.) is recommended.

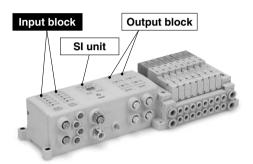
Maximum number of AS-Interface compatible input blocks

	SI unit specifications			Input block maximum stations
		1	M12/2 inputs	4 stations
EX250-SAS3	AS-Interface 8in/8out 31SlaveMode, 2 power supply systems	2	M12/4 inputs	2 stations
		3	M8/4 inputs	2 stations
			M12/2 inputs	2 stations
EX250-SAS5	AS-Interface 4in/4out 31SlaveMode, 2 power supply systems	2	M12/4 inputs	1 station
			M8/4 inputs	1 station
			M12/2 inputs	4 stations
EX250-SAS7	AS-Interface 8in/8out 31SlaveMode, 1 power supply system	2	M12/4 inputs	2 stations
			M8/4 inputs	2 stations
		1	M12/2 inputs	2 stations
EX250-SAS9	AS-Interface 4in/4out 31SlaveMode, 1 power supply system	2	M12/4 inputs	1 station
			M8/4 inputs	1 station

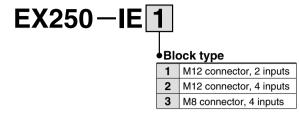


Input Block





How to Order Input Block



For options, refer to pages 1670 to 1678.

Input Block Specifications

Model		EX250-IE1	EX250-IE2	EX250-IE3			
	Input type	PNP/NPN sensor input (switched using a switch)					
Input specification	Number of inputs	2 points 4 points					
	Input device supply voltage		24 VDC				
	Input device supply current		Max. 30 mA/point Note 1)				
	Rated input current		Approx. 8 mA				
	Display	Green LED (Illuminated when the power supply for the SI unit input is applied) Yellow LED (Illuminated when the input signal is turned on.)					
	Connector on the input device side	M12 connector (4 pins	M8 connector (3 pins, plug)				
	Enclosure	IP67					
	Operating temperature range	−10 to 50°C					
	Operating humidity range	35 to 85%RH (with no condensation)					
Environmental resistance	Withstand voltage	500 VAC for 1 min. between external terminals and FG					
	Insulation resistance	10 $\mathrm{M}\Omega$ or more (500 VDC) between external terminals and FG					
	Vibration resistance	10 to 150 Hz with a 0.35 mm amplitude or 49 m/s ² in each X, Y, Z direction for 2 hrs (De-ene					
	Impact resistance	147 m/s², in each X, Y, Z direction, 3 times (De-energized)					
Standard		CE marking, UL (CSA)					
Accessory Note	2)	Tie-rod 2 pcs.					

Note 1) When the maximum inputs to the SI unit is reached by adding an input block, pay attention not to exceed the supply current for the SI unit input.

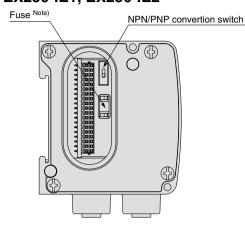
Note 2) When the SI unit is integrated into manifold, its tie-rod is also incorporated at the time of shipping.

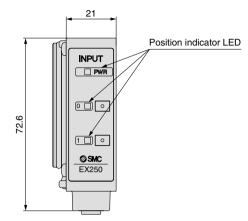
Note 3) For detailed specifications other than the above, refer to the separate technical operation manual that can be downloaded from SMC's website (http://www.smcworld.com/).



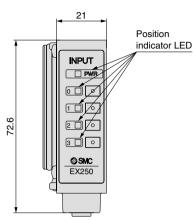
Input Block Dimensions / Parts Description

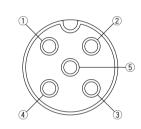
EX250-IE1, EX250-IE2



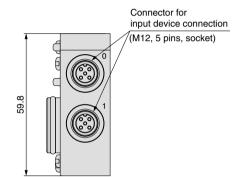


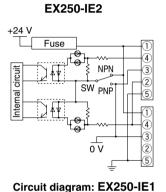
EX250-IE1

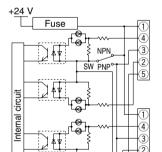




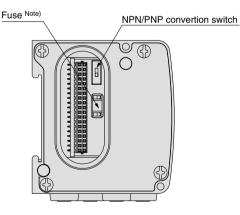
Connector's pin assignment for the input device connection (M12, 5 pins, socket)

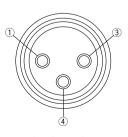




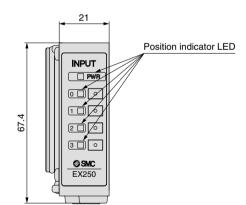


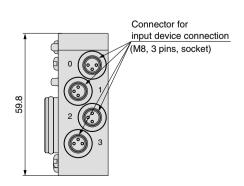
EX250-IE3



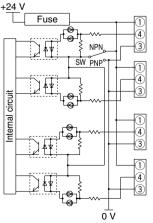


Connector's pin assignment for the input device connection (M8, 3 pins, socket)









Circuit diagram: EX250-IE3





Options

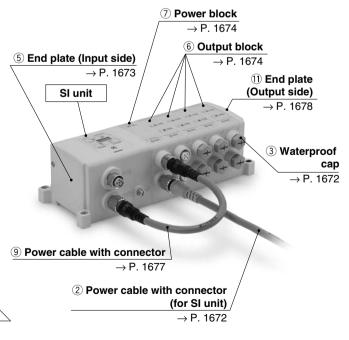
Example of connections

Connection example of the SI unit Connection example of the SI unit compliant with DeviceNet compliant with EtherNet/IP 5 End plate (Input side) 7 Power block → P. 1673 5 End plate (Input side) → P. 1674 **6** Output block → P. 1673 **6** Output block SI unit → P. 1674 → P. 1674 SI unit Input block Input block 3 Waterproof 3 Waterproof сар сар → P. 1672 → P. 1672 8 Cable with connector 1 Communication cable for output entry Power cable with connector with connector → P. 1677 → P. 1677 2 Power cable with connector → P. 1671 (for SI unit) 1 Communication cable 2 Power cable with connector → P. 1672 with connector (for SI unit) → P. 1671 → P. 1672

Connection example of the SI unit compliant with AS-Interface

5 End plate (Input side) 7 Power block → P. 1673 → P. 1674 SI unit 6 Output block → P. 1674 Input block ③ Waterproof cap → P. 1672 10 Power cable with connector (for SI unit) 9 Power cable with connector → P. 1678 → P. 1677

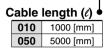
Connection example of the SI unit compliant with PROFIBUS DP

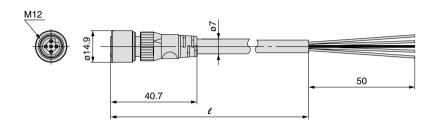


(1) Communication cable with connector

For DeviceNet type SI unit

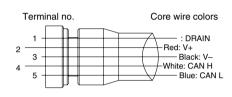






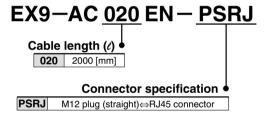


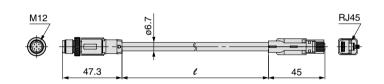
Socket connector pin arrangement

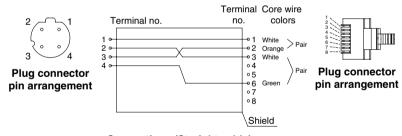


Connections

For EtherNet/IP type SI unit





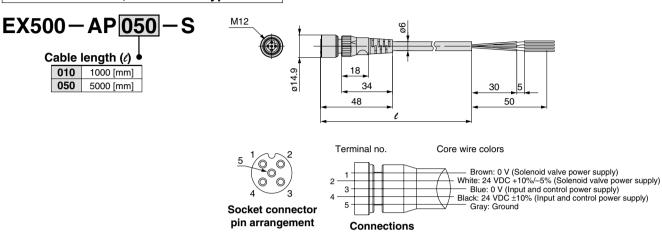


Connections (Straight cable)

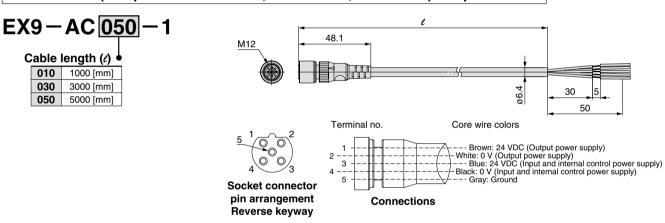
Options

2 Power cable with connector (for SI unit)

For PROFIBUS DP, EtherNet/IP type SI unit



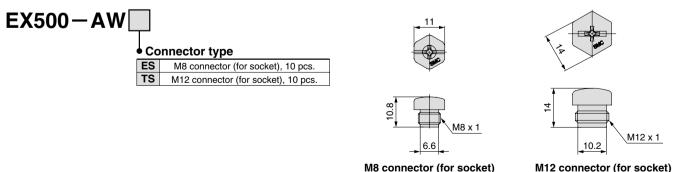
For the SI unit (except for PROFIBUS DP, AS-Interface, EtherNet/IP) and power block



3 Waterproof cap: M8, M12 connector (for socket)

Use this on ports that are not being used for M8 and M12 connectors (socket). Use of this waterproof cap maintains the integrity of the IP67 enclosure.

Note) Tighten the waterproof cap with the prescribed tightening torque. (For M8: 0.05 N+m, For M12: 0.1 N+m)



4 Replacement fuse

Replacement fuse required when the fuse for the input block (EX250-IE□) overcurrent protection is blown.

EX9-FU05

Model	EX9-FU05
Applicable model	EX250-IE□
Rated current	0.5 A
Rated insulation capacity	48 VAC/DC 50 A
Fuse resistance value	$0.36~\Omega$



EX250-EA1

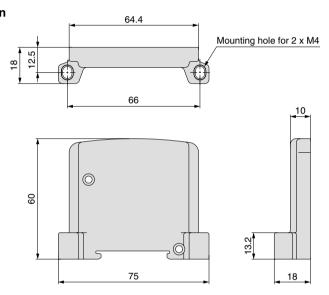
5 End plate (Input side)

EX250-EA 1

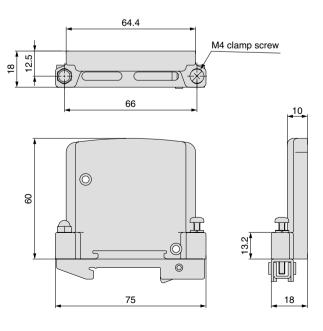
• Mounting specification

Direct mountingDIN rail mounting

Accessory Hexagon socket head cap screw (M3 x 10): 2 pcs.



EX250-EA2





Options

6 Output block / 7 Power block

Features: • Able to retrofit to the valve manifold, using the unused points.

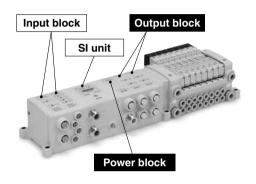
- 2-output (M12 connector)
- + common / common are standardized.
- Able to drive by 0.5 A per point.

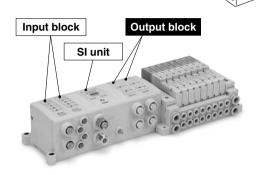


Output block

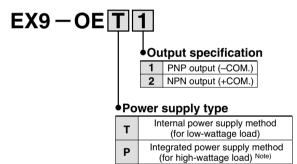
Power block







How to Order Output Block



Note) Required to connect with a power block.

How to Order Power Block

EX9 - **PE1**

Option/Part No.

option/r art ito.		
Description	Part no.	Note
Waterproof cap	EX500-AWTS	Refer to page 1672. Order separately: 10 pcs. included
Power cable with connector	EX9-AC□-1	Refer to page 1672, Order separately.
Cable with connector for between SI unit and power block	EX9-AC002-2 EX9-AC002-3 EX9-AC002-4	Refer to page 1677, Order separately.
AS-Interface power supply cable	EX9-AC□-5	Refer to page 1678, Order separately.

SI Unit Part No.

or orner are no	'	
SI unit part no.	Output	Applicable model
EX250-SDN1 EX250-SPR1 EX250-SAS□ EX250-SCA1A EX250-SCN1 EX250-SEN1	PNP output (-COM.)	EX9-OET1 EX9-OEP1
EX250-SMJ2	NPN output (+COM.)	EX9-OET2 EX9-OEP2

Option/Part No.

_ •					
Description	Part no.	Applicable model		Note	
Description	Fait iio.	OET□	OEP□	Note	
Waterproof cap	EX500-AWTS	0	0	Refer to page 1672. Order separately: 10 pcs. included	
Cable with connector for output entry	EX9-AC□-7	0	0	Refer to page 1677. Order separately.	
Power block	EX9-PE1		0	Refer to the right page. Order separately.	



Integrated Type/ For Input/Output Series EX250

Output Block Specifications

	Model	EX9-OET1	EX9-OET2	EX9-OEP1	EX9-OEP2		
Output connector		M12 connector (5 pins)					
Internal curren	t consumption		40 m <i>A</i>	A or less			
	Output type	PNP output (-COM.)	NPN output (+COM.)	PNP output (-COM.)	NPN output (+COM.)		
	Number of outputs		2 points				
	Power supply method	Internal power	supply method	Integrated power supply method (Po	ower block: supplied from EX9-PE1)		
Output specification	Output device supply voltage		24	VDC			
	Output device supply current	Max. 62 mA/po	int (1.5 W/point)	Max. 0.5 A/poi	nt (12 W/point)		
	Display	Yellow LED (Lights when power is turned ON.)					
	Connector on the output device side		M12 connecto	or (5 pins, plug)			
	Enclosure	IP67					
	Operating temperature range	−10 to 50°C					
	Operating humidity range	35 to 85%RH (with no condensation)					
Environmental resistance	Withstand voltage	1500 VAC for 1 min. between external terminals and FG					
	Insulation resistance	10 $\mbox{M}\Omega$ or more (500 VDC) between external terminals and FG					
	Vibration resistance	10 to 150 Hz with a 0.35 mm amplitude or 49 m/s² in each X, Y, Z direction for 2 hrs (De-energized)					
	Impact resistance		98 m/s² in each X, Y, Z dire	ection, 3 times (De-energized)			
Standard		CE marking, UL (CSA)					
Accessory	Tie-rod	2 pcs.					

Power Block Specifications

	ľ	Model	EX9-PE1	
Connection block			Output block (EX9-OEP□)	
Connection block stations		ations	Output block: Max. 9 stations (excluding input blocks) Note 1)	
Power supply fo		Power supply voltage	22.8 to 26.4 VDC	
output and inter		Internal power consumption	20 mA or less	
Supply current			Max. 3.1 A (When using with 3.0 to 3.1 A, the ambient temperature should not exceed 40°C, and do not bundle the cable.)	
	Encl	losure	IP67	
	Ope	rating temperature range	−10 to 50°C	
	Ope	rating humidity range	35 to 85%RH (with no condensation)	
Environmental resistance	Withstand voltage		1500 VAC for 1 min. between external terminals and FG	
	Insu	lation resistance	10 $\text{M}\Omega$ or more (500 VDC) between external terminals and FG	
	Vibr	ation resistance	10 to 150 Hz with a 0.35 mm amplitude or 49 m/s² in each X, Y, Z direction for 2 hrs (De-energized)	
Impact resistance		act resistance	98 m/s ² in each X, Y, Z direction, 3 times (De-energized)	
Standard			CE marking, UL (CSA)	
Accessory		Tie-rod	2 pcs.	
		Waterproof cap (for M12 connector socket)	1 pc. (EX500-AWTS)	

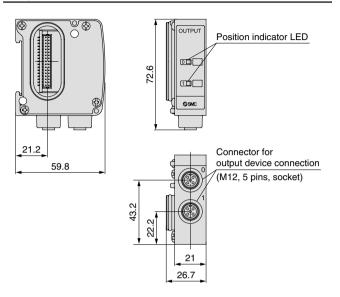
Note 1) The total number of connectable input/output/power block to the EX250 series SI unit (except for AS-Interface compliant) is 10 stations at the maximum.

Note 2) For detailed specifications other than the above, refer to the separate technical operation manual that can be downloaded from SMC's website (http://www.smcworld.com/).

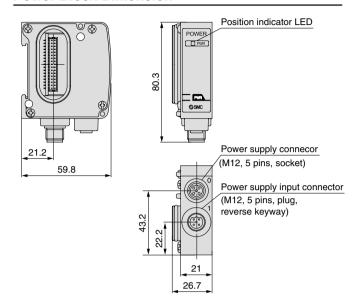


Options

Output Block Dimension

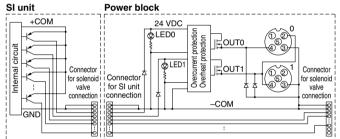


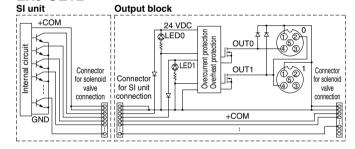
Power Block Dimension



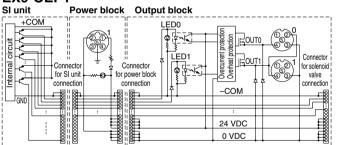
Circuit Diagram

EX9-OET1



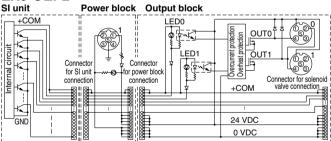


EX9-OEP1

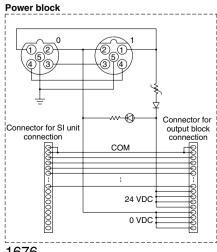


EX9-OEP2

EX9-OET2



EX9-PE1



We sell this product individually. Please place an order separately. You are requested to connect it to an SI unit and a valve manifold. When using the output block only (valve manifold is unused.), place an order for an end plate (1) EX9-EA) separately for connection.

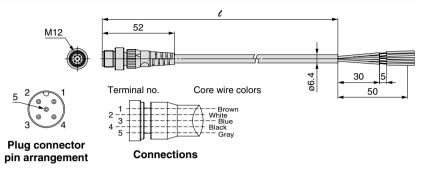
Refer to the separate technical instruction manual for connection, wiring, installation, optional goods and cable, etc.



(8) Cable with connector for output entry



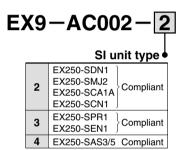
010 1000 [mm]
030 3000 [mm]



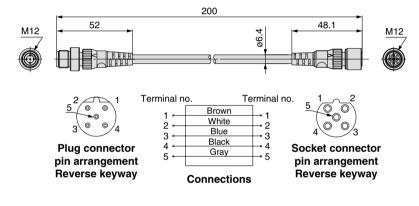
Note) Wiring to the output devices differs depending on the output style of the output block. For details, please refer to the technical documentation for the output block.

9 Power cable with connector

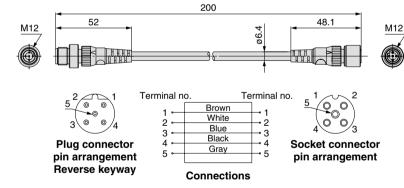
Connects between the power supply connector for the power block and the SI unit power supply connector, bridging the external power supply, which is supplied with the power block, to the SI unit.



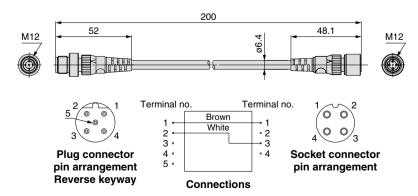








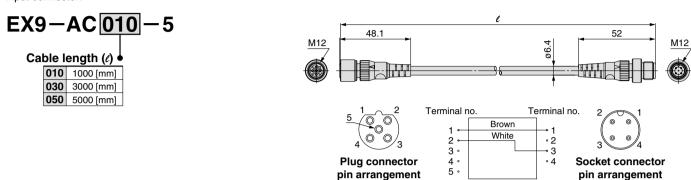
EX9-AC002-4



Options

10 AS-Interface power cable

Cable connecting between AS-Interface power supply line (for external devices) branch connector (M12) and the power block's power supply input connector.



11 End plate (Output side)

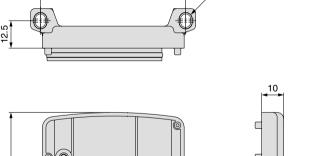
The plate connected on the output block side in order to connect or fix between the SI unit and the input/output/power block when the valve manifold is not used.

Mounting hole for 2 x M4

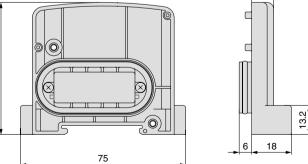
Reverse keyway



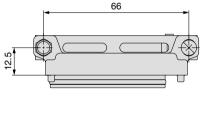
EX9-EA03



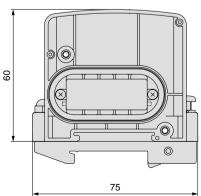
66

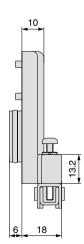


EX9-EA04



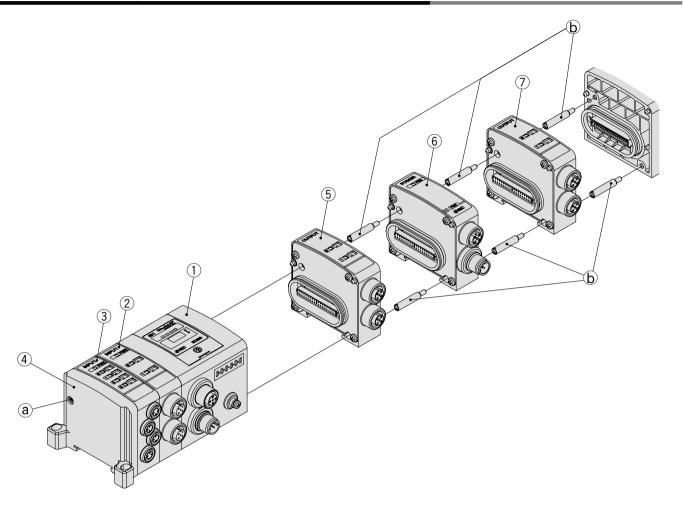
Connections





9

How to Increase Input/Output Blocks, Procedure Drawing



Parts List

No.	Description	Part no.	Note
1	SI unit	EX250-S□	For details, refer to pages 1664 to 1667.
2	Input block (M12, 2 inputs)	EX250-IE1	PNP/NPN switchable
3	Input block (M8, 4 inputs)	EX250-IE3	PNP/NPN switchable
4	End plate (Input side)	EX250-EA1	EA2: DIN rail mounting
5	Output block (For low-wattage load)	EX9-OET□	1: PNP output, 2: NPN output Note)
6	Power block	EX9-PE1	For EX9-OEP□
7	Output block (For high-wattage load)	EX9-OEP□	1: PNP output, 2: NPN output Note)

Note) Refer to page 1674 for the applicable SI unit for each output block.

How to increase the input block, and output block (power block)

- ① Loosen the hexagon socket head cap screws ⓐ (2 locations) which are fixing the end plate of the valve manifold.
- 2 Separate the section to be installed additionally.
- 3 Add and increase the attached tie-rod (b) (2 pcs per block) to the increased block respectively and pass through a block by the tie-rod.

Increased section: Input block ······· Between the left side of the SI unit and the end plate : Output (power) block ······ Between the right side of the SI unit and the valve

- ④ Fix by loosening the hexagon socket head cap screw ⓐ, paying attention to avoid the gap between eack block. (0.6 N⋅m)
- * In the case of the DIN rail manifold, prepare the DIN rail long enough to ensure the extended length, because the length of the manifold is increased by a 21 mm per block addition. Please contact SMC for the DIN rail's part number and its specifications.

