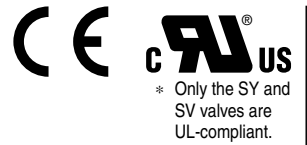## Type 3 Integrated input-output type

Fieldbus System (For Input/Output)

EX250 Series

Compatible Protocols

DeviceNet™ PROFIBUS® CC-Link ASI INTERFACE

CANopen EtherNet/IP™

Made to Order ▶ Modbus CC-Link IE Field™

C E c℞US
∗ Only the SY and SV valves are UL-compliant.

★**Enclosure IP67**
★**Maximum 32 inputs/32 outputs**
★**Sensors with M8/M12 connectors can be connected.**

Manifold Solenoid Valves
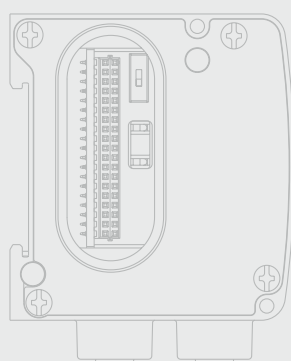
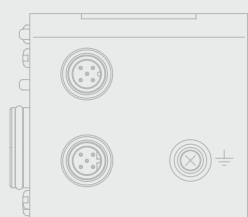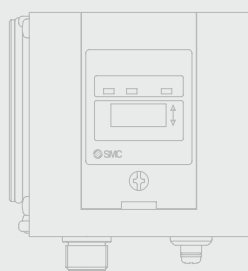**SY3000/5000/7000**

VQC1000/2000/4000/5000

S0700

SV1000/2000/3000

SMC

CONTENTS

Type 3 **Integrated input-output type**

Fieldbus System (For Input/Output)
EX250 Series

INPUT
PWR

SMC

Fieldbus System
For Input/Output
EX250 Series CE ℅ us

* Only the SY and
   SV valves are
   UL-compliant.

Parts Structure
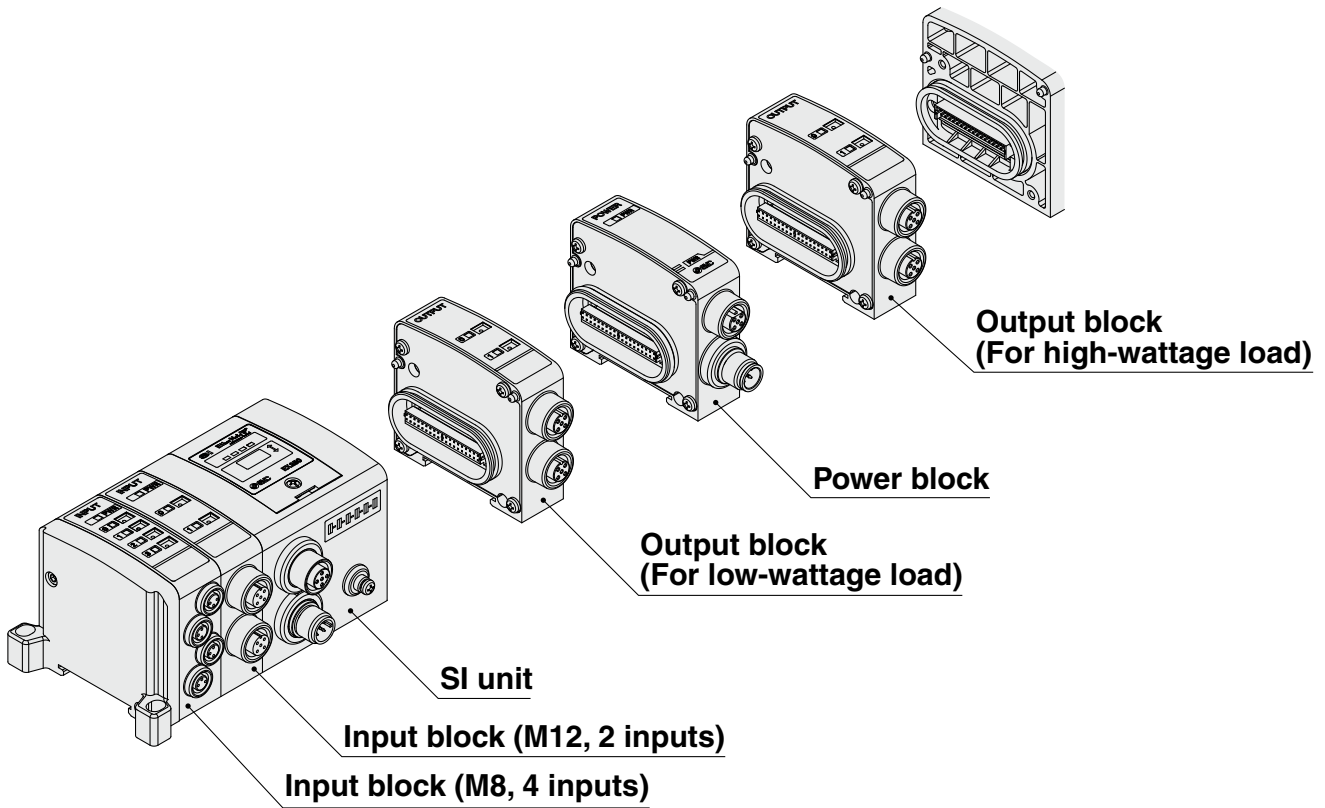
**Output block
(For high-wattage load)**

Power block

**Output block
(For low-wattage load)**

SI unit

Input block (M12, 2 inputs)

Input block (M8, 4 inputs)

SI Unit

Input block

Output block

SI unit

Power block

Input block

Output block

SI unit

How to Order

EX250 - S DN1 - ☐

● **Made to Order ➡ p. 167**
DeviceNet™ 7/8 inch connector

● **Protocol**

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

∗1 DN1's occupied points are 32 inputs and 32 outputs, while
    DN1-X102 has 48 inputs and 32 outputs.

SMC
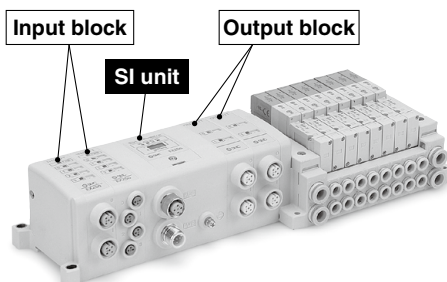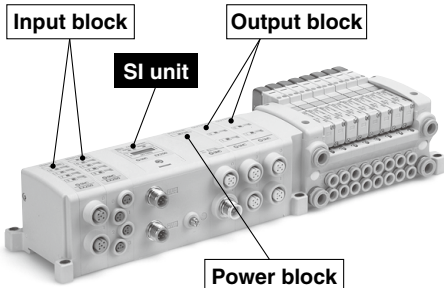
EX250 Series

Specifications

Model			EX250-SDN1	EX250-SDN1-X102 [*1]	EX250-SPR1	EX250-SMJ2	EX250-SCA1A	EX250-SEN1	EX250-SAS3/5	EX250-SAS7/9
Communication	Applicable system	Protocol	DeviceNet™		PROFIBUS DP	CC-Link	CANopen	EtherNet/IP™	AS-Interface	
		Version[*2]	Release 2.0		DP-V0	Ver.1.10	CiA DS-301 V4.02 CiA DS-401	Release 1.0	Ver. 2.11 (Standard Address Mode)	
	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	10 M/100 Mbps	167 kbps	
	Configuration file[*3]		EDS file		GSD file	CSP+ file	EDS file	EDS file	—	—
	I/O occupation area (Inputs/Outputs)		32/32	48/32	32/32	64/64 (2 stations, remote device station)	32/32	48/32	SAS3: 8/8 (2 slave units) SAS5: 4/4	SAS7: 8/8 (2 slave units) SAS9: 4/4
	Applicable function		QuickConnect™		—	—	—	—	—	—
	Terminating resistor		Not provided				Not provided (Not required)			
Power supply voltage	For control		11 to 25 VDC (Supplied by DeviceNet™ circuit)		24 VDC ±20%		18 V to 30 VDC (Supplied by CANopen circuit)	24 VDC ±20%	26.5 to 31.6 VDC (Supplied by AS-i circuit)	[*4] 26.5 to 31.6 VDC (Supplied by AS-i circuit)
	For sensors		24 VDC ±20%				24 VDC±20%			
	For valve		24 VDC +10%/–5%							
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
Input	Number of inputs		32 inputs (Based on input block connection)						SAS3: 8 inputs SAS5: 4 inputs	SAS7: 8 inputs SAS9: 4 inputs
	Supply voltage		24 VDC							
	Supply current		1.0 A or less						SAS3: 240 mA or less SAS5: 120 mA or less	[*5]
Output	Output type		Source/PNP (Negative common)			Sink/NPN (Positive common)	Source/PNP (Negative common)			
	Number of outputs		32 outputs						SAS3: 8 outputs SAS5: 4 outputs	SAS7: 8 outputs SAS9: 4 outputs
	Load		Solenoid valve with surge voltage suppressor 24 VDC, 1.5 W or less (SMC) Output block Power block							
	Supply voltage		24 VDC							
	Supply current		2.0 A or less						SAS3: 500 mA or less SAS5: 250 mA or less	[*5]
	Fail safe		HOLD/CLEAR (Switch setting)			CLEAR	HOLD/CLEAR (Switch setting)			
Environmental resistance	Enclosure		IP67							
	Operating temperature range		5 to +45°C				−10 to +50°C	5 to +45°C		
	Operating humidity range		35 to 85%RH (No condensation)							
	Withstand voltage		500 VAC for 1 minute between whole external terminal and FG							
	Insulation resistance		10 MΩ or more (500 VDC) between whole external terminal and FG							
Standards			CE marking, UL (CSA)							
Weight			250 g							
Accessory[*6]			Tie-rod 2 pcs.							

∗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. The 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.

∗2 Please note that the version is subject to change.

∗3 The setting file can be downloaded from SMC website, http://www.smcworld.com

∗4 Since the 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.

∗5 Since the 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 170 for details.)
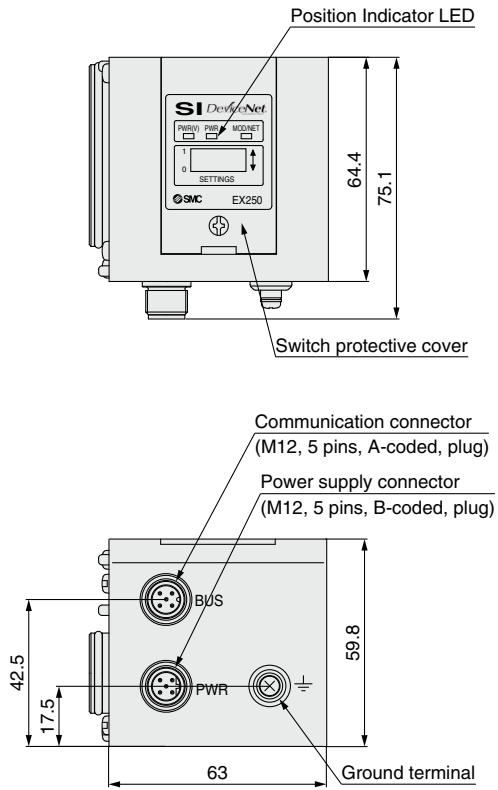EX250-SAS7 ··· Max. 240 mA, EX250-SAS9 ··· Max. 120 mA

∗6 When the SI unit is mounted to the manifold when shipped, accessories are shipped together with it.
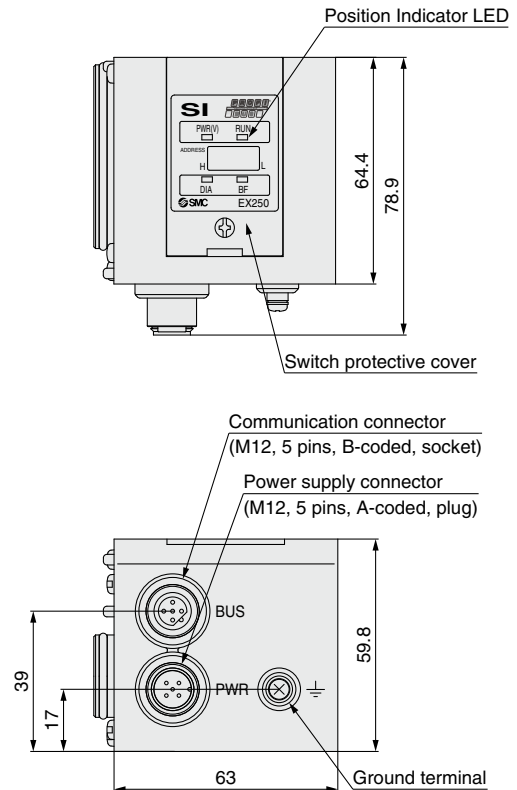
∗7 For detailed specifications other than the above, refer to the operation manual that can be downloaded from SMC website, http://www.smcworld.com

SMC
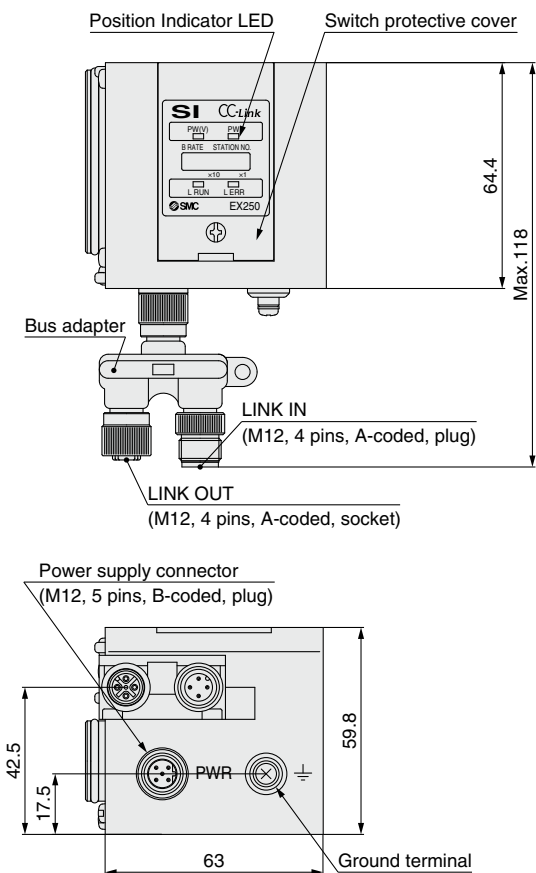
Dimensions/Parts Description

EX250-SDN1 (DeviceNet™)

Position Indicator LED

SI *DeviceNet*
PWR(V) PWR(V) MOD/NET
0 SETTINGS
SMC EX250

64.4
75.1

Switch protective cover

Communication connector
(M12, 5 pins, A-coded, plug)

Power supply connector
(M12, 5 pins, B-coded, plug)

BUS

PWR

42.5
17.5
59.8

63

Ground terminal

EX250-SPR1 (PROFIBUS DP)

Position Indicator LED

SI
PWR(V) RUN
ADDRESS
H
DIA BF
SMC EX250

64.4
78.9

Switch protective cover

Communication connector
(M12, 5 pins, B-coded, socket)

Power supply connector
(M12, 5 pins, A-coded, plug)

BUS

PWR

39
17
59.8

63

Ground terminal

EX250-SMJ2 (CC-Link)

Position Indicator LED   Switch protective cover

SI *CC-Link*
PW(V) PWR
B·RATE STATION NO.
×10 ×1
L RUN L ERR
SMC EX250

64.4
Max.118

Bus adapter

LINK IN
(M12, 4 pins, A-coded, plug)

LINK OUT
(M12, 4 pins, A-coded, socket)

Power supply connector
(M12, 5 pins, B-coded, plug)

PWR

42.5
17.5
59.8

63

Ground terminal

Type 1	EX260
	EX123/124/126
Type 2	EX500
	EX600
Type 3	EX245
	EX250
	EX120/121/122
Type 1	EX140
	EX180
Type 2	EX510
	M8/M12
	ATEX

SMC

150

EX250 Series

Dimensions/Parts Description

EX250-SCA1A (CANopen)

Position indicator LED

Switch protective cover

64.4
75.1

Communication connector
(M12, 5 pins, A-coded, plug)

Power supply connector
(M12, 5 pins, B-coded, plug)

BUS

PWR

Ground terminal

42.5
17.5
59.8
63

EX250-SEN1 (EtherNet/IP™)

Position indicator LED

Switch protective cover

64.4
78.9

Communication connector
(M12, 4 pins, D-coded, socket)

Power supply connector
(M12, 5 pins, A-coded, plug)

BUS

PWR

Ground terminal

39
17
59.8
63

EX250-SAS7/9
(AS-Interface 1 power supply system)

Position indicator LED

Switch protective cover

64.4
75.1

Communication connector
(M12, 4 pins, A-coded, plug)

BUS

42.5
59.8
63

EX250-SAS3/5
(AS-Interface 2 power supply systems)

Position indicator LED

Switch protective cover

64.4
75.1

Communication connector
(M12, 4 pins, A-coded, plug)

Power supply connector
(M12, 4 pins, A-coded, plug)

BUS

PWR

Ground terminal

42.5
17.5
59.8
63

SMC

LED Indicator

EX250-SDN1 (DeviceNet™)

PWR(V):
Power supply for valve

MOD/NET:
Connection state

PWR:
Input/Power supply
for control

EX250-SPR1 (PROFIBUS DP)

PWR(V):
Power supply for valve

RUN:
SI unit state

DIA:
Self diagnosis

BF: Bus failure

EX250-SMJ2 (CC-Link)

PWR(V):
Power supply for valve

PW:
Input/Power supply for control

L RUN:
Communication
state

L ERR:
Communication
error

EX250-SCA1A (CANopen)

PWR(V):
Power supply for valve

CAN:
Communication state

PWR:
Input/Power supply
for control

EX250-SEN1 (EtherNet/IP™)

SOL:
Power supply for valve

MS: SI unit state

PWR:
Input/Power supply
for control

NS:
Communication
state

EX250-SAS7/9
(AS-Interface 1 power supply system)

PWR:
Power supply for control

IN-ERR:
Overcurrent detection

COM-ERR:
Error

EX250-SAS3/5
(AS-Interface 2 power supply systems)

PWR:
Power supply for control

IN-ERR:
Overcurrent detection

AUX:
Power supply
for valve

COM-ERR:
Error

Type 1	EX260
	EX123/124/126
Type 2	EX500
	EX600
Type 3	EX245
	EX250
	EX120/121/122
Type 1	EX140
	EX180
Type 2	EX510
	M8/M12
	ATEX

EX250 Series

Input Block

Input block

SI unit

Output block

Power block

Input block

SI unit

Output block

EX250−IE 1

● **Block type**

1	M12 connector, 2 inputs
2	M12 connector, 4 inputs
3	M8 connector, 4 inputs

Specifications

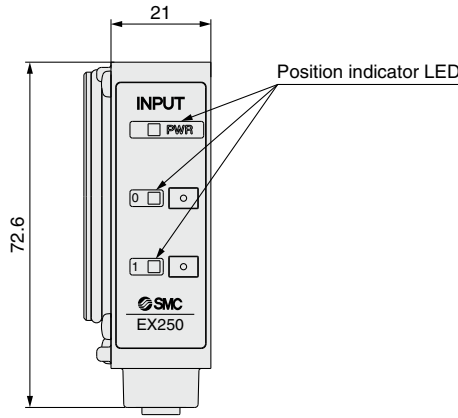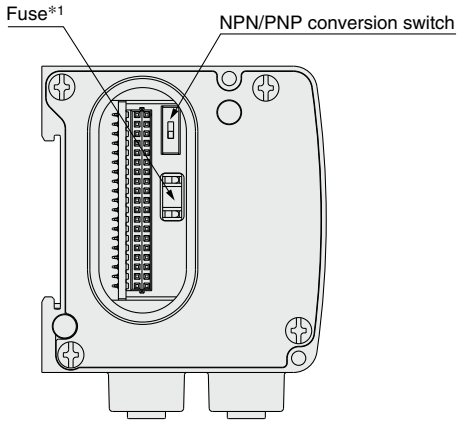| Model		EX250-IE1	EX250-IE2	EX250-IE3
Input	Input type	PNP/NPN sensor input (switched using a switch)		
	Number of inputs	2 inputs	4 inputs	
	Input device supply voltage	24 VDC		
	Input device supply current	Max. 30 mA/Point[1]		
	Rated input current	Approx. 8 mA		
Environmental resistance	Enclosure	IP67		
	Operating temperature range	−10 to +50°C		
	Operating humidity range	35 to 85%RH (No condensation)		
	Withstand voltage	500 VAC for 1 minute between whole external terminal and FG		
	Insulation resistance	10 MΩ or more (500 VDC) between whole external terminal and FG		
Standards		CE marking, UL (CSA)		
Weight		90 g		
Accessory[2]		Tie-rod 2 pcs.		

∗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.
∗2 When the SI unit is integrated into manifold, its tie-rod is also incorporated at the time of shipment.
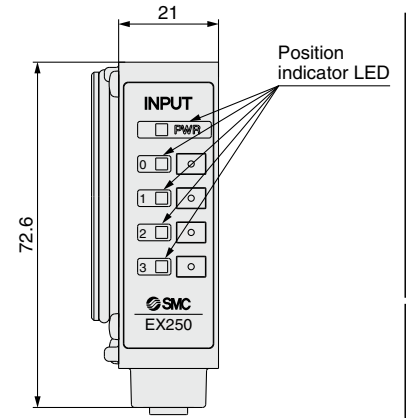∗ For detailed specifications other than the above, refer to the operation manual that can be downloaded from SMC website, http://www.smcworld.com

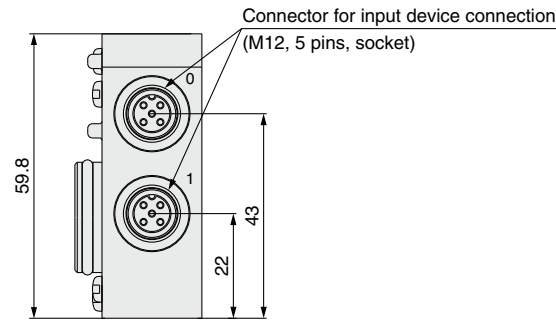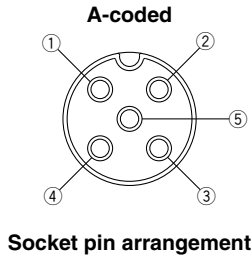**SMC**

Dimensions/Parts Description
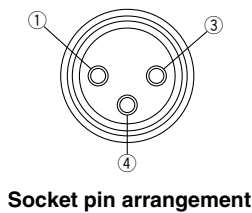
EX250-IE1, EX250-IE2

Fuse*1

NPN/PNP conversion switch

21

Position indicator LED

INPUT

PWR

72.6

EX250-IE1

21

Position indicator LED

INPUT

PWR

72.6

EX250-IE2

A-coded

Socket pin arrangement

59.8

Connector for input device connection
(M12, 5 pins, socket)

43

22

EX250-IE3

Fuse*1

NPN/PNP conversion switch

21

Position indicator LED

INPUT

PWR

67.4

Socket pin arrangement

5.9

59.8

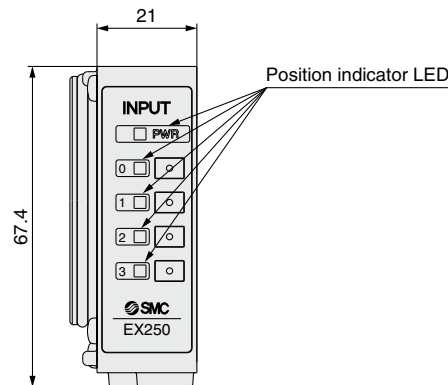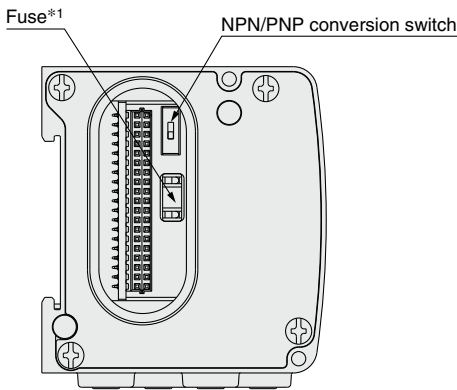Connector for input device connection
(M12, 3 pins, socket)

46.5

35.5

24.5

13.5
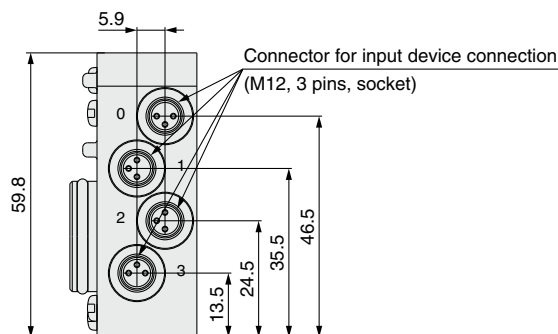
*1 Fuse for overcurrent protection
  If addressing the possible cause of a problem, even when the fuse is blown, it can be reinstated by replacing with a fuse as shown in options, page 157

EX260
EX123/124/126
EX500
EX600
EX245
EX250
EX120/121/122
EX140
EX180
EX510
M8/M12
ATEX

Type 1
Type 2
Type 3
Type 1
Type 2

EX250 *Series*

LED Indicator

EX250-IE1

PWR: Power supply for sensor

0, 1: Sensor input signal

EX250-IE2

PWR: Power supply for sensor

0 to 3: Sensor input signal

EX250-IE3

PWR: Power supply for sensor

0 to 3: Sensor input signal
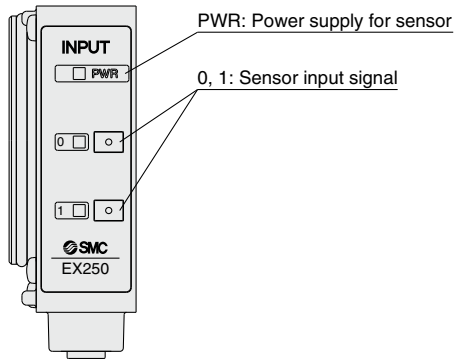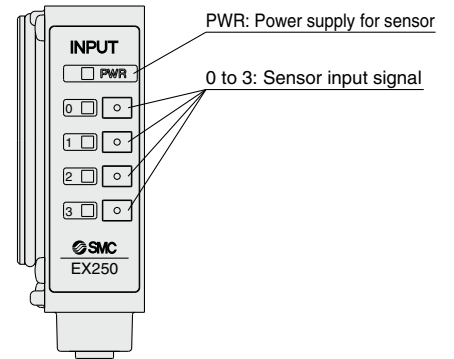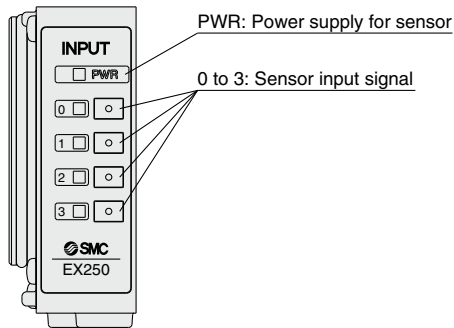
Internal Circuit

EX250-IE1
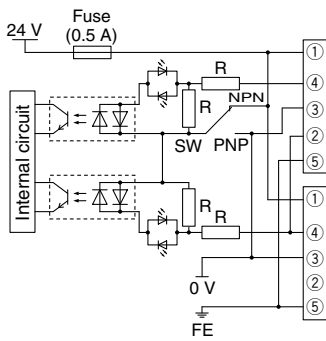
EX250-IE2
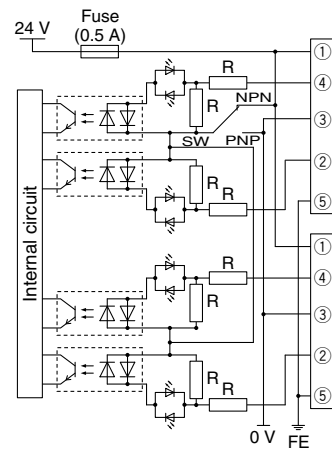
EX250-IE3
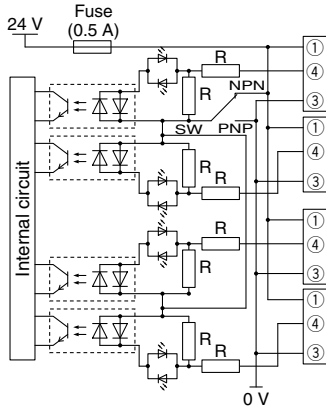
EX250 Series
Accessories

Example of Connections

Type 1   EX260

EX123/124/126

Type 2   EX500

EX600

Type 3   EX245

EX250

EX120/121/122

Type 1   EX140

EX180

Type 2   EX510

M8/M12

ATEX

Connection example of an SI unit compatible with DeviceNet™, CANopen, CC-Link

❷ **End plate (Input side)**
→p. 157

SI unit

Input block

❹ **Power block**
→p. 158

❸ **Output block**
→p. 158

❿ **Seal cap**
→p. 165

⓫ **Power supply cable**
→p. 166

❻ **Communication cable**
→p. 162

❽ **Power supply cable**
(For SI unit/For power block)
→p. 164
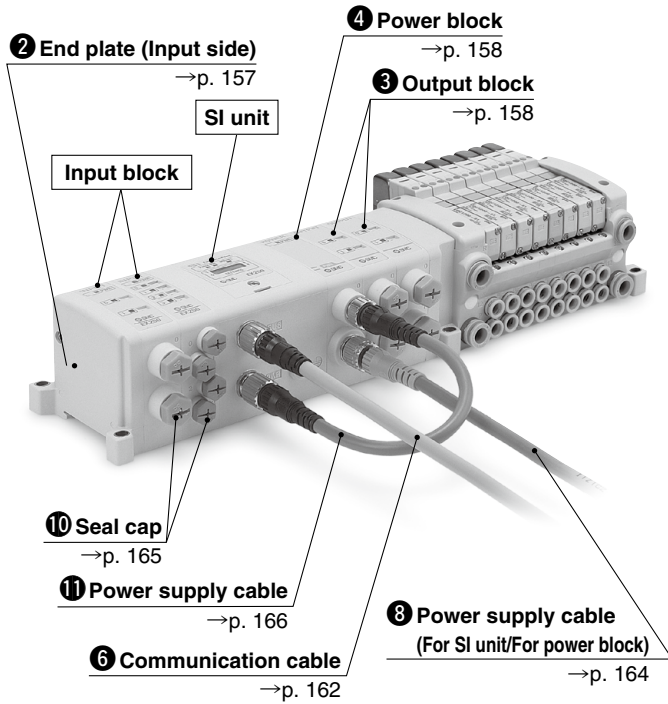
∗ The SI unit pictured above is compatible with DeviceNet™.

Connection example of an SI unit compatible with EtherNet/IP™, PROFIBUS DP

❷ **End plate (Input side)**
→p. 157

SI unit

Input block

❸ **Output block**
→p. 158

❿ **Seal cap**
→p. 165

❻ **Communication cable**
→p. 163

❾ **Cable for output entry**
→p. 165

❽ **Power supply cable**
(For SI unit/For power block)
→p. 164
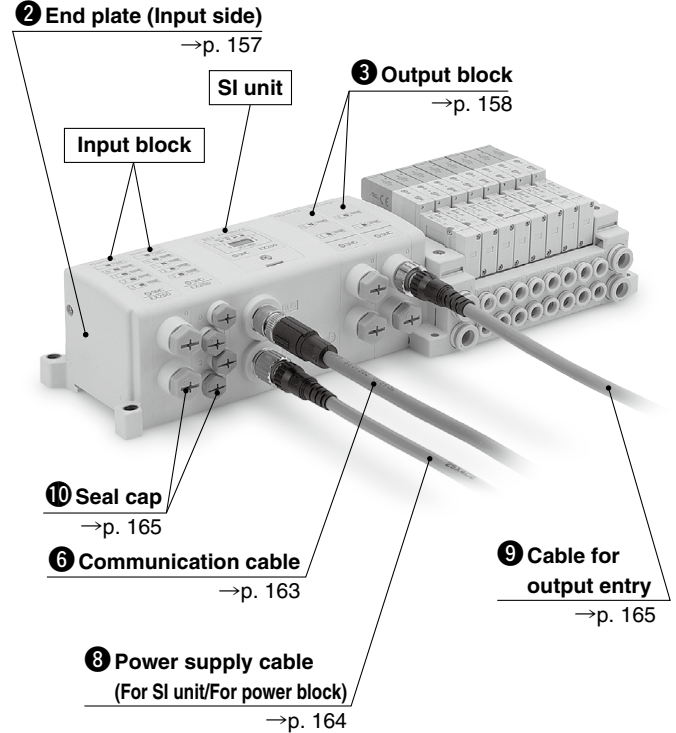
∗ The SI unit pictured above is compatible with PROFIBUS DP.

Connection example of an SI unit compatible with AS-Interface
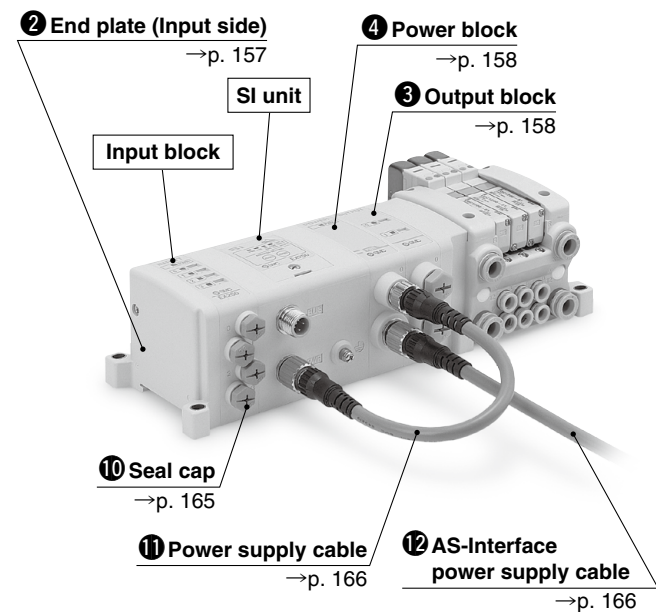
❷ **End plate (Input side)**
→p. 157

SI unit

Input block

❹ **Power block**
→p. 158

❸ **Output block**
→p. 158

❿ **Seal cap**
→p. 165

⓫ **Power supply cable**
→p. 166

⓬ **AS-Interface power supply cable**
→p. 166

SMC

156

EX250 Series

❶ 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 Ω

Fuse
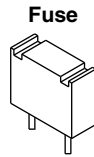
❷ End Plate (Input side)

EX250-EA 1

● Mounting specification

1	Direct mounting
2	DIN rail mounting

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

<Example of use>

End plate (Input side)

EX250-EA1

64.4

18   12.5

Mounting hole for 2 x M4

66

60

10

13.2

75   18

EX250-EA2

64.4

18   12.5

M4 Clamping screw
Tightening torque 0.4 to 0.6 N·m

66

60

10

13.2

75   18

◆SMC

Input block
Power block
SI unit
Output block
Power supply
Output device
Solenoid valve
Others
Indicator light, Relay
Buzzer
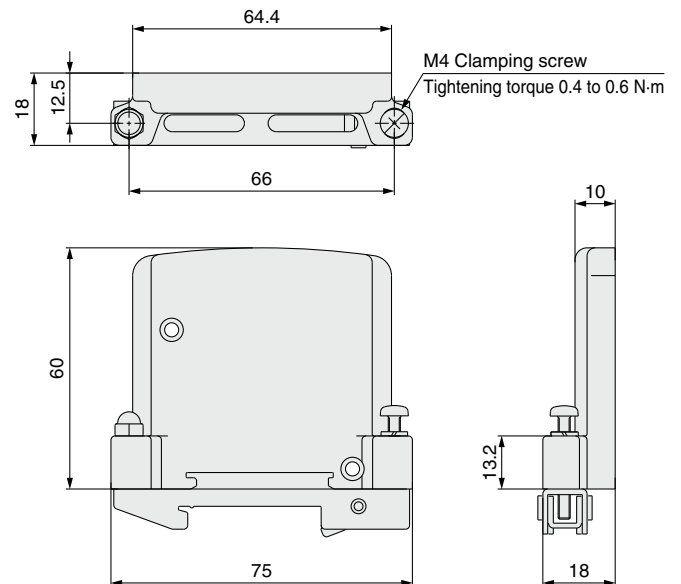
- **Able to retrofit to the valve manifold, using the unused points**
- **2-output (M12 connector)**
- **Positive/Negative common available as standard**
- **Able to drive by 0.5 A per point**

You are requested to connect it to an SI unit and a valve manifold. For detailed specifications, refer to the operation manual that can be downloaded from SMC website, http://www.smcworld.com

❸ Output Block

EX9-OE T 1
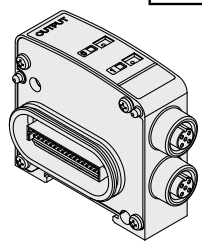
Output specification

1	Source/PNP (Negative common)
2	Sink/NPN (Positive common)

Power supply type

T	Internal power supply method (for low-wattage load)
P	Integrated power supply method (for high-wattage load)*1

*1 Required to connect with a power block

SI Unit/Part Nos.

SI unit part no.	Output	Applicable model
EX250-SDN1 **EX250-SPR1** **EX250-SAS□** **EX250-SCA1A** **EX250-SEN1**	Source/PNP (Negative common)	EX9-OET1 EX9-OEP1
EX250-SMJ2	Sink/NPN (Positive common)	EX9-OET2 EX9-OEP2

Option/Part Nos.

Description	Part no.	Applicable model OET□	Applicable model OEP□	Note
Seal cap	**EX9-AWTS**	○	○	Refer to page 165. Order separately: 10 pcs. included
Cable for output entry	**EX9-AC□-7**	○	○	Refer to page 165. Order separately.
Power block	**EX9-PE1**		○	Refer to page 159. Order separately.

❹ Power Block

EX9-PE1
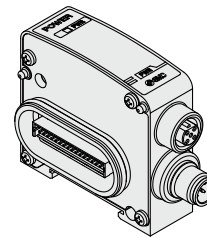
Option/Part Nos.

Description	Part no.	Note
Seal cap	**EX9-AWTS**	Refer to page 165. Order separately: 10 pcs. included
Power supply cable (For SI unit/For power block)	**EX9-AC□-1**	Refer to page 164. Order separately.
Power supply cable (For connecting the SI unit to the power block)	**EX9-AC002-2** **EX9-AC002-3** **EX9-AC002-4**	Refer to page 166. Order separately.
AS-Interface power supply cable	**EX9-AC□-5**	Refer to page 166. Order separately.

EX260
EX123/124/126
Type 1

EX500
Type 2

EX600
EX245
Type 3

EX250

EX120/121/122
EX140
Type 1

EX180

EX510
Type 2

M8/M12

ATEX
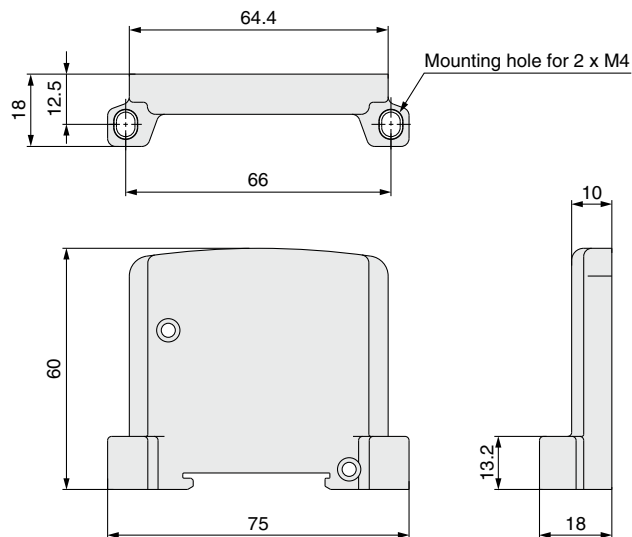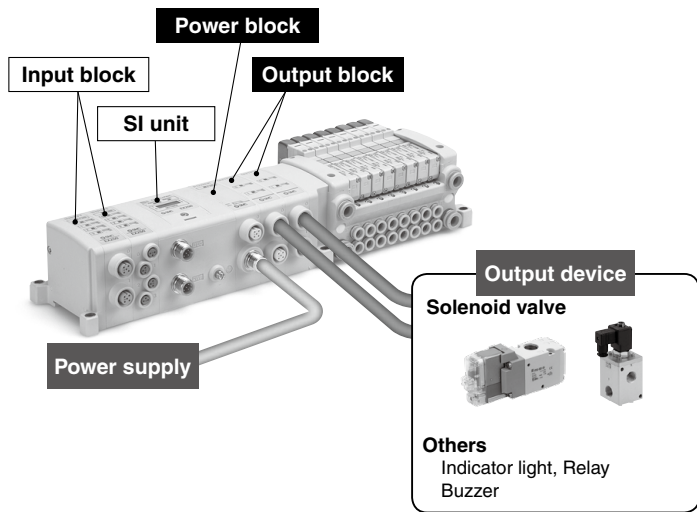
EX250 *Series*

❸ Output Block/❹ Power Block

Output Block Specifications

Model	EX9-OET1	EX9-OET2	EX9-OEP1	EX9-OEP2
Output connector		M12 connector (5 pins)		
Internal current consumption		40 mA or less		
Output Output type	Source/PNP (Negative common)	Sink/NPN (Positive common)	Source/PNP (Negative common)	Sink/NPN (Positive common)
Number of outputs		2 outputs		
Power supply method	Internal power supply method		Integrated power supply method (Power block: supplied from EX9-PE1)	
Output device supply voltage		24 VDC		
Output device supply current	Max. 62 mA/Point (1.5 W/Point)		Max. 0.5 A/Point (12 W/Point)	
Environmental resistance Enclosure		IP67		
Operating temperature range		−10 to +50°C		
Operating humidity range		35 to 85%RH (No condensation)		
Withstand voltage		1500 VAC for 1 minute between whole external terminal and FG		
Insulation resistance		10 MΩ or more (500 VDC) between whole external terminal and FG		
Standards		CE marking, UL (CSA)		
Weight		120 g		
Accessory Tie-rod		2 pcs.		

Power Block Specifications

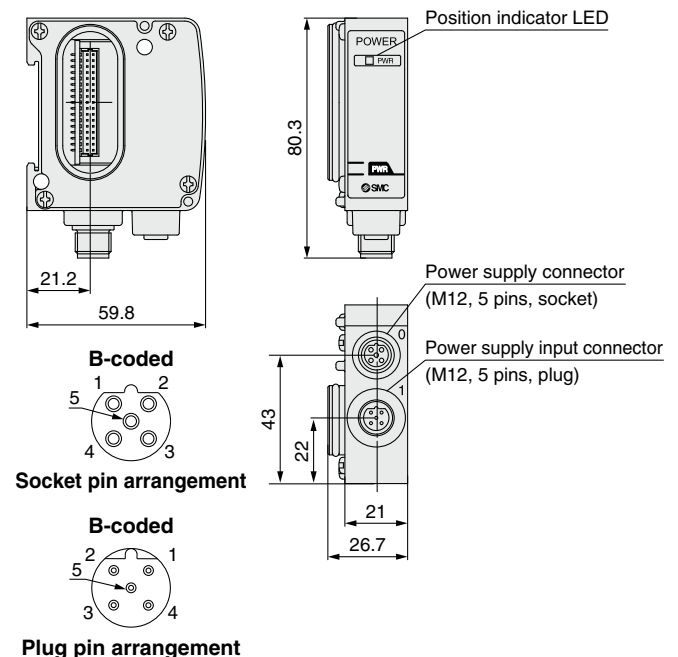| Model	EX9-PE1
Connection block	Output block (EX9-OEP☐)
Connection block stations	Output block: Max. 9 stations (excluding input blocks)*1
Power supply for output and internal control Power supply voltage	22.8 to 26.4 VDC
Internal power consumption	20 mA or less
Supply current	Max. 3.1 A (When using with 3.0 to 3.1 A, the ambient temperature should not exceed 40°C, and do not bundle the cable.)
Environmental resistance Enclosure	IP67
Operating temperature range	−10 to +50°C
Operating humidity range	35 to 85%RH (No condensation)
Withstand voltage	1500 VAC for 1 minute between whole external terminal and FG
Insulation resistance	10 MΩ or more (500 VDC) between whole external terminal and FG
Standards	CE marking, UL (CSA)
Weight	120 g
Accessory Tie-rod	2 pcs.
Seal cap (for M12 connector socket)	1 pc. (EX9-AWTS)

*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.
*   For detailed specifications other than the above, refer to the operation manual that can be downloaded from SMC website, http://www.smcworld.com

Output Block Dimensions/Parts Description

A-coded

Socket pin arrangement

Power Block Dimensions/Parts Description

B-coded

Socket pin arrangement

B-coded

Plug pin arrangement

SMC
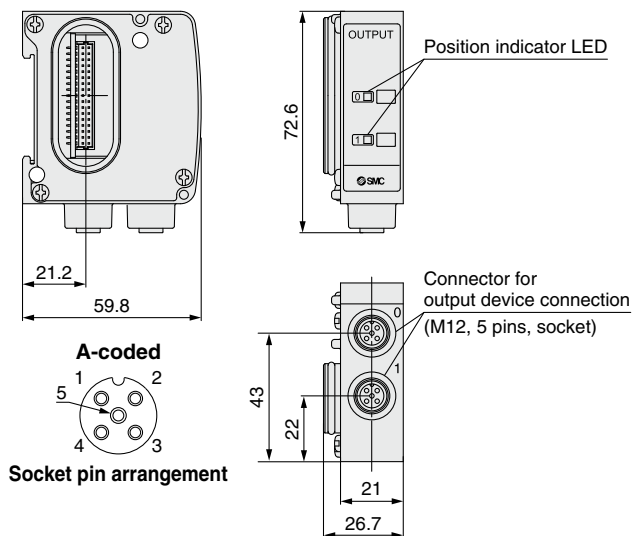
❸ Output Block/❹ Power Block

Circuit Diagram

EX9-OET1
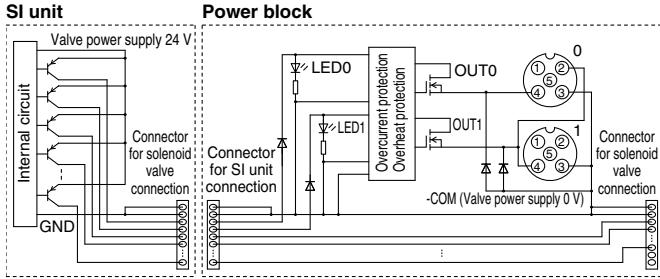
EX9-OET2
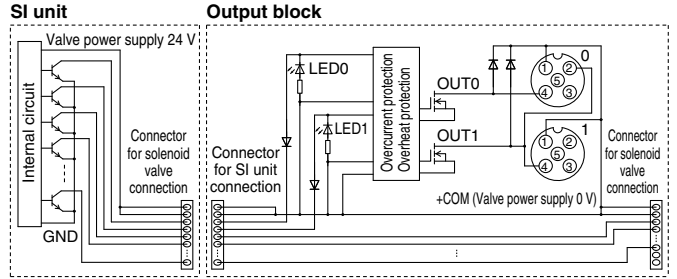
EX9-OEP1

EX9-OEP2
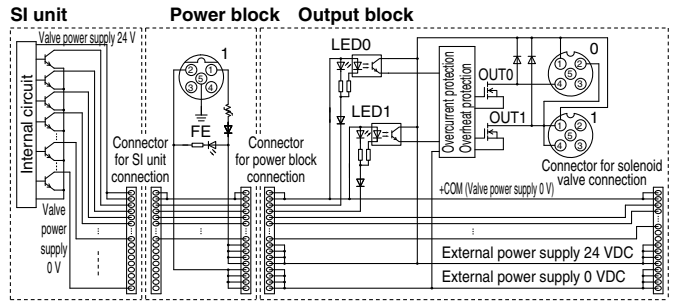
EX9-PE1
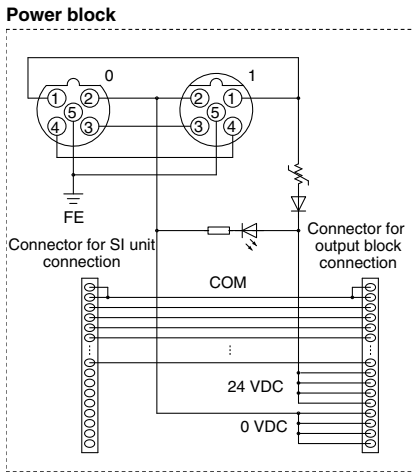
∗ When the valve which supplies power to the SI unit is turned OFF, the output of the output block (EX9-OE□) remains OFF.

EX250 *Series*

❺ End Plate (Output side)

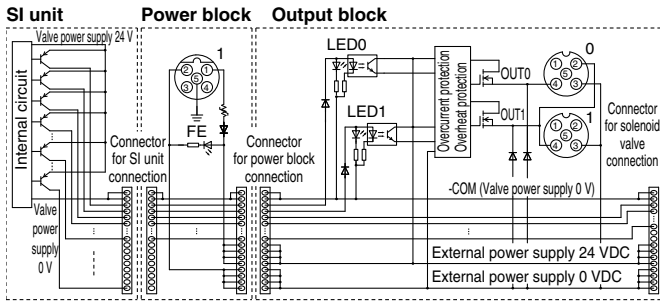Use the end plate when a valve manifold is not connected.

EX9-EA 03

Mounting specification

03	Direct mounting
04	DIN rail mounting

<Example of use>

End plate (Output side)

EX9-EA03

66

Mounting hole for 2 x M4

12.5

60

75

10

13.2

6 | 18

EX9-EA04

66

M4 Clamping screw
Tightening torque 0.4 to 0.6 N·m

12.5

60

75

10

13.2

6 | 18

SMC

SI unit
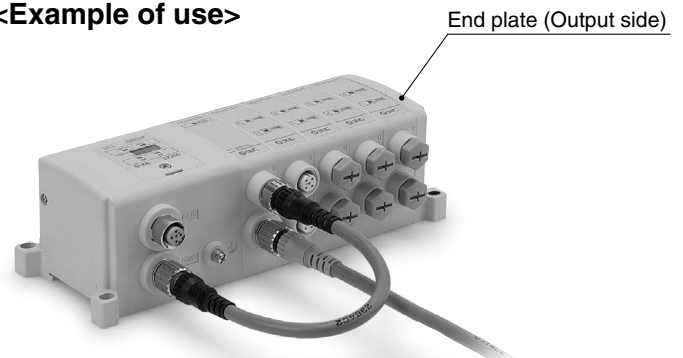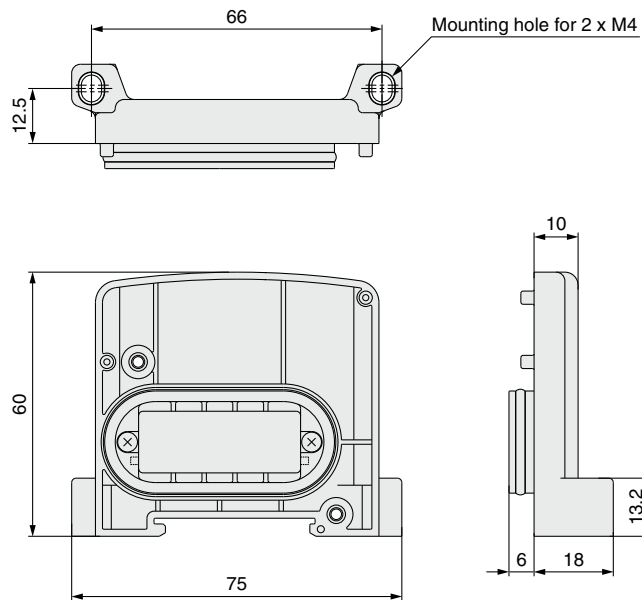
Communication cable
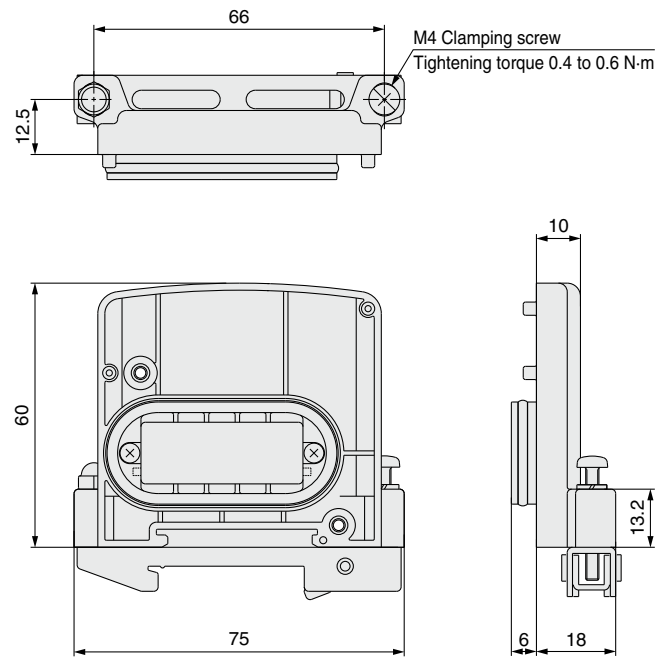
❻ Communication Cable

For CC-Link

PCA-1567720
(Socket)

*1

Socket connector pin arrangement
A-coded (Normal key)
*1 Number of holes: 5, Total number of pins: 4

PCA-1567717
(Plug)
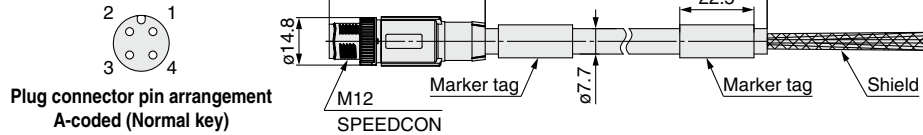
Plug connector pin arrangement
A-coded (Normal key)

Made to Order

Made to Order

| Cable length | 10000 mm | **p. 167** |

44.5 | 5000 | 50
ø14.8
M12
SPEEDCON
Marker tag | ø7.7 | Marker tag | Shield

47.3 | 5000 | 50
ø14.8
22.5
M12
SPEEDCON
Marker tag | ø7.7 | Marker tag | Shield

Terminal no. | Core wire color

2 1
3
4
White: DB
Blue: DA
: SLD
Yellow: DG

Connections

Item		Specifications
Cable O.D.		ø7.7 mm
Conductor nominal cross section	**Data pair**	0.5 mm²/AWG20
	Drain	0.34 mm²/AWG20
Wire O.D. (Including insulator)		2.55 mm
Min. bending radius (Fixed)		77 mm

EX9-AC 005 MJ-SSPS (With connector on both sides (Socket/Plug))

●Cable length (L)

005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm

44.5 | **L** | 47.3
ø14.8
Metal parts | 22.5 | Metal parts | ø14.8
M12
SPEEDCON
Marker tag | ø7.7 | Marker tag | M12
SPEEDCON

1 2
*1
4 3

**Socket connector
pin arrangement
A-coded (Normal key)**
*1 Number of holes: 5,
Total number of pins: 4

Terminal no.		Terminal no.	Core wire color	Signal name CC-Link
4		4	Blue	DA
2		2	White	DB
3		3	Yellow	DG
1		1	Shield	SLD

Metal parts | Shield | Metal parts

Connections

2 1
3 4

**Plug connector
pin arrangement
A-coded (Normal key)**

Item		Specifications
Cable O.D.		ø7.7 mm
Conductor nominal cross section	**Data pair**	0.5 mm²/AWG20
	Drain	0.34 mm²/AWG22
Wire O.D. (Including insulator)		2.55 mm
Min. bending radius (Fixed)		77 mm

Type 1 | EX260
EX123/124/126
Type 2 | EX500
EX600
Type 3 | EX245
EX250
EX120/121/122
Type 1 | EX140
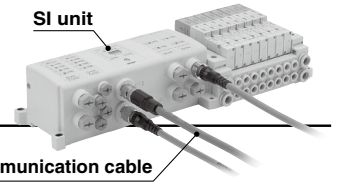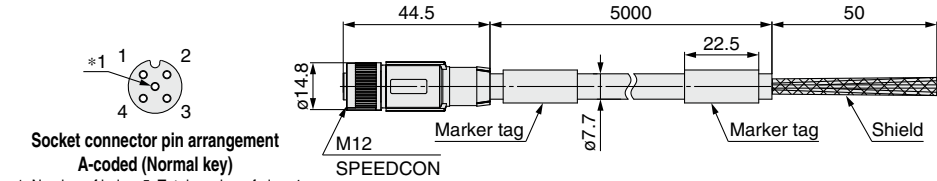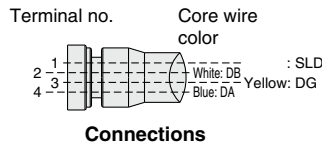EX180
Type 2 | EX510
M8/M12
ATEX

SMC

EX250 *Series*

SI unit

Communication cable

❻ Communication Cable
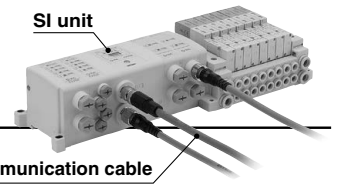
| For DeviceNet™ | For CANopen |

EX500-AC 050 -DN

● **Cable length (L)**

010	1000 mm
050	5000 mm

M12

ø7

ø14.9

40.7

L

50

A-coded

```
   1
5     2


4     3
```

**Socket
pin arrangement**

```
1
2
3
4
5
```
: DRAIN
Red: V+
Black: V-
White: CAN H
Blue: CAN L
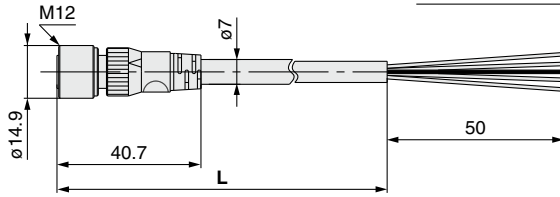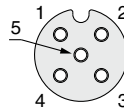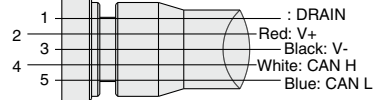
Connections

Item		Specifications
Cable O.D.		ø7 mm
Conductor nominal cross section	Power pair	0.3 mm²/AWG22
	Data pair	0.2 mm²/AWG24
Wire O.D. (Including insulator)	Power pair	1.5 mm
	Data pair	1.9 mm
Min. bending radius (Fixed)		60 mm

PCA-1557633
(Socket)

```
   1
5     2

4     3
```

**Socket connector pin arrangement
A-coded (Normal key)**

44.5

5000

50

22.5

ø14.8

ø6.7

M12
SPEEDCON

Marker tag

Marker tag

Terminal no.

Core wire color

```
1
2
3
4
5
```
: DRAIN
Red: V+   Black: V-
White: CAN H   Blue: CAN L

Connections

Made to Order

| Cable length | 10000 mm | **p. 167** |

Item		Specifications
Cable O.D.		ø6.7 mm
Conductor nominal cross section	Power pair	0.34 mm²/AWG22
	Data pair	0.25 mm²/AWG24
Wire O.D. (Including insulator)	Power pair	1.4 mm
	Data pair	2.05 mm
Min. bending radius (Fixed)		67 mm

EX9-AC 005 DN-SSPS (With connector on both sides (Socket/Plug))

● **Cable length (L)**

005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm

ø14.8

44.5

L

47.3

ø14.8

Metal parts

22.5

Metal parts

M12
SPEEDCON

Marker tag

ø6.7

Marker tag

M12
SPEEDCON

```
   1
5     2

4     3
```

**Socket connector
pin arrangement
A-coded (Normal key)**

Terminal no.	Core wire color	Signal name DeviceNet™	Terminal no.
1	Shield	DRAIN	1
2	Red	V+	2
3	Black	V–	3
4	White	CAN H	4
5	Blue	CAN L	5

Metal parts   Shield   Metal parts

Connections

```
   2
1     5

3     4
```

**Plug connector
pin arrangement
A-coded (Normal key)**

Item		Specifications
Cable O.D.		ø6.7 mm
Conductor nominal cross section	Power pair	0.34 mm²/AWG22
	Data pair	0.25 mm²/AWG24
Wire O.D. (Including insulator)	Power pair	1.4 mm
	Data pair	2.05 mm
Min. bending radius (Fixed)		67 mm

SMC

EX250 Series

❻ Communication Cable

For PROFIBUS DP

PCA-1557691
(Plug)

Plug connector pin arrangement
B-coded (Reverse key)

47.3   5000   50

22.5

ø14.8

ø7.8

M12
SPEEDCON

Marker tag

Marker tag

Connections

Terminal no.

Core wire color

2 — 1
3
4 — 5

Green: A Line
Red: B Line

Shield line is connected to the knurl.
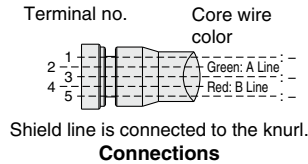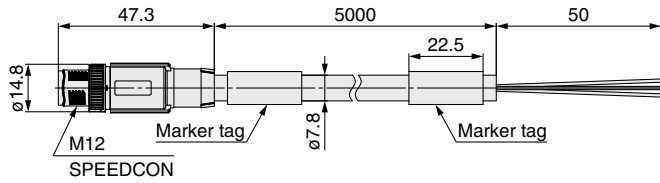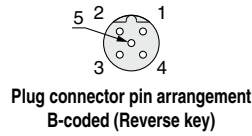
Item	Specifications
Cable O.D.	ø7.8 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	2.55 mm
Min. bending radius (Fixed)	78 mm

For EtherNet/IP™

EX9-AC 020 EN-PSRJ (Plug/RJ-45 connector)

Cable length (L)

010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm

M12

ø14.8

ø6.4

Metal parts   Metal parts   RJ-45

(47.3)   L   (44)

Plug connector
pin arrangement
D-coded

Signal name	Terminal no.		Terminal no.	Core wire color
TD+	1		1	White/Orange
RD+	2		2	Orange
TD–	3		3	White/Green
RD–	4		4	
			5	
	Metal parts		6	Green
			7	
			8	

Shield   Metal parts

Plug connector
pin arrangement
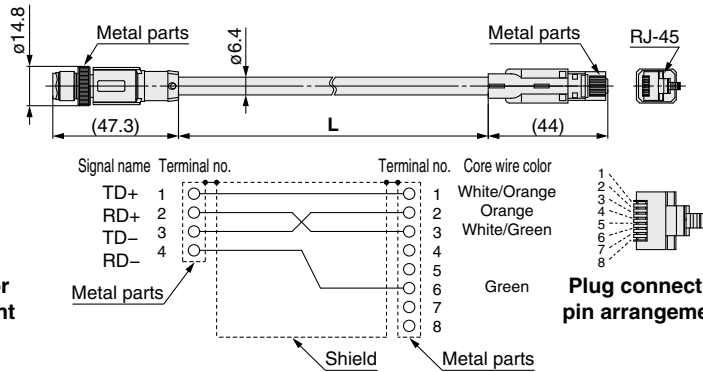
Connections (Straight cable)

Item	Specifications
Cable O.D.	ø6.4 mm
Conductor nominal cross section	0.14 mm²/AWG26
Wire O.D. (Including insulator)	0.98 mm
Min. bending radius (Fixed)	26 mm

EX9-AC 005 EN-PSPS (With connector on both sides (Plug/Plug))

Cable length (L)

005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm

ø14.8

47.3   L   47.3

ø14.8

ø6.5

Metal parts
M12
SPEEDCON

Metal parts
M12
SPEEDCON

Plug connector
pin arrangement
D-coded

Terminal no.			Terminal no.	Core wire color	Signal name
1			1	Yellow	TD+
2			2	White	RD+
3			3	Orange	TD–
4			4	Blue	RD–

Metal parts   Shield   Metal parts

Plug connector
pin arrangement
D-coded
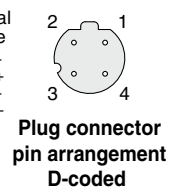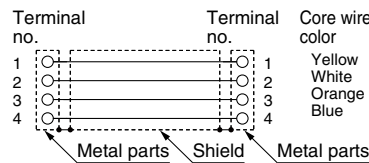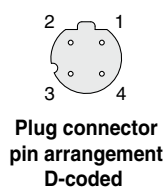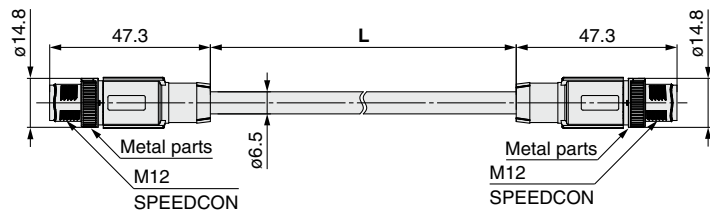
Connections (Straight cable)

Item	Specifications
Cable O.D.	ø6.5 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.55 mm
Min. bending radius (Fixed)	19.5 mm

SMC

❼ Field-wireable Communication Connector

Plug

For CC-Link	For DeviceNet™
PCA-1557617	For CANopen
	PCA-1557659
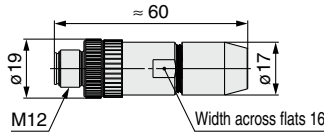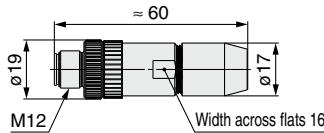
**A-coded
(Normal key)**

≈ 60
ø19　M12　Width across flats 16　ø17

For PROFIBUS DP
PCA-1557701

**B-coded
(Reverse key)**

≈ 60
ø19　M12　Width across flats 16　ø17

Applicable Cable

Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.5 mm² AWG26 to 20

Socket

For CC-Link	For DeviceNet™
PCA-1557620	For CANopen
	PCA-1557662
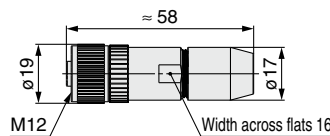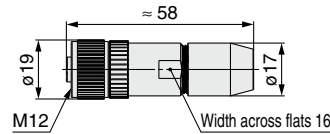
**A-coded
(Normal key)**

≈ 58
ø19　M12　Width across flats 16　ø17

For PROFIBUS DP
PCA-1557714

**B-coded
(Reverse key)**

≈ 58
ø19　M12　Width across flats 16　ø17

Applicable Cable

Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.5 mm² AWG26 to 20

❽ Power Supply Cable (For SI unit/For power block)

SI unit — Power supply cable
Power block — Power supply cable
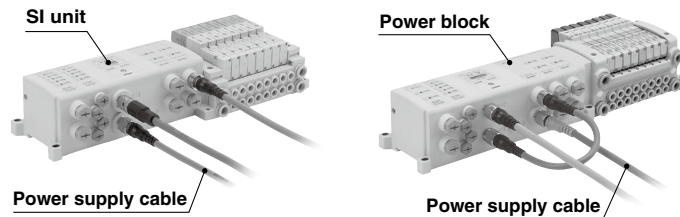
| For DeviceNet™ | For CC-Link | For CANopen | For Power block |

Straight connector type

EX9-AC 050 -1

Cable length (L)

010	1000 mm
030	3000 mm
050	5000 mm

**Socket connector
pin arrangement
B-coded**

5 1 2 4 3

M12　40.7　L　ø6.6　30　5　50

Item	Specifications
Cable O.D.	ø6.6 mm
Conductor nominal cross section	AWG22
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm

Made to Order

| Cable length | 10000 mm | **p. 168** |
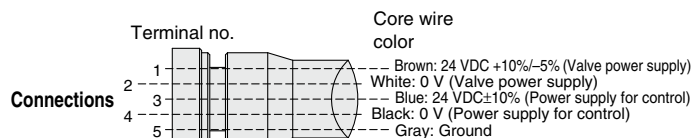
Connections

Terminal no. — Core wire color
1 — Brown: 24 VDC +10%/–5% (Valve power supply)
2 — White: 0 V (Valve power supply)
3 — Blue: 24 VDC±10% (Power supply for control)
4 — Black: 0 V (Power supply for control)
5 — Gray: Ground

Side tabs: Type 1 EX260, EX123/124/126; Type 2 EX500; EX600; Type 3 EX245; EX250; EX120/121/122; Type 1 EX140; EX180; Type 2 EX510; M8/M12; ATEX

EX250 *Series*

❽ Power Supply Cable (For SI unit)

| For PROFIBUS DP | For EtherNet/IP™ |

EX500-AP 050 -S

Cable length (L)

| 010 | 1000 mm |
| 050 | 5000 mm |

Connector specification

| S | Straight |

Straight connector type

Socket connector pin arrangement A-coded

M12 ø14.9 ø6

27
40.7
L
30
5
50

Terminal no.

Core wire color

1 — Brown: 24 VDC +10%/–5% (Valve power supply)
2 — White: 0 V (Valve power supply)
3 — Blue: 24 VDC±10% (Power supply for control)
4 — Black: 0 V (Power supply for control)
5 — Gray: Ground*1, Not connected*2

Connections

∗1 For PROFIBUS DP
∗2 For EtherNet/IP™
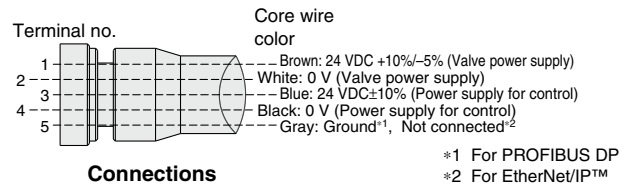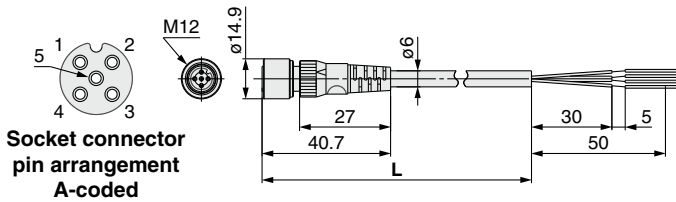
Made to Order

| Cable length | 10000 mm | **p. 169** |

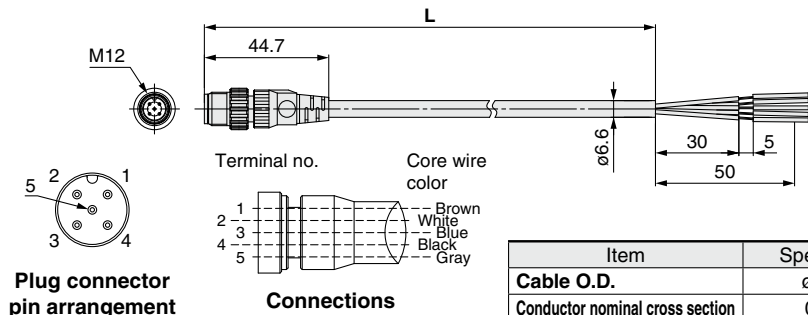| Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm

❾ Cable for Output Entry

Connects the output block to the output device

EX9-AC 030 -7

Cable length (L)

| 010 | 1000 mm |
| 030 | 3000 mm |
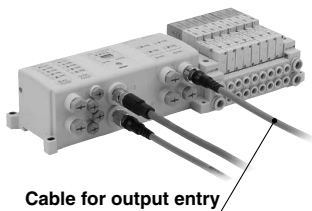
Cable for output entry

M12

44.7
L
30
5
50
ø6.6

Plug connector pin arrangement

Terminal no.

Core wire color

1 — Brown
2 — White
3 — Blue
4 — Black
5 — Gray

Connections

Item	Specifications
Cable O.D.	ø6.6 mm
Conductor nominal cross section	0.3 mm²
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm

❿ Seal Cap (10 pcs.)

Use this on ports that are not being used for an M8 or M12 connector (socket). Use of this seal cap maintains the integrity of the enclosure.
(Seal caps are packed together with each unit.)

∗ Tighten the seal caps with the prescribed tightening torque. (For M8: 0.05 N·m, For M12: 0.1 N·m)

EX9-AW ES

Connector type

| ES | M8 connector (For socket), 10 pcs. |
| TS | M12 connector (For socket), 10 pcs. |

Seal cap

11
10.8
6.6
M8 x 1

14
14
10.2
M12 x 1
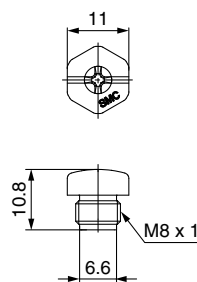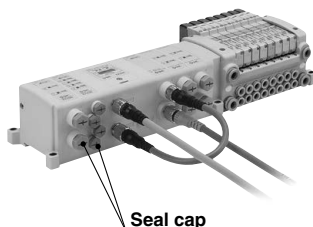
For M8 connector socket   **For M12 connector socket**

SMC
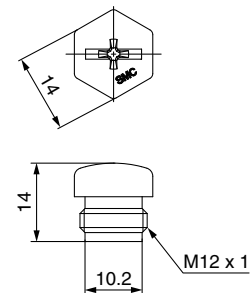
⓫ Power Supply Cable (For connecting the SI unit to the power block)

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- 2

SI unit type

2	EX250-SDN1 EX250-SMJ2 EX250-SCA1A	Compliant
3	EX250-SPR1 EX250-SEN1	Compliant
4	EX250-SAS3/5 Compliant	

Power supply cable

EX9-AC002-2

200   44.7   ø6.6   40.7   M12

Plug connector pin arrangement Reverse key

Terminal no. — Terminal no. — Core wire color

1	1	Brown
2	2	White
3	3	Blue
4	4	Black
5	5	Gray

Connections

Socket connector pin arrangement Reverse key

EX9-AC002-3

200   44.7   ø6.6   40.7   M12

Plug connector pin arrangement Reverse key

Terminal no. — Terminal no. — Core wire color

1	1	Brown
2	2	White
3	3	Blue
4	4	Black
5	5	Gray

Connections

Socket connector pin arrangement

EX9-AC002-4

200   44.7   ø6.6   40.7   M12

Plug connector pin arrangement Reverse key

Terminal no. — Terminal no. — Core wire color

1	1	Brown
2		
3	3	White
4		
5		

Connections

Socket connector pin arrangement

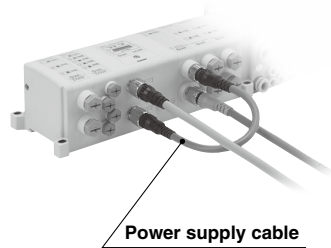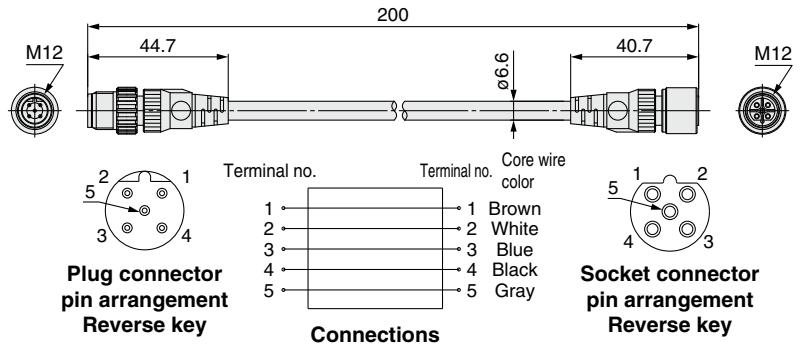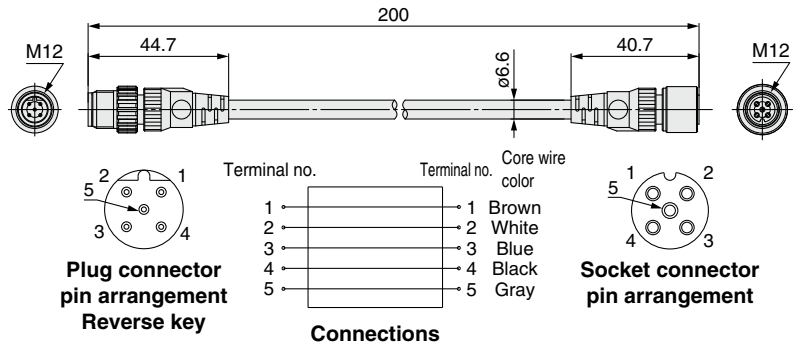| Item	Specifications
Cable O.D.	ø6.6 mm
Conductor nominal cross section	0.3 mm²
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm

⓬ AS-Interface Power Supply Cable

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

EX9-AC 010 -5

Cable length (L)

010	1000 mm
030	3000 mm
050	5000 mm

AS-Interface power supply cable

L   40.7   ø6.6   44.7   M12

Plug connector pin arrangement Reverse key

Terminal no. — Terminal no. — Core wire color

1	1	Brown
2		
3	3	White
4		
5		

Connections

Plug connector pin arrangement

Item	Specifications
Cable O.D.	ø6.6 mm
Conductor nominal cross section	0.3 mm²
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm

EX260 | EX123/124/126 | Type 1
EX500 | Type 2
EX600
EX245 | Type 3
EX250
EX120/121/122
EX140 | Type 1
EX180
EX510 | Type 2
M8/M12
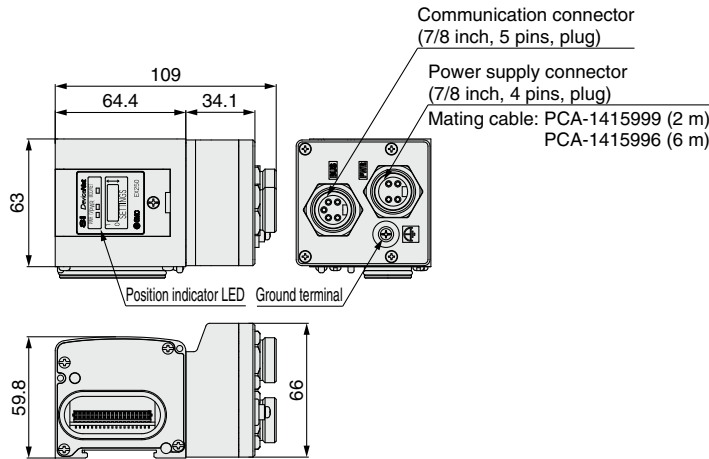ATEX

EX250 Series
Made to Order

Please contact SMC for detailed specifications and lead times.

SI Unit

Prepare the SI unit, each type of block, and the manifold valve (without SI unit) separately, and combine them before use.

① DeviceNet™, 7/8 inch connector, 32 inputs/32 outputs
(Occupied points: 48 inputs (32 inputs + diagnostic 16 inputs)/32 outputs)

EX250-SDN1-X122

Communication connector
(7/8 inch, 5 pins, plug)

Power supply connector
(7/8 inch, 4 pins, plug)
Mating cable: PCA-1415999 (2 m)
PCA-1415996 (6 m)

109
64.4   34.1
63
59.8   66

Position indicator LED   Ground terminal

Power supply connector

1	24 VDC +10%/−5% (For valve)
2	Unused
3	FE
4	0 VDC (For valve)

Communication connector

1	DRAIN
2	V+
3	V−
4	CAN H
5	CAN L

∗ When connecting to a VQC4000 series model, use a VVQC4000-3A-3□, etc., D side end plate. The VVQC4000-3A-2□ D side end plate used by the standard EX250-SDN1 model cannot be used as it will come into contact with the EX250-SDN1-X122.
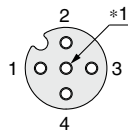
Communication Cable

① With connector on one side (Socket)
Cable length: 10000 mm

For CC-Link   For DeviceNet™
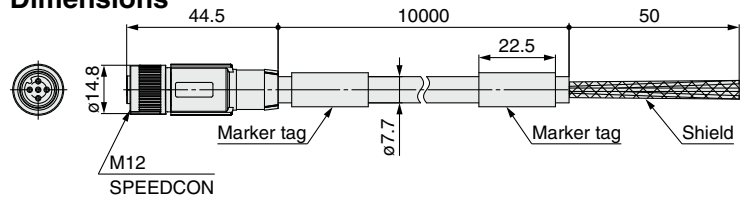
EX9-AC100 [MJ] -X12

Applicable protocol

MJ	CC-Link
DN	DeviceNet™

For CC-Link

Dimensions

44.5   10000   50
22.5
ø14.8
ø7.7
Marker tag   Marker tag   Shield
M12
SPEEDCON

2   ∗1
1 ○○○ 3
4

Socket connector pin arrangement
A-coded (Normal key)

Connections

Terminal no.	Core wire color: Signal name (CC-Link)
1	Shield: SLD
2	White: DB
3	Yellow: DG
4	Blue: DA

∗1 Number of holes: 5, Total number of pins: 4

Item		Specifications
Cable O.D.		ø7.7 mm
Conductor nominal cross section	Data pair	0.5 mm²/AWG20
	Drain	0.34 mm²/AWG22
Wire O.D. (Including insulator)		2.55 mm
Min. bending radius (Fixed)		77 mm

For DeviceNet™

Dimensions

44.5   10000   50
22.5
ø14.8
ø6.7
Marker tag   Marker tag
M12
SPEEDCON

5   2
1 ○○○ 3
4

Socket connector pin arrangement
A-coded (Normal key)
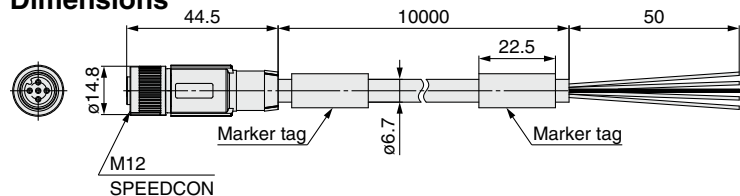
Connections

Terminal no.	Core wire color: Signal name (DeviceNet™)
1	Shield: DRAIN
2	Red: V+
3	Black: V−
4	White: CAN H
5	Blue: CAN L

Item		Specifications
Cable O.D.		ø6.7 mm
Conductor nominal cross section	Power pair	0.34 mm²/AWG22
	Data pair	0.25 mm²/AWG24
Wire O.D. (Including insulator)	Power pair	1.4 mm
	Data pair	2.05 mm
Min. bending radius (Fixed)		67 mm

SMC

Power Supply Cable

① With connector on one side (Socket)
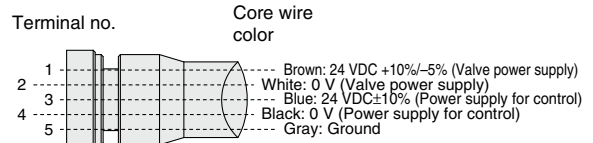**Cable length: 10000 mm**

| For CC-Link |

EX9-AC100-1-X16

Dimensions
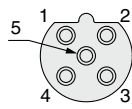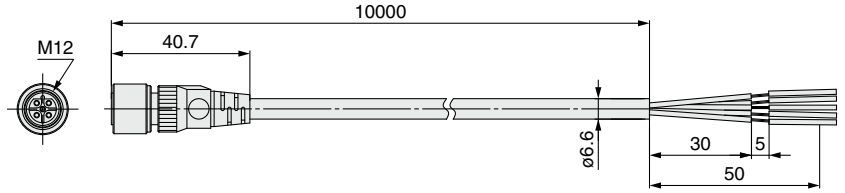
M12

10000

40.7

ø6.6

30

5

50

Terminal no.

Core wire color

1 ---- Brown: 24 VDC +10%/–5% (Valve power supply)
2 ---- White: 0 V (Valve power supply)
3 ---- Blue: 24 VDC±10% (Power supply for control)
4 ---- Black: 0 V (Power supply for control)
5 ---- Gray: Ground

**Socket connector
pin arrangement
B-coded (Reverse key)**

1 2
5
4 3

Connections

Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm

Type 1: EX260, EX123/124/126
Type 2: EX500
Type 3: EX600, EX245, EX250
EX120/121/122
Type 1: EX140
EX180
Type 2: EX510
M8/M12
ATEX

SMC

EX250 *Series*

Power Supply Cable

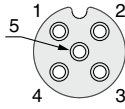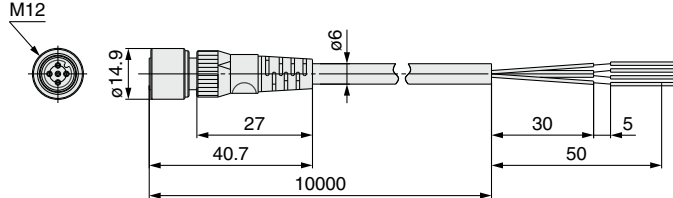② **With connector on one side (Socket)**
   Cable length: 10000 mm

| For PROFIBUS DP | For EtherNet/IP™ |

Straight connector type

EX500-AP100-S-X1

● **Connector specification**

| S | Straight |

M12

ø14.9

ø6

27
40.7
30
5
50
10000

Terminal no.

Core wire color

5 1 2
4 3

1 ---- Brown: 24 VDC +10%/–5% (Valve power supply)
2 ---- White: 0 V (Valve power supply)
3 ---- Blue: 24 VDC±10% (Power supply for control)
4 ---- Black: 0 V (Power supply for control)
5 ---- Gray: Not connected

**Socket connector
pin arrangement
A-coded**
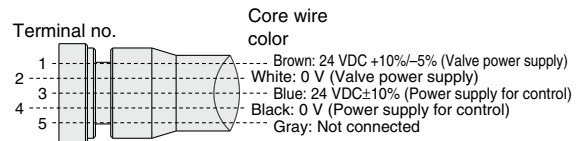
Connections (PROFIBUS DP, EtherNet/IP™)

Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm

SMC

EX260
EX123/124/126
Type 1
EX500
Type 2
EX600
EX245
Type 3
EX250
EX120/121/122
EX140
Type 1
EX180
EX510
Type 2
M8/M12
ATEX

EX250 Series
Specific Product Precautions

Be sure to read this before handling the products. Refer to page 277 for safety instructions. For fieldbus system precautions, refer to pages 278 to 280 and the "Operation Manual" on the SMC website: http://www.smcworld.com

When one AS-Interface power supply system is used

⚠ Caution

	EX250-SAS7	EX250-SAS9
Power supply voltage	Supplied from AS-Interface circuit, 26.5 to 31.6 VDC[*1]	
Internal current consumption	Max. 100 mA	Max. 65 mA
Input/output specification Number of inputs	8	4
Number of outputs	8	4
Supply voltage	24 VDC	
Supply current[*2]	Max. 240 mA	Max. 120 mA

∗1 For communication power supply, use a power supply dedicated to AS-Interface. For details, please refer to operation manuals provided by the respective manufacturers.

∗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 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 type		Input block maximum stations
EX250-SAS3	AS-Interface 8in/8out 31 Slave Mode, 2 power supply systems	1	M12/2 inputs	4 stations
		2	M12/4 inputs	2 stations
		3	M8/4 inputs	2 stations
EX250-SAS5	AS-Interface 4in/4out 31 Slave Mode, 2 power supply systems	1	M12/2 inputs	2 stations
		2	M12/4 inputs	1 station
		3	M8/4 inputs	1 station
EX250-SAS7	AS-Interface 8in/8out 31 Slave Mode, 1 power supply system	1	M12/2 inputs	4 stations
		2	M12/4 inputs	2 stations
		3	M8/4 inputs	2 stations
EX250-SAS9	AS-Interface 4in/4out 31 Slave Mode, 1 power supply system	1	M12/2 inputs	2 stations
		2	M12/4 inputs	1 station
		3	M8/4 inputs	1 station

Operating Environment

⚠ Caution

1. Select the proper type of enclosure according to the environment of operation.

IP65 is achieved when the following conditions are met.
1) Provide appropriate wiring between all units using electrical wiring cables, communication connectors and cables with M12 connectors.
2) Suitable mounting of each unit and valve manifold.
3) Be sure to mount a seal cap on any unused connectors.
If using in an environment that is exposed to water splashes, please take measures such as using a cover.

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QuickConnect™ is a trademark of ODVA.