Fieldbus System (128 Points)

EX500 Series

Decentralized valve installation

Valves can be installed near the actuators!

Reduced piping space and piping materials

Reduced wiring space

No need to set the address for the valve manifolds and input units



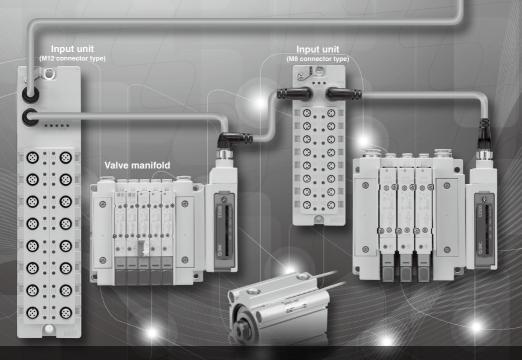




GW unit (Gateway unit)



Description	Compatible protocol	Number of inputs/outputs	Number of valve manifold and input unit connections	Branch cable length	New function
Gateway Decentralized System 2 Page 1448	enong* EtherNet/IP	128 inputs/ 128 outputs	Max. 16 units	Max. 20 m	Web server function • Valve operation test • Connection diagnostic • Short-circuit diagnostic



EX500 Series Fieldbus System

Gateway Decentralized System 2 (128 Points)

Number of branch ports: 4

Number of inputs/outputs 128 inputs/128 outputs

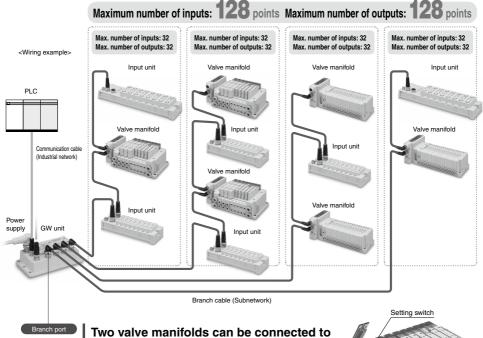
Number of inputs/outputs per branch: Max. 32 inputs/32 outputs

Number of valve manifold connections Max. 8 units*1 Number of input unit connections Max. 8 units

■ Number of valve manifold connections per branch: Max. 2 units*1 ■ Number of input unit connections per branch: Max. 2 units

Max. **20** m Total cable length per branch

*1. When the number of outputs is set to "16 outputs" using the built-in setting switch of the SI unit



one branch port.

The SI unit has a built-in setting switch which switches the number of outputs (32 points/16 points) of the valve manifold connected to the SI unit. By setting the number of outputs to 16 points, two valve manifolds can be installed to one branch port.



SLunit

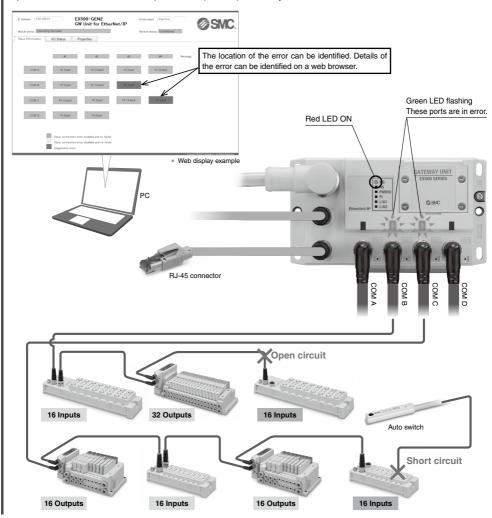




Web server function

A valve operation test (ON/OFF), a connection diagnostic between the valve manifolds and the input units, and a short-circuit diagnostic of input devices can be performed on a web browser.

A password can be used for the valve operation test (ON/OFF) for security.



No need to set the address

I/O mapping for the SI unit and input unit is set by the gateway unit automatically.

The unit installation order is not specified.

(The upper limit of the inputs/outputs is 32 points for one branch port.)



EX500 Series Fieldbus System

Gateway Decentralized System 2 (128 Points)

Page 1454 Page 1472

Reduced wiring

The amount of communication and power supply wiring for the I/O device can be reduced.

Reduction in number of communication nodes

By reducing the number of communication nodes, the load on the network is reduced.

Flexibly copes with changes in the protocol

Previously, it was necessary to change the part number of the I/O unit, return the I/O unit, and make arrangements once again to obtain a new unit (additional quotation, delivery management).

Now, only the GW unit needs to be changed.

Accessories can be ordered together.

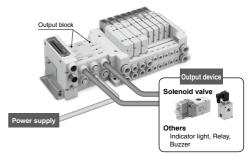
Accessories including cables and connectors can be ordered together from SMC.

Parts selection and ordering times as well as delivery management can be reduced.

Applicable to output devices Page 1459 other than valve manifolds

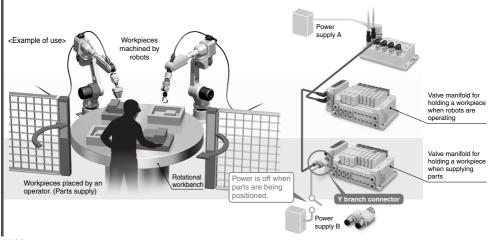
By using an output block, lights and buzzers can be operated.





Specified valve manifolds can be controlled by supplying power from a different system. Page 1457

By using a Y branch connector, power from a different system can be supplied to the SI unit (valve manifold).



System Comparison Table

	Gateway Decentralized System 2	
Protocol	PROFIT® EtherNet/IP	
Number of inputs/outputs (Number of inputs/outputs per branch)	128 inputs/128 outputs (32 inputs/32 outputs)	
Number of valve manifold connections (Number of connections per branch)	Max. 8 units* ¹ (Max. 2 units)	
Number of input unit connections (Number of connections per branch)	Max. 8 units (Max. 2 units)	
Branch cable length	Max. 20 m	
Enclosure	GW unit: IP65 SI unit: IP67 Input unit: IP67	
Function	Web server function (Valve operation test, Connection diagnostic, Short-circuit diagnostic)	
Page	1448	

^{*1} When the number of outputs is set to "16 outputs" using the built-in setting switch of the SI unit

Applicable Valve/Vacuum Unit

Applicable valve	vacuu	iiii Oiiit						
		Flow rate characteristics (4/2→5/3)			Power consumption	Enclosure	Standards	_
Applicable valve		C [dm³/(s·bar)]	/(s·bar)] b number of solenoids		[w]	Enclosure	Standards	Page
	SY3000	1.6	0.19		0.35 (Standard)			
660	SY5000	3.6	0.17	32	0.1 (With power- saving circuit)	IP67	C € ĽK	
1.000	SY7000	5.9	0.20		[Inrush 0.4, Holding 0.1		` ` ` ` ` ` `	
	VQC1000	1.0*1	0.30*1		0.4 (Standard)		C € 5K	
	VQC2000	3.2*1	0.30*1	24	0.4 (Standard)	IP67		
· · · · · · · · · · · · · · · · · · ·	VQC4000	7.3*1	0.38*1] 24 [0.95 (Standard)		CCA	Web Catalog
C. C.	VQC5000	17.0*1	0.31*1		0.4 (Low-wattage type)			
	S0700	0.37	0.39	32	0.35	IP40	C € 5½	
M. C.	SV1000	1.1	0.35	32	32 0.6	IP67	C€R	
	SV2000	2.4	0.18					ı
- Constitution	SV3000	4.3	0.21				c 71 2 us	
Applicable vacuum un	it	Nozzle dia		Max. number o solenoids		Enclosure	Standards	Page
and Maria		0.7	•					
	ZK2□A	1.0		16	0.4	IP40	(€	Web Catalog
	∠RZ⊔A	1.2		1 10	0.4	11-40	CCA	web catalog

^{*1} Values for 2-position single, rubber seal type



1.2

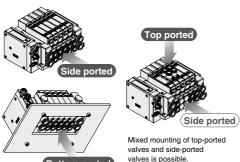
SY3000/5000/7000 Series

Piping on the top or the bottom allows for a reduced footprint and increased space saving.



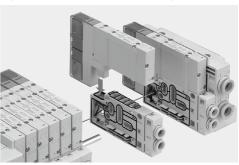
Valve piping direction variations

■ Piping is possible from 3 directions.



Max. 24 stations are connectable.

■ It is possible to connect only the number of valves required, from 1 to 24 stations, to suit the application. (Maximum number of solenoids: 32)



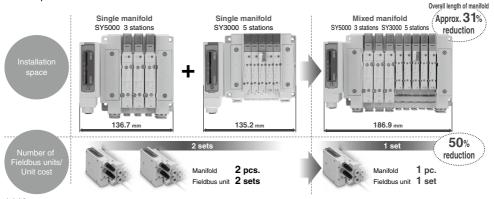
Mixed valve sizes manifold

Bottom ported

It is also possible to install a combination of different-sized valves on the same manifold. (SY3000 and SY5000, or SY5000 and SY7000)

This facilitates a reduction in the installation space and number of units/cables.

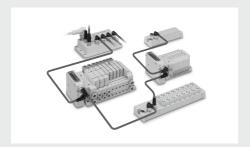
■ Example: For the SY5000 and SY3000



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Type 2 Gateway type

Fieldbus System (128 Points) **EX500** Series



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Dimensions/Parts Description ·····	···· p. 1450
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Specifications ······	···· p. 145
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Input Unit	
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Made to Order

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Fieldbus System Gateway Decentralized System 2 (128 Points)

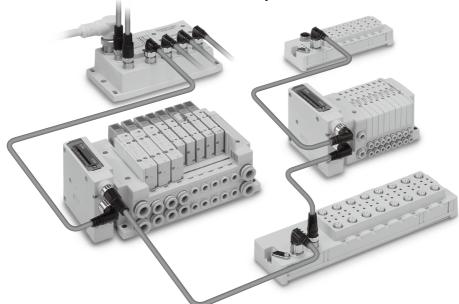
EX500 Series くもいる





- * Valve manifolds and input units can be connected around the GW (Gateway) unit.
- * Compatible with other protocols by replacing the GW unit
- ★ Number of inputs/outputs = 128 points/128 points

 The number of outputs (solenoids) per branch is 32 points.
- ★ Number of valve manifold connections = Max. 8 units, Number of input unit connections = Max. 8 units, Branch cable length = Max. 20 m
- ★ Web server function (Valve operation test, Connection diagnostic of units, Short-circuit diagnostic of input devices)
- ★ No need to set the address for the valve manifolds or input units







Gateway Decentralized System 2 (128 Points) **GW Unit**



How to Order



EX500 – **GEN2**

Protocol •

EN2	EtherNet/IP TM (Input/Output = 128 points/128 points)
	PROFINET (Input/Output = 128 points/128 points)

Specifications

	Model	EX500-GEN2	EX500-GPN2		
Protocol		EtherNet/IP™*1	PROFINET IO		
	Version*2	Volume 1 (Edition 3.14) Volume 2 (Edition 1.15)	PROFINET Specification Version 2.2		
	Media	100BASE-TX	100BASE-TX		
	Communication speed	10/100 Mbps (Automatic)	100 Mbps		
	Communication method	Full duplex/Half duplex (Automatic)	Full duplex		
	Number of inputs/ outputs (I/O occupation area)	128 inputs/128 outputs (20 bytes/20 bytes)	128 inputs/128 outputs (18 bytes/16 bytes)		
Communication	Configuration file*3	EDS file	GSDML		
	IP address setting range	Switch settings: 192.168.0.1 to 254 or 192.168.1.1 to 254, Through DHCP server: Optional address	Optional address		
	Device information	Vendor ID: 7 (SMC Corporation) Product type: 12 (Communication Adapter), Product code: 198	_		
	Applicable function	DLR QuickConnect™ Web server	MRP Fast Start Up Web server		
Power supply voltage For input and control For valve		24 VDC ±10%			
		24 VDC +10%, -5%			
Current For input and control consumption		6.2 A or less (Max. 1.5 A per branch x 4 branches + GW unit internal current consumption: 0.2 A or less)			
- Concumption	For output (valve)	4 A or less (Max. 1 A per branch x 4 branches)			
	Number of branch ports	4 ports			
Branch port	Number of inputs and outputs	32 inputs/32 outputs per branch			
	Branch cable length	20 m or less per branch			
	Enclosure	IP65			
Environmental resistance	Operating temperature range	Operating: -10 to +50°C, Stored: -20 to +60°C (No condensation)			
Todiotalioe	Operating humidity range	Operating, Stored: 35 to 85%RH (No condensation)			
Standards	•	CE/UKCA marking, UL (CSA)			
Weight		550 g			
Enclosed parts		Seal cap (for M12 connector socket) 5 pcs.			

^{*1} Use a CAT5 or higher communication cable.

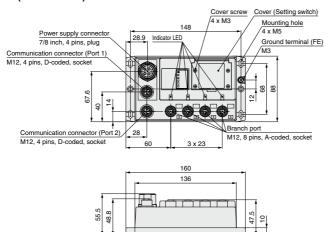
^{*2} Please note that the version is subject to change.

^{*3} The setting file can be downloaded from SMC website, https://www.smcworld.com

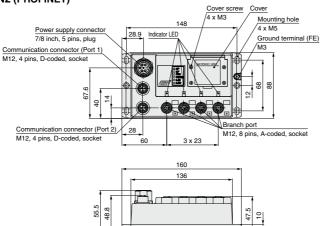
EX500 Series

Dimensions/Parts Description

EX500-GEN2 (EtherNet/IP™)



EX500-GPN2 (PROFINET)



Gateway Decentralized System 2 (128 Points) CE CA CANONS

SI Unit

Output unit for valve manifold connection

How to Order





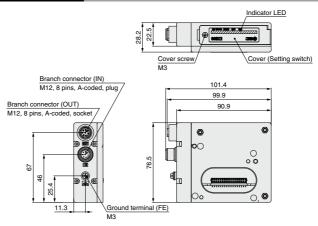
EX500-S103

Specifications

Model		EX500-S103	
Applicable valv	/e/Vacuum unit	SY, VQC, S0700, SV, ZK2□A	
Number of outputs	16/32 outputs (Switched by built-in setting switch)		
	Output type	Source/PNP (Negative common)	
Output	Rated voltage	24 VDC	
	Supply current	With power supplied to GW unit: Max. 1.0 A With external power*1 supplied: Max. 1.5 A	
Internal current consumption		50 mA or less	
Environmental resistance	Enclosure	IP67	
	Operating temperature range	Operating: -10 to +50°C, Stored: -20 to +60°C (No condensation)	
resistance	Operating humidity range	Operating, Stored: 35 to 85%RH (No condensation)	
Standards		CE/UKCA marking, UL (CSA)	
Weight		200 g	
Enclosed parts		Seal cap (for M12 connector socket) 1 pc.	
		Valve manifold mounting screw (M3 x 30) 2 pcs.	

^{*1} When an accessory, Y branch connector, is used.

Dimensions/Parts Description





Gateway Decentralized System 2 (128 Points)

Input Unit







EX500-DXPA

How to Order

Input unit

Connector type

A M8 connector type

B M12 connector type

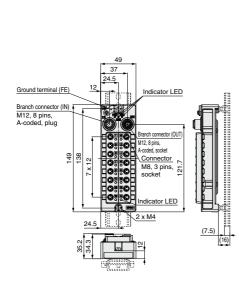
Specifications

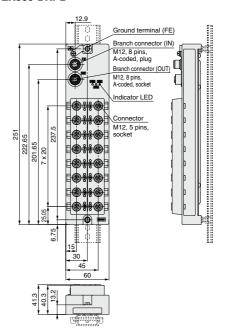
Model		EX500-DXPA	EX500-DXPB	
Connector type		M8 connector	M12 connector	
	Number of inputs	16 ir	puts	
	Input type	PNP sensor input		
	Rated voltage	24 \	/DC	
Innut		Max. 1.:	3 A/Unit	
Input	Supply current	Total of 8 connectors of even number must be Max. 0.65 A, 8 connectors of odd number must be Max. 0.65 A		
	Input ON voltage/Input ON current	11 V or more/Typ. 7 mA (at 24 VDC)		
	Input OFF voltage/Input OFF current	5 V or less/1.5 mA or less		
Internal current consumption		200 mA or less (when the input signal is ON)		
Environmental resistance		IP67		
		Operating: -10 to +50°C, Stored: -20 to +60°C (No condensation)		
		Operating, Stored: 35 to 85%RH (No condensation)		
Standards		CE/UKCA marking, UL (CSA)		
Weight		250 g	450 g	
Enclosed parts		Seal cap (for M8 connector socket) 16 pcs.	Seal cap (for M12 connector) 17 pcs.	
		Seal cap (for M12 connector socket) 1 pc.	Sear cap (101 W12 connector) 17 pcs.	

Dimensions/Parts Description

EX500-DXPA

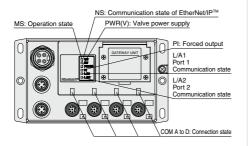
EX500-DXPB



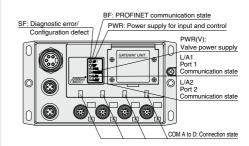


LED Indicator

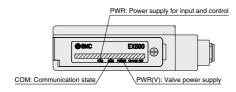
EX500-GEN2

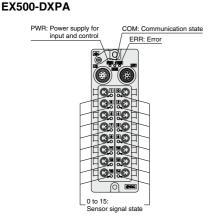


EX500-GPN2

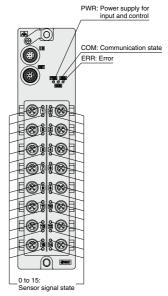


EX500-S103





EX500-DXPB





Gateway Decentralized System 2 (128 Points) Accessories

1 Power Supply Cable

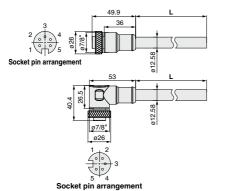
Supplies power to the GW unit.

For PROFINET

PCA- 1558810

◆Connector specification, Cable length (L)

1558810	Straight 2 m	
1558823	Straight 6 m	
1558836	Angle 2 m	
1558849	Angle 6 m	



Connectio	Red/Black: 24 VDC +	valve) d input) 0% (For control and input) -10%/–5% (For valve)
	Item	Specifications
	Cable O.D.	ø12.58 mm
	Conductor naminal cross section	1.5 mm ² /AWG16

Wire O.D. (Including insulator)

Min. bending radius (Fixed)

2.35 mm

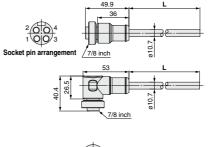
110 mm

For EtherNet/IP™

PCA- 1416000

Connector specification, Cable length (L)

1415999	Straight 2 m
1415996	Straight 6 m
1416000	Angle 2 m
1415997	Angle 6 m





Socket pin arrangement



	Item	Specifications
	Cable O.D.	ø10.7 mm
	Conductor nominal cross section	1.5 mm ² /AWG16
	Min bending radius (Fixed)	94 mm

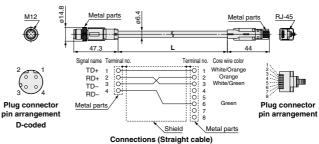
② Communication Cable

Connects field bus to the GW unit.



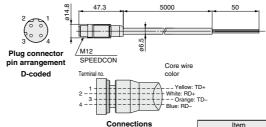
EX9-AC 020 EN-PSRJ (Plug/RJ-45 connector)





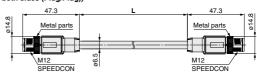
Item	Specifications
Cable O.D.	ø6.4 mm
Conductor nominal cross section	0.14 mm ² /AWG20
Wire O.D. (Including insulator)	0.98 mm
Min. bending radius (Fixed)	26 mm

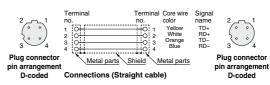
PCA-1446566 (Plug)



Item	Specifications
Cable O.D.	ø6.5 mm
Conductor nominal cross section	0.34 mm ² /AWG22
Wire O.D. (Including insulator)	1.55 mm
Min. bending radius (Fixed)	19.5 mm

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





Item	Specifications
Cable O.D.	ø6.5 mm
Conductor nominal cross section	0.34 mm ² /AWG22
Wire O.D. (Including insulator)	1.55 mm
Min hending radius (Fixed)	19.5 mm



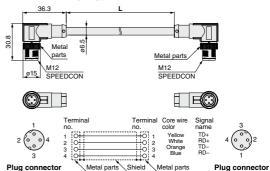
EX500 Series

2 Communication Cable

For PROFINET For EtherNet/IP™

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





Connections (Straight cable)

Item	Specifications
Cable O.D.	ø6.5 mm
Conductor nominal cross section	0.34 mm ² /AWG22
Wire O.D.(Including insulator)	1.55 mm
Min. bending radius (Fixed)	19.5 mm

pin arrangement

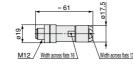
D-coded

Field-wireable Communication Connector

For PROFINET For EtherNet/IP™

PCA-1446553





Applicable Cable

Item		Specifications	
Cable O.D.		4.0 to 8.0 mm	
	Wire gauge (Stranded wire cross section)	0.14 to 0.34 mm ² /AWG26 to 22	

pin arrangement

D-coded

The table above shows the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.

Branch Cable

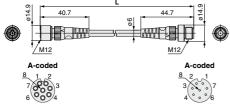
Connects the GW unit and SI unit or input unit.

EX500-AC 030 - SSPS

Cable length (L)		
003	300 mm	
005	500 mm	
010	1000 mm	
030	3000 mm	
050	5000 mm	
100	10000 mm	

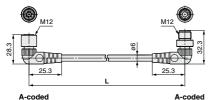
Connector specification Socket side: Straight, SSPS















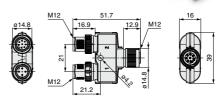
Plug pin arrangement

Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.25 mm ²
Wire O.D. (Including insulator)	1.27 mm
Min. bending radius (Fixed)	40 mm

5 Y Branch Connector

Supplies separate power to valve manifold when it is connected to the SI unit.

EX500-ACY01-S





arrangement

Pin Layout of the Cable for Power Supply from a Different System 24 VDC +10%, -5% (for valve) 2 0 VDC (for valve)

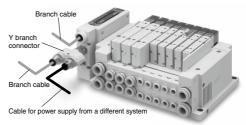
Unused

Unused

3

4

<Example of use>



EX500 Series

Gable for Power Supply from a Different System

Connect to Y branch connector to supply power.

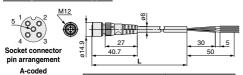


EX500-AP 050 - S

Cable length (L) 010 1000 mm **050** 5000 mm

 Connector specification Straight Angle

Straight connector type



Item	Specifications	
Cable O.D.	ø6 mm	
Conductor nominal cross section	0.3 mm ² /AWG22	
Wire O.D. (Including insulator)	1.5 mm	
Min. bending radius (Fixed)	40 mm	

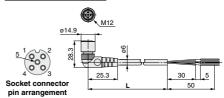


Connections (PROFINET)

Made to Order

Cable length 10000 mm p. 1475

Angle connector type

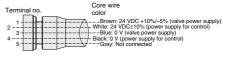


A-coded

44.5

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

50



Connections (EtherNet/IP™)

PCA- 1401804

 Cable length (L) 1401804 1500 mm 1401805 3000 mm 1401806 5000 mm



Socket connector pin arrangement

M12 Item SPEEDCON Cable O.D. ø5 mm Conductor nominal cross section Wire O.D. (Including insulator) A-coded 1 27 mm Min. bending radius (Fixed) 21.7 mm



Connections (PROFINET)

Specifications 0.34 mm²/AWG22 Core wire

Terminal no color COOM

__Brown: 24 VDC +10%/-5% (valve power supply)

-White: 24 VDC±10% (power supply for control)
--=Blue: 0 V (valve power supply)
--=Black: 0 V (power supply for control)
---Green/Yellow: Not connected

Connections (EtherNet/IP™)

DIN Rail Bracket (2 pcs.)

Bracket for mounting the input unit (EX500-DXPA, EX500-DXPB) to DIN rail.

EX500-ZMA1 < Example of use

Marker (1 sheet, 88 pcs.)

Signal name of the input device such as a switch can be written on the marker and installed to the input unit.

EX600-ZT1



Seal Cap (10 pcs.)

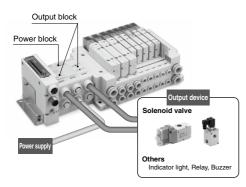
Use with new connector. By using these seal caps, the new connector maintains IP65/67 enclosure.

EX9-AWES EX9-AWTS For M8 connector socket For M12 connector socket





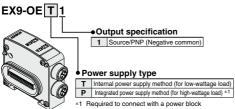
Gateway Decentralized System 2 (128 Points) Accessories **EX500 Series**



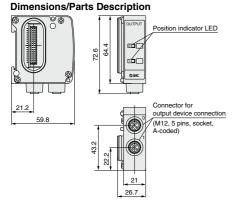
- Output devices other than valve manifold can be operated.
- By using the power block and output block for high watt load, operation up to 0.5 A/point can be performed.
- Possible to mount the output block and power block additionally between the SI unit and the valve (The surplus I/O points are used).
- 2 point outputs per output block (M12 connector)

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, https://www.smcworld.com

(1) Output Block



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Specifications

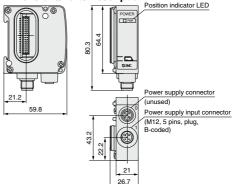
	Model	EX9-OET1	EX9-OEP1
Internal current consumption		40 mA or less	
	Output type	Source/PNP (Ne	egative common)
	Number of outputs	2 outputs	
Output	Power supply method	Internal power supply method	Integrated power supply method (Power block: supplied from EX9-PE1)
	Output device supply voltage	24 VDC	
	Output device supply current	Max. 42 mA/point (1.0 W/point)	Max. 0.5 A/point (12 W/point)
Enclosure		IP67	
Environmental resistance	Operating temperature range	−10 to 50°C	
redictance	Operating humidity range	35 to 85%RH (No condensation)	
Standards		CE/UKCA marking, UL (CSA)	
Weight		120 g	

1 Power Block

EX9-PE1



Dimensions/Parts Description



Specifications

Model Connection block Connection block stations		EX9-PE1	
		Output block for high wattage load	
		Output block: Max. 8 stations	
Power supply for output	Power supply voltage	22.8 to 26.4 VDC	
and internal control	Internal current consumption	20 mA or less	
Supply current		Max. 3.1 A*1	
	Enclosure	IP67	
Environmental resistance	Operating temperature range	−10 to 50°C	
	Operating humidity range	35 to 85%RH (No condensation)	
Standards Weight		CE/UKCA marking, UL (CSA)	
		120 g	
Enclosed parts		Seal cap (for M12 connector) 1 pc.	
*1 When using with 3.0 to 3.1.4		A the ambient temperature should not exceed	

¹ When using with 3.0 to 3.1 A, the ambient temperature should not exceed 40°C, and do not bundle the cable.

EX500 Series

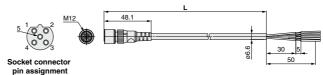
Power Supply Cable (For power block)

Supplies power to the power block.

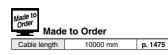


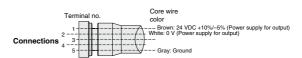
EX9-AC 050 -1

O10 1000 mm
030 3000 mm
050 5000 mm



| Recoded | Reco





Min. bending radius (Fixed)

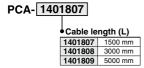
40 mm

ø5 mm

0.34 mm²/AWG22

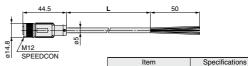
1.27 mm

21.7 mm





Socket connector pin assignment B-coded

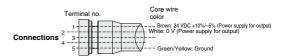


Cable O.D.

Conductor nominal cross section

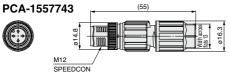
Wire O.D. (Including insulator)

Min. bending radius (Fixed)



(B) Connector for Output Block Wiring

Field-wireable connector for connecting an output device to an output block

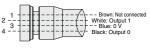


Annlicable Cable

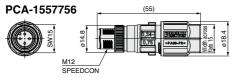
i de la companie de companie d		
	Item	Specifications
	Cable O.D.	3.5 to 6.0 mm
	Wire gauge (Stranded wire cross section)	0.14 to 0.34 mm ² /AWG26 to 22
	Core wire diameter (Including insulating material)	0.7 to 1.3 mm









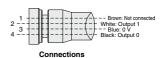


Applicable Cable

Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.34 to 0.75 mm ² /AWG22 to 18
Core wire diameter (Including insulating material)	1.3 to 2.5 mm



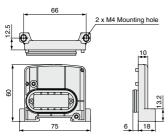




(2) End Plate

Use when an output block is not being used and a valve manifold is not connected.

EX9-EA03

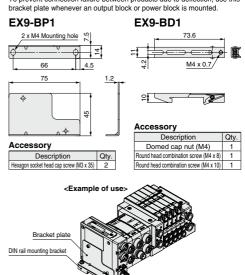




Bracket Plate/DIN Rail Mounting Bracket

A reinforcing brace used to mount an output block or power block onto an SI unit

To prevent connection failure between products due to deflection, use this





EX500 Series Specific Product Precautions

Be sure to read this before handling the products. Refer to page 7 for safety instructions and pages 15 to 17 for fieldbus system precautions.

Operating Environment

 Select the proper type of enclosure according to the operating environment.

IP65/67 is achieved when the following conditions are met.

- Provide appropriate wiring between the products using electrical wiring cables, communication connectors and cables with M12 connectors.
- 2) Suitable mounting of the product 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.

Adjustment / Operation

<Web server function>

1. The valve operation test is a function which forcibly changes the signal status. Please check safety of the ambient environment and the device before using this function.

This may cause injuries or equipment damage.

2. If the communication line and PC are shut down during a valve operation test, the valve output status will be held (It remains in the output status before the communication line and/or PC was shut down). Please check safety of the ambient environment and the device when performing this function.

This may cause injuries or equipment damage.

