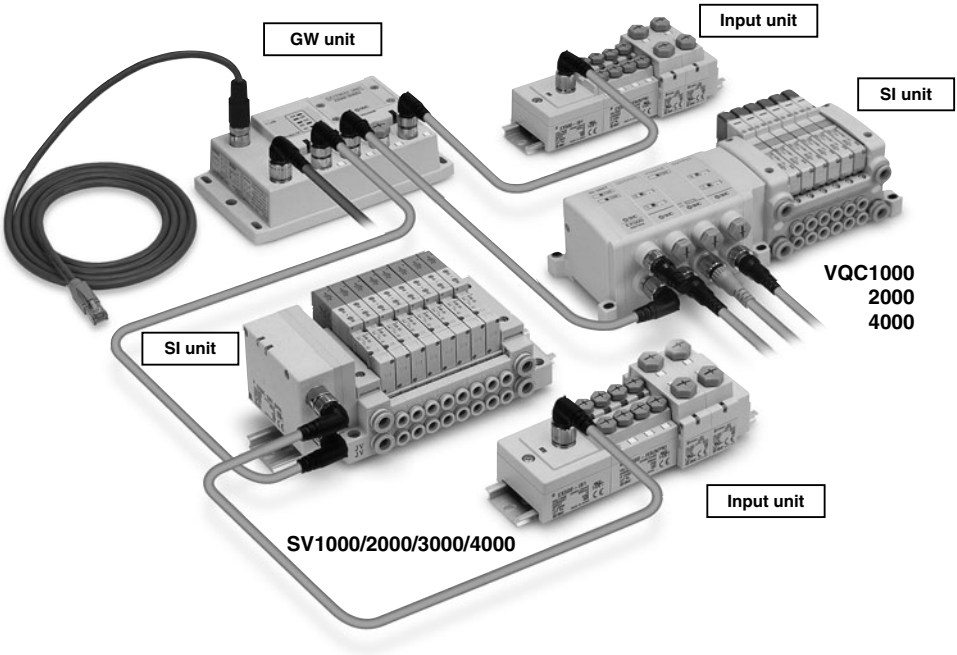
Decentralized Serial Wiring (GW System, 4 Branches)

Series EX500

★**Valve manifold and input unit manifold can be connected around the GW unit.**
★**Compatible with various protocols by replacing the GW unit.**
★**Compatible with 64-digital-outputs (16 points x 4 branches) and 64-digital-inputs (16 points x 4 branches).**
★**GW unit, Input unit manifold: IP65**
★**Valve manifold including SI unit: IP67**



Decentralized Serial Wiring (GW System, 4 Branches)

Series EX500

GW Unit

How to Order GW Unit

EX500 − G DN1

Communication protocol

DN1	DeviceNet™
PR1A	PROFIBUS DP
MJ1	CC-Link
EN1	EtherNet/IP™

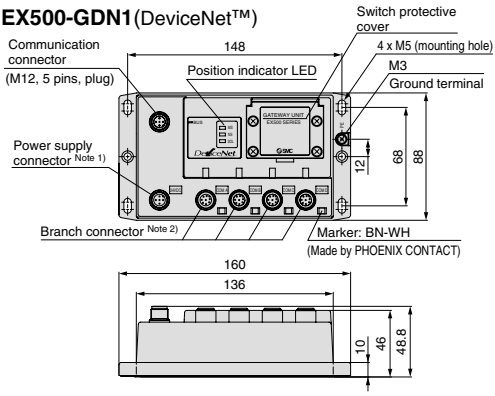
GW Unit Specifications

Model			EX500-GDN1	EX500-GPR1A	EX500-GMJ1	EX500-GEN1
Communication	Applicable system	Protocol	DeviceNet™	PROFIBUS DP	CC-Link	EtherNet/IP™
		Version Note 1)	Release 2.0	DP-V0	Ver. 1.10	Release 1.0
	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	10M/100 Mbps
	Configuration file Note 2)		EDS file	GSD file	—	EDS file
	I/O occupation area (Inputs/Outputs)		64/64	64/64	96/96 (3 stations, remote device station)	128/128
	Terminating resistor		Not provided	Built into the unit (Switch setting)	Not provided	
Power supply voltage	For unit		11 to 25 VDC (Supplied by DeviceNet™ circuit, 50 mA or less)	24 VDC±10%		
	For sensors		24 VDC±10%			
	For valve		24 VDC±10%/−5%			
Internal current consumption (Unit)			200 mA or less (GW unit)			
Input	Number of inputs		64 inputs (16 inputs x 4 branches)			
	Connection input device		The EX500 series input unit manifold (connection from communication port A to D)			
	Supply voltage		24 VDC			
	Supply current		Max. 2.8 A (Max. 0.7 A per branch)			
Output	Number of outputs		64 outputs (16 outputs x 4 branches)			
	Connection output device		The EX500 series SI unit manifold (connection from communication port A to D)			
	Supply voltage		24 VDC			
	Supply current		Max. 3.0 A (Max. 0.75 A per branch)			
Branch cable length			5 m or less between connected devices (total extension 10 m or less)			
Environment	Enclosure		IP65			
	Operating temperature range		Operating: 5 to 45°C Stored: −25 to 70°C (with no freezing and condensation)			
	Operating humidity range		Operating, Stored: 35 to 85%RH (with no condensation)			
	Withstand voltage		1000 VAC for 1 minute between whole live part and enclosure			
	Insulation resistance		2 MΩ or more (500 VDC mega meter) between whole live part and enclosure			
Standards			CE marking, UL (CSA)			
Weight			470 g			
Accessory: Waterproof cap (for M12 connector socket)			EX500-AWTS (4 pcs.)	EX500-AWTS (5 pcs.)	EX500-AWTS (4 pcs.)	EX500-AWTS (5 pcs.)

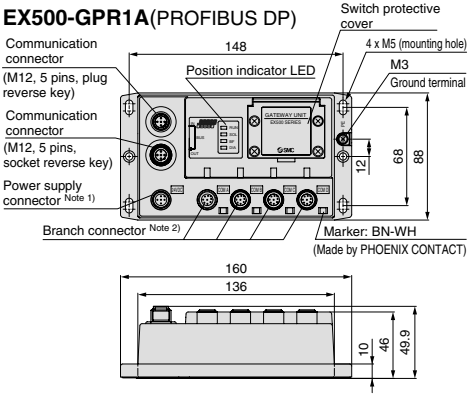
Note 1) Please note that the version is subject to change.
Note 2) Each file can be downloaded from SMC's website (http://www.smcworld.com).
Note 3) For detailed specifications other than the above, refer to the operation manual that can be downloaded from SMC's website (http://www.smcworld.com).

GW Unit Dimensions/Parts Description

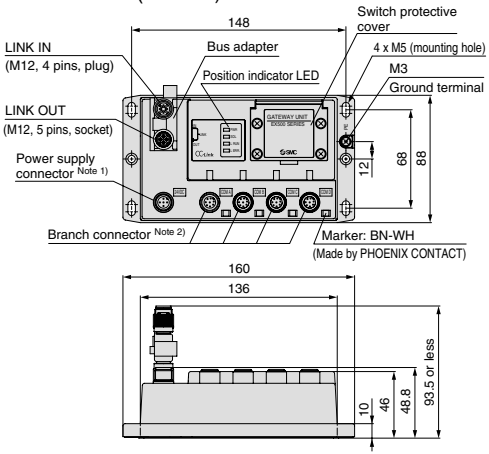
EX500-GDN1 (DeviceNet™)



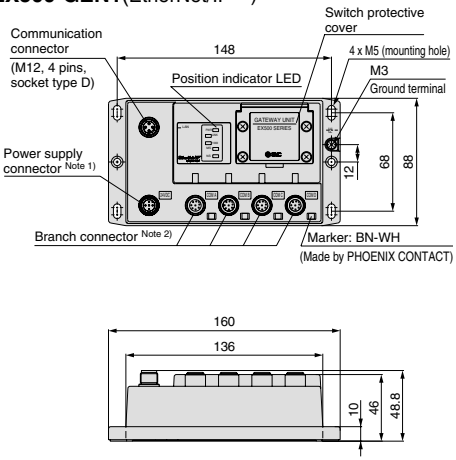
EX500-GPR1A (PROFIBUS DP)



EX500-GMJ1 (CC-Link)



EX500-GEN1 (EtherNet/IP™)



Note 1) Power supply connector specification
(M12, 5 pins, plug)
Note 2) Branch connector specification
(M12, 8 pins, socket)

Input Unit Manifold

How to Order Input Manifold

EEX500−IB1−E 8

Connector type

E	M8 connector
T	M12 connector
M	M8, M12 mixed

Stations

1	1 station
⋮	⋮
8	8 stations

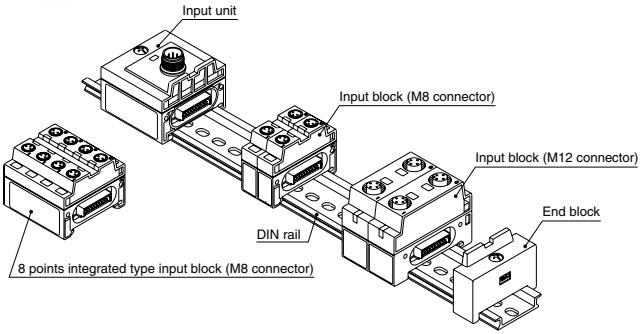
How to Order Input Block

EX500−IE 1

Block type

1	M8 connector, 2 inputs, PNP specifications
2	M8 connector, 2 inputs, NPN specifications
3	M12 connector, 2 inputs, PNP specifications
4	M12 connector, 2 inputs, NPN specifications
5	M8 connector, 8 points integrated type, PNP specifications
6	M8 connector, 8 points integrated type, NPN specifications

For options, refer to pages 620 to 622.

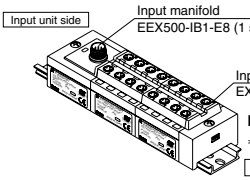


How to Order Input Unit Manifold [Ordering Example]

When ordering an input unit manifold, enter the Input manifold part no. + Input block part no. .
The Input unit , End block and DIN rail are included in the input manifold. Refer to the indications below.

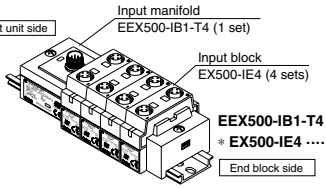
Block part no. entry
Input unit side
↓
End block side

Example 1) M8 input block only

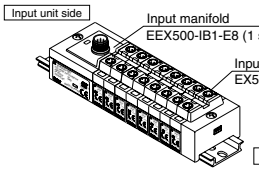


EEX500-IB1-E8 ····· 1 set
∗ EX500-IE5 ····· 2 sets

Example 2) M12 input block only

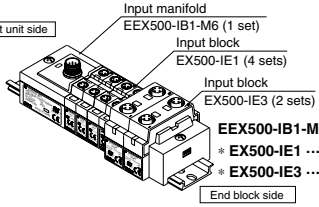


EEX500-IB1-T4 ····· 1 set
∗ EX500-IE4 ····· 4 sets

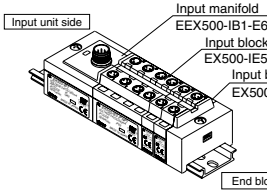


EEX500-IB1-E8 ····· 1 set
∗ EX500-IE1 ····· 8 sets

Example 3) M8, M12 mixed



EEX500-IB1-M6 ····· 1 set
∗ EX500-IE1 ····· 4 sets
∗ EX500-IE3 ····· 2 sets



EEX500-IB1-E6 ····· 1 set
∗ EX500-IE5 ····· 1 set
∗ EX500-IE1 ····· 2 sets

Note) • Since the 8 points integrated type input block is equivalent to the length of four stations on an M8 input block, pay attention to the number of stations on an input manifold.
• When an input block layout becomes complicated, indicate in the input unit manifold specifications sheet.

Input Unit Specifications

Model		EX500-IB1
Internal current consumption		100 mA or less
Input	Number of inputs	16 inputs
	Connection block	The EX500 series input block (mixed combination is possible)
	Connection block stations	2-input, input block: Max. 8 stations 8-input, input block: Max. 2 stations
Environment	Enclosure	IP65
	Operating temperature range	Operating: 5 to 45°C Stored: –25 to 70°C (with no freezing and condensation)
	Operating humidity range	Operating, Stored: 35 to 85%RH (with no condensation)
	Withstand voltage	1000 VAC for 1 minute between whole live part and enclosure
	Insulation resistance	2 MΩ or more (500 VDC mega meter) between whole live part and enclosure
Standards		CE marking, UL (CSA)
Weight		100 g (Input unit + End block)

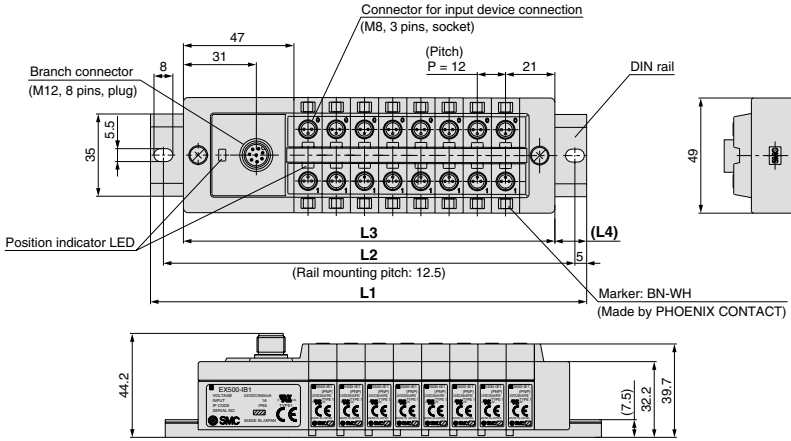
Input Block Specifications

Model		EX500-IE1	EX500-IE2	EX500-IE3	EX500-IE4	EX500-IE5	EX500-IE6
Input	Input type	PNP sensor input	NPN sensor input	PNP sensor input	NPN sensor input	PNP sensor input	NPN sensor input
	Number of inputs	2 inputs				8 inputs	
	Input device supply voltage	24 VDC					
	Input device supply current	Max. 480 mA/Input unit manifold					
	Rated input current	Approx. 5 mA					
	Display	Green LED (Lights up when power is turned ON.)					
	Connector on the input device side	M8 connector (3 pins, plug)		M12 connector (4 pins, plug)		M8 connector (3 pins, plug)	
Environment	Enclosure	IP65					
	Operating temperature range	Operating: 5 to 45°C Stored: –25 to 70°C (with no freezing and condensation)					
	Operating humidity range	Operating, Stored: 35 to 85%RH (with no condensation)					
	Withstand voltage	1000 VAC for 1 minute between whole live part and enclosure					
	Insulation resistance	2 MΩ or more (500 VDC mega meter) between whole live part and enclosure					
Standards		CE marking, UL (CSA)					
Weight		20 g		40 g		55 g	
Accessory: Waterproof cap	(for M8 connector socket)	EX500-AWES (2 pcs.)		—		EX500-AWES (8 pcs.)	
	(for M12 connector socket)	—		EX500-AWTS (2 pcs.)		—	

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

Input Unit Manifold Dimensions/Parts Description

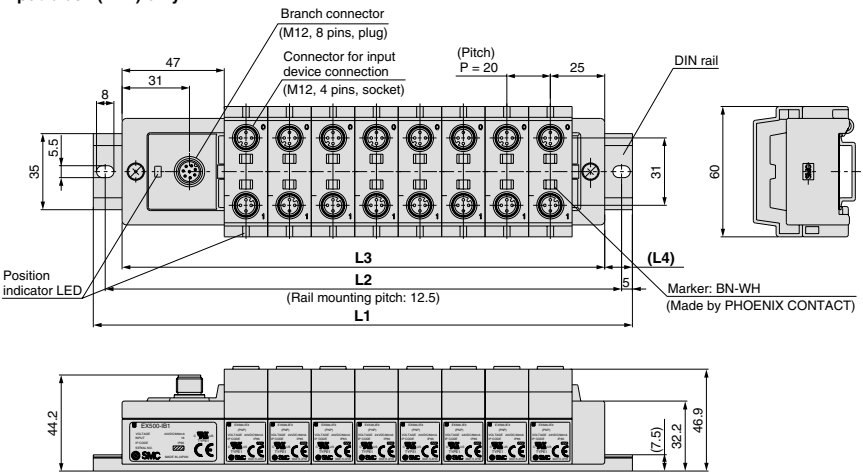
Input block (M8) only



(mm)

Stations	1	2	3	4	5	6	7	8
Rail length **L1**	98	110.5	123	135.5	148	160.5	173	185.5
Mounting pitch **L2**	87.5	100	112.5	125	137.5	150	162.5	175
Manifold length **L3**	74	86	98	110	122	134	146	158
L4	12	12	12.5	12.5	13	13	13.5	13.5

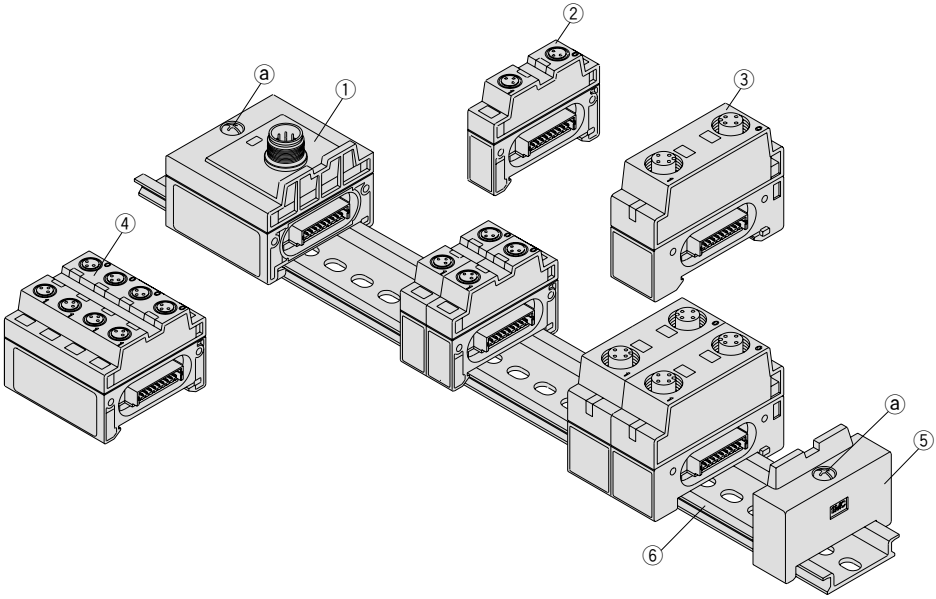
Input block (M12) only



(mm)

Stations	1	2	3	4	5	6	7	8
Rail length **L1**	110.5	123	148	173	185.5	210.5	223	248
Mounting pitch **L2**	100	112.5	137.5	162.5	175	200	212.5	237.5
Manifold length **L3**	82	102	122	142	162	182	202	222
L4	12	12	12.5	12.5	13	13	13.5	13.5

Input Unit Manifold Exploded View



Parts List

No.	Description	Part no.	Note
		For standard	
1	**Input unit**	EX500-IB1	
2	**Input block (M8 connector)**	EX500-IE□	PNP specifications ··· □: 1, NPN specifications ··· □: 2
3	**Input block (M12 connector)**	EX500-IE□	PNP specifications ··· □: 3, NPN specifications ··· □: 4
4	**Input block (M8 connector) 8 points integrated type**	EX500-IE□	PNP specifications ··· □: 5, NPN specifications ··· □: 6
5	**End block**	EX500-EB1	
6	**DIN rail**	VZ1000-11-1-□	□: No. based on L dimension (Refer to the table below.)

How to add input block stations

1. Loosen the screws ⓐ (2 places) that hold the end block.
2. Separate the blocks at the locations where stations are to be added.
3. Attach the additional blocks to the DIN rail, and connect the blocks so that they fit together securely.
4. While holding the blocks together so that there are no gaps between them, secure them to the DIN rail by tightening the screws ⓐ.
   Note: Be sure to tighten the round head combination screw with the prescribed tightening torque. (0.6 N·m)

DIN Rail L Dimension [mm]

Stations	M8 input block (m)									
M12 input block (n)	0	1	2	3	4	5	6	7	8
0		0	1	2	3	4	5	6	7
1	1	2	3	4	5	6	7	8	
2	2	3	4	5	6	7	8		
3	4	5	6	7	8	9			
4	6	7	8	9	10				
5	7	8	9	10					
6	9	10	11						
7	10	11							
8	12								

Connector type
For T (n = 1 to 8)

Connector type
For M (m + n = 2 to 8)

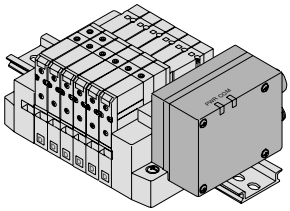
Connector type
For E (m = 1 to 8)

L dimension

No.	L dimension	No.	L dimension
0	98	7	185.5
1	110.5	8	198
2	123	9	210.5
3	135.5	10	223
4	148	11	235.5
5	160.5	12	248
6	173		

SI Unit

SV1000/2000/3000/4000



How to Order SI Unit

EX500 − S001

Applicable solenoid valve: Series SV

For options, refer to pages 620 to 622.

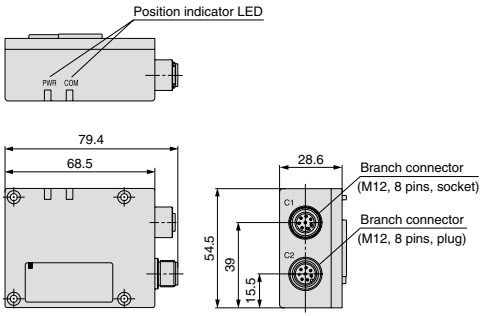
SI Unit Specifications (EX500-S001)

Model		EX500-S001
Internal current consumption		100 mA or less
Output	**Number of outputs**	16 outputs
	Output type	NPN (Positive common)
	Connection block	Positive common compatible Solenoid valve (single, double) Relay output module (1 ouput, 2 outputs)
	Connection block stations	Double solenoid valve, relay output module (2 outputs): Max. 8 stations Single solenoid valve, relay output module (1 output): Max. 16 stations
	Connection block supply current	Max. 0.65 A
Environment	**Enclosure**	IP67
	Operating temperature range	Operating: 5 to 45°C Stored: –25 to 70°C (with no freezing and condensation)
	Operating humidity range	Operating, Stored: 35 to 85%RH (with no condensation)
	Withstand voltage	1000 VAC for 1 minute between whole live part and enclosure
	Insulation resistance	2 MΩ or more (500 VDC mega meter) between whole live part and enclosure
Standards		CE marking, UL (CSA)
Weight		115 g
Accessory: Waterproof cap (for M12 connector socket)		EX500-AWTS (1 pc.)

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

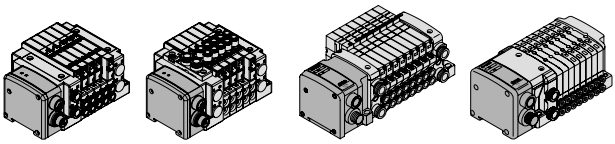
SI Unit Dimensions/Parts Description

EX500-S001



SI Unit

SY3000/5000 **VQC1000/2000/4000** **S0700**



Note) SY3000/5000, VQC1000/2000/4000, S0700 are not yet UL-compatible.

How to Order SI Unit

EX500 − Q 0 0 1

Applicable solenoid valve: Series SY/VQC/S0700

Output specifications

0	NPN (Positive common)
1	PNP (Negative common)

SI unit type

1	For without EX9 output block
2	For EX9 output block mounting

For options, refer to pages 620 to 622.

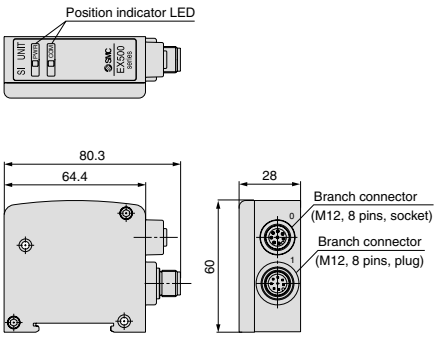
SI Unit Specifications (EX500-Q□0□)

Model		EX500-Q001	EX500-Q101	EX500-Q002	EX500-Q102
Internal current consumption		100 mA or less			
Output specifications	Number of outputs	16 points			
	Output type	NPN (Positive common)	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)
	Connection block	Positive common compatible Solenoid valve (single, double)	Negative common compatible Solenoid valve (single, double)	Positive common compatible Note) Output block, power block Solenoid valve (single, double)	Negative common compatible Note 1) Output block, power block Solenoid valve (single, double)
	Connection block stations	Double solenoid valve: Max. 8 stations Single solenoid valve: Max. 16 stations		Double solenoid valve, output block: Max. 8 stations Single solenoid valve: Max. 16 stations ∗ Power block is not included.	
	Connection block supply current	Max. 0.75 A			
Environment	Enclosure	IP67			
	Operating temperature range	Operating: 5 to 45°C Stored: –25 to 70°C (with no freezing and condensation)			
	Operating humidity range	Operating, Stored: 35 to 85%RH (with no condensation)			
	Withstand voltage	1000 VAC for 1 minute between whole live part and enclosure			
	Insulation resistance	2 MΩ or more (500 VDC mega meter) between whole live part and enclosure			
Standards		CE marking, UL (CSA)			
Weight		105 g			
Accessory: Waterproof cap (for M12 connector socket)		EX500-AWTS (1 pc.)			

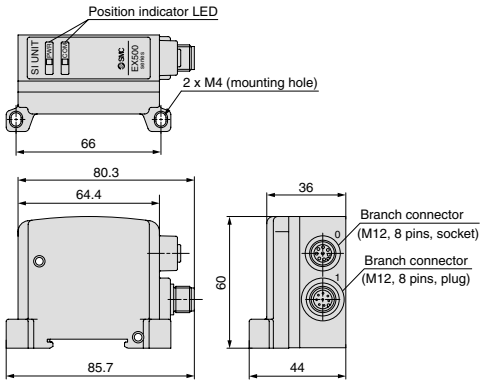
Note 1) For details of output block and power block, refer to page 520.
Note 2) For detailed specifications other than the above, refer to the operation manual that can be downloaded from SMC's website (http://www.smcworld.com).

SI Unit Dimensions/Parts Description

EX500-Q□01



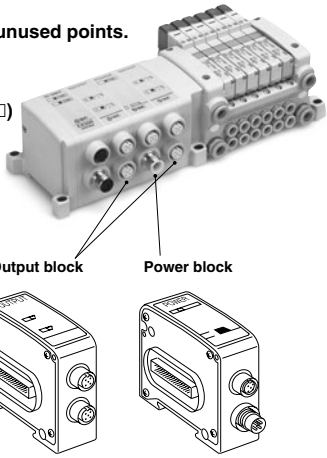
EX500-Q□02



Options

● Output block/● Power block

Features:
- **Possible to retrofit to the valve manifold, using the unused points.**
- **2-output/1-output block (M12 connector)**
- **Positive/Negative common available as standard.**
- **Possible to drive by up to 0.5 A per a point. (EX9-OEP□)**



How to Order Output Block

EX9 − OE T 1

Output specifications

1	PNP (Negative common)
2	NPN (Positive common)

Power supply type

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

Note) Required to connect with a power block.

SI Unit Part No.

SI unit part no.	Output	Applicable model
EX500-Q002	PNP (Negative common)	EX9-OET2, EX9-OEP2
EX500-Q102	NPN (Positive common)	EX9-OET1, EX9-OEP1

Option/Part No.

Description	Part no.	Applicable model		Note
		OET□	OEP□	
Waterproof cap	**EX500-AWTS**	○	○	Refer to page 623. Order separately: 10 pcs.
Cable with connector for output entry	**EX9-AC□-7**	○	○	Refer to page 623. Order separately.
Power block	**EX9-PE1**	—	○	Refer to the right page. Order separately.

How to Order Power Block

EX9 − PE1

Option/Part No.

Description	Part no.	Note
Waterproof cap	**EX500-AWTS**	Refer to page 623. When ordering separately: 10 pcs.
Power cable with connector	**EX9-AC□-1**	Refer to page 621, Order separately.

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**	PNP (Negative common)	NPN (Positive common)	PNP (Negative common)	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. 42 mA/point (1.0 W/point) Note)		Max. 0.5 A/point (12 W/point)	
	Display	Yellow LED (Lights up when power is turned ON.)			
	Connector on the output device side	M12 connector (5 pins, plug)			
Environment	**Enclosure**	IP67			
	Operating temperature range	–10 to 50°C			
	Operating humidity range	35 to 85%RH (with no condensation)			
	Withstand voltage	1500 VAC for 1 min. 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			

Note) The rated load current varies due to the output capability of the SI unit when connected to EX500.

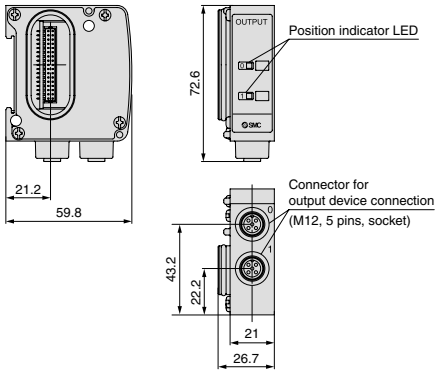
Power Block Specifications

Model		EX9-PE1
Connection block		Output block (for high-wattage load)
Connection block stations		Output block: Max. 8 stations
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.)
Environment	**Enclosure**	IP67
	Operating temperature range	–10 to 50°C
	Operating humidity range	35 to 85%RH (with no condensation)
	Withstand voltage	1500 VAC for 1 min. 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: Waterproof cap (for M12 connector socket)		EX500-AWTS (1 pc.)

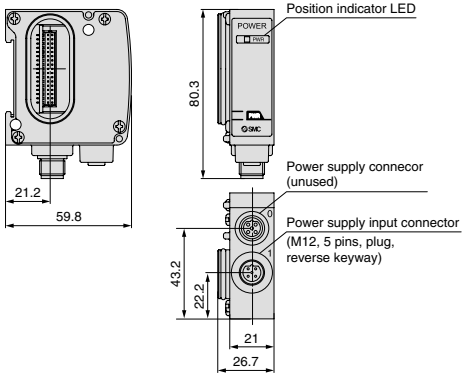
Note) For detailed specifications other than the above, refer to the operation manual that can be downloaded from SMC's website (http://www.smcworld.com).

Options

Output Block Dimensions



Power Block Dimensions



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 (● EX9-EA03) separately for connection.
Refer to the operation manual for connection, wiring, installation, option and cable, etc.

● End plate

EX9－EA03