

Before Use

Fieldbus system

EX500-S□03



Thank you for purchasing an SMC EX500 series Fieldbus system. Please read this manual carefully before operating the product and make sure you understand its capabilities and limitations. Please keep this manual handy for future reference.

To obtain the operation manual about this product and control unit, please refer to the SMC website (URL <http://www.smcworld.com>) or contact SMC directly.

Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution", "Warning" or "Danger". They are all important notes for safety and must be followed in addition to International standards (ISO/IEC) and other safety regulations.

- Caution:** CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
- Warning:** WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
- Danger:** DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

Operator

- ◆ The operation manual is intended for those who have knowledge of machinery using pneumatic equipment, and have sufficient knowledge of assembly, operation and maintenance of such equipment. Only those persons are allowed to perform assembly, operation and maintenance.
- ◆ Read and understand the operation manual carefully before assembling, operating or providing maintenance to the product.

Safety Instructions

Warning

- Do not disassemble, modify (including changing the printed circuit board) or repair. An injury or failure can result.
- Do not operate the product outside of the specifications. Do not use for flammable or harmful fluids. Fire, malfunction, or damage to the product can result. Verify the specifications before use.
- Do not operate in an atmosphere containing flammable or explosive gases. Fire or an explosion can result. This product is not designed to be explosion proof.
- If using the product in an interlocking circuit:
 - Provide a double interlocking system, for example a mechanical system.
 - Check the product regularly for proper operation. Otherwise malfunction can result, causing an accident.
- The following instructions must be followed during maintenance:
 - Turn off the power supply.
 - Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance. Otherwise an injury can result.

Caution

- When handling the unit or assembling/replacing units:
 - Do not touch the sharp metal parts of the connector or plug for connecting units.
 - Take care not to hit your hand when disassembling the unit. The connecting portions of the unit are firmly joined with seals.
 - When joining units, take care not to get fingers caught between units. An injury can result.
- After maintenance is complete, perform appropriate functional inspections. Stop operation if the equipment does not function properly. Safety cannot be assured in the case of unexpected malfunction.
- Provide grounding to assure the safety and noise resistance of the Serial System. Individual grounding should be provided close to the product with a short cable.

NOTE

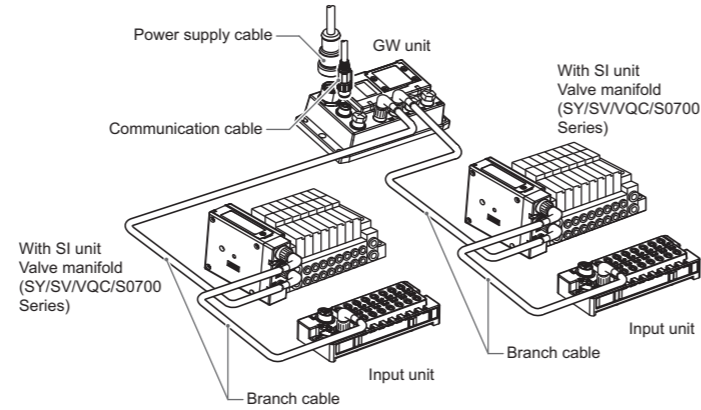
- The direct current power supply to combine should be UL1310 Class 2 power supply when conformity to UL is necessary.

Maintenance

- Maintenance should be performed according to the Safety Instructions.
 - Perform regular maintenance and inspections. There is a risk of unexpected malfunction.
 - Do not use solvents such as benzene, thinner etc. to clean each unit. They could damage the surface of the body and erase the markings on the body. Use a soft cloth to remove stains.
 - For heavy stains, use a cloth soaked with diluted neutral detergent and fully squeezed, then wipe up the stains again with a dry cloth.
- Refer to the SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about maintenance.

Product Summary

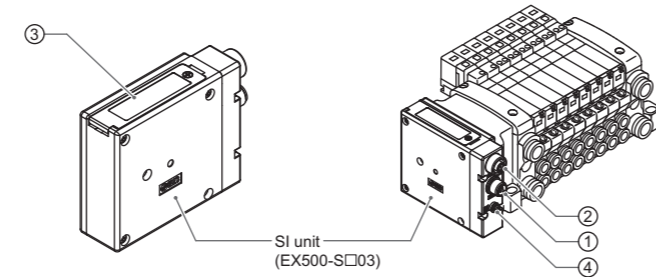
System configuration



The EX500 range of units can be connected to open fieldbus to realize the reduction of input or output device wiring and the distributed control system. One branch of manifold valves/input unit can be connected to 32 outputs/32 inputs. Up to 4 branches can be connected (total 128 outputs/128 inputs).

Summary of Product parts

SI unit is combined with the manifold valve to communicate with GW unit. The EX9 series general output block can be connected with the SI unit to operate the solenoid valve or relays.



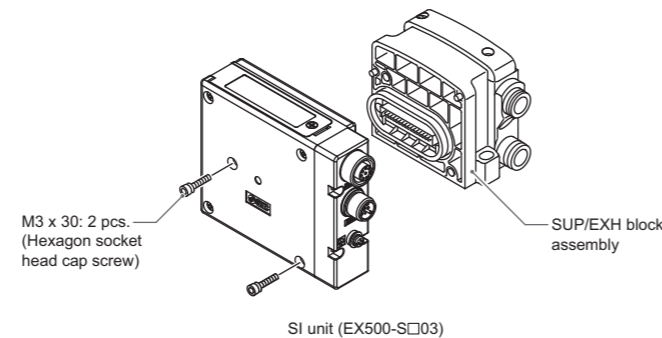
No.	Description	Application
1	Branch connector (IN)	Connector for branch cable (with M12 connector) from the GW unit.
2	Branch connector (OUT)	Connector for branch cable (with M12 connector) to the next unit on the branch line.
3	Display and switch setting cover	LED display to indicate the SI unit status. Set up the output points using the internal switches.
4	Grounding terminal (FE)	Used for functional grounding. (M3 thread) (It is recommended to ground with resistance of 100 ohms or less)

*: Seal cap is provided.

Mounting and Installation

Installation

Refer to the drawing below.



- Replacing the SI unit
- Remove the M3 hexagon screws from the SI unit and remove the SI unit from the valve manifold.
 - Replace the SI unit.
 - Tighten the screws originally. (Tightening torque: 0.6 Nm)

Caution for maintenance

- Check that all the power has been turned OFF.
- Verify that there is no foreign matter inside the SI unit.
- Verify that there is no damage and/or foreign matter stuck to the gasket.
- Check that the M3 hexagon socket head cap screws have been tightened to the specified torque.

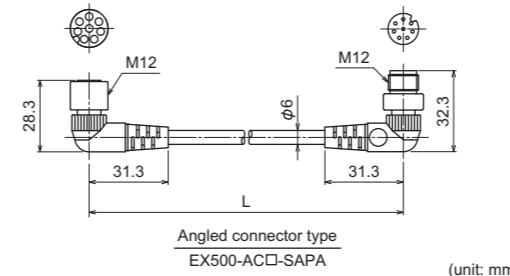
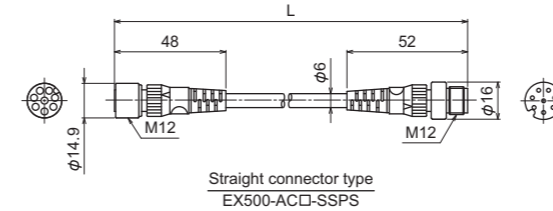
If these items are not adhered to, it may lead to damage to the unit or intrusion of liquid or dust into the units.

Wiring

Select the specified branch cable below.

How to order: EX500-AC [030] - [SSPS]

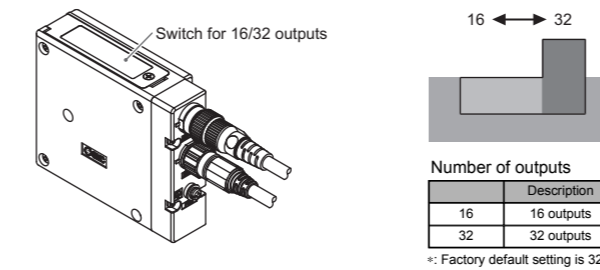
Cable length (L)	Connector
003 0.3 [m]	SSPS Socket side: Straight Plug side: Straight
005 0.5 [m]	SAPA Socket side: Angled Plug side: Angled
010 1 [m]	
030 3 [m]	
050 5 [m]	
100 10 [m]	



Minimum acceptable cable bending radius: 40 mm (fixed)

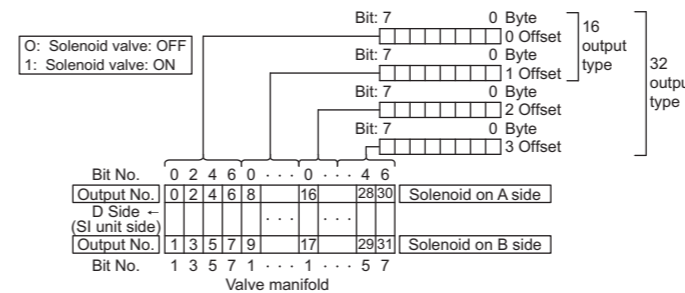
Setting

Switch setting

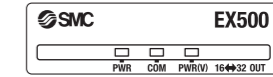


Output No. assignment

The Output number is assigned by the SI unit.



LED Display



Display	Description	
PWR	LED is OFF	The power supply for input and control is OFF
	Green LED is ON	Power supply for input and control is ON
COM	LED is OFF	Communication error between GW unit has occurred
	Green LED is ON	Communication between GW unit is normal
PWR(V)	LED is OFF	Power supply for Solenoid valve is OFF
	Green LED is ON	Power supply for Solenoid valve is ON

Troubleshooting

Refer to the LED Display. Refer to the SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about troubleshooting.

Specification

Gateway distributed system 2 (128 points) specifications

Item	Specification
Number of points	128 inputs/128 outputs
Number of branches	4 (Input: Max. 32 points/Output: Max. 32 points per branch)
Slave connection number	Max. 16 devices (Input unit: Max. 2 devices/Output unit: Max. 2 devices per branch)
Branch cable length	20 m or less total extension per branch

When you use this system together with another product compatible with the gateway distributed system (64 points), please refer to the SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about product.

SI unit specifications

Item	Specification
Output type	Source/PNP (negative common)
Number of outputs	32 outputs (selected from 16 or 32 outputs)
Connected load	Solenoid valve with surge voltage suppressor of 24 VDC and 1.0 W or less (manufactured by SMC)
Short circuit protection	Applicable
Load current	Max. 1.0 A/unit *: When an external power supply is used: Max. 1.5 A/unit (Note)
Internal current consumption	50 mA or less
Enclosure rating	IP67
Ambient temperature range	Operation: -10 to 50 °C, Storage: -20 to 60 °C (no condensation or freezing)
Operating humidity range	Operation, Storage: 35 to 85%RH (No condensation)
Operating atmosphere	No corrosive gas
Weight	200 g
Pollution degree	Hexagon socket head cap screw (M3 x 30): 2 pcs. Seal cap: (for M12 connector socket): 1 pc.

(Note): Y connectors for external power supply are available as accessories. Refer to the product catalog or SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about product.

Outline with Dimensions

Refer to the product catalog or SMC website (URL <http://www.smcworld.com>) to obtain more detailed information about outline dimensions.

SMC Corporation URL <http://www.smcworld.com>

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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