



ORIGINAL INSTRUCTIONS

Instruction Manual

Power Block

EX9-PE1-X15 / EX9-PE1-X22
EX9-PE1-X23 / EX9-PE1-X24



The intended use of this product is to control pneumatic valves. Refer to the document EX##-PSY0005 before using in any safety related application.

1 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)^{*1}, and other safety regulations.

^{*1}ISO 4414: Pneumatic fluid power — General rules and safety requirements for systems and their components.

ISO 4413: Hydraulic fluid power — General rules and safety requirements for systems and their components

IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements

ISO 10218-1: Robotics — Safety requirements — Part 1: Industrial robots

- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

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

Danger

If the SI unit valve supply (US2/PWR(V)) 0V connection is lost all the valves powered by the SI unit and the EX9-PE1-X## will turn on. Countermeasure: Ensure that the US2 0V connection is secure and cannot become disconnected. Or if this cannot be achieved, then do not connect the 0V of the EX9-PE1-X## to the 0V of the supply.

Warning

- **Always ensure compliance with relevant safety laws and standards.**
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.
- **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.
- **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 for correct operation.**
Otherwise malfunction can result, causing an accident.

Caution

- **When conformity to UL is required the SI unit must be used with a UL1310 Class 2 power supply.**

2 Specifications

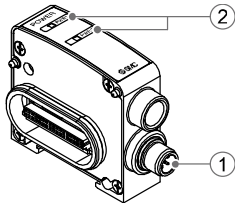
Model		EX9-PE1-X15	EX9-PE1-X22	EX9-PE1-X23	EX9-PE1-X24
Rated voltage		24 VDC +10% / -5%			
Internal current consumption		External power supply 1: 20 mA or less, External power supply 2: 20 mA or less			
Output specifications	Power supply	Outputs 0 to 3: External power supply 1 (PWR1) Outputs 4 to 7: External power supply 2 (PWR2)	Outputs 8 to 11: External power supply 1 (PWR1) Outputs 12 to 15: External power supply 2 (PWR2)	Outputs 16 to 19: External power supply 1 (PWR1) Outputs 20 to 23: External power supply 2 (PWR2)	Outputs 24 to 27: External power supply 1 (PWR1) Outputs 28 to 31: External power supply 2 (PWR2)
	Output type	Source / PNP (Negative common)			
	Connected load	• Solenoid valve with surge voltage suppressor of 24 VDC and 1.5 W or less (manufactured by SMC) • Output block *1			
	Residual voltage	0.7 VDC or less			
	Rated Load current	PWR1 (Outputs 0 to 3): Max. 2 A PWR2 (Outputs 4 to 7): Max. 2 A	PWR1 (Outputs 8 to 11): Max. 2 A PWR2 (Outputs 12 to 15): Max. 2 A	PWR1 (Outputs 16 to 19): Max. 2 A PWR2 (Outputs 20 to 23): Max. 2 A	PWR1 (Outputs 24 to 27): Max. 2 A PWR2 (Outputs 28 to 31): Max. 2 A
Enclosure		IP67			
Weight		120 g			
Accessory		Tie-rod (2 pcs.)			

^{*1}: Refer to the table below.

Model	Note
EX9-OET1	Output block (For low-wattage Load), Source/PNP (Negative common), M12 connector
EX9-OEP1 ^{*2}	Output block (For high-wattage Load), Source/PNP (Negative common), M12 connector
EX9-PE1 ^{*2}	Power block, M12 connector

^{*2}: When using the EX9-OEP1, the EX9-PE1 must be connected to the left side of the EX9-OEP1.

3 Name and Function of Individual Parts



No.	Element	Description
1	Power input connector	Power Supply for output devices. ^{*3}
2	Power LED	PWR1 LED is green when external power supply 1 is supplied.
		PWR2 LED is green when external power supply 2 is supplied.

^{*3}: Refer to section 5 for Wiring.

4 Installation

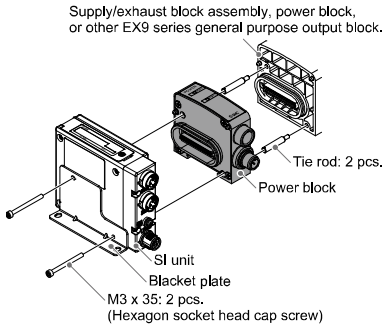
4.1 Installation

Warning

- Do not install the product unless the safety instructions have been read and understood.

- The mounting and removal method for each unit are as shown below.

^{*}: Refer to the product catalogue regarding assembly / disassembly with other units.



4 Installation (continued)

4.2 Combinations

		Stations			
		1	2	3	4
		X15	X22	X23	X24
1 station	Outputs 0 to 7 (Separate power supply 1)				
2 stations	Outputs 0 to 7 (Separate power supply 1), 8 to 15 (Separate power supply 2)				

3 stations	Outputs 0 to 7 (Separate power supply 1), 8 to 15 (Separate power supply 2), 16 to 23 (Separate power supply 3)				
4 stations	Outputs 0 to 7 (Separate power supply 1), 8 to 15 (Separate power supply 2), 16 to 23 (Separate power supply 3), 24 to 31 (Separate power supply 4)				

The arrangement is numbered starting with the 1st station on the SI unit side.

Caution

- Be sure to turn off the power.
- Check there is no foreign matter inside the SI unit.
- Check there is no damage and no foreign matter on the gasket.
- If the SI unit is not assembled properly, the internal PCBs may be damaged or liquid and/or dust may enter into the unit.
- Hold together so that there is no gap between units and tighten the screws.
- Tighten the screws with the specified tightening torque (0.6 N•m).

4 Installation (continued)

4.3 Environment

Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.

5 Wiring

5.1 Power Supply Connector

M12 5-pin plug, A-coded

No.	Function	Description
1	PWR1 24 V	External power supply 1 24 V
2	PWR1 0 V ^{*4}	External power supply 1 0 V
3	PWR2 0 V ^{*4}	External power supply 2 0 V
4	PWR2 24 V	External power supply 2 24 V
5	–	Not used

^{*4}: 0 V signal lines of No. 2, No. 3, and the power supply for the valve on the SI unit side are internally connected **Do not connect externally to 0V, unless the security of the SI Unit valve supply (US2/PWR(V)) can be guaranteed.**

6 How to Order

Refer to the product catalogue for the 'How to Order' details.

7 Outline Dimensions (mm)

Refer to the Operation manual for Outline dimensions.

8 Maintenance

8.1 General Maintenance

Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.
- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.
- Stop operation if the product does not function correctly.

9 Limitations of Use

9.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

10 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor / importer.

SMC Corporation

URL : <https://www.smcworld.com> (Global) <https://www.smc.eu> (Europe)
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