



ORIGINAL INSTRUCTIONS

Instruction Manual

Fieldbus device - Digital IO modules

EX245-DX1 / EX245-DY1



The intended use of this product is for the connection of Input and Output signals to a fieldbus system for the control of pneumatic valves.

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

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.

2 Specifications

2.1 EX245-DX1 - Digital Input Module

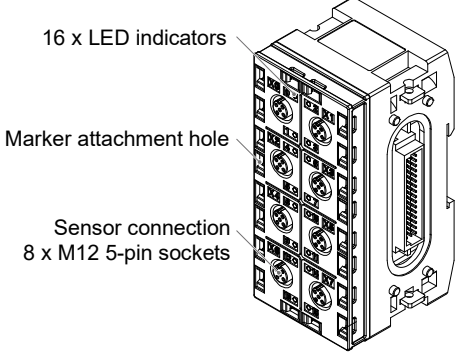
Item	Description
Dimensions (W x L x H)	54 x 120 x 61 mm
Weight	265 g
Housing material	Nylon, PBT
Rated supply voltage	24 VDC
Voltage drop to sensor supply	1.6 V maximum
Internal current consumption at 24 VDC	50 mA or less
Input connection type	8 x M12, 5-pins sockets with double allocation
Over Voltage protection	Yes, more than 28 VDC at US1 (sensor/input)
Over current protection	Yes
Sensor supply current per connector	0.5 A maximum
Sensor supply current per module	2 A maximum
Status indication	Yes (per input)
Over current indication	Yes (per connector)
Number of inputs	16
Input type	PNP
Signal 1	11 to 30 V
Signal 0	-3 to 5 V
Permissible residual current	1.5 mA maximum
Input current signal 1	4.5 mA typical

2.2 EX245-DY1 - Digital Output Module

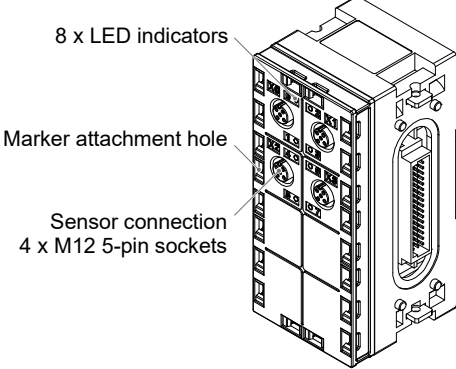
Item	Description
Dimensions (W x L x H)	54 x 120 x 61 mm
Weight	255 g
Housing material	Nylon, PBT
Rated supply voltage	24 VDC
Voltage drop to load supply	1.6 V maximum
Internal current consumption at 24 VDC	50 mA or less
Load connection	4 x M12, 5-pins sockets with double allocation
Over Voltage protection	Yes, more than 28 VDC at US2 (solenoid/output)
Over current protection	Yes
Output current per output	0.5 A maximum
Output current per module	2 A maximum
Status indication	Yes (per output)
Over current indication	Yes (per output)
Number of outputs	8
Output type	PNP

3 Names and Function of Parts

3.1 EX245-DX1



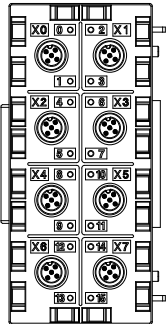
3.2 EX245-DY1



4 LED indicators

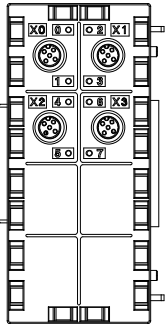
The status indicators are arranged on the EX245-DX1 and EX245-DY1 as shown in the illustrations below.

• EX245-DX1



X0 to X15	Description
OFF	Input is not activated, No errors.
Green ON	Input is activated.
Red ON	Short circuit is detected.

• EX245-DY1



X0 to X7	Description
OFF	Output is not activated, No errors.
Green ON	Output is activated.
Red ON	Short circuit is detected.

5 Installation

5.1 Installation

Warning

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

5.2 Environment

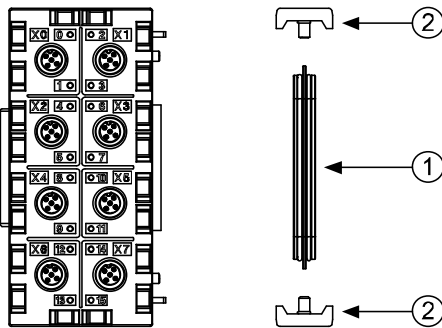
Warning

- 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.

5.3 Module Connection

Connect the SI Unit, the IO modules and the End plate using the 2 modular adaptor assemblies and a joint assembly. These are supplied together in a Joint pack (Part No.EX245-ZJP).

- ① 1 x Joint assembly
- ② 2 x Modular adaptor assembly (hexagonal socket wrench size 2.5 mm, torque = 1.3 N•m)



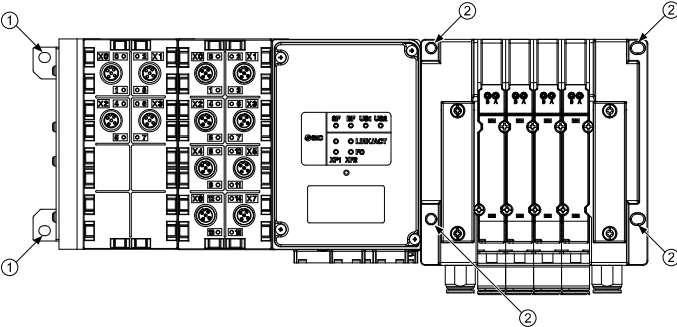
Caution

- For a protection rating of IP65 to be ensured the modular adaptor assemblies and joint assembly must be installed correctly between each module.
- To prevent the modules and assemblies being damaged, apply the recommended tightening torque.

5.4 Mounting

To prevent the manifold components being damaged, apply the recommended tightening torque. Mount the manifold using the 6 base mounting positions with screws. Required screws are as follows:

- ① 2 x M5 (End plate: torque = 1.5 N•m)
- ② 4 x M* (Valve manifold: refer to valve manifold catalogue)



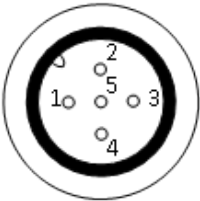
All manifolds are mounted using 6 screws (except VQC4000 which uses 5 screws).

6 Wiring

Caution

- To prevent damage all power supplies to the SI Unit must be turned off (de-energised) before the modules are installed or removed.
- For a protection rating of IP65 to be ensured, all covering caps must be screwed down correctly after wiring and settings have been performed.
- For a protection rating of IP65 to be ensured, unused sockets must be fitted with the M12 Seal cap.

Pin allocation of the M12, 5-pin socket connector as shown below:



EX245-DX1

Pin	Description
1	24 V
2	DI (input signal "n+1")
3	0 V (US1)
4	DI (input signal "n")
5	FE / Shield

EX245-DY1

Pin	Description
1	N.C.
2	DO (output signal "n+1")
3	0 V (valves/loads)
4	DO (output signal "n")
5	FE / Shield

7 Settings

7.1 Process data

- EX245-DX1

The EX245-DX1 occupies 2 bytes of input data. The following table shows the allocation of the digital inputs and the process image.

Digital Input allocation and process data

Connector position		
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