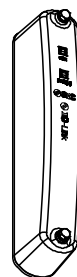




ORIGINAL INSTRUCTIONS

Instruction Manual

Fieldbus device - SI unit for IO-Link
EX430-SIL1

The intended use of this product is to control pneumatic valves and I/O while connected to the IO-Link protocol.

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 relating to systems.
ISO 4413: Hydraulic fluid power - General rules relating to systems.
IEC 60204-1: Safety of machinery - Electrical equipment of machines. (Part 1: General requirements)

ISO 10218-1: Manipulating industrial robots -Safety. etc.

- 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.

	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.

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

- Provide grounding to assure the safety and noise resistance of the Fieldbus system.**
Individual grounding should be provided close to the product using a short cable.
- When conformity to UL is required the SI unit must be used with a UL1310 Class 2 power supply.**

2 Specifications

2.1 General specifications

Item	Specifications
Ambient temperature	-10 to +50 °C
Ambient humidity	35 to 85%RH (No condensate)
Ambient storage temperature	-20 to +60 °C
Withstand voltage	500 VAC applied for 1 minute
Insulation resistance	500 VDC, 10 MΩ or more
Operating atmosphere	No corrosive gas
Enclosure	IP69K
Weight	100 g or less

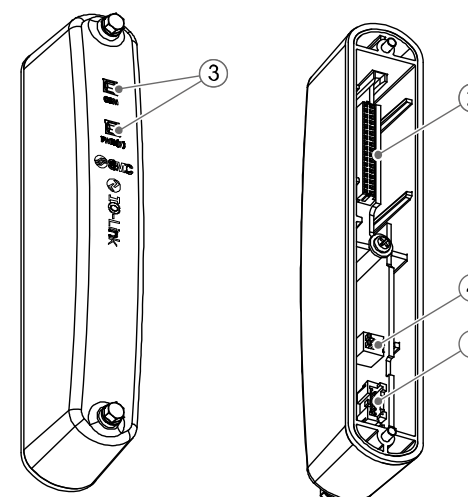
2.2 Electrical specifications

Item	Specifications	
Power supply voltage range / Current consumption	SI unit power supply	18 to 30 VDC 0.05 A max.
	Solenoid valve power supply	22.8 to 26.4 VDC 0.54 A or less (according to the solenoid valve specification)
Solenoid valve specification	Output type	PNP (negative common) / source type
	Connected load	Solenoid valve (with surge voltage suppressor) 24 VDC and 0.4 W or less (manufactured by SMC)
	Insulation	Power supply for SI unit – Power supply for solenoid valve
	Residual voltage	0.4 VDC or less
Applicable valve series	JSY5000-H	

2.3 IO-Link Communication specifications

Item	Specifications	
Protocol	IO-Link version 1.1	
Data transmission rate	230.4 Kbps (COM3) or 38.4 kbps (COM2) selectable	
Process data minimum cycle time	In/out 0/4 bytes, COM3	0.8 ms
	In/out 0/4 bytes, COM2	3.4 ms
	In/out 2/4 bytes, COM3	1 ms
	In/out 2/4 bytes, COM2	5 ms
Process data length (selectable)	0 byte input / 4 bytes output 2 bytes input / 4 bytes output (2 bytes input: Device Status)	
Number of outputs	32 outputs	
Vendor ID	83 hex	
Device ID	EX430-SIL1 (in/out 0/4 bytes, COM3)	237 hex
	EX430-SIL1 (in/out 0/4 bytes, COM2)	238 hex
	EX430-SIL1 (in/out 2/4 bytes, COM3)	239 hex
	EX430-SIL1 (in/out 2/4 bytes, COM2)	23A hex

3 Name and function of individual parts



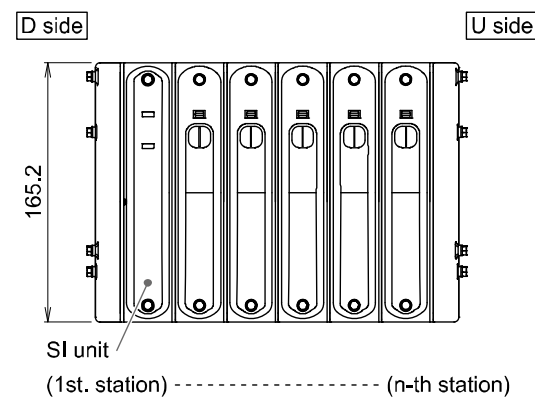
No.	Element	Description
1	Communication / power supply connector	IO-Link communication interface (port class B) for connection including power supply for solenoid valves
2	Output connector	Output signal interface for solenoid valve manifold.
3	LED Indication	LED display to indicate the SI unit status.
4	Switch	Switch for setting of data transmission rate of the SI unit (COM2 or COM3)

4 Installation

4.1 Installation

Warning

- Do not install the product unless the safety instructions have been read and understood.
- Assembly of the SI unit to the valve manifold.


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.
- Tighten the screws with the specified tightening torque (0.6 N•m).

4 Installation (continued)

4.2 Environment

Warning

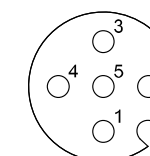
- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.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

5 Wiring

5.1 Fieldbus Interface Connector

- IO-Link communication and power supply connector layout (Port class B).

BUS IN : M12 5-pin plug, A-coded



No.	Signal	Description
1	L+	+24 V for SI unit
2	SV24V	+24 V for solenoid valve
3	L-	0 V for SI unit
4	C/Q	IO-Link communication
5	SV0V	0 V for solenoid valve

- Select the appropriate cables to mate with the connectors on the SI unit. Cable accessory details can be found in the product operation manual on the SMC website (URL: <https://www.smcworld.com>).

5.2 Ground Connection

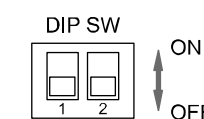
- Connect the ground terminal to ground.
Individual grounding should be provided close to the product with a short cable to assure the safety and noise resistance of the Fieldbus system. Resistance to ground should be 100 ohms or less.

6 Settings

6.1 Switch Setting

Process data size and data transmission rate setting.

- The switches should only be set with the power supply turned OFF.
- Open the cover and set the DIP switch with a small flat blade screwdriver.



No.2	Process data size
ON	2 bytes input/4 bytes output (2 bytes input: Device Status)
OFF	0 byte input/4 bytes output

*: Default setting is 0 byte input/4 bytes output (OFF).

No.1	COM2/COM3	Description
ON	COM2	COM2 (38.4 kbps)
OFF	COM3	COM3 (230.4 kbps)

*: Default setting is COM3 (OFF).

- The appropriate IODD file depends on the settings of the data transmission rate and process data size.
- Refer to the IODD file list below for details.

6 Settings (continued)

6.2 Parameter settings

- IODD file

An IODD (I/O Device Description) is a file that provides all of the necessary properties to establish communication and the necessary parameters and their boundaries to establish the desired function of a sensor or actuator.

It is the set of files of the main IODD file and image files such as a vendor logo, device picture and device icon.

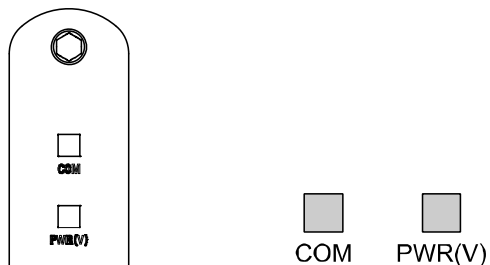
The corresponding IODD files for each product are as follows:

Data Transmission rate	Process data size	IODD File *
COM3 (230.4 kbps)	0 byte input / 4 bytes output	SMC-EX430-SIL1_04_3- yyyymmdd-IODD1.1
COM2 (38.4 kbps)		SMC-EX430-SIL1_04_2- yyyymmdd-IODD1.1
COM3 (230.4 kbps)	2 bytes input / 4 bytes output	SMC-EX430-SIL1_24_3- yyyymmdd-IODD1.1
COM2 (38.4 kbps)		(2 bytes input: Device Status) SMC-EX430-SIL1_24_2- yyyymmdd-IODD1.1

*: "yyyymmdd" in the file name indicates the date of the file creation.

For all other parameter settings refer to the Operation manual on the SMC website (URL: <https://www.smcworld.com>).

7 LED Indication



LED	LED Status	Description
COM	<input type="checkbox"/> Green ON	Power ON, IO-Link communication inactive
	<input type="checkbox"/> OFF	Power OFF
	<input type="checkbox"/> Flashing Green	IO-Link communication active
PWR(V)	<input type="checkbox"/> Yellow ON	Power for the solenoid valve is supplied
	<input type="checkbox"/> OFF	Power for the solenoid valve is not supplied or outside the tolerance range (19 V or less)

8 How to Order

Refer to the catalogue or operation manual on the SMC website (URL: <https://www.smcworld.com>) for the "How to Order" information.

9 Outline Dimensions (mm)

Refer to the catalogue or operation manual on the SMC website (URL: <https://www.smcworld.com>) for Outline dimensions.

10 Maintenance

10.1 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.

11 Limitations of Use

11.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

12 Product Disposal

This product shall not be disposed of as municipal waste. Check your local regulations and guidelines to dispose of this product correctly, in order to reduce the impact on human health and the environment.

13 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.smceu.com> (Europe)
 SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan
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