SMC

Expertise – Passion – Automation

Enjoy IO-Link advantages with SMC

Our IO-Link solutions

SMC your one-stop-shop for all your automation needs

Hot on the heels of Lean Manufacturing the focus has once again changed.

With the goal to improve manufacturing performance, using more automated operations and the use of **data analytics**, Smart Manufacturing (SM) is today's Holy Grail.

This technology-driven approach, using internet connected machinery to monitor the production process, has seen the development of smart machine components.

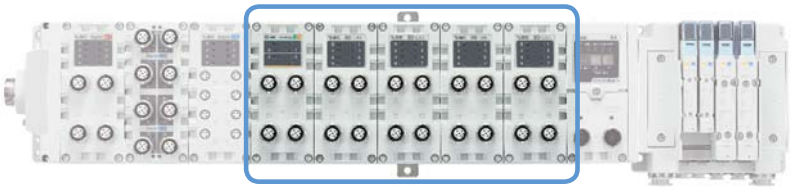
SMC IO-Link sensors, IO-Link master and IO Link actuators are just some of our **smart products** that can help improve your productivity and reduce your costs.

For more information on our **smart factory** solutions check out our latest products on our website today.

Our IO-Link products

Master

IO-Link Master
EX600-X60 Series



Sensors

High-precision digital pressure & vacuum sensor for air
ZSE20B(F)-L/ISE20B-L Series

High-precision digital pressure sensor for air & general fluids
ISE7□/7□G Series

Digital flow sensor for water
PF3W7□-X445 Series

Actuator position sensor
D-MP□ Series

Actuators

Valve control unit
EX260-SIL1-X207/X210 Series

Step motor controller
JXCL1 Series

Electro-pneumatic regulator
ITV10□0/20□0/30□0-X395 Series

New technology enables sensors and actuators to become smarter but…

What is IO-Link really?

IO-Link (IEC61131-9) is an open standard serial communication protocol that allows the bi-directional exchange of data from sensors and devices that support IO-Link and are connected to a master. The IO-Link master can transmit this data over various networks, fieldbuses, or backplane buses, making the data accessible for immediate action or long-term analysis via an industrial information system (PLC, HMI, etc.).

Each IO-Link device has an IODD (IO Device Description) file that describes it and its IO-Link capabilities.

Did you know that…

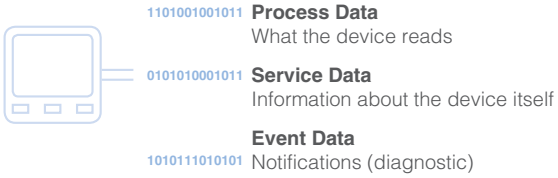
IO-Link is *not* another fieldbus. It is a point-to-point communication between a compatible IO-Link Master and a field device. Because IO-Link is an open standard, Master devices are available for virtually **any fieldbus or automation system (PLC)**.

IO-Link

IO-Link with SMC: **The 6 advantages**

Increased data availability

There are **three primary data types** made available, which are categorized into *cyclic data* (data automatically transmitted on a regular basis) or *acyclic data* (data transmitted as needed or upon request).



Product diagnostic

No need to wait for a process failure to replace a sensor. Devices are always being monitored to know the state of their health with **Event Data**.

Depending on the device, you can track if they are suffering excessive temperature, pressure, if they are out of range, internal default, etc.

Standard wiring

The entire measured value **transmission is digital**, thus, all device **parameter are stored in the IO-Link** master. The data transfer is based on a 24 V signal and the **shielded wires are not required**.

Remote access

Customised solutions force a **continuous change in parameters**. The overall setting control from the control system (PC) minimises time, increasing machine availability.

Easy device replacement

Plug & play replacement simplifies the connection: a common connector for communication and power. Parameters are saved in the master, enabling **automatic setting** once the device is connected.

Tamper free

The key-lock function keeps unauthorised persons from tampering with the settings.

Together these advantages result in:

- Reduce overall costs
- Increase process efficiency
- Improve machine availability.

Our IO-Link solutions

IO-Link

High-precision digital pressure & vacuum sensor for air

ZSE20B(F)-L/ISE20B-L Series

- Applicable fluid: Air
- 3 parameters visible on the screen
- Red/green colour values to identify the acceptable range
- Pressure ranges: from -100 kPa to 1 MPa
- Repeatability: ±0.2 % F.S. ±1 digit
- Output: IO-Link and NPN/PNP
- IP65 Enclosure
- Consumption: 35 mA or less
- Power saving mode available.

Internal failure, abnormal internal temperature, outside of rated range, diagnostic bit (process data).

Selected part numbers

Part number	Rated pressure range	Applicable fluid	Piping	Output
ISE20B-L-M5	0 to 1 MPa	Air, Non-corrosive gas, Non flammable gas	M5 female thread	IO-Link/Switch: 1 output
ZSE20B-L-M5	0 to -100 kPa			
ZSE20BF-L-M5	-100 to 100 kPa			

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High-precision digital pressure sensor for air & general fluids

ISE7☐/ISE7☐G Series

- Applicable fluid: Air and general fluids
- 3 parameters visible on the screen
- Red/green colour values to identify the acceptable range
- Pressure ranges: from 0 to 10 MPa
- Metal housing, solid turnable body
- Repeatability: ±0.5 % F.S. or less
- Output: IO-Link and NPN/PNP
- IP67 Enclosure
- Consumption: 35 mA or less
- Power saving mode available.

Selected part numbers

Part number	Rated pressure range	Applicable fluid	Piping	Output
ISE70-F02-L2	0 to 1 MPa	Air, Non-corrosive gas, Non flammable gas	G1/4	IO-Link: Switch output 1 + Switch output 2 (Switch output: NPN or PNP switching type)
ISE71-F02-L2	0 to 1.6 MPa			
ISE70G-F02-L2	0 to 1 MPa	Liquid or gas that will not corrode materials of parts in contact with fluid		
ISE75G-F02-L2	0 to 2 MPa			
ISE76G-F02-L2	0 to 5 MPa			
ISE77G-F02-L2	0 to 10 MPa			

Internal failure, abnormal internal temperature, outside of rated range, short-circuit detection, diagnostic bit (process data).

For dimensions and other details refer to the general catalogue of each series in www.smc.eu

Digital flow sensor for water

PF3W7☐-X445 Series

- Applicable fluid: Water
- 3 parameters visible on the screen
- Red/green colour values to identify the acceptable range
- Flow ranges: from 0.5 to 40 l/min
- Repeatability: ±2 % F.S.
- Output: IO-Link
- With temperature sensor
- IP65 Enclosure
- Consumption: 50 mA or less.

Internal failure, abnormal internal temperature, outside of rated range, diagnostic bit (process data).

Selected part numbers

Part number	Rated flow range	Applicable fluid	Piping	Output
PF3W704-F03-LT-M-X445	0.5 to 4 l/min	Water and ethylene glycol aqueous solution (Viscosity: 3 mPa·s (3 cP) or less)	3/8	IO-Link: Switch output (N/P)
PF3W720-F04-LT-M-X445	2 to 16 l/min		1/2	
PF3W740-F06-LT-M-X445	5 to 40 l/min		3/4	

Actuator position sensor

D-MP☐ Series

- Measuring range: 25, 50, 100, 200 mm
- Repeatability: 0.1 mm
- Output: IO-Link, NPN/PNP and analogue (0 to 10 V or 4 to 20 mA)
- IP67 Enclosure
- Teach pad: Setting is available by simply touching the touch pad
- Consumption: 48 mA or less
- Applicable cylinders: MB, CQ2, MGP, CXSJ, CP96, C96, C55 Series.

How to Order

D-MP 025 A
① ②

① Measuring range

Symbol	Specifications
025	25 mm
050	50 mm
100	100 mm
200	200 mm

② Lead wire

Symbol	Specifications
A	Separate line, 2.0 m
B	M8-4 pin, 0.3 m
C	M12-4 pin, 0.3 m

Internal failure, abnormal internal temperature, outside of rated range, reduced magnetic field strength.

IO-Link Master

EX600-X60 Series

- Connectable only with CC-Link IE Field compatible SI unit
- Up to 4 communication ports
- Up to 9 masters IO-link per serial interface
- Mixing possible with digital input/output units or analogue units
- Modular connection with input/output units or valves is possible
- IP67 Enclosure.

How to Order

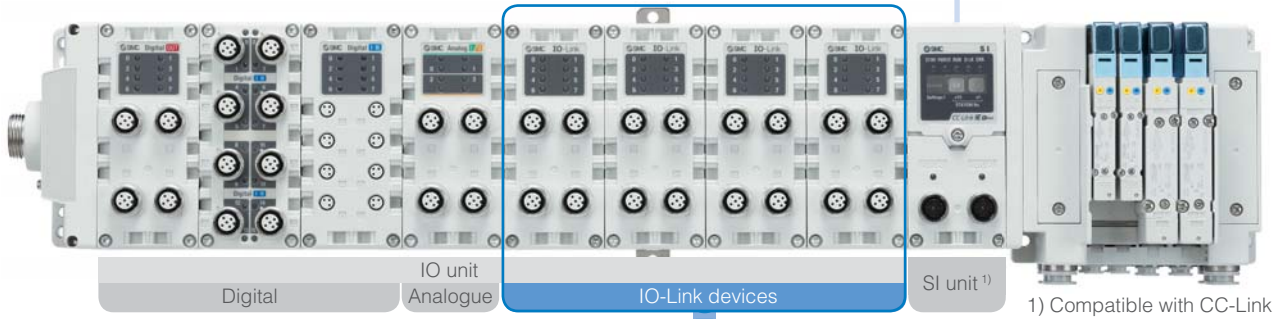
EX600-GIL B-60
① ②

① Communication protocol

② Number of ports

B	4 ports

PLC



1) Compatible with CC-Link SI Unit: EX600-SCF1-X60

1011001

01011010

Valve control unit

EX260-SIL1-X207/X210 Series

- Send and receive ON/OFF signals + unit information/status
- Supports data update cycles of 1 ms or less
- IO-Link master and SI unit can be connected with one cable
- Uses 4-wire or 5-wire unshielded cables.

How to Order

EX260-S IL 1 - X207
① ② ③

① Communication protocol

IL	IO-Link

② Output specifications

1	32 outputs, PNP (Negative common/Source

③ IO-Link port class

X207	IO-Link port Class A, valve power supplied from another connector
X210	IO-Link port Class B

Internal failure, abnormal internal temperature, short-circuit detection (valve output wiring), open-circuit detection (valve output wiring), external power supply failure (valve power supply), number of valve operations exceeded.

For dimensions and other details refer to the general catalogue of each series in www.smc.eu

Electro-pneumatic regulator

ITV-X395 Series

- Applicable fluid: Air (oil free)
- Linearity: ±1 % F.S. or less
- Hysteris: 0.5 % F.S. or less
- Repeatability: ±0.5 % F.S. or less
- Pressure ranges: 0.1, 0.5, 0.9 MPa
- Repeatability: ±2 % F.S.
- Output/input: IO-Link
- IP65 Enclosure
- Consumption: 80 mA.

Internal failure, outside of rated range, set pressure reached (process data).

Selected part numbers

Part number	Model	Pressure range	Port size
ITV1010-IOF1N-X395	1000 type	0.1 MPa	G1/8
ITV1030-IOF1N-X395		0.5 MPa	
ITV1050-IOF1N-X395		0.9 MPa	
ITV2010-IOF2N-X395	2000 type	0.1 MPa	G3/8 [1]
ITV2030-IOF1N-X395		0.5 MPa	
ITV2050-IOF1N-X395		0.9 MPa	
ITV3010-IOF4N-X395	3000 type	0.1 MPa	G1/2
ITV3030-IOF4N-X395		0.5 MPa	
ITV3050-IOF4N-X395		0.9 MPa	

1) Also for 3000 type.

Step motor controller

JXCL1 Series

- Multiple compatible actuators: All 24 VDC stepper motor axis
- Two types of operation command: step no. defined operation and numerical data defined operation
- Current consumption: 100 mA or less
- Applicable electric actuators: LEF, LEM, LEL, LEY/LEYG, LES/LESH, LEPY/LEPS, LEH, LER.

External power supply failure (control power supply), motor control related alarm, diagnostic bit (process data).

Selected part numbers

Part number	Communication protocol	Mounting
JXCL17	IO-Link	Screw mounting
JXCL18		DIN rail

Common specifications

	ZSE20B(F)-L/ ISE20B-L	ISE7□/ ISE7□G	PF3W7□-X445	D-MP□	EX600-X60	EX260-SIL1-X207/ X210	ITV-X395	JXCL1
IO-Link version	V1.1	V1.1	V1.1	V1.1	V1.1	V1.1	V1.1	V1.1
Process data length	2-byte input	2-byte input	6-byte input	2-byte input	32-byte input/32-byte output (per port)	4-byte output	2-byte input/2-byte output	14-byte input/22-byte output
Transmission speed	COM2 (38.4 kbps)	COM2 (38.4 kbps)	COM2 (38.4 kbps)	COM3 (230.4 kbps)	—	COM3 (230.4 kbps)	COM3 (230.4 kbps)	COM3 (230.4 kbps)
Minimum cycle time	2.3 ms	2.3 ms	3.5 ms	1.0 ms	—	0.8 ms	0.7 ms	2.4 ms
IO-link port type	Class A	Class A	Class A	Class A	Class A	Class A/ Class B	Class A	Class A

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