

IO-LINK BASICS AND TECHNOLOGY

Getting to the point.

An IO-Link is a point-to-point connection within any network, fieldbus or backplane bus. The IO-Link master can be installed either directly in the field or in the control cabinet.

An IO-Link device can be any sensor, actuator or even a combination of the two.

This device is connected to the IO-Link master by means of a standard connection cable with a maximum length of 20 m. The IO-Link device communicates with the IO-Link master using a driver file (the IODD – IO-Link Device Description) and can send and receive signals (binary switch signals or analog signals). The IO-Link digitizes these signals directly so that they can be transferred virtually free of interference.

The international IO-Link standard (in accordance with IEC 61131-9) is now regarded as an **“enabler for Industry 4.0”**



1. Reduced costs

Through reduced storage time

2. Implementation of innovative machine concepts

Thanks to continuous communication

3. Shortening of commissioning times

with cabling using standards

4. Increasing machine productivity

Due to independent parameterization and identification

5. Revolutionizing maintenance

Due to self-diagnosis



This is how IO-Link functions

- Standardized bidirectional point-to-point communication interface for the connection of intelligent sensors and actuators
- Backward compatible for binary PNP or push-pull sensors
- Operation modes without IO-Link (SIO mode) or with IO-Link communication
- 3 standardized data transmission rates
4,800 (COM 1), 38,400 (COM 2), 230,400 Baud (COM 3)
- Unshielded standard sensor cables with a cable length up to 20 m
- Cyclical and acyclical data:
Process data (e.g. switch signals or distance values) is transmitted cyclically, service data (e.g. parameters) is transmitted acyclically

Photos of PLCs and modules: © Siemens AG 2017, all rights reserved.

IOL MASTER

The IO-Link Device V4 tool can be used for operating sensors and actuators with an IO-Link interface (IO-Link devices). The IO-Link devices are described by XML device descriptions and can thus be conveniently monitored and configured in multiple languages. The tool is designed for presetting, testing and demonstrating IO-Link devices. The tool is not intended for ongoing operation in production systems.



We have set up 3 user levels in IODD for you

- **OPERATOR**
View only
- **MAINTENANCE**
Teach-in and modification of approved settings
- **SPECIALIST**
Full access to all available setting options

Only the relevant setting options are provided in the IODD, as opposed to the exhaustive, full listing of all options, which would be confusing.

The IODD was completely developed in accordance with the Smart Sensor Profile, thus making it possible to configure the sensor directly over the SPS without additional parameterization software. The Smart Sensor Profile describes the assignment of the most important indices and sub-indices, thereby enabling devices to be addressed directly by means of the master if the IODD is not available.

Software that does away with lengthy explanations
You know intuitively what each property represents.

Technical data	
USB	USB 2.0 (Mini USB B)
Power supply	5 V / 500 mA (PC USB)
	24 V / 80 mA (IO-Link device from USB)
	24 V / 1 A (IO-Link device from the power supply)
Protected against polarity reversal	Yes
Protection class	III
IO-Link communication	IO-Link specification V1.1
IO-Link port class	A
Temperature range for operation	0 to 45 °C
Storage temperature	-40 to 80 °C
Protection class	IP 20

IO-Link device	
Scope of delivery: IO-Link device tool -USB A-B cable -AC adapter (24V/24W) -"Read Me First" document	IOL master

Accessories	
Connection cable (coupling M12, 4-pin / M12 connector, 4-pin)	VSHM-Z-0.6/VKM-Z/4
Adapter plug (coupling M8, 3-pin / connector M12, 3-pin)	M8K/M12S
Adapter plug (coupling M8, 4-pin / connector M12, 4-pin)	M8K/M12S/4

System requirements for operating the IO-Link device tool V 4.0 software	
Computer Computer with an available USB 1.1 or 2.0 port Ethernet network interface	Operating System Windows 7 32/64 bit Service Pack 1 Windows 8.1 32/64 bit Windows 10 64 bit Microsoft.Net Framework 3.5
Monitor Resolution of 1024x768 or higher	

IOL PORTABLE

IOL Portable enables the display of measured values as well as the diagnoses and the configuration of IO-Link-capable sensors without additional control. The handheld device enables you to operate IO-Link sensors without additional hardware.



We have set up 3 user levels in IODD for you

- **OBSERVER**
Identification, observe, diagnosis
- **MAINTENANCE**
Identification, observe, diagnosis, parameter (basic)
- **SPECIALIST**
Full access to all provided setting options
- Universal IO-Link handheld master
- App-based, no prior knowledge necessary
- Integrated touchscreen and plug connectors
- Integrated battery, IO-Link master and WLAN
- For identification, configuration and diagnostics
- IODD download via IODDfinder
- For devices with IODD Specification 1.1

Technical data	+20°C, 24 VDC
Power consumption	80 mA
Inverse polarity protection	Yes
Power supply	24V / 80 mA (IO-Link device from battery)
Housing dimensions	62 x 222 x 90 mm
Housing material	Polycarbonate
Protection class	III, operation on protective low voltage
To be used for	For devices with IODD Specification 1.1
Functions	Without PC
Communication	IO-Link specification V 1.1, IO-Link port class A
Ambient temperature during operation	0 to +40 °C
Protection class	IP 30
Connection	Socket, M8, 3-pin
Connection 2	Socket, M8, 4-pin
Connection 3	Socket, M12, 4-pin

IOL Portable	
Scope of delivery: -IO-Link handheld master -Cable with clamps 0.3m with M12 connector, 4-pin -Protective bag -Micro-USB cable -Quickstart instructions	IOL Portable

Accessories	
Connection cable (coupling M12, 4-pin / M12 connector, 4-pin)	VSHM-Z-0.6/VKM-Z/4