# IO-Link Field I/O

IO-Link Overview

IO-Link is a standardized protocol that enables connection of intelligent devices (sensors and actuators) to an automation system.

Communication takes place between an IO-Link master and one or more IO-Link devices. IO-Link is a point-to-point communication system and is not a fieldbus. A master module has one or more ports and one device can be connected to each port.

The IO-Link master module is the interface between the controller and the IO-Link system, using EtherNet/IP or EtherCAT.
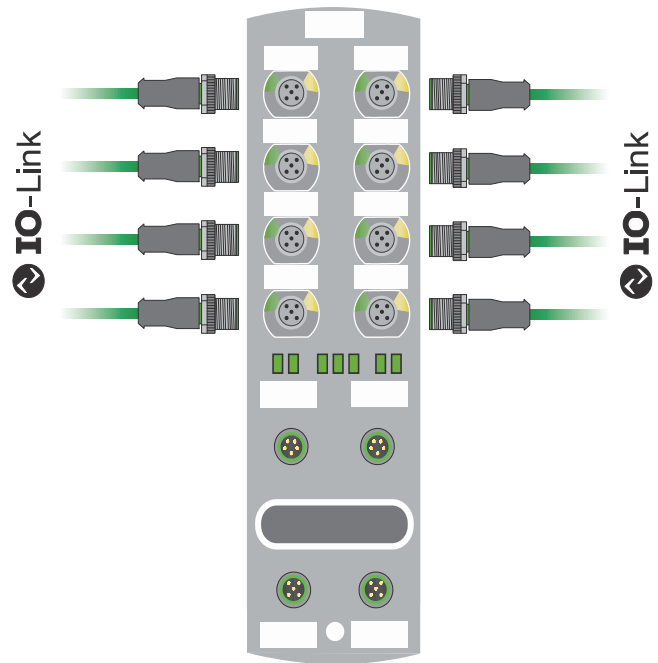
Features

- No field wiring is typically required. IO-Link devices plug into M12 ports.
- Rich sensor data can add diagnostics, history, and engineering units automatically, all delivered over one cable.
- Automatic device configuration can speed up and simplify field replacement.
- IO-Link Masters support daisy-chaining for easy installation of many devices.
- Premiere integration with Productivity PLC and BRX via EDS files

IO-Link Masters		
Part Number	Description	Price
SIOL-EI8B	STRIDE Basic EtherNet/IP IO-Link master, (8) IO-Link capable I/O points, up to (16) discrete I/O points, IO-Link v1.1, 8A, 1A/port, IP65 and IP67.	$290.00
54631	Murrelektronik Premium EtherNet/IP IO-Link master, (8) IO-Link capable I/O points, up to (16) discrete I/O points, IO-Link v1.1, 16A, 2A/port, IP65 and IP67.	$385.00
54632	Murrelektronik Premium EtherCAT IO-Link master, (8) IO-Link capable I/O points, up to (16) discrete I/O points, IO-Link v1.1, 16A, 2A/port, IP65 and IP67.	$399.00

IO-Link Hubs		
Part Number	Description	Price
59507	Murrelektronik IO-Link hub, up to (8) discrete I/O points, (8) 3-pin M8 ports, 24 VDC, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, 4A, 0.5A/port, IP68. Requires IO-Link master.	$195.00
59710	Murrelektronik IO-Link hub, up to (16) discrete input points, (8) 5-pin M12 A-coded ports, 24 VDC, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, IP68. Requires IO-Link master.	$180.00
59712	Murrelektronik IO-Link hub, up to (16) discrete I/O points, (8) 5-pin M12 A-coded ports, 24 VDC, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class B Device, 4A, 2A/port, IP68. Requires IO-Link master.	$215.00
59719	Murrelektronik IO-Link hub, up to (16) discrete I/O points, (8) 5-pin M12 A-coded ports, 24 VDC, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, 4A, 0.5A/port, IP68. Requires IO-Link master.	$215.00
59738	Murrelektronik IO-Link hub, up to (16) discrete I/O points, (8) 5-pin M12 A-coded ports, 24 VDC, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, 12A, 4A/port, IP68. Requires IO-Link master.	$301.00
59840	Murrelektronik IO-Link hub, up to (4) analog input channel(s), (4) 5-pin M12 A-coded port(s), current/voltage, 24-bit, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, IP65, IP67 and IP68. Requires IO-Link master.	$229.00
59841	Murrelektronik IO-Link hub, up to (4) temperature input channel(s), (4) 5-pin M12 A-coded port(s), RTD, 24-bit, IO-Link v1.1.2 (compatible with v1.1.3), IO-Link Class A Device, IP65, IP67 and IP68. Requires IO-Link master.	$219.00

IO-Link Masters

Features

- EtherNet/IP or EtherCAT Communication
- IP65 / IP67 rated
- Each port offers one dedicated digital I/O pin plus a second selectable pin for IO-Link, digital input or digital output.

SIOL-EI8B

54631

54632

CE

IO-Link

EtherNet/IP

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LISTED
IND. CONT. EQ
E201820

EtherCAT

UK CA

IIoT Functions			
Part Number	*SIOL-EI8B*	*54631*	*54632**
Web Interface	Yes		
Energy monitoring	Yes, Current and voltage		
Temperature monitoring	Yes		
OPC UA	**For IO-Link**	No	Yes. Complies with Companion Specification Release 1.0 and Murrelektronik IO-Link diagnostic information model
	Transport	No	UA TCP, UA Secure Conversation, UA Binary Encoding
	Minimum release interval	No	100 ms
	Maximum sessions/clients	No	5
JSON	No	Yes, via REST API and MQTT	

*Requires an EtherCAT master with Ethernet over EtherCAT

Bus Data			
Part Number	*SIOL-EI8B*	*54631*	*54632*
Fieldbus protocol	EtherNet/IP		EtherCAT
Transfer Rate	10/100 Mbit/s		100 Mbit/s
Addressing	BOOTP, DHCP, WebUI (Unsecure), Rotary encoder switch		Rotary encoder switch, EEPROM
Connection types	Exclusive Owner, Listen Only, Input Only		AoE, CoE, EoE, FoE
Device Level Ring (DLR)	Beacon-based		N/A
Connector	M12, 4-pin, D-coded		

IO-Link	
IO-Link devices operating voltage	24VDC ⎓
IO-Link devices voltage range	20–30V
Transfer rate	4.8, 38.4 or 230.4 kbit/s
Standardized Master Interface (SMI)	IO-Link V1.1.3
Transfer rate recognition	Automatic

Supply	
Operating voltage US	24VDC ⎓
Voltage range US	18–30V
	20.3–30V when using IO-Link
Operating voltage UA	24V
Voltage range UA	18–30V
Sensor current US	≤16A at ≤40°C (see Derating)
Actuator current UA	≤16A at ≤40°C (see Derating)
Current consumption	≤0.18 A at idle
Connector	M12, 5-pin, L-coded
Conductor cross-section	Current per supply ≤12 A: #14 AWG Current per supply >12 A: #12 AWG

Materials			
Part Number	*SIOL-EI8B*	*54631*	*54632*
Housing material	Plastic		

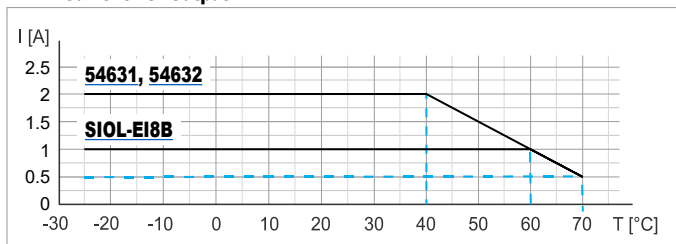| Assembly Data			
Part Number	*SIOL-EI8B*	*54631*	*54632*
Weight (net)	470g [16.6 oz]		
Dimensions (L x W x H)	225.4 x 63 x 36 mm [8.874 x 2.5 x 1.4 in]		
Drawing	PDF	PDF	PDF

IO-Link Masters
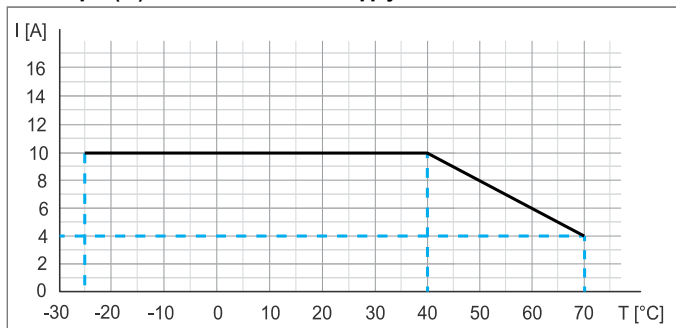
Derating Charts

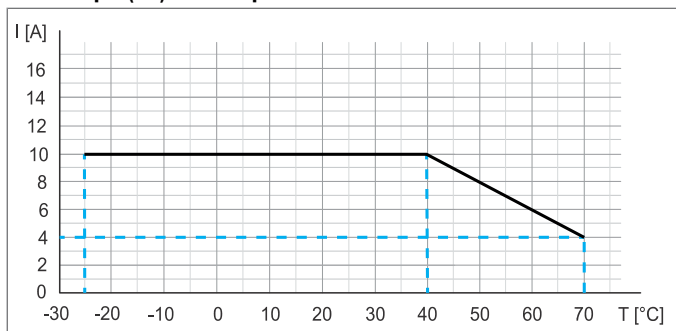**Supply Sensor Current US and Actuator Current UA**
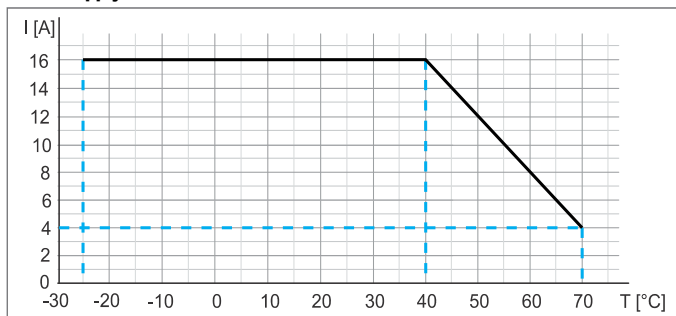
Current Per Sensor Power Supply
Current Per Output

Input (DI) Total Current Sensor Supply

Output (DO) Total Output Current

Input (DI)			
Part Number	*SIOL-EI8B*	*54631*	*54632*
Sensor power supply (US) (see Derating)	≤1A load Automatic start, per port, at ≤60°C	≤2A load Automatic start, per port, at ≤40°C	
Total current sensor supply	≤10A at ≤40°C (see Derating)		
Filter time	0–15 ms + tcycle, adjustable		
Delay time for signal change	2–5 ms		
Input characteristic	EN 61131-2, Type 1 + Type 3		
Short-circuit protection, sensor supply	MOSFET with current measurement		
Connector	M12, 5-pin, A-coded		
Conductor cross-section	#18 AWG		
Conductor length	≤30m [98ft]		
Total current	≤2A per port	≤4A per port	

Output (DO)			
Part Number	*SIOL-EI8B*	*54631*	*54632*
Output current DO (UA)	≤1A per channel at ≤60°C (see Derating)	≤2A per channel at ≤40°C (see Derating)	
Total output current	≤10A at ≤40°C (see Derating)		
Frequency	≤50 Hz		
Short-circuit protection actuator	MOSFET with current measurement		
Connector	M12, 5-pin, A-coded		
Conductor cross-section	#18 AWG		
Conductor length	≤30m [98ft]		
Total current	≤2A per port	≤4A per port	

Environmental	
Operating temperature	-25°C to +70°C [-13°F to +158°F]
Storage & transport temperature	-25°C to +85°C [-13°F to +185°F]
	Provide acclimatization for commissioning
Relative humidity	≤95%
Installation altitude	≤3000m above sea level

Mechanical	
Vibration test	EN 60068 Part 2-6: 10–58 Hz, Oscillation angle 0.35 mm, 58–150 Hz; 20 g
Shock test	EN 60068 Part 2-27: 50 g, duration 11 ms

Device Protection	
Overvoltage protection	Yes
Overload protection module supply	Yes. To be ensured through load circuit monitoring
Reverse-polarity protection module supply US and UA	Yes
Short-circuit protection sensor supply	Electronically
Short-circuit protection output	Electronically
Protective circuit input	Suppressor diode, internal

EMC Immunity	
Electrostatic discharge (ESD)	EN 61000-4-2
Electromagnetic RF fields	EN 61000-4-3
Fast transient burst	EN 61000-4-4
Surge AC	EN 61000-4-5
Conducted RF fields	EN 61000-4-6
Voltage dips	EN 61000-4-11

Electrical Safety	
Protection degree	EN 60529: IP67
Protection class	III, using a SELV- or PELV- power supply
Pollution degree	2

Electrical Interference	
Radiated interference E-field enclosure	EN 55016-2-3

IO-Link Masters

Conformity, Approvals

Product standard	EN 61131-2, Programmable logic controllers
CE	2014/30/EU, 2011/65/EU
UKCA	Compliant
EMC	2014/30/EU
REACH	No. 1907/2006, SVHC List
WEEE	2012/19/EU, Category 5
cUL	CSA C22.2 NO. 61010-1, 3rd Ed., CSA C22.2 NO. 61010-2-201:18, 2nd Ed. E201820
ULus	UL 61010-1, 3rd Ed., UL 61010-2-201, 2nd Ed. E201820
China RoHS	GB/T 26572, 25 EPUP

Hazardous Substances

Part Name	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr (VI))	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Component part PCB	X	O	O	O	O	O
Connection Terminal/Screws	X	O	O	O	O	O

O: Indicates that the content of the harmful substance in all homogeneous materials of the component part is below the limit defined in GB/T 26572.

X: Indicates that the content of the harmful substance in at least one homogeneous material of the component part exceeds the limit defined in GB/T 26572.
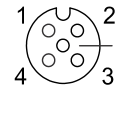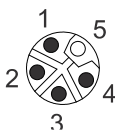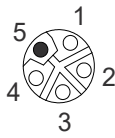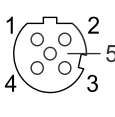
Module Port Designations and Pinouts
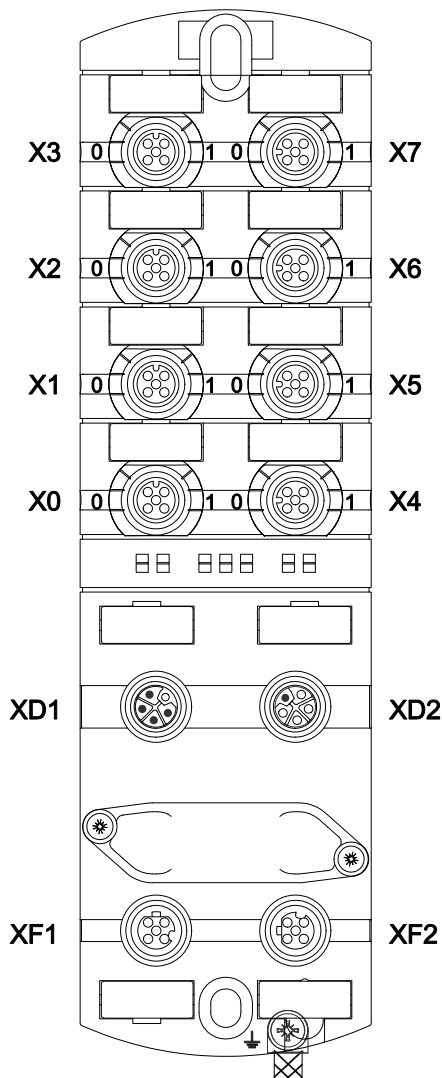
Port Designations

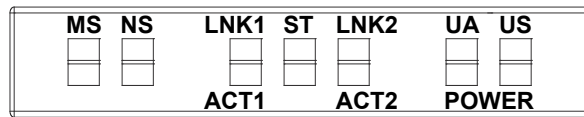|	
X0–X7	Digital inputs and outputs or IO-Link, M12, A-coded
	LED 0 corresponds to pin 4 LED 1 corresponds to pin 2
XD1	Power supply POWER IN, M12, L-coded, 5-pin
XD2	Power supply POWER OUT, M12, L-coded, 5-pin
XF1	Ethernet port 1, M12, D-coded
XF2	Ethernet port 2, M12, D-coded

Pin Assignments

X0–X7	M12 A-coded female connectors	
	Pin 1	24VDC ⎓ US
	Pin 2	DI/DO
	Pin 3	0V
	Pin 4	DI/DO/IO-Link
	Pin 5	0V
XD1	**M12, L-coded, Power IN**	
	Pin 1	24VDC ⎓ US (operating voltage)
	Pin 2	0V UA (actuator voltage)
	Pin 3	0V US
	Pin 4	24VDC ⎓ UA
	Pin 5	⏚
XD2	**M12, L-coded, Power OUT**	
	Pin 1	24VDC ⎓ US (operating voltage)
	Pin 2	0V UA (actuator voltage)
	Pin 3	0V US
	Pin 4	24VDC ⎓ UA
	Pin 5	⏚
XF1/XF2	**M12 female connector, D-coded, Ethernet**	
	Pin 1	TD +
	Pin 2	RD +
	Pin 3	TD -
	Pin 4	RD -
	Pin 5	n.c.

IO-Link Masters

LED Indicators
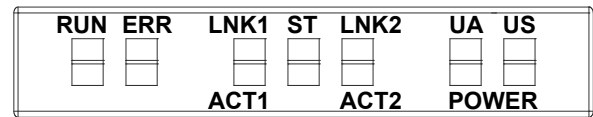
The IO-Link master modules are equipped with the following separate LED indicators:

- an individual LED status indicator for each input and output pin
- NS (network status): indicates the state of the fieldbus system (models SIOL-EI8B and 54631)
- MS (module status): indicates the state of the module in the PLC configuration (models SIOL-EI8B and 54631)
- LNK/ACT (Link/Activity): indicate the state of EtherNet/IP or EtherCAT communications at each port
- RUN: indicates the device's operational mode (model 54632)
- ERR: indicates the device's error state (model 54632)
- ST: indicates the state of the overall module
- POWER UA: actuator voltage
- POWER US: operating voltage
- extended indications via blink patterns

Pin 2

Pin 4

0   1   0   1

MS NS   LNK1 ST LNK2   UA US

ACT1   ACT2   POWER

SIOL-EI8B, 54631

RUN ERR   LNK1 ST LNK2   UA US

ACT1   ACT2   POWER
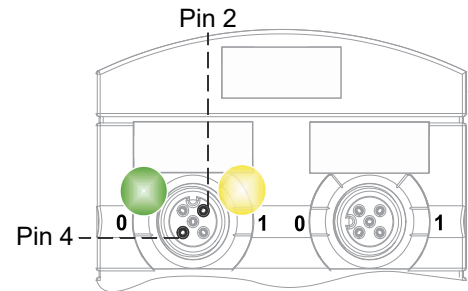
54632

Web-based User Interface

The IO-Link master modules have a built-in web server for easy access to device status, configurations, and diagnostics.

English ▾	Logged in as: Guest	About	

Stride Powered by MURR ELEKTRONIK

STATUS	PARAMETERS	DIAGNOSTICS	MAINTENANCE

Station Name / Station Type

Collapse all	Expand all		↻ Refresh

SIOL-EI8B STRIDE IO-Link Basic DIO8 IOL8

- ▸ Vendor information
- ▸ Device information
- ▸ Device version
- ▸ Maintenance information
- ▸ Device status

- IO-Link Master Port X0
- IO-Link Master Port X1
- IO-Link Master Port X2
- IO-Link Master Port X3
- IO-Link Master Port X4
- IO-Link Master Port X5
- IO-Link Master Port X6
- IO-Link Master Port X7
- Digital IO Channels
- Settings / Maintenance
- User Administration
- Sign In

Universal Field I/O tFED-99