Stride Field I/O Modules

SIMPLE & COMPACT FIELD I/O!

The *Stride* Field I/O family of modules provides a simple and economical means to connect inputs and outputs to a Modbus TCP communications network.

Each module operates as a standalone Modbus TCP server, and can be configured via a built-in web server.

Analog input, output and thermocouple modules have fully isolated or isolated-in-pairs channels for noise-sensitive applications.

FEATURES

- Interfaces remote I/O points to a Modbus TCP network via Ethernet 10/100 Base-T
- Analog current, voltage, resistance & temperature inputs available
- Digital inputs available
- Analog current and voltage outputs available
- Discrete relay and transistor outputs available
- Isolated power sources
- Integrated web server for status and configuration
- Remotely configurable
- Removable screw terminals
- LED status signaling
- Galvanic isolation
- IP20 rated
- –10°C to +40°C UL operating temp. (–10°C to +60°C non-UL)
- UL listed / CE mark
- DIN rail mounting

Stride Field I/O Modules		
Part Number	***Description***	***Price***
SIO-MB04ADS	STRIDE analog input module, 4-channel, current/voltage, 16-bit, isolated, input current signal range(s) of +/- 20 mA, input voltage signal range(s) of +/- 10 VDC, (1) Ethernet (RJ45) port, Modbus TCP server, external 20-30 VDC required.	$229.00
SIO-MB08ADS-1	STRIDE analog input module, 8-channel, current, 16-bit, isolated, input current signal range(s) of +/- 20 mA, (1) Ethernet (RJ45) port, Modbus TCP server, external 14-30 VDC required.	$249.00
SIO-MB08ADS-2	STRIDE analog input module, 8-channel, voltage, 16-bit, isolated, input voltage signal range(s) of +/- 10 VDC, (1) Ethernet (RJ45) port, Modbus TCP server, external 14-30 VDC required.	$249.00
SIO-MB04DAS	STRIDE analog output module, 4-channel, current/voltage, 16-bit, isolated, output current signal range(s) of 0-20 mA, output voltage signal range(s) of 0-10 VDC, (1) Ethernet (RJ45) port, Modbus TCP server, external 18-30 VDC required.	$209.00
SIO-MB04THMS	STRIDE temperature input module, thermocouple, 4-channel, 16-bit resolution, isolated, input thermocouple type(s): J, E, K, R, S, T, B, N, (1) Ethernet (RJ45) port, Modbus TCP server, external 14-30 VDC required.	$219.00
SIO-MB08THMS	STRIDE temperature input module, thermocouple, 8-channel, 16-bit resolution, isolated, input thermocouple type(s): J, E, K, R, S, T, B, N, (1) Ethernet (RJ45) port, Modbus TCP server, external 14-30 VDC required.	$259.00
SIO-MB04RTDS	STRIDE temperature input module, RTD, 4-channel, 16-bit resolution, isolated, input RTD type(s): Pt100, Pt1000, Ni100 and Ni1000, (1) Ethernet (RJ45) port, Modbus TCP server, external 18-30 VDC required.	$249.00
SIO-MB16ND3	STRIDE discrete input module, 16-point, 12-24 VDC, sinking/sourcing, 2 isolated common(s), 8 point(s) per common, (1) Ethernet (RJ45) port, Modbus TCP server, external 10-30 VDC required.	$219.00
SIO-MB12CDR	STRIDE discrete combo module, Input: 8-point, 12-24 VDC, sinking, Output: 4-point, relay, (4) Form C (SPDT) relays, 2A/point, (1) Ethernet (RJ45) port, Modbus TCP server, external 10-30 VDC required.	$199.00
SIO-MB16CDD2	STRIDE discrete combo module, Input: 8-point, 12-24 VDC, sinking, Output: 8-point, 12-24 VDC, sourcing, 500mA per point, 1A per module, (1) Ethernet (RJ45) port, Modbus TCP server, external 10-30 VDC required.	$239.00

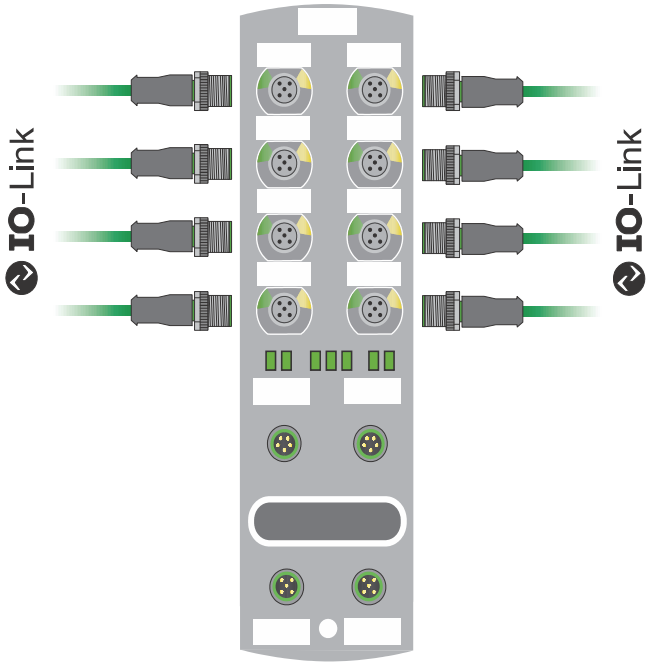
IO-Link Field I/O

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, plastic housing, IP65 and IP67, -25 to 70 deg C.	$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, plastic housing, IP65 and IP67, -25 to 70 deg C.	$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, plastic housing, IP65 and IP67, -25 to 70 deg C.	$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

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

CE

IO-Link

EtherNet/IP

EtherCAT

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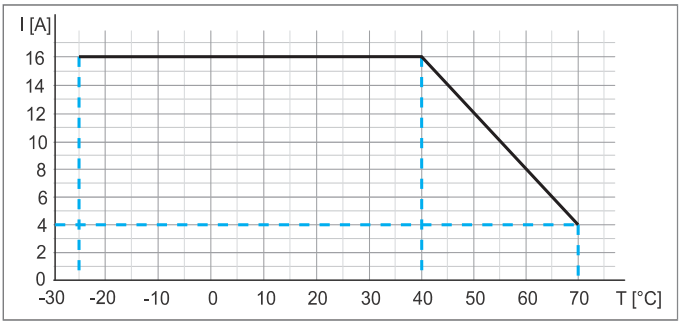
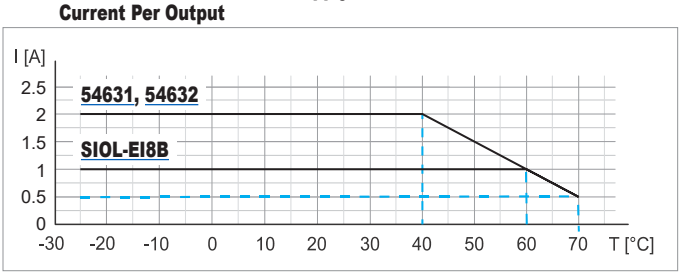
IO-Link Masters

Derating Charts

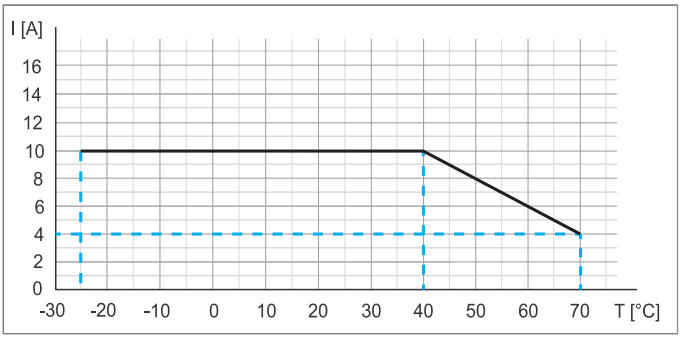
Supply Sensor Current US and Actuator Current UA



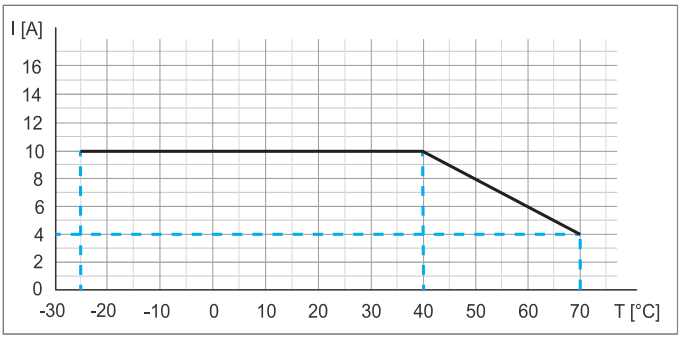
Current Per Sensor Power Supply
Current Per Output



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

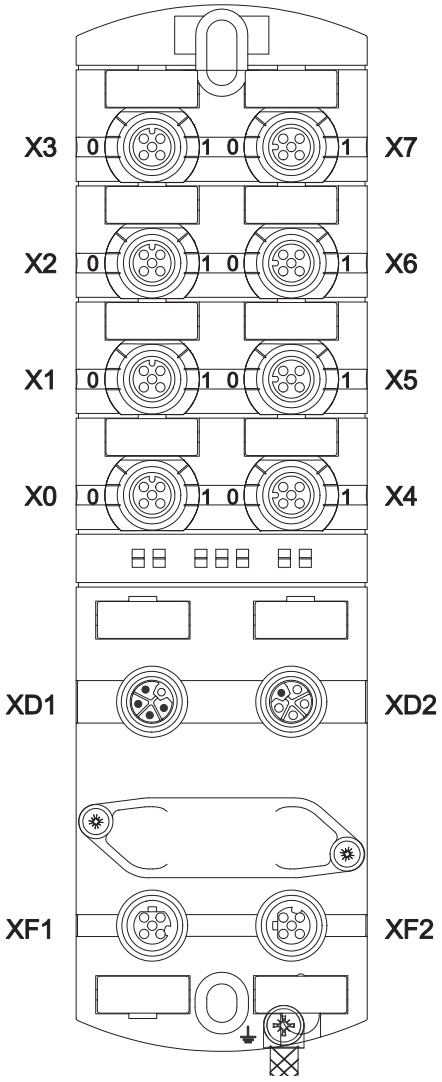
Conformity, Approvals	
Product standard	EN 61131-2, Programmable logic controllers
CE	2014/30/EU, 2011/65/EU
UKCA	Compliant
EMC	2014/30/EU
REACH	No. 1907/2006, SVHC List
WEEE	2012/19/EU, Category 5
cUL	CSA C22.2 NO. 61010-1, 3rd Ed., CSA C22.2 NO. 61010-2-201:18, 2nd Ed. E201820
ULus	UL 61010-1, 3rd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

Hazardous Substances						
25 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

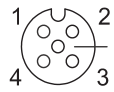
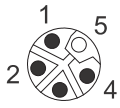
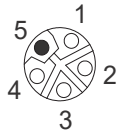
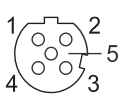
O: Indicates that the content of the harmful substance in all homogeneous materials of the component part is below the limit defined in GB/T 26572.

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

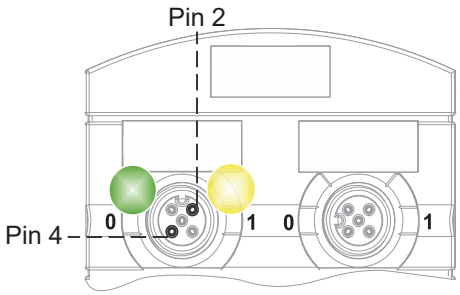
Pin Assignments		
X0–X7	***M12 A-coded female connectors***	
	Pin 1	24VDC ⎓ US
	Pin 2	DI/DO
	Pin 3	0V
	Pin 4	DI/DO/IO-Link
	Pin 5	0V
XD1	***M12, L-coded, Power IN***	
	Pin 1	24VDC ⎓ US (operating voltage)
	Pin 2	0V UA (actuator voltage)
	Pin 3	0V US
	Pin 4	24VDC ⎓ UA
	Pin 5	⏚
XD2	***M12, L-coded, Power 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.

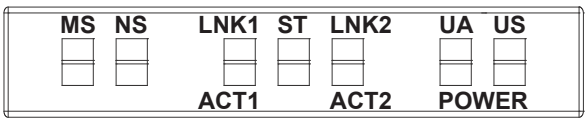
IO-Link Masters

LED Indicators

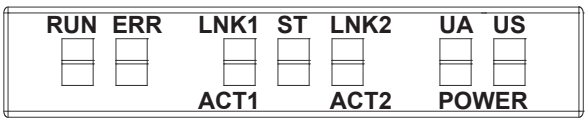
The IO-Link master modules are equipped with the following separate LED indicators:

- 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





SIOL-EI8B, 54631



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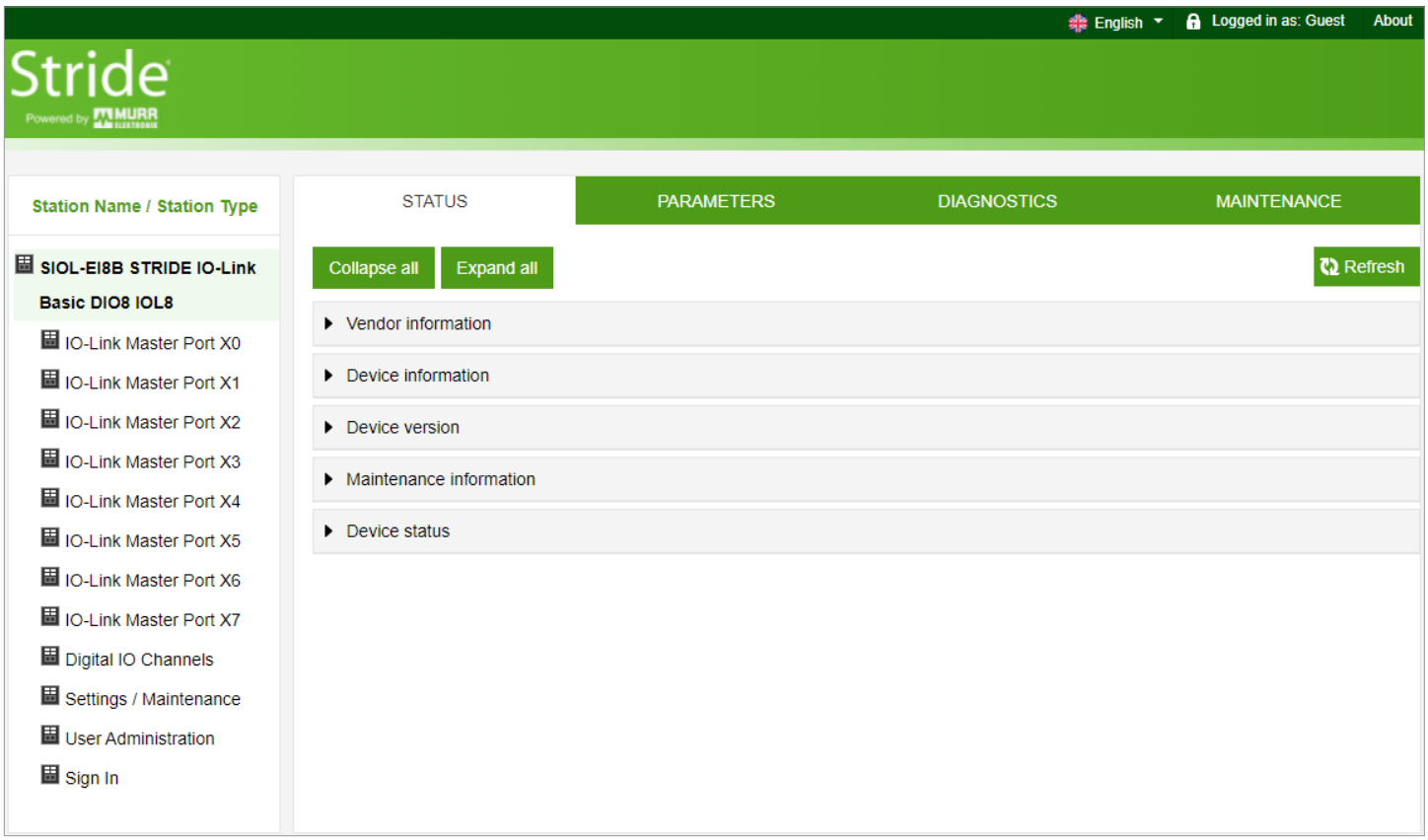
Web-based User Interface

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



IO-Link Hubs

Features

- IO-Link V1.1.2 (compatible with IO-Link 1.1.3)
- 8 I/O ports (8 or 16 inputs/outputs) for digital modules
- 4 I/O ports (4 inputs) for analog modules
- IP68 rating
- M8 & M12 I/O ports
- M12 IO-Link port

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IO-Link Hubs							
Part Number	***59507***	***59710***	***59712***	***59719***	***59738***	***59840***	***59841***
Housing	plastic, 30mm wide	plastic, 50mm wide				plastic, 30mm wide	
IO-Link	1 x M12 IO-Link Class A		1 x M12 IO-Link Class A/B (common GND)	1 x M12 IO-Link Class A			
Digital & Analog I/O	8 x M8 I/O ports	8 x M12 I/O ports				4 x M12 I/O ports	
	8 configurable digital inputs/outputs	16 digital inputs	16 configurable digital inputs/outputs			4 analog inputs (multi)	4 analog inputs (RTD)

Module Power Supply							
Part Number	***59507***	***59710***	***59712***	***59719***	***59738***	***59840***	***59841***
Operating voltage	24VDC						
Operating voltage range	18–30V						
Total current	≤4A at ≤50°C (see Derating)				≤6A at ≤40°C (see Derating)	50mA	
Current consumption when idling	≤40mA		≤50mA	≤40mA	≤75mA	≤50mA	
Galvanic isolation	No				Yes, UL1/UL2/IOL	No	

IO-Link							
Part Number	***59507***	***59710***	***59712***	***59719***	***59738***	***59840***	***59841***
Communication speed	COM3						
Transfer rate	230.4 kbit/s						
Bus protocol	IO-Link V1.1.2, compatible with IO-Link 1.1.3						
IO-Link cycle time	≥1 ms					≥1.6 ms	
VendorID	0x012F						
DeviceID	0x0C0005	0x0C000F	0x0C0013	0x0C0009	0x0C0018	0x0C0015	0x0C0016
Process data	2 byte (inputs), 2 byte (outputs)					10 byte (inputs), 5 byte (outputs)	

IO-Link Hubs

Sensor Power Supply							
Part Number	***59507***	***59710***	***59712***	***59719***	***59738***	***59840***	***59841***
Connector (female)	M8	M12					
Operating voltage	24VDC						N/A
Current supply	≤1A per 2 ports (X0+X1, X2+X3, X4+X5, X6+X7)	≤0.5 A per port				≤0.2 A per port	N/A

Input (DI/AI)							
Part Number	***59507***	***59710***	***59712***	***59719***	***59738***	***59840***	***59841***
Input Type	Digital					Analog (mixed)	Analog (RTD)
Connector (female)	M8	M12					
Cable cross section	≤0.75 mm^2						
Cable length	≤30m [98ft]						≤30m [98ft], shielded
Input characteristic	EN 61131-2: Type 1 + Type 3					N/A	
Input filter	1 ms					Interference frequency filter, 50/60Hz	

Output (DO)							
Part Number	***59507***	***59710***	***59712***	***59719***	***59738***	***59840***	***59841***
Connector (female)	M8	Not Applicable	M12			N/A	
Cable cross section	≤0.75 mm^2		≤0.75 mm^2				
Cable length	≤30m [98ft]		≤30m [98ft]				
Output current	≤0.5 A per pin		≤2 A per pin	≤0.5 A per pin	≤2 A per pin, ≤4 A per port		
Switching frequency (resistive load)	≤25 Hz		≤25 Hz				

Assembly data							
Part Number	***59507***	***59710***	***59712***	***59719***	***59738***	***59840***	***59841***
Weight (net)	129g [4.55 oz]	200g [7.05 oz]				150g [5.29 oz]	
Dimensions (L x W x H)	126 x 30 x 34.5 mm [4.96 x 1.2 x 1.36 in]	126 x 50 x 34.5 mm / [4.96 x 2.0 x 1.36 in]				126 x 30 x 34.3 mm [4.96 x 1.2 x 1.35 in]	
Drawing	PDF	PDF	PDF	PDF	PDF	PDF	PDF

Environmental	
Operating temperature	-25°C to +70°C [-13°F to +158°F]
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Relative humidity	≤95%
Installation altitude	≤3000m above sea level

Mechanical	
Vibration test	EN 60068 Part 2-6: 5–500 Hz, constant amplitude 1mm, acceleration 15 g
Shock test	EN 60068 Part 2-27: 50 g, duration 11 ms

EMC Immunity	
Electrostatic discharge (housing)	EN 61000-4-2: ±4kV @ contact, ±8kV @ air
Electromagnetic high-frequency fields (housing)	EN 61000-4-3 RF field: 10V/m
Rapid transient electric disturbances (burst) DC inputs/outputs or AC inputs	EN 61000-4-4: ±2kV I.O supply, ±1kV data line, ±1kV I/O line, ±1kV AIN (5kHz, 100kHz)
Magnetic field	EN 61000-4-8: 30A/m @ 50 Hz (excluding 59738, 59840 and 59841)
Conducted interferences, high frequency fields	EN 61000-4-6, asymmetric: 10V

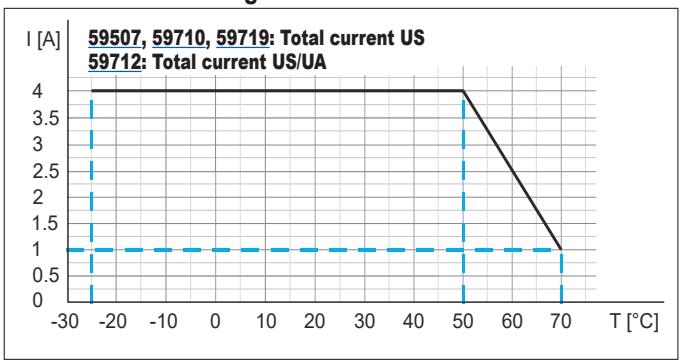
IO-Link Hubs

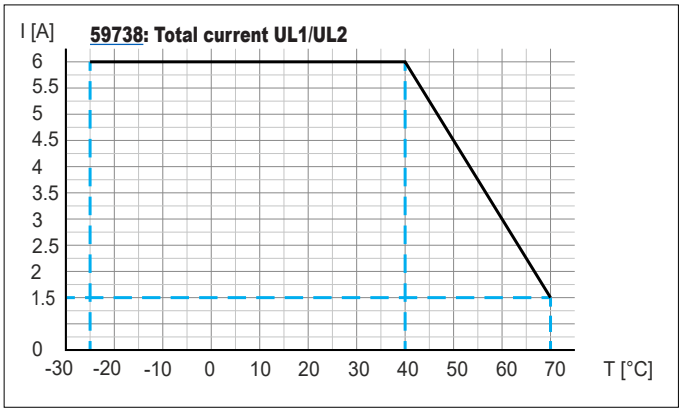
Electrical Safety	
Protection degree	IP68
Protection class	III
Pollution degree	2

Electrical Interference	
Radio interference field strength	**Models 59840 and 59841:** EN 61000-6-3 Emission QP: 42–35 dBµV/m @30–230 MHz; QP: 42 dBµV/m@230 MHz to 1 GHz; PK: 70 dB, AV: 50 dB @1–3 GHz; PK: 74 dB, AV: 54 dB @3–6 GHz
	All other models: EN 61000-6-4 Emission: QP: 40 dBµV/m @ 30–230 MHz QP: 47 dBµV/m @ 230–1000 MHz

Device Protection	
Overvoltage protection	Yes
Overload protection module supply	Yes. To be ensured through load circuit monitoring
Reverse polarity protection of module supply	Yes
Short-circuit protection, sensor supply	Electronically (59841: N/A)
Short-circuit protection, output (DO)	Electronically (59840 and 59841: N/A)
Protective circuit for input	Suppressor diode, internal (59841: N/A)

Total Current Derating Chart





Conformity, Approvals	
Product standard	EN 61131-2, Programmable logic controllers: Compliant
CE	2014/30/EU, 2011/65/EU: Compliant
UKCA	Compliant
EMC	2014/30/EU: Compliant
REACH	No. 1907/2006: SVHC List
WEEE	2012/19/EU: Compliant
ULus	E201820
RoHS	2011/65/EU & 2015/863: Exception 6c&7a&7c1
China RoHS	SJ/T 11364-2014, 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.

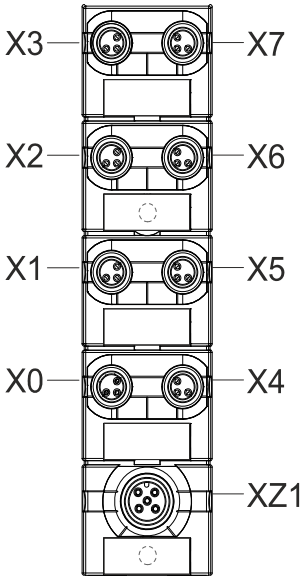
LED Indicators

The IO-Link hubs are equipped with separate LED indicators for I/O and IO-Link/sensor supply.

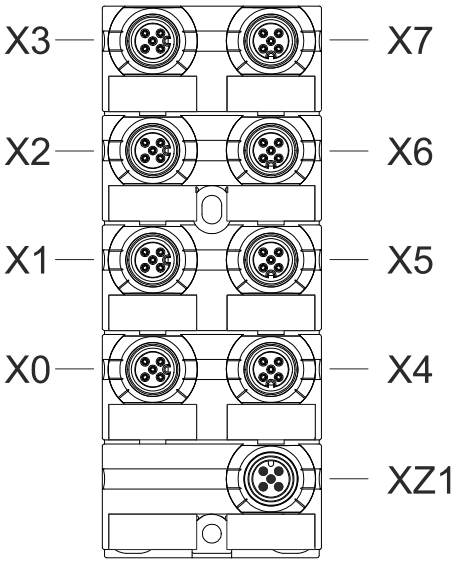
The IO-Link status LED (green) and sensor supply status LED (red) are combined. This can generate mixed green/red flashing or orange flashing codes in the case of overlapped signals.

IO-Link Hubs

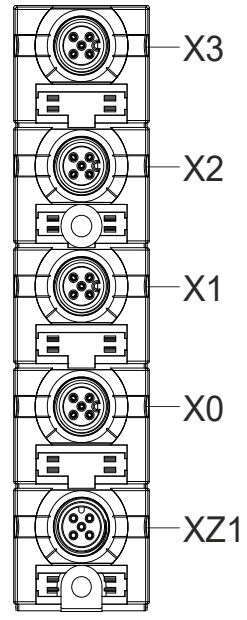
Module Port Designations and Pinouts



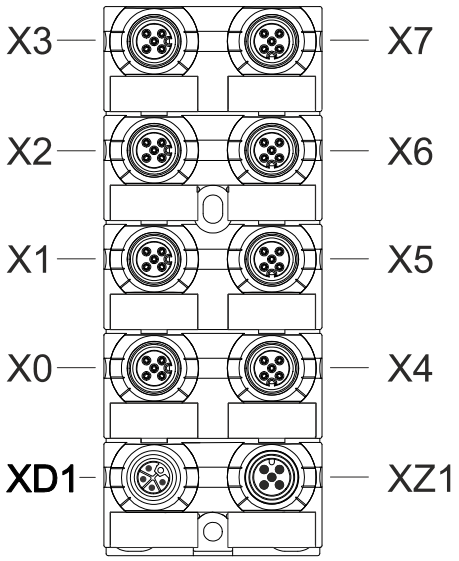
59507



59719 / 59710 / 59712

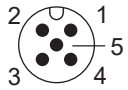
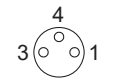
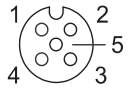
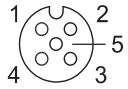
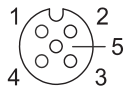
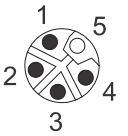


59840 / 59841



59738

Port Designations		
X0–X7	59507	Digital inputs and outputs, US
	59719	
	59712	Digital inputs, US (common ground) Digital outputs, UA
	59710	Digital inputs, US
X0–X3	59738	Digital inputs and outputs, UL2
	59840	Analog inputs, voltage or current
	59841	Analog inputs, RTD
X4–X7	59738	Digital inputs and outputs, UL1
XD1	59738	Power supply, I/O
XZ1	Module supply, IO-Link Class A	

Pin Assignments		
IO-Link	***XZ1 (M12 A-coded male connectors)***	
	Pin 1	24VDC ⎓ US (L+)
	Pin 2	59712: UA (Actuator voltage) Others: n.c.
	Pin 3	0V US (L-)
	Pin 4	C/Q IO-Link
	Pin 5	n.c.
59507 DIO	***X0–X7 (M8 A-coded female connectors)***	
	Pin 1	24VDC ⎓ US
	Pin 2	0V US
	Pin 3	DIO US
59710 DI 59712 DIO 59719 DIO	***X0–X7 (M12 A-coded female connectors)***	
	Pin 1	24VDC ⎓ US
	Pin 2	59710: DI US Others: DIO US
	Pin 3	0V US
	Pin 4	59710: DI US 59712: DI US(common ground), DO UA Others: DIO US
	Pin 5	FE
59738 DIO	***X0–X7 (M12 A-coded female connectors)***	
		X0–X3 / X4–X7
	Pin 1	24VDC ⎓ UL2 / 24VDC ⎓ UL1
	Pin 2	DIO UL2 / DIO UL1
	Pin 3	0V UL2 / 0V UL1
	Pin 4	DIO UL2 / DIO UL1
	Pin 5	FE
59840 AI 59841 AI	***X0–X3 (M12 A-coded female connectors)***	
	Pin 1	59840: 24VDC ⎓ US 59841: CH+
	Pin 2	59840: Analog input (U/I) 59841: CH S+
	Pin 3	59840: 0V US 59841: CH-
	Pin 4	59840: n.c. 59841: CH S-
	Pin 5	n.c.
59738 I/O Power	***XD1 (M12, L-coded connectors)***	
	Pin 1	24VDC ⎓ UL1
	Pin 2	0V UL2
	Pin 3	0V UL1
	Pin 4	24VDC ⎓ UL2
	Pin 5	⏚

IO-Link Hubs

IO-Link Object Directory

IO-Link Object Directory (DPP)							
ISDU index	***DPP index***	***Object name***	***Access***	***Length in bytes***	***Meaning / default value***		
Part Number					***59507***	***59719***	***59710***
Identification							
0x0000	0x00	MasterCommand	W	1			
	0x01	MasterCycleTime	R/W	1			
	0x02	MinCycleTime	R	1			
	0x03	M-sequenceCapability	R	1			
	0x04	RevisionID	R/W	1			
	0x05	ProcessDataIn	R	1			
	0x06	ProcessDataOut	R	1			
	0x07	VendorID 1 (MSB)	R	1	0x012F		
	0x08	VendorID 2 (MSB)	R	1			
	0x09	DeviceID 1 (octet 2, MSB)	R/W	1	0x0C		
	0x0A	DeviceID 1 (octet 1, MSB)		1	0x00		
	0x0B	DeviceID 1 (octet 0, LSB)		1	0x05	0x09	0x0F
	0x0C	FunctionID 1 (MSB)	R	1			
	0x0D	FunctionID 2 (LSB)		1			
	0x0E	Reserved	R	1			
	0x0F	SystemCommand	W	1			
0x0002		SystemCommand	R	1			
0x0003		DataStorageIndex	R	variable			
0x000D		ProfileCharacteristic	R	variable			
0x000E		PDInputDescriptor	R	variable			
0x000F		PDOutputDescriptor	R	variable			
0x0010		VendorName	R	64	Murrelektronik GmbH		
0x0011		VendorText	R	64	www.murrelektronik.com.		
0x0012		ProductName	R	64	MVP8-P3 DIO8 8xM8-3 IOLA12 B0	MVP12-P6 DIO16 8xM12A IOLA12 B0	MVP12-P6 DI16 8xM12A IO-LA12 B0
0x0013		ProductID	R	64	59507	59719	59710
0x0014		ProductText	R	64	Digital I/O hub MVP8-P30 - IO-Link Class A DIO8 8xM8-3P Basic Firmware Edition: 2 bytes IN / 1 byte Out	Digital I/O hub, MVP12-P60 - IO-Link Class A DIO16 8xM12A Basic Firmware Edition: 2 bytes IN / 2 byte Out	Digital I/O hub MVP12-P60 - IO-Link Class A DI16 8xM12A Basic Firmware Edition: 2 Byte IN / 0 Byte Out
0x0015		SerialNumber	R	16	Running serial number set during production		
0x0016		HardwareRevision	R	64	e.g. “01.00”		
0x0017		FirmwareRevision	R	64	e.g. “V.1.00.00”		
0x0018		ApplicationSpecificTag	R	16–32	User-specific designation e.g. “System 3 / Port 4”		
0x0019		FunctionTag	R	32			
0x001A		LocationTag	R	32			
Diagnosis							
0x0020		Error Count	R	2			
0x0024		DeviceStatus	R	1	0: Device is operating properly 1: Maintenance Required 2: Out of Specification 3: Functional Check 4: Failure 5–255: Reserved		
0x0025		DetailedDeviceStatus	R	variable	6 x (octet 1: EventQualifier octet 2,3: EventCode)		
0x0028		ProcessDataInput	R	PD length			
0x0029		ProcessDataOutput	R	PD length			
0x0031–0x003F		Reserved for profiles					

IO-Link Hubs

Pin-Based Bitmapping

Input Process Data	
Bit	***Contact/Description***
Byte 0 Inputs (X0–X7)	
0	Pin4_X0
1	Pin4_X1
2	Pin4_X2
3	Pin4_X3
4	Pin4_X4
5	Pin4_X5
6	Pin4_X6
7	Pin4_X7
Byte 1 Inputs (X0–X7)	
0	Pin2_X0
1	Pin2_X1
2	Pin2_X2
3	Pin2_X3
4	Pin2_X4
5	Pin2_X5
6	Pin2_X6
7	Pin2_X7
Byte 2 Diagnostics	
0	Error/Warning at power supply (too low or high)
1	Error/Warning because of temperature rating (threshold can be defined inside object)
2	Error/Warning at Input/Output (short-circuit or overload)
3 4 5 6	DIA at channel X 0 = channel 1 ... 15 = channel 16
7	Global status 0 = no diagnostic 1 = fault detected
Byte 3 Module Identification	
0–7	User defined module identification bits, e. g. for tool change applications; 0 = not used 1–255 = ID value is read out from object

Output Process Data	
Bit	***Contact***
Byte 0 Outputs (X0–X3)	
0	Pin4_X0
1	Pin2_X0
2	Pin4_X1
3	Pin2_X1
4	Pin4_X2
5	Pin2_X2
6	Pin4_X3
7	Pin2_X3
Byte 1 Outputs (X4–X7)	
0	Pin4_X4
1	Pin2_X4
2	Pin4_X5
3	Pin2_X5
4	Pin4_X6
5	Pin2_X6
6	Pin4_X7
7	Pin2_X7

Diagnostic IO-Link Events

NOTE: In addition to the vendor-specific IO-Link events listed here, the standard events of the IO-Link specification also apply.

Vendor-Specific IO-Link Events		
Event Code	***Event Type***	***Description***
0x4000	Error	The device shows a temperature fault - overload.
0x4210	Warning	The device shows a temperature over-run.
0x4220	Warning	The device shows a temperature under-run.
0xFF91	Notification	The device requests a data storage upload from the master.
0x5100	Error	General power supply fault (US) - below shutdown voltage.
0x5110	Warning	Primary sensor supply voltage (US) is over-run.
0x5111	Warning	Primary sensor supply voltage (US) is under-run.
0x1830	Warning	Secondary sensor supply voltage (UA) is over-run.
0x1831	Warning	Secondary sensor supply voltage (UA) is under-run.
0x1832	Error	Secondary power supply fault (UA) - below shutdown voltage.
0x7710	Error	Short-circuit detected on a specific channel.
0x8CA0	Error	DIO pin current overload/ shortcircuit - Port 0 Pin 4.
0x8CA1	Error	DIO pin current overload/ shortcircuit - Port 0 Pin 2.
0x8CA2	Error	DIO pin current overload/ shortcircuit - Port 1 Pin 4.
0x8CA3	Error	DIO pin current overload/ shortcircuit - Port 1 Pin 2.
0x8CA4	Error	DIO pin current overload/ shortcircuit - Port 2 Pin 4.
0x8CA5	Error	DIO pin current overload/ shortcircuit - Port 2 Pin 2.
0x8CA6	Error	DIO pin current overload/ shortcircuit - Port 3 Pin 4.
0x8CA7	Error	DIO pin current overload/ shortcircuit - Port 3 Pin 2.
0x8CA8	Error	DIO pin current overload/ shortcircuit - Port 4 Pin 4.
0x8CA9	Error	DIO pin current overload/ shortcircuit - Port 4 Pin 2.
0x8CAA	Error	DIO pin current overload/ shortcircuit - Port 5 Pin 4.
0x8CAB	Error	DIO pin current overload/ shortcircuit - Port 5 Pin 2.
0x8CAC	Error	DIO pin current overload/ shortcircuit - Port 6 Pin 4.
0x8CAD	Error	DIO pin current overload/ shortcircuit - Port 6 Pin 2.
0x8CAE	Error	DIO pin current overload/ shortcircuit - Port 7 Pin 4.
0x8CAF	Error	DIO pin current overload/ shortcircuit - Port 7 Pin 2.
0x8CD0	Error	Power pin current overload/ shortcircuit - Port 0 Pin 1.
0x8CD1	Error	Power pin current overload/ shortcircuit - Port 1 Pin 1.
0x8CD2	Error	Power pin current overload/ shortcircuit - Port 2 Pin 1.
0x8CD3	Error	Power pin current overload/ shortcircuit - Port 3 Pin 1.
0x8CD4	Error	Power pin current overload/ shortcircuit - Port 4 Pin 1.
0x8CD5	Error	Power pin current overload/ shortcircuit - Port 5 Pin 1.
0x8CD6	Error	Power pin current overload/ shortcircuit - Port 6 Pin 1.
0x8CD7	Error	Power pin current overload/ shortcircuit - Port 7 Pin 1.