Remote-I/O-System u-remote

IO-Link Communication modules

UR20-4COM-IO-LINK, UR20-4COM-IO-LINK-V2

Manual

Weidmüller

Content

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1 About this documentation

1.1 Symbols and notes

The safety notices in this documentation are designed according to the severity of the danger.

DANGER

Imminent danger to life!
Notes with the signal word “Danger” warn you of situations that will result in serious injury or death if you do not follow the instructions given in this manual.

WARNING

Possible danger to life!
Notes with the signal word “Warning” warn you of situations that may result in serious injury or death if you do not follow the instructions given in this manual.

CAUTION

Risk of injury!
Notes with the signal word “Caution” warn you of situations that may result in injury if you do not follow the instructions given in this manual.

ATTENTION

Material damage!
Notes with the signal word “Attention” warn you of hazards that may result in material damage.

Text next to this arrow are notes that are not relevant to safety, but provide important information about proper and effective work procedures.

The situation-dependent safety notices may contain the following warning symbols:

Symbol	Meaning
	Warning against dangerous electrical voltage
	Warning against explosion hazard
	Warning against electrostatically charged components
	Warning against automatic startups
	Observe the documentation

- ► All instructions can be identified by the black triangles next to the text.
- – Lists are marked with a tick.

1.2 Complete documentation

The documentation is intended for trained electricians who are familiar with national and international laws, provisions and standards.

This manual contains product-specific information and notes about the communication module UR20-4COM-IO-LINK. It supplements but does not replace the **Remote-I/O-System u-remote Manual** (document No. 1432790000).
The **u-remote Web Server Manual** (document No. 2112220000) describes how to use the web server application.

You can find the documents in the Weidmüller Support Center.

1.3 Standard data structure

All given details of data structure (e.g. process data, parameters) refer to the u-remote internal mapping, when the standard data format is set in the coupler parameters.
The way these data are represented by other fieldbus participants (e.g. the PLC), depends additionally on the fieldbus specification and the data format of the communicating device. Therefore it might happen, that bytes are changed within a word or words are changed within a double word.

The standard data structure of the u-remote I/O-modules can be found in the **Remote-I/O-System u-remote Manual**.
You can find the document in the Weidmüller Support Center.

1.4 Software releases described

This manual describes the latest version of the UR20 fieldbus coupler firmware.

The software releases of the UR20 fieldbus couplers can be found in the **Remote-I/O-System u-remote Manual**. You can find the document in the Weidmüller Support Center.
Please also regard the release notes of the respective UR20 fieldbus coupler. You can find the release notes in the Weidmüller Support Center.

2 Safety

This chapter includes general safety instructions for handling the communication module product. Specific warning notices for specific tasks and situations are given at the appropriate places in the documentation. Failure to observe the safety and warning notices can result in damage to persons and material.

This manual contains product-specific information and notes about the communication module UR20-4COM-IO-LINK. It supplements but does not replace the **Remote-I/O-System u-remote Manual** (Document No. 1432790000).
You can find the document in the Weidmüller Support Center.

2.1 General safety notice

Work on the u-remote products may only be performed by qualified electricians with the support of trained persons. As a result of their professional training and experience, an electrician is qualified to perform the necessary work and identify any potential risks.

Before any work is carried out on the products (installation, maintenance, retrofitting), the power supply must be switched off and secured against being switched on again. Work may be carried out with safety extra-low voltage (SELV/PELV). When working during continued operations, the emergency stop mechanisms must not be made ineffective.

The u-remote products do not comprehend any components or parts that can be maintained by the operator. If a malfunction on a u-remote product cannot be fixed after following the recommended measures (see Chapter 10), the product in question must be sent back to Weidmüller. Weidmüller does not assume any liability if the product has been tampered with!

Electrostatic discharge

u-remote products can be damaged or destroyed by electrostatic discharge. When handling the products, the necessary safety measures against electrostatic discharge (ESD) according to IEC 61340-5-1 and IEC 61340-5-2 must be observed.

All devices are supplied in ESD-protected packaging. The packing and unpacking as well as the installation and disassembly of a device may only be carried out by qualified personnel and in accordance with the ESD information.

Open equipment

u-remote products are open equipment that may only be installed and operated in lockable housings, cabinets or electrical operations rooms. Only trained and authorised personnel may access the equipment.

For applications requiring functional safety, the surrounding housing must meet at least IP54. The standards and guidelines applicable for the assembly of switch cabinets and the arrangement of data and supply lines must be complied with.

Fuse protection

The operator must set up the equipment so that it is protected against overloading. The 24 V DC power supply units used must fulfill the SELV category, no matter whether they supply the system or feed-in modules. The output voltage of the feed-in power supply has to fulfill overvoltage category 1 according to IEC 61010. When connecting to outer current circuits the respective overload category has to be regarded for each single module of the u-remote station (see technical data).

The main switch, the switches of the subsequent circuits, the cable cross-sections and the fuse protection have to be configured according to IEC 61010. The current demand must be caluclated separately for each single u-remote station as described in the Remote-I/O-System u-remote Manual.

In the case of modules without fused sensor/actuator power supplies, all lines to the connected sensors/actuators must be fused corresponding to their conductor cross-section (as per DIN VDE 0298 Part 4).

To meet UL-specifications in accordance with UL 248-14, a UL-certified automatic fuse (e.g. ABB Type S201-B16) or a 10 A fuse with a medium time-lag (e.g. ESKA Part No. 522.227) must be used.

All connections of the u-remote components are protected against voltage pulses and overcurrent in accordance with IEC 61131-2, Zone B. The operator has to decide whether additional overvoltage protection according to IEC 62305 is required. Voltages that exceed +/-30 V may cause the destruction of couplers and modules.

Earthing

Via an FE spring on its underside each coupler and each module is electrically connected to the DIN rail. This connection is only established certainly if the assembly is carried out carefully and in accordance with the instructions (Remote-I/O-System u-remote Manual). In order to ensure the earthing of the station the DIN rail must be connected to the protective earth via the earth terminals (PE).

Shielding

IO-Link Devices and conventional sensors/actuators are connected to the UR20-4COM-IO-LINK communication module via unshielded cables.

2.2 Intended use

The UR20-4COM-IO-LINK or UR20-4COM-IO-LINK-V2 communication module is an I/O module from the u-remote series. It is intended for use in a u-remote station. As an IO-Link master the module can integrate up to four IO-Link Devices in an automation system.

The products of the u-remote series are intended for use in industrial automation. A u-remote station with bus coupler and connected modules is intended for the decentralised control of systems or sub-systems. Via the fieldbus coupler every module of a station is integrated into a fieldbus structure and connected to the superordinate control unit. The u-remote products conform to protection class IP20 (in accordance with IEC 60529).

The observance of the documentation is part of the intended use. The products described in this manual may only be used for the intended applications and only in connection with certified third-party devices or components. The product-specific protective measures can become ineffective in the event of deviating use.

2.3 Use in a potentially explosive atmosphere

If you use the module in a potentially explosive atmosphere, you must observe chapter 2.3 in the **Remote-I/O-System u-remote Manual** (document no. 1432790000).
You can find the document in the Weidmüller Support Center.

2.4 Legal notice

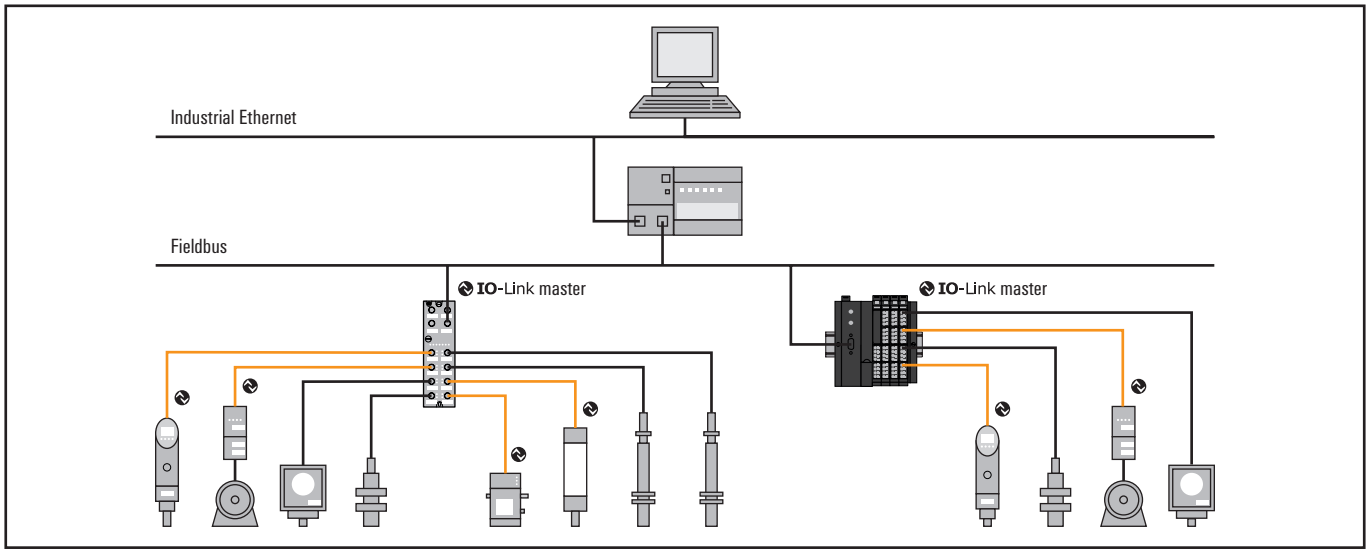
The UR20-4COM-IO-LINK or UR20-4COM-IO-LINK-V2 communication module is CE-compliant in accordance with the following directives:
- 2014/30/EU, EMC Directive
- 2014/35/EU, Low Voltage Directive
- 2014/34/EU, ATEX Directive (unless otherwise noted)

The UR20-4COM-IO-LINK or UR20-4COM-IO-LINK-V2 communication module is UKCA-compliant in accordance with the following regulations:
- SI2016/1091, Electromagnetic Compatibility Regulations 2016
- SI2016/1101, Electrical Equipment (Safety) Regulations 2016
- SI2016/1107, Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 (unless otherwise noted)

The results of the measurements according to CISPR 16-2-3 should also be suitable to demonstrate the compliance of the u-remote devices to the limits for radiated emissions as defined by CFR 47 Part 15, Subpart B, §15.109, Class A (2010) and ICES-003, Issue 5, Class A (2012).

Free software products are integrated into the u-remote products. You can find the licence terms in the webserver within the **General information** on the respective coupler.
Components of free software products are integrated into the **u-mation configurator.** The licence terms are accessible from within the program.

3 IO-Link overview



IO-Link for automation technology

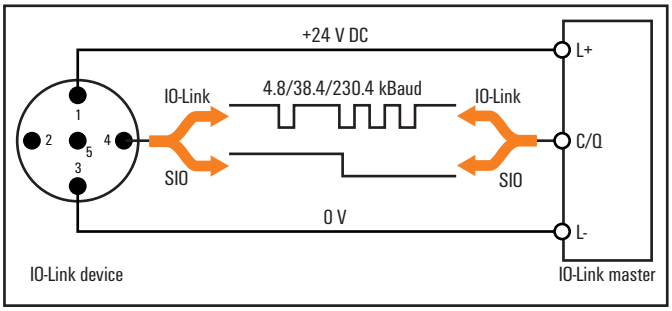
IO-Link is a communication protocol for automation technology. IO-Link enables serial, bi-directional point-to-point communication between devices on the sensor-actuator level and devices on the field level or control level. Besides cyclic process data, IO-Link allows parameters, diagnoses and identification data to be exchanged acyclically. IO-Link is standardised worldwide in IEC 61131-9 under the designation "single-drop communication interface for small sensors and actuators" (SDCI).

An IO-Link system consists of two components:
- **IO-Link master:** represents the interface between IO-Link devices and the superordinate communication system.
- **IO-Link device:** communication-capable field device, e.g. a sensor which is controlled by a IO-Link master.

IO-Link master and IO-Link device communicate via the switching and communication cable C/Q. The IO-Link device is supplied with voltage by the IO-Link master via the L+ and L- cables. Depending on the port class, an IO-Link port has additional connections:

- **Port class A:** The function of the additional connections is selected by the manufacturer. Often, this connection is occupied with an additional digital input or output.
- **Port class B:** The IO-Link master provides a second supply voltage via two further connections.

An IO-Link device is connected with an IO-Link port of the IO-Link master with 3-cable or 5-cable technology.



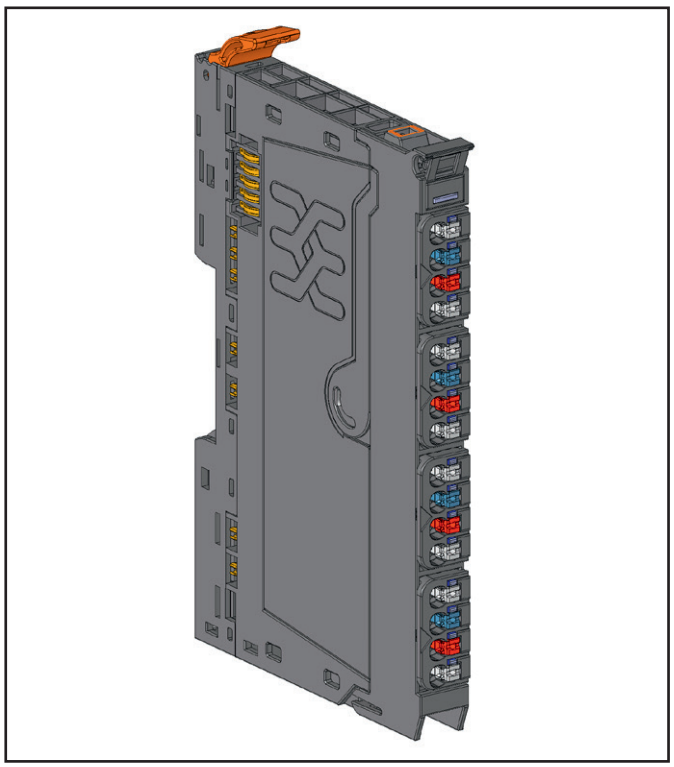
IO-Link communication principle

The IO-Link ports can be operated in IO-Link mode for bi-directional communication or in SIO mode as digital inputs or outputs. In IO-Link mode, the IO-Link master automatically sets the right transmission rate for IO-Link communication after activation. The IO-Link master then checks the identity of the IO-Link device (device comparison). The Data Storage function ensures correct parameterization of the IO-Link device after replacement of IO-Link device or IO-Link master without additional programming.

You can parameterise IO-Link devices using a configuration application or by means of acyclic services. To do so, you will need the device description files from the IO-Link device-manufacturer (IODDs). You can search for and download IODDs using the **IODDfinder** on the IO-Link Consortium website.

You will find more information on IO-Link and IODDs at www.io-link.com.

4 Module description UR20-4COM-IO-LINK



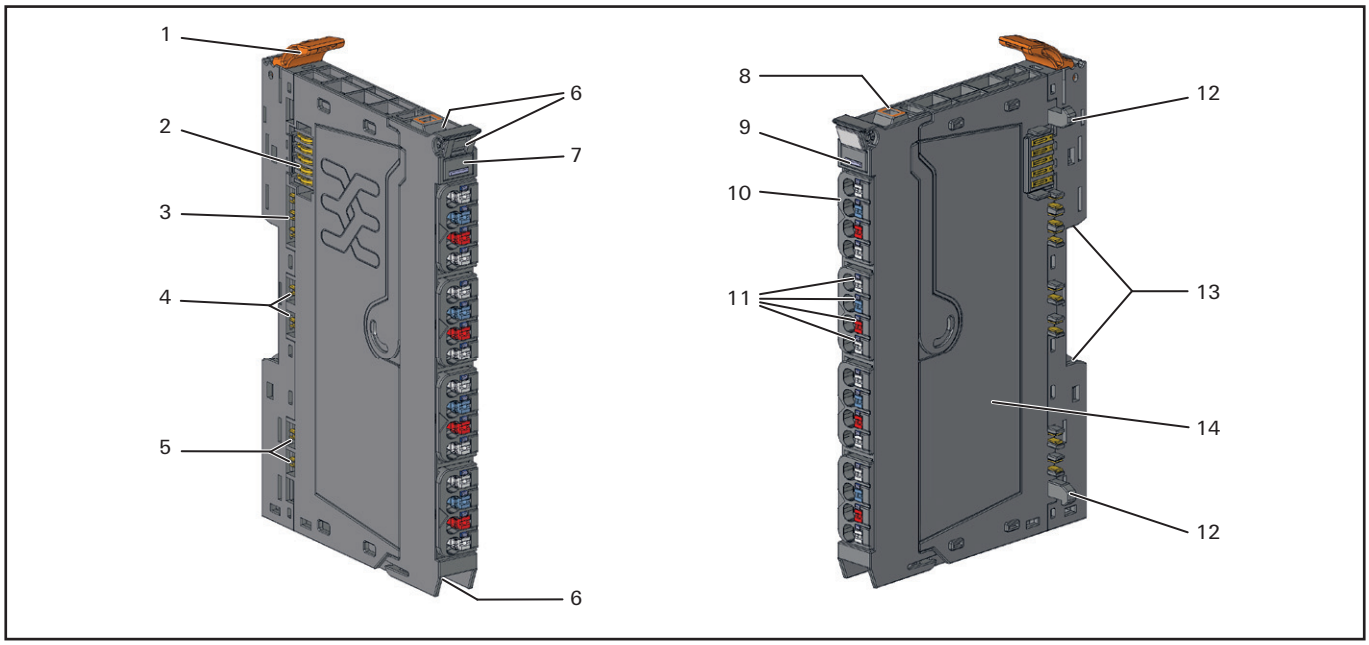
Digital communication module UR20-4COM-IO-LINK (order no. 1315740000)

The digital communication module UR20-4COM-IO-LINK is an IO-Link master according to IO-Link specification V1.1.2. One IO-Link device can be connected to each plug-in connector. The IO-Link devices must comply with port class A. Port class B is possible if additional potential distribution modules are used. One digital input can be used at each plug-in connector.
Process data is exchanged with the IO-Link device connected via each IO-Link port. In addition, acyclic data can be exchanged (diagnosis data, parameter data, status information). The parameter data of the IO-Link devices connected can be stored in the master module where they are managed from a parameterising server (Data Storage). This means that the IO-Link master or an IO-Link device (from IO-Link specification version 1.1) are very easy to replace.
The four communication channels can also be used as digital inputs or outputs with standard field devices.
A status LED is assigned to each channel. The module electronics supply the connected sensors with power from the input current path (I_{IN}).
The inputs are protected against voltage surges and overcurrent. Voltages that exceed ±30 V may cause the destruction of the module.

You can use the **u-mation configurator** software to configure IO-Link devices for the UR20-4COM-IO-LINK.

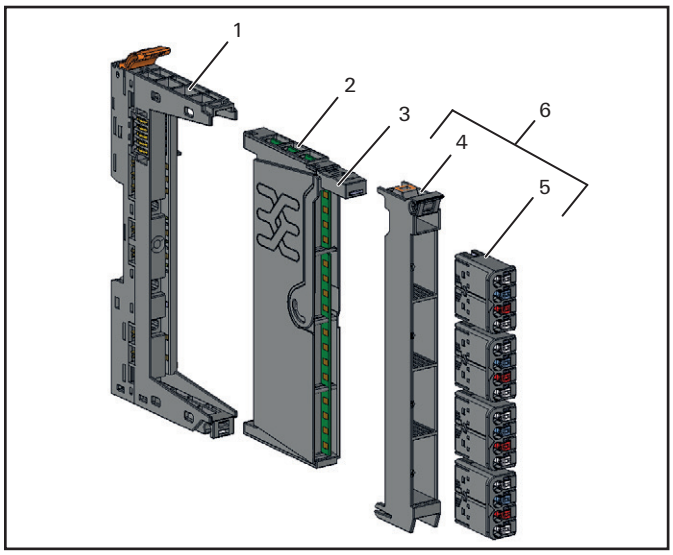
A maximum of 3 of the following module types may be installed in a u-remote station, either of the same type or mixed:
- UR20-1COM-SAI-PRO
- UR20-4COM-IO-LINK

4.1 Device description



Communication module UR20-4COM-IO-LINK

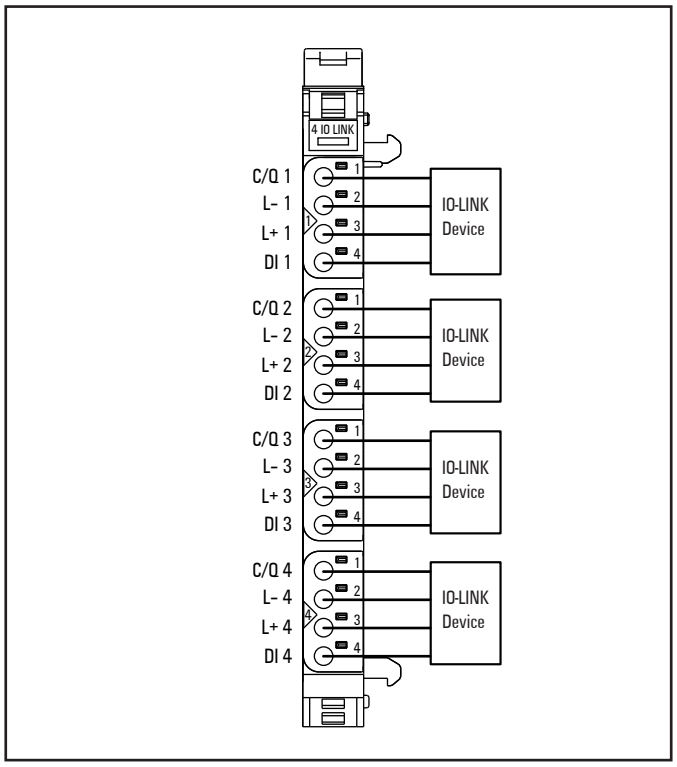
1 Release lever for DIN rail fixing
2 System bus
3 System current path
4 Input current path
5 Output current path
6 Seats for module markers
7 Type designation
8 Connector frame unlocking device
9 Module status LED (collective message)
10 Connector
11 Channel status LED
12 Latching hook for latching onto module sides
13 DIN rail foot
14 Type plate



I/O-Module components

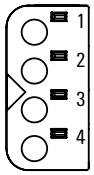
1 Base module
2 Electronic unit
3 Removal lever for electronic unit
4 Connector frame
5 Connector
6 Plug-in unit

4.2 Connections



Connection diagram UR20-4COM-IO-LINK

A plug-in connector corresponds to an IO-Link port of type A.

Connector	Connection	Signal	Function
	1	C/Q	IO-Link communication
	2	L-	GND IN
	3	L+	24 V DC IN
	4	DI	Digital input (type 1)

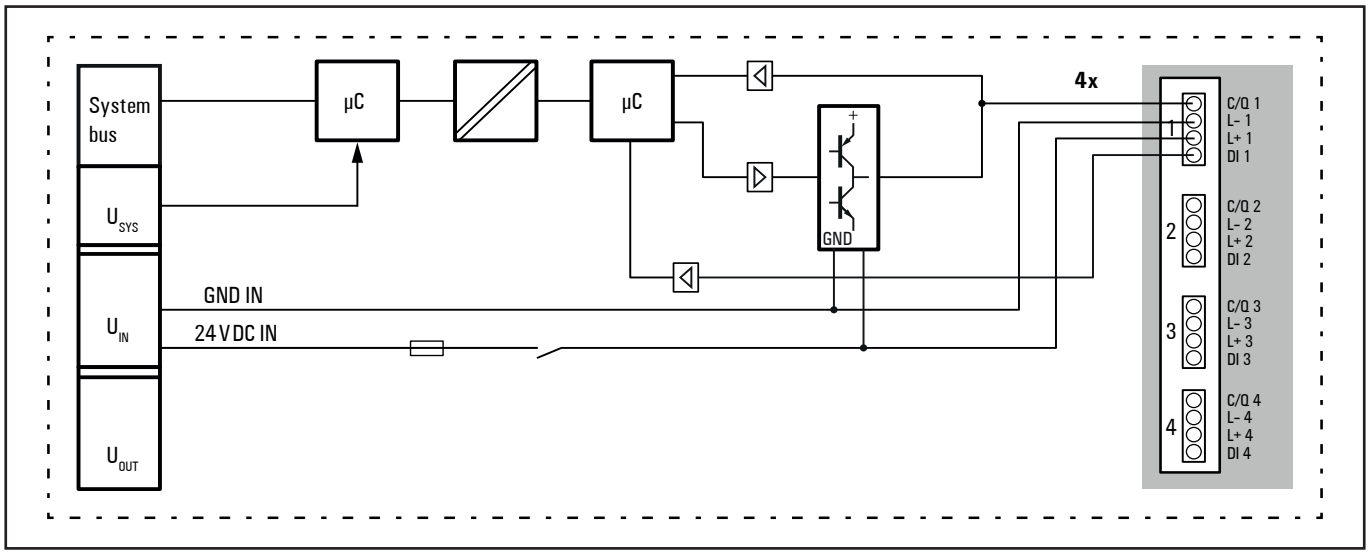
A description of how IO-Link devices for both port classes and standard field devices can be connected to the module is available in chapter 5.

4.3 LED indicators

	Module status LED Green: Communication on system bus Red: Collective error diagnostic
1.1	Yellow: Status COM 1
1.2	Red: Error IO-Link port 1
1.4	Yellow: Status DI 1
2.1	Yellow: Status COM 2
2.2	Red: Error IO-Link port 2
2.4	Yellow: Status DI 2
3.1	Yellow: Status COM 3
3.2	Red: Error IO-Link port 3
3.4	Yellow: Status DI 3
4.1	Yellow: Status COM 4
4.2	Red: Error IO-Link port 4
4.4	Yellow: Status DI 4

LED indicators UR20-4COM-IO-LINK

4.4 Block diagram



Block diagram UR20-4COM-IO-LINK

The numbering of the channels in the u-remote system differs from the numbering of the IO-Link port as per the IO-Link specification. The following table shows the assignment of plug-in connectors and channels to IO-Link ports for the UR20-4COM-IO-LINK communication module.

Plug-in connector	IO-Link port	Channel
1	1	0
2	2	1
3	3	2
4	4	3

4.5 Technical data

Technical data UR20-4COM-IO-LINK

System data		
Data (coupler dependent)	see Chapter 8	
Interface	u-remote system bus	
System bus transfer rate	48 MBit/s	
Digital inputs		
Number	4	
Sensor types	Typ 1 and Typ 3 acc. IEC 61131-2	
Low input voltage	< 5 V	
High input voltage	> 11 V	
IO-Link interfaces		
Number	4	
Type	IO-Link as per IEC 61131-9	
Transfer rate	4,8 kBaud / 38,4 kBaud / 230,4 kBaud, depending on the connected IO-Link device	
Output current C/Q (in DO mode)	0,1 A, ohmic load only	
Input type C/Q (in DI mode)[1)]	Typ 1 and Typ 3 acc. IEC 61131-2	
Output current L+	0.5 A per channel, total max. 2 A	
Line break detection	yes	
Short-circuit-proof	yes	
Module diagnosis	yes	
Individual channel diagnosis	yes	
Supply		
Supply voltage	24 V DC +20 %/-15 %	
Current consumption from system current path I_{SYS}	8 mA	
Current consumption from input current path I_{IN}	25 mA + sensor supply	
General data		
Type of connection	"PUSH IN"	Single-wired, fine-wired
		Conductor cross-section 0.14 – 1.5 mm^2 (AWG 16 – 26)
Dimensions	Height	120.0 mm / 4.72" (with release lever: 128.0 mm / 5.04")
	Width	11.5 mm / 0.45"
	Depth	76.0 mm / 2.99"
Weight (operational status)	88 g	
Protection class (IEC 60529)	IP 20	

1) If C/Q is used as digital input, the connected device shall only be supplied via the L+ and L- connections of the respective channel.
2) Higher altitudes are possible when particular deratings are considered. Please contact your responsible Weidmüller company as needed.

Technical data UR20-4COM-IO-LINK

Flammability rating UL 94	V-0	
Temperature data	Operation	-20 °C ... +60 °C / -4 ... +140 °F
	Storage, transport	-40 °C ... +85 °C / -40 ... +185 °F
Humidity	Operation, storage, transport	5 % to 95 %, non-condensing as per IEC 61131-2
Air pressure	Operation[2)]	≥ 795 hPa (altitude ≤ 2000 m) as per IEC 61131-2
	Storage, transport	≥ 700 hPa (altitude ≤ 3000 m) as per IEC 61131-2
Potential isolation	Test voltage	500 V DC field/system (as per EN 60079-15:2010)
	Pollution severity level	2 (as per DIN EN 60664-1:2008)
	Overvoltage category	II (as per DIN EN 50178)
Vibration resistance	5 Hz ≤ f ≤ 8.4 Hz: 3.5-mm amplitude as per IEC 60068-2-6	
	8.4 Hz ≤ f ≤ 150 Hz: 1-g acceleration as per IEC 60068-2-6	
Shock resistance	15 g over 11 ms, half sinewave, as per IEC 60068-2-27	
Approvals and standards	cULus	UL 61010
	EMC	IEC 61000 (partial standards as per the requirements of IEC 61131-2)
	Potentially explosive atmosphere Zone 2	IEC 60079-0:2017+Corr.1:2020, IEC 60079-7:2017, IEC 60079-15:2017 EN IEC 60079-0:2018, EN IEC 60079-7:2015+A1:2018, EN IEC 60079-15: 2019
	PLC	IEC 61131-2, IEC 61131-9

1) If C/Q is used as digital input, the connected device shall only be supplied via the L+ and L- connections of the respective channel.
2) Higher altitudes are possible when particular deratings are considered. Please contact your responsible Weidmüller company as needed.

4.6 Editable parameters

Overview of the editable parameters UR20-4COM-IO-LINK

Channel	Description	Options[1]	Default
0 ... 3	Operating mode	disabled (0) / DO (1) / DI (2) / IO-Link (3)	disabled
0 ... 3	Port cycle	Free running (0) / Fixed cycle (1) / Message sync (2)	Free running
0 ... 3	Port cycle time [n*0.1 ms]	4 ... 1326	4
0 ... 3	IO-Link device check	disabled (0) / Type compare (1) / Identical (2)	disabled
0 ... 3	DS activation state	disabled (0) / enabled (1) / Clear (2)	disabled
0 ... 3	Channel diagnostics	disabled (0) / enabled (1)	disabled
0 ... 3	Process data length input	0 Byte (0) / 1 Byte (1) / 2 Byte (2) / ... / 32 Byte (32) / auto (33)	auto
0 ... 3	Process data length output	0 Byte (0) / 1 Byte (1) / 2 Byte (2) / ... / 32 Byte (32) / auto (33)	auto

1) Values in brackets for Modbus-TCP (firmware version 02.00.00), CANopen, EtherCAT and EtherNet/IP via class module parameters

Operating mode parameter

The **Operating mode** parameter defines the function of the respective IO-Link port (C/Q, L+ and L- connections). The parameter does not influence the function of the additional digital input (DI connection).

Disabled (default)
The supply voltage at L+ and communication via C/Q are disabled.

DO
The C/Q connection works as a digital output. The length of the process output data for this IO-Link port is 1 byte.

DI
The C/Q connection works as a digital input. The length of the process input data for this IO-Link port is 1 byte.

IO-Link
The IO-Link port uses the C/Q connection for IO-Link communication. The length of the process data is determined by the **Process data length input** and **Process data length output** parameters.

Port cycle parameter

The **Port cycle** parameter defines how the cycle time of the IO-Link port is determined.

Free running (default)
The cycle time of the IO-Link port is automatically set to match the IO-Link device connected.

Fixed cycle
The cycle time of the IO-Link port is set to the value which is defined by the **Port cycle time (n*0.1 ms)** parameter.

The real cycle time of the IO-Link port depends on the IO-Link device connected. If you set a cycle time which is shorter than the minimum cycle time of the IO-Link device, the smallest possible cycle time is automatically set.
The web view is not updated.

Message sync
All IO-Link ports with this parameter setting start simultaneously with message transmission. The IO-Link device with the longest cycle time at these IO-Link ports determines the cycle time.

Port cycle time (n*0.1 ms) parameter

The **Port cycle time (n*0.1 ms)** parameter defines the cycle time of the IO-Link port. This parameter is only relevant if the **Port cycle** parameter has been set to **Fixed value**.
According to the IO-Link specification, the cycle time is coded with a time base (2 bits) and a multiplier (6 bits). The coding is dependent on the cycle time.

Coding the cycle time

Cycle time	Time base	Multipl.	Calculation
0,4 ms ... 6,3 ms	0,1 ms	4 ... 63	Time Base × Multipl.
6,4 ms ... 31,6 ms	0,4 ms	0 ... 63	6,4 ms + Time Base × Multipl.
32,0 ms ... 132,8 ms	1,6 ms	0 ... 63	32,0 ms + Time Base × Multipl.

4 ... 1326 (default: 4)
The cycle time of the IO-Link port set is (4 ... 1326) × 0.1 ms.

Cycle times which cannot be coded as above, are automatically converted by the IO-Link master into the next-possible, codable time.
The web view is not updated.

IO-Link device check parameter

This function allows the identification characteristics of a connected IO-Link device to be checked. The transfer of the process data is only started once the characteristics match the values set in the IO-Link master.

disabled (default)
The function is disabled and there is no validation.

Type compare
The Vendor ID and the Device ID are compared.

Identical
The Vendor ID, the Device ID and the serial number are compared.

DS activation state parameter

The **DS activation state** parameter activates the Data Storage function. The Data Storage function controls the parameter setting server of the IO-Link master. The parameter setting server manages the IO-Link device parameters, such that the IO-Link master or a IO-Link device (from IO-Link specification version 1.1) is very easy to replace.

disabled (default)
The Data Storage function is disabled. Parameter data already saved in IO-Link master is retained.

enabled
The Data Storage function is enabled. Parameter data is exchanged between the IO-Link master and IO-Link device if an inconsistency is detected. The direction of replacement depends on the status of IO-Link master and IO-Link device.
An upload of IO-Link device to the IO-Link master takes place if a connected IO-Link device requests an upload (upload flag set) or if there is no valid data in the IO-Link master. A IO-Link device requests an upload for each change in the IO-Link device parameter.
If the parameter data saved in the IO-Link master does not match the data on the connected IO-Link device and there have been no upload requests made by the IO-Link device, data is downloaded from the IO-Link master to the IO-Link device.

Data Storage function enabled

IO-Link master status	IO-Link device status	Action
No valid data	Upload flag set	Upload
No valid data	Upload flag not set	Upload
Valid data	Upload flag set	Upload
Valid data	Upload flag not set	Download

Clear
The Data Storage function is disabled. Parameter data already stored in the IO-Link master is deleted.

If the Data Storage function is enabled, do not connect any IO-Link devices with unknown parameters to avoid saving incorrect parameters. Reset IO-Link devices to factory settings before you connect them.

Channel diagnostics parameter

The **Channel diagnostics** parameter activates channel diagnostics.

Disabled (default)
Channel diagnostics is disabled.

Enabled
Channel diagnostics is enabled.

Process data length input parameter

The **Process data length input** parameter defines how many bytes the process input data of the IO-Link master are occupied by the cyclic input data of the IO-Link device connected.

0 ... 32 bytes
The cyclic input data of the IO-Link device connected occupies 0 ... 32 bytes of the IO-Link master process input data.

auto (default)
The length of the cyclic input data is automatically set to the IO-Link device connected.

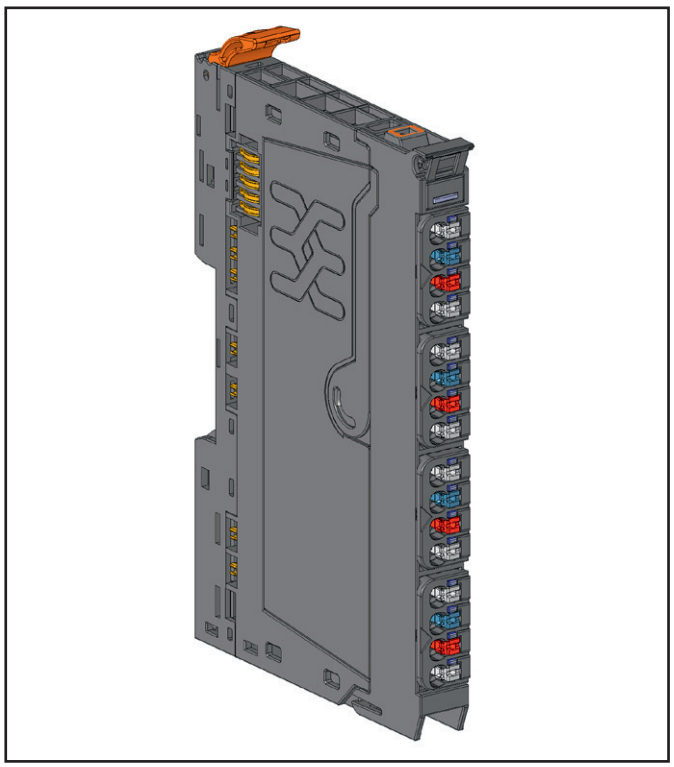
Process data length output parameter

The **Process data length output** parameter defines how many bytes of the IO-Link master process output data are occupied by the cyclic data of the IO-Link device connected.

0 ... 32 bytes
The cyclic output data of the IO-Link device connected occupies 0 ... 32 bytes of the IO-Link master process output data.

auto (default)
The length of the cyclic output data is automatically set to match the IO-Link device connected.

5 Module description UR20-4COM-IO-LINK-V2

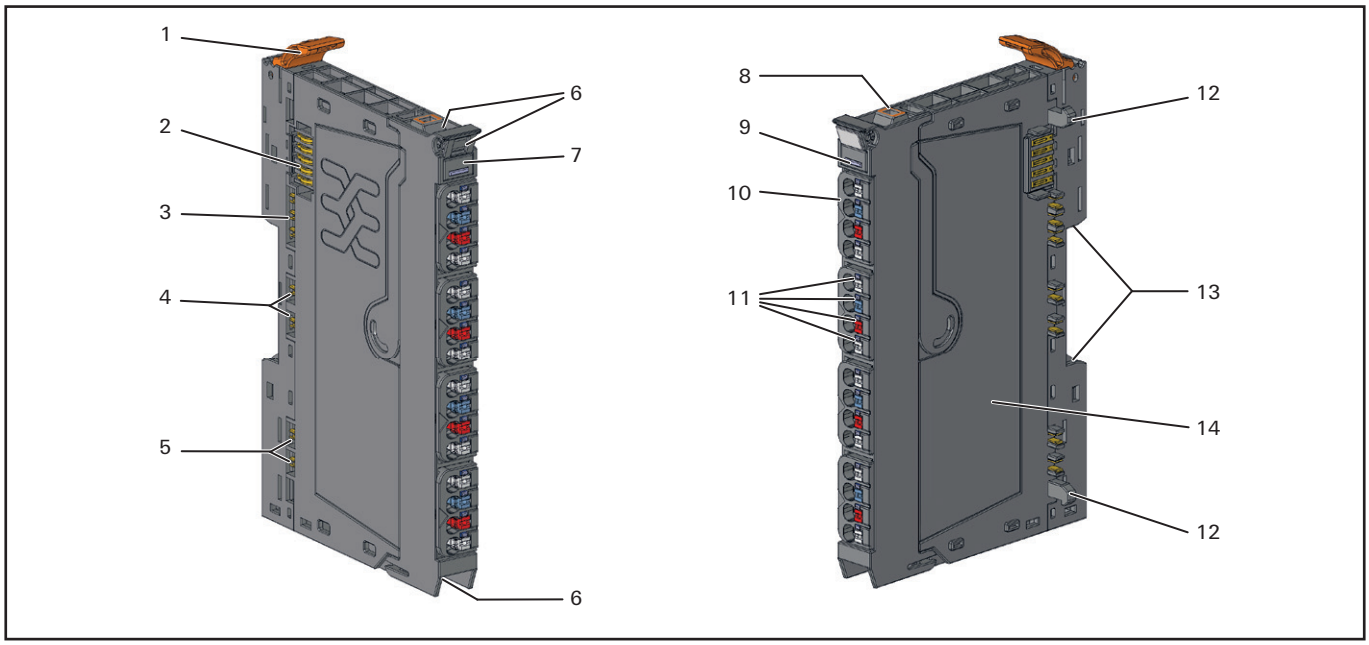


Digital communication module UR20-4COM-IO-LINK-V2 (Order No. 2819690000)

The digital communication module UR20-4COM-IO-LINK-V2 is an IO-Link master according to IO-Link specification V1.1.4. One IO-Link device can be connected to each plug-in connector. The IO-Link devices must comply with port class A. Port class B is possible if additional potential distribution modules are used. One digital input can be used at each plug-in connector.
Process data is exchanged with the IO-Link device connected via each IO-Link port. In addition, acyclic data can be exchanged (diagnosis data, parameter data, status information). The parameter data of the IO-Link devices connected can be stored in the master module where they are managed from a parameterising server (Data Storage). This means that the IO-Link master or an IO-Link device (from IO-Link specification version 1.1) are very easy to replace.
The four communication channels can also be used as digital inputs or outputs with standard field devices.
A status LED is assigned to each channel. The module electronics supply the connected sensors with power from the input current path (I_{IN}).
The inputs are protected against voltage surges and overcurrent. Voltages that exceed ±30 V may cause the destruction of the module.

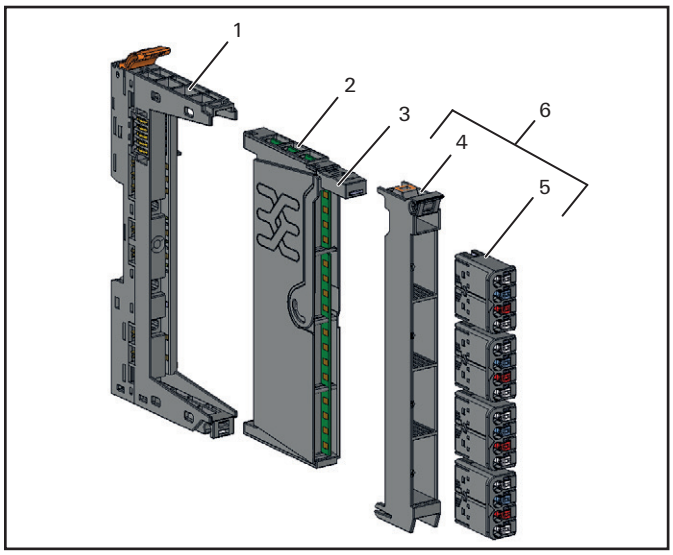
You can use the **u-mation configurator** software to configure IO-Link devices for the UR20-4COM-IO-LINK-V2.

5.1 Device description



Communication module UR20-4COM-IO-LINK-V2

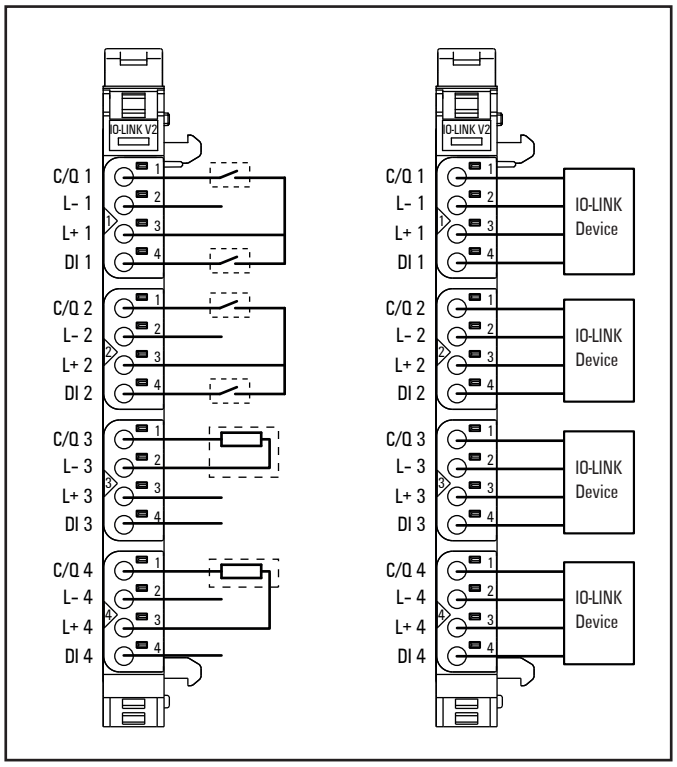
1 Release lever for DIN rail fixing
2 System bus
3 System current path
4 Input current path
5 Output current path
6 Seats for module markers
7 Type designation
8 Connector frame unlocking device
9 Module status LED (collective message)
10 Connector
11 Channel status LED
12 Latching hook for latching onto module sides
13 DIN rail foot
14 Type plate



I/O-Module components

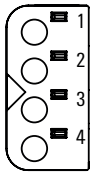
1 Base module
2 Electronic unit
3 Removal lever for electronic unit
4 Connector frame
5 Connector
6 Plug-in unit

5.2 Connections



Connection diagram UR20-4COM-IO-LINK-V2

A plug-in connector corresponds to an IO-Link port of type A.

Connector	Connection	Signal	Function
	1	C/Q	IO-Link communication
	2	L-	GND IN
	3	L+	24 V DC IN
	4	DI	Digital input (type 1)

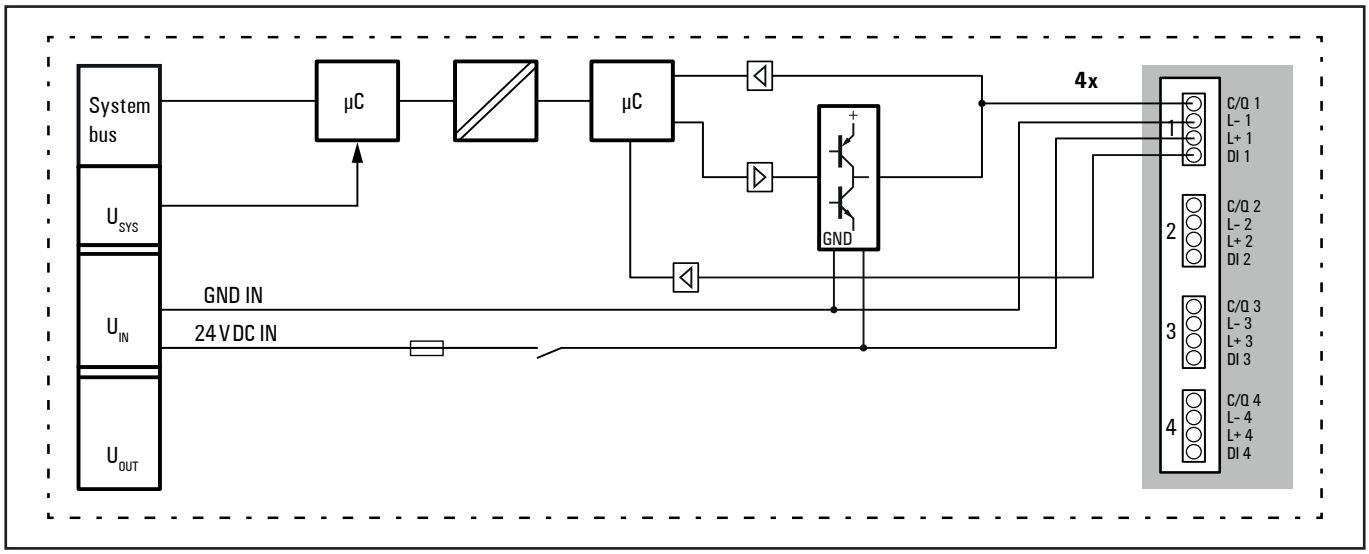
A description of how IO-Link devices for both port classes and standard field devices can be connected to the module is available in chapter 6.

5.3 LED indicators

	Module status LED Green: Communication on system bus Red: Collective error diagnostic
1.1	Yellow: Status COM 1
1.2	Red: Error IO-Link port 1
1.4	Yellow: Status DI 1
2.1	Yellow: Status COM 2
2.2	Red: Error IO-Link port 2
2.4	Yellow: Status DI 2
3.1	Yellow: Status COM 3
3.2	Red: Error IO-Link port 3
3.4	Yellow: Status DI 3
4.1	Yellow: Status COM 4
4.2	Red: Error IO-Link port 4
4.4	Yellow: Status DI 4

LED indicators UR20-4COM-IO-LINK-V2

5.4 Block diagram



Block diagram UR20-4COM-IO-LINK-V2

The numbering of the channels in the u-remote system differs from the numbering of the IO-Link port as per the IO-Link specification. The following table shows the assignment of plug-in connectors and channels to IO-Link ports for the UR20-4COM-IO-LINK-V2 communication module.

Plug-in connector	IO-Link port	Channel
1	1	0
2	2	1
3	3	2
4	4	3

5.5 Technical data

Technical data UR20-4COM-IO-LINK-V2

System data		
Data (coupler dependent)	see Chapter 9	
Interface	u-remote system bus	
System bus transfer rate	48 MBit/s and 192 MBit/s	
Digital inputs		
Number	4	
Sensor types	Type 3 (DI) as per IEC 61131-2[1)]	
Low input voltage	P-switching: < 5 V against 0 V, N-switching: > -5 V against 24 V DC	
High input voltage	P-switching: > 11 V against 0 V, N-switching: < -18 V against 24 V DC	
IO-Link interfaces		
Number	4	
Type	IO-Link as per IEC 61131-9	
Transfer rate	4,8 kBaud / 38,4 kBaud / 230,4 kBaud, depending on the connected IO-Link device	
Output current C/Q in DO mode	0,1 A, ohmic load only	
Switching frequency Ohmic load	500 Hz	
Input type in DI mode[2)]	Type 1 as per IEC 61131-2	
Output current L+	0.5 A per channel, total max. 2 A	
Line break detection	no	
Short-circuit-proof	yes	
Module diagnosis	yes	
Individual channel diagnosis	yes	
Supply		
Supply voltage	24 V DC +20 %/-15 %	
Current consumption from system current path I_{SYS}	8 mA	
Current consumption from input current path I_{IN}	13 mA + sensor supply	
General data		
Type of connection	"PUSH IN"	Single-wired, fine-wired
		Conductor cross-section 0.14 – 1.5 mm² (AWG 16 – 26)
Dimensions	Height	120.0 mm / 4.72" (with release lever: 128.0 mm / 5.04")
	Width	11.5 mm / 0.45"
	Depth	76.0 mm / 2.99"

1) With N-switching parameterisation, the hysteresis of DI 1 ... DI 4 exceeds the standard range of IEC 61131-2, type 3.
2) If C/Q is used as a digital input, the connected device must be powered exclusively via L+ and L- of the same channel.
3) Higher operating altitudes are possible, provided that certain deratings are observed. Please contact your local Weidmüller representative.

Technical data UR20-4COM-IO-LINK-V2

Weight (operational status)	89 g	
Protection class (IEC 60529)	IP 20	
Flammability rating UL 94	V-0	
Temperature data	Operation	-20 °C ... +60 °C / -4 ... +140 °F
	Storage, transport	-40 °C ... +85 °C / -40 ... +185 °F
Humidity	Operation, storage, transport	5 % to 95 %, non-condensing as per IEC 61131-2
Air pressure	Operation[2)]	≥ 795 hPa (altitude ≤ 2000 m) as per IEC 61131-2
	Storage, transport	≥ 700 hPa (altitude ≤ 3000 m) as per IEC 61131-2
Potential isolation	Test voltage	500 V DC field/system (as per EN 60079-15:2010)
	Pollution severity level	2 (as per DIN EN 60664-1:2008)
	Overvoltage category	II (as per DIN EN 50178)
Vibration resistance	5 Hz ≤ f ≤ 8.4 Hz: 3.5-mm amplitude as per IEC 60068-2-6	
	8.4 Hz ≤ f ≤ 150 Hz: 1-g acceleration as per IEC 60068-2-6	
Shock resistance	15 g over 11 ms, half sinewave, as per IEC 60068-2-27	
Approvals and standards	cULus	UL 61010
	EMC	IEC 61000 (partial standards as per the requirements of IEC 61131-2)
	Potentially explosive atmosphere Zone 2	IEC 60079-0:2017+Corr.1:2020, IEC 60079-7:2017, IEC 60079-15:2017 EN IEC 60079-0:2018, EN IEC 60079-7:2015+A1:2018, EN IEC 60079-15: 2019
	PLC	IEC 61131-2, IEC 61131-9

1) With N-switching parameterisation, the hysteresis of DI 1 ... DI 4 exceeds the standard range of IEC 61131-2, type 3.
2) If C/Q is used as a digital input, the connected device must be powered exclusively via L+ and L- of the same channel.
3) Higher operating altitudes are possible, provided that certain deratings are observed. Please contact your local Weidmüller representative.

5.6 Editable parameters

Overview of the editable parameters UR20-4COM-IO-LINK-V2

Channel	Description	Options	Default
0 ... 3	Operating mode C/Q	disabled (0) / DO (1) / DI (2) / IO-Link (3)	disabled
0 ... 3	Port cycle	Free running (0) / Fixed cycle (1)	Free running
0 ... 3	Port cycle time [n x 0.1 ms]	4 ... 1326	4
0 ... 3	IO-Link start-up	automatic (0) / manual (1)	automatic
0 ... 3	Validation	no device check (0) / same type of device V1.0 (1) / same type of device V1.1 (2)	no device check
0 ... 3	DS activation state	disabled (0) / Backup and Restore (1) / Restore (2)	disabled
0 ... 3	IO-Link vendor ID	0 ... 65535	no value
0 ... 3	IO-Link device ID	0 ... 16777215	no value
0 ... 3	CQ polarity	P-switching (0) / N-switching (1) / push-pull (DO) – high impedance (DI) (2)	P-switching
0 ... 3	Substitute value	Off (0) / On (1)	Off
0 ... 3	DI input channel polarity	P-switching (0) / N-switching (1)	P-switching
0 ... 3	Process data length input	0 Byte (0) / 1 Byte (1) / 2 Byte (2) / ... / 32 Byte (32) / auto (255)	auto
0 ... 3	Process data length output	0 Byte (0) / 1 Byte (1) / 2 Byte (2) / ... / 32 Byte (32) / auto (255)	auto

Channel settings and dependencies

Operating mode C/Q	DI	DO	IO-LINK	IO-LINK	IO-LINK	IO-LINK
Port cycle	–	–	–	x	x	x
Port cycle time [n x 0.1 ms]	–	–	–	x	x	x
IO-Link start-up	–	–	Automatically	Manually	Manually	Manually
Validation (Revision V1.0 / V1.1)	–	–	–	Rev. V1.0 (10)	Rev. V1.1 (11)	Rev. V1.1 (11)
DS activation state	–	–	–	–	–	x
IO-Link vendor ID (VID)	–	–	–	VID	VID	VID
IO-Link device ID (DID)	–	–	–	DID	DID	DID
CQ polarity	x	x	–	–	–	–
Substitute value	–	x	–	–	–	–
DI input channel polarity	x	x	x	x	x	x
Process data length input	x	x	x	x	x	x
Process data length output	x	x	x	x	x	x

– not used
x parameterisable by the user

Operating mode parameter

The **Operating mode** parameter defines the function of the respective IO-Link port (C/Q, L+ and L- connections). The parameter does not influence the function of the additional digital input (DI connection).

Disabled (default)
The supply voltage at L+ and communication via C/Q are disabled.

DO
The C/Q connection works as a digital output. The length of the process output data for this IO-Link port is 1 byte.

DI
The C/Q connection works as a digital input. The length of the process input data for this IO-Link port is 1 byte.

IO-Link
The IO-Link port uses the C/Q connection for IO-Link communication. The length of the process data is determined by the **Process data length input** and **Process data length output** parameters.

Port cycle parameter

The **Port cycle** parameter defines how the cycle time of the IO-Link port is determined.

Free running (default)
The cycle time of the IO-Link port is automatically set to match the IO-Link device connected.

Fixed cycle
The cycle time of the IO-Link port is set to the value which is defined by the **Port cycle time (n*0.1 ms)** parameter.

The real cycle time of the IO-Link port depends on the IO-Link device connected. If you set a cycle time which is shorter than the minimum cycle time of the IO-Link device, the smallest possible cycle time is automatically set.
In the webserver, the view of the **Port cycle** parameter is not updated.

Port cycle time (n*0.1 ms) parameter

The **Port cycle time (n*0.1 ms)** parameter defines the cycle time of the IO-Link port. This parameter is only relevant if the **Port cycle** parameter has been set to **Fixed value**.
According to the IO-Link specification, the cycle time is coded with a time base (2 bits) and a multiplier (6 bits). The coding is dependent on the cycle time.

Coding the cycle time

Cycle time	Time base	Multipl.	Calculation
0,4 ms ... 6,3 ms	0,1 ms	4 ... 63	Time Base × Multipl.
6,4 ms ... 31,6 ms	0,4 ms	0 ... 63	6,4 ms + Time Base × Multipl.
32,0 ms ... 132,8 ms	1,6 ms	0 ... 63	32,0 ms + Time Base × Multipl.

4 ... 1326 (default: 4)
The cycle time of the IO-Link port set is (4 ... 1326) × 0.1 ms.

Cycle times which cannot be coded as above, are automatically converted by the IO-Link master into the next-possible, codable time.
In the webserver, the view of the **Port cycle time** parameter is not updated.

IO-Link start-up parameter

Automatic (default)
Automatic device start-up at the resprective port without checking vendor ID and device ID

Manuell
The device is started-up at the respective port after the acceptance criteria have been checked (**Validation**, **IO-Link Vendor-ID** and **IO-Link Device-ID** parameters).

Validation parameter

no device check (default)
Process data transmission starts without checking the identification features of the connected IO-Linkd device (IO-Link Vendor ID, IO-Link Device ID, etc.).

same type of device V1.0
Prior to the start of process data transmission, a check is made to ensure that the connected IO-Link device complies with specification 1.0.

same type of device V1.1
Prior to the start of process data transmission, a check is made to ensure that the connected IO-Link device complies with specification 1.1.

DS activation state parameter

The **DS activation state** parameter activates the Data Storage function. The Data Storage function controls the parameter setting server of the IO-Link master. The parameter setting server manages the IO-Link device parameters, such that the IO-Link master or a IO-Link device (from IO-Link specification version 1.1) is very easy to replace.

disabled (default)
The Data Storage function is disabled. Parameter data already saved in IO-Link master is retained until the respective port is deactivated or parameterised as DI or DO.

Backup and Restore
The Data Storage function is enabled. Parameter data is exchanged between the IO-Link master and IO-Link device if a difference in configuration is detected. The direction of replacement depends on the data set saved in the IO-Link master and IO-Link device.
A backup of the IO-Link device to the IO-Link master takes place as soon as a connected IO-Link device requests a backup. This happens as soon as a parameter of the IO-Link device is changed.
A download (Restore) from the IO-Link master to the IO-Link device is performed as soon as the paramter data stored in the IO-Link master deviate from the connected IO-Link device and no upload request from the IO-Link device is present. In this case, the IO-Link device is in default status.

Data Storage function Backup and Restore

IO-Link master status	IO-Link device status	Action
No valid data	Upload flag set	Backup
No valid data	Upload flag not set	no action
Valid data	Upload flag set	Backup
Valid data	Upload flag not set	Restore

Restore
The Data Storage function is activated. A download (Restore) from the IO-Link master to the IO-Link device is performed as soon as the paramter data stored in the IO-Link master deviate from the connected IO-Link device and no upload request from the IO-Link device is present.

Data Storage function Restore

IO-Link master status	IO-Link device status	Action
No valid data	Upload flag set	no action
No valid data	Upload flag not set	no action
Valid data	Upload flag set	no action
Valid data	Upload flag not set	Restore

If the Data Storage function is enabled, do not connect any IO-Link devices with unknown parameters to avoid saving incorrect parameters into the Data Storage. Reset IO-Link devices to factory settings before you connect them.

IO-Link vendor ID parameter
Globally unique manufacturer identification number (Vendor ID) of the IO-Link device connected to the port

IO-Link device ID parameter
Unique device identification number (Device ID) of the IO-Link device connected to the port, created by the device manufacturer.

CQ polarity parameter
Polarity of the C/Q x connection

P-switching (default)
In DO operation mode, a positive potential (24 V DC) is switched to the output. In DI operation mode, C/Q switches to High (1) on positive potential.

N-switching
In DO operation mode, a negative potential (24 V DC) is switched to the output. In DI operation mode, C/Q switches to High (1) on negative potential.

Push-pull (DO) / high impedance (DI)
In DO operation mode, the C/Qx connection works push-pull. In DI operation mode, the C/Qx connection works with high impedance.

Substitute value parameter

Off (default)
No substiute value is output by the IO-Link device in case of a communication error.

On
A substitute value is output by the IO-Link device in case of a communication error.

DI input polarity parameter

P-switching (default)
DIx switches to High (1) on positive potential.

N-switching
DIx switches to High (1) on negative potential.

Process data length input parameter
The **Process data length input** parameter defines how many bytes the process input data of the IO-Link master are occupied by the cyclic input data of the IO-Link device connected.

0 ... 32 bytes
The cyclic input data of the IO-Link device connected occupies 0 ... 32 bytes of the IO-Link master process input data.

auto (default)
The length of the cyclic input data is automatically set to the IO-Link device connected.

Process data length output parameter

The **Process data length output** parameter defines how many bytes of the IO-Link master process output data are occupied by the cyclic data of the IO-Link device connected.

0 ... 32 bytes
The cyclic output data of the IO-Link device connected occupies 0 ... 32 bytes of the IO-Link master process output data.

auto (default)
The length of the cyclic output data is automatically set to match the IO-Link device connected.

For PROFINET and EtherCAT:
The maximum process data width of the UR20-4COM-IO-LINK-V2 module is 128 bytes, inkluding 2 bytes for the module itself (2 status bytes, 2 control bytes). Therefore, a total of 126 Bytes are available for the configuration of the connected IO-LINK devices, e.g. 3 x 32 Bytes + 1 x 30 Bytes = 126 Bytes.

6 Assembly and installation

WARNING

Explosion risk!
During installation work, sparks can form and surfaces may become excessively hot
► Before starting any work, make sure that there is not a potentially explosive atmosphere!
► For applications in explosive risk zones, observe the installation and construction requirements of EN 60079-15 and country-specific regulations.

WARNING

Dangerous contact voltage!
► Carry out assembly and wiring work only when the power supply disconnected.
► Make sure that the place of installation has been disconnected from the power supply!

ATTENTION

The product can be destroyed by electrostatic discharge!
u-remote products can be destroyed by electrostatic discharge.
► Please make sure that persons and work equipment are adequately earthed!

► In addition, always refer to the complete documentation in the **Remote-I/O-System u-remote Manual.**
You can find the document in the Weidmüller Support Center.

► Carry out all work during the installation/removal and replacement of components as described in the u-remote manual.

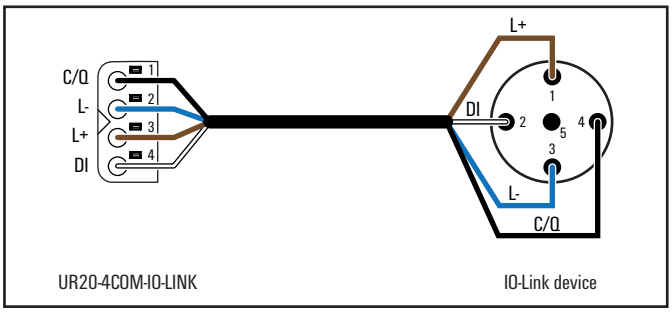
6.1 Connecting the IO-Link device

ATTENTION

The module can be destroyed!
The voltage between C/Q and L- must not be greater that the voltage between L+ and L-.
► Only connect the devices as shown.

Use unshielded cables of maximum 20 m length to connect IO-Link devices.

Connecting IO-Link device for class A port



Connecting IO-Link device for class A port (DI connection optional)

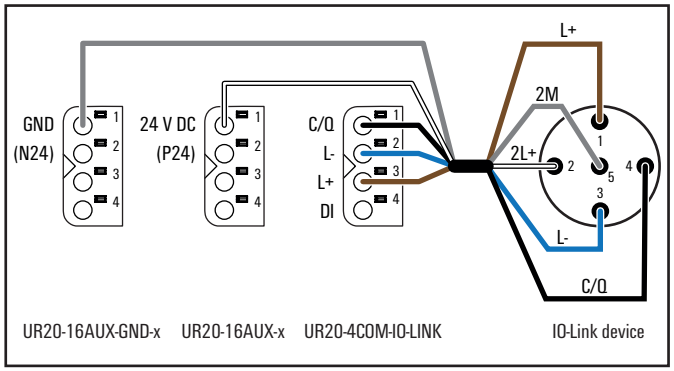
► Connect the IO-Link device as shown in the figure.

The use of the additional digital input at the DI connection is optional. You can use this digital input, e.g. if the IO-Link device provides an additional switching signal.

Connecting IO-Link device for class B port

To connect an IO-Link device with class B port to your u-remote station, you also need the following potential distribution modules:

- for input current path
  - UR20-16AUX-I (order no. 1334770000)
  - UR20-16AUX-GND-I (order no. 1334800000)
- for output current path
  - UR20-16AUX-O (order no. 1334780000)
  - UR20-16AUX-GND-O (order no. 1334810000)



Connecting IO-Link device for type B port

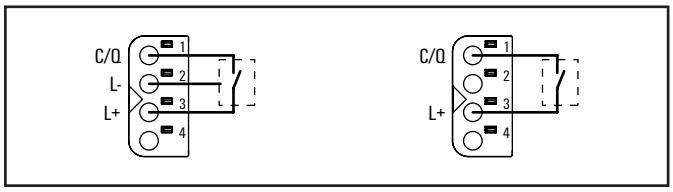
► Install the three modules in a u-remote station.
► Connect the IO-Link device as shown in the figure.

6.2 Connecting standard field devices

ATTENTION

The module can be destroyed!
The voltage between C/Q and L- must not be greater that the voltage between L+ and L-.
► Only connect the devices as shown.

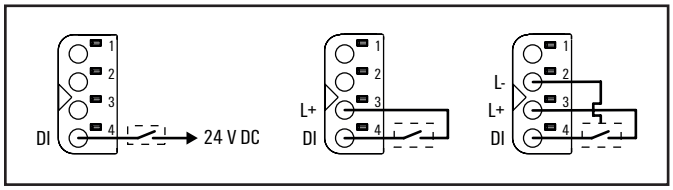
Connecting sensor to C/Q



Connecting sensor to C/Q

► Connect the sensor as shown in the figure.

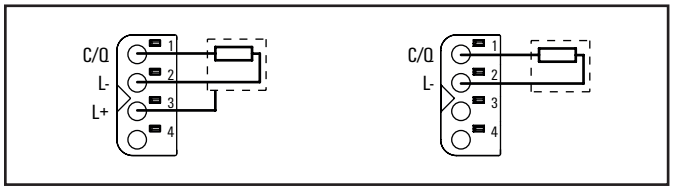
Connecting sensor to DI



Connecting sensor to DI

► Connect the sensor as shown in the figure.

Connect load to C/Q



Connect load to C/Q

► Connect the load as shown in the figure.

7 Commissioning

WARNUNG

Explosion risk!

► Before starting any work, make sure that there is not a potentially explosive atmosphere!

WARNUNG!

Manipulation of the control unit!

During commissioning, the system may be manipulated to such an extent that risk to life and material damage can result.

► Make sure that system components cannot start up unintentionally!

ATTENTION

The product can be destroyed!

► Perform an insulation test every time before putting the station into operation (see section 7.6 in the Remote-I/O-System u-remote Manual).

► Always observe the complete documentation in the **Remote-I/O-System u-remote Manual** (document no. 1432780000) and in the **u-remote Web Server Manual** (document no. 2112220000).

You can find the documents in the Weidmüller Support Center.

7.1 Requirements

Before you start the commissioning work, the following requirements must be fulfilled.

- The control unit must be in operation.
- The u-remote station must be completely assembled and wired.
- The fieldbus coupler and UR20-4COM-IO-LINK module must use the current firmware versions.
- The control unit and u-remote station must be connected to each other, and a PC/laptop must also be connected.
- The power supply must be turned on.

7.2 Device description files

► Download the current device description files from the Weidmüller Support Center.

These include:

- GSDML files for PROFINET couplers
- GSD files for PROFIBUS couplers
- ESI files for EtherCAT couplers
- EDS files for Ethernet/IP couplers
- EDS files for DeviceNet couplers
- EDS files for CANopen couplers
- XDD files for POWERLINK couplers

If bitmap files for visualising the couplers are also supplied, store them in the same folder as the device description files.

You require the current device description files in order to use all the functions of the UR20-4COM-IO-LINK communication module.

The naming convention for GSDML files always follows this pattern: GSDML_V2.3-WI-UR20-yyyymmdd.xml. The date in the file name (dd.mm.yyyy) indicates the version of the GSDML file and helps to determine whether you are already using the latest version.

The version number of a GSD file can be found from the file. If you open the file with a GSD editor, you can find the version number in the **Info_Text** entry. If you open the file with a text editor, you can find the version number in the entry comment.

The version number of an ESI file can be found from the file. If you open the file with a text editor, you can find the version number in the **FileVersion** attribute of the **Vendor** tag.

The version number of an EDS file can be found from the file. Open the file using a text editor.

- Ethernet/IP: **Revision** entry in the **File** section
- DeviceNet: **Revision** entry in the **File** section
- CANopen: **FileVersion** entry in the **FileInfo** section

The version number of an XDD file can be found from the file. If you open the file with a text editor, you can find the version number in the **FileVersion** attribute of the **ProfileBody** tag.

7.3 Commissioning procedure

Updating the software

► Update the firmware of the fieldbus coupler and that of the UR20-4COM-IO-LINK modules to the latest version.

Configuring the IO-Link master

► Install the current device description files.
► Configure the control unit and the network as usual.
► Add the required fieldbus coupler and the UR20-4COM-IO-LINK module to your configuration.
► Adjust the process data length of the UR20-4COM-IO-LINK module and the fieldbus coupler to your IO-Link device configuration.

The procedure for adjusting the process data length depends on which fieldbus coupler and which engineering tool you are using.

For commissioning examples, see sections 7.4 to 7.8.

Parameterising the IO-Link port

The IO-Link ports are parameterised via the parameters of the IO-Link master. A field device is integrated using the suitable parameterisation of the associated IO-Link port. An overview of all parameters can be found in section 4.6. and 5.6

► For each IO-Link port, set the **Operating mode** parameter such that the setting corresponds with the connected device.
► Change the other parameters as required.

Configuring IO-Link devices online

You can use the **u-mation configurator** to configure IO-Link devices during ongoing operation.

► Start the **u-mation configurator.**
► Establish a connection between the computer and the u-remote station.
► Activate the IO-Link ports to which IO-Link devices are connected.
► Assign the correct IODDs to these IO-Link ports.
► Parameterise the IO-Link devices.
► Write the edited parameters to the IO-Link devices.

You can find further information on installation and operation of the **u-mation configurator** in Chapter 8 and in the embedded help.

Loading the IO-Link device configuration to the u-remote station

You can load an exported IO-Link device configuration to the u-remote station via the u-remote web server. This procedure is suitable when you want to use the same configuration a number of times.

► Always observe the complete documentation in the **u-remote Web Server Manual** (document no. 2112220000).
You can find the document in the Weidmüller Support Center.

If you access a fieldbus coupler via the **u-mation configurator** and the u-remote web server simultaneously, this may result in access conflicts.

► Start the u-remote web server.
► Open the component view of the IO-Link module by clicking on the IO-Link module in the station overview.
► In the component view, click **Load device configuration**.

Loading the IO-Link device configuration to the u-remote station

► Select the required configuration file (.json) and click **Open**.

A dialogue box with details for the IO-Link device configuration is opened.

► Check whether the details for the IO-Link device configuration correspond with the actual configuration.
► Click **Upload**.

The IO-Link device configuration is written to the module.

You can find further information on installation and operation of the **u-mation configurator** in Chapter 8 and in the built-in online help.

You will receive an error message if the IO-Link device configuration does not match the connected IO-Link devices.

7.4 Commissioning with the SIMATIC Manager (PROFINET)

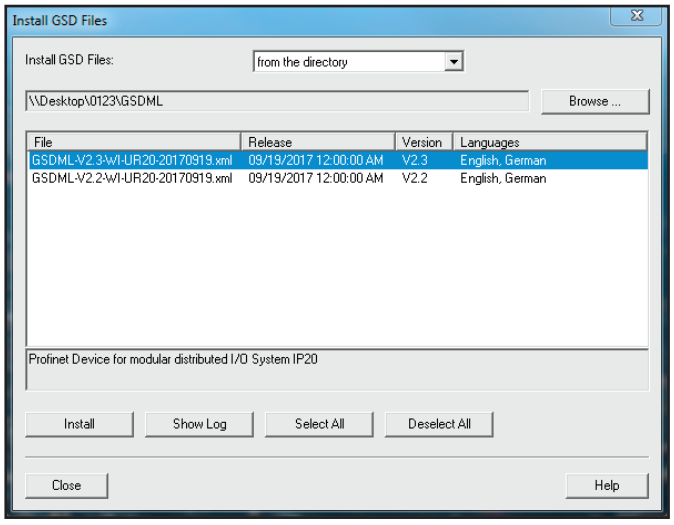
Installing the device description files

Projects must not be open in the hardware configuration tool while the files are being installed!

► Close any open projects before installing the device description files!

► In the hardware configuration tool, open **Installing Extras/GSD files**
► Select the directory in which you have stored the device description files.

The available files are displayed.



Selecting the GSD(-ML) file

► Select the files that you would like to install.
► Click **Install**.
► When the installation is complete, click **Close**.
► Update the device catalogue via **Extras/Update catalogue**.

The devices associated with the current device description file are now listed in the device catalogue.

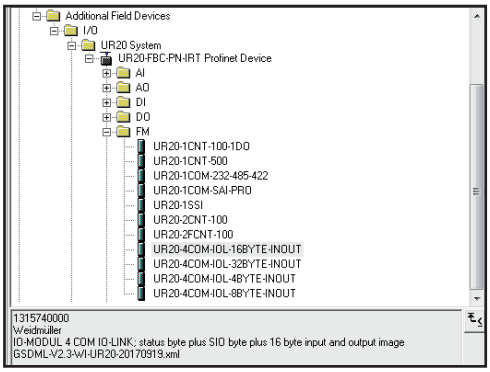
Integrating IO-Link master with SIMATIC Manager

► Start **SIMATIC Manager**.
► Create a new project or open an existing project.
► Configure the controller and the network as usual.
► Add the appropriate u-remote fieldbus coupler to the subnet.
► In the hardware configuration tool, click the icon for the fieldbus coupler.

The module list is displayed in the lower part of the window.

► In the module list, click the slot to which you want to add the IO-Link master.

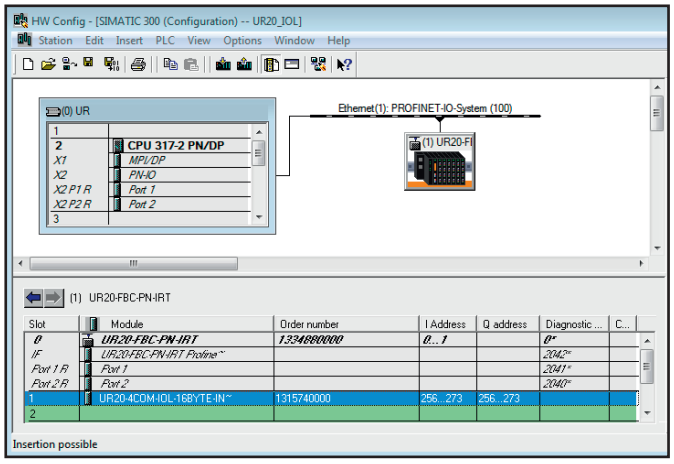
The device description files support various configurations for the UR20-4COM-IO-LINK module. The configurations differ only in the length of the process data for the IO-Link devices connected, e.g. 16 bytes input data and 16 bytes output data for IO-Link devices for the configuration UR20-4COM-IOL-16BYTE-INOUT.



Select module with the appropriate process data length

► Determine the required process data length of the IO-Link master, by adding the length of the input data and output data of the IO-Link devices connected.
► In the device catalogue, select the UR20-4COM-IO-LINK module with a process data length greater than or equal to the required length.
► Double-click the module, or drag it into the module list.

The module is displayed in the module list.



Adding IO-Link master in SIMATIC Manager (Example: PROFINET)

Parameterising IO-Link port with SIMATIC Manager

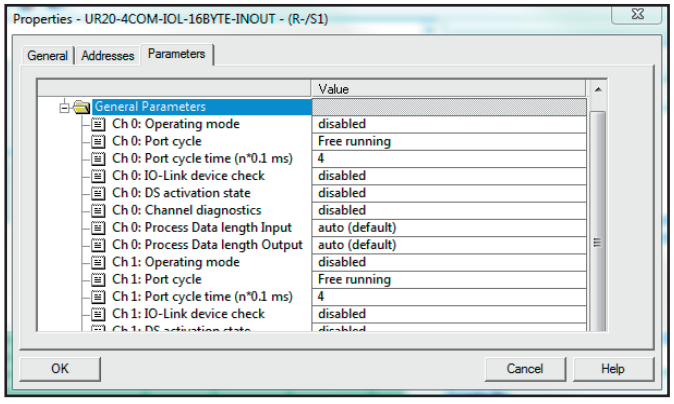
The IO-Link ports are parameterised using the IO-Link master parameters. An overview of all parameters is presented in section 4.6.

► Double-click the module in the module list.

The **UR20-4COM-IO-LINK Properties window** opens.

► Select the **Parameters** tab

The list of all parameters is displayed.



Editing module parameters

► Click the parameter that you would like to change and select the desired setting.

► Use this method to edit all of the parameters that you want to change.

► Click **OK** to save the settings.

All settings only take effect once they have been loaded into the component.

Integrating IO-Link device with SIMATIC Manager

An IO-Link device is integrated using the suitable parameterization of the associated IO-Link port.

► Double-click the module in the module list.

The **UR20-4COM-IO-LINK Properties window** opens.

► Select the **Parameters** tab.

► Set the **Operating mode** parameter of the IO-Link port to the value **IO-Link**.

► Set each of the parameters **Process data length input** and **Process data length output** to the value **auto**.

► Change the other parameters as required.

► Save the setting by clicking **OK**.

All settings only take effect once they have been loaded into the component.

Writing parameters of connected IO-Link devices

The PROFINET couplers UR20-FBC-PN-IRT-V2 (from FW 01.15.00 on) and UR20-FBC-PN-ECO (from FW 01.04.00 on) support writing device parameters of the connected IO-Link devices via the device parameter of the UR20-4COM-IO-LINK module. Parameter registers as well as parameter data are defined by the respective IO-Link device connected to the port, see documentation of the IO-Link device.

This function can replace using the IOL-CAL block, e.g. if no acyclic services can be used during the runtime of the control programm.

To use this function, select the module **UR20-4COM-IOL-... with Device Parameter** in the respective GSDML file.

► Select the IO-Link device by specifying the port number (1 ... 4).

► Select the desired device parameter via Index and Subindex.

► For **Length**, specify the number of parameter byte to be written (0 ... 32 byte per parameter).

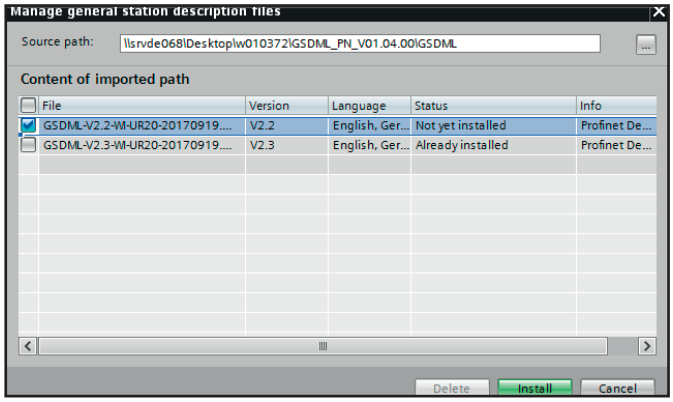
Up to 32 different device parameters can be written for all four ports in total.

7.5 Commissioning with the TIA portal (PROFINET)

Installing the device description files

► In the project view, open: **Extras/Manage general station description files (GSD)**
► Select the directory in which you have stored the device description files.

The available files are displayed.



Selecting the GSD(-ML) file

► Select the files that you would like to install.
► Click **Install**.
► When the installation is complete, click **Close**.

The hardware catalogue is updated automatically. The devices from the current device description file are now listed in the hardware catalogue.

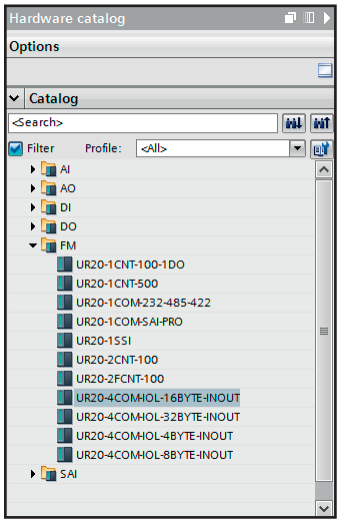
Integrating IO-Link master with the TIA portal

► Start the **TIA portal**.
► Create a new project or open an existing project.
► Configure the controller and the network as usual.
► Add the appropriate u-remote fieldbus coupler to the subnet.
► In the hardware configuration tool, click the icon for the fieldbus coupler.

The device overview is displayed.

► In the device overview, click the plug-in station to which you want to add the IO-Link master.

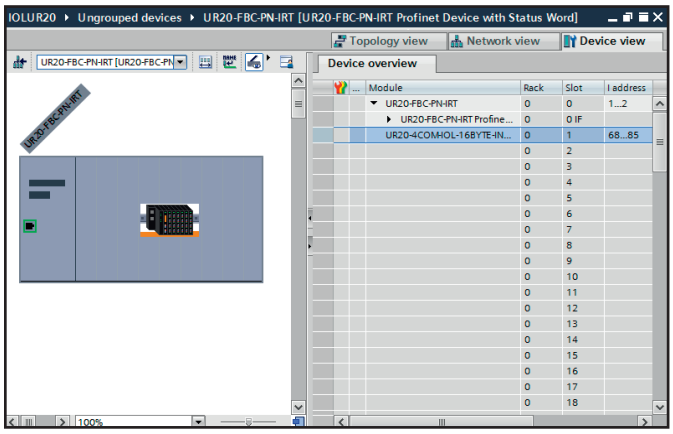
The device description files support various configurations for the UR20-4COM-IO-LINK module. The configurations differ only in the length of the process data for the IO-Link devices connected, e.g. 16 bytes input data and 16 bytes output data for IO-Link devices for the configuration UR20-4COM-IOL-16BYTE-INOUT.



Select module with the appropriate process data length

► Determine the required process data length of the IO-Link master, by adding the length of the input data and output data of the IO-Link devices connected.
► In the device catalogue, select the UR20-4COM-IO-LINK module with a process data length greater than or equal to the required length.
► Double-click the module, or drag it into the device overview.

The module is displayed in the device overview.



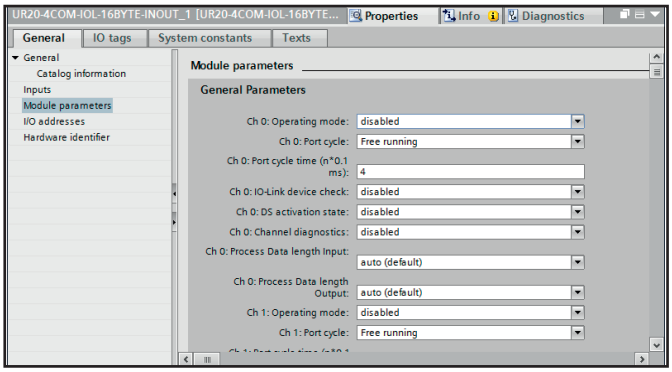
Adding IO-Link master with the TIA portal (example: PROFINET)

Parameterising IO-Link port with the TIA portal

The IO-Link ports are parameterised using the IO-Link master parameters. An overview of all parameters is presented in section 4.6.

► Select the module in the device overview.
► In the inspection window, select the **General** tab.
► Select **Component parameters**.

The list of all parameters is displayed.



Editing module parameters

- ► Click the parameter that you would like to change and select the desired setting.
- ► Use this method to edit all of the parameters that you would like to change.

All settings only take effect once they have been loaded into the component.

Integrating IO-Link device with the TIA portal

A IO-Link device is integrated using the suitable parameterization of the associated IO-Link port.

- ► Select the module in the device overview.
- ► In the inspection window, select the **General** tab.
- ► Select **Component parameters**.

The list of all parameters is displayed.

- ► Set the **Operating mode** parameter of the IO-Link port to the value **IO-Link**.
- ► Set the **Process data length input** parameter to the value **auto (default)**.
- ► Set the **Process data length output** parameter to the value **auto (default)**.
- ► Change the other parameters as required.

All settings only take effect once they have been loaded into the component.

Writing parameters of connected IO-Link devices

The PROFINET couplers UR20-FBC-PN-IRT-V2 (from FW 01.15.00 on) and UR20-FBC-PN-ECO (from FW 01.04.00 on) support writing device parameters of the connected IO-Link devices via the device parameter of the UR20-4COM-IO-LINK module. Parameter registers as well as parameter data are defined by the respective IO-Link device connected to the port, see documentation of the IO-Link device.

This function can replace using the IOL-CAL block, e.g. if no acyclic services can be used during the runtime of the control programm.
To use this function, select the module **UR20-4COM-IOL-... with Device Parameter** in the respective GSDML file.

- ► Select the IO-Link device by specifying the port number (1 ... 4).
- ► Select the desired device parameter via Index and Subindex.
- ► For **Length**, specify the number of parameter byte to be written (0 ... 32 byte per parameter).

Up to 32 different device parameters can be written for all four ports in total.

7.6 Commissioning with TwinCAT (EtherCAT)

Installing the device description files

- ► Before starting **TwinCAT**, copy the ESI files to the TwinCAT installation folder, e.g. C:\TwinCAT\3.1\Config\Io\EtherCAT.

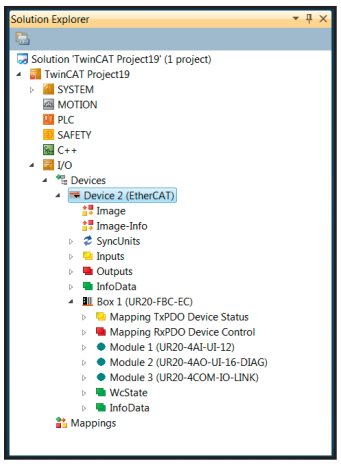
Existing folder structures in the ESI files must remain unchanged when copying.

After starting TwinCAT 3, the devices from the device description files are available in the hardware catalogue.

Integrating IO-Link master with TwinCAT 3

- ► Start **TwinCAT 3**.
- ► Create a new project or open an existing project.
- ► Establish an online connection to the EtherCAT master.
- ► Switch to **Solution Explorer**.
- ► Right-click **I/O**.
- ► Select **Scan**... and follow the configuration wizard.

All the EtherCAT slaves available on the network are added.



IO-Link master in Solution Explorer

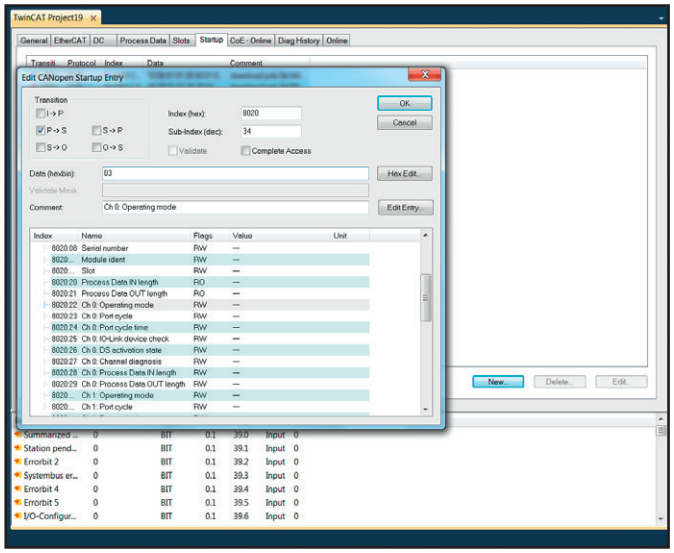
Parameterising IO-Link port with TwinCAT

The IO-Link ports are parameterised via the parameters of the IO-Link master. An overview of all parameters can be found in section 4.6.

► In the **Editor** window of the coupler, switch to **Startup**.
The current parameter setting is displayed.

You can edit the parameter setting.

► Double-click the parameter you want to edit.
The **Edit** dialogue box is opened.



Editing module parameters with TwinCAT

► Change the value in the **Data** text field.
► Click **OK**.
► Use this method to edit all of the parameters that you would like to change.

All settings only take effect once they have been loaded into the component.

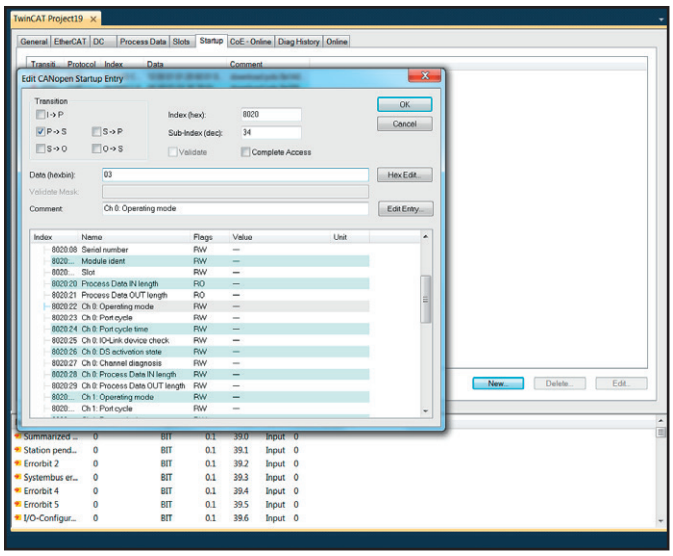
Integrating IO-Link device with TwinCAT

An IO-Link device is integrated using the appropriate parameterisation of the associated IO-Link port.

► Switch to **Startup**.
The current parameter setting is displayed.

You can edit the parameter setting.

► Double-click the parameter you want to edit.
The **Edit** dialogue box is opened.



Editing module parameters with TwinCAT

► Set the **Operating mode** parameter of the IO-Link port to the value **IO-Link** (0x03).
► Set the **Process data length input** parameter to the value **auto (default)** (0x21).
► Set the **Process data length output** parameter to the value **auto (default)** (0x21).
► Change the other parameters as required.

All settings only take effect once they have been loaded into the component.

7.7 Commissioning with Studio 5000 (Ethernet/IP)

Installing the device description files

► Start **Studio 5000**.
► Download and unzip the archive file from the Weidmüller Support Center.
► In the **Tools** menu within the Studio 5000 software, select the **EDS Hardware Installation Tool** option.
► Follow the installation wizard.

Integrating IO-Link master with Studio 5000

► Start **Studio 5000**.
► Create a new project or open an existing project.
► Configure the control unit and the network as usual.
► Establish a connection to the controller (**Go Online**).

If your project does not match the project on the controller, load your project onto the controller (**Download**) or transfer the project from the controller to Studio 5000 (**Upload**). The controller must be in programming mode in both cases.

All projects downloaded from Studio 5000 to the controller irrevocably overwrite any projects saved on the controller.

► Add the u-remote station as usual.

The fieldbus coupler and module are added with the standard process data width. Usually, this process data width does not correspond with the existing IO-Link device configuration.

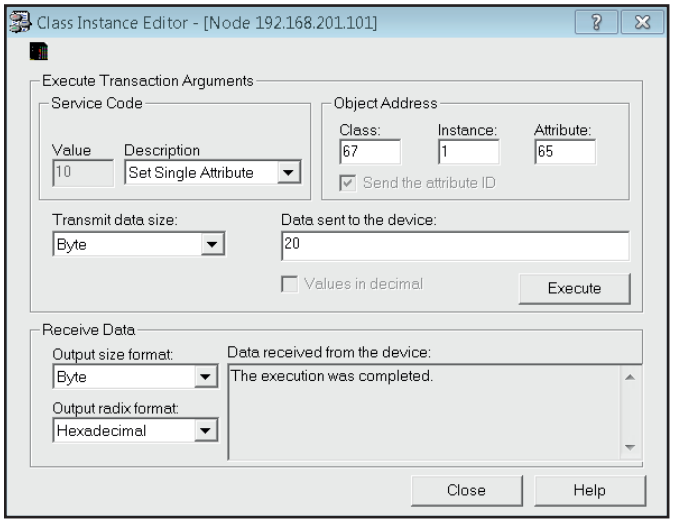
You can adjust the process data length of the module to your IO-Link device configuration using a sequence of acyclic write operations. The following descriptions are examples of the procedure with **RSNetworx for EtherNet/IP**. Alternatively, you can implement the write operations with the MSG function component as generic CIP messages.

► Switch to RUN mode.
► Start **RSNetworx for EtherNet/IP**.
► Scan the network.
► Right-click the fieldbus coupler.
► In the context menu, click **Class Instance Editor**.
► Read the warning message and confirm by clicking on **Yes**.

The **Class Instance Editor** is opened.

Change the length of the input data for the module:

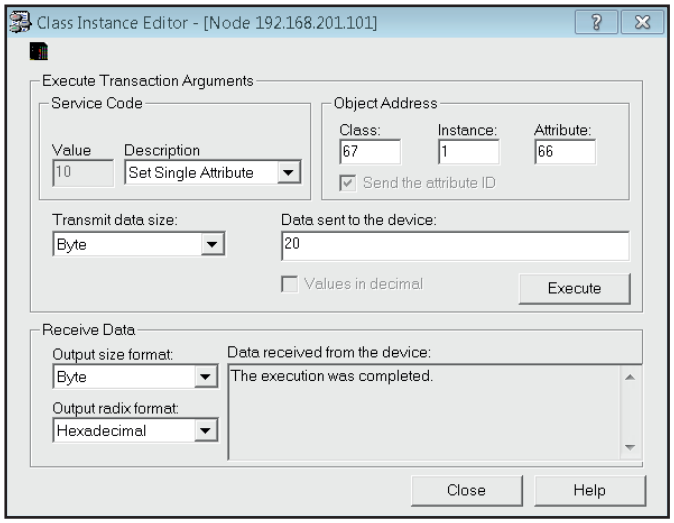
► Select the service code **Set Single Attribute** (10)
► Set the object address parameter as hexadecimal numbers.
  – Class: 67 (module parameters)
  – Instance: slot of the UR20-4COM-IO-LINK module
  – Attribute: 65 (length of the input data)
► In the drop-down list **Transmit data size**, select **Byte**.
► Determine the required length of the input data of the UR20-4COM-IO-LINK module by adding the length of the input data of the connected IO-Link devices as well as 2 status bytes for the module.
► In the text field **Data sent to the device**, enter the determined value as a hexadecimal number.
► Click **Execute** to trigger the transaction.



Changing the length of the input data for the module

Change the length of the output data for the module:

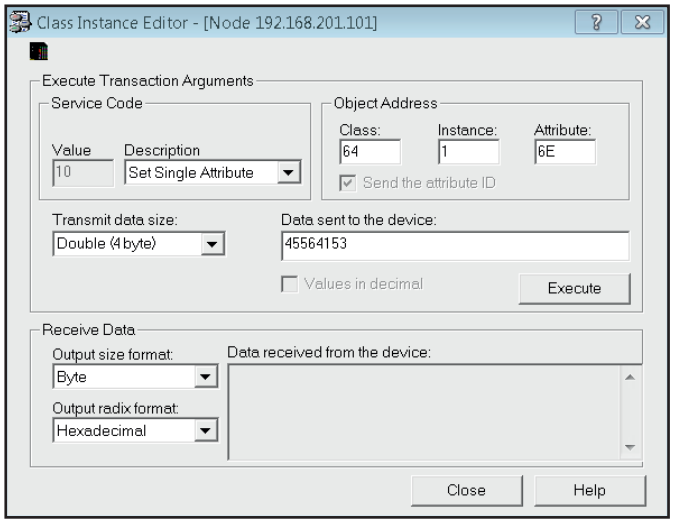
► Select the service code **Set Single Attribute** (10)
► Set the object address parameter as hexadecimal numbers.
  – Class: 67 (module parameters)
  – Instance: slot of the UR20-4COM-IO-LINK module
  – Attribute: 66 (length of output data)
► In the drop-down list **Transmit data size**, select **Byte**.
► Determine the required length of the output data of the UR20-4COM-IO-LINK module by adding the length of the output data of the connected IO-Link devices as well as 2 control bytes for the module.
► In the text field **Data sent to the device**, enter the determined value as a hexadecimal number.
► Click **Execute** to trigger the transaction.



Changing the length of the output data for the module

Save the module parameters in the coupler:

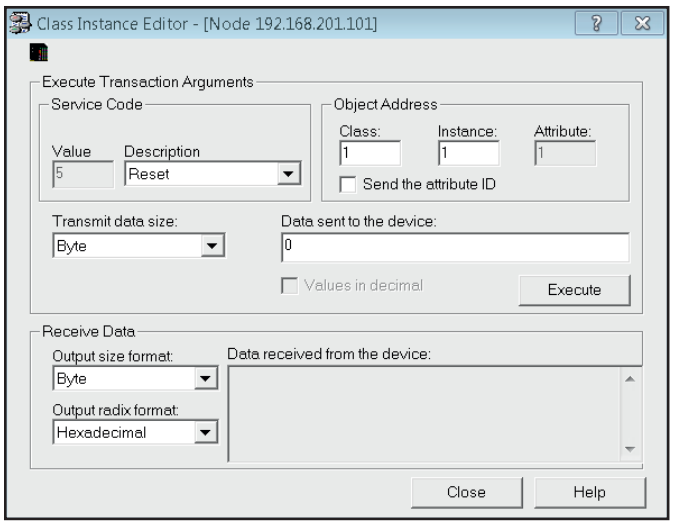
- ► Select the service code **Set Single Attribute** (10)
- ► Set the object address parameter as hexadecimal numbers.
  - – Class: 64 (gateway)
  - – Instance: 1
  - – Attribute: 6E (save/restore module parameters)
- ► In the drop-down list **Transmit data size**, select **Double (4 byte)**.
- ► In the text field **Data sent to the device**, enter **45564153** (“SAVE”, ASCII-coded, Intel format).
- ► Click **Execute** to trigger the transaction.



Saving the module parameters in the coupler

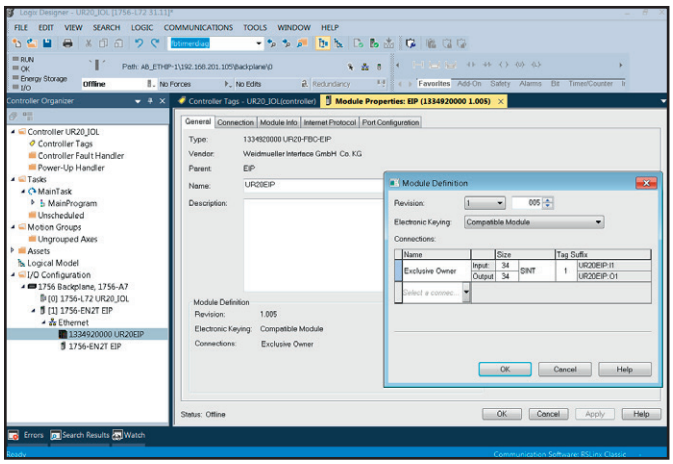
Restart the coupler:

- ► Select the service code **Reset** (5).
- ► Deactivate **Send the attribute ID**.
- ► Set the object address parameter as hexadecimal numbers.
  - – Class: 1
  - – Instance: 1
- ► In the drop-down list **Transmit data size**, select **Byte**.
- ► In the text field **Data sent to the device**, enter “0”.
- ► Click **Execute** to trigger the transaction.



Restarting the coupler

- ► Switch to **Studio 5000**.
- ► Switch to offline mode.
- ► Open the properties of the fieldbus coupler.
- ► Click the **General Change** tab.
- ► Set the process data length of the connection in accordance with the process data length of the fieldbus coupler.
- ► Click **OK**.
- ► Download the changes to the controller.



Setting the process data length of the coupler

Parameterising the IO-Link port with Ethernet/IP

First set the process data length of the IO-Link master to the required value. Setting the process data length requires that the coupler is restarted. In doing so, the parameter settings that were not saved in the coupler via the "Save module parameters" function are reset to the factory settings.

The IO-Link ports are parameterised via the parameters of the IO-Link master. An overview of all parameters can be found in section 4.6. Use the u-remote web server to parameterise IO-Link ports.

► Start the u-remote web server.
► Open the component view of the IO-Link module by clicking on the IO-Link module in the station overview.
► Under **parameters**, click the channel whose parameters you want to change.

The parameters are displayed.

For parameters that can be edited, you can enter the changes in the respective entry field or choose alternative settings from a drop-down menu.

► Enter the required changes.

Each change is labelled with a green symbol until it has been applied. All changes are only saved when you click **Apply changes**.
All changes are reset when you click **Restore**.
► When you have entered all changes, click **Apply changes**.

The changes are then transferred to the coupler and the green labels are removed.

Alternatively, you can parameterise IO-Link ports using acyclic write accesses.

Integrating IO-Link device with Ethernet/IP

First set the process data length of the IO-Link master to the required value. Setting the process data length requires that the coupler is restarted. In doing so, the parameter settings are reset to the factory settings.

An IO-Link device is integrated using the appropriate parameterisation of the associated IO-Link port. Use the u-remote web server to parameterise IO-Link ports.

► Start the u-remote web server.
► In the station overview, click the IO-Link module to open the component view of the IO-Link module.
► Click **Parameter**.

The parameters are displayed.

► Set the **Operating mode** parameter of the IO-Link port to the value **IO-Link**.
► Set the **Process data length input** parameter of the IO-Link port to the value **auto (default)**.
► Set the **Process data length output** parameter of the IO-Link port to the value **auto (default)**.
► Change the other parameters as required.

Each change is labelled with a green symbol until it has been applied. All changes are only saved when you click **Apply changes**.
All changes are reset when you click **Restore**.
► Click **Apply changes**.

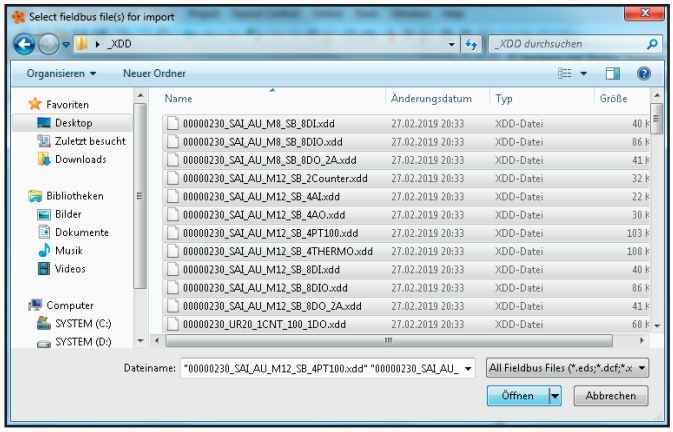
The changes are then transferred to the coupler and the green labels are removed.

Alternatively, you can parameterise IO-Link ports using acyclic write accesses

7.8 Commissioning with Automation Studio (POWERLINK)

Installing the device description file

► Start **Automation Studio**.
► On the menu bar, click **Tools/Import Fieldbus Device...**.
► Select the directory where you have stored the device description files.



Selecting XDD files

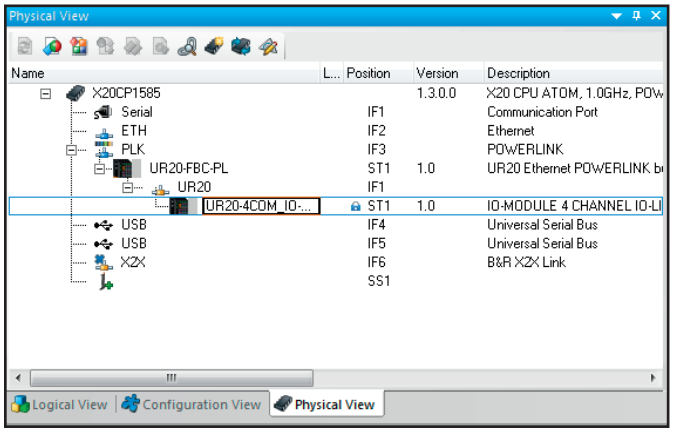
► Select the files that you would like to install.
► Click **Open**.

The hardware catalogue is updated automatically. The devices from the current device description file are now listed in the hardware catalogue.

Integrating IO-Link master with Automation Studio

► Start **Automation Studio**.
► Create a new project or open an existing project.
► Configure the control unit and the network as usual.
► Add the appropriate u-remote fieldbus coupler.
► Add the UR20-4COM-IO-LINK module from the hardware catalogue to the u-remote station.
► Connect the fieldbus coupler to the controller.

The device description files support various configurations for the UR20-4COM-IO-LINK module. The configurations differ in terms of the process data length for the connected IO-Link devices. The process data length you select should only be as long as is required, in order to relieve the fieldbus system.



Restarting the coupler

► In the **Physical View**, right-click the module.
► Click **Configuration** in the context menu.

The list of all parameters is displayed.

► Determine the required process data length of the IO-Link master, by adding the length of the input data and output data of the connected IO-Link devices.
► Set the **Process data length input** parameter of the IO-Link master to the required value.
► Set the **Process data length input** parameter of the IO-Link master to the required value.

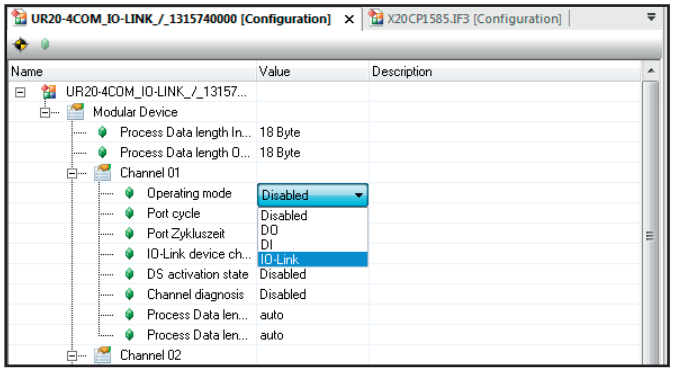
All settings only take effect once they have been loaded into the component.

Parameterising IO-Link port with Automation Studio

The IO-Link ports are parameterised via the parameters of the IO-Link master. An overview of all parameters can be found in section 4.6.

► In the **Physical View**, right-click the module.
► In the context menu, click **Configuration**.

The list of all parameters is displayed.



Editing module parameters

► Click the parameter that you would like to change and amend the setting as required.
► Use this method to edit all of the parameters that you would like to change.

All settings only take effect once they have been loaded into the component.

Integrating IO-Link device with Automation Studio

An IO-Link device is integrated using the appropriate parameterisation of the associated IO-Link port.

► In the **Physical View**, right-click the module.
► In the context menu, click **Configuration**.

The list of all parameters is displayed.

► Set the **Operating mode** parameter of the IO-Link port to the value **IO-Link**.
► Set the **Process data length input** parameter of the IO-Link port to the value **auto (default)**.
► Set the **Process data length output** parameter of the IO-Link port to the value **auto (default)**.
► Change the other parameters as required.

All settings only take effect once they have been loaded into the component.

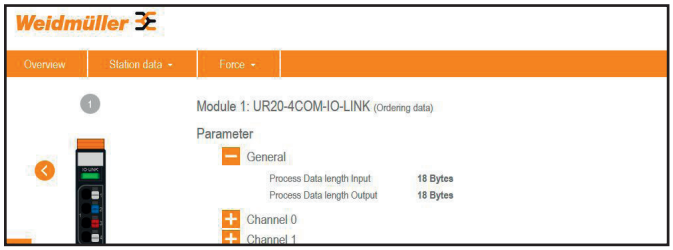
7.9 Configuration of process data length with Modbus TCP

The process data length can only be changed by register write accesses of the Modbus master but not via the web server.

The register range for module parameters starts with address 0xC000 (49152) (see **Remote-I/O-System u-remote Manual**, chapter 5.4, table **Register addresses for the use with function codes 3, 4, 6, 16, 22, 23**).

The module parameters are sorted into the registers according to the order of the parameter position in the web server:

– Process Data length Input is the first parameter/register
– Process Data length Output is the second parameter/register



Parameters in the web server

Example:

The values in the example can only be used if the coupler parameter **Data format** is set to **Motorola**.

Setting Process Data length Input of Module 1 to 24 Bytes:

– Function Code: 0x06 (6) Write single register
– Address: 0xC000 (49152)
– Value: 0x18 (24)

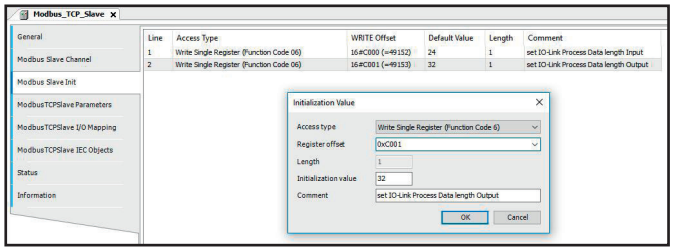
Setting Process Data length Output of Module 1 to 32 Bytes:

– Function Code: 0x06 (6) Write single register
– Address: 0xC001 (49153)
– Value: 0x20 (32)

Module parameters are not stored persistently in the coupler by default. If your Modbus master does not initialise the coupler with the module parameters every time a connection is established, store the module parameters persistently.

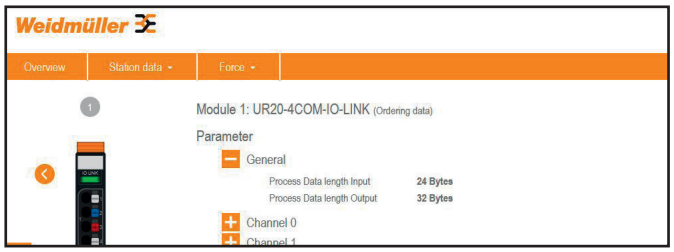
– Storing persistently via the web server: see **u-remote Web Server Manual**, chapter 6.2

– Storing persistently via Modbus register access: see **Remote-I/O-System u-remote Manual**, chapter 5.4, section **Save module parameters (0x113E – 0x113F)**



Example of access to module parameter registers (CODESYS)

► Check the changed settings in the web server.



Configured process data length in the web server

7.10 Reading and writing data objects on IO-Link devices

Protocol for acyclic accesses

If you want to read and write IO-Link data objects only during commissioning, we recommend using the **u-mation configurator** (see Chapter 7).

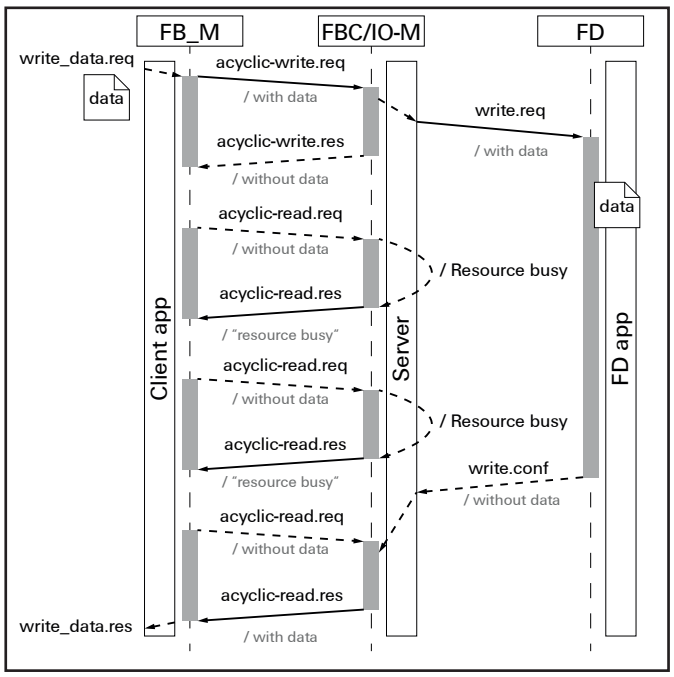
In order to access data objects for a field device (FD), e.g.those of a IO-Link device, you must create a client application (client app) for the fieldbus master (FB_M). This client application communicates with a server on the u-remote station (FBC/IO_M). The server communicates with the field device application (FD app) on the field device.

An acyclic access to an IO-Link device always begins with a write access by the client application to the server (acyclic-write.req). The data written determine which request is sent by the server to the IO-Link device application (write.req oder read.req).

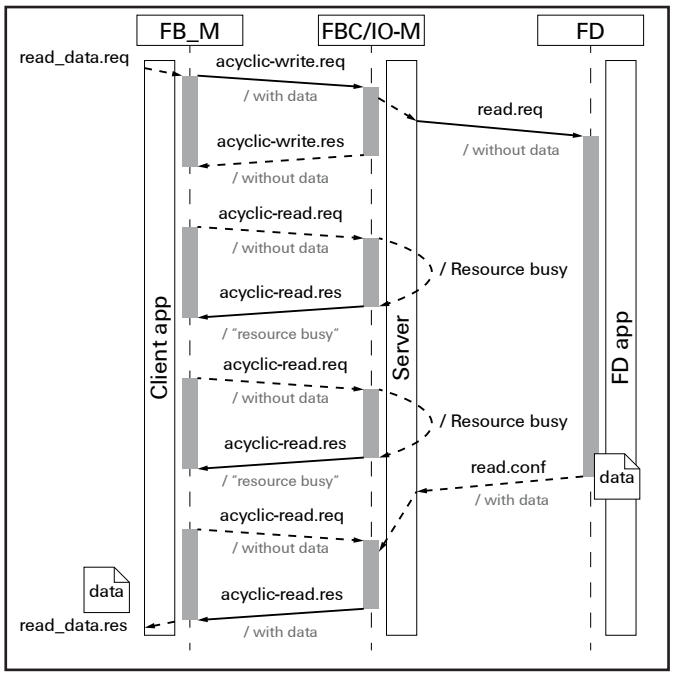
The client application then performs a sequence of read accesses (acyclic-read.req). Provided that the IO-Link device application has not yet processed the request, the server feeds back that the IO-Link device application is busy (acyclic-read.res with status **Busy**). If the server has received a response from the IO-Link device application (write.conf or read.conf), the server then forwards the response to the client application (acyclic-read.res with status **Done** or **Error**).

For integrating the IO-Link with PROFIBUS and PROFINET, also refer to the integration guidelines of the PROFIBUS user organisation.

– IO-Link Integration Part 1: Technical Specification for PROFIBUS and PROFINET
– IO-Link Integration – Edition 2: Guideline for PROFINET



Writing a data object on an IO-Link device



Reading a data object on an IO-Link device

Addresses for acyclic accesses

Acyclic write access: Addressing the requests (.req)

Protocol	Address
PROFIBUS	227 or 255
PROFINET	227 (0x00E3)
CANopen	0x2200:0
MODBUS-TCP	0x2C00 - 2C7F
EtherCAT	0x4020:1
Ethernet/IP	Class 0x64, Instance 1, Attribute 0x78
DeviceNet	Class 0x64, Instance 1, Attribute 0x78
POWERLINK	0x2200:0

Acyclic read access: Addressing the responses (.res)

Protocol	Address
PROFIBUS	227 or 255
PROFINET	227 (0x00E3)
CANopen	0x2201:0
MODBUS-TCP	0x2D00 - 2D7F
EtherCAT	0x4020:2
Ethernet/IP	Class 0x64, Instance 1, Attribute 0x78
DeviceNet	Class 0x64, Instance 1, Attribute 0x78
POWERLINK	0x2201:0

IO-Link Call

IO-Link data objects and IO-Link port functions are accessed via IO-Link Call.

With PROFIBUS and PROFINET, you can use the function block **IO_LINK_CALL** or **IO_LINK_DEVICE** (see Chapter 7.10)

IO-Link Call: Request

Data object	Length [bytes]	Description	Example
Length[1]	1	Total length in bytes	0x0A
Slot[1]	1	Slot IO-Link master	0x01
Ext. Function Number[2]	1	0x08 (fixed)	0x08
Port	1	Number of the IO-Link port (0x01 ...0x04)	0x02
FI index	2	65098 (0xFE4A)	0xFE4A
Control	1	Write (0x02), Read (0x03)	0x02
IOL index	2	IO-Link device index (0x0000 ... 0xFFFF)	0x0050
IOL subindex	1	IO-Link device data or port function	0x00
IOL data object	0 ... 232	Data for write access	0x42

1) Not for PROFIBUS and PROFINET
2) Only for PROFIBUS and PROFINET

IO-Link Call: Response

Data object	Length [bytes]	Description	Example
Length[1]	1	Total length in bytes	0x0A
Slot[1]	1	Slot IO-Link master	0x01
Ext. Function Number[2]	1	0x08 (fixed)	0x08
Port	1	Number of the IO-Link port (0x01 ...0x04)	0x02
FI index	2	65098 (0xFE4A)	0xFE4A
Status	1	PROFIBUS/PROFINET: Done (0x00), IDLE (0x01), Error (0x80) Other fieldbus systems: Error (0x00), DONE (0x01), Busy (0x02)	0x01
Control response[1]	1	Write (0x02), Read (0x03)	0x02
IOL index	2	IO-Link device index (0x0000 ... 0xFFFF)	0x0050
IOL subindex	1	IO-Link device data or port function	0x00
IOL data object	0 ... 232	Read access: Data Write access: – Error incident: error code	–

1) Not for PROFIBUS and PROFINET
2) Only for PROFIBUS and PROFINET

Reading out device information

You can read out device information of connected IO-Link devices.

Read out device information: Request

Data object	Length [bytes]	Description	Example
Length[1]	1	Total length in bytes (0x05)	0x05
Slot[1]	1	Slot IO-Link master	0x01
Ext. Function Number[2]	1	0x08 (fixed)	0x08
Port	1	0x00	0x00
FI index	2	Port 1: 65016 (0xFDF8) Port 2: 65017 (0xFDF9) Port 3: 65018 (0xFDFA) Port 4: 65019 (0xFDFB)	0xFDFA

1) Not for PROFIBUS and PROFINET
2) Only for PROFIBUS and PROFINET

Read out device information: Response

Data object	Length [bytes]	Description	Example
Length[1]	1	Total length in bytes (0x05)	0x0D
Slot[1]	1	Slot IO-Link master	0x01
Ext. Function Number[2]	1	0x08 (fixed)	0x08
Port	1	0x00	0x00
FI index	2	Port 1: 65016 (0xFDF8) Port 2: 65017 (0xFDF9) Port 3: 65018 (0xFDFA) Port 4: 65019 (0xFDFB)	0xFDFA
Status	1	PROFIBUS/PROFINET: Done (0x00), IDLE (0x01), Error (0x80) Other fieldbus systems: Error (0x00), DONE (0x01), Busy (0x02)	0x01
Vendor ID	2	Identification number of the IO-Link device manufacturer	0 x 0134
Device ID	3	Manufacturer-related identification number of the IO-Link device	0x000050
Function ID	2	Reserved (0x0000)	0 x 0000

1) Not for PROFIBUS and PROFINET
2) Only for PROFIBUS and PROFINET

Reading out process data mapping

You can read out the process data mapping of an IO-Link master (details in bytes).

Read out process data mapping: Request

Data object	Length [bytes]	Description	Example
Length[1)]	1	Total length in bytes (0x05)	0x05
Slot[1)]	1	Slot IO-Link master	0x01
Ext. Function Number[2)]	1	0x08 (fixed)	0x08
Port	1	0x00	0x00
FI index	2	65100 (0xFE4C)	0xFE4C

1) Not for PROFIBUS and PROFINET
2) Only for PROFIBUS and PROFINET

Read out process data mapping: Response

Data object	Length [bytes]	Description	Example
Length[1)]	1	Total length in bytes (0x16)	0 x 16
Slot[1)]	1	Slot IO-Link master	0x01
Ext. Function Number[2)]	1	0x08 (fixed)	0x08
Port	1	0x00	0x00
FI index		65100 (0xFE4C)	0xFE4C
Status	1	PROFIBUS/PROFINET: Done (0x00), IDLE (0x01), Error (0x80) Other fieldbus systems: Error (0x00), DONE (0x01), Busy (0x02)	0x01
Port 1: Len IN	1	Port 1: Length of process input data	0x02
Port 1: Pos IN	1	Port 1: Position of process input data	0x02
Port 1: Len OUT	1	Port 1: Length of process output data	0x00
Port 1: Pos OUT	1	Port 1: Position process output data	0x02
Port 2: Len IN	1	Port 2: Length of process input data	0x04
Port 2: Pos IN	1	Port 2: Position of process input data	0x04
Port 2: Len OUT	1	Port 2: Length of process output data	0x02
Port 2: Pos OUT	1	Port 2: Position process output data	0x02
Port 3: Len IN	1	Port 3: Length of process input data	0x02
Port 3: Pos IN	1	Port 3: Position of process input data	0x08
Port 3: Len OUT	1	Port 3: Length of process output data	0x05
Port 3: Pos OUT	1	Port 3: Position process output data	0x04
Port 4: Len IN	1	Port 4: Length of process input data	0 x 03
Port 4: Pos IN	1	Port 4: Position of process input data	0x0A
Port 4: Len OUT	1	Port 4: Length of process output data	0 x 03
Port 4: Pos OUT	1	Port 4: Position process output data	0 x 09

1) Not for PROFIBUS and PROFINET
2) Only for PROFIBUS and PROFINET

Reading out the event queue

You can read out events from the event queue.

Read out event queue: Request

Data object	Length [bytes]	Description	Example
Length[1)]	1	Total length in bytes (0x05)	0x05
Slot[1)]	1	Slot coupler (0x00)	0x00
Ext. Function Number[2)]	1	0x08 (fixed)	0x08
Port	1	0x00	0x00
FI index	2	65101 (0xFE4D)	0xFE4D

1) Not for PROFIBUS and PROFINET
2) Only for PROFIBUS and PROFINET

Read out event queue: Response

Data object	Length [bytes]	Description	Example
Length[1)]	1	Total length in bytes (0x0F)	0x0F
Slot[1)]	1	Slot coupler (0x00)	0x00
Ext. Function Number[2)]	1	0x08 (fixed)	0x08
Port	1	0x00	0x00
FI index	2	65101 (0xFE4D)	0xFE4D
Status	1	PROFIBUS/PROFINET: Done (0x00), IDLE (0x01), Error (0x80) Other fieldbus systems: Error (0x00), DONE (0x01), Busy (0x02)	0x01
Event at slot	1	Coupler (0x00) I/O module (0x01 ... 0x40)	0x01
Event at port	1	Number of the IO-Link port (0x01 ...0x04)	0x02
Event status	1	OK (0x00), error with event communication (0x01), event queue empty (0x02)	0x00
Instance	1	Source instance: Physical layer (0x01), data link layer (0x02), application layer (0x03), application (0x04)	0x04
Mode	1	Event single shot (0x01), Event disappears (0x02), Event appears (0x03)	0x01
Type	1	Notification (0x01), Warning (0x02), Error (0x03)	0x02
Source	1	Source device: IO-Link device (0x00), IO-Link master (0x01)	0x00
Event code	2	Event code in accordance with IO-Link specification	0x5012

1) Not for PROFIBUS and PROFINET
2) Only for PROFIBUS and PROFINET

Transferring a configuration file

You can export a configuration file from the **u-mation configurator** and transfer it to the IO-Link master.

The configuration file is transferred in segments of max. 200 bytes. Every segment requires a separate access operation. Segments must be transferred sequentially and in the right order.

Transfer configuration file: Request

Data object	Length [bytes]	Description	Example
Length[1)]	1	Total length in bytes	0x0A
Slot[1)]	1	Slot IO-Link master	0x01
Ext. Function Number[2)]	1	0x08 (fixed)	0x08
Port	1	0x00	0x00
FI-Index	2	65102 (0xFE4E)	0xFE4E
Segment count	2	First segment (0x0000) Second segment (0x0001) ... (n-1)-th segment ((n-2)hex) n-th segment ((n-1)hex + 0x8000)	0x00F5
Segment data	0 ... 200	Segment of the configuration file	0x42

1) Not for PROFIBUS and PROFINET
2) Only for PROFIBUS and PROFINET

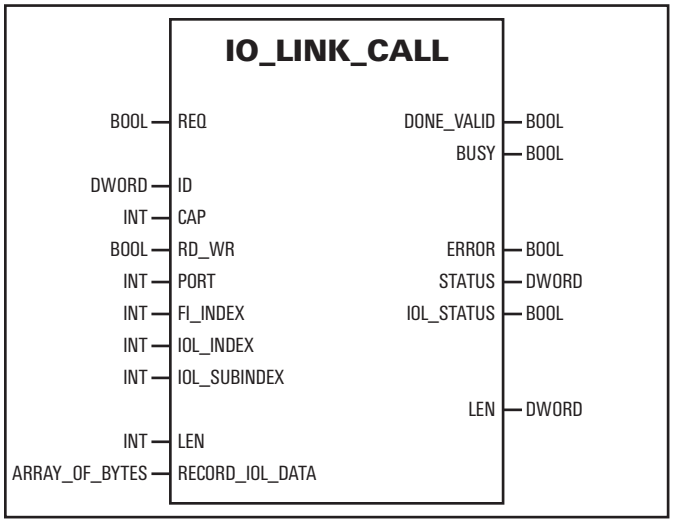
Transfer configuration file: Response

Data object	Length [bytes]	Description	Example
Length[1)]	1	Total length in bytes	0x0A
Slot[1)]	1	Slot IO-Link master	0x01
Ext. Function Number[2)]	1	0x08 (fixed)	0x08
Port	1	0x00	0x00
FI-Index	2	65102 (0xFE4E)	0xFE4E
Status	1	PROFIBUS/PROFINET: Done (0x00), IDLE (0x01), Error (0x80) Other fieldbus systems: Error (0x00), DONE (0x01), Busy (0x02)	0x01
Segment count	2	First segment (0x0000) Second segment (0x0001) ... (n-1)-th segment ((n-2)hex) n-th segment ((n-1)hex + 0x8000)	0x00F5
Percent processed	1	Processing progress (0 ... 100 %)	0x63

1) Not for PROFIBUS and PROFINET
2) Only for PROFIBUS and PROFINET

7.11 "IO_LINK_CALL" function block

SIEMENS offers the STEP7 IO-Link library for **SIMATIC Manager** and the **TIA Portal**. With PROFIBUS and PROFINET, the **IO_LINK_ CALL** function block allows acyclic communication with an IO-Link device: device parameters are written and parameters, measured values and diagnostic data are read. In the more recent versions of the IO-Link library, **IO_LINK_CALL** has been replaced by the **IO_LINK_DEVICE** block.



"IO_LINK_ CALL" function block

IO_LINK_CALL: input parameters

Parameter	Data type	Description
REQ	BOOL	Rising edge starts data transmission
ID	DWORD HW_ID	Address of the IO-Link master. S7-300/400: log. start address S7-1200/1500: Hardware ID
CAP	INT	CAP-ID PROFIBUS: 227 oder 255 PROFINET: 227
RD_WR	BOOL	0: read access 1: write access
PORT	INT	Number of the IO-Link port (1 ... 4)
FI_INDEX	INT	65098
IOL_INDEX	INT	Parameter index
IOL_SUBINDEX	INT	Parameter subindex
LEN	INT	Length of data to be written in bytes Read access: not required Write access: 1 ... 232
RECORD_IOL_DATA	ARRAY OF BYTES	Read access: Target range for data Write access: Source range for data

IO_LINK_CALL: output parameters

Parameter	Data type	Description
DONE_VALID	BOOL	Validity of data 0: Data invalid 1: Data valid
BUSY	BOOL	Read access / write access is executed
ERROR	BOOL	0: no error 1: error and cancellation
STATUS	DWORD	Communication error message
IOL_STATUS	DWORD	IO-Link error message
RD_LEN	DWORD	Length of the data read

Processing of the function block lasts several PLC cycles. The access, use of IO-Link port functions and the remaining backup and recovery of device data must be controlled by the user program.

Further information is available in the SIEMENS document **Acyclic reading and writing with the IO-Link library**.

You can download the SIEMENS IO-Link library from the SIEMENS support website.

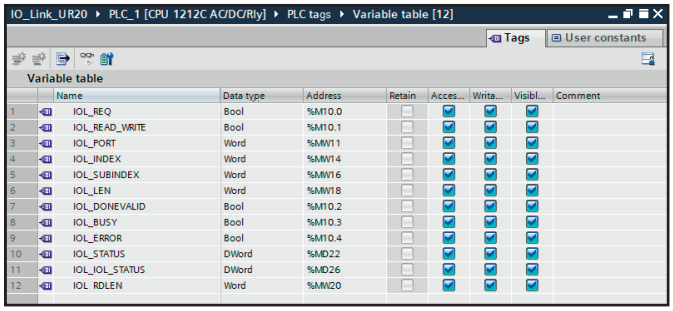
Reading and writing with "IO_LINK_DEVICE" in STEP7

You can read and write IO-Link device parameters using the **IO_LINK_DEVICE** function block.

- ► Add the **IO_LINK_DEVICE** function block to the OB1 of your user program.
- ► Create a new data block of type ARRAY [0 ... 231] of BYTE.

This data block is the target range for data read and the source range for data to be written.

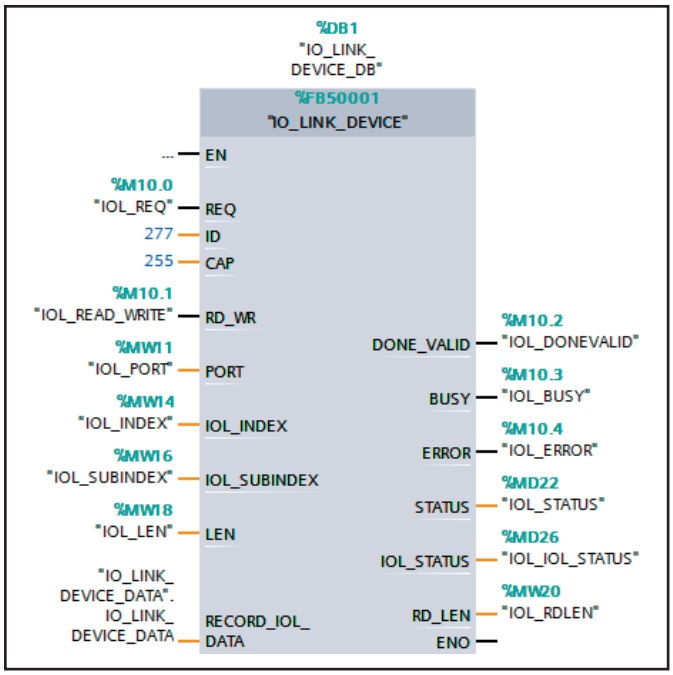
- ► Generate a new variable table for the input parameters and output parameters of the function block.



Variable table for "IO_LINK_DEVICE" (TIA portal)

- ► Assign the variables to the inputs and outputs of the function block.

You can enter the parameters ID and CAP directly on the function block.



"IO_LINK_DEVICE" function block (TIA portal)

- ► Create a watch and force table with the input parameters and output parameters of the function block.
- ► Force the variables for the input parameters to the required values.

In the case of S7-300/400 CPUs, use the logical start address of the module inputs as ID.
In the case of S7-1200/1500 CPUs, use the hardware address of the module as ID.

For PORT, use the number of the IO-Link port, not the number of the channel.

► Generate a rising edge at REQ to start the data transmission.

Processing of the function block takes several PLC cycles. During processing, the BUSY output is on 1.

After successful processing, the BUSY output switches to 0. The DONE_VALID output switches to 1. During read access, the data read is displayed in the data block.

7.12 I&M functions

Reading and writing can be realised with the functional blocks RDREC (SFB52) and WRREC (SFB53) in STEP 7.

I&M 0: Basic

Protokoll	CAP ID		FI index
PROFIBUS	227 or 255		65000
PROFINET	45040 (0xAFF0)		-
Data object	**Length [bytes]**	**Access**	**Default / Description**
MANUFACTURER_ ID	2	Read	0x0134 (Weidmüller)
ORDER_ID	20	Read	Order number of module
SERIAL_NUMBER	16	Read	Defined in production process
HARDWARE_REVISION	2	Read	Hardware revision of device
SOFTWARE_REVISION	4	Read	Software revision of device
REVISION_COUNTER	2	Read	Incremented for every static stored parameter change on IO-Link-Master (e.g. Device Name or IP-Address)
PROFILE_ID	2	Read	0x4E00 (IO-Link-Master)
PROFILE_SPECIFIC_TYPE	2	Read	0x0000
IM_VERSION	2	Read	0x0101 (I&M Version 1.1)
IM_SUPPORTED	2	Read	0x0001 (Profile specific)

I&M 99: IOL-M directory

Protocol	CAP ID		FI index
PROFIBUS	227 or 255		65099
PROFINET	45155 (0xB063)		-
Data object	**Length [bytes]**	**Access**	**Default / Description**
Version	1	Read	0x09 (IO-Link version 1.1)
Profile_Version	1	Read	0x01 (IO-Link profile version 1.0)
Feature_Support	4	Read	0x00000000 (supported features)
Num_of_Ports	1	Read	0x04 (number of IO-Link ports)
REF_Port_Config	1	Read	0xDC (reference Port configuration)
REF_IO_Mapping	1	Read	0xDE (reference Get IO mapping)
REF_iPar_directory	1	Read	0xDF (reference iPar directory)
REF_IOL_M	1	Read	0xDD (reference IOL-M parameter)
Number_of_cap	1	Read	0x01 (number of Client Access Points)
Index_cap1	1	Read	0xE3 (IOL_CALL: Client Access Point 1)

Send Upload Request

Protocol	CAP ID		FI index
PROFIBUS	227 or 255		65101
PROFINET	223 (0xDF)		-
Data object	**Length [bytes]**	**Access**	**Default / Description**
Status	1	Read	False (0x00), True (0x01)

8 Configuring IO-Link devices

8.1 u-mation configurator

The **u-mation configurator** is a software that contains a configurator for IO-Link devices.

Starting page u-mation configurator

You can use the **IO-Link configurator** to configure the IO-Link devices. You can carry out the following functions for test purposes, during commissioning or service work:
- Create and export IO-Link device configurations
- Parameterise IO-Link devices during ongoing operation
- Read out identification data, process data and diagnoses of IO-Link devices

There are two possibilities to use the **u-mation configurator**. You can install a setup version or run a portable version without installation.

With both versions of the **u-mation configurator** you can open project files (**.ucc**) in the software with **Open project** and **Open file.** Only with the setup version you can additionally open project files (**.ucc**) in the file system.

8.2 Installing the setup version

► Download the **u-mation configurator** from the Weidmüller website.
► Navigate to the download folder.
► Open the file **u-mation_configurator_setup.exe**.
► Follow the installation wizard.

A link to the **u-mation configurator** is created on the desktop. Once successfully installed, you can start the software. The starting page is displayed.

8.3 Running the portable version

► Download the **u-mation configurator** from the Weidmüller website.
► Navigate to the download folder.
► Double-click **u-mation_configurator_portable.exe**.

The starting page is displayed.

8.4 Accessing the online help

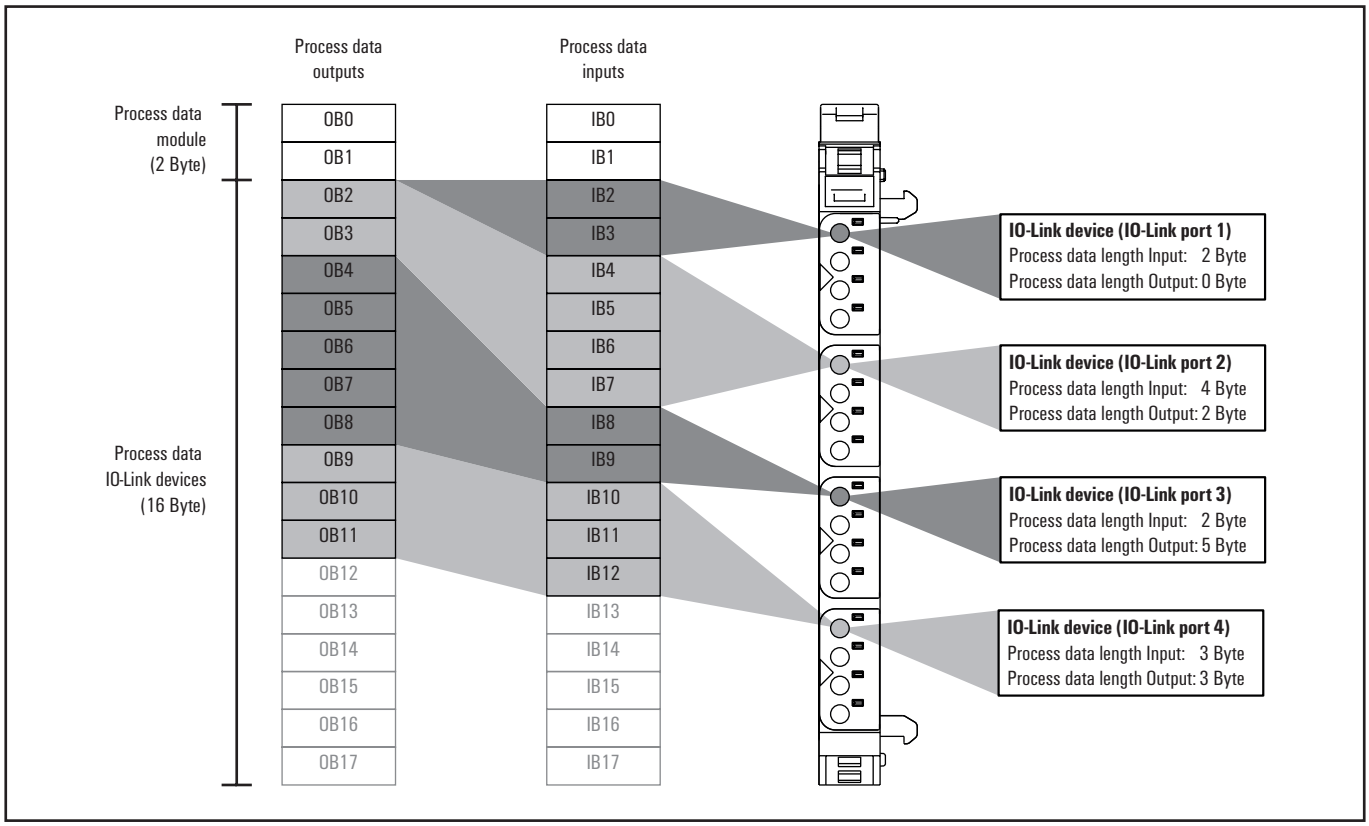
The built-in online help describes how to operate the **u-mation configurator**.

► Start the **u-mation configurator**.
► On the starting page, click **Help.**
► Click **Open help**.

The online help is opened in your default web browser.

9 Process data

9.1 Process data mapping



Example: Process data mapping (Configuration: UR20-4COM-IOL-16BYTE-INOUT)

The process data length of the UR20-4COM-IO-LINK(-V2) module is adjustable and can be adjusted to the respective IO-Link device configuration. The procedure for adjusting the process data length depends on which fieldbus coupler and which engineering tool you are using, see Chapter 7.

The first two bytes of the input data and output data respectively contain the process data of the module. This is followed by the process data of the IO-Link device connected.

Mapping of the process data for the individual IO-Link devices to the process data of the module is defined with the **Process data length input** and **Process data length output** parameters of the respective IO-Link port.

You can read out the mapping of the process data, see Chapter 7.9.

The cyclic IO-Link process data is sent in any case. Using the bits **Process data OUT valid ...**, commands can be sent, that instruct the respective device how it should respond to this:

FALSE: (DeviceOperate) The cyclic process output data of the master are invalid or not yet present. The device waits for the MasterCommand „ProcessDataOutputOperate“, before it changes to regular operation. In this status, the cyclic process input data are already transmitted from the device to the master, which is indicated via the bits **Processdata IN valid ...** in IB1.

TRUE: (ProcessDataOutputOperate) The cyclic process output data are valid. The device should change to regular operation and respond to the process output data.

9.2 Process input data

Process data inputs UR20-4COM-IO-LINK, UR20-4COM-IO-LINK-V2

Byte	Bit	Description
IB0	IX0.0	DI 1
	IX0.1	DI 2
	IX0.2	DI 3
	IX0.3	DI 4
	IX0.4	C/Q 1
	IX0.5	C/Q 2
	IX0.6	C/Q 3
	IX0.7	C/Q 4
IB1	IX1.0	Process data IN valid IO-Link-Port 1
	IX1.1	Process data IN valid IO-Link-Port 2
	IX1.2	Process data IN valid IO-Link-Port 3
	IX1.3	Process data IN valid IO-Link-Port 4
	IX1.4	Error IO-Link-Port 1
	IX1.5	Error IO-Link-Port 2
	IX1.6	Error IO-Link-Port 3
	IX1.7	Error IO-Link-Port 4
IB2 ...		Process data of the IO-Link device[1)]

1) The process data length of the IO-Link devices is adjustable. The mapping of the IO-Link devices depends on the length of their process data and the parameter settings.

- **DI X:** Status DI on channel X.
- **C/Q X:** Status C/Q on channel X.
- **Process data IN valid channel X:** Process input data of the IO-Link devices at IO-Link port X valid.
- **Error channel X:** Error on channel X.
- **Process input data of the IO-Link devices:** see Chapter 9.1.

9.3 Process output data

Process data outputs UR20-4COM-IO-LINK, UR20-4COM-IO-LINK-V2

Byte	Bit	Description
OB0	OX0.0	DO 1
	OX0.1	DO 2
	OX0.2	DO 3
	OX0.3	DO 4
	OX0.4	reserved
	OX0.5	reserved
	OX0.6	reserved
	OX0.7	reserved
OB1	OX1.0	Process data OUT valid IO-Link-Port 1
	OX1.1	Process data OUT valid IO-Link-Port 2
	OX1.2	Process data OUT valid IO-Link-Port 3
	OX1.3	Process data OUT valid IO-Link-Port 4
	OX1.4	reserved
	OX1.5	reserved
	OX1.6	reserved
	OX1.7	reserved
OB2 ...		Process data of the IO-Link device[1)]

1) The process data length of the IO-Link devices is adjustable. The mapping of the IO-Link devices depends on the length of their process data and the parameter settings.

- **DO X:** Control C/Q on channel X in DO operation mode.
- **Process data OUeT valid channel X:** Process output data of the IO-Link devices on channel X valid.
- **Process output data of the IO-Link devices:** see Chapter 9.1.

9.4 Fieldbus-dependent process data widths

The following tables show which process data lengths are available for the individual couplers, and the relevant fieldbus-dependent data widths.

UR20-FBC-PB-DP

Process data for IO-Link devices		Fieldbus dependent data widths[1]	
Input	Output	Input	Output
Byte	Byte	Byte	Byte
4	**4**	6	6
8	**8**	10	10
16	**16**	18	18
32	**32**	34	34
16	**8**	18	10
32	**16**	34	18
32	**8**	34	10

1) incl. 2 Byte module process data

UR20-FBC-PN-IRT

Process data for IO-Link devices		Fieldbus dependent data widths[1]	
Input	Output	Input	Output
Byte	Byte	Byte	Byte
4	**4**	7	7
8	**8**	11	11
16	**16**	19	19
32	**32**	35	35
64	**64**	67	67
128/126[2]	**128/126**[2]	131/128[2]	131/128[2]
16	**8**	19	11
32	**16**	35	19
32	**8**	35	11
64	**8**	67	11
64	**16**	67	19
64	**32**	67	35
128/126[2]	**8**	131/128[2]	11
128/126[2]	**16**	131/128[2]	19
128/126[2]	**32**	131/128[2]	35
128/126[2]	**64**	131/128[2]	67

1) incl. 2 Byte module process data
2) For UR20-4COM-IO-LINK-V2: The IO-LINK devices may only use a total of 126 bytes of data width. The maximum fieldbus-dependent data width is 128 bytes for PROFINET and EtherCAT.

For PROFINET and EtherCAT:
The maximum process data width of the UR20-4COM-IO-LINK-V2 module is 128 bytes, inkluding 2 bytes for the module itself (2 status bytes, 2 control bytes). Therefore, a total of 126 Bytes are available for the configuration of the connected IO-LINK devices, e.g. 3 x 32 Bytes + 1 x 30 Bytes = 126 Bytes.

UR20-FBC-EC

With EtherCAT, four different variants of data widths are provided with the ESI file. The variants are listed separately in the hardware catalogue of the engineering tool. Changing the data width via module parameters is not possible. IO-Link modules detected during a network scan are added to the project with the standard process data width (19/18). If needed, these modules can be manually replaced by module instances with a different process data width.
The EtherCAT master initialises the coupler with the configured process data width of the module. The process data width is activated immediately, a restart of the coupler is not necessary.

Process data for IO-Link devices		Fieldbus dependent data widths	
Input	Output	Input[1)2)]	Output[1)]
Byte	Byte	Byte	Byte
16	**16**	19	18
32	**32**	35	34
64	**64**	67	66
128/126[3)]	**128/126**[3)]	131/128[3)]	130/128[3)]

1) incl. 2 Byte module process data
2) incl. 1 Byte **Module state** (is not included in the display of the module data width in the web server)
3) For UR20-4COM-IO-LINK-V2: The IO-LINK devices may only use a total of 126 bytes of data width. The maximum fieldbus-dependent data width is 128 bytes for PROFINET and EtherCAT.

For PROFINET and EtherCAT:
The maximum process data width of the UR20-4COM-IO-LINK-V2 module is 128 bytes, inkluding 2 bytes for the module itself (2 status bytes, 2 control bytes). Therefore, a total of 126 Bytes are available for the configuration of the connected IO-LINK devices, e.g. 3 x 32 Bytes + 1 x 30 Bytes = 126 Bytes.

UR20-FBC-MOD-TCP, UR20-FBC-MOD-TCP-V2

You can select the length of the process input data and the length of the process output data independently of each other.

Process data for IO-Link devices		Fieldbus dependent data widths[1)]	
Input	Output	Input	Output
Byte	Byte	Byte	Byte
0 ... 62	**0 ... 62**	2 ... 64	2 ... 64

1) incl. 2 Byte module process data

UR20-FBC-PL

Process data for IO-Link devices		Fieldbus dependent data widths[1)]	
Input	Output	Input	Output
Byte	Byte	Byte	Byte
8	**8**	10	10
8	**16**	10	18
8	**32**	10	34
8	**62**	10	64
16	**8**	18	10
16	**16**	18	18
16	**32**	18	34
16	**62**	18	64
32	**8**	34	10
32	**16**	34	18
32	**32**	34	34
32	**62**	34	64
62	**8**	64	10
62	**16**	64	18
62	**32**	64	34
62	**62**	64	64

1) incl. 2 Byte module process data

UR20-FBC-EIP

You can select the length of the process input data and the length of the process output data independently of each other.

Process data for IO-Link devices		Fieldbus dependent data widths[1)]	
Input	Output	Input	Output
Byte	Byte	Byte	Byte
0 ... 128	**0 ... 128**	2 ... 130	2 ... 130

1) incl. 2 Byte module process data

UR20-FBC-DN

You can select the length of the process input data and the length of the process output data independently of each other.

Process data for IO-Link devices		Fieldbus dependent data widths[1)]	
Input	Output	Input	Output
Byte	Byte	Byte	Byte
0 ... 128	**0 ... 128**	2 ... 130	2 ... 130

1) incl. 2 Byte module process data

UR20-FBC-CAN

You can select the length of the process input data and the length of the process output data independently of each other.

Process data for IO-Link devices		Fieldbus dependent data widths[1)]	
Input	Output	Input	Output
Byte	Byte	Byte	Byte
0 ... 62	**0 ... 62**	2 ... 64	2 ... 64

1) incl. 2 Byte module process data

10 Diagnostics and troubleshooting

10.1 Diagnostic data

Channel diagnoses can be activated with the **Channel diagnosis** parameter.

Diagnostic data UR20-4COM-IO-LINK, UR20-4COM-IO-LINK-V2

Name	Byte	Bit	Description	Default
Error indicator	0	0	Module error	0
		1	Internal Error	0
		2	External error	0
		3	Channel error	0
		4	Error	0
		5	Power supply fault	0
		6	Reserved	0
		7	Parameter error	0
Module type	1	0	Module Type 0x05	
		1		
		2		
		3		
		4	Reserved	1
		5	Reserved	0
		6	Reserved	0
		7	Reserved	0
Error byte 2	2	0	IO-Link Event in Queue	0
		1 ... 7	Reserved	
Error byte 3	3	0 ... 2	Reserved	0
		3	Diagnostic Alarm Lost	0
		4	Communication fault	0
		5	Reserved	0
		6	Reserved	0
		7	Reserved	0
Channel type	4	0	Channel type 0x78	1
		1		1
		2		0
		3		1
		4		1
		5		1
		6		1
		7	Reserved	0
Diagnostic bits per channel	5		Number of diagnostic bit per channel	16
Number of channels	6		Number of similar channels per module	4
Channel error	7	0	Error at channel 0	0
		1	Error at channel 1	0
		2	Error at channel 2	0
		3	Error at channel 3	0
		4 ... 7	Reserved	0
	8 ... 10	8 ... 31	Reserved	0

Diagnostic data UR20-4COM-IO-LINK, UR20-4COM-IO-LINK-V2

Name	Byte	Bit	Description	Default
Error channel 0 Error channel 1 Error channel 2 Error channel 3	11 13 15 17	0	Short Circuit	0
		1	Undervoltage	0
		2	Overvoltage	0
		3	Overload	0
		4	Overtemperature	0
		5	Line Break	0
		6	Upper Limit Value	
		7	Lower Limit Value	0
Error channel 0 Error channel 1 Error channel 2 Error channel 3	12 14 16 18	0	Error	0
		1	Parameter fault	0
		2	Powersupply fault	0
		3	Fuse blown	0
		4	Communication fault	0
		5	Error 1	0
		6	Unknown Error	
		7	Unknown Error 2	0
Error channel 4 ... Error channel 15	19 ... 42	0 ... 7	Reserved	0
Time stamp	43-46		time stamp [µs] (32bit)	

10.2 IO-Link master event codes

Event Code	Description
0xC101	Overcurrent at transmitter
0xC102	Overtemperature at transmitter
0xC103	Undervoltage at VDD
0xC104	Undervoltage at VDDH
0xC105	Undervoltage at L+
0xC106	Overcurrent at L+ shunt
0xC201	Error at Data Storage EEPROM access
0xFF21	A new connection has been established between the Master and the Device
0xFF22	The Device hasn't answered for three consequent Master request
0xFF23	DS header settings doesn't match with the read IDs
0xFF24	The DS buffer overflows
0xFF25	A DS parameter can't be accessed
0xFF91	Request DS upload

10.3 LED indicators and troubleshooting

LED		Status		Recommended action
Status LED		**Red:**	– Error in the supply voltage at input current path – Communication error on the system bus – Configuration error IO-Link – There is a new diagnostic message	– Check the supply voltage – Check that the module has been snapped into place properly – Check the configuration
Channel LED	1.1 ... 4.1	**Yellow:**	– Status COM 1 ... COM 4	-
	1.2 ...4.2	**Red:**	– Fehler IO-Link port 1 ... IO-Link port 4	– Check the wiring – Check the configuration
	1.4 ... 4.4	**Yellow:**	– Status DI 1 ... DI 4	-

11 Disassembly and disposal

11.1 Disassembling a u-remote-Modul

	**WARNING** **Explosion risk!** ► Prior to starting work, make sure that there is not a potentially explosive atmosphere!

	**WARNING** **Dangerous contact voltage!** ► Carry out all disassembly work on the u-remote station only when the power supply is disconnected. ► Make sure that the place of installation (switch cabinet etc.) has been disconnected from the power supply!

Before you can disassemble a specific module, you must disassemble every module right of that module as well.

► Remove all cables and lines.
► Remove the end bracket marker (if present).
► Unfasten the mounting screw on the right-hand end bracket.
► Slide the end bracket with the end plate to the right and remove both from the DIN rail.

You can now disassemble the modules and the fieldbus coupler either individually or in groups of three to four modules.

► Press all the release levers of a module group towards the mounting plate so that they click into place.
► Slide the module group to the right and remove it from the DIN rail.
► Repeat the above procedure for all remaining modules/ module groups.
► Please observe the instructions for proper disposal.

11.2 Disposing of a u-remote-Modul

The products contain substances that may be harmful to the environment and human health. In addition, it also contains substances that can be reused through targeted recycling.
Observe the notes for proper disposal of the product. You can find the notes here: www.weidmueller.com/disposal.

When all u-remote products reach the end of their life cycle, you can return them to Weidmüller, and we will arrange for their proper disposal. This also applies to countries outside the European Union.
► Please pack the products properly and send them to your responsible distributor.

You can find the address of your respective country representative at the Weidmüller website.