

Software

SW | SW300IOEA V1.0.0 | Manual


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IO-Link Manager - SW300IOEA



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1 General

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1.2 About this manual

Objective and contents

This manual describes the IO-Link Manager from Yaskawa.

- Installation and application are described.
- The manual is written for users with basic knowledge of automation technology and profound knowledge of IO-Link communication.
- The manual consists of chapters. Each chapter describes a completed topic.
- The following guides are available in the manual:
 - An overall table of contents at the beginning of the manual.
 - References with pages numbers.

Validity of the documentation

Product	Order no.	as of version:
IO-Link Manager	SW300I0EA	V1.0.0

Icons Headings

Important passages in the text are highlighted by following icons and headings:

**DANGER!**

Immediate or likely danger. Personal injury is possible.

**CAUTION!**

Damages to property is likely if these warnings are not heeded.



Supplementary information and useful tips.

2 Installation

2.1 System requirements

The minimum system requirements for installing the *IO-Link Manager* are:

- CPU with min. 800MHz clock frequency
- Working memory: At least 512MB of RAM
- Graphics card that supports DirectX 9
- Operating system: Microsoft® Windows® 7 and newer
- Microsoft® Microsoft .NET Framework 4.5 and newer



If Microsoft® .NET Framework is not available, it will be installed during setup. Internet access is required for this.

2.2 Install *IO-Link Manager*

- In order to install programmes, you may need to be logged in as an administrator or a user with administrator rights.
 - You can find the software *IO-Link Manager* in the 'Download Center' of www.yaskawa.eu.com at SW300I0EA.
1. ➤ Download the ZIP file to your PC and unzip it.
 2. ➤ Run the msi file to install.
 - ⇒ 'The Setup Wizard' opens.
 3. ➤ Follow the on-screen instructions and start the installation.



*The use of the *IO-Link Manager* assumes that you agree to the license agreement. During installation, you must confirm this.*

⇒ *IO-Link Manager* is installed and a programme link is added to the desktop.



Please note that Microsoft®.NET Framework is required for operation. You can download this from the Microsoft® web page.

2.3 Uninstall *IO-Link Manager*

You can uninstall the *IO-Link Manager* in the control panel. Click 'Uninstall' and follow the instructions.



Please note that Microsoft®.NET Framework is not uninstalled during uninstallation.

3 Deployment

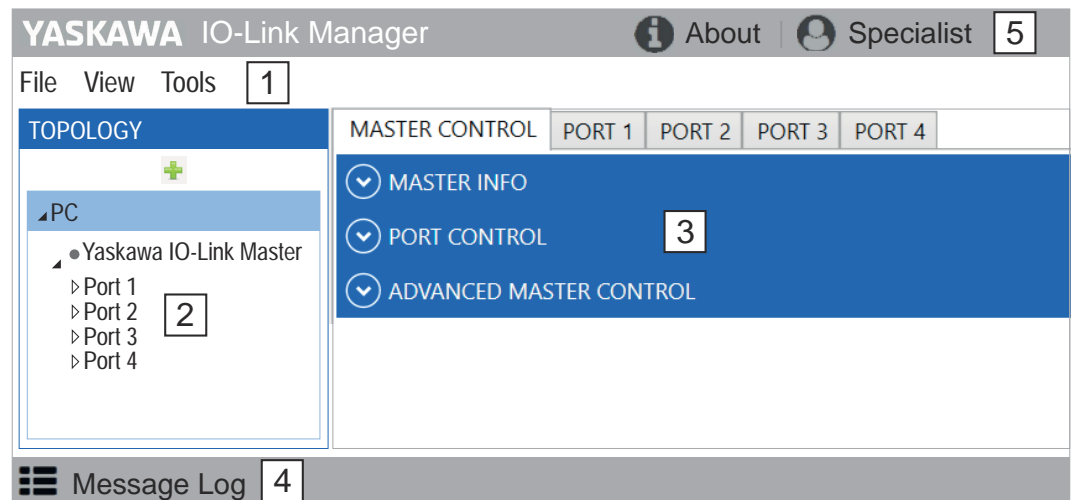
3.1 Overview

Properties

IO-Link Manager is a software for configuring the Yaskawa IO-Link masters with the following features:

- Configuration of several IO-Link masters/devices online and offline.
- Diagnostic option for IO-Link masters/devices.
- Status indication IO-Link master/ports in the topology area.
- Controlled access via defined user roles.
- Read/write access to process data.
- Variable port mapping.
- IODD catalog management for the IO-Link devices.
- IODD-supported process data representation, diagnostics and parametrization.
- Process data representation, diagnosis and parametrization also possible without IODD.
- Firmware update for IO-Link masters/devices.

Working environment



- 1 Main menu Here you have access to the main functions of the *IO-Link Manager*.
- 2 'TOPOLOGY': The IO-Link masters are listed here with the corresponding ports.
- 3 Editor area with properties dialogs for parametrization and information areas.
- 4 Message Log: When accessed, all messages are listed here.
- 5 Information icon: Here you will find version information about the software and the installed components.
User role icon: Here you can set the corresponding user role.




Please note that program processing can be blocked by a dialog window in the background. The blockage is only removed again by closing the dialog window.

Editor area


- The editor area always refers to the currently active IO-Link master. This is highlighted accordingly in the 'TOPOLOGY' area.
- The editor area is divided into tabs for the IO-Link master and its ports.
- Within the dialogs, the information and parameters are summarized in functional areas that you can open or close via or . Extensive information within the functional areas can be subdivided into additional tabs.

User roles

Via  you can set the corresponding user role. When using IODDs, the device manufacturers can assign task areas and access rights corresponding to the user roles. There are the following user roles:

- Operator
 - This user role should cover the area of operation and monitoring.
- Maintenance
 - This user role focuses on commissioning and parametrization.
- Specialist
 - By selecting '*Specialist*' you should be able to access the full range of services.

Message Log

Via  you can access a message window. Occurring events are listed there accordingly. You can export and delete the message log. By double-clicking on a message, the details of the message are shown in a separate dialog.

3.2 Main menu

File

- Save Project
 - You can use this to save the configuration of the IO-Link master currently selected at '*TOPOLOGY*' on your PC.
- Open Project
 - You can use this to load an IO-Link master configuration. Here, in an existing project, the loaded IO-Link master configuration is placed at the lower end in '*TOPOLOGY*'.
- Exit
 - Exit ends the program without saving. Please note that if you have not previously saved your project with '*Save Project*', these changes will be discarded with '*Exit*'!

View


- '*Topology* → *Show / Hide*'
 - By temporarily hiding the '*TOPOLOGY*', you can extend the editor area to the width of the screen.

Tools

- Manage Plugins
 - Here you will find information about the installed plugins. Standard plugins cannot be removed.
- Communication Module Manager
 - Here you will find information about the installed communication modules. Standard communication modules cannot be removed.
- Options
 - Here you can view or adjust the basic settings and file paths of the *IO-Link Manager*. Press [Apply] to apply the changes.

3.3 IODD

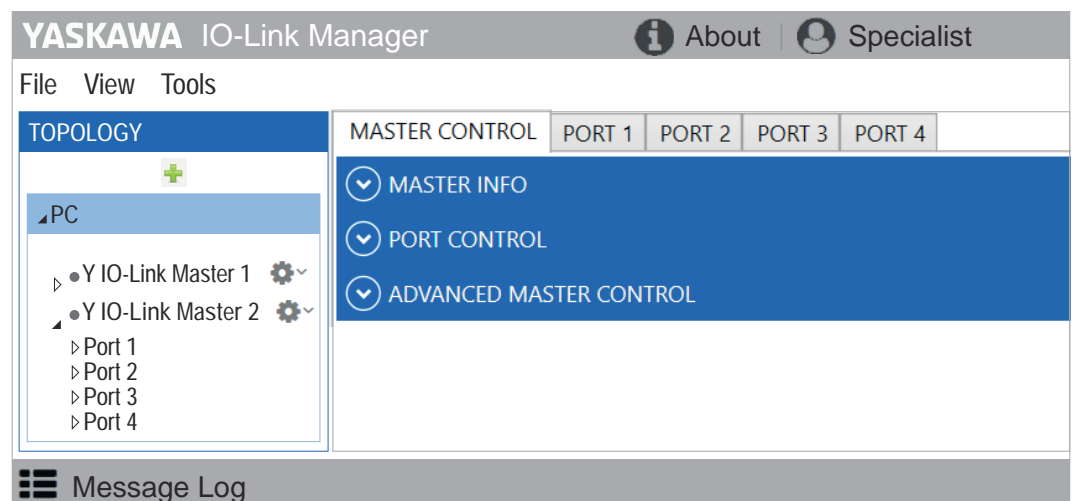
IODD - Device description

- For integration into the *IO-Link Manager*, you will receive an IODD file (**IO Device Description**) from the manufacturer of the corresponding IO-Link device.
- The IODD file contains device-specific properties of the corresponding IO-Link device, which are available after integration in *IO-Link Manager*.
- In the *IO-Link Manager* you have the possibility to configure, control and monitor a device IODD-supported or without IODD.
- If an IODD is loaded for the corresponding device, all information and parameters are prepared and shown according to the IODD specifications of the device manufacturer for the respective user role.
- At '**MASTER CONTROL** → **PORT CONTROL**' '*Selected Device*' you can access the '*IODD Catalog*' via . Here you can install the corresponding IODD files via the [Import IODD File] button.

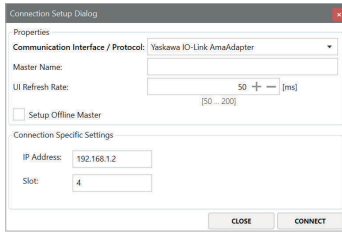
3.4 IO-Link master management

3.4.1 Overview

- The *IO-Link Manager* can communicate with several IO-Link masters in parallel.
- The IO-Link masters are created and managed in the '*TOPOLOGY*' area.
- Each '*TOPOLOGY*' tree node represents an IO-Link master by its specified number of IO-Link ports, including information about the current C/Q and I/Q status and the names of the connected IO-Link devices.
- The editor area always refers to the currently active IO-Link master. This is highlighted accordingly in the '*TOPOLOGY*' area.



3.4.2 Add IO-Link master

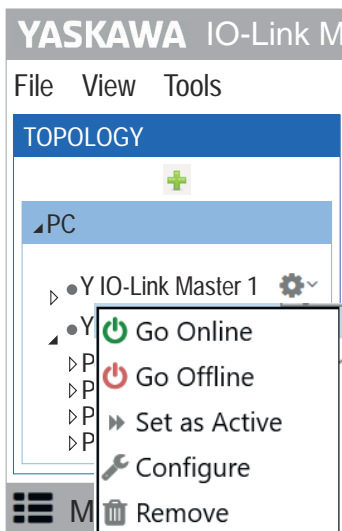


To add an IO-Link master, click in the *'TOPOLOGY'* area . The *'Connection Setup Dialog'* opens with the following parameters, which are required to establish a connection with the IO-Link master:

- *'Communication Interface / Protocol'*
The Yaskawa communication protocol for the IO-Link master is fixed here.
- *'Master Name'*
Here you can specify a user-friendly name for the IO-Link master that is to be shown in the *'TOPOLOGY'* area.
- *'UI Refresh Rate'*
This parameter allows you to specify the refresh rate for the user interface. This property specifies the update frequency of the port status and process data from each port of the IO-Link master.
- *'Setup Offline Master'*
If you only want to set up the connection but do not want to connect to the IO-Link master immediately, you can activate this option. Here you must specify the number of ports.
- *IP Address*
Enter here the IP address via which you are connected to the head module of the System SLIO.
- *Slot*
Enter the slot of your IO-Link master in the System SLIO, here. The counting starts with 1 right after the head module. Please consider the System SLIO power and clamp modules do not have any module ID. These cannot be recognised by the head module and are therefore not taken into account in the count.

Press [Connect] to accept the data and the IO-Link master is listed in the *'TOPOLOGY'* area.

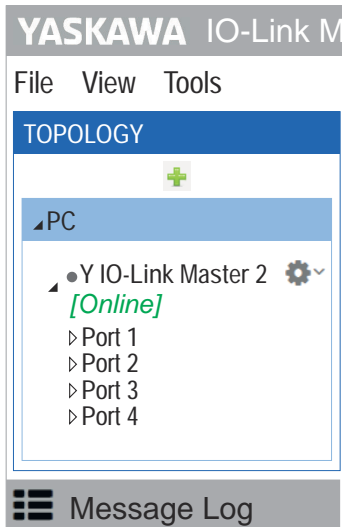
3.4.3 IO-Link master context menu



The IO-Link masters listed in the *'TOPOLOGY'* area have a context menu with the following functions:

- **Go Online**
This establishes an online connection with the IO-Link master. The specified connection data are used here.
- **Go Offline**
This ends the online connection.
- **Set as Active**
The editor area always refers to the currently active IO-Link master. You can switch it to active by double-clicking on the IO-Link master or via *'Context menu' → 'Set as Active'*. This is highlighted accordingly in the *'TOPOLOGY'* area.
- **Remove**
This allows you to remove the selected IO-Link master with its port configuration from the *'TOPOLOGY'* area.

3.4.4 Online status



In the 'TOPOLOGY' area, the IO-Link masters and their status are visualised. If an IODD is loaded, the port states and the IO-Link device names are also shown. The following states are defined for IO-Link masters:

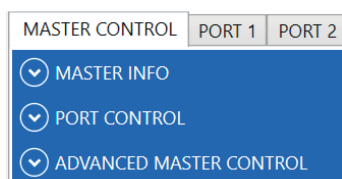
States IO-Link master:

- Online
There is an online connection to the IO-Link master.
- Offline
There is an online connection to the IO-Link master.
- Connecting
An attempt is made to establish an online connection to the IO-Link master.
- Disconnecting
An attempt is made to terminate an existing online connection to the IO-Link master.
- Busy
IO-Link Manager waits for a response from the IO-Link master.
- Communication lost
An existing online connection was interrupted.
- Bootloader mode
The IO-Link master is in *Bootloader Mode* during a firmware update. If the IO-Link master is still in *Bootloader Mode* after the firmware update, an error has occurred. Check that the firmware file matches your IO-Link master and run the update again.
↳ *Chap. 3.4.5.3.1.3 'Firmware update' page 17*
If the error persists, please contact the Yaskawa hotline!



States of the ports

- Deactivated
The IO-Link port is disabled.
- Diagnosis
The IO-Link port is in the '*Port Diagnosis*' status.
- No Device
There is no communication but the IO-Link port is configured as '*IO-Link Autostart*' respectively '*IO-Link Manual*'.
- Not available
No status information is available.
- DI
The IO-Link port is enabled as a digital input and works correctly.
- DO
The IO-Link port is enabled as a digital output and works correctly.
- Operate
The port is enabled as IO-Link and works correctly.
- Device starting
The device is in the start-up phase.

3.4.5 Master Control



The tab '*Master Control*' is located in the editor area. The dialog window contains information about the corresponding IO-Link master and offers access to its port functionalities.

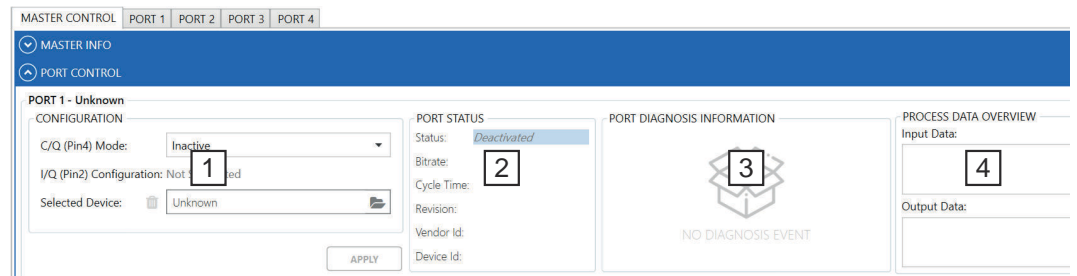
- The editor area is divided into tabs for the IO-Link master and its ports.
- Within the dialogs, the information and parameters are summarized in functional areas which you can open respectively close via  respectively . Extensive information within the functional areas can be subdivided into additional tabs.

3.4.5.1 Master Info

- 'Master Info' shows information about the IO-Link master. This information is extracted from the SMI service "MasterIdent".
- The IO-Link master adapts the available control functions to the supported services.

3.4.5.2 Port Control

The 'Port Control' dialog allows access to the functionality of the port of the IO-Link master and provides an overview of the status of the port together with diagnostic information and the current process data.

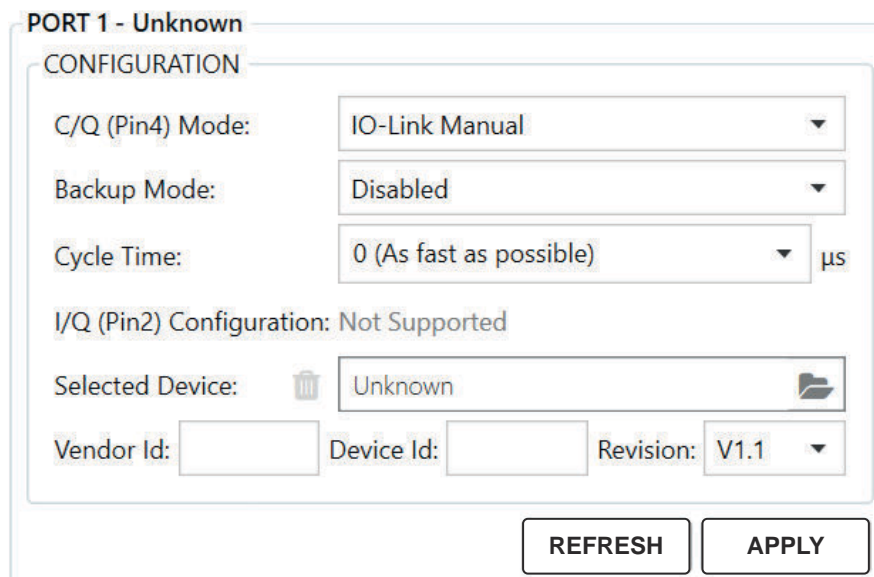


The ports dialog consists of four parts:

- 1 Configuration - Allows configuration of the IO-Link port.
- 2 Port Status - Shows the current port status.
- 3 Port Diagnosis Information - Contains the diagnostic information about the IO-Link port.
- 4 Process Data Overview - Shows the current process data input/output raw values (if the port is configured as IO-Link mode) or the SIO level (if the port is configured as digital input or output mode).

3.4.5.2.1 Configuration

Here you can define the configuration of the IO-Link port according to the specification. Press [Apply] to transfer the data to the IO-Link master.



C/Q (Pin4) Mode

C/Q (Pin4) Mode	Description
Deactivated	The port is disabled.
Digital Input	The port is in <i>SIO mode</i> and works as a standard digital input.
Digital Output	The port is in <i>SIO mode</i> and works as a standard digital output.
IO-Link Autostart	The port is in <i>IO-Link mode</i> . Every connected IO-Link device is accepted here. Please note possible effects on your process image in your user program.
IO-Link Manual	The port is in <i>IO-Link mode</i> . The IO-Link master only accepts IO-Link devices that correspond to the specified 'Device ID', 'Vendor ID' and 'Revision ID'.

Backup Mode

- 'Backup Mode' is only available when 'IO-Link Manual' mode is selected.
- Storage of the IO-Link device parameters in the backup of the IO-Link master is only possible for IO-Link devices with an IO-Link revision from 1.1.

The parameters set in the IO-Link device can also be stored in the IO-Link master. When using the restore function of the IO-Link master, the saved parameters are automatically made available to the new IO-Link device when the IO-Link device on the corresponding port is replaced.

Here, a distinction is made between the following modes:

Backup Mode	Description
Disabled	Automatic parameter backup/restore is disabled. <ul style="list-style-type: none"> ■ The IO-Link device parameters stored in the IO-Link master are deleted. ■ The IO-Link device parameters are not stored in the IO-Link master. ■ When the IO-Link device is changed, no parameters are transferred to the new IO-Link device.
Restore	Automatic parameter restore is enabled. <ul style="list-style-type: none"> ■ If no IO-Link device parameters have been stored in the IO-Link master yet, the current IO-Link device parameters are retentively stored once in the IO-Link master as a backup. ■ Changes to individual IO-Link device parameters are not transferred to the backup. ■ When the IO-Link device is changed, the parameters stored during the last backup are automatically transferred to the new IO-Link device (restore).
Backup/Restore	Automatic parameter backup/restore is enabled. <ul style="list-style-type: none"> ■ If no IO-Link device parameters have been stored in the IO-Link master yet, the current IO-Link device parameters are retentively stored once in the IO-Link master as a backup. ■ Changes to individual IO-Link device parameters are not transferred to the backup. ■ If IO-Link device parameters are also to be stored in the IO-Link master (backup), you have to transfer them to the IO-Link device with the [Write All] button. ■ When the IO-Link device is changed, the parameters stored during the last backup are automatically transferred to the new IO-Link device (restore).

Create a backup in the IO-Link master

1. ➤ Set at *'Master Control → Port Control → Port ...'* for the corresponding port *'C/Q (Pin4) Mode'* to *'IO-Link Manual'*.
⇒ The *'Backup Mode'* parameter is shown.
2. ➤ Set *'Backup Mode'* to *'Disabled'*.
⇒ The IO-Link device parameters stored in the IO-Link master are deleted.
3. ➤ Select your IO-Link device at *'Selected Device'*.
4. ➤ Set the IO-Link device parameters for the corresponding port at *'Port ... → Parameters'*.
5. ➤ Once you have entered all the parameters, navigate back to *'Master Control → Port Control → Port ...'*, set the according mode *'Restore'* or *'Backup / Restore'* for the corresponding port and confirm your entry with [Apply].
⇒ The IO-Link device parameters are stored retentively in the IO-Link master (backup). When the IO-Link device is changed, the parameters stored during the last backup are automatically transferred to the new IO-Link device.



For productive operation, you should operate the IO-Link device in 'Manual', 'Restore' mode. If the IO-Link device is replaced due to a defect, for example, the new IO-Link device is automatically supplied with the parameters stored in the backup.

Cycle Time

Here you can specify a fixed cycle time for communication with the IO-Link device. The value 0 means as fast as possible. Otherwise values between 400µs and 132800µs are accepted. The typical response time for an IO-Link device results from the cycle time of the IO-Link device and the typical internal processing time of the master.



– *The 'Cycle Time' parameter is only available if the 'IO-Link Manual' mode is selected.*

I/Q (Pin2) Configuration

A Pin2 configuration is not supported by the IO-Link master.

Vendor, Device and Revision Id

These parameters must match the values read from the IO-Link device. If an IODD is selected, these fields are filled in automatically.

Vendor ID - ID number of the IO-Link device manufacturer.


Device ID - ID number of the IO-Link device.

Revision - IO-Link revision of the IO-Link device.



– *These parameters are only available if the 'IO-Link Manual' mode is selected.*

IODD Selection

Use  to access the *'IODD Catalog'*. Here you can install the corresponding IODD files via the [Import IODD File] button. If the device goes into *'OPERATE'* (online) state and the IODD is not selected but is present in the catalog, it will be automatically selected.



3.4.5.2.2 Port Status

PORT STATUS	
Status:	Operate
Bitrate:	Unknown
Cycle Time:	21200 μ s
Revision:	V1.1
Vendor ID:	310
Device ID:	323

The current status information of the connection is shown in this area. The connection status is updated cyclically at the set refresh rate of the user interface. The vendor, device and revision ID determined from the port status must match the IO-Link. Deviations are marked accordingly with '!'.

3.4.5.2.3 Port Diagnosis Information

The port-related diagnostic entries reported by the IO-Link master are listed here. The following example shows the reported diagnostic events in the C/Q (pin 4) mode 'IO-Link Manual' with incorrectly set vendor and device ID.

PORT DIAGNOSIS INFORMATION	
 Incorrect VendorID – Inspection Level mismatch	Mode: <i>SingleShot</i> Code: <i>6146</i> Instance: <i>Application</i> Source: <i>Master</i>
 Incorrect DeviceID – Inspection Level mismatch	Mode: <i>SingleShot</i> Code: <i>6147</i> Instance: <i>Application</i> Source: <i>Master</i>

3.4.5.2.4 Process Data Overview

Depending on the port configuration, the current process data of the inputs and outputs are shown here in the 'Operate' state. Here, valid data are marked with 'VALID'. Invalid data are marked with 'INVALID'.

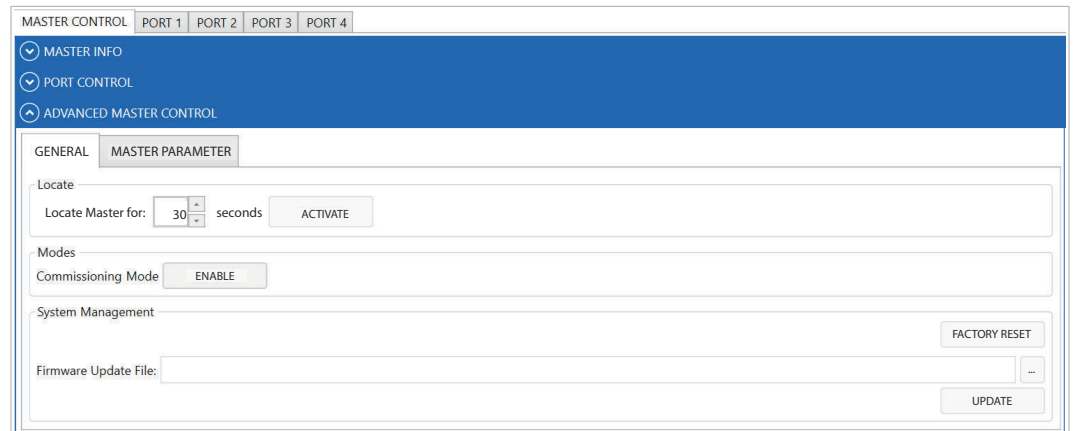
PROCESS DATA OVERVIEW	
Input Data:	
0x12, 0x59	VALID
Output Data:	

3.4.5.3 Advanced Master Control

3.4.5.3.1 General

Overview

In this dialog, you can basically apply operations to your IO-Link master.



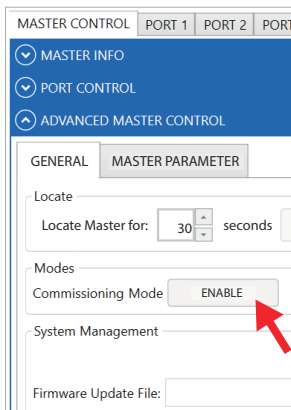
IO-Link master identification

To identify your IO-Link master on the System SLIO backplane bus, you can set a time period in seconds at 'Locate Master...'. Clicking on [ACTIVATE] starts the *localisation* with device-specific blinking behavior on the IO-Link master.

Commissioning Mode

Commissioning Mode enable

In normal operation (*Commissioning Mode* disabled), the IO-Link Manager has no write access to the process data of an IO-Link device. Please note that in order to be able to send process data from the IO-Link Manager to an IO-Link device, you have to enable the '*Commissioning Mode*' for the corresponding IO-Link master!



1. Select the corresponding IO-Link master in '*Topology*'.
2. In the editors area, navigate to the '*Modes*' area via '*Master Control*' → '*Advanced Master Control*' → '*General*'.
3. At *Commissioning Mode*, click [ENABLE].
 - ⇒ The button changes to [DISABLE].
 - The *Commissioning Mode* for the corresponding IO-Link master is enabled.
 - The output data are set to "0" and the output data coming from the header module are ignored.
 - The IO-Link Manager has write access to the process data of the associated IO-Link devices.

Commissioning Mode disable

1. Select the corresponding IO-Link master in '*Topology*'.
2. In the editors area, navigate to the '*Modes*' area via '*Master Control*' → '*Advanced Master Control*' → '*General*'.
3. At *Commissioning Mode*, click [DISABLE].
 - ⇒ The button changes to [ENABLE].
 - The *Commissioning Mode* for the corresponding IO-Link master is disabled again.
 - The IO-Link Manager has no write access to the process data of the associated IO-Link devices.

Reset to factory settings

Proceeding

1. ➤ Switch on the power supply for your system.
2. ➤ Open the *IO-Link Manager* and establish an online connection to your IO-Link master via the head module..
3. ➤ Select the corresponding IO-Link master in 'Topology'.
4. ➤ Navigate to the reset dialog via 'Master Control → Advanced Master Control → General'.



To identify the IO-Link master, you can localize it on the System SLIO bus. To do this, enter a period of time in seconds at "Locate Master ..." and click on [ACTIVATE]. This starts the localisation with device-specific blinking behavior at the corresponding IO-Link master for the set period of time.

5. ➤ With the [FACTORY RESET] button at 'System Management', you can trigger the reset to Factory setting.
 - ⇒ Reset to Factory setting is done and the IO-Link master is restarted without configuration with default parameters.

Firmware update

Here you can apply a firmware update for your IO-Link master.

- You can only apply a firmware update via the IO-Link Manager.
- You can find current firmware versions in the 'Download Center' of www.yaskawa.eu.com



CAUTION!

- When installing a new firmware you have to be extremely careful. In certain circumstances, your CP 042 IO-Link may become unusable if, for example, the power supply is interrupted during transmission or the firmware file is faulty. In this case, please call the Yaskawa hot-line!



- The update deletes the port configurations saved in the IO-Link master and resets the parameters to their default values.

Proceeding

1. ➤ Go to the 'Download Center' of www.yaskawa.eu.com.
2. ➤ Download the corresponding zip file for your IO-Link master to your PC at 'Firmware', by stating the order number.
3. ➤ Extract the zip file into your working directory.
4. ➤ Switch on the power supply for your system.
5. ➤ Open the *IO-Link Manager* and establish an online connection to your IO-Link master via the head module..
6. ➤ Select the corresponding IO-Link master in 'Topology'.

7. ➔ Navigate to the firmware update dialog via 'Master Control ➔ Advanced Master Control ➔ General'.

i To identify the IO-Link master, you can localize it on the System SLIO bus. To do this, enter a period of time in seconds at "Locate Master ..." and click on [ACTIVATE]. This starts the localisation with device-specific blinking behavior at the corresponding IO-Link master for the set period of time.

8. ➔ At 'System Management' navigate with your firmware file in the working directory.
9. ➔ Start the firmware update with [Update].
 - ⇒ During the firmware update, the LEDs C1, F3 and C2, F4 are blinking alternately. After the update, the IO-Link master is restarted without configuration with default parameters.

i If only the LEDs C1 and C2 are blinking alternately, an error has occurred, the IO-Link master is still in Bootloader Mode and indicates this at 'TOPOLOGY'. Check that the firmware file matches your IO-Link master and run the update again. If the error persists, please contact the Yaskawa hotline!

3.4.5.3.2 Master Parameter

Here you can adapt the mapping of the process data accordingly.

⚠ CAUTION!
Port mapping necessary
 Please note that the port mapping of the process data must always be applied and is not done automatically!

MASTER CONTROL | PORT 1 | PORT 2 | PORT 3 | PORT 4

MASTER INFO
 PORT CONTROL
 ADVANCED MASTER CONTROL

GENERAL | PROCESS DATA

Mapping
 Use PQI
 Toggle Bit Interval: 100 ms

	PORT	INPUT OFFSET	INPUT LENGTH (IN BYTES)	OUTPUT OFFSET	OUTPUT LENGTH (IN BYTES)
●	1	1	6	0	0
●	2	8	16	8	16
●	3	1	0	0	0
●	4	1	0	0	0

Mapping Alignment

Input

Output

With [WRITE MAPPING] respectively [READ MAPPING] you can transfer your settings to the IO-Link master respectively import them from the IO-Link master.

- By activating 'EnablePqi', the input data of devices in IO-Link mode are extended by the PQI byte at the end.
- In 'Toggle Bit Interval' you can specify the interval for changing the status of the toggle bit. A failure on the field side can be detected by cyclically querying the toggle bit (bit 7) in the STATUS byte of the IO-Link master.
- By double-clicking on an entry at 'Mapping', you can specify the mapping data for the corresponding port.
 - 'Input/Output Offset'
Offset of the input/output data for the corresponding port.
 - 'Input/Output Length (in Byte)'
Length of the input/output data.
- The mapping data of the ports are listed with the corresponding colors at 'Mapping Alignment'.
- Overlaps are detected and marked in red. Data that overlap cannot be transferred.
- Consistency checks are made according to the following rules:
 - The process data of each port must be within the input respectively output process image of the IO-Link master. If 'EnablePqi' is enabled, the additional PQI byte must be taken into account accordingly for the input data of IO-Link devices in IO-Link mode.
 - The process data of the individual ports must not overlap in the input or output process image of the IO-Link master.
 - The process input data of the individual ports must not overlap with the status byte of the IO-Link master.

Example of valid port mapping

Output process image				Input process image			
	Port	Offset	Length		Port	Offset	Length
0x3F				0x3F			
0x0D	Port 3	0x00	0x02	0x3E	Port 3 PQI	0x01	0x02
0x0C	Port 2	0x04	0x02	0x3D	Port 3	n/a	n/a
0x0B				0x3C			
0x0A	Port 3	0x06	0x02	0x3B			
0x09	Port 2			0x09	Port 4 PQI	0x3C	0x02
0x08	Port 4	0x3C	0x04	0x08	Port 4	0x04	0x04
0x07				0x07			
0x06				0x06			
0x05				0x05			
0x04				0x04			
0x03				0x03	Port 1 PQI		
0x02				0x02	Port 1		
0x01	Port 1			0x01			
0x00				0x00	STATUS		

Example of incorrect port mapping

Output process image				Input process image			
Port	Offset	Length	Port	Offset	Length		
Port 1	0x00	0x04	Port 1	0x01	0x02		
Port 2	0x3D	0x04	Port 2	n/a	n/a		
Port 3	n/a	n/a	Port 3	0x3C	0x02		
Port 4	0x02	0x04	Port 4	0x04	0x04		

- The output mapping of port 2 is partly outside the output process image of the IO-Link master.
- The ranges of port 1 and port 4 overlap.

- If PQI is enabled, the port 4 input mapping is outside of the input process image.
- If PQI is enabled, port 2 and port 3 overlap.
- Port 1 overlaps with the status byte.

3.4.5.3.3 Diagnostic Events

In this dialog, all events of the IO-Link master application and the connected IO-Link devices are listed in table form.

- Export
 - With this you can export all event messages to a text file.
- Read
 - You can use this button to refresh the events table.

TIME	EVENT ID	MESSAGE
00:00:00	0x1300	Port/ Device event (Port: 1, EventQualifier: 0x5C, EventCode: 0x1FD0)
00:00:00	0x1300	Port/ Device event (Port: 2, EventQualifier: 0x5C, EventCode: 0x1FD0)
00:00:00	0x1300	Port/ Device event (Port: 3, EventQualifier: 0x5C, EventCode: 0x1FD0)
00:00:00	0x1300	Port/ Device event (Port: 4, EventQualifier: 0x5C, EventCode: 0x1FD0)
00:00:03	0x10C0	Parameter received
00:00:03	0x1301	Master parameter are valid
00:00:03	0x1302	Master configuration is valid
00:00:03	0x1002	Initialization done



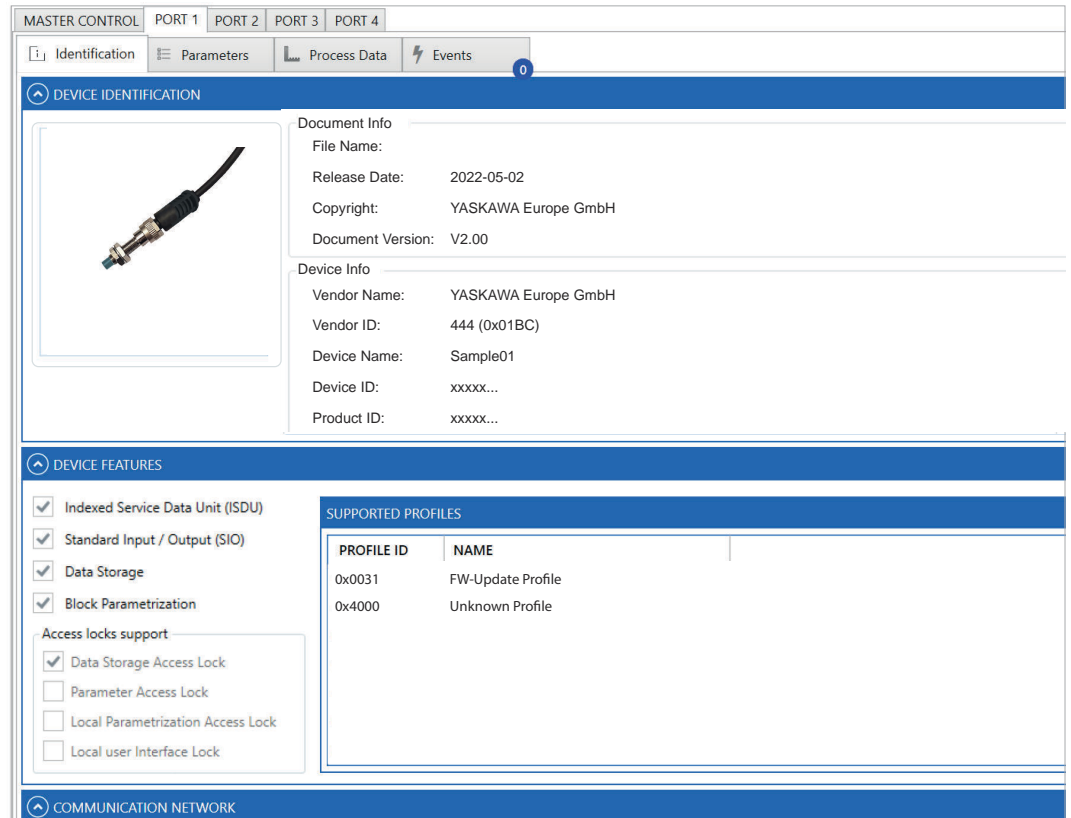
More detailed information on the port events with event ID 0x1300 can be accessed via the tabs 'Port x → Events'. ↪ Chap. 3.4.6.5 'Events' page 28

3.4.6 Port x

In the editor area, the *'Port...'* tabs are listed after the *'Master Control'* tab. Here you can parametrize the connected IO-Link device, have access to the status and can retrieve information about the IO-Link device.

3.4.6.1 Identification

All information from the IODD is processed here and summarized in functional areas.



The screenshot shows the software interface for IO-Link master management. At the top, there are tabs for MASTER CONTROL, PORT 1, PORT 2, PORT 3, and PORT 4. Below these, there are sub-tabs for Identification, Parameters, Process Data, and Events. The Identification tab is selected, showing a device image and the following information:

DEVICE IDENTIFICATION

Document Info

- File Name:
- Release Date: 2022-05-02
- Copyright: YASKAWA Europe GmbH
- Document Version: V2.00

Device Info

- Vendor Name: YASKAWA Europe GmbH
- Vendor ID: 444 (0x01BC)
- Device Name: Sample01
- Device ID: xxxxx...
- Product ID: xxxxx...

DEVICE FEATURES

- Indexed Service Data Unit (ISDU)
- Standard Input / Output (SIO)
- Data Storage
- Block Parametrization

Access locks support

- Data Storage Access Lock
- Parameter Access Lock
- Local Parametrization Access Lock
- Local user Interface Lock

SUPPORTED PROFILES

PROFILE ID	NAME
0x0031	FW-Update Profile
0x4000	Unknown Profile


COMMUNICATION NETWORK

3.4.6.1.1 Device Identification

The following data are shown here:

- Document Info
 - Information about the IODD file such as file name, creation date, copyright and version.
- Device Info
 - Information about the IO-Link device such as manufacturer name and ID, device name and ID and product ID.

⤴
DEVICE IDENTIFICATION



Document Info

File Name:

Release Date: 2022-05-02

Copyright: YASKAWA Europe GmbH

Document Version: V2.00

Device Info

Vendor Name: YASKAWA Europe GmbH

Vendor ID: 444 (0x01BC)

Device Name: Sample01

Device ID: xxxxx...

Product ID: xxxxx...

3.4.6.1.2 Device Features

The supported standard functions and profiles are listed here.

⤴
DEVICE FEATURES

Indexed Service Data Unit (ISDU)

Standard Input / Output (SIO)

Data Storage

Block Parametrization

Access locks support

Data Storage Access Lock

Parameter Access Lock

Local Parametrization Access Lock

Local user Interface Lock

⤴
SUPPORTED PROFILES

PROFILE ID	NAME
0x0031	FW-Update Profile
0x4000	Unknown Profile

3.4.6.1.3 Communication Network

Here you will find information about the communication such as bit rate, shortest cycle time and process data length. If available, information on the pin assignment is shown at 'Connection'.

⏪
COMMUNICATION NETWORK

IO-Link Revision:	V1.1	Process Data Input Length:	3 byte
Bitrate:	COM2 (38,4 kbit/s)	Process Data Output Length:	1 byte
Minimum Cycle Time:	5000 µs	Operate On-Request Data Length:	1 byte (TYPE2_V)
Compatible With (V1.0):	No	Preoperate On-Request Data Length:	1 byte (TYPE0)

⏪
CONNECTION

Connection Type: M12-4 Connection

Wire assignment			
TYPE	COLOR	FUNCTION	NAME
Wire 1		L+	
Wire 2		Other	Multipurpose Dig. In/Out
Wire 3		L-	
Wire 4		C/Q	

3.4.6.1.4 Supported Events

In this table you will find all event messages that are supported by the IO-Link device.

⏪
SUPPORTED EVENTS

CODE	TYPE	NAME	DESCRIPTION
16384	Error	Temperature fault	Overload
20753	Warning	Primary supply voltage underrun	Check valid voltage range
30480	Error	Short circuit	Check installation
35841	Warning	Simulation active	Check operating mode

3.4.6.1.5 Supported Errors

In this table you will find all error messages that are supported by the IO-Link device.

⏪
SUPPORTED ERRORS

CODE	ADDITIONA	NAME	DESCRIPTION
128	17	Index not available	Read or write access attempt to a non-existing index.
128	18	Subindex not available	Read or write access attempt to a non-existing subindex of an
128	49	Parameter value above limit	Written parameter value is above its specified value range.
128	50	Parameter value below limit	Written parameter value is below its specified value range.

3.4.6.2 Parameters

In this dialog window you can parametrize your IO-Link device. To do this, the IO-Link device must be in the 'Operate' state.

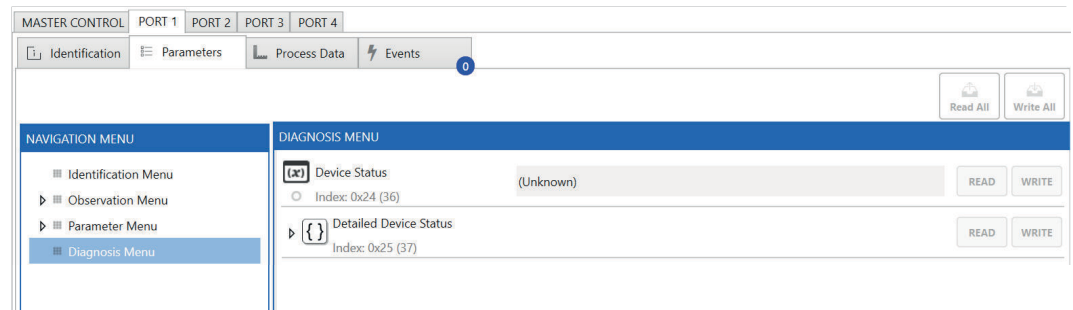
- If an IODD is available, the menu structure and parameter range of the IO-Link device manufacturer are shown.
 - In the menu area you will find all elements that are defined for the set user role.
 - Depending on the selected menu item, the corresponding parameters are listed in the parameter area.
- If no IODD is available, by specifying index and subindex, you can apply an ISDU write or read request for parametrization.



With 'View → Topology → Show / Hide' you can hide the 'TOPOLOGY' area and show the menu structure and parameter area side by side.

3.4.6.2.1 Use with IODD

- The parameters are shown according to the format defined for them in the IODD. These can be input fields, selection fields or buttons.
- Some parameters can only be read or read and written.
- Reading or writing of individual parameters is done with the associated buttons [READ] or [WRITE].
- All currently shown parameters are read or written with the [Read All] or [Write All] buttons.
- If the menu structure changes due to a value change of a conditional parameter, this is recognized by the *IO-Link Manager* and the menu structure is refreshed.



There is the following color assignment for the shown values of the parameters:

- Black
Parameter value is not known or no value has been transferred and the shown value is a default value.



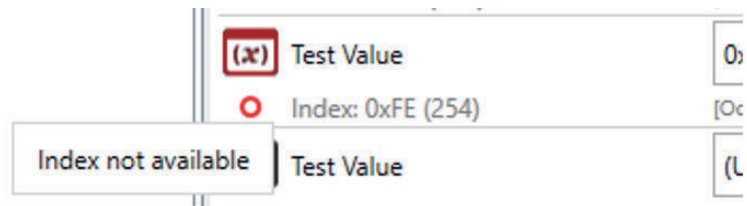
- Blue
Parameter value has been adjusted but not yet transferred.



- Green
The currently shown parameter value also corresponds to the transmitted value.



- Red
An error occurred when transferring the parameter value. As soon as you move the mouse pointer over the red symbol, the error message is shown as a tool tip.



3.4.6.2.2 Use without IODD

If no IODD is loaded, you still have the option of parametrizing. By specifying index and subindex, you can apply an ISDU write or read request for parametrization.

The screenshot shows a software interface for sending ISDU requests. It features a top navigation bar with tabs for 'MASTER CONTROL', 'PORT 1', 'PORT 2', 'PORT 3', and 'PORT 4'. Below this is a secondary navigation bar with 'Identification', 'Parameters', 'Process Data', and 'Events'. The main content area is titled 'CUSTOM ISDU REQUEST' and includes the following elements:

- Index:** A text input field containing '0x0'.
- Subindex:** A text input field containing '0x0'.
- Data:** A large, empty text area for entering data.
- Input Format:** A dropdown menu currently set to 'Byte[]'.
- Buttons:** 'READ' and 'WRITE' buttons.
- Result:** A large, empty area at the bottom for displaying the response.

- **Index**
The entry for the index can be decimal or hexadecimal. The prefix 0x is to be used for this.
Range of values: 0 ... 65535
- **Subindex**
The entry for the index can be decimal or hexadecimal. The prefix 0x is to be used for this.
Range of values: 0 ... 255
- **Data**
Enter the data to be written here.
The input format is a byte array decimal or hexadecimal (prefix 0x) or a string in UTF-8 format.
- **Result**
The result of the query is shown here as a byte array or ASCII text.

3.4.6.3 Process Data

In this dialog window you have access to the input respectively output data of the IO-Link device. If an IODD is available, the data are processed and listed according to the IODD. Here you can switch between the defined process data elements or select the requested process data from possibly existing combo boxes. Otherwise, the output data must be specified at 'RAW DATA' as a hexadecimal byte array (prefix 0x).

■ **Process Data Input**

Here you will find the input data that the IO-Link device sends to the IO-Link master.

■ **Process Data Output**

Here you can specify output data. With the [SET] button, these are taken from 'RAW DATA' and transferred to the IO-Link device.

You can discard the output data with the [Invalidate] button.



Please note that in order to be able to send process data from the IO-Link Manager to an IO-Link device, you must activate the Commissioning Mode for the corresponding IO-Link master! ↪ Chap. 3.4.5.3.1.1 'Commissioning Mode' page 16

MASTER CONTROL
PORT 1
PORT 2
PORT 3
PORT 4

Identification
Parameters
Process Data
Events

PROCESS DATA INPUT (V_PD)

VALIDITY: - | LENGTH: -
 RAW DATA

NAME	VALUE	UNIT
Switching signal of SSC1	(Unknown)	
Target out of sensor range.	(Unknown)	
Switching Count Supervision: Speed is too low.	(Unknown)	
Switching Count Supervision: Speed is too high.	(Unknown)	
Teach command is active.	(Unknown)	

PROCESS DATA OUTPUT (V_PD)

LENGTH: - |

RAW DATA
 0x0

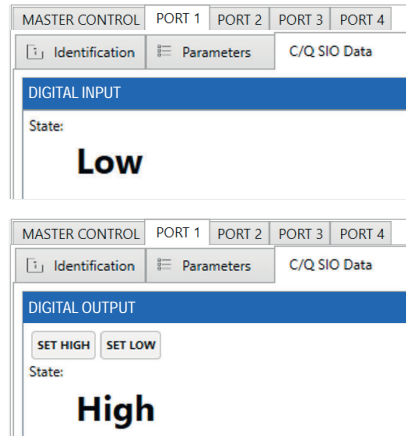
NAME	VALUE	UNIT
Switching Count Supervision value	0 (false)	

3.4.6.4 SIO Data

If the port was configured as a digital input or digital output, you can use this dialog to retrieve the status of the input or set and reset the output via the [SET HIGH] and [SET LOW] buttons.



Please note that in order to be able to send process data from the IO-Link Manager to an IO-Link device, you must activate the Commissioning Mode for the corresponding IO-Link master! ↪ Chap. 3.4.5.3.1.1 'Commissioning Mode' page 16



3.4.6.5 Events

All events for the corresponding port are listed here.

- The last entry in the table is always the most recent message. Sorting is from old to new.
- You can delete all entries with the [Clear] button.
- The table of messages is refreshed with the [Refresh] button.
- The number on the 'Events' tab indicates the number of messages and the color indicates the urgency.
 - Blue
The table only contains notifications.
 - Orange
The table contains at least one warning message.
 - Red
The table contains at least one error message.

