



WAGO Software

WAGO IO-Link Configurator

2759-106/1121-1000



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Every conceivable measure has been taken to ensure the accuracy and completeness of this documentation. However, as errors can never be fully excluded, we always appreciate any information or suggestions for improving the documentation.

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We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally protected by trademark or patent.

WAGO is a registered trademark of WAGO Verwaltungsgesellschaft mbH.

Table of Contents

Terms	5
1.1 Scope of Applicability	5
1.2 Intended Use	5
1.3 Typographical Conventions	6
1.4 Legal Information	8
Security	9
2.1 General Safety Regulations	9
2.2 Indirect Safety	9
Requirements	10
3.1 System Requirements	10
Overview	11
Functions	12
5.1 Possible Operating Modes	12
5.2 IODD Viewer	12
5.3 IODDfinder	12
5.4 Tool Calling Interface (TCI)	12
5.5 Integration of IO-Link Masters and IO-Link Devices	13
5.6 Configuration of IO-Link Masters in the WAGO I/O System 750	13
5.6.1 Requirements	14
5.6.2 User Interface	15
5.6.3 IO-Link Master Configuration	16
5.6.3.1 Menu Bar	16
5.6.3.2 "General" Tab	18
5.6.3.3 "Port Configuration" (Port Configuration) Tab	19
5.6.3.4 "Settings" Tab	21
5.6.4 IODD Configuration	23
Starting.....	24
6.1 Operation as a Standalone Program	24
6.2 Activation and Licensing	24
6.3 Install	25
6.4 Operate via Tool Calling Interface (TCI)	25
6.5 Configuring and Parameterizing IO-Link Masters in the WAGO I/O System 750 .	27
6.5.1 IO-Link Plug-in	28
6.5.1.1 Title Bar	28
6.5.1.2 Toolbar	29
6.5.1.2.1 Process Image Size	30
6.5.1.2.2 Options	32
6.5.1.2.3 Events	33
6.5.1.3 "Master Configuration" Tab	36
6.5.1.4 "Port Configuration" Tab	39
6.5.1.4.1 IODD View of Ports 1 to 4	43

6.5.1.5	“Module ID” Tab.....	44
6.6	Startup with WAGO-I/O-PRO.....	45
	Graphical User Interface	46
7.1	Start Screen and Login Dialog	46
7.2	User Interface.....	47
7.3	Device Catalog	47
7.3.1	IODD Search	48
7.4	Topology.....	49
7.5	Device Controls Window	50
7.6	Menu Bar and Toolbar	51
7.6.1	Project Administration	51
7.6.2	Language Selection.....	52
7.6.3	Managing Login and User Roles	52
7.6.4	Importing an IODD Device Description	54
7.7	IO-Link Master Control	58
7.7.1	Searching for IO-Link Masters.....	59
7.7.2	Online / Offline, Setting Port Mode.....	60
7.7.3	Searching for IO-Link Devices.....	61
7.7.4	Transferring Data Storage Data	61
7.7.5	Port Configuration Details	61
7.8	IO-Link Master Control, Block Modular	63
7.9	IO-Link Device Control	66
7.9.1	Device Default Settings	67
7.9.2	“General” Tab	68
7.9.3	“Process Data” Tab	68
7.9.4	“Identification, Monitoring, Parameters, Diagnostics” Tabs.....	68
7.9.5	“Device GUI” Tab	69
7.9.6	“Scope” Tab.....	69
7.9.7	“Generic” Tab	71
7.9.8	“FW Update” Tab.....	72
7.9.9	“IODD” Tab	73
	Parameterization	74
8.1	Performing an IO-Link Device Firmware Update	74
8.2	Quick Start Guide: Using an ETHERNET IO-Link Master.....	74
8.3	Quick Start Guide: Using TCI, e.g., in STEP 7 or the TIA Portal	75
8.4	IO-Link Implementation	75
8.4.1	Data Types	75
8.4.2	Block Parameterization	76
8.4.3	“Block Write” Mode / “Direct Write” Mode.....	76
8.4.4	Upload and Download	76
	Appendix.....	77
9.1	Protected Rights.....	77

Terms

1.1 Scope of Applicability

This documentation applies to the WAGO IO-Link Configurator software (Item No. 2759-106/1121-1000) in conjunction with the following products:

Table 1: Scope of Applicability

Item no.	From Firmware Version
0765-110x/0100-0000	1.1.0.10
0765-120x/0100-0000	1.1.0.17
0765-150x/0100-0000	1.1.0.11
0765-170x/0100-0000	1.0.0.8
0765-410x/0100-0000	1.1.0.10
0765-420x/0100-0000	1.1.0.17
0765-450x/0100-0000	1.1.0.11
0750-0657	10

1.2 Intended Use

The WAGO IO-Link Configurator is an independent commissioning, configuration and management software program.

Depending on the WAGO IO-Link master and settings, the software is used for the following activities:

- Diagnostics, identification, parameterization and display of process data of WAGO IO-Link devices
- Writing output process data
- Configuring the WAGO IO-Link master or WAGO I/O System Field module
- Reading the master's configuration

Software operation is only permitted if the system requirements and license conditions are met.

Improper Use

Improper use of the products is not permitted. Specifically, improper use occurs in the following cases:

- Non-observance of the intended use.
- Use of the products in areas with special risk that require flawless continuous operation and in which failure or operation of the software can result in an imminent risk to life, limb or health or cause serious damage to property or the environment (such as the operation of nuclear power plants, weapon systems, aircraft and motor vehicles).

Warranty and Liability

The terms set forth in the General Business & Contract Conditions for Delivery and Service of WAGO Kontakttechnik GmbH & Co. KG and the terms for software products and products with integrated software stated in the WAGO Software License Contract – both available at www.wago.com – shall apply. In particular, the warranty is void if:

- The products are used improperly.

- The deficiency (hardware and software configurations) is due to special instructions.
- Modifications to the hardware or software have been made by the user or third parties that are not described in this documentation and that has contributed to the fault.

Individual agreements always have priority.

Obligations of Installers/Operators

The installers and operators bear responsibility for the safety of an installation or a system assembled with the products. The installer/operator is responsible for proper installation and safety of the system. All laws, standards, guidelines, local regulations and accepted technology standards and practices applicable at the time of installation, and the instructions in the the products' Instructions for Use, must be complied with. In addition, the Installation regulations specified by Approvals must be observed. In the event of non-compliance, the products may not be operated within the scope of the approval.

1.3 Typographical Conventions





Number Notation

100	Decimals: Normal notation
0x64	Hexadecimals: C-notation
'100'	Binary: In single quotation marks
'0110.0100'	Nibbles separated by a period

Text Formatting

<i>italic</i>	Names of paths or files
bold	Menu items, entry or selection fields, emphasis
Code	Sections of program code
>	Selection of a menu point from a menu
"Value"	Value entries
[F5]	Identification of buttons or keys

Cross References / Links

	Cross references/links to a topic in a document
	Cross references / links to a separate document
	Cross references / links to a website
	Cross references / links to an email address

Action Instructions

- ✓ This symbol identifies a precondition.
- 1. Action step
- 2. Action step
 - ⇒ This symbol identifies an intermediate result.
- ⇒ This symbol identifies the result of an action.

Lists

- Lists, first level
 - Lists, second level

Figures

Figures in this documentation are for better understanding and may differ from the actual product design.

Notes

DANGER

Type and source of hazard

Possible consequences of hazard that also include death or irreversible injury

- Action step to reduce risk

WARNING

Type and source of hazard

Possible consequences of hazard that also include severe injury

- Action step to reduce risk

CAUTION

Type and source of hazard

Possible consequences of hazard that include at least slight injury

- Action step to reduce risk

NOTICE

Type and source of malfunction (property damage only)

Possible malfunctions that may restrict the product's scope of functions or ergonomics, but do not lead to foreseeable risks to persons

- Action step to reduce risk

Note


Notes and information

Indicates information, clarifications, recommendations, referrals, etc.

1.4 Legal Information

Intellectual Property

Unless barred by applicable legal provisions, unauthorized copying and distribution of this document, as well as the use and communication of its content are strictly prohibited unless expressly authorized by prior agreement. Third-party products are always mentioned without any reference to patent rights. WAGO Kontakttechnik GmbH & Co. KG, or for third-party products, their manufacturer, retain all rights regarding patent, utility model or design registration.

Third-party trademarks are referred to in the product documentation. The “®” and “™” symbols are omitted hereinafter. The trademarks are listed in the Appendix ( **Protected Rights [▶ 77]**).

Subject to Change

The instructions, guidelines, standards, etc., in this manual correspond to state of the art at the time the documentation was created and are not subject to updating service. The installer and operator bear sole responsibility to ensure they are complied with in their currently applicable form. WAGO Kontakttechnik GmbH & Co. KG retains the right to carry out technical changes and improvements of the products and the data, specifications and illustrations of this manual. All claims for change or improvement of products that have already been delivered – excepting change or improvement performed under guarantee agreement – are excluded.

Security

2.1 General Safety Regulations

- This documentation is part of the product. Therefore, retain the documentation during the entire service life of the product. Pass on the documentation to any subsequent user of the product. In addition, ensure that any supplement to this documentation is included, if necessary.
- Any actions related to the use of WAGO software may only be performed by qualified staff with sufficient knowledge to use the respective PC system.
Steps in which files are created or changed on a PC system may only be performed by qualified employees with sufficient knowledge in the administration of the PC system used in addition to file creation or modification.
Steps that change the PC system's behavior within a network may only be performed by qualified employees with sufficient knowledge of administration of the responsible network.
- Comply with the laws, standards, guidelines, local regulations and accepted technology standards and practices applicable at the time of installation.

2.2 Indirect Safety

- If automation solutions are implemented that can cause personal injury or major property damage in the event of failure, you must take appropriate measures to ensure that the system remains in a safe operating state even in the event of failure.
- Give all products in a network different IP addresses.
- Operate ETHERNET and PROFINET interfaces in separate networks.
- Never connect a PC on which a DHCP server is installed to a global network. In larger networks, there is usually already a DHCP server that can cause collisions and subsequent network failure.
- Use only the latest security software.
- Uninstall or disable all software components or programs on your PC that are not required for the intended use.

Requirements

3.1 System Requirements

The following system requirements must be met to install the WAGO IO-Link Configurator software:

Minimum System Requirements

Table 2: Minimum System Requirements

Components	Requirements
Operating system	Windows 10 (32- and 64-bit)
Memory	2 GB
Free hard disk space	150 MB
Processor	1 GHz or higher, 32-bit (x86) or 64-bit (x64)
Screen resolution	1024 × 768 pixels
Interface	ETHERNET network interface

Recommended System Requirements

Table 3: Recommended System Requirements

Components	Requirements
Operating system	Windows 10 (64-bit)
Memory	8 GB
Free hard disk space	250 MB
Processor	1 GHz or higher, 64-bit (x64)
Screen resolution	1920 × 1080 pixels
Interface	ETHERNET network interface

Overview

The WAGO IO-Link Configurator is an independent commissioning, configuration and management software program. The software replaces the earlier IO-Link plug-in for WAGO-I/O-CHECK.

The WAGO IO-Link Configurator software is used for configuring and parameterizing IO-Link devices. It supports a large number of IO-Link masters and IO-Link sensors/actuators. Within the software, you can switch between the IO-Link masters of a node that are used without having to switch back to WAGO-I/O-CHECK. In addition, the handling of IODD (device description files for IO-Link modules) is more flexible. For example, you can access the IODD server directly to import IODDs.

The WAGO IO-Link Configurator software can be launched as a stand-alone program from the Start menu or with the desktop icon, or in connection with WAGO I/O-CHECK. It then provides the functions necessary for connecting to accessible WAGO IO-Link masters or searching for them.

The following fieldbus couplers/controllers are supported:

Table 4: Supported fieldbus couplers/controllers

Bus System	Fieldbus Coupler/Controller	Item no.
Modbus/TCP	Programmable Fieldbus Controller	750-891
PROFINET®	Fieldbus Couplers	750-375

Functions

5.1 Possible Operating Modes

The WAGO IO-Link Configurator software can be used both as a stand-alone program and integrated into engineering systems that support the “Tool Calling Interface” (TCI) in accordance with the PNO specification, as well as from *WAGO-I/O-CHECK*.

5.2 IODD Viewer

The IODD is interpreted so as to make operation and monitoring as easy as possible for the user. In the area of PLC programming, it is necessary with most programming systems to have detailed information on the structure and addressing of the parameters, process data and diagnostics. The WAGO IO-Link Configurator software provides a convenient view of the IODD.

5.3 IODDfinder

IODDfinder makes it easy to find and get IODDs (see [🔗 IODD Search \[▶ 48\]](#)).

5.4 Tool Calling Interface (TCI)

Tool Calling Interface (TCI) is an interface between an engineering system and a device tool. It makes it possible to invoke configuration, parameterization and diagnostic software for field products from within an engineering system, giving the user an integrated control interface.

For example, with the Simatic STEP 7, TIA13 or TIA14, device tools can be launched from the hardware configuration by right-clicking them.

TCI only describes the software interface. It does not determine what technology is used for product integration. This allows tools for adaptation to FDT DTM to be connected just like tools that interpret EDDs, as well as Web browsers or tools that are specially developed or adapted for use with TCI.

The WAGO IO-Link Configurator software is connected directly to the TCI interface, which has the advantage of avoiding the unnecessary time and effort associated with other integration technologies. Furthermore, the software can run on any other tools that are connected via TCI.

The two main functions of TCI are the following:

- **Invocation Interface**

The invocation interface serves to launch the WAGO IO-Link Configurator software from the engineering system and provide it with the information necessary for operation of the connected field products.

- **Communication Server**

The WAGO IO-Link Configurator software has various options for communication with the supported IO-Link masters and the IO-Link devices connected to them. The most convenient situation is when the engineering system provides a communication channel and the software does not need to worry about the communication channel. This

communication channel is called a communication server. STEP 7 supports PROFIBUS® and PROFINET®. PROFIBUS® requires so-called dataset routing. This is not supported by all products. Therefore, the software also supports its own communication options, independent of the communication server.

TCI Conformance Classes

The WAGO IO-Link Configurator software supports all TCI conformance classes according to the operating mode and communication system. As a general rule, TCI conformance class 3 is used for PROFIBUS® and TCI conformance class 2 for PROFINET®.

- TCI Conformance Class 1
Calling only via the invocation interface; no communication with the field product
- TCI Conformance Class 2
Calling via the invocation interface and communication via its own communication channels
- TCI Conformance Class 3
Calling via the invocation interface and communication via the communication server

5.5 Integration of IO-Link Masters and IO-Link Devices

IO-Link masters are integrated into the WAGO IO-Link Configurator software by including an IOLM (IO-Link Master) device description file. The IO-Link devices are fully integrated into the software via the IODDs (IO Device Descriptions)

5.6 Configuration of IO-Link Masters in the WAGO I/O System 750

The *WAGO-I/O-CHECK* software from WAGO Kontakttechnik GmbH & Co. KG can be used to conveniently and completely configure and parameterize the IO-Link master and IO-Link devices using device description files:

- Configuration of the module-specific process image
- Parameterization of the operating modes of the IO-Link master
- Diagnosis of the IO-Link master
- Importing of the IO-Link-specific device description files (IODDs)
 - Display of IO-Link devices
 - Configuration of IO-Link devices
 - Parameterization of IO-Link devices
- Diagnostics of IO-Link devices

Note

Software WAGO IO-Link Configurator Replaces IO-Link Plug-in

The IO-Link plug-in will no longer be maintained in the future and will be replaced by the WAGO IO-Link Configurator software.

If you have the software installed, the settings in *WAGO-I/O-CHECK* automatically opens the software instead of the IO-Link plug-in.

Note**USB Service Cable (or ETHERNET Connection) Required**

The WAGO IO-Link Configurator software supports USB service cables, but does not support older serial service cables.

5.6.1 Requirements

To configure and parameterize IO-Link devices using *WAGO-I/O-CHECK*, the following requirements must be met:

- ✓ The WAGO IO-Link Configurator software must be installed.
 - ✓ The WAGO IO-Link adapter is installed (available at the [WAGO Website](#)).
If *WAGO-I/O-CHECK* was open while installing the WAGO IO-Link adapter, *WAGO-I/O-CHECK* must be restarted after installation.
If uninstalling the WAGO IO-Link adapter, *WAGO-I/O-CHECK* must be restarted, so that the old IO-Link plug-in can be used again (see IO-Link-Plug-in).
1. Launch *WAGO-I/O-CHECK*.
 2. Read the current node configuration by clicking the **[Identify]** button.
 - ⇒ The node is connected online.
 3. Right-click the IO-Link master and select the **Settings** menu item.
 - ⇒ The WAGO IO-Link Configurator software opens for the selected IO-Link master.
To open all IO-Link masters present in the node, instead click the **[Settings]** button in *WAGO-I/O-CHECK* and select the **For All I/O Modules of this Type ...** menu item. Opening multiple IO-Link masters can reduce performance and is therefore not recommended for a serial connection.
 4. Perform your parameterization and configuration.
 5. To finish parameterizing and configuring the devices and return to *WAGO-I/O-CHECK*, close the WAGO IO-Link Configurator software.

5.6.2 User Interface

After logging in, the workspace is displayed, which serves as a frame for the various control panels and windows for configuration and parameterization. The workspace consists of the menu and toolbar, the topology (1), the device catalog (2) and a device configuration window (3). Only the functions relevant to the specific device and operating mode are displayed.

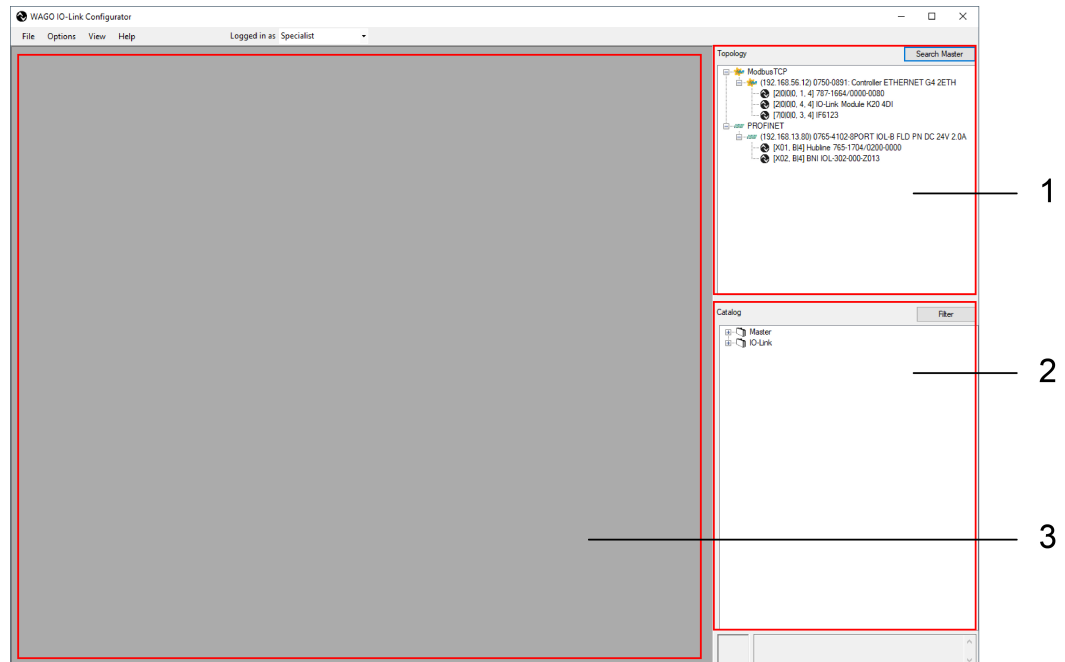


Table 5: WAGO IO-Link Configurator Software Workspace

No.	Custom Name	Description
1	Topology	<p>For the specific fieldbus, the topology shows all accessible IO-Link masters located in the node in a tree structure. The IO-Link masters are arranged in the topology according to the communication connection to the higher-level network. The tree structure starts with the corresponding fieldbus (here: Modbus TCP), followed by the IP address of the node below it. This is followed by the IP address of the node. The IO-Link masters are shown below that with the associated IO-Link devices (actuators/sensors). All devices here can be selected and then further configured and parameterized. The device selected in WAGO-I/O-CHECK is also selected here. The "General" tab of the IO-Link master opens after clicking the [Find Master] button. On that tab, click the button next to the IP address, enter the master's IP address and establish a connection.</p> <p>Note: The WAGO IO-Link Configurator software can also be opened directly as a stand-alone application (see Starting). In that case, it is not necessary to access it via WAGO-I/O-CHECK. You can drag IO-Link masters from the device catalog and drop them into the topology to insert them (offline) and then assign the required address information online later. [[Find Master]] searches for the master that you inserted into the topology. The corresponding master can be selected from the devices found and applied.</p>
2	Device Catalog	<p>The device catalog contains all useable devices installed through corresponding device description files (IODDs).</p> <p>The IO-Link masters are arranged in the tree structure by manufacturer, product familiar and product variant. Since an IODD can contain multiple device variants, each variant is represented by its own entry. However, all variants are always imported or deleted together.</p> <p>The device catalog can be expanded through manufacturer-independent import of IODDs:</p> <ul style="list-style-type: none"> By right-clicking the "IO-Link Master" node and Import IODD button

No.	Custom Name	Description
		<ul style="list-style-type: none"> From the menu ribbon "Settings" > "Import IODD" <p>The [IODDfinder] button establishes a connection to an Internet database containing a collection of IODDs. The IO-Link community provides this list. IODDfinder searches the database for the matching IODD and inserts it directly into the device catalog. You can also import IOLMs by right-clicking the "Master" node. You can remove individual devices from the device catalog by right-clicking them in the node.</p>
3	Device configuration	<p>When a device is selected in the topology, this window shows the corresponding user interface for device configuration and parameterization:</p> <ul style="list-style-type: none"> When sensors/actuators are selected, IODD Configuration opens. When an IO-Link master is selected, IO-Link Master Configuration opens.

5.6.3 IO-Link Master Configuration

This window opens when an IO-Link master is selected in the topology. It contains a menu bar and three tabs for various settings.

5.6.3.1 Menu Bar

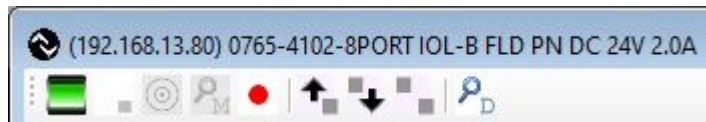


Figure 1: IO-Link Master Configuration – Menu Bar





Table 6: IO-Link Master Configuration – Menu Bar

Icon	Button/Indicator	Description
	[Connection Status]	Indicates the status of the connection between WAGO IO-Link Configurator software and the WAGO IO-Link master.
	[PLC Connection Status]	Indicates whether a PLC is connected to the IO-Link master or not. If a controller is connected, it has access rights for configuration and for writing process output data. Otherwise, the software has full access.
	[Flash]	Requests flashing for finding the IO-Link master (not available with all masters).
	[Find Master]	Searches for IO-Link masters of the configured type. The IP address can also optionally be entered manually: Clicking on the button next to "IP Address" opens a dialog for entering the IP address.
	[Online]/[Offline]	Establishes or terminates the connection to the IO-Link master. The IO-Link master can only be configured offline. The configuration can then be transferred to the I/O module online. When the connection is established, a dialog opens. It verifies that the project configuration in IO-Link Configurator corresponds to the configuration in the WAGO IO-Link Configurator software.

Synchronize Port Configuration

Configured by PLC Module Configuration Changed
 PLC connected Port Configuration Changed
 Master Variables Changed

The port configuration or master variables have been changed. You can choose whether you want to transfer the configuration from the master to the tool or whether you want to transfer the configuration from the tool to the master.

Icon	Button/Indicator	Description
		<p>The [Read From Master] button overwrites the parameter settings in the software with those from the master.</p> <p>The [Write to Master] button transfers the parameters changed in the software to the master.</p>
	[Data Storage – Upload from Master]	<p>Loads the data storage content from the master into the project. (Data storage is not available.)</p>
	[Data Storage – Download Data to the Master]	<p>Loads the previously saved data storage content from the project into the IO-Link master. (Data storage is not available.)</p>
	[Status of Data Storage Data in Project]	<p>The tooltip indicates whether data storage data is stored in the project (Data storage is not available.)</p>
	[Device Search]	<p>Searches for connected devices.</p> <p>This search can only be performed online. The device connections must be configured as “IO-Link”.</p> <p>Note: If a device is shown as “unknown,” it should still be imported into the project. This is merely due to a missing IODD. Right-click the imported device and select “Import IODD” to load the IODD locally or via IODDfinder.</p>

5.6.3.2 “General” Tab

This tab shows information about the manufacturer and IO-Link master. The identification information comes from the master device description (IOLM).

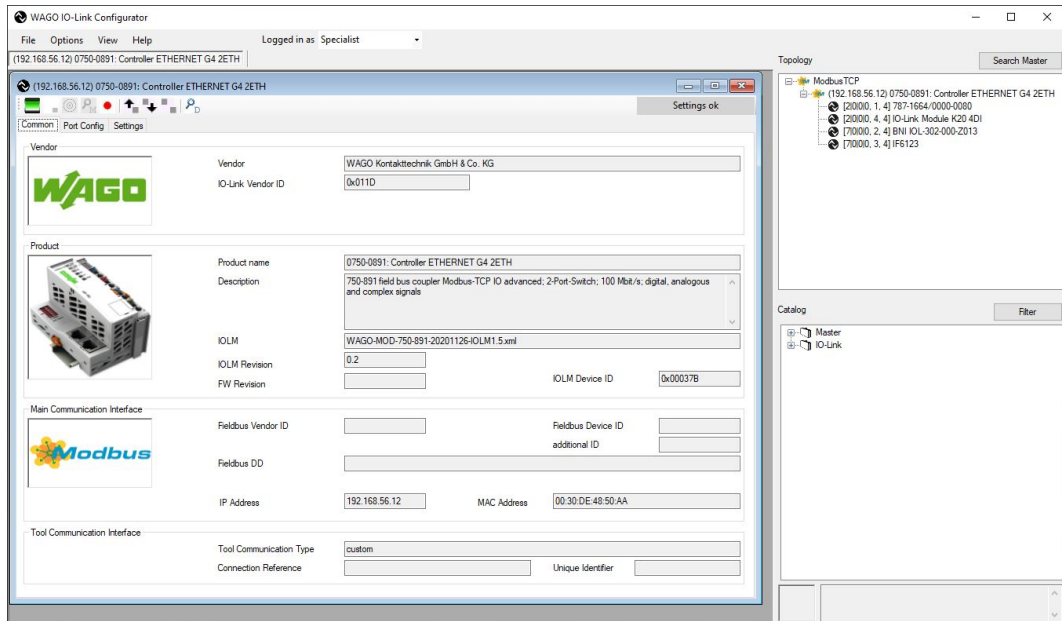


Figure 2: IO-Link Master Configuration – “General” Tab

Table 7: IO-Link Master Configuration – “General” Tab

Option	Description
Vendor	Manufacturer name
IO-Link Vendor ID	Manufacturer ID of the IO-Link master
Product name	Name or item number of the product
Description	Product description
IOLM	Name of the master device description file
Revision	Version number of the SDCI protocol supported by the IO-Link device
IO-Link Revision	IO-Link version
Release Date	Release date
IOLM Device ID	IO-Link device ID of the master assigned by the IO-Link consortium
Fieldbus Vendor ID	Manufacturer ID assigned by the fieldbus organization PNO
Fieldbus Device ID	Device ID in relation to the fieldbus assigned by the manufacturer (PROFINET®)
Additional ID	ID for the application with PROFINET® und TCI
IP address	IP address of the IO-Link master Clicking on the button next to “IP Address” opens a dialog for entering the IP address.
MAC address	MAC address of the IO-Link master

5.6.3.3 “Port Configuration” (Port Configuration) Tab

This tab contains an overview of all available IO-Link ports and their configurations. The lower section shows detailed information on the port selected in the table.

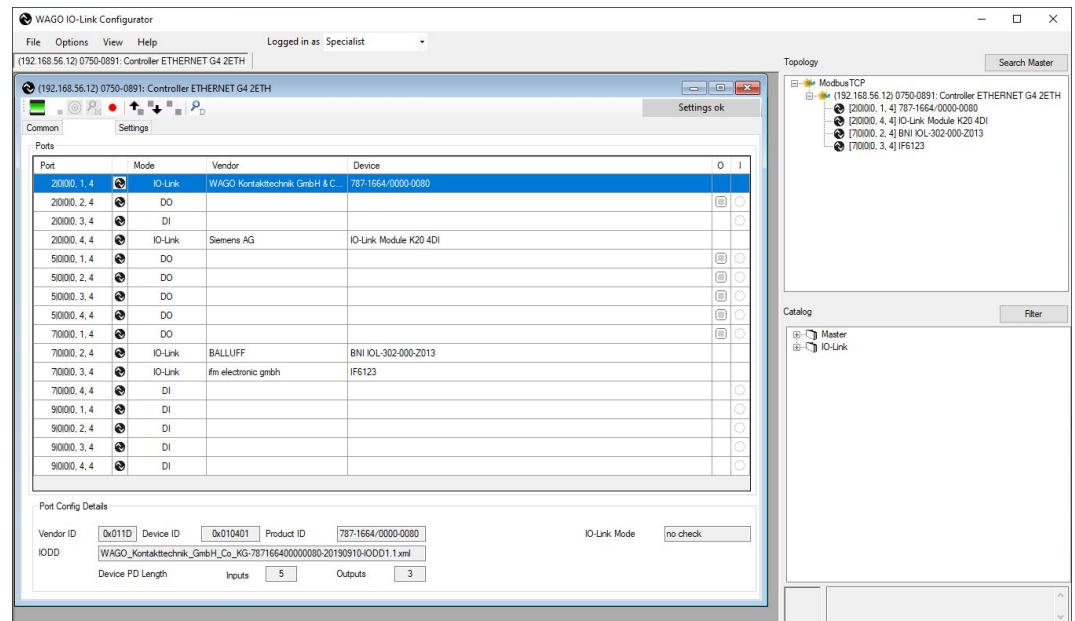


Figure 3: IO-Link Master Configuration – “Port Configuration” Tab

Table 8: IO-Link Master Configuration – “Port Configuration” Tab

Option	Description	
Port	Displays the following information based on the formula “x000, y, z”: x: Position of the IO-Link master in the node (000 has no relevance) y: Port number of the respective IO-Link master z: Number of ports of the respective IO-Link master	
Mode	Indicates the operating mode of the port. The mode can be changed (offline) by right-clicking it:	
	IO-Link	Operating mode for connecting an IO-Link-enabled device to a port.
	DI	The port functions as a type 1 input per IEC 61131-2.
	DO	The port behaves as a standard digital output.
	deactivated	The port is disabled.
Details	Shows details of the relevant port (for further information, see the manual for the IO-Link device tool).	
Vendor	Indicates the manufacturer of the IO-Link device connected to the port of the IO-Link master.	
Device	Indicates the name of the IO-Link device connected to the port of the IO-Link master.	
O	Output	
I	Input	
Port Config Details		
Vendor ID	Manufacturer ID of the device	
Device ID	Device ID of the device	
Product ID	Product ID of the device	
IODD	Name of the device’s IODD	
Device PD Length		
Inputs	Process data length of the input	
Outputs	Process data length of the output	

Option	Description		
IO-Link Mode	<p>According to the IO-Link interface specification V1.1.3 and the “Standardized Master Interface” (SMI) described, the following port modes are available, which can be changed offline.</p> <p>Note: The “Backup & Restore” and “Restore” operating modes offer the most advantages with regard to IO-Link and are recommended for preferred use.</p>		
	<table border="1"> <tr> <td data-bbox="552 394 711 506">No check</td> <td data-bbox="711 394 1398 506"> <p>The connected IO-Link device is not checked.</p> <p>Note: The IO-Link specification also includes a “auto config” port mode. This is redundant and has the same meaning as “No check”.</p> </td> </tr> </table>	No check	<p>The connected IO-Link device is not checked.</p> <p>Note: The IO-Link specification also includes a “auto config” port mode. This is redundant and has the same meaning as “No check”.</p>
	No check	<p>The connected IO-Link device is not checked.</p> <p>Note: The IO-Link specification also includes a “auto config” port mode. This is redundant and has the same meaning as “No check”.</p>	
	<table border="1"> <tr> <td data-bbox="552 506 711 804">Backup & Restore</td> <td data-bbox="711 506 1398 804"> <p>Data storage is activated for both upload and download.</p> <p>When a device is replaced, the device is automatically parameterized with the parameters saved in the master. However, if the device, e.g., has been pre-parameterized using a USB-IO-Link master, then the data is loaded from the device into the master. When parameters are changed by the WAGO IO-Link Configurator software, they are automatically transferred to the master.</p> <p>“Backup & Restore” is available for devices with IO-Link Revision V1.1 or higher. In addition, this mode checks compatibility based on the vendor ID and device ID.</p> </td> </tr> </table>	Backup & Restore	<p>Data storage is activated for both upload and download.</p> <p>When a device is replaced, the device is automatically parameterized with the parameters saved in the master. However, if the device, e.g., has been pre-parameterized using a USB-IO-Link master, then the data is loaded from the device into the master. When parameters are changed by the WAGO IO-Link Configurator software, they are automatically transferred to the master.</p> <p>“Backup & Restore” is available for devices with IO-Link Revision V1.1 or higher. In addition, this mode checks compatibility based on the vendor ID and device ID.</p>
	Backup & Restore	<p>Data storage is activated for both upload and download.</p> <p>When a device is replaced, the device is automatically parameterized with the parameters saved in the master. However, if the device, e.g., has been pre-parameterized using a USB-IO-Link master, then the data is loaded from the device into the master. When parameters are changed by the WAGO IO-Link Configurator software, they are automatically transferred to the master.</p> <p>“Backup & Restore” is available for devices with IO-Link Revision V1.1 or higher. In addition, this mode checks compatibility based on the vendor ID and device ID.</p>	
<table border="1"> <tr> <td data-bbox="552 804 711 1106">Restore</td> <td data-bbox="711 804 1398 1106"> <p>Data storage is only enabled for the download.</p> <p>This mode is normally used when an application has been approved and the settings should no longer be changed. When a device is replaced, the device is automatically parameterized with the parameters saved in the master. Changes, e.g., in the case of a pre-parameterized device or changes to parameters by the IO-Link Configurator, are not transferred to the master.</p> <p>“Backup & Restore” is available for devices with IO-Link Revision V1.1 or higher. In addition, this mode checks compatibility based on the vendor ID and device ID.</p> </td> </tr> </table>	Restore	<p>Data storage is only enabled for the download.</p> <p>This mode is normally used when an application has been approved and the settings should no longer be changed. When a device is replaced, the device is automatically parameterized with the parameters saved in the master. Changes, e.g., in the case of a pre-parameterized device or changes to parameters by the IO-Link Configurator, are not transferred to the master.</p> <p>“Backup & Restore” is available for devices with IO-Link Revision V1.1 or higher. In addition, this mode checks compatibility based on the vendor ID and device ID.</p>	
Restore	<p>Data storage is only enabled for the download.</p> <p>This mode is normally used when an application has been approved and the settings should no longer be changed. When a device is replaced, the device is automatically parameterized with the parameters saved in the master. Changes, e.g., in the case of a pre-parameterized device or changes to parameters by the IO-Link Configurator, are not transferred to the master.</p> <p>“Backup & Restore” is available for devices with IO-Link Revision V1.1 or higher. In addition, this mode checks compatibility based on the vendor ID and device ID.</p>		
<table border="1"> <tr> <td data-bbox="552 1106 711 1173">Compatible V1.0</td> <td data-bbox="711 1106 1398 1232" rowspan="2"> <p>Compatibility based on vendor ID, device ID and IO-Link revision is checked.</p> </td> </tr> <tr> <td data-bbox="552 1173 711 1232">Compatible V1.1</td> </tr> </table>	Compatible V1.0	<p>Compatibility based on vendor ID, device ID and IO-Link revision is checked.</p>	Compatible V1.1
Compatible V1.0	<p>Compatibility based on vendor ID, device ID and IO-Link revision is checked.</p>		
Compatible V1.1			

5.6.3.4 “Settings” Tab

On this tab, you can view and set values. In the “Address” field, you can switch between different IO-Link masters of the node.

Note that the device must be offline for values to be changed.

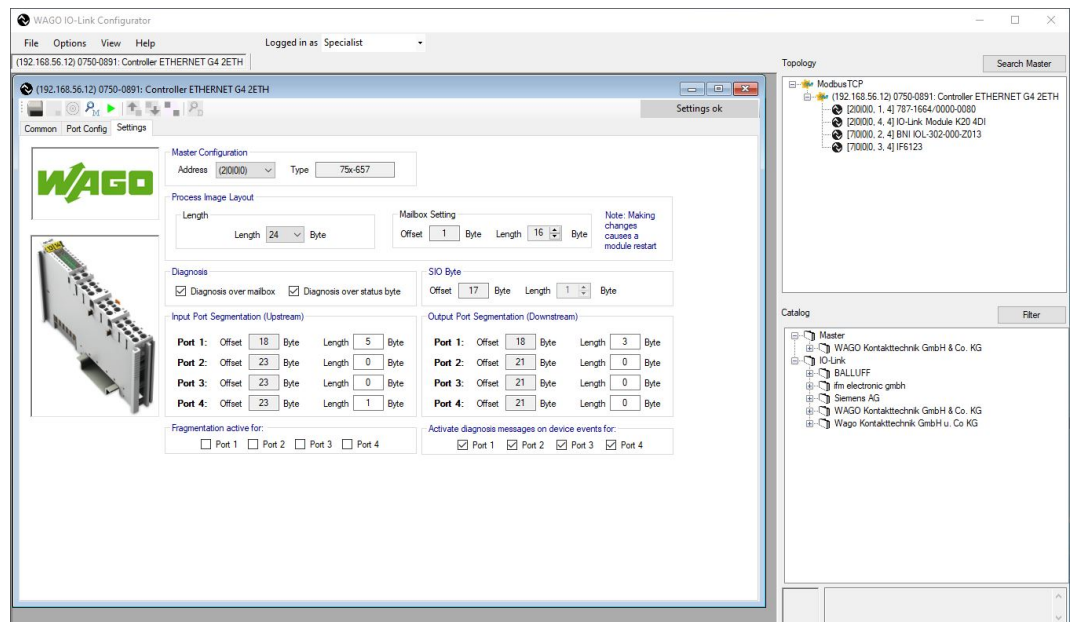


Figure 4: IO-Link Master Configuration – “Settings” Tab

Table 9: IO-Link Master Configuration – “Settings” Tab

Option	Description
Master Configuration	
Address	Toggles between connected IO-Link masters: 1000 = First IO-Link master 2000 = Second IO-Link master ... Note: This toggling option requires the WAGO IO-Link Configurator software to be opened from WAGO-I/O-CHECK with the [Settings] button and the menu item “For All I/O Modules of This Type ...”
Type	Item number of the IO-Link master
Process Image Layout	
Length	Setting the Process Image Size Possible sizes: 4, 6, 8, 10, 12, 16, 20 and 24 bytes (default: 24 bytes) Note: If you connect IO-Link devices that process more than one bit of process data, then set the data width of the local bus to a value greater than 4 bytes.
Mailbox Setting – Offset	The mailbox begins with an offset of 1 (after the control/status byte) in the process image and occupies at least two bytes. The offset cannot be changed.
Mailbox Setting – Length	Mailbox Size The mailbox size is 2 bytes by default but can be set to a maximum of x bytes for configuring the IO-Link master: $x = \text{Data width on the local bus} - (\text{PI size} + 1 \text{ SIO byte} + 1 \text{ control/status byte})$ Entering a higher value (e.g.: 6 bytes) increases the data throughput and causes the parameterization operations to be executed faster. The bigger the mailbox is, the further backwards the process data is shifted in the process image of the IO-Link master.

Option	Description	
	<p>Note: If the mailbox size is not reset, mailbox data may be overlaid over important process data. You should therefore reset the mailbox size to the value required for the controller after configuration. The positions of the SIO byte and port offset are adjusted automatically.</p>	
Diagnosis		
Diagnosis over Mailbox	<p>Switch acyclic diagnostics via the mailbox on/off.</p> <p>If enabled, diagnostic events of the IO-Link master (note: not those of the attached devices) are sent to the controller via the acyclic channel. The diagnostics of the IO-Link master and the individual ports should be considered separately.</p> <p>Note: Do not enable acyclic diagnostics via <i>WAGO-I/O-CHECK</i> if using a PROFIBUS® coupler. For PROFIBUS®, they are enabled through a GSD file.</p>	
Diagnosis over Status Byte	<p>Switch cyclic diagnostics via the status byte on/off.</p> <p>If enabled, error states of the I/O module and the connected devices are indicated in the status byte.</p> <p>Note: If diagnostics are switched off, important diagnostic messages from attached devices may no longer be indicated by the status byte.</p>	
SIO Byte		
Offset	Position of the SIO byte in relation to the control/status byte (SIO byte = 1st byte after the mailbox byte)	
Length	Position of a port segment in relation to the control/status byte (length of the SIO byte = 1 byte)	
Port Input Segmentation (Upstream)		
Data Direction: I/O Module to Controller		
Port x:	Offset	Position of a port segment in relation to the control/status byte
	Length	Length of a port segment in bytes
Port Import Segmentation (Downstream)		
Data Direction: Controller to I/O Module		
Port x:	Offset	Position of a port segment in relation to the control/status byte
	Length	Length of a port segment in bytes
Enable Fragmentation for:		
Port x	<p>If enabled, fragmentation is activated for the respective port to allow larger data volumes to be transferred even with lower port segment data widths.</p> <p>Note: For fragmentation, a segment length of at least 2 bytes (port input and output) is required for the corresponding port.</p>	
Enable Diagnostic Messages for Events for:		
Port x	Incoming diagnostics (IOL events) are sent from the IO-Link device attached to the port to the controller via the mailbox.	

5.6.4 IO-Link Configuration

This window opens when a sensor or actuator is selected in the topology. The content shown differs according to the specific IO-Link and will not be described further here.

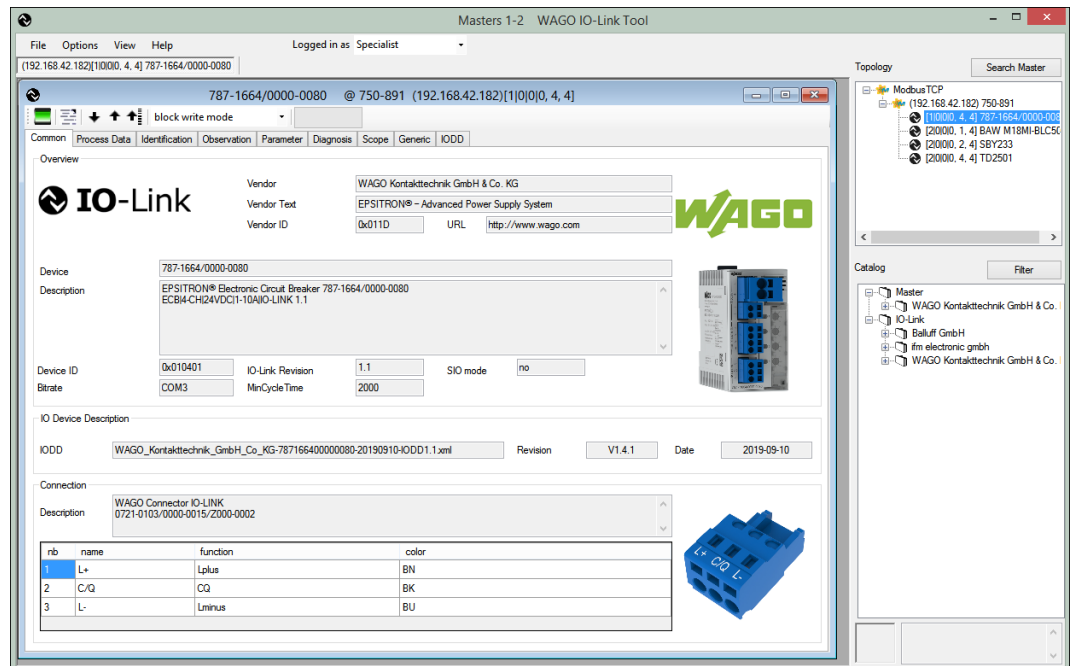


Figure 5: IO-Link Master Configuration – IO-Link-Configuration

The “IO Device Description” specification can be downloaded from the website of the IO-Link community at www.io-link.com along with the schema and application examples.

Starting

6.1 Operation as a Standalone Program

The WAGO IO-Link Configurator software can be launched as a stand-alone program from the Start menu or with the desktop icon, or in connection with WAGO I/O-CHECK. It then provides the functions necessary for connecting to accessible WAGO IO-Link masters or searching for them.

The WAGO IO-Link Configurator software offers the following functions, depending on the WAGO IO-Link master and setting:

- Diagnostics, identification, parameterization and display of process data of WAGO IO-Link devices
- Writing output process data

This normally the controller's job, and the tool cannot write here concurrently. However, some WAGO IO-Link masters can also be operated on the tool without a PLC. In this case, the tool can also write the process data. In particular, this applies to some ETHERNET-based WAGO IO-Link masters. You can tell this when the WAGO IO-Link master opens or read about it in the corresponding documentation.

- Configuring the WAGO IO-Link master or WAGO I/O System Field module
- Reading the master's configuration

The configuration is read from the master, compared to the setting in the tool and displayed. This function is always available.

Please find information on operation via TCI at [🔗 Operate via Tool Calling Interface \(TCI\) \[▶ 25\]](#).

6.2 Activation and Licensing

The WAGO IO-Link Configurator software is protected by license mechanisms. A license key is required for productive use of the software without time restriction. The full scope of the software can be used without a license key for 30 days. When loading the software, a prompt appears with the number of days remaining. Access without a license key is no longer possible after the trial period. Please refer to your license certificate for the corresponding information.

For the WAGO IO-Link Configurator software, single user licenses are available for the product on the [🌐 WAGO website](#).

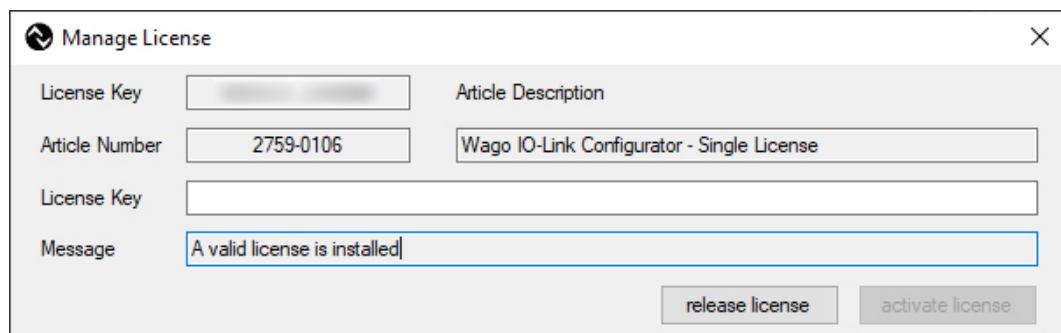


Figure 6: WAGO IO-Link Configurator – License Administration


6.3 Install

The WAGO IO-Link Configurator software is installed from a setup file. The device drivers are automatically created in the form of device description files (Device Type Packages) for WAGO devices of the 765, 750 and 2787 and 787 Series.

“Uninstall” can be invoked from the Windows Control Panel.

You will need administrator rights for this.

Proceed as follows to install the WAGO IO-Link Configurator software:

1. Open the  **WAGO website** for the product.
2. To receive a download link for the software, click the **Registration** link and fill out the form.
3. Download the software.
4. Start the installation process by double-clicking the setup file and follow the steps described in the Installation Wizard:
5. Click **Install** to start the installation.
6. If an older version is already installed, a dialog appears in which you can choose to accept already installed devices.
7. To finish the installation, click **Finish**.

Note

Show information about the new version

During setup, you can click the **See What's New** button to open a PDF with current information about the version installed. You can also view the document via “Help” **[Links]** > **[Links]** > “WAGO IO-Link Configurator Documentation” or on the website for the product.

Windows Firewall

During installation, the WAGO IO-Link Configurator software is entered as an exception for incoming and outgoing connections for Windows Firewall. The software uses UDP port 1999 for outgoing telegrams and port 2000 for incoming telegrams.

If you use a different firewall, or automatic entry during installation is locked, contact your system administrator. The firewall must be enabled accordingly.

With Windows 7 and higher, UDP “255.255.255.255” broadcasts are now only sent on the network interface with the lowest metric. The software searches for all subnets that are entered for the network interfaces.

6.4 Operate via Tool Calling Interface (TCI)

Tool Calling Interface (TCI) is a software interface for integrating device software into engineering tools. TCI is specified by PNO (PROFIBUS® Nutzerorganisation e.V.) and is now available as an open interface for PROFIBUS® and PROFINET®. This interface is supported by well-known manufacturers, e.g., Siemens with STEP 7 and the TIA Portal and Phoenix Contact with the PC Worx.

TCl is launched from the network configurator of the engineering tool. For STEP 7 or the TIA Portal from Siemens, this is “Hardware Config”. Right-clicking on the desired device and selecting the “Launch Device Tool” function launches the IO-Link device tool. In the process, the engineering tool passes all the devices supported by the tool. They then appear in the topology. Under “Tools,” you can choose whether only the device selected in STEP 7, the network line with the selected device or all network lines are shown in the topology.

The topology cannot be changed by the tool. Although the supported masters appear in the device catalog, they can only be added, configured and deleted by the higher-level engineering tool.

When called via TCl, the tool handles the following functions:

- Diagnostics, identification, parameterization and display of process data of WAGO IO-Link devices
- The output process data can sometimes be written if the WAGO IO-Link master is connected to the fieldbus. Write access is possible when the controller has no connection to the module. This can be helpful in the installation phase in order to test functions at this stage already, even without a PLC. You can find information on the exact function with the corresponding WAGO IO-Link master in the latter’s documentation.
- The master is configured by the calling engineering tool.
- Reading the master’s configuration

The data is passed regardless of whether or not a communication connection exists.

The configuration is read from the master and, if applicable, the information from the TCl is supplemented. However, the data from the TCl call takes precedence. In the event of inconsistency, an error message appears, and the PLC must write the configuration anew with the current data.

The communication with the WAGO IO-Link master is performed over the communication channels provided by the engineering tool (TCl class 3) or its own communication channels (TCl class 2), depending on the case.

The process data is stored in the engineering tool’s project repository, so it is included when the project is archived and unarchived with the engineering tool.

6.5 Configuring and Parameterizing IO-Link Masters in the WAGO I/O System 750

This section describes configuring and parameterizing IO-Link masters and IO-Link devices in the WAGO I/O System 750.

Note

Additional Information

You receive the *WAGO-I/O-CHECK* on a CD-ROM under order ID 759-302. The CD-ROM includes all program files for the application. The documentation for the *WAGO-I/O-CHECK* software is available on the Internet at <http://www.wago.com> under Documentation > WAGO Software 759 > WAGO-I/O-CHECK.

✓ The *WAGO-I/O-CHECK* software is installed.

1. Launch *WAGO-I/O-CHECK*.
2. To open the specific configuration for the IO-Link master, right-click the IO-Link master and select the **Settings** menu item:

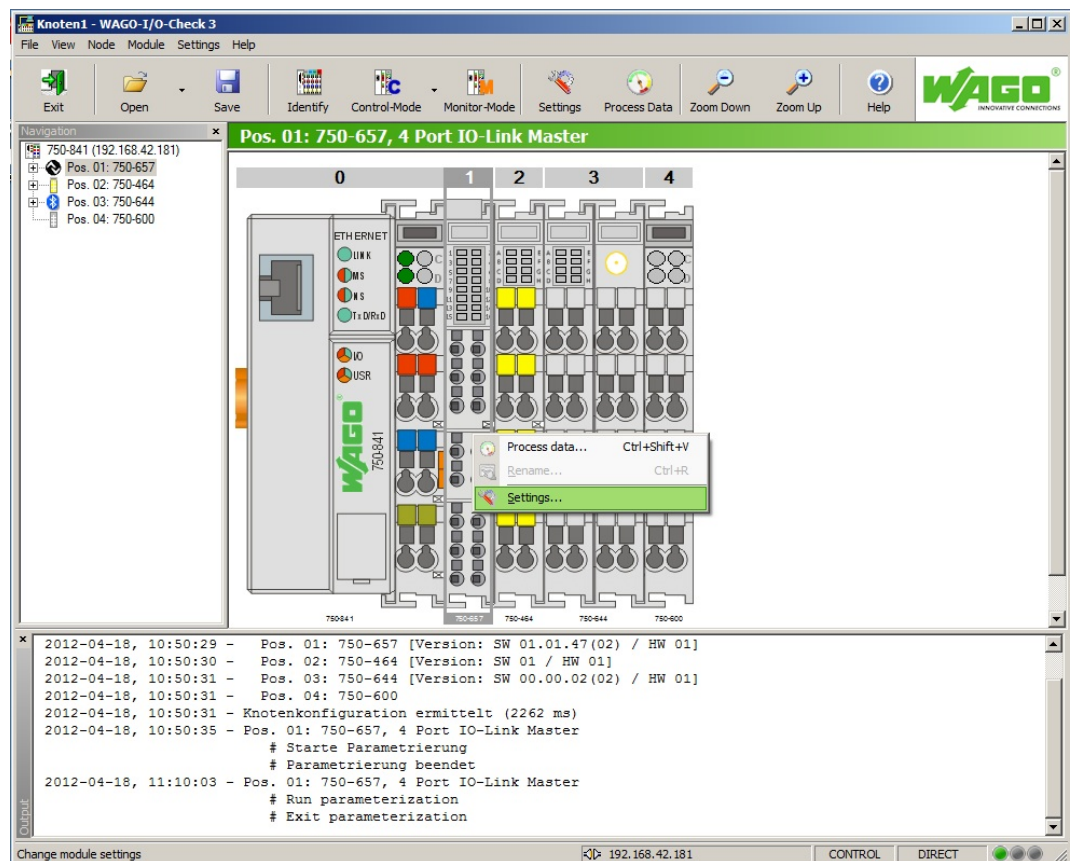


Figure 7: WAGO-I/O-CHECK – User Interface

⇒ The WAGO IO-Link Configurator opens.

6.5.1 IO-Link Plug-in

The parameterization dialog for the IO-Link plug-in for WAGO-I/O-CHECK is divided into the following sections:

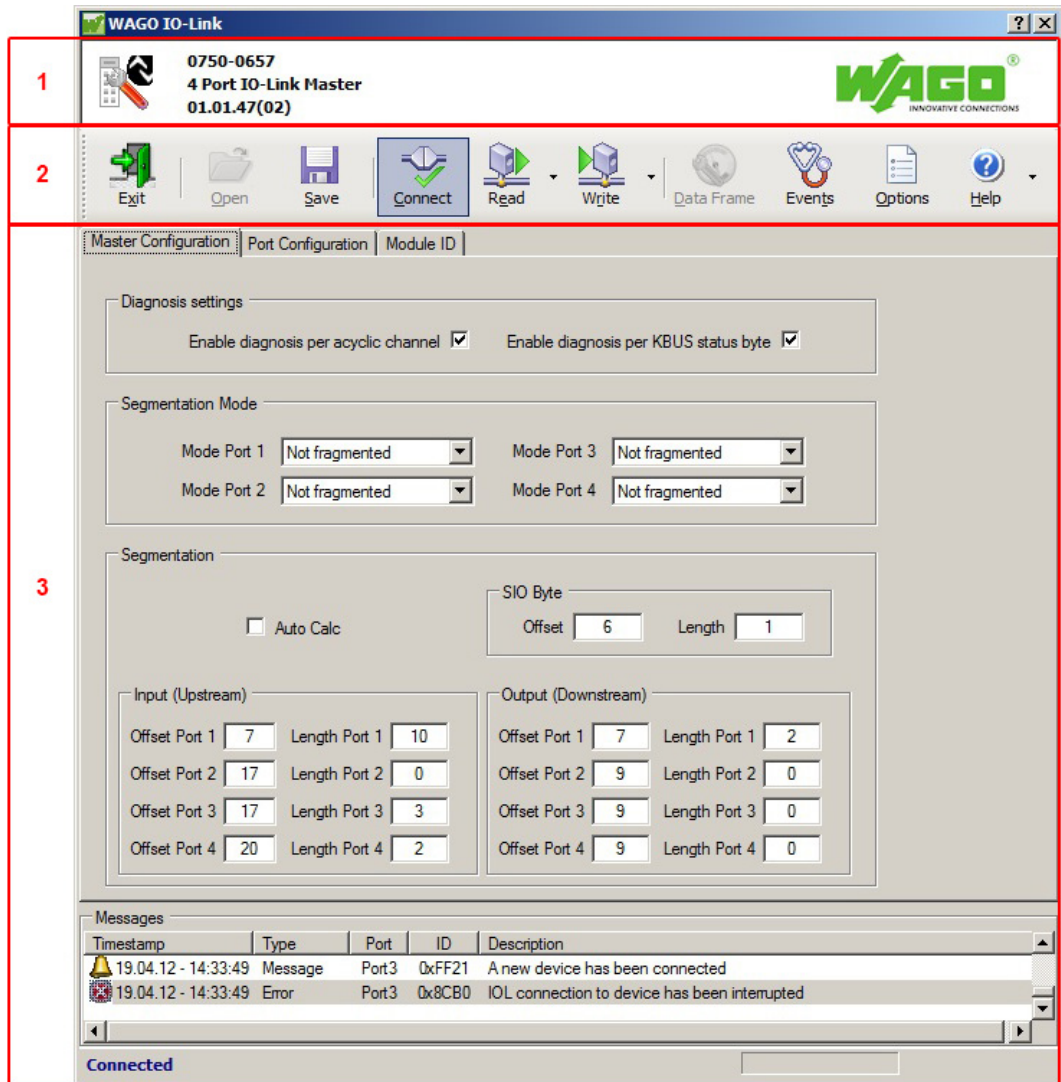


Figure 8: IO-Link Plug-in

1. Title Bar
2. Toolbar
3. “Master Configuration”, “Port Configuration” and “Module ID” tabs (diagnostic and event messages at the bottom)

These areas will be explained in more detail in the following sections.


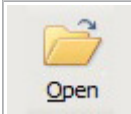


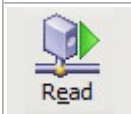




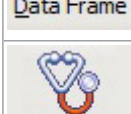
6.5.1.1 Title Bar

The item number, name and version of the IO-Link master are displayed in the title bar of the parameterization dialog.

6.5.1.2 Toolbar

The toolbar in the parameterization dialog of the IO-Link master contains the following buttons:

Table 10: Toolbar buttons

Button	Function	Description
	[Exit]	Closes the parameterization dialog of the IO-Link plug-in.
	[Open]	Opens an existing parameterization file. WAGO-I/O-CHECK displays the default dialog for opening files.
	[Save]	Saves the current parameter in a parameter file. WAGO-I/O-CHECK displays the default dialog for saving files.
	[Connect]	Establishes communication with the IO-Link master.
	[Read]	Reads the current parameters of the displayed page from the IO-Link master and displays them in this window. An additional menu item can be selected in the context menu: Read parameters on current page: Reads parameters on the current page. Read all parameters: Reads parameters from all pages.
	[Write]	Writes the current parameters of the displayed page to the I/O module. Additional menu items are available in the context menu: Write parameters on current page: Saves parameters of the current page in the IO-Link master. Write all parameters: Saves parameters of all pages in the IO-Link master. Load user settings: Loads the user settings. Save as user settings: Saves user settings.
	[PI Size]	Sets the process image size. The mailbox size cannot be changed (see the next section).
	[Events]	Opens diagnostic and event messages (see Events).
	[Options]	Opens a dialog to set actions at application startup and exit (see Options [32]).
	[Help]	Opens the WAGO-I/O-CHECK online help.

6.5.1.2.1 Process Image Size

To set the data width of the local bus, click the **[PI Size]** button. By default, the data width is 24 bytes.

Which local bus data width makes sense depends on the respective application. It should be noted that 4 bytes of the minimum 24 available are already allocated. If you connect IO-Link devices that process more than one bit of process data, then set the data width of the local bus to a value greater than 4 bytes.

The mailbox begins with an offset of 1 (after the control/status byte) in the process image and occupies at least two bytes. The Mailbox size can be set to max. x bytes (see the following formula) for configuring the IO-Link master.

$$x = \text{Data width on the local bus} - (\text{PI size} + 1 \text{ SIO byte} + 1 \text{ control/status byte})$$

The Mailbox size is 2 bytes by default. To increase the Mailbox size during the configuration, enter the new required value manually in the respective "Length" input field or use the arrow keys to select the value.

By entering a higher value in the "Length" field (e.g. 6 bytes), the data throughput is increased and the configuration operations are executed faster.

The bigger the mailbox is, the further the process data moves backwards in the memory image of the local bus of the IO-Link master.

Note

Make sure the offsets are correct in the process image

When increasing the size of the Mailbox, make sure you adjust the position of the SIO byte and the offsets of the process data slots as required. Use the "AutoCalc" function in *WAGO-IO-CHECK* to determine and write the new values to the IOL master.

Note

Reset mailbox size after configuration

If the mailbox size is not reset, mailbox data may be overlaid over important process data. You should therefore reset the mailbox size to the value required for the controller after configuration.

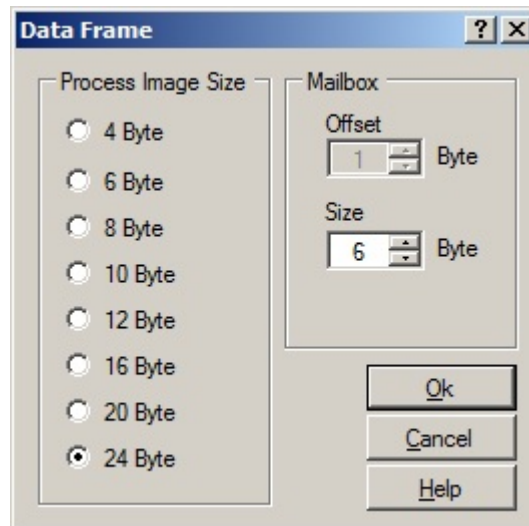


Figure 9: Set Process Image Size Dialog

Table 11: Set Process Image Size Dialog

Option	Description
Process image size	
4, 6, 8, 10, 12, 16, 20 or 24 byte	Setting the Process Image Size
Mailbox	
Offset [bytes]	Offset for the Mailbox start (cannot be changed)
Size [bytes]	Mailbox Size (can be changed)
[OK]	Save the process image size set
[Cancel]	Close window without saving
[Help]	Call up online help

6.5.1.2.2 Options

Click the **[Options]** button to set actions at application startup, exit and timeout.

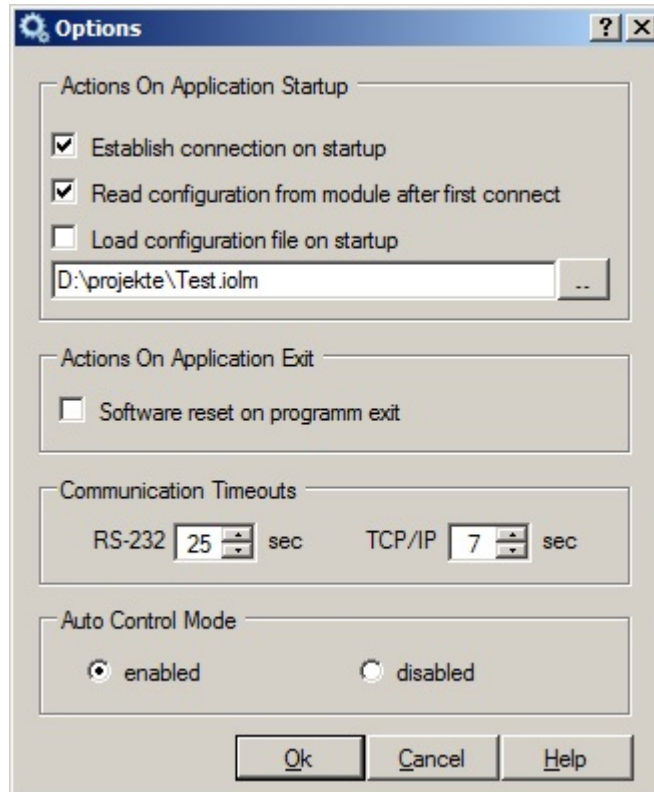


Figure 10: Set Options Dialog

Table 12: Set Options

Option	Description
Actions on Application Startup	
Establish connection on Startup	<input checked="" type="checkbox"/> A connection is established automatically on startup of the configuration dialog.
	<input type="checkbox"/> The connection is established only after clicking the [Connect] button.
Read configuration from module after first connection	<input checked="" type="checkbox"/> Configurations are automatically read and displayed after the first connection. When a new connection is established, the configuration is only read by clicking the [Read] button.
	<input type="checkbox"/> Configurations are only read by clicking the [Read] button.
Load configuration file on Startup	<input checked="" type="checkbox"/> Load an existing configuration file by clicking the [Save] button.
	<input type="checkbox"/> No configuration file is loaded.
Actions at the end of the program	
Software reset on Application Exit	<input checked="" type="checkbox"/> The fieldbus coupler/controller is restarted after closing the parameterization dialog.
	<input type="checkbox"/> No restart after closing the parameterization dialog.
Communication Timeouts	
RS-232 ___ sec	Time during which a response is expected after sending the command via RS-232 interface or TCP/IP before the next command is sent.
TCP/IP ___ sec	
Auto Control Mode	
Write access to the process image is switched on or off via "Auto Control Mode". Depending on the fieldbus coupler/controller used and corresponding firmware, performance can be increased by switching the "Auto Control Mode" off when not needed.	
enabled	<input checked="" type="radio"/> Write access to process image ON

Option	Description
disabled	<input type="radio"/> Write access to process image OFF
[OK]	Save the settings made.
[Cancel]	Close window without saving
[Help]	Call up online help

6.5.1.2.3 Events









Click the **[Events]** button to display Mailbox events and error messages from the IO-Link master. You can switch between “Mailbox Events” and “Diagnostics/Errors” in the two tabs.

The toolbar in the “Events” dialog includes the following buttons:



Figure 11: Toolbar buttons

Table 13: Toolbar buttons

Button	Function	Description
	[Close]	Closes the message window.
	[Update]	Refreshes the list of messages.
	[Show/hide data column]	Shows/hides the “Data” column.
	[Save]	Saves all messages previously logged to a file.
	[First entry]	Switches to the first entry.
	[Last entry]	Switches to the last entry.
	[Delete list]	Clears the current list of messages. (The data is displayed again by clicking [Update].)
	[Help]	Call up online help.

6.5.1.2.3.1 Mailbox-Events

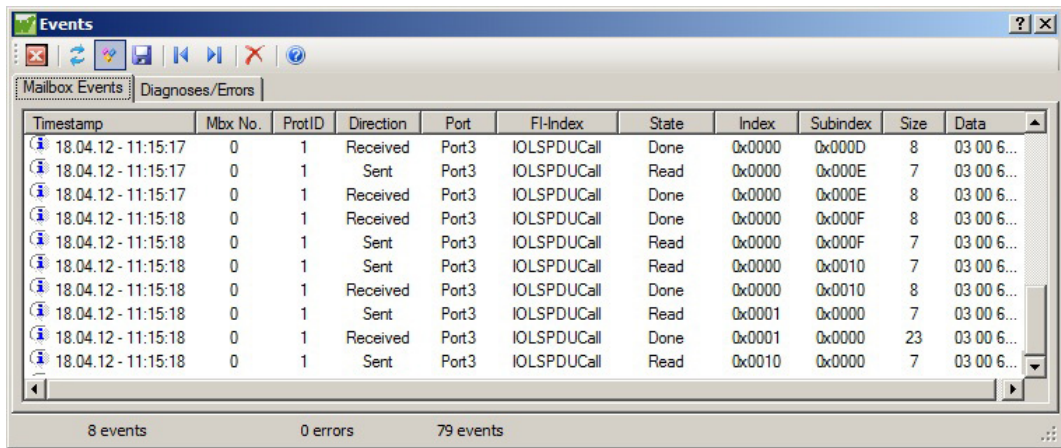


Figure 12: Display of Mailbox Events

Table 14: Display of Mailbox Events

Option	Description
Timestamp	Timestamp of the Mailbox events
Mbx No.	0 Acyclic channel
	1, 2, 3, 4 Fragmentation service
ProtID	Protocol ID
	0 IOL_PD
	1 IOL_CALL
	2 IOL_DIAG
Direction	Data direction: Received or Sent
Port	Master or device
FI Index	Specification of the record to be accessed (see Section "FI_Index")
State	Status: "Init", "Sync", "Ready", "Done"
Index	Index (see Table "Access to Data Areas")
	0x100 IOL-M Basic-Configuration
	0x200 IOL-M Port 1
	0x300 IOL-M Port 2
	0x400 IOL-M Port 3
	0x500 IOL-M Port 4
	0x1000 Command Register
Subindex	IOL subindex (if device event)
Size	Size of the telegram
Data	Display of the telegram data

6.5.1.2.3.2 Diagnostics/Errors

Timestamp	Type	Channel	Mode	Source	Instance	Event Code	Description
18.04.12 - 11:12:35	Error	Port1	Appears	Device	4	0x5115	
18.04.12 - 11:12:35	Error	Port1	Appears	Device	4	0x5114	
18.04.12 - 11:12:35	Error	Port2	Disappears	Master	2	0x8CB0	IOL connection to device has been in...
18.04.12 - 11:12:35	Message	Port1	SingleShot	Master	2	0xFF21	A new device has been connected
18.04.12 - 11:12:35	Error	Port1	Disappears	Master	2	0x8CB0	IOL connection to device has been in...
18.04.12 - 11:12:35	Error	Port4	Disappears	Master	2	0x8CB0	IOL connection to device has been in...
18.04.12 - 11:12:35	Message	Port3	SingleShot	Master	2	0xFF21	A new device has been connected
18.04.12 - 11:12:35	Error	Port3	Disappears	Master	2	0x8CB0	IOL connection to device has been in...

Timestamp	IOLM-Error	IOLD-Error	FI-Index	Port	Description

8 events 0 errors 79 events

Figure 13: Display of diagnostic and error messages

Table 15: Display of Mailbox Events

Option	Description										
Timestamp	Message timestamp										
Type	Message type: "Error", "Warning" or "Message"										
Channel	Master, Port 1, Port 2, Port 3, Port 4										
Mode	Unconfirmed message "Single shot", "Appear", "Disappear"										
Source	Master/Appl or Device										
Instance	Event instance: <table border="1" style="width: 100%;"> <tr> <td>0:</td> <td>Unknown</td> </tr> <tr> <td>1:</td> <td>Physical layer</td> </tr> <tr> <td>2:</td> <td>Data link layer</td> </tr> <tr> <td>3:</td> <td>Application layer</td> </tr> <tr> <td>4:</td> <td>Application</td> </tr> </table>	0:	Unknown	1:	Physical layer	2:	Data link layer	3:	Application layer	4:	Application
0:	Unknown										
1:	Physical layer										
2:	Data link layer										
3:	Application layer										
4:	Application										
Event code	Event code hexadecimal (see table "Event Codes of the IO-Link Masters")										
Description	Description of the diagnostic message or event										
IOLM error	IOL master error code (see Section "Error Messages")										
IOLD error	IOL device error code (see Section "Error Messages")										
FI Index	Specification of the record to be accessed (see Section "FI_Index")										
Port	Master, Port 1, Port 2, Port 3, Port 4										

Diagnostic and error messages are also displayed at the bottom of the window on the configuration pages.

6.5.1.3 “Master Configuration” Tab

The base confirmation of the IO-Link master appears in the “Master Configuration” tab. In addition, fragmentation for the ports can be set.

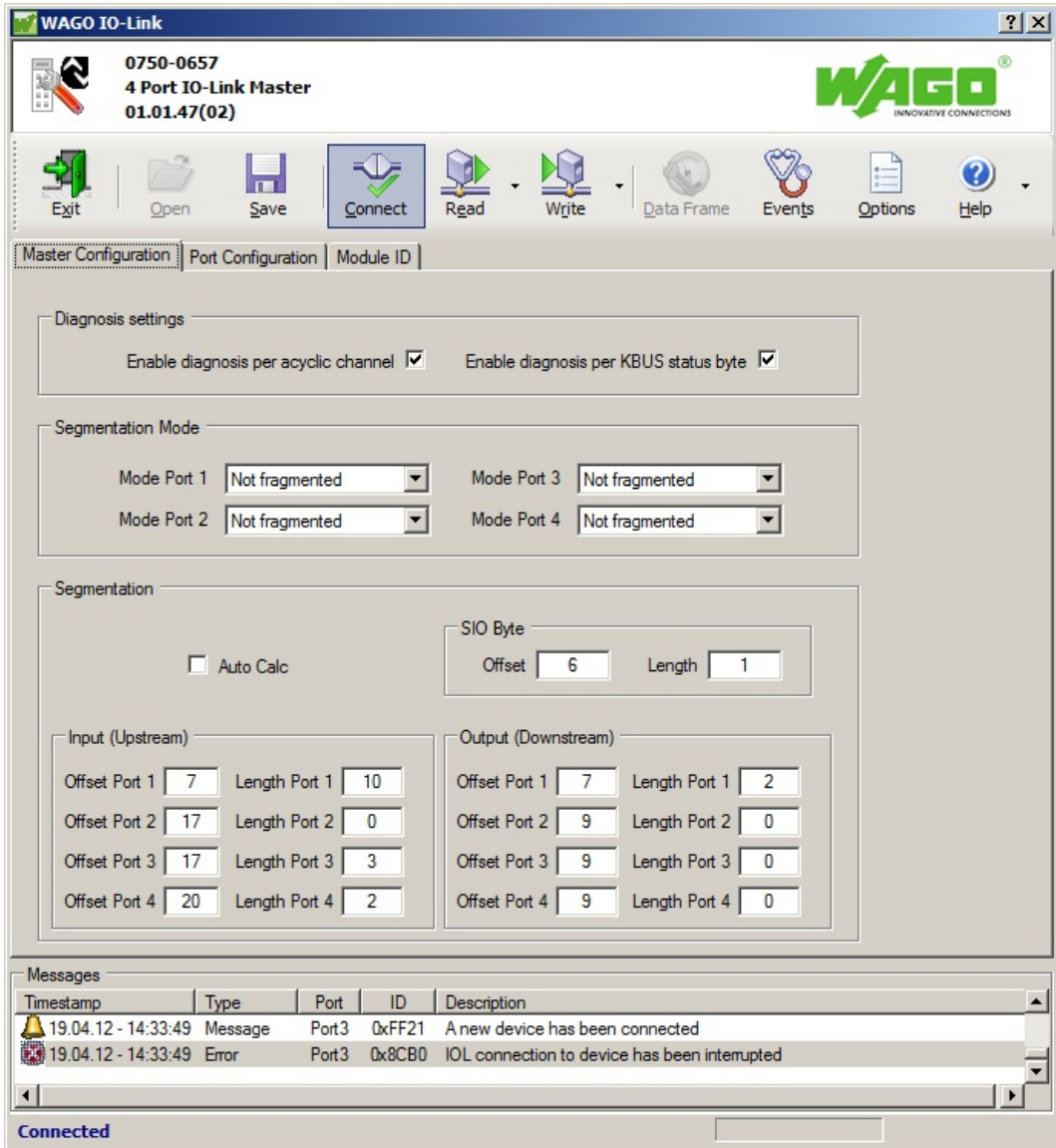


Figure 14: “Master Configuration” Tab

Table 16: “Master Configuration” Tab

Option	Description
Diagnosis Settings	
Enable diagnosis per acyclic channel	<input checked="" type="checkbox"/> Switch on acyclic diagnosis via the Mailbox
	<input type="checkbox"/> Switch off acyclic diagnosis via the Mailbox No diagnosis events of the IO-Link master (Notice: Not those of the attached devices) are sent via the acyclic channel to the control. The diagnostics of the IO-Link master and the individual ports should be considered separately. Note: Do not enable acyclic diagnostics via WAGO-I/O-CHECK if using a PROFIBUS® coupler. The GSD file is used for this purpose.
Enable diagnosis per KBUS status byte	<input checked="" type="checkbox"/> Switch on cyclic diagnosis via the status byte
	<input type="checkbox"/> Switch off cyclic diagnostics via the status byte Error states of the I/O module and the connected devices are no longer displayed in the status byte.

Option	Description
	Note: If diagnostics are switched off, important diagnostic messages from attached devices may no longer be indicated by the status byte.
Segmentation Mode	
Mode Port x	Fragmented: Enable fragmentation of the respective port Not fragmented: Disable fragmentation of the respective port
Auto Calc	<input checked="" type="checkbox"/> Offset in the Input/Output area is automatically calculated (in bytes) from the port lengths entered. That the total process image size is not exceeded is checked. The total process image size is compared to the process image size from the respective IODD (if the port configuration has already been read once). <input type="checkbox"/> Offset in the Input/Output area must be manually entered (in bytes).
SIO Byte	
Offset	Position of the SIO byte in relation to the control/status byte (SIO byte = 1st byte after the mailbox byte)
Length	Position of a port segment in relation to the control/status byte (length of the SIO byte = 1 byte). If "Auto Calc" is enabled, tooltips are displayed when there are entries that do not fit. <ul style="list-style-type: none"> "Length differs from value of selected device (xx Byte)": If the length differs from the value of a selected IODD. "Length has to be 1 byte minimum for fragmentation": If a length of "0" is entered, but the port is set to Fragmentation. "Input/Output configuration (xx byte) exceeds available process data length of yy byte" If the lengths entered exceed the total process image size set. Note: Note when calculating the offset that the SIO byte is after the Mailbox byte.

Data Direction: Controller to I/O Module

Table 17: "Master Configuration" Tab

Option	Description
Output (Downstream)	
Offset Port x	Position of a port segment in relation to the control/status byte
Length Port x	Set the length of a port segment in bytes.

Byte / Offset Content	0	1	2	3	Offset = 4	Offset = 7	Offset = 9	Offset = 14	21	22	23
	Control Byte/Status Byte	Mailbox / Reg. Communication	Mailbox / Reg. Communication	SIO Byte	Segment Port 1	Segment Port 1	Segment Port 1	Segment Port 1	Segment Port 1	Segment Port 1	Segment Port 1
Segment length					Length = 3	Length = 2	Length = 5	Length = 7			

Figure 15: Local process data, example of a segment distribution with a 2-byte Mailbox size

The following rules must be followed during segmentation:

- The smallest value for Offset is 4.

The first four bytes of the local bus process image are already occupied by the status/control byte, at least two mailbox bytes and the SIO byte.

- The segments may no overlap.
Segments can only lie next to each other.
- Offset + port segment length must be within the local bus.

The width of the local bus process image can be configured variably between 4, 6, 8, 10, 12, 16, 20 and 24 bytes.

Data Direction: I/O Module to Controller

Table 18: "Port Configuration" Tab

Option	Description
Input (Upstream)	
Offset Port x	Position of a port segment in relation to the control/status byte
Length Port x	Set the length of a port segment in bytes.

6.5.1.4 “Port Configuration” Tab

The setting options in the “Port Configuration” tab are identical for all ports. The tabs at the top of the window are used to switch between ports 1 to 4.

One IODD (description file standardized by the manufacturer), which contains the available parameters of the IO-Link, can be assigned to each of the 4 ports and each attached IO-Link device.

To display the IODD files under “Port Configuration”, save them in the following directory, depending on the operating system used:

- Path in Windows XP:
C:\Documents and Settings\All Users\Shared Documents\WAGO Software
- Path in Windows 7 (original path):
C:\Users\Public\Documents\WAGO Software
- Path in Windows 7 (German version):
C:\Benutzer\Öffentlich\Öffentliche Dokumente\WAGO Software

Note

Only assign the IODD when the IO-Link master is not connected

If the IO-Link master is connected (**[Connect]** button is active in the toolbar, the IODD cannot be selected. When you disconnect the IO-Link master, the drop-down field for selecting the IODD is enabled.

To read out the respective port configuration, click the **[Read]** button in the toolbar.

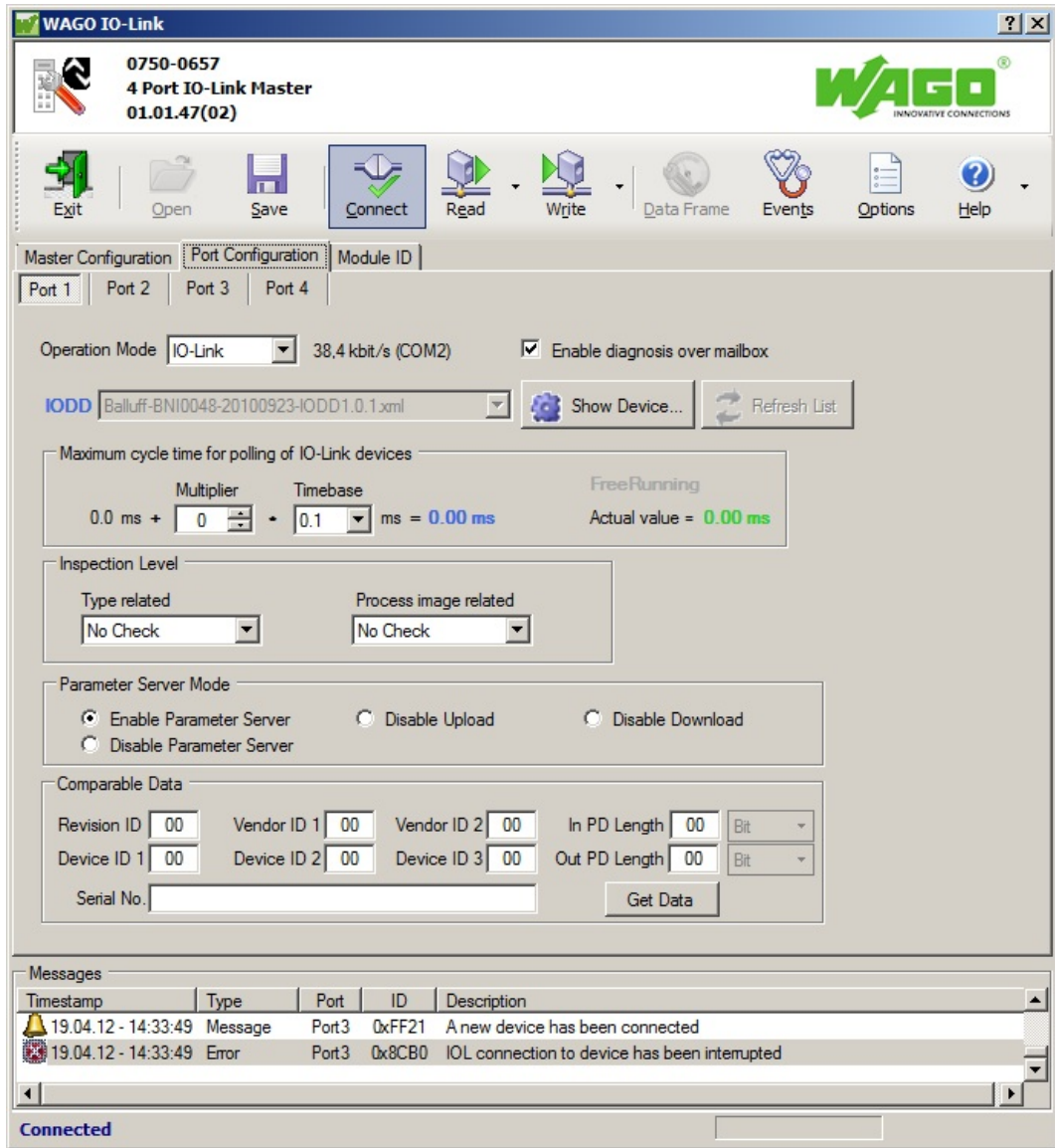


Figure 16: "Port Configuration" Tab

Table 19: "Port Configuration" Tab

Option	Description	
Operation Mode	Select operating mode:	
	IO-Link	Operating mode for connecting an IO-Link-enabled device to a port.
	DI	The port functions as a type 1 input per IEC 61131-2.
	DO	The port behaves as a standard digital output.
	Disabled	The port is disabled and ignored by the internal device software.
Transfer rate	Display of the transfer rate and COM port, e.g. 38.4 kbit/s (COM2)	
Enable diagnosis over Mailbox	<input checked="" type="checkbox"/>	Enable port diagnostics via the Mailbox
	<input type="checkbox"/>	Disable port diagnostics via the Mailbox
IODD	Select the device description file IODD ([Connect] button may not be active).	
[Show Device]	Display IODD of the attached device in the new window (can only be selected with IO-Link-enabled devices), see the following section	
[Refresh List]	Refresh the list if new IODD has been added to the folder.	
Maximum cycle time for polling of IO-Link devices		

Option	Description	
	The master cycle time describes the minimum cycle time, in which the IO-Link master queries the attached IO-Link devices. Set values for the multiplier and the time base. The resulting cycle time appears as the result of the term directly.	
Multiplier	Set the multiplier for the master cycle time ("0" = FreeRunning)	
Timebase	Set time base The master cycle time is calculated based on the set time base.	
	0.1 ms:	$0.0 \text{ ms} + \text{MULTIPLIER} \times \text{TIMEBASE}$
	0.4 ms:	$6.4 \text{ ms} + \text{MULTIPLIER} \times \text{TIMEBASE}$
	1.6 ms:	$32.0 \text{ ms} + \text{MULTIPLIER} \times \text{TIMEBASE}$
Actual value	Displays the current value in milliseconds.	
Inspection Level		
The "Inspection Level" indicates which parameters of an attached IO-Link device have to match those of the current port configuration to be recognized as valid.		
Type related	No Check	Whether the parameters match is not checked. A device is always recognized as valid (for this part).
	Compatible	The following fields of the attached IO-Link device have to match those of the port configuration: Device ID, Vendor ID.
	Identical	The following fields of the attached IO-Link device have to match those of the port configuration: Device ID, Vendor ID and Serial Number. A unique device serial number is required for valid device recognition.
Process image related	No Check	Whether the parameters match is not checked. A device is always recognized as valid (for this part).
	PD Length Strict	The lengths for the process input and output data of an IO-Link device have to match those saved in the I/O module. Otherwise, the device is classified as invalid.
	PD Length Loose	The process data lengths of the IO-Link devices must be equal to or smaller than the buffer size, which provides the I/O-Link master for the IO-Link device.
Parameter server mode	Enable parameter server	Parameter server enabled (data storage)
	Disable parameter server	Parameter server (data storage) disabled
	Disable upload	Prevents parameter upload: The upload request of the IO-Link device is suppressed by the I/O module.
	Disable download	Prevents parameter download: The download request of the control is not sent to the IO-Link device by the I/O module.
Comparable Data		
The data of the devices connected to the ports are only required for the validity check when starting a device for a comparison.		
Revision ID	Version number of the SDCI protocol supported by the IO-Link device	
Vendor ID 1	Manufacturer ID of the attached device (top byte)	
Vendor ID 2	Manufacturer ID of the attached device (bottom byte)	
Device ID 1	Device ID of the attached device (top byte)	
Device ID 2	Device ID of the attached device (middle byte)	
Device ID 3	Device ID of the attached device (bottom byte)	
In PD Length	Size and structure of the process input data of the IO-Link device	
Out PD Length	Size and structure of the process output data of the IO-Link device	
Serial No.	Unique serial number of the attached device	

Option	Description
[Get Data]	Reads the current data of the device attached to the port

Use case of the Upload parameter:

The IOL-D parameters are uploaded to the parameter server (data storage) of the IO-Link master if the device parameters have been changed. This occurs either “remotely” via the bus or “locally” on the device.

Use case of the Download parameter:

When uploading to the IO-Link device, the master checks the identify of the device. (Device ID, Vendor ID, Serial Number). When successful, the parameter server (data storage) synchronizes the parameters:

- For devices without ISDU support, parameters are always downloaded.
- For devices with ISDU support, parameters are only downloaded if the checksums do not equal the parameter sets.

6.5.1.4.1 IO-Link Device Description Interpreter

The IO-Link Device Description Interpreters of the attached devices are displayed in a separate window, which is opened by clicking the **[Show Device]** button. Information from the respective IO-Link Device Description Interpreter of the attached devices appears in this window.

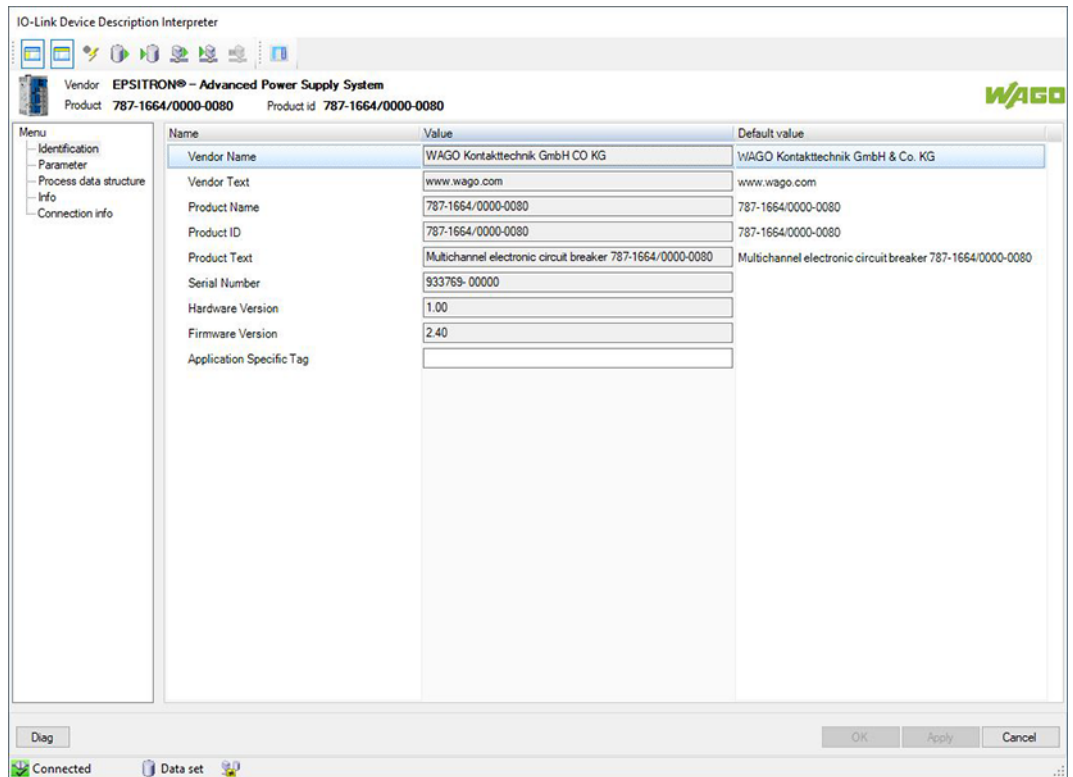


Figure 17: IO-Link Device Description Interpreter

The entries of the displayed menus on the left side and the displayed content are IO-Link Device Description Interpreter-specific and vary by each device.

The buttons above the product image are part of the IO-Link Device Description Interpreter, which is integrated in WAGO-I/O-CHECK. These buttons are identical for each IO-Link Device Description Interpreter displayed:

Table 20: IO-Link Device Description Interpreter Buttons

Button	Description
1	Change visibility of the navigation area, display menu
2	Toggle the visibility of the identification area
3	Switch between displaying the instance record (online, shown in green) and the device record (offline, shown in gray)
4	Load instance record
5	Save instance record
6	Upload device record from the device to the instance record
7	Download instance record to the device record
8	Enable/disable direct mode: All values are saved directly when enabling. When disabling direct mode, the values must be individually saved by clicking button [5] or [7] (only selectable if the device has been switched online by clicking 3).
9	Display minimum/maximum value

6.5.1.5 “Module ID” Tab

Information about the IO-Link master appears in the “Module ID” tab. In addition to reading the I&M0 record, there is read/write access to records I&M1 to I&M4.

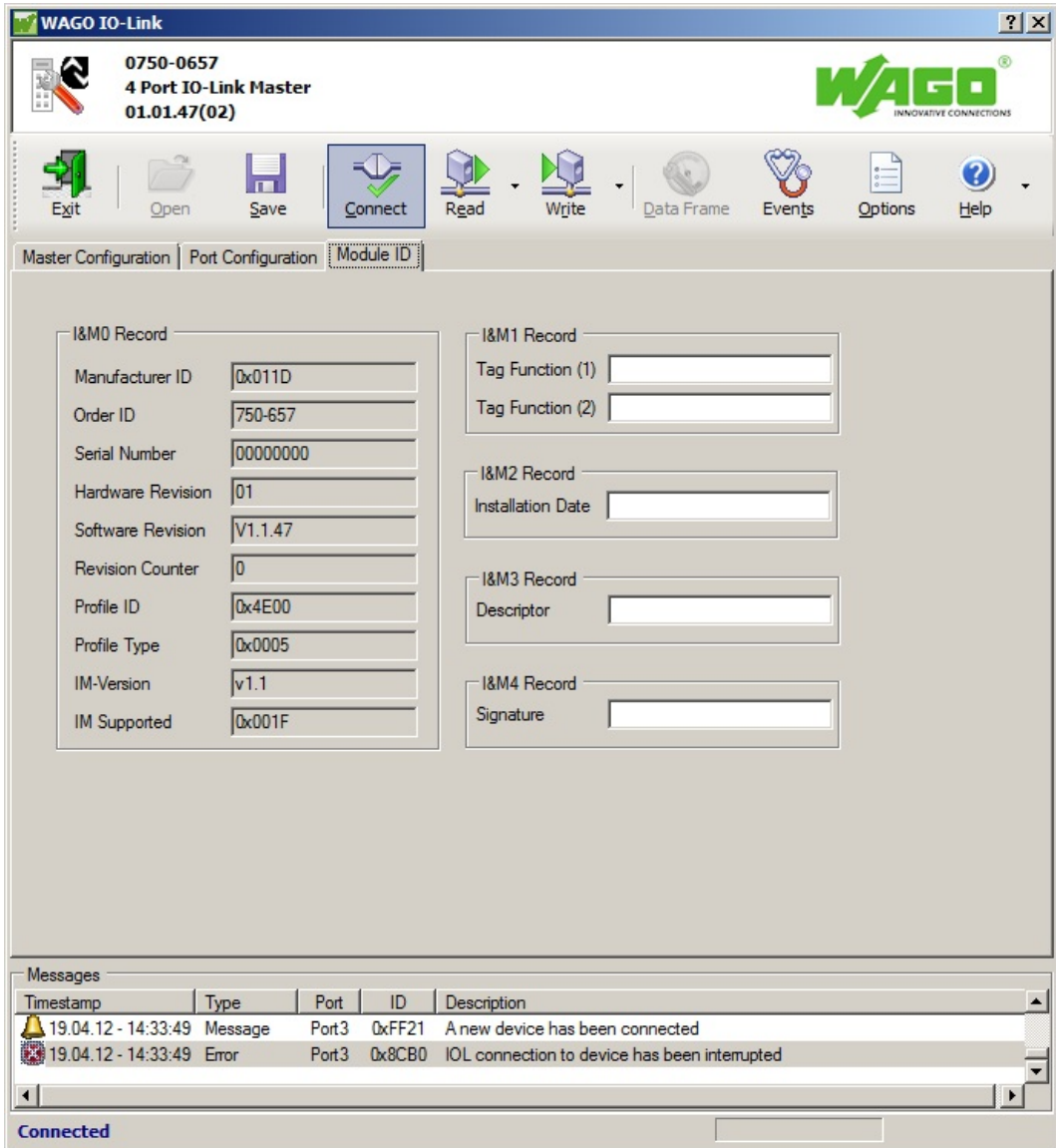


Figure 18: “Module ID” Tab

Table 21: “Module ID” Tab

Option	Description
I&M0 Record	
Manufacturer ID	Unique manufacturer ID
Order ID	Item number
Serial Number	Serial number of the I/O module
Hardware Revision	Hardware version number
Software Revision	Software version number
Revision Counter	Revision counter of the IO-Link master (not currently supported, read query returns 0x0000)
Profile ID	IO-Link
Profile Type	Interface Module
IM-Version	I&M version

Option	Description
IM Supported	I&M supported
I&M1 Record	
Tag Function (1)	Data storage area (ASCII format) for free use (e.g., can be used for device names or location information)
Tag Function (2)	Data storage area (ASCII format) for free use (e.g., can be used for device names or location information)
I&M2 Record	
Installation Date	Data storage area (ASCII format) for free use (e.g., can be used to save the installation date)
I&M3 Record	
Descriptor	Data storage area (ASCII format) for free use (e.g., can be used to save a device description)
I&M4 Record	
Signature	Data storage area (ASCII format) for free use (e.g., can be used to save a device signature)

6.6 Startup with WAGO-I/O-PRO

The WAGO-I/O-PRO library “WagoLib_IO_Link.lib” provides the option to start up the IO-Link master using the corresponding function blocks. In addition to configuring the IO-Link master, communication with attached IO-Link devices is also possible using the parameterization access service “IOL_CALL” (see appendix, Section “Mailbox 2.0 Transmission Method”), in which the IO-Link devices can be configured and parameterized.

IO-Link-specific diagnostic messages can also be displayed. If process data of an IO-Link device is fragmented, the data can be defragmented using function blocks.

Note

Library cannot be used to set the process image size

The WAGO-I/O-PRO library “WagoLib_IO_Link.lib” is not used to set the process image size.

Note

Additional Information

The WAGO-I/O-PRO library “WagoLib_IO_Link.lib” and a detailed description are available on the Internet at  <http://www.wago.de> > Service > Downloads > AUTOMATION > Libraries.

Graphical User Interface

7.1 Start Screen and Login Dialog

If the WAGO IO-Link Configurator software is launched as a stand-alone program or called up via *WAGO-I/O-CHECK*, then the start screen opens.

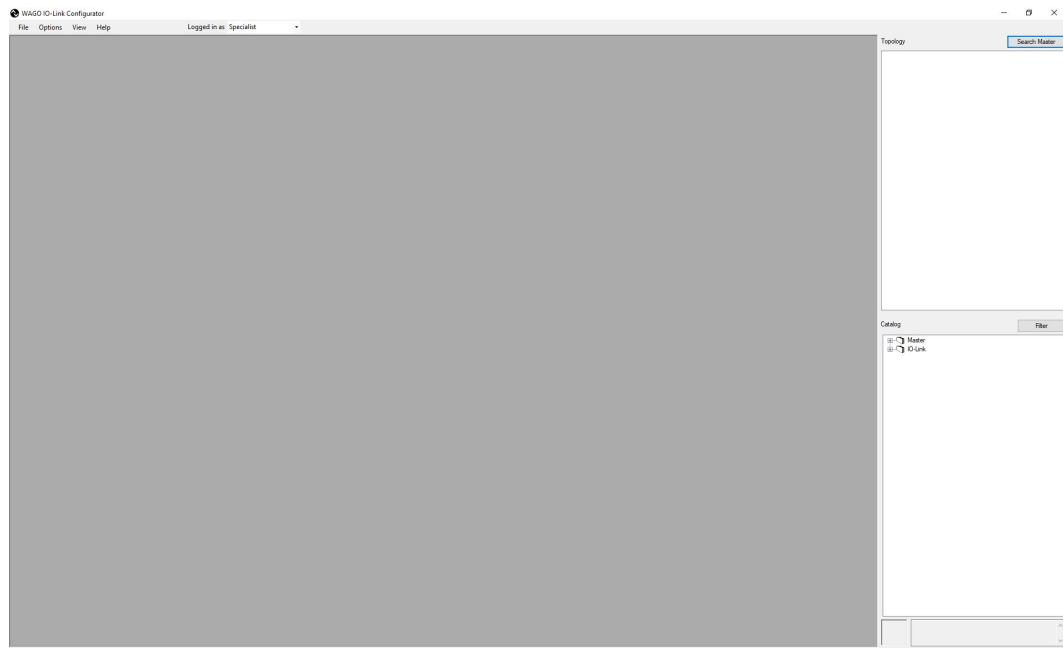


Figure 19: WAGO IO-Link Configurator – Start Screen

A login dialog opens automatically, which allows the user role to be selected that can be secured with a password for each user role. When invoked via TCI specifically, project data is only passed again when called up. To avoid having to repeatedly use the login dialog during startup, e.g., you can switch it off for a specific “password validity” period. The login then occurs automatically with the last user role without a password prompt. This setting is also made under “Tools/Manage Users”.

Under “Tools/Manage Users,” you can specify whether or not the start screen should be suppressed at startup. The start screen can then also be opened via “Help/About” and contains information about the software version.

7.2 User Interface

After logging in, the workspace is displayed, which serves as a frame for the various control panels and windows for configuration and parameterization. The workspace consists of the menu and toolbar, the topology (1), the device catalog (2) and a device configuration window (3). Only the functions relevant to the specific device and operating mode are displayed.

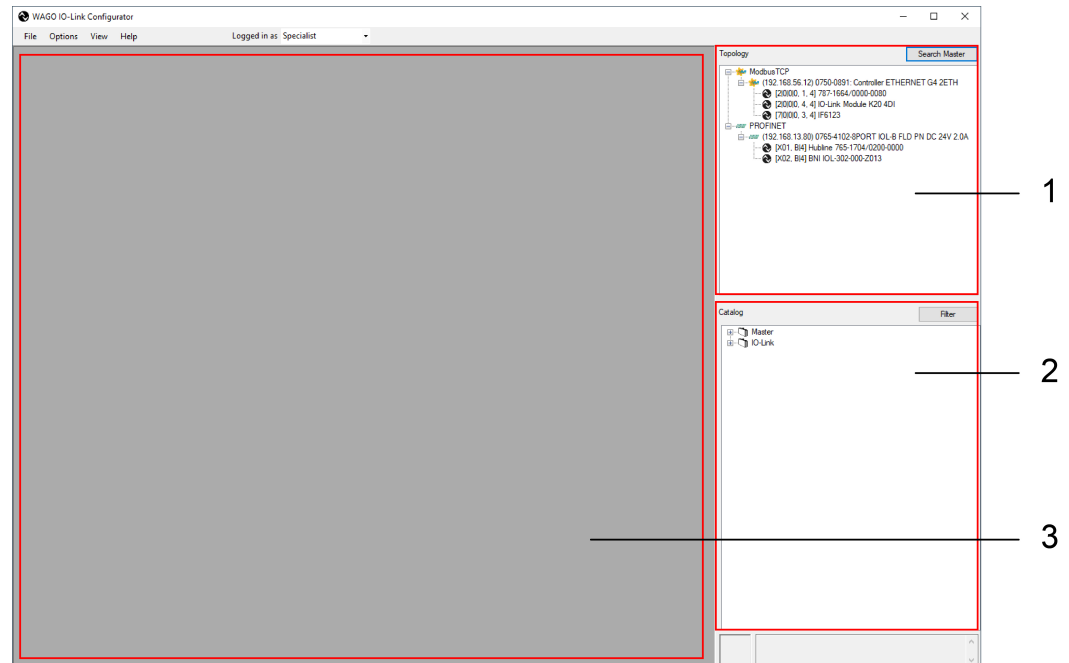


Figure 20: WAGO IO-Link Configurator – Workspace

7.3 Device Catalog

In the device catalog, you find the products supported by the WAGO IO-Link Configurator software. These are the WAGO IO-Link masters and WAGO IO-Link devices as well as the IO-Link devices of the IODDs imported as required from all manufacturers that have a valid IODD. The device catalog contains the products that can be used according to the operating mode. The user can hide and unhide the device catalog if needed.

The login and user roles are stored in the software (PC).

The WAGO IO-Link masters are added when the tool is installed. Additional WAGO IO-Link masters can be installed at any time. The IO-Link masters are arranged according to their communication connection with the higher-level network and the manufacturer.

The IO-Link masters of the WAGO I/O System Field are integrated into the WAGO IO-Link Configurator software through a WAGO-specified device description. The IO-Link masters are arranged by fieldbus standard and, if applicable, manufacturer. Entries can be deleted by right-clicking.

IO-Link devices from all manufacturers can be supported. These are described by the associated IODDs, which must then be imported. The software supports IODDs per according 1.0.1 and 1.1. One IODD can contain multiple variants of an IO-Link device. In the catalog, each variant appears in its own entry, since these are products with different item

numbers for the manufacturer as well. However, all variants are always imported or deleted. The IO-Link devices are arranged by manufacturer, product family and product variant. Entries can be deleted by right-clicking.

7.3.1 IODD Search

The IO-Link community provides its members and IO-Link users with a database of IODDs on the Internet. The WAGO IO-Link Configurator software allows access to this database if the IODD of a connected device is not available on the computer. If “Unknown” appears when searching for the device, then apply it in the project planning. “Import IODD” now appears in the context menu of the corresponding row in the master dialog. You then find the “IODDfinder” button in the import dialog. This searches for the corresponding IODD, which can then be loaded directly into the catalog and enabled.

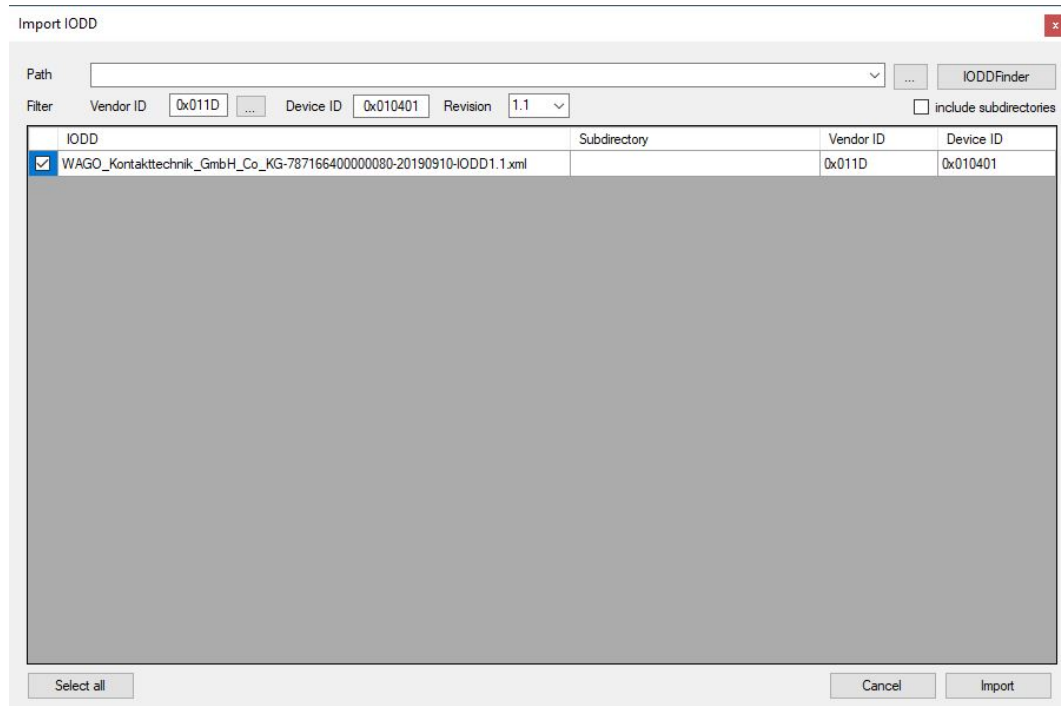


Figure 21: WAGO IO-Link Configurator – IODD Search

i Note

Matching IODD required

The WAGO IO-Link Configurator software searches for the matching IODD for exactly one device type with the vendor ID and device ID. Therefore, the IODDfinder button is grayed out if this information is not available.

7.4 Topology

You can display and manage the topology here with the accessible IO-Link masters and connected IO-Link devices.

When the WAGO IO-Link Configurator software is running as a stand-alone program, you can search for accessible IO-Link masters and then apply them in the topology (online). You can also add IO-Link masters to the topology from the device catalog optionally (offline). The required address information is then assigned later online. The IO-Link masters are arranged in the topology according to the communication connection to the higher-level network.

When operated from an engineering tool (TCI), the topology is passed from the engineering tool to the connected IO-Link device. The structure of the topology starts here with the CPU, followed by its communication threads with the connected IO-Link masters. In this case, only IO-Link devices can be added or deleted in the software. The definition of the higher-level topology is fixed by the engineering tool and cannot be modified here. For changes to the topology made in the engineering tool to also take effect in the software, it is necessary to close and restart it.

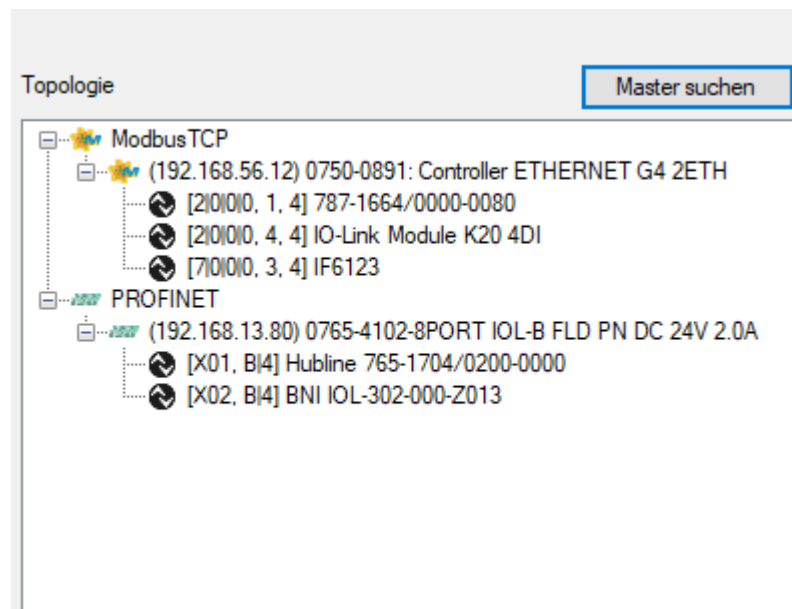


Figure 22: WAGO IO-Link Configurator – Topology

Note

Drag-and-drop function not available for assigned connections

Since the IO-Link devices are assigned to fixed connections of the IO-Link master, they cannot be dragged and dropped into the topology, but must rather be dragged onto the corresponding port of the IO-Link master.

7.5 Device Controls Window

This section shows the master controls, the device control or the project properties control. Only one control is visible and active at a time. The master controls/device control can be viewed by selecting the corresponding product in the topology, and the project properties control by opening it from the menu bar or toolbar.

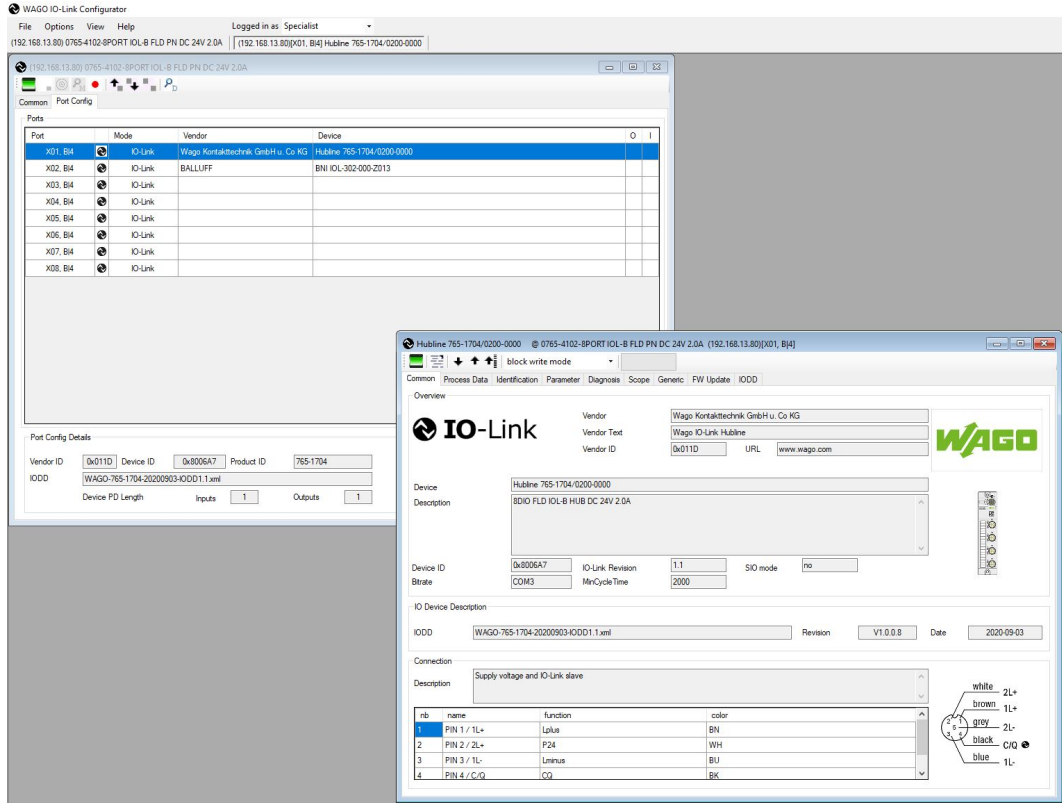


Figure 23: WAGO IO-Link Configurator – Device Controls Window

7.6 Menu Bar and Toolbar

7.6.1 Project Administration

A project consists of a topology with the IO masters and IO devices of the WAGO I/O System Field. For the IO masters, information on their identity and network addressing, as well as the configuration, is saved. For the IO devices, instance data and state information on the parameters and the state of the menu – whether expanded or collapsed – is saved. The data is stored in a project file (XML). In addition, all device descriptions with all associated files are saved, so all required data can be passed on when a project is shared. Therefore, the IO-DDs do not need to be present on the destination computer. They come with the project automatically. All data is stored together in a project directory.

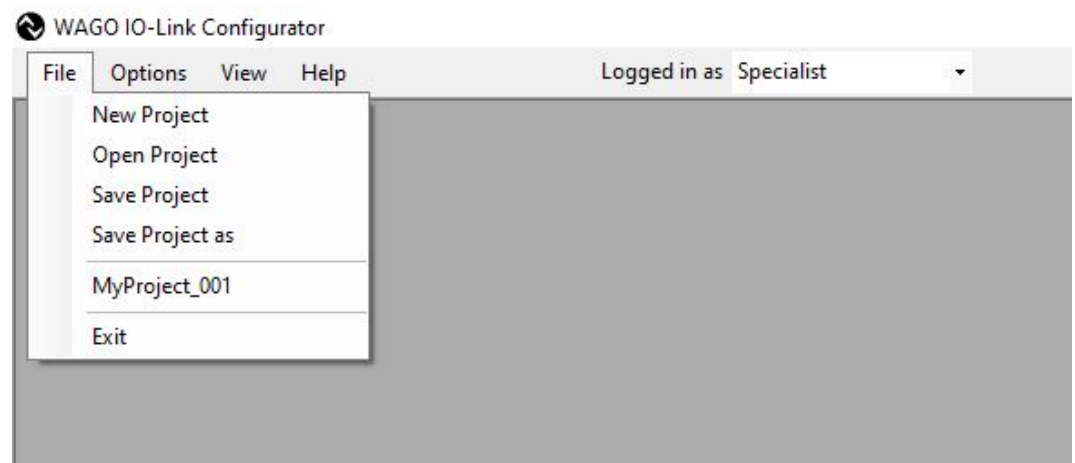


Figure 24: WAGO IO-Link Configurator – Project Management

If the WAGO IO-Link Configurator software is executed as a stand-alone program, the user can select the storage location for the projects. If it is invoked via TCI, the project information is generally stored in a project folder of the engineering tool.

Execution as stand-alone program:

Table 22: Execution as stand-alone Program

Menu	Description
File > New Project	Open an empty project.
File > Open Project	Open an existing project.
File > Save Project	Save project. If the project has been saved, it is automatically saved to the last location. Otherwise, the “Save as” dialog opens.
File > Save Project As	Save the project to a new location. The last storage location with project directories is offered by default.
Recent Project List	Open one of the last projects used.

Execution via TCI:

Table 23: Execution via TCI

Menu	Description
File > New Project	Delete all project content that was added in addition to the information from the engineering tool
File > Save Project	Save project.

7.6.2 Language Selection

Except for the default dialogs, you can switch between English and German for all text in the WAGO IO-Link Configurator software. If the corresponding IODD also contains the selected language, the text is also displayed accordingly. If the IODD does not contain the selected language, English is used as the default setting.

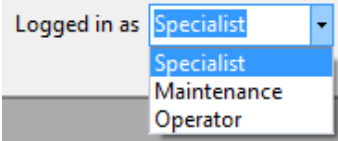
Table 24: Language Selection

Menu	Description
Tools/Language Selection	Switches the language setting. The language setting has no effect on default dialogs. The default dialog language is determined by the operating system settings.

7.6.3 Managing Login and User Roles

When the WAGO IO-Link Configurator software starts, login to the required user role. The IO-Link device descriptions each determine which user can view and modify which parameters. Each user role can be password-protected. Only as a specialist can you modify the settings for the user roles.

Table 25: Managing Login and User Roles

Menu	Icon	Description
Logged in as		Switches the user role. If a password is set for the user role, it must be entered.
Options > User Management		Opens the "Manage User Roles" dialog (only available as a specialist).

User Roles

Table 26: User Roles

User Role	Description
Operator (Operator)	The user sees the "Operator" selection of parameters. Write access is usually not allowed. This is specified in the device description by the device manufacturer and may differ for different devices. The operator cannot change passwords or their validity periods. No password is preset in the WAGO IO-Link Configurator software for the user role "Operator".
Maintenance	The user sees the "Maintenance" selection of parameters. Write access is usually restricted. This is specified in the device description by the device manufacturer and may differ for different devices. The user role "Maintenance" cannot change passwords or their validity periods. The preset password is "maintain".
Specialist	The user sees the "Specialist" selection of parameters. Write access is usually unrestricted. This is specified in the device description by the device manufacturer and may differ for different devices. The specialist can change passwords and their validity periods for all user roles. The preset password is "special".

“User Role Management” Dialog

This dialog is only available for the “Specialist” user role. You can assign passwords for the user roles and set the behavior when the tool is called up.

You can enter a password validity period to avoid having to constantly reenter the password during startup, for example. For the duration of the password validity period, you are no longer prompted to enter the password after the first successful login. This is especially helpful for operation via TCI. The start screen can also be suppressed.

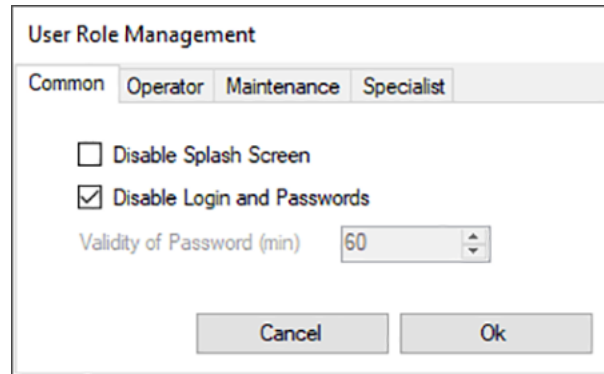


Figure 25: WAGO IO-Link Configurator – “User Role Management” Dialog

Suppressing the start screen:

- The start screen no longer appears at startup. However, it can be accessed via “Help/About”.

Suppressing the login and password prompt:

- This function switches the login and passwords off for all user roles.

Password validity (min):

- This function is only available if “Login and Password Prompt” is not suppressed. After successful login to a user role, the product starts the selected time without a login dialog. The user wants can switch roles using the toolbar or menu. This requires entering the corresponding password.

7.6.4 Importing an IODD Device Description

Device descriptions can be imported into the WAGO IO-Link Configurator software from any storage location. The device descriptions must be checked by a valid checker and tagged. When imported, the validity of the IODD XML files is checked on the basis of the “Stamp” tag. All referenced graphics files must also be present. The files are only imported if they are complete and correct.

The WAGO IO-Link Configurator software supports:

- IODD V1.0.1 for IO-Link devices per IO-Link V1.0
- IODD V1.1 for IO-Link devices per IO-Link V1.1
- Use of IODD V1.0 is no longer allowed and no longer supported.

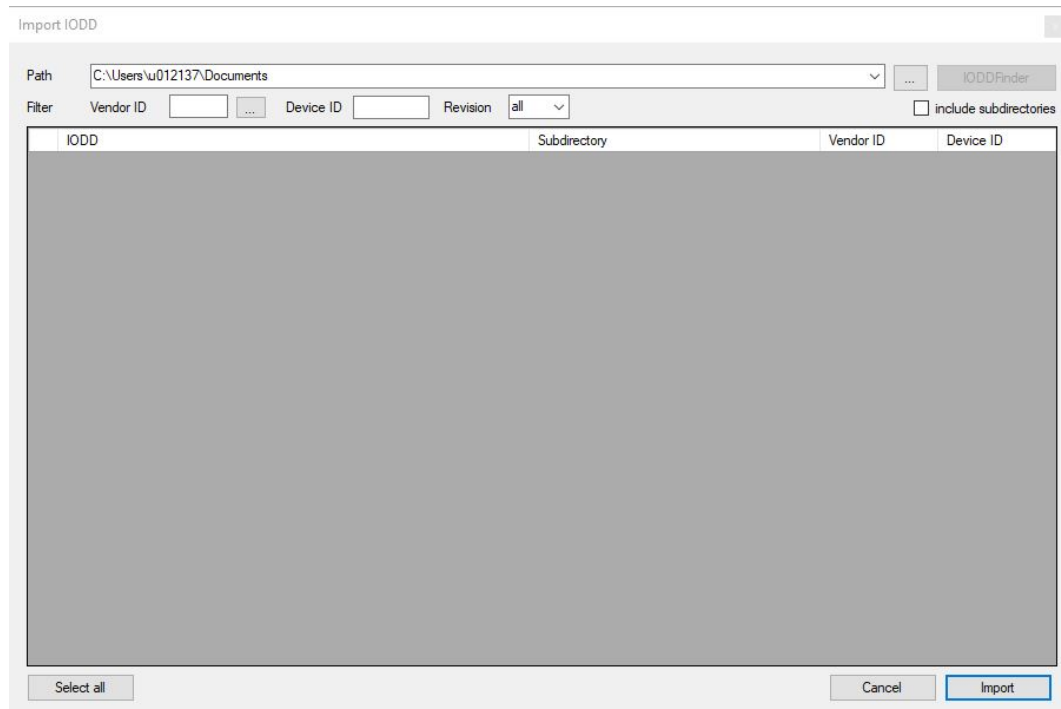


Figure 26: WAGO IO-Link Configurator – Import an IODD Device Description

Table 27: WAGO IO-Link Configurator – Import an IODD Device Description

Menu	Description
Tools/Import IODD	Opens the “Import IODD” dialog.

i Note

Include files in the software exclusively via the import function

The WAGO IO-Link Configurator software uses a hidden directory as the storage location for the imported IODDs and IOLMs. The IODDs and IOLMs are copied to this directory when imported. This is an internal working directory of software, similar to a database.

Do not copy any files to the IO-Link directory yourself. Always use the import function or right-click to delete. This is necessary in order to ensure data consistency. If you would like to create a collection of IODDs you use independent of the software, store them in working directory of your choice. You can then import the IODDs into the software from there.

Importing IODDs with Different Versions

If updated IODDs are imported with a new date in the file name, the previous versions are retained. When new WAGO IO-Link devices are added to the project (topology), the current IODD is always used. Older versions can only be read in by reading in projects.

To compare an old IODD with a current IODD, e.g., in order to compare old functions with new functions, delete the current IODD from the device catalog and then import the old IODD.

For devices that have already been added, the version current at this time applies. When projects are saved, all associated IODDs are also saved. When they are opened, the later are installed if they are not in the database.

Importing a Newer IODD with the Same Date in the File Name

The device developer must ensure that different IODDs (for one device) with the same date are not circulated. Except during the development phase of WAGO IO-Link devices, this is generally not permitted.

To allow this in the development phase, the imported IODD replaces the previously existing IODD. In this case, since the consistency of the saved data is no longer guaranteed, the tool discards it. A corresponding error message appears.

To import IOLMs that support call-up via TCI, the WAGO IO-Link Configurator software must first be started with administrator permissions.

For more information, please see [🔗 IODD Search \[▶ 48\]](#).

Note

Matching IODD required

The WAGO IO-Link Configurator software searches for the matching IODD for exactly one device type with the vendor ID and device ID. Therefore, the **[IODDfinder]** button is grayed out if this information is not available.

Show Logbook

A series of diagnostic outputs are written to a log file to aid in support requests. The content can be viewed in the log window.

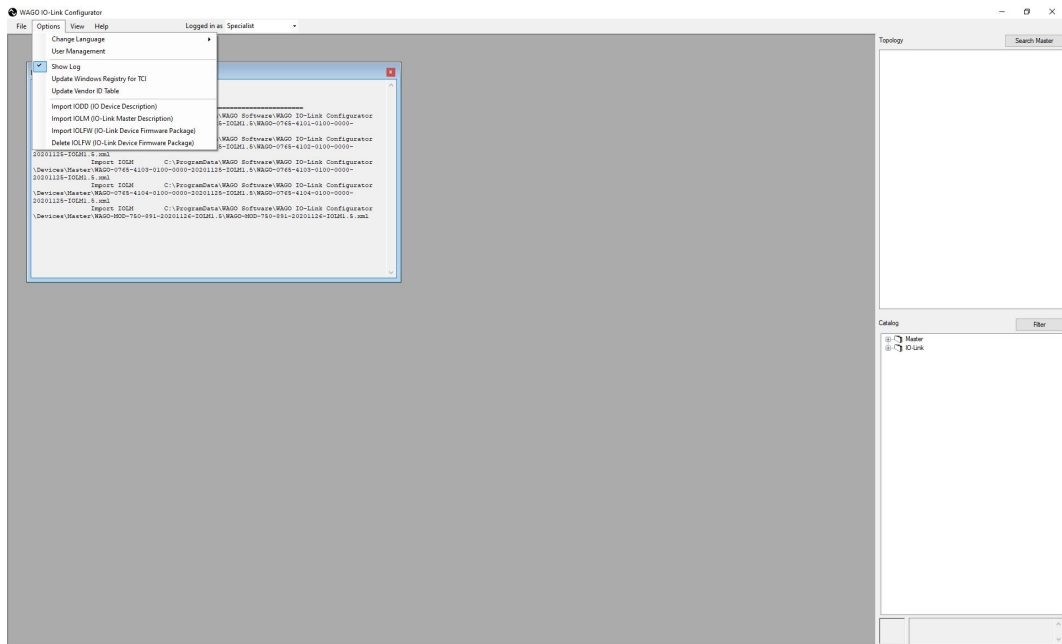


Figure 27: WAGO IO-Link Configurator – Log Window

The display can be switched on and off under “Tools”. Double-clicking in the Log window enlarges the window to the area of the user interface.

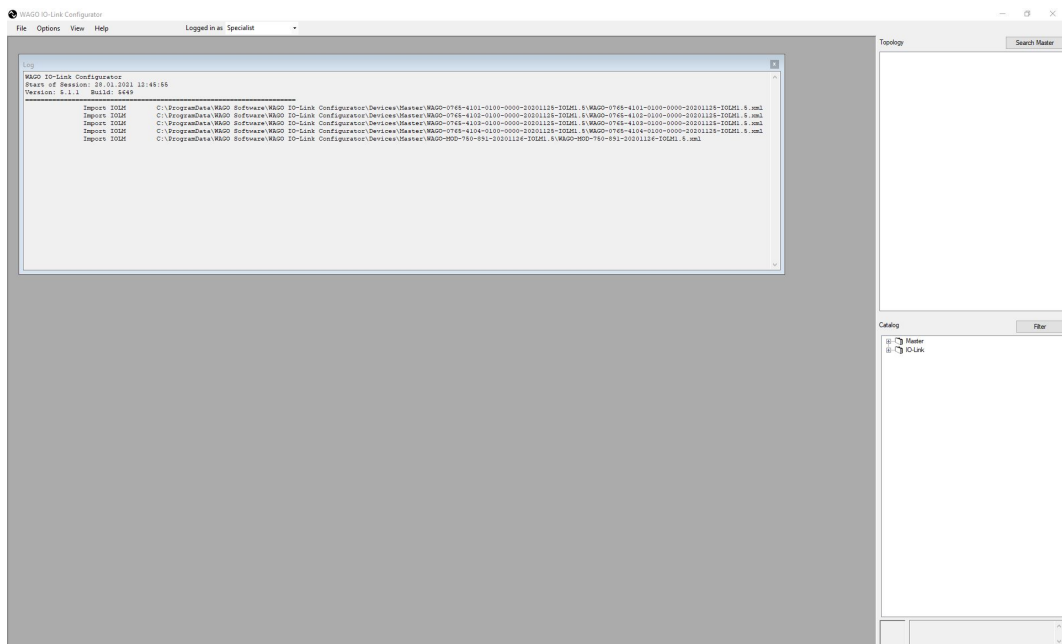


Figure 28: WAGO IO-Link Configurator – Log File

Right-clicking opens the context menu.

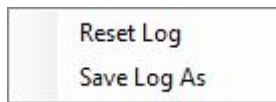


Figure 29: WAGO IO-Link Configurator – Log File Context Menu

- **Delete Output**
Deletes the content of the output window. However, data continues to be written to the log file.
- **Reset Log File**

Deletes the content of the output window and log file

- Save Logfile As

Saves the log file under a path of your choosing. Send this file to WAGO Support along with support requests.

TCI Call

You can specify whether only the IO-Link master selected in the engineering tool, the network line with the selected IO-Link masters or all network lines are displayed. Only the selected IO-Link master is displayed by default. This corresponds to the basic operating philosophy of the engineering tool. The user can launch the tool associated with this IO-Link master. However, for experts, it may be easier to get access to all IO-Link masters with one call.

This is just a display setting. The project always contains all passed IO-Link masters of the WAGO I/O System Field. Although the display is reduced, no data is lost.

Table 28: TCI Call

Menu	Description
Tools/TCI Call/ Only Selected Device	After the call from the engineering tool, only the WAGO IO-Link master from which the call was made from the engineering tool is displayed.
Tools/TCI Call/ Only Selected Subsystem	After the call from the engineering tool, only the subsystem (network line) and the accessible WAGO IO-Link masters connected to it from which the call was made from the engineering tool are displayed. The WAGO IO-Link master selected in the engineering tool is also selected in the topology of the software.
Tools/TCI Call/ All Subsystems	After the call from the engineering tool, all subsystems (network lines) are displayed with the accessible WAGO IO-Link masters connected to them. The WAGO IO-Link master selected in the engineering tool is also selected in the topology of the software.

7.7 IO-Link Master Control

The control described here is only used for modular IO-Link masters.

For this control, the information is divided into three tabs:

- General
 - Identification data from the master device description (IOLM)
 - Identification data of the specific master

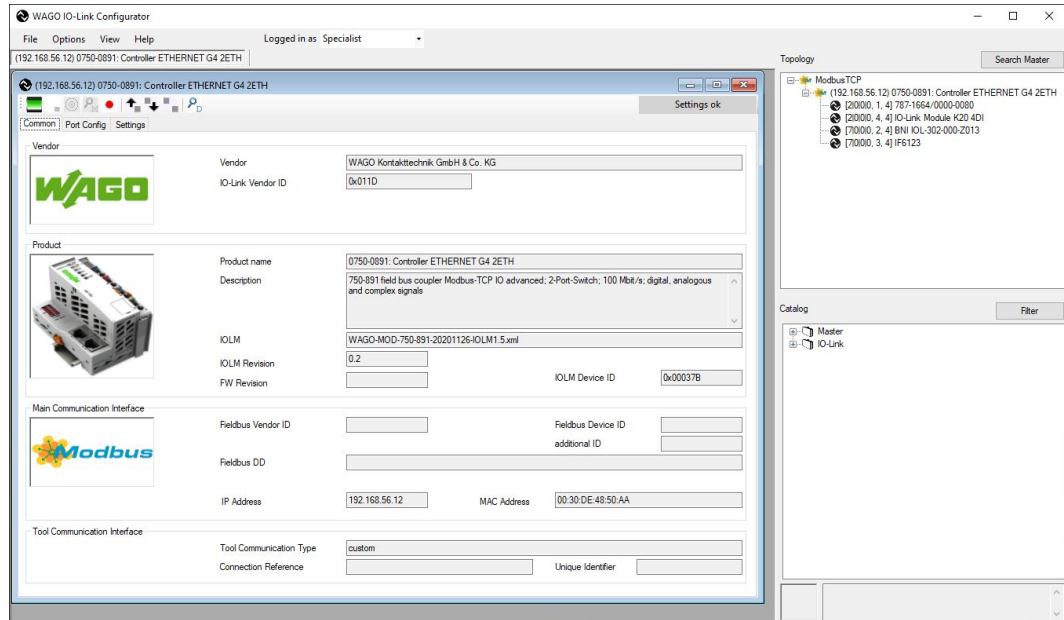


Figure 30: IO-Link Master Control – “Common” Tab

- Port Config
 - List of connections with IO-Link standard port configuration. The implementation follows the standard master interface (SMI, IO-Link interface-specification V1.1.3).

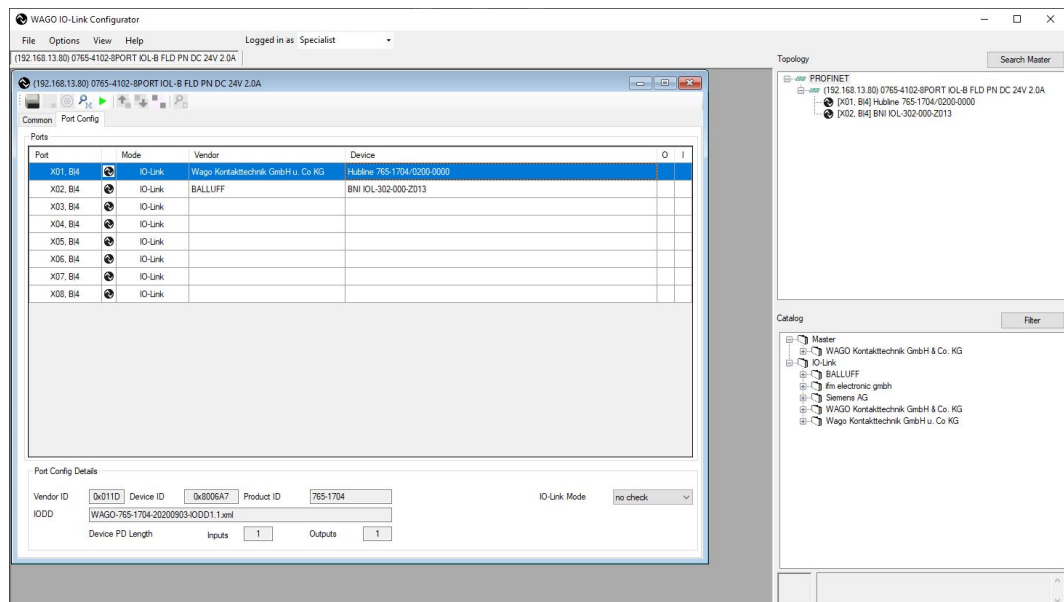


Figure 31: IO-Link Master Control – “Port Config” Tab

- Settings

This tab only appears if the IO-Link requires additional parameterization or parameterization differing from the default. There is a plug-in interface for manufacturer-specific dialogs for this purpose. For IO-Link masters that need this, or even need a special communication driver, the device description is imported in a package (ZIP) consisting of the IOLM device description, master GUI and communication drivers.

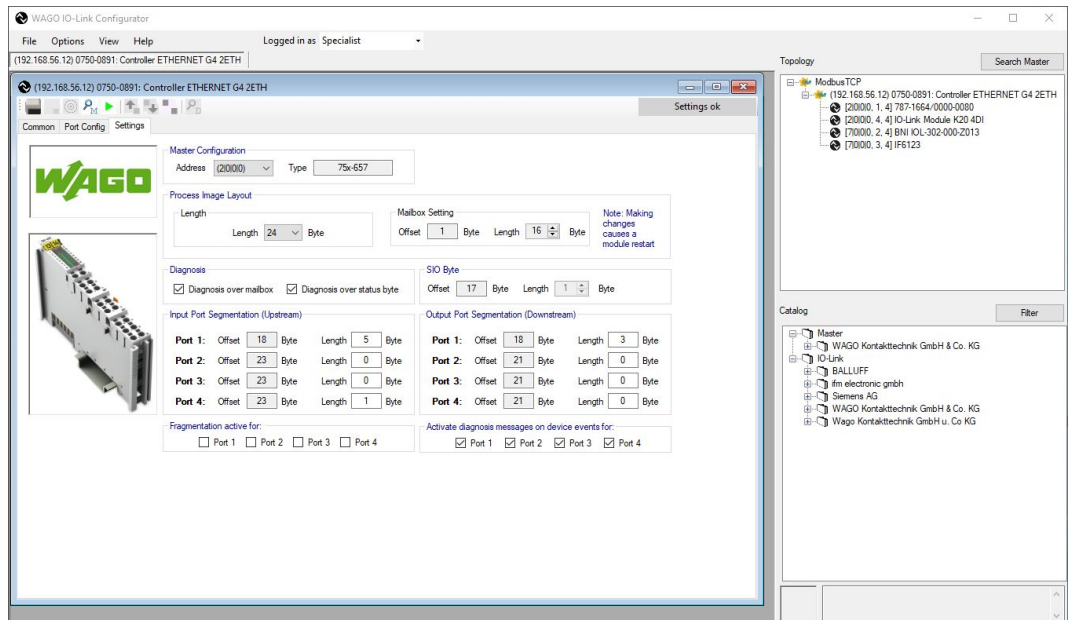


Figure 32: IO-Link Master Control – “Settings” Tab

The top third of the IO-Link master control contains information on the WAGO IO-Link master (identification section). The table in the middle shows all the available IO-Link ports and their configuration. Below that there are buttons for searching for connected IO-Link devices and transferring the WAGO IO-Link master’s data storage data.

The lower section shows detailed information on the port selected in the table.

7.7.1 Searching for IO-Link Masters

There are several options for searching for IO-Link masters and applying them to the project. With integrated execution via TCI, these functions are disabled, since the configuration is performed with the PLC engineering software.

In the topology:

- Right-click in an empty area
- ⇒ A search is performed for all IO-Link masters.
- Right-click fieldbus or ETHERNET icon
- ⇒ A search is performed for only IO-Link masters with the corresponding communication interface.

[Search Master] button:

If the master was selected from the device catalog and added to the topology, you can search for the exact configured IO-Link master with this button.

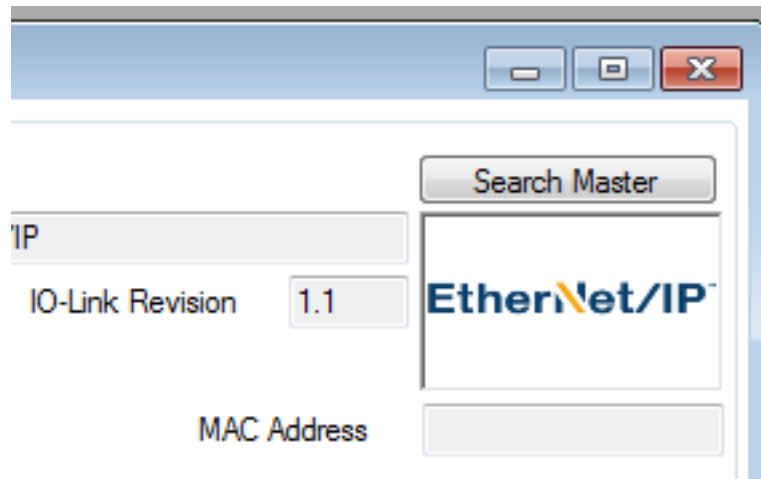


Figure 33: IO-Link-Master-Control – [Search Master] Button

A list appears of the IO-Link masters of the WAGO I/O System Field that were found. Double-clicking the IO-Link master you want to add adds it. Right-clicking makes additional functions available, such as modifying network settings and flashing.

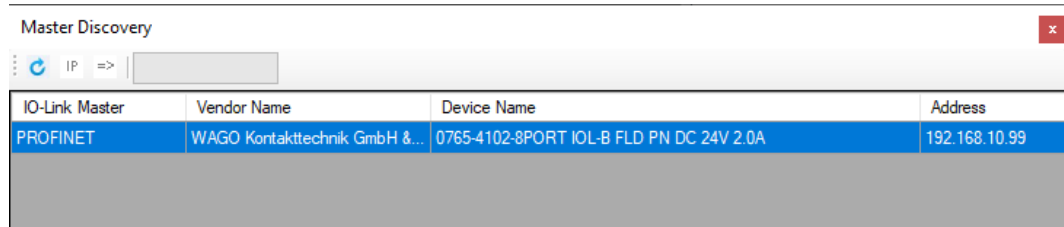


Figure 34: IO-Link Master Control – Results List

Once the IO-Link master has been added, the “Flashing” function can be used to identify the IO-Link master.

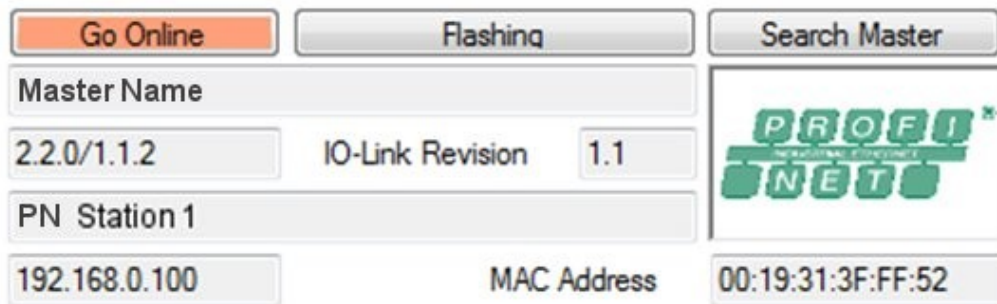


Figure 35: IO-Link-Master-Control – [Flash] Button

7.7.2 Online / Offline, Setting Port Mode

Online establishes the link to the IO-Link master. When the connection is established, the WAGO IO-Link Configurator software checks whether the configuration can be modified and whether the configuration in the project planning (software) matches that in the IO-Link master.

The configuration can only be modified offline and then transferred to the IO-Link master.

The parameters in the IO-Link devices can be modified both online and offline. This makes it possible to prepare the parameterization of entire application without the products (offline).

7.7.3 Searching for IO-Link Devices

This can only be performed online. If connections are configured as IO-Link, a search can be performed for connected products. If the IODD for these products is found in the WAGO IO-Link Configurator software database, the corresponding IODD opens. Otherwise, only data that can be displayed even without the IODD is displayed.

“IL” Column = Inspection Level, Validation

n = none, disabled

c = compatible

l = identical

Engineering and Rev Columns = Port Configuration

IO-Link Master Column= Device Currently Connected

Green = identical to the device according to the project planning

Yellow = can be added into the project planning:

- If the validation is disabled
- If the port configuration shows “unknown device” and the IODD has since been imported

Red = incorrect device

7.7.4 Transferring Data Storage Data

For replacement of defective IO-Link devices, the parameters are saved in the IO-Link master. The data storage data can be saved in the product so IO-Link masters can also be replaced without re-parameterization. This function allows IO-Link masters to be copied (cloned) as well.

“Master to Project” transfers all available data storage data to the project database.

“Project to Master” transfers all available data storage data from the project database to the master.

These functions are for data exchange between the WAGO IO-Link Configurator software and the IO-Link master. The commands under “Port Configuration Details” are for data exchange between the IO-Link master and IO-Link device.

7.7.5 Port Configuration Details

You can view the details of the ports selected in the list or adjust them. In online mode, some commands are available for controlling the data storage function manually. With operation via TCI, the configuration can only be viewed, not modified.

Validation/Inspection Level

You can select which IO-Link device to accept for the port:

Inspection Level = none

All IO-Link devices are accepted. This setting is used especially during commissioning.

Inspection Level = compatible

The Vendor ID and Device ID are checked.

Inspection Level = identical

The serial number is also checked. This ensures that IO-Link devices can only be replaced by authorized personnel. To allow this, it is necessary to revert the inspection level to at least “compatible,” enter the new serial number and then reset the inspection level to “identical”.

Data Storage/Data Storage Mode

This function is only available for IO-Link devices of IO-Link versions V1.1 and higher. You can select from the following operating modes:

- **Disabled**
No parameter server function
- **Auto**
Changes to the parameterization in the device are automatically applied to the parameter server.
- **Download**
The data in the parameter server (master) takes precedence. If a device is replaced, its parameters are set from the parameter server.
This setting is selected if an application is “withdrawn” and modifications should be prohibited. In this mode, no changes can be made with the tool. They are overwritten immediately by the data storage mechanism.
- **Upload**
The data in the device takes precedence and is applied to the parameter server. This setting can be used if the devices are pre-parameterized and the data is to be applied to the master. Furthermore, this also allows a master to be replaced if all devices have already been parameterized and their data is to be applied to the master.

Data Storage Commands

The parameterization can also be exchanged manually between the data storage and IO-Link device. The following commands are available: **Clear**, **Upload** and **Download**.

Process Data Configuration

You can view/modify the process data width setting for the PLC. “Configured Length” shows the process data width for the PLC, “Device Length” the number of input or output bytes of the IO-Link device. A color change indicates that too little of the process image is configured for the PLC.

7.8 IO-Link Master Control, Block Modular

This control is used for block-modular IO-Link masters, especially if they are modular or require special settings beyond the normal port configuration.

For this control, the information is divided into two tabs:

- Common
 - Identification data from the master device description (IOLM)
 - Identification data of the specific master

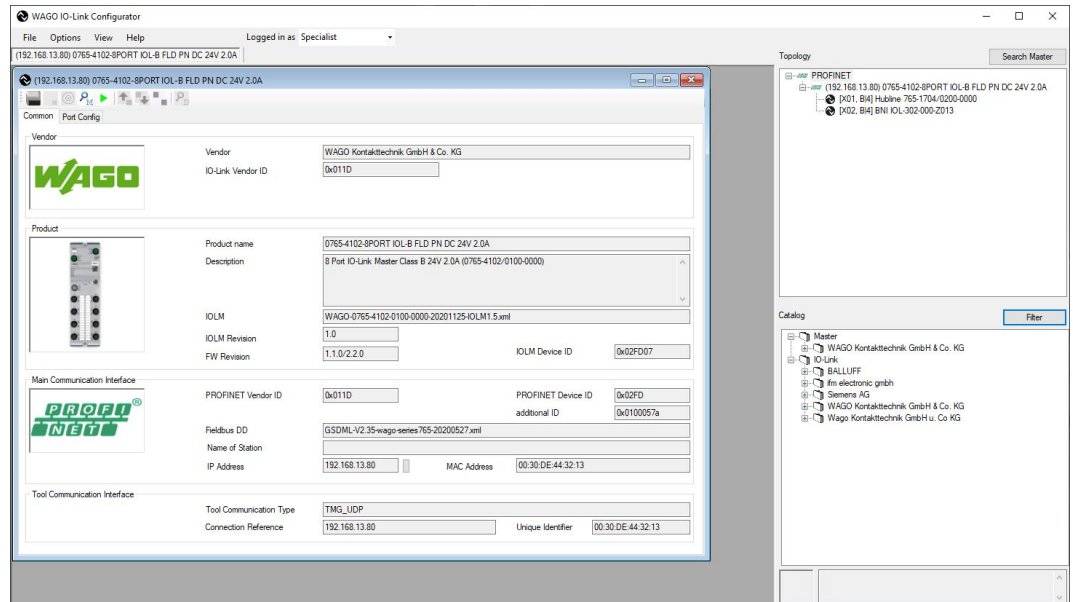


Figure 36: IO-Link Master Control, Block Modular – “Common” Tab

- Port Config
 - List of connections with IO-Link standard port configuration; implementation follows the standard master interface (SMI, IO-Link interface specification V1.1.3).

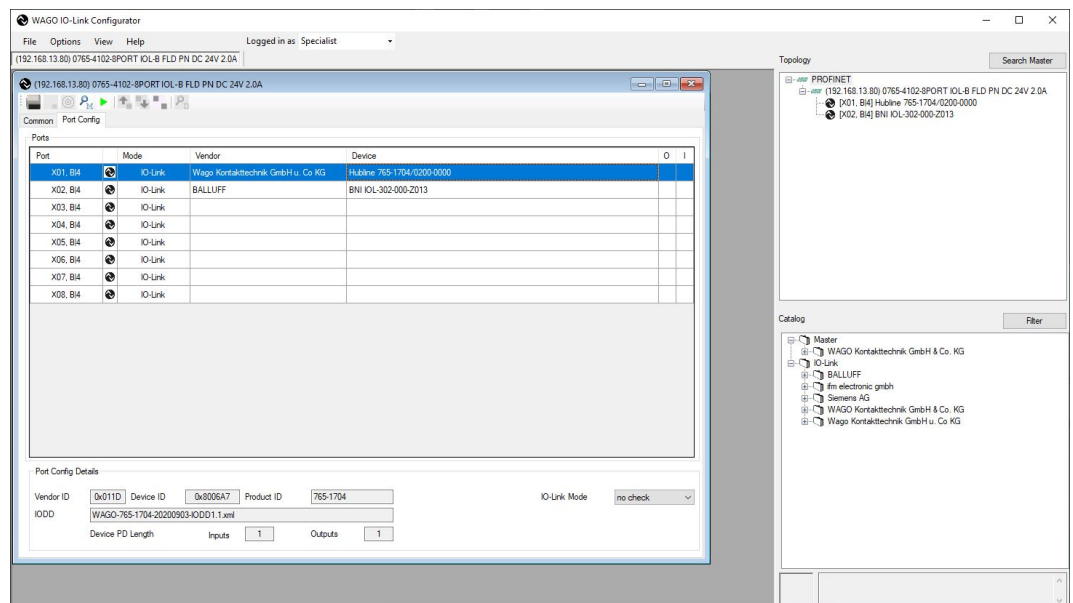


Figure 37: IO-Link Master Control, Block Modular – “Port Config” Tab

There is a toolbar for quick access:



Figure 38: IO-Link Master Control, Block Modular – Toolbar

- **Communication Status**

A connection exists between the WAGO IO-Link Configurator software and the WAGO IO-Link master.

- **SPS Connected**

Indicates whether or not a PLC is connected to the master. If a PLC is connected, it has access rights for configuration and for writing process output data. Otherwise, the tool has full access.

- **Flashing**

Requests flashing for finding the master. This is not available for all masters.

- **Search Master**

Searches for masters of the type being configured.

The IP address can optionally be entered manually. Right-clicking on the IP address field or clicking on the button next to it opens a dialog for entering the IP address. Recently used addresses are offered.



Figure 39: IO-Link Master Control, Block Modular – IP Address

- **Connecting/Disconnecting**

Establishes or terminates the connection.

- **Upload of Data Storage Data from Master**

Loads the content of the data storage from the master into the project.

- **Transferring Data Storage from the Master to the Tool**

Loads the data storage data that was saved previously from the project into the master.

- **Transferring Data Storage from the Tool to the Master**

The tooltip indicates whether data storage data is stored in the project.

- **Search Devices**

Searches for connected devices. If devices are specified as unknown, the associated IODD device description is missing, which you then project to the project anyway.

Right-clicking on the corresponding device offers the IODD import. You can import the IODD from the local environment or IODDfinder.

With modular IO-link masters, the configuration can be read in online.

Right-clicking in the “Module” column or, if no modules have been configured yet, in an empty space opens the “Configure Station” selection.

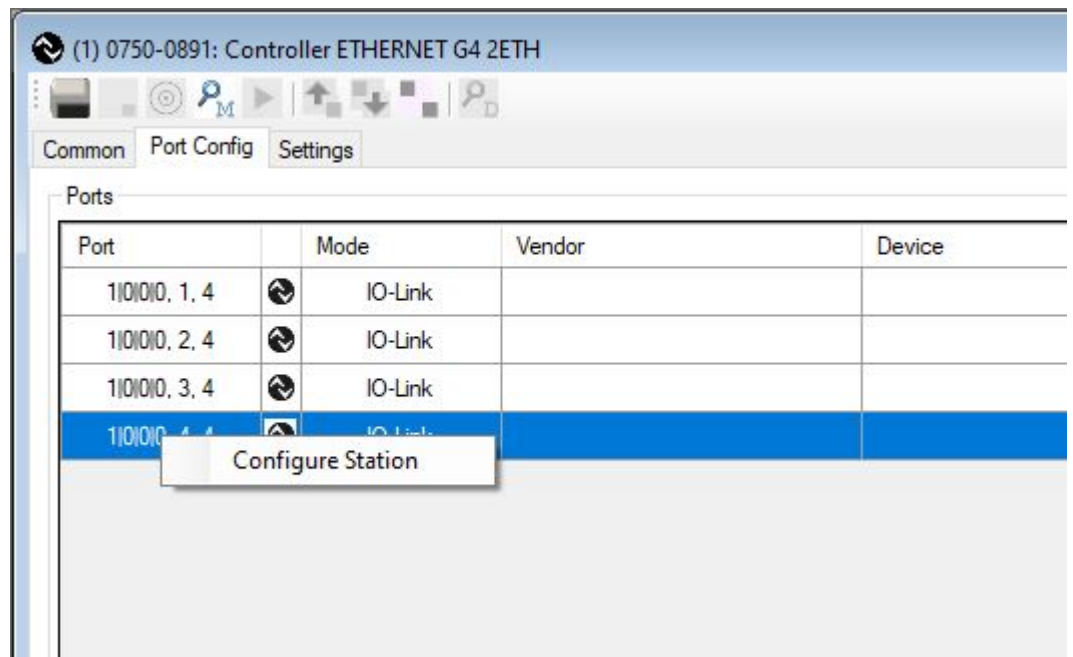


Figure 40: IO-Link Master Control, Block Modular – “Configure Station” Selection

A module can be selected from the list of available modules and added. Selected modules can be deleted. Under “Address,” the address within the station can be selected.

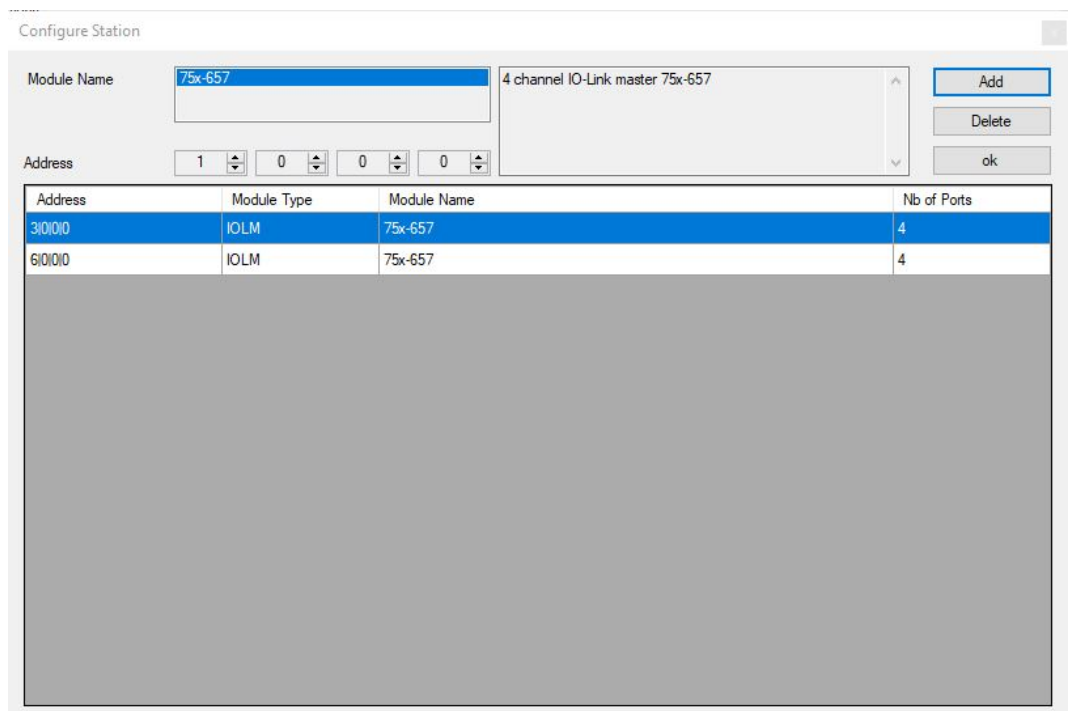


Figure 41: IO-Link Master Control, Block Modular – “Address” Drop-down Menu

In principle, the interface is designed for a hierarchical topology with up to four levels. However, only one level (n|0|0|0) is currently supported.

7.9 IO-Link Device Control

The IO-Link devices are described by XML device descriptions. These IODDs (IO Device Descriptions) are imported into the WAGO IO-Link Configurator software device catalog. The configuration and parameterization can be performed both offline and online. The settings are saved in a project file, so they are available for documentation or product replacement, for example. The project file is saved in the project directory with the device descriptions used.

If TCI is used, the project directory is saved in such a way that the data is also included when the engineering project is archived and unarchived.

If the IO-Link device is selected in the topology or opened by double-clicking in the master control, the device control, which essentially implements an IODD interpreter, appears.



Figure 42: IO-Link Device Control – Menu Bar

There are tabs for general product properties (“Common”), process data, identification, monitoring, parameterization and diagnostics. Their content comes from the IODD. If there are no entries in the IODD for the corresponding tab, it is grayed out.

There is also a “Generic” tab, which allows access to the IO-Link device via index and subindex and shows the corresponding data in the raw format. This is also available if there is no IODD at hand for the IO-Link device.

Toolbar, from left to right:

- **Connected Status**
- **Device Default Settings**
Opens the “Device Default Settings” dialog
- **Load Onto Device**
All read/write variables that are accessible in the present user role are transferred. However, this does not take into account whether menus are expanded or hidden, e.g., due to the operating mode selection.
- **Load from device**
All variables that are accessible in the present user role are transferred. However, this does not take into account whether menus are expanded or hidden, e.g., due to the operating mode selection.
- **Enable loading of dynamic parameters**
Cyclic variable loading is enabled for variables that are marked as “Dynamic”.
- **Operating mode for writing parameters**
“block write mode“: Variables can first be edited without being transferred. Edited variables are marked with “c”. A yellow download arrow appears, which then initiates transfer of the modified variables.
“direct mode“: Variables are transferred directly after modification.
Commands (write only) are always transferred immediately, independent of this setting.
- **Loading modified parameters (yellow down arrow)**
- **Progress bar**
- **Conditions**

With IO-Link, table sections (menus) can be hidden and unhidden with conditions. If a variable that is used as a condition is edited, the menu display changes that depend on it do not take effect until they are transferred into the device or the tool's database. In "block write mode," you should always first write/transfer this variable and then edit it further.

7.9.1 Device Default Settings

Settings for the specific device type are saved here in and apply across projects.

- **Scope**
Settings for the Scope tab
- **Menu**
State indicating whether the IODD table headers are expanded or collapsed
- **Values**
Value of variables with "Read/Write" access rights

Name	Scope	Menu	Values	Comment
default	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	default settings for this device type

New ever with default
 Scope Settings
 Menu Collapse States
 Variable Values

Store Default Store Settings Load Settings

Figure 43: IO-Link Device Control – Device Default Settings

For "Scope" and "Menu", there are usually sensible default settings that can always be used for this product type. Saving and loading values (parameter sets) is a convenient way to keep pre-settings available for different application cases for the product type. They can also easily be transferred between projects.

Any number of settings can be saved; in each case, you can specify whether Scope, Menu and Values are saved. The first row always contains the settings with the name "default." A setting for "Scope" and "Menu" should be prepared here that makes the most sense initially for the specific device. The "New ever with default" checkbox can be used to specify whether these settings are then always loaded automatically when new project planning is performed for this device type.

- **Store Default**
Stores the settings selected in the "Scope Settings," "Menu Collapse States" and "Variable Values" checkboxes in the "Default" settings.

- **Store Settings**
Stores the settings selected with the “Scope Settings,” “Menu Collapse States” and “Variable Values” checkboxes. An input window appears for selecting the name and comments on the settings.
- **Load Settings**
Loads the settings selected with the “Scope Settings,” “Menu Collapse States” and “Variable Values” checkboxes.
- **New ever with default**
When the device type is newly created, the “Default” settings are loaded automatically.
- **Deleting settings:**
Pressing the <Delete> key deletes the selected setting. The row with the “Default” settings cannot be deleted, but the content is deleted.

7.9.2 “General” Tab

The “General” tab shows general information from the IODD about the IO-Link device.

7.9.3 “Process Data” Tab

This tab’s behavior depends on the IO-Link master and operating mode:

- **Offline:**
Only the process data structure is shown. No values are shown, and no values can be set either.
- **Online:**
Depending on the product, it may be possible to selectively write/force the data. The higher-level controller is then removed from the communication for this process data area and, depending on the fieldbus, may be notified of this.

7.9.4 “Identification, Monitoring, Parameters, Diagnostics” Tabs

- **Offline**
The variables’ structure and value settings are shown. For Read/Write variables, the variable values can be changed and are stored in the project.
- **Online**
When switching to online, no data is transferred automatically. You can use the **[Check]** button to compare the data on the device and in the project configuration. You can use the **[Upload]** and **[Download]** buttons to synchronize the data between the WAGO IO-Link Configurator software and the module. Only the module parameters that are defined for the currently active user role are transferred.

If the **Value** field of a variable is selected, the value is retrieved from the module, and the display is updated.

The operating mode can be set for the input with the context menu (right-click). This allows you to specify whether the value of an unchanged variable should be transferred to the module immediately after it is entered, or whether the inputs should be collected until they are transferred via command (also in the context menu).

7.9.5 “Device GUI” Tab

If a plug-in for a graphical user interface for the device was also imported with the IODD, this tab is displayed. The tool provides an interface for such plug-ins. The settings on the Device GUI tabs are available online and offline and are all synchronized with the tool's internal database. A change on the “Identification”, “Monitoring”, “Parameters” and “Diagnostics” tabs can be seen in the device GUI and vice versa.

7.9.6 “Scope” Tab

The process data is visualized graphically in trend curves. All process data elements are recorded. Up to eight elements can be selected for visualization in the Configuration window. You can go to the Configuration window by right-clicking in the “Scope” tab. Data can be recorded for up to one day.

The recording starts anew whenever the “Scope” tab is activated. The sampling rate is set according to the IO-Link master.

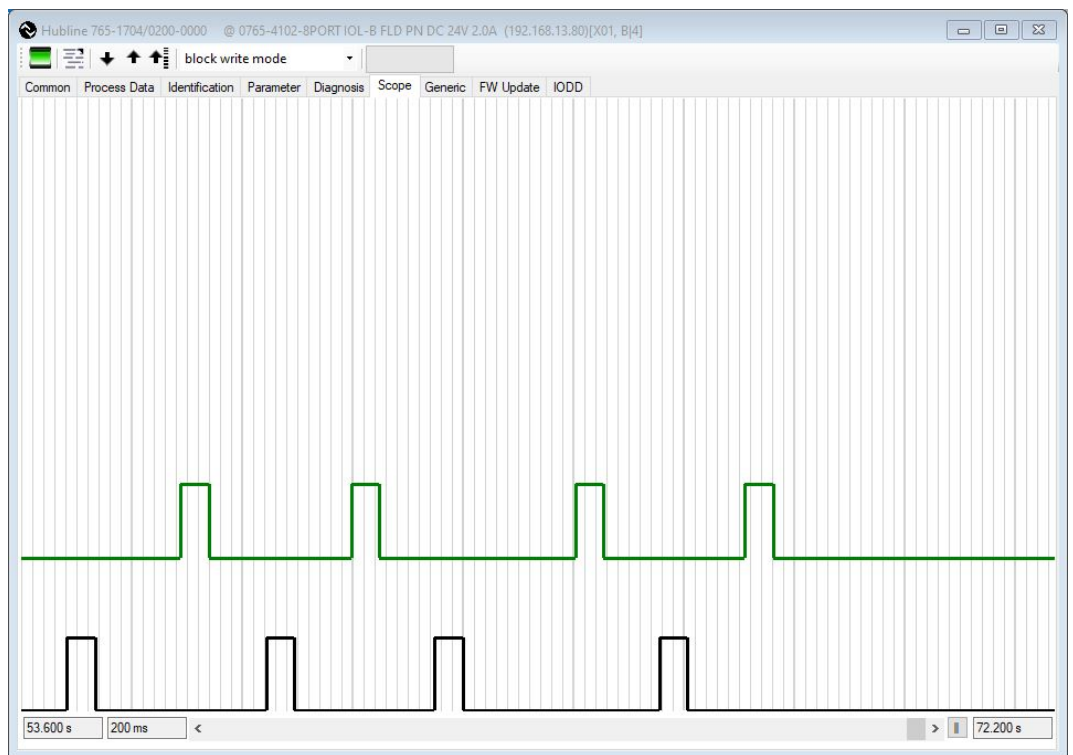


Figure 44: IO-Link Device Control – “Scope” Tab

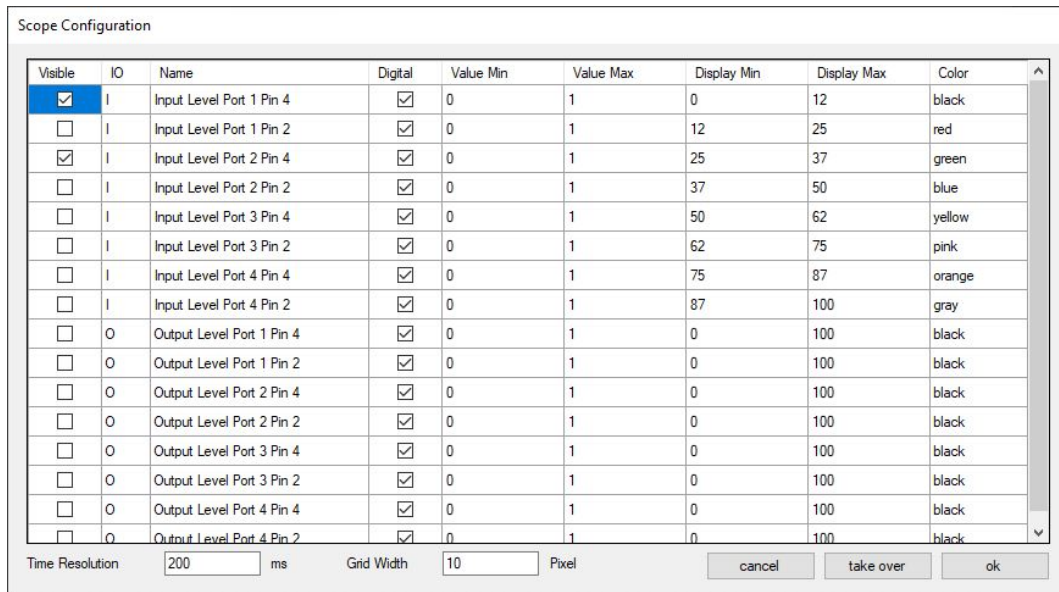


Figure 45: IO-Link Device Control – “Scope Configuration” Window

Configuration of the Scope function

- **Visible**
Indicates whether the process data element is displayed. Up to eight curves can be displayed simultaneously.
- **IO (read only)**
Indicates whether the process data element represents input or output data.
- **Name (read only)**
Name of the process data element
- **Digital**
Indicates whether the values are discrete values. The default setting for all booleans or integers with enumeration is “Digital”.
- **Value Min, Value Max**
Value range of the process data element. The default setting is taken from the IODD. The possible values are limited to these. Since the IODD usually does not indicate a value range for the process data, the user must configure this. The curves are restricted to the value range according to the setting.
- **Display Min, Display Max**
Determines where the curve is displayed and in what size. The value range is 0 ... 100, measured from the bottom.
- **Color**
Eight easily distinguishable colors are available. Multiple assignment is also possible if needed.
- **Time Resolution**
Indicates the time unit of the grid.
- **Grid Width**
Sets the grid width.

7.9.7 “Generic” Tab

This tab is for operating the IO-Link device even without an IODD. In this process, the data is displayed as raw data, and the addressing is performed via index and subindex. To make the default variables easily accessible, they are stored as a pull-down table by index.

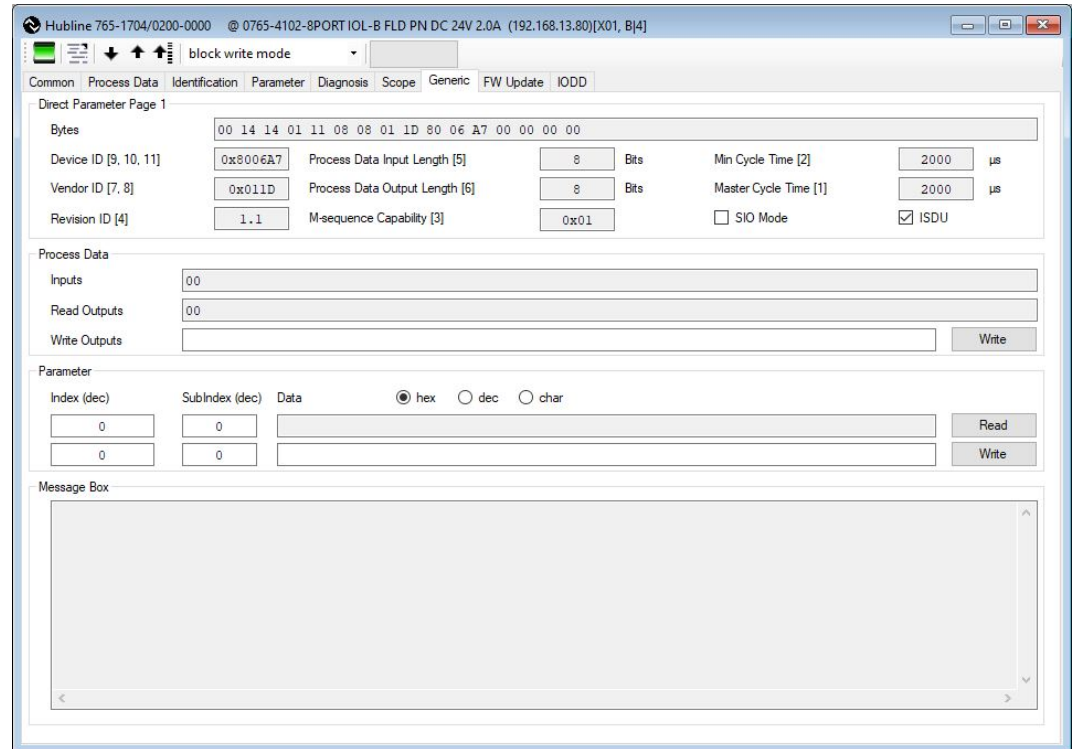


Figure 46: IO-Link Device Control – “Generic” Tab

If no IODD is available, only this tab appears. Otherwise, it is available as a supplement. It is useful in particular for PLC programming, since this usually involves addressing via index and subindex and the necessity of working with raw data.

The output window shows both the events of the IO-Link port and the results of the read and write requests that were executed manually.

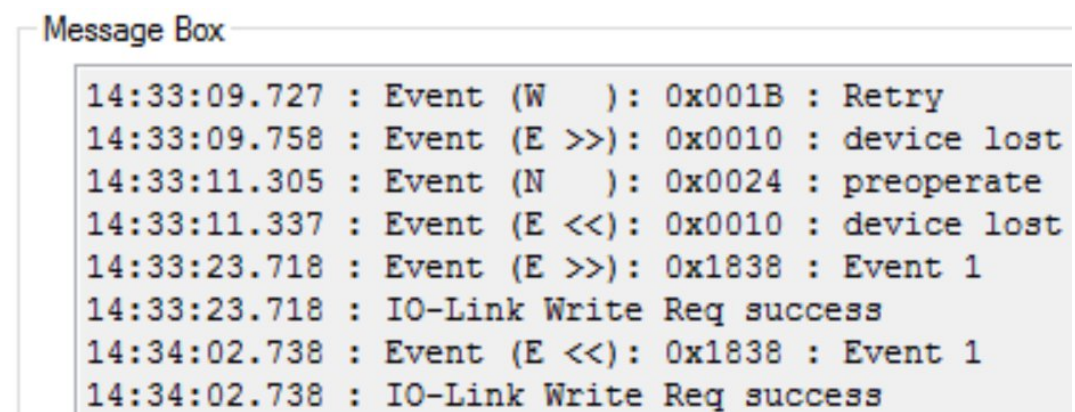


Figure 47: IO-Link Device Control – “Message Box” Selection

Event display:

Event (<Type> <Mode>): <Code> : <Name> : <Description>

Type: E Error

W Warning

N Notification

Mode: >> appears

<< disappears

single shot

7.9.8 “FW Update” Tab

This tab appears if the firmware update profile is provided in the IODD. New firmware versions are supplied as a *-YYYYMMDD-IOLFW1.0.iolfw package. Firmware packages can be read in for any IO-Link devices in the “Settings/Import IOLFW” menu in the user interface. The firmware packages matching the IO-Link device’s hardware are listed on the “FW Update” tab and can be selected and transferred.

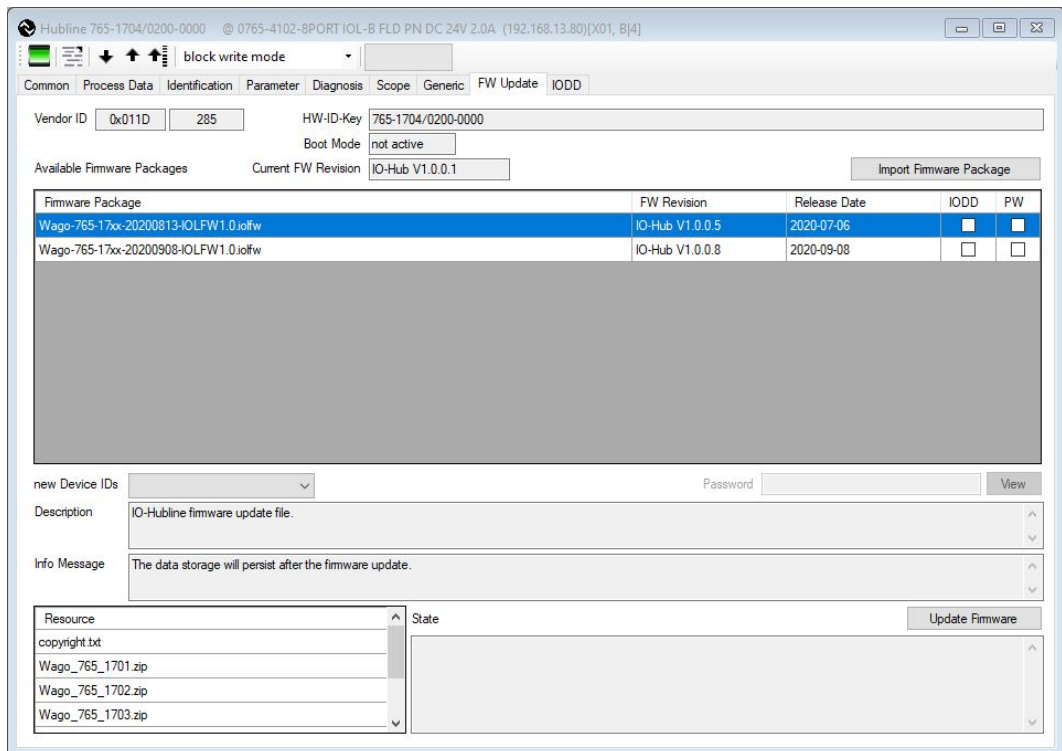


Figure 48: IO-Link Device Control – “Firmware Update” Tab

7.9.9 “IODD” Tab

The information from the IODD for application programmers is displayed here in pre-processed form. It is organized into the following divisions:

- **Datasheet**
Comprehensive datasheet derived from the IODD
- **Process Data**
Structure of the process data with data type, value ranges and position within the byte sequence
- **Variables**
Each with data type, value ranges and default setting
For structured variables like records and arrays: with position within the byte sequence
- **XML**
Displays the XML source text
With navigation to the main elements of the IODD
With text search within the IODD

Parameterization

WAGO IO-Link masters can be used in various system environments. They can be either gateways that link IO-Link to higher-level fieldbus or ETHERNET systems, modules in modular remote I/O Systems or a fixed component of devices like controllers.

In most cases, a higher-level engineering tool is used in the relevant system environment. Often, however, there is none or at least no uniform integration option. Various options are implemented for the IO-Link device tool as easy-to-use solutions for the respective cases.

The WAGO IO-Link Configurator software can be operated as a stand-alone program or via WAGO I/O-CHECK.

Corresponding information is available at [🔗 Operation as a Standalone Program \[▶ 24\]](#), [🔗 Operate via Tool Calling Interface \(TCI\) \[▶ 25\]](#) and Configuring and Parameterizing IO-Link Masters in the WAGO I/O System 750.

8.1 Performing an IO-Link Device Firmware Update

The IO-Link community has defined a profile for updating WAGO IO-Link device firmware. This makes it possible to perform this with every WAGO IO-Link master. This requires support by a tool or function blocks.

The device manufacturer packages the firmware in a firmware package. This contains the firmware itself and an XML file with information on the firmware.

The WAGO IO-Link Configurator software provides an import function for the firmware packages, which are then available in the internal database for use. The device user interface then contains an additional tab for conveniently performing the firmware update. If the firmware package contains a new IODD, it is imported automatically and assigned to the device after the update. The software makes the firmware update available for all WAGO IO-Link masters.

8.2 Quick Start Guide: Using an ETHERNET IO-Link Master

- Install the WAGO IO-Link Configurator software.
- Connect the computer to the network to which the ETHERNET IO-Link masters are also connected. Note the information on Windows Firewall in [🔗 Install \[▶ 25\]](#).
- Right-click in the topology section and select from the **[Search Devices]** menu.
- The ETHERNET IO-Link master will now appear. Try switching Windows Firewall off if the WAGO IO-Link master is not detected.
- You can apply it by double-clicking on the entry.
- Connect at least one WAGO IO-Link device to the WAGO IO-Link master.
- Click the **[Online]** button in the toolbar. If the IO-Link master configuration does not match the one shown in the software, you can choose which configuration to use.
- Click the **[Search Devices]** button.
- The connected WAGO IO-Link devices now appear, as long as the ports are configured as IO-Link. Add the found devices into the project configuration.
- Double-clicking within the user interface of the master or making a selection in the topology brings you to the IODD interpreter.

8.3 Quick Start Guide: Using TCI, e.g., in STEP 7 or the TIA Portal

- Install the PLC engineering tool that supports TCI. TCI V1.2 or higher must be supported.
- Import the GSD file for the PROFIBUS® and PROFINET® IO-Link masters that are supported by the WAGO IO-Link Configurator software. You can find them in the software program directory under \Devices\Master\GSD.
- Install the software.
- In the fieldbus configuration of the PLC tool (e.g., Hardware Config in Step 7), you can now launch the software by right-clicking “Launch Device Tool”. The corresponding WAGO IO-Link master automatically appears in the interface of the software.
- During operation via TCI, you cannot modify the WAGO IO-Link master configuration in the software. This is done in the “Hardware Config” of the PLC engineering tool. For information on this, read the documentation of the PLC engineering tool and the WAGO IO-Link master.
- Communication between the WAGO IO-Link Configurator software and the WAGO IO-Link masters is realized by the PLC engineering tool. For information on this, refer to the documentation of the PLC engineering tool.
- Connect at least one WAGO IO-Link device to the WAGO IO-Link master.
- Click the **[Online]** button in the toolbar. If the IO-Link master configuration does not match the one shown in the tool, you can choose which configuration to use.
- Click the **[Search Devices]** button.
- The connected WAGO IO-Link devices now appear, as long as the ports are configured as IO-Link. Add the found devices into the project configuration.
- Double-clicking within the user interface of the WAGO IO-Link master or making a selection in the topology brings you to the IODD interpreter.

8.4 IO-Link Implementation

This section provides some notes on IO-Link implementation with the WAGO IO-Link Configurator software. The implementation corresponds to the IO-Link interface and IODD specification.

8.4.1 Data Types

The WAGO IO-Link Configurator software supports all the data types of the specification without restriction.

- Display and Input Formats

For number formats with decimal places, both decimal commas and decimal points are accepted as decimal separators. Thousands of separators are not supported.

- TimeT

Corresponds to the RFC 1305 specification and calculates from 1900-01-01 0.00,00(UTC) to 2036-02-07 6.28,15(UTC). Format: yyyy-mm-dd[Thh:mm:ss[.fff]]

- TimeSpanT

Regular expression: `[+-]?PT\d+(\.\d{1,3})?S`

Example: `-PT7765.001S`

8.4.2 Block Parameterization

For transferring variables, besides on the “Generic” tab, the tool generally uses block parameterization if the device supports it. Each transfer to the device concludes with Block-EndStore, even if the device does not support block parameterization, but data storage. This ensures that the user’s changes are always backed up. This also applies to the transfer of individual variables.

8.4.3 “Block Write” Mode / “Direct Write” Mode

In “Block Write” mode, at first variables are only edited and marked “changed,” but not yet transferred. The yellow download arrow indicates that there are modified variables. The variables are not transferred until you click the download arrow.

- Yellow download arrow: only modified variables
- Black download arrow: all read/write variables

In “Direct Write” mode, the modified variable is transferred directly. If the IO-Link device supports this, it is always transferred with block parameterization in order to ensure data consistency and to back up its value in the data storage.

Note

Differentiate between “Block Write” and “Direct Write” mode of block parameterization

Do not confuse “Block Write Mode” and “Direct Write Mode” with the use of block parameterization.

8.4.4 Upload and Download

The upload and download function always uses block parameterization if the IO-Link device supports it.

The read/write variables that are visible in the respective user role are transferred. If the device is to be backed up so it can be replaced, or so a new application can be initialized with the saved data, the “Specialist” role is required for this.

When the connection to the WAGO IO-Link master is established or the device control is activated, the data is not automatically synchronized with the device. The reason is that there are IO-Link devices with a large number of variables and low performance for their transmission. Therefore, it is possible to load individual variables by clicking on the device’s Status column with the mouse and only transferring modified variables in “Block Write Mode”.

Appendix

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List of Tables

Table 1	Scope of Applicability.....	5
Table 2	Minimum System Requirements.....	10
Table 3	Recommended System Requirements.....	10
Table 4	Supported fieldbus couplers/controllers.....	11
Table 5	WAGO IO-Link Configurator Software Workspace.....	15
Table 6	IO-Link Master Configuration – Menu Bar.....	16
Table 7	IO-Link Master Configuration – “General” Tab.....	18
Table 8	IO-Link Master Configuration – “Port Configuration” Tab.....	19
Table 9	IO-Link Master Configuration – “Settings” Tab.....	21
Table 10	Toolbar buttons.....	29
Table 11	Set Process Image Size Dialog.....	31
Table 12	Set Options.....	32
Table 13	Toolbar buttons.....	33
Table 14	Display of Mailbox Events.....	34
Table 15	Display of Mailbox Events.....	35
Table 16	“Master Configuration” Tab.....	36
Table 17	“Master Configuration” Tab.....	37
Table 18	“Port Configuration” Tab.....	38
Table 19	“Port Configuration” Tab.....	40
Table 20	IODD Interpreter Buttons.....	43
Table 21	“Module ID” Tab.....	44
Table 22	Execution as stand-alone Program.....	51
Table 23	Execution via TCI.....	51
Table 24	Language Selection.....	52
Table 25	Managing Login and User Roles.....	52
Table 26	User Roles.....	52
Table 27	WAGO IO-Link Configurator – Import an IODD Device Description.....	54
Table 28	TCI Call.....	57

List of Figures

Figure 1	IO-Link Master Configuration – Menu Bar	16
Figure 2	IO-Link Master Configuration – “General” Tab.....	18
Figure 3	IO-Link Master Configuration – “Port Configuration” Tab	19
Figure 4	IO-Link Master Configuration – “Settings” Tab	21
Figure 5	IO-Link Master Configuration – IODD-Configuration	23
Figure 6	WAGO IO-Link Configurator – License Administration	24
Figure 7	WAGO-I/O-CHECK – User Interface	27
Figure 8	IO-Link Plug-in	28
Figure 9	Set Process Image Size Dialog	31
Figure 10	Set Options Dialog	32
Figure 11	Toolbar buttons	33
Figure 12	Display of Mailbox Events	34
Figure 13	Display of diagnostic and error messages	35
Figure 14	“Master Configuration” Tab	36
Figure 15	Local process data, example of a segment distribution with a 2-byte Mailbox size	37
Figure 16	“Port Configuration” Tab	40
Figure 17	IODD Data of the Respective Ports	43
Figure 18	“Module ID” Tab	44
Figure 19	WAGO IO-Link Configurator – Start Screen	46
Figure 20	WAGO IO-Link Configurator – Workspace	47
Figure 21	WAGO IO-Link Configurator – IODD Search.....	48
Figure 22	WAGO IO-Link Configurator – Topology	49
Figure 23	WAGO IO-Link Configurator – Device Controls Window	50
Figure 24	WAGO IO-Link Configurator – Project Management.....	51
Figure 25	WAGO IO-Link Configurator – “User Role Management” Dialog.....	53
Figure 26	WAGO IO-Link Configurator – Import an IODD Device Description	54
Figure 27	WAGO IO-Link Configurator – Log Window	56
Figure 28	WAGO IO-Link Configurator – Log File	56
Figure 29	WAGO IO-Link Configurator – Log File Context Menu	56
Figure 30	IO-Link Master Control – “Common” Tab.....	58
Figure 31	IO-Link Master Control – “Port Config” Tab	58
Figure 32	IO-Link Master Control – “Settings” Tab	59
Figure 33	IO-Link-Master-Control – Search Master Button.....	60
Figure 34	IO-Link Master Control – Results List	60
Figure 35	IO-Link-Master-Control – Flash Button	60
Figure 36	IO-Link Master Control, Block Modular – “Common” Tab.....	63

Figure 37	IO-Link Master Control, Block Modular – “Port Config” Tab	63
Figure 38	IO-Link Master Control, Block Modular – Toolbar	64
Figure 39	IO-Link Master Control, Block Modular – IP Address	64
Figure 40	IO-Link Master Control, Block Modular – “Configure Station” Selection	65
Figure 41	IO-Link Master Control, Block Modular – “Address” Drop-down Menu	65
Figure 42	IO-Link Device Control – Menu Bar	66
Figure 43	IO-Link Device Control – Device Default Settings	67
Figure 44	IO-Link Device Control – “Scope” Tab	69
Figure 45	IO-Link Device Control – “Scope Configuration” Window	70
Figure 46	IO-Link Device Control – “Generic” Tab.....	71
Figure 47	IO-Link Device Control – “Message Box” Selection	71
Figure 48	IO-Link Device Control – “Firmware Update” Tab.....	72

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