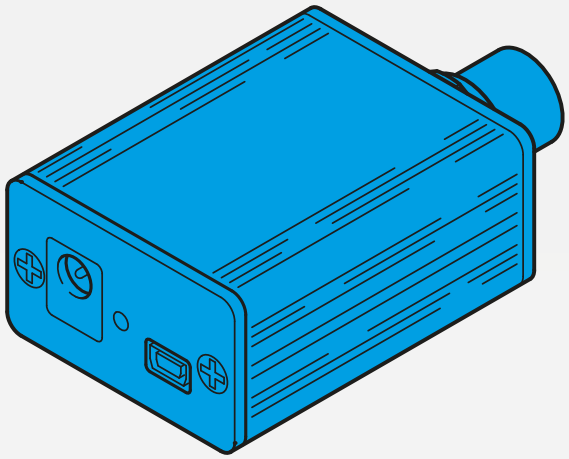
IO-LINK DEVICE TOOL V5.1

IOL MASTER



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OPERATING INSTRUCTIONS

di-soric

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1 DEVICE DESCRIPTION

1.1 INTENDED USE

The IO-Link Device V5.1 tool can be used for operating sensors and lighting with an IO-Link interface (IO-Link devices). The IO-Link devices are described by XML device descriptions and can thus be conveniently monitored and configured in multiple languages. The tool is designed for presetting, testing and demonstrating IO-Link devices. The tool is not intended for ongoing operation in production systems.

1.2 SCOPE OF DELIVERY

Item	Product description	Item number
USB IO-Link Master V2 • USB A-B cable • AC adapter (24V / 1 A) • Installation Guide	IOL master	210075

1.3 ACCESSORIES

Connection cable (coupling M12, 3-pin / connector M12, 3-pin)	VSHM-Z-0.6/VKM-Z	202501
Connection cable (coupling M12, 4-pin / M12 connector, 4-pin)	VSHM-Z-0.6/VKM-Z/4	203253
Adapter plug (coupling M8, 3-pin / connector M12, 3-pin)	M8K/M12S	201098
Adapter plug (coupling M8, 4-pin / connector M12, 4-pin)	M8K/M12S/4	201099

2 ELECTRICAL CONNECTION

2.1 USB CONNECTION

The USB connection acts as a communication interface between the master and the computer. To connect the computer to the USB IO-Link Master, use the USB cable provided.

Pin	Signal	Function
Pin 1	+5 V	VBUS +5 V DC / 500 mA
Pin 2	D-	Data -
Pin 3	D+	Data +
Pin 4	ID	no contact
Pin 5	GND	Ground

2.2 IO-LINK CONNECTION

M12 interface (A-coded socket) for a sensor with IO-Link (connection cable not included in the scope of delivery).

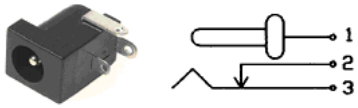
Pin	Signal	Function
Pin 1	+ 24 V	+24 V 1 A / 80 mA
Pin 2	DI *	IO-Link, DI, DO, deactivated (configurable **)
Pin 3	GND	0 V
Pin 4	IO-Link *	IO-Link, DI, DO, deactivated (configurable **)
Pin 5	-	NC

Note: Pin 2 is wired in the factory setting so that there is a GND for sensors with inputs at Pin 2.
* Factory setting ** can be configured via IO-Link Master tab - Port Config: Context menu (right mouse button)

2.3 CONNECTION OF THE AC ADAPTER

A standard USB port provides **500 mA** at **5 V**. Without an AC adapter, the IO-Link Master provides approx.: **80 mA** at **24 V**. That enables many IO-Link devices to be operated.

If an IO-Link device requires more current (including starting current), the AC adapter has to be used.
Please note that some laptops are particularly sensitive to starting currents.
In case of doubt, use the AC adapter. The pin assignment is pictured below.



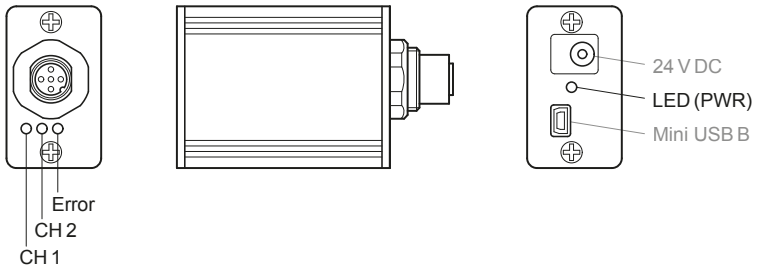
Pin	Signal
Pin 1	+24 V
Pin 2	GND
Pin 3	GND

CAUTION:
If the IO-Link device requires more than **80 mA**, the external supply must be used!

3 DISPLAY ELEMENTS

The LED displays on the USB IO-Link Master have the following meanings:

LED allocation	Color	Meaning
LED (PWR)	yellow	Indicates the power supply at the USB port
CH 1	Green / yellow	Green: IO-Link mode
		The LED blinks slowly if there is no IO-Link connection, blinks fast in the Preoperate status and stays lit if the IO-Link connection is in the data exchange (Operate) status. Yellow: SIO Modus, displays the digital status of Pin 4 (DI)
CH 2		Yellow: Displays the digital status of Pin 2 (DI)
Error	Red	Lights up if an error has occurred. (short-circuit, data transmission error)



4 IO-LINK DEVICE TOOL V5.1 SOFTWARE

4.1 SYSTEM REQUIREMENTS

Computer

- Available USB 1.1, 2.0 or 3.0 interface
- Ethernet network interface

Operating System

- Windows 10 64Bit
  Windows 11 64Bit
- Microsoft .Net Framework 4.6.1

Monitor

- Resolution of 1024 x 768 or higher

4.2 SOFTWARE INSTALLATION

You can find the **software download** under “Downloads” on the IOL-Master product page at **www.di-soric.com**.
You will need administrator rights to install the software on your computer. Please **do not** connect the USB IO-Link interface to your computer yet. Make sure that you have the required rights.

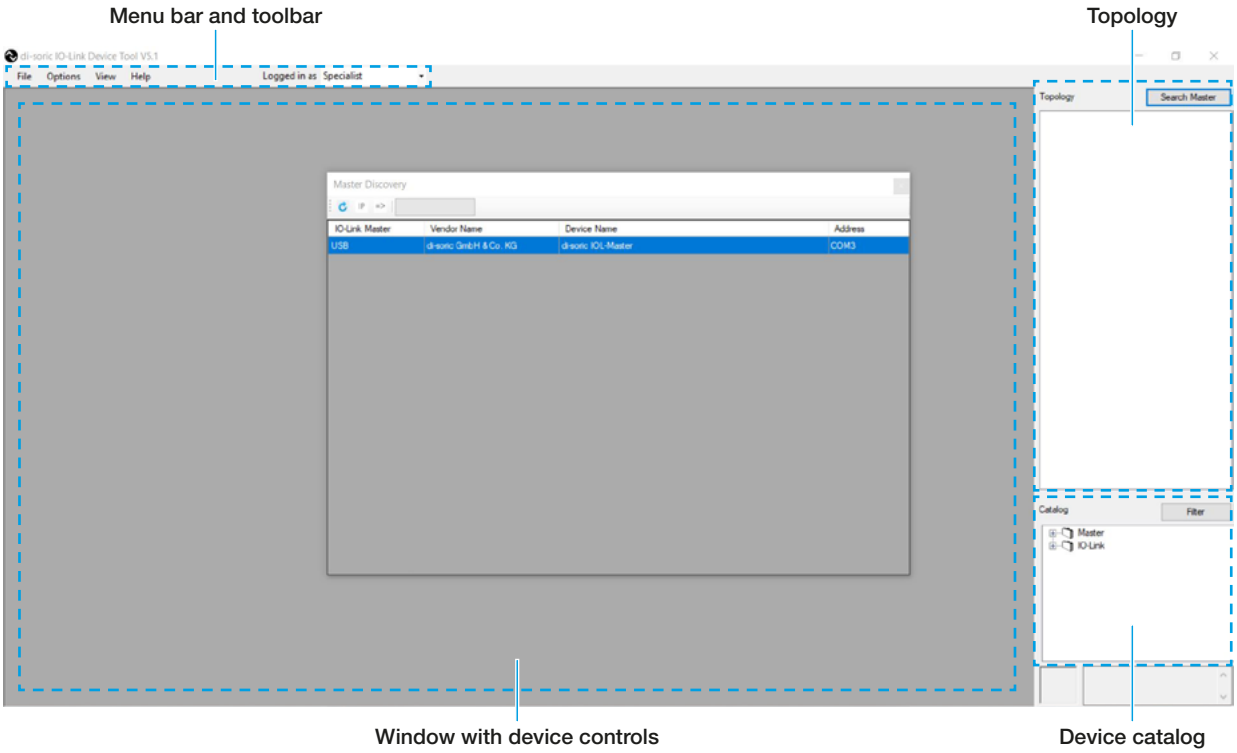
After installation, you can connect the USB IO-Link Master to your computer.
Please note the instructions about the power supply.

4.3 STARTING THE SOFTWARE

Start the “di-soric IO-Link Device Tool V5.1” PC software.
After starting the tool for the first time, you have to update the **device catalog**.
For more information, see the **online help**.

4.4 PROGRAM INTERFACE OVERVIEW

After the program is started the workbench appears, which always acts as a frame for the software.
It consists of a menu bar and toolbar, topology, device catalog and window with device controls.



- The topology with the accessible IO-Link masters and connected IO-Link devices is displayed and managed in the **topology** window area
- You will find all devices relevant to the tool in the **device catalog** window area. These are the IO-Link Master and the IO-Link devices. The catalog contains the devices that may be used depending on the operating mode. The IO-Link devices are arranged according to manufacturer, device family and device (variant). Entries can be deleted by right-clicking.
- The master controls or device controls are displayed in the **device control** window area. Only one control is visible and active.

4.5 MENU BAR AND TOOLBAR

File
Functions: New, open and save project
A project contains the topology with the IO-Master and IO-Device. Saved projects consist of a folder and an XML file.

Options
Functions: Changing the language, managing user roles, importing IODDs

4.6 USER ROLE

Function: Changes the user role
The IO-Link Device Tool supports multiple user roles. Upon starting, select your user role and enter your password.

Default passwords:
Operator: no password
Maintenance: maintain
Specialist: special
If a password has been set for the user role, it has to be entered

5 CONNECTING IO-LINK DEVICES TO A PC

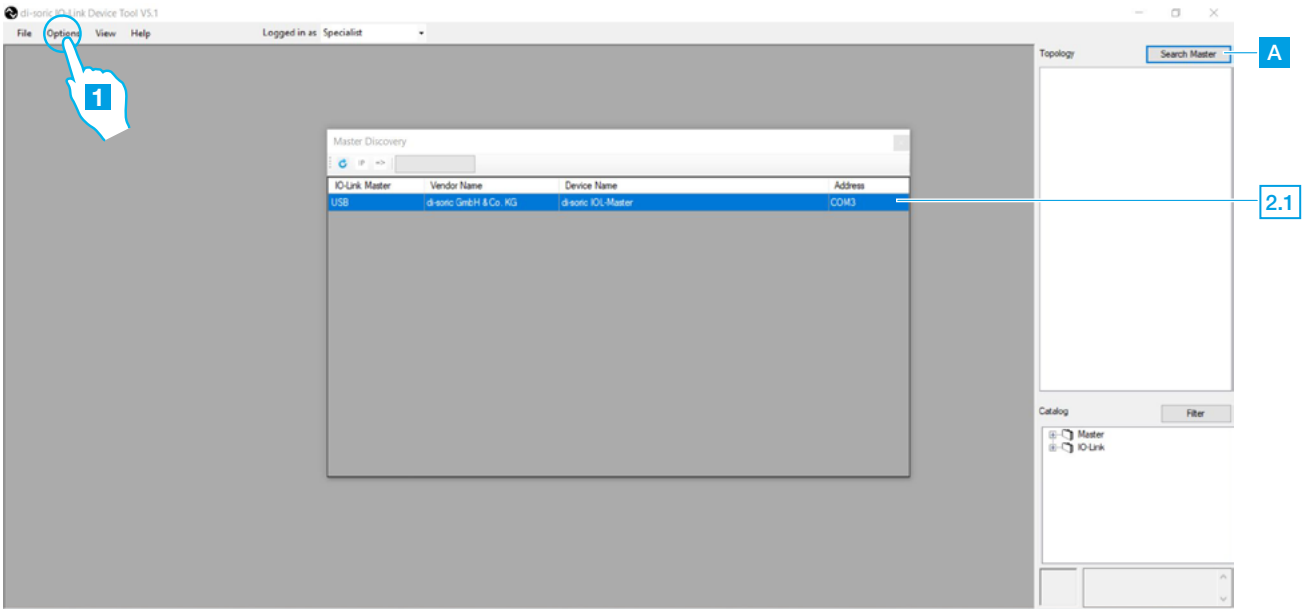
5.1 IMPORTING THE IODD DEVICE DESCRIPTION FROM THE PC

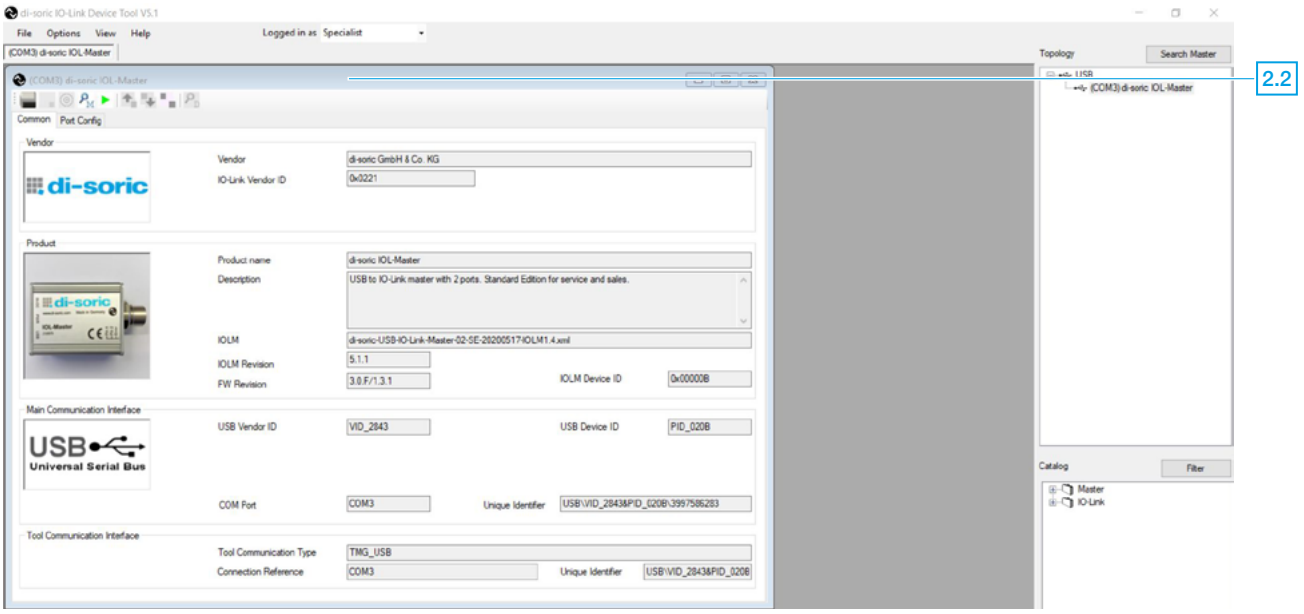
IODDs can be imported via “Import settings/IODD” 1. The IO-Link Device Tool supports IODDs according to specifications 1.0.1 and 1.1. An IODD can contain multiple variants of a device. Device descriptions can be imported into the IO-Link Device Tool from any memory space.

NOTE: If IODDs are imported with a new date, the previous versions are retained.
For this purpose, delete the previous IODD from the catalog via the context menu (right mouse button) and then import the desired IODD.

5.2 SELECTING THE IOL-MASTER VIA A PC

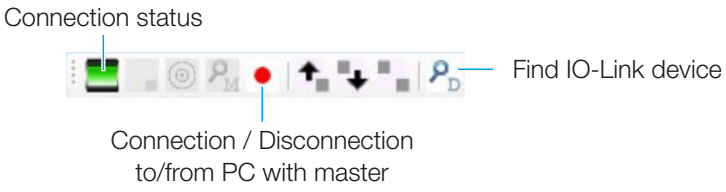
1. Select “Search Master” A
2. The “Search Master” window opens, select the di-soric IOL-Master 2.1
3. di-soric IOL-Master window opens 2.2





5.3 IOL-MASTER TOOLBAR

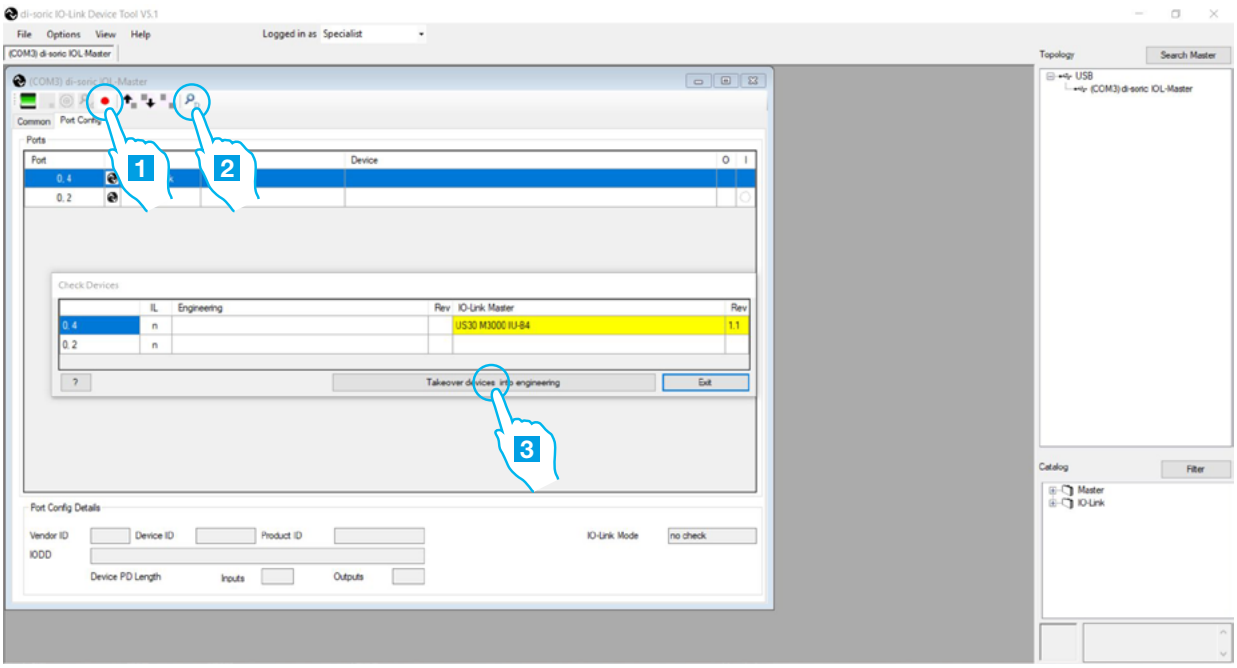
Toolbar for quick operation – brief description:



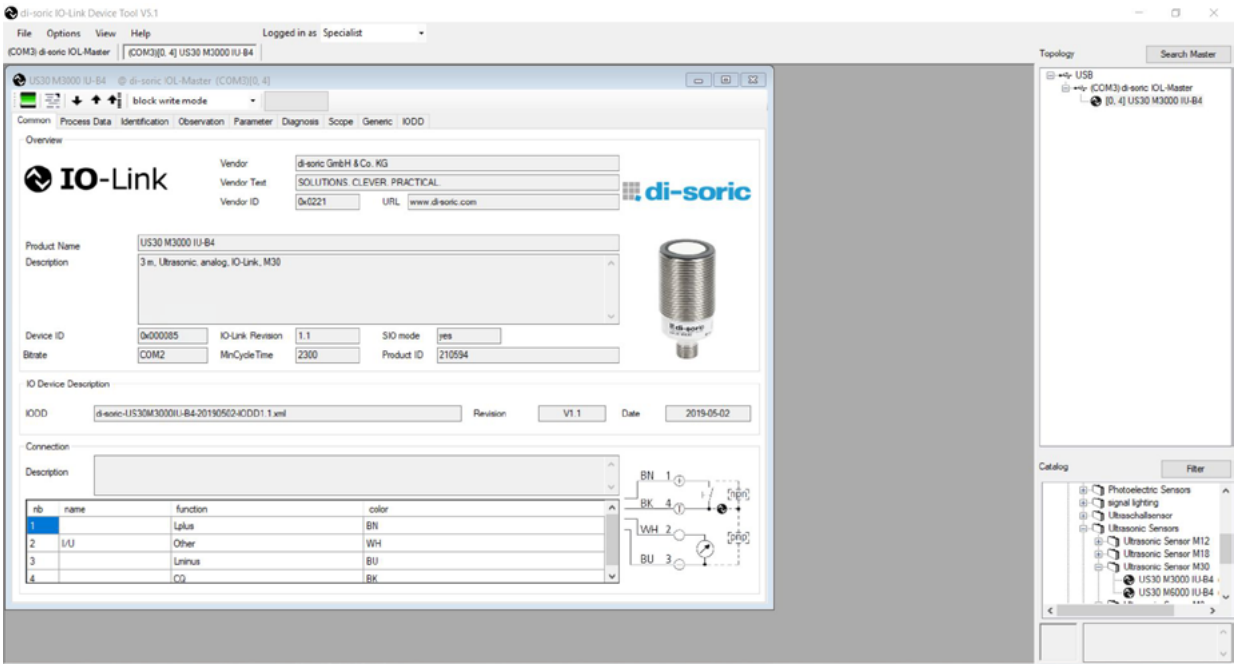
5.4 CONNECTING THE IOL-MASTER TO AN IO-LINK DEVICE

Connect an IO-Link device to the IO-Link Master USB. If you are uncertain that the supply voltage from the USB is sufficient, then use the external AC adapter.

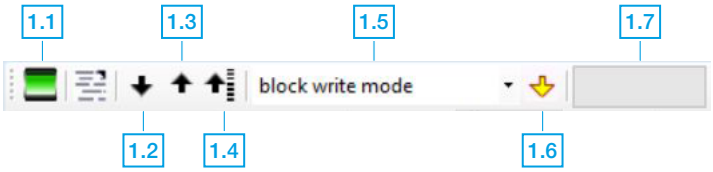
1. Press the ▶ “Connect” 1 button on the Master toolbar
2. Press the “Find device” button 2 on the Master toolbar
3. The IO-Link device is now displayed. Perform the configuration 3
4. The tab for the IO-Link device opens



6 OVERVIEW OPERATION WITH IO-LINK DEVICE



6.1 DEVICE TOOLBAR



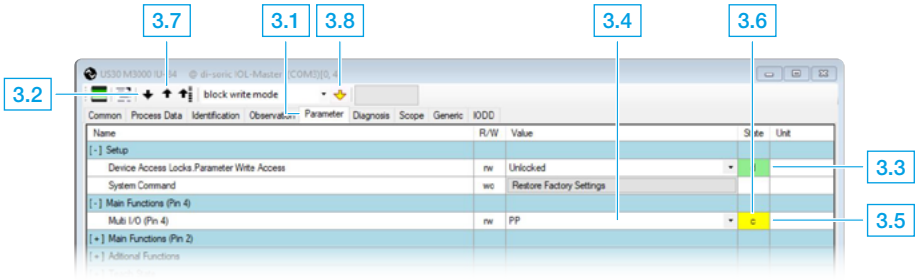
Toolbar brief description:

- Connection status 1.1
- Loading to the device 1.2
- Loading from the device 1.3
- Cyclically loading from the device 1.4
- Selection: **block write mode** (variables can first be edited without being transferred) or **direct mode** (variables are transferred directly after being changed) 1.5
- Only changed variables are transferred 1.6
- Progress bar 1.7

6.2 TAB DESCRIPTION

- **Common tab:** General information about the IO-Link device from the IODD
- **Process data tab:** The process data of the IO-Link device are displayed cyclically
- **Identification, Observation, Parameter, Diagnosis tabs:** The structure and the set values of the variables are displayed. If the IO-Link device is connected to the IOL-Master. You can synchronize the data between the tool and device via the “Upload” and “Download” buttons. Only those device parameters defined for the currently active user role are transferred.
- **Scope tab:** The process data are shown graphically.
- **Generic tab:** This tab is used so that you can also operate the IO-Link device without an IODD.
- **IODD tab:** The IODD information for application programmers is prepared and displayed here.

6.3 EXAMPLE: CONFIGURATION OF IOL-LINK DEVICE PARAMETERS



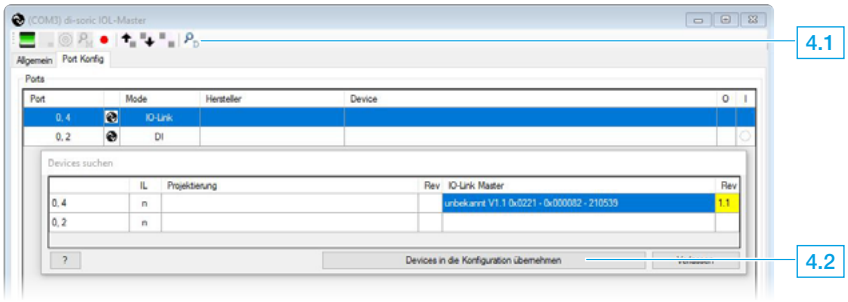
1. Select the “Parameters” 3.1 tab
2. Select load from device 3.2, current parameters are marked in green in the Status column 3.3
3. Change parameter value 3.4, changed parameters are marked in yellow in the Status column 3.5
4. **Important!** Click in the deviating field with the mouse 3.6, status c, yellow 3.5
5. Select load to device 3.7, all parameters are transferred to the device or select 3.8 to only transfer changed parameters to the device

6.4 IMPORTING THE IODD DEVICE DESCRIPTION FROM IODDFINDER

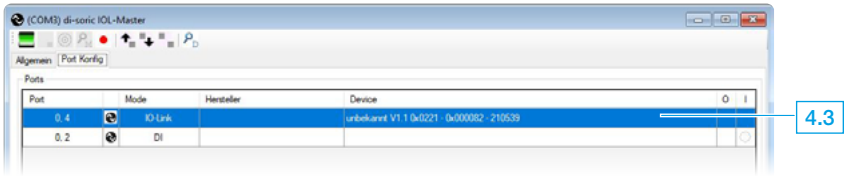
IODDfinder is a service from the IO-Link community. It is a central, manufacturer-independent database. If the IODD is not available for a device, the IO-Link device tool can search for and import the IODD in IODDfinder.

Requirements:

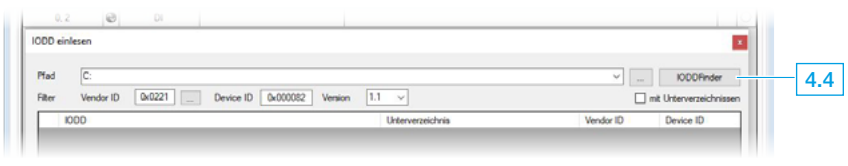
- There must be an Internet connection.
- The IOL-Master is connected to the PC.
- The device is connected to the IOL-Master.
- The right IODD is located in IODDfinder



1. Press the “Find device” 4.1 button on the toolbar
2. Apply the unknown device 4.2

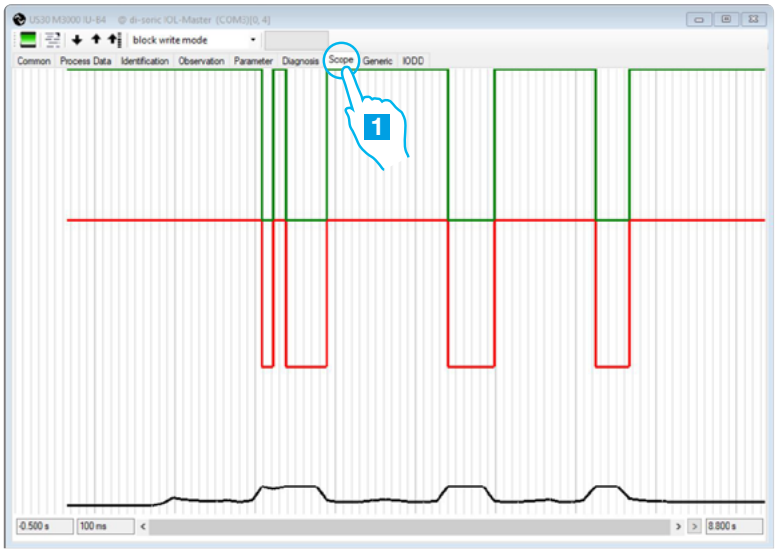


3. Switch to the context menu (right mouse button) to import the IODD 4.3



4. Press the “IODDfinder” button 4.4 in the dialog. If the IODD is published in the IODDfinder, it will be applied automatically.

6.5 EXAMPLE: GRAPHICAL VISUALIZATION OF PROCESS DATA

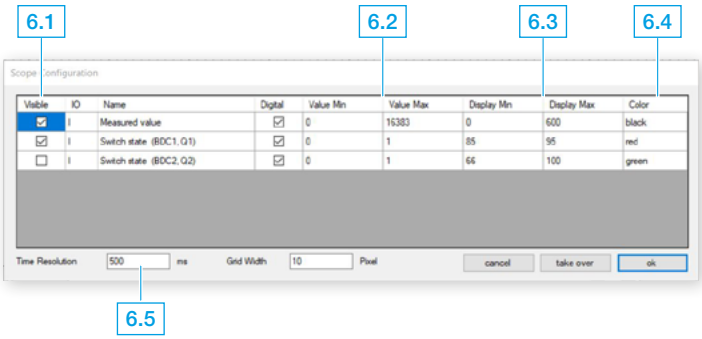


Select the “Scope” tab 1.

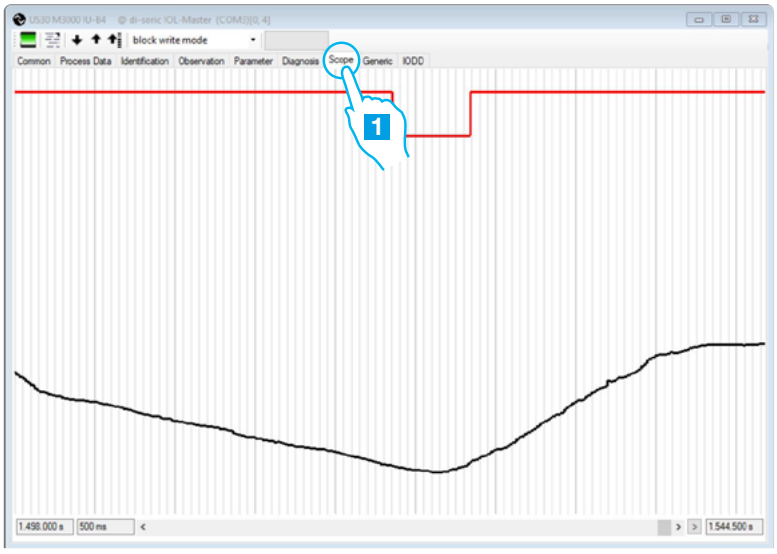
The visualization restarts each time you activate the Scope tab. All process data are displayed.

6.6 EXAMPLE: CONFIGURATION FOR THE GRAPHICAL VISUALIZATION OF PROCESS DATA

The Configuration window is accessed via the right mouse button in the Scope tab



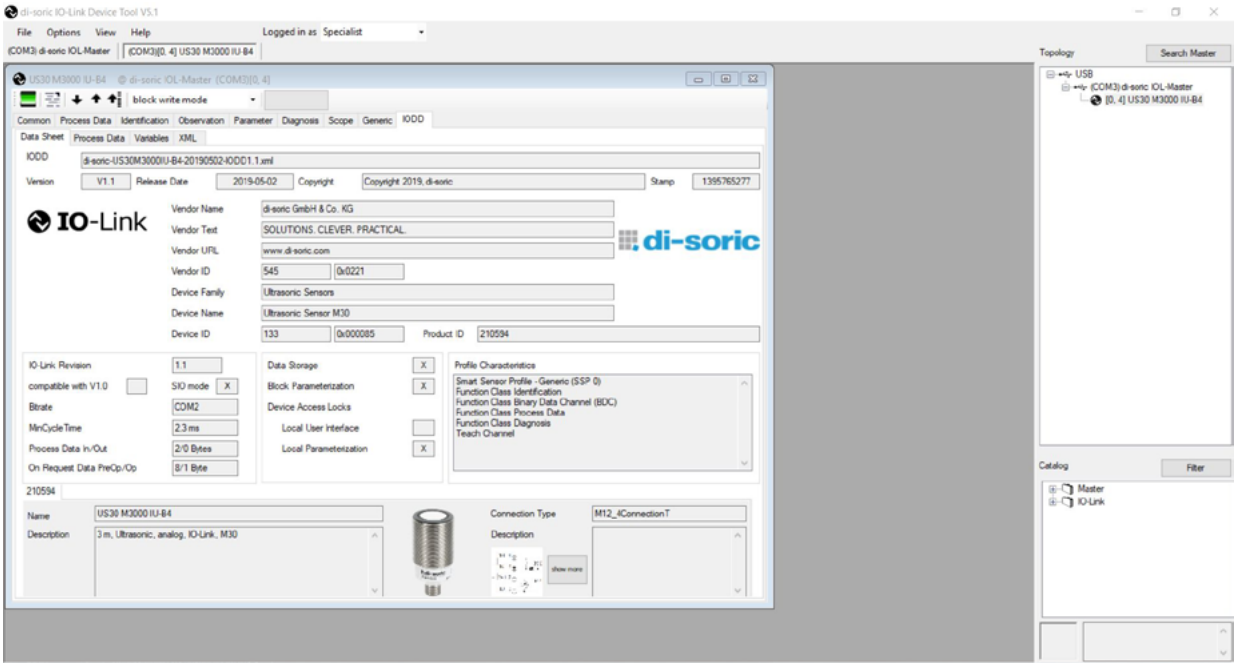
Configuration example:



- **Visible** 6.1**:**
  Selection whether the process data element is displayed. A maximum of 8 curves can be shown simultaneously.
- **Value Min, Value Max** 6.2**:**
  Apply the default setting to the IODD. The visualization is then limited to the set value range.
- **Display Min, Display Max** 6.3**:**
  Configuration as to where and how large the curve is displayed. The value range is between 0 and 100 measured from below.
- **Color** 6.4**:**
  Curve color display configuration
- **Time Resolution** 6.5**:**
  Time unit of the grid
- **Grid Width:** Grid width

6.7 EXAMPLE: IODD TAB

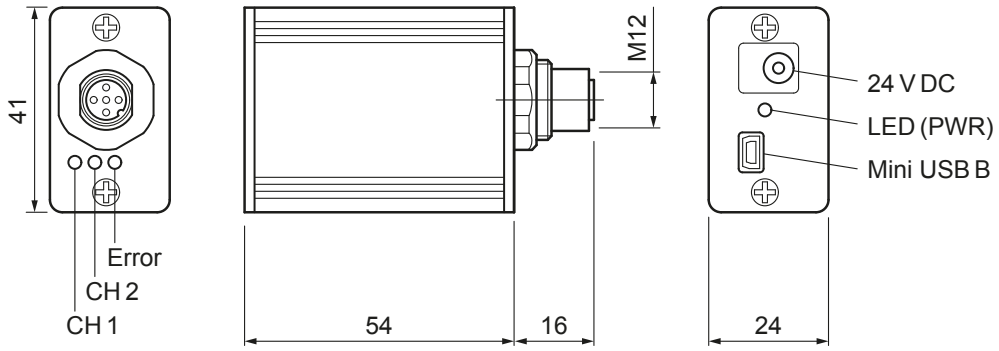
The IODD information for application programmers is prepared and displayed here. The following information about the IO-Link device is found here.



Data Sheet tab: Data sheet from IODD
Process Data tab: Structure of process data
Variables tab: Data type, value range and default setting
XML tab: XML source text

7 TECHNICAL DATA

USB	USB 2.0 (Mini USB B)
Current requirement from USB	<= 500 mA
Supply to the IO-Link device from USB	24 V / 80 mA
External supply (accompanying power supply unit)	24 V / 1 A
Protected against polarity reversal	Yes
Protection class	III
IO-Link communication	IO-Link specification V1.1
IO-Link port class	A
Ambient temperature during operation	0 to 45 °C
Storage temperature	-40 to 80 °C
Protection type	IP 20
Certification mark	CE



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