

Operation Manual

Norgren IO-Link Configuration Tool Version 1.7



Before starting work read these instructions.

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1. Preliminary note

This document explains the set-up and use of the Norgren IO-Link Configuration Tool software from Norgren.

1.1 Symbols used

- ▶ Instructions
- » Response, result
- [...] Designation of keys, buttons or messages
- Cross-reference
-  Important note
Non-compliance may result in malfunction or interference.
-  Information
Supplementary note

2. Safety instructions

Please read the operating instructions before using the software.

Ensure that the software is suitable for your application and the connected sensors.

If the operating instructions or the technical data are not followed, personal injury and/or damage to property can occur. Installation, set-up and maintenance must only be carried out by qualified personnel authorised by the machine operator.

Non-observance of the instructions, operation which is not in accordance with use as prescribed below, wrong installation or incorrect handling can affect the safety of operators and machinery.

The installation and connection must comply with the applicable national and international standards. Responsibility lies with the person installing the software.

Changes to the source code or to individual components of the software which are not explicitly described in the instructions lead to the loss of the right to benefit from the support provided by Norgren.

3. Functions and features

Using the Norgren IO-Link Configuration Tool offers the following options:

- ▶ Parameter setting of IO-Link masters and devices via the network
- ▶ Online and offline set-up of Norgren IO-Link masters and devices
 - » Parameter setting
 - » Loading parameters from an IO-Link sensor
 - » Saving and loading sets of parameters in / from a file
 - » Writing parameters to IO-Link devices
 - » Support of IO-Link actuators
- ▶ Graphic representation of process values
 - » Evaluation of measured values
 - » Export of displayed measured values

The Norgren IO-Link Configuration Tool can be used for simple and efficient parameter setting of IO-Link masters and sensors. The software is designed to reduce set-up costs, increase plant uptime and simplify verification/evaluation of measured value curves during set-up or maintenance.



Parameters of devices and sensors can only be set from a single Norgren IO-Link Configuration Tool. Simultaneous parameter setting of devices and sensors with several Norgren IO-Link Configuration Tool instances or other engineering software products is not supported and may cause problems.



During parameter setting, the behaviour of devices and sensors may change. This applies in particular if process values of actuators are changed via Norgren IO-Link Configuration Tool. The user must ensure that no processes that are in operation will be impaired and that there is no risk for people or devices at any time.

4. Installation

4.1 System requirements

4.1.1 PC hardware

- ▶ Min. 2 GB working memory
- ▶ Min. 5 GB hard disc memory available
- ▶ 1 free Ethernet port
- ▶ Minimum: CPU Intel Dual Core 2.0 GHz

4.1.2 PC software

- ▶ Operating system Microsoft Windows 8.1, Windows 10, Windows Server 2012, Windows Server 2012 R2, Windows Server 2016.
- ▶ Web browsers Google Chrome, Mozilla Firefox, Microsoft Internet Explorer 11, Microsoft Edge.

4.1.3 Hardware accessories

- ▶ IT network and the necessary accessories for the connection of computer and network.
- ▶ Norgren IO-Link master, e.g. NC-MP-4A4B-12DLA, NC-ME-4A4B-12DLA, NC-MC-4A4B-12DLA (incl. voltage supply, network cable with M12 connector and M12 connection cable for IO-Link devices).



Hardware accessories not supplied.

4.2 Installing the program on the hard disk



Perform data backup on the target system before installation.

The program Norgren IO-Link Configuration Tool is installed on the PC using the file "Norgren_IO-Link_Configuration_Tool_x.x.x.xxx_INSTALL.exe".



If an LR SENSOR version is installed on the PC, it will be upgraded to Norgren IO-Link Configuration Tool by agreement. Installation of LR SENSOR and Norgren IO-Link Configuration Tool on an operating system is not possible.



Administrator rights are required for set-up and operation of the software. Contact the administrator or IT operator.

- ▶ Start the "Norgren_IO-Link_Configuration_Tool_x.x.x.xxx_INSTALL.exe" file with a double click.
 - » The setup window opens. The licence conditions are displayed.
- ▶ Agree to the licence conditions, click on [Install] and follow the instructions of the installation routine.
 - » The program is installed.
- ▶ Close the setup window after successful installation.

4.3 Software upgrade

- ▶ Ask your Norgren partner for available upgrades.
- ▶ Follow the installation routine as in → 4.2.
 - » The licence key remains valid.

4.4 Language selection

The interface language depends on the language selected in your browser.

- ▶ Set the required language in the browser settings for website display.
- ▶ Restart or refresh the browser.



This software manual in other languages can be found at → www.norgren.com

5. Program start

5.1 Free version of the software

The Norgren IO-Link Configuration Tool can be used for free as a limited version without a licence key.

Functions of the limited version:

- ▶ IO-Link masters are displayed with network address via the network.
- ▶ Read parameters from the master
- ▶ Edit parameters in the Norgren IO-Link Configuration Tool set up view (offline)
- ▶ Writing data to a master or device is not possible.

5.2 Licensing procedures

The licence key can be entered by clicking on the [FREE VERSION] text.

The licence key consists of:

- ▶ Licence number
- ▶ Licence



The licence key is supplied by Norgren

5.3 Functions depending on the licence keys used

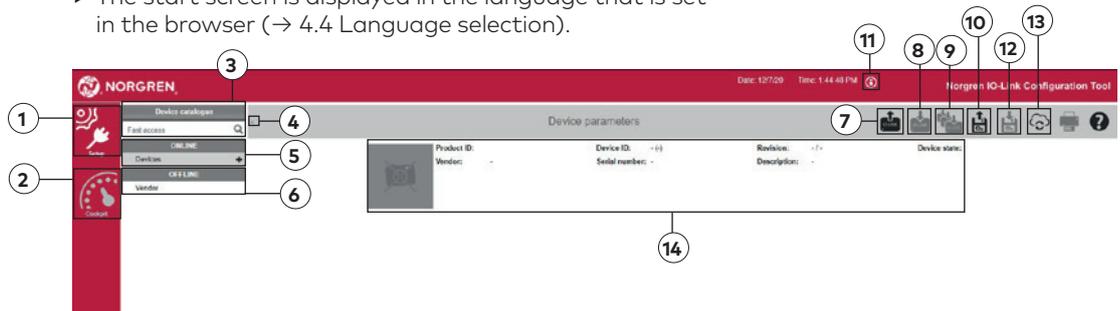
Licence	Reading IO-Link devices via network	Writing data via network to network IO-Link master	Writing data via network IO-Link master to IO-Link device
FREE VERSION	YES	YES	NO
Norgren IO-Link Configuration Tool	YES	YES	YES

5.4 Connection of the hardware

- ▶ Connect the PC to the network via a suitable network cable.
- ▶ For sensors with display or indicators, check whether the unit is in operation.

5.5 Start screen

► The start screen is displayed in the language that is set in the browser (→ 4.4 Language selection).



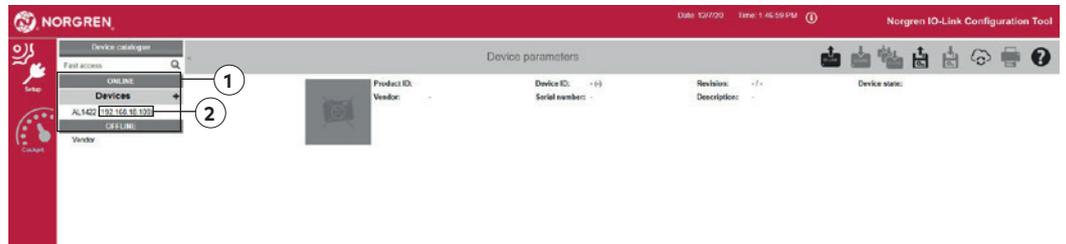
①	Setup:	Parameter setting of IO-Link masters and IO-Link devices.
②	Cockpit:	Display mode of all measured values available online.
③	Device catalogue:	Quick access to IODD files for offline parameter setting via part number.
④	< : >:	Hide menu catalogue, ONLINE and OFFLINE Show menu catalogue, ONLINE and OFFLINE
⑤	ONLINE:	Detected interface / detected device is displayed.
⑥	OFFLINE:	Selection list from manufacturer to part number. Activate IODD file for offline parameter setting.
⑦	Read IO-Link parameters from the device:	Read parameters from the master or device.
⑧	Write IO-Link parameters to the device:	Write set parameter values to the master or device.
⑨	Write IO-Link parameters to selected devices:	Functions like (8), in addition writing to several detected, selected devices in offline mode is possible.
⑩	Load parameters from a file:	Upload stored parameter settings (lrp file) from a directory.
⑪	Company details	Show company details.
⑫	Save parameters to a file:	Save parameter values in an lrp file.
⑬	Search for updates of IODD files:	New IODD files can be downloaded from the internet. Installed IODD files can be deleted.
⑭	Header with information and a photo of the detected device:	Device name; vendor; device ID; serial number; device type; hardware / firmware revision (internal version ID); device state (only for online parameter setting).

General icons:

	A print preview of the displayed parameters is opened in a separate browser window. It contains parameter names, the current and the preset parameter value (factory setting), max. and min. setting values of the parameter and the short description of the parameter. In the print preview, remarks can be added and printed.
	Open software manual in a separate browser window.

6. Online parameter setting via the network

- » PC is connected to the network.
- ▶ Click on .
- » Parameters of the connected IO-Link master are loaded into the software.



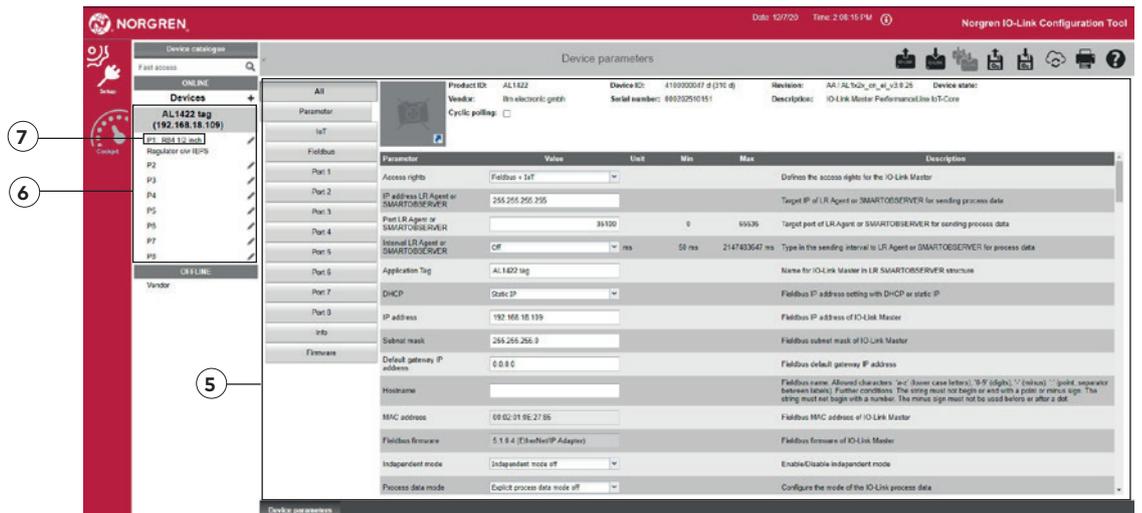
- » ONLINE ① shows all detected IO-Link masters.
- » In this case the network address ② of the IO-Link masters is shown.
- ▶ Change the network address of the PC to be on the subnet of the IO-Link master if parameters are to be changed.

 Norgren IO-Link Configuration Tool will detect IO-Link masters with network addresses that differ from the PC network address. The parameters cannot be changed in this case.

- ▶ Click on .



- » If the IO-Link masters are displayed with [Application Tag] ③, the network settings are OK.
- ▶ Click on IO-Link master ④.



- » Parameter settings for the IO-Link master are displayed ⑤.
- » The network address [IP address], [Application Tag] and other parameters can be set. For further information see the operating instructions of the IO-Link master.



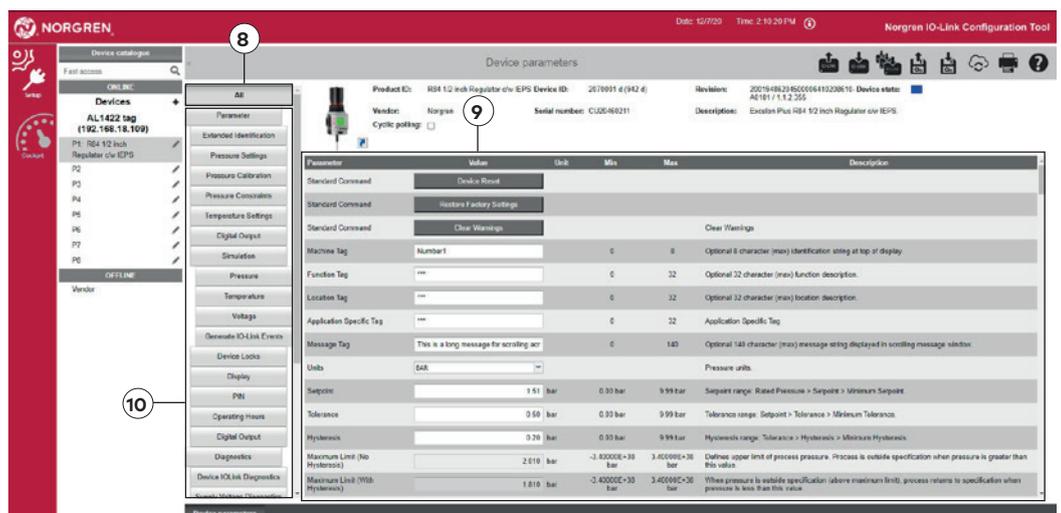
Device state is indicated by different colours. Hover over the device state box and view more information in the tool tip.

Device state colour	Description
White	Status not read or unavailable
Green	Device is operating normally
Yellow	Process data is invalid or an IO-Link Event has occurred with the class „Error“
Red	Device has a problem or connection lost
Blue	Device has a notification

- » [Devices] shows the ports used on the IO-Link master ⑥.

- ▶ To identify the physical device displayed in the Norgren IO-Link Configuration Tool, click on [O] on the right next to the displayed IO-Link master. (The symbol [O] is only displayed if the device supports this function).
 - » For a few seconds,
 - the LED RDY on the IO-Link master flashes
 - the symbol [O] in Norgren IO-Link Configuration Tool flashes orange
 - ▶ While it flashes, click on [O] again.
 - » The LED on the device and the symbol [O] in Norgren IO-Link Configuration Tool flash continuously.
 - ▶ Click on [O] again.
 - » The flashing of the LED on the device and the symbol [O] in the Norgren IO-Link Configuration Tool will stop. Refreshing or closing the browser window will also stop the flashing.

- ▶ The Norgren IO-Link Configuration Tool supports the safety function of IO-Link masters, provided that the devices are equipped with this function. The safety function allows for access to the device via the IoT interface to be password-protected (parameter [Security mode HTTPS] and [Security password]; for configuration, see the operating instructions of the IO-Link master).
 - ▶ Click on [P1] to show the device on port 1.
 - » The parameters of the connected IO-Link device open.



Parameter	Value	Unit	Min	Max	Description
Standard Command	Device Reset				
Standard Command	Restore Factory Settings				
Standard Command	Clear Warnings				Clear Warnings
Machine Tag	Number1		0	8	Optional 8 character (max) identification string at top of display
Function Tag	---		0	32	Optional 32 character (max) function description
Location Tag	---		0	32	Optional 32 character (max) location description
Application Specific Tag	---		0	32	Application Specific Tag
Message Tag	This is a long message for scrolling act		0	140	Optional 140 character (max) message string displayed in scrolling message window
Units	bar				Pressure units
Setpoint	1.51	bar	0.00 bar	9.99 bar	Setpoint range: Rated Pressure > Setpoint > Minimum Setpoint
Tolerance	0.00	bar	0.00 bar	9.99 bar	Tolerance range: Setpoint > Tolerance > Minimum Tolerance
Hysteresis	0.00	bar	0.00 bar	9.99 bar	Hysteresis range: Tolerance > Hysteresis > Minimum Hysteresis
Maximum Limit (No Hysteresis)	2.010	bar	-3.40000E+38	3.40000E+38	Defines upper limit of process pressure. Process is outside specification when pressure is greater than this value
Maximum Limit (With Hysteresis)	1.810	bar	-3.40000E+38	3.40000E+38	When pressure is outside specification (above maximum limit), process returns to specification when pressure is less than this value

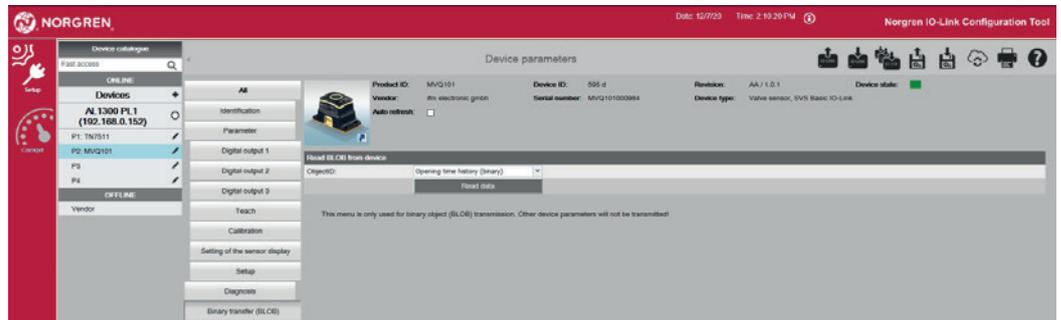
- » The setting [All] is preset.
- » All parameters are displayed and can be edited.
- ▶ To change specific parameters, select the required category and edit the parameters. appears to show that the value has been edited but is not yet written to the device.
- ▶ Click on [] to write parameters to the device.

The function [Cyclic polling] displays the parameter values available in the device in an additional column [Device value]. Writing to the device is always via [].

6.1 Search for missing IODD

If no IODD is yet installed for a connected device that has been found, Norgren IO-Link Configuration Tool asks if it can use the internet to find a corresponding IODD file. The user can start the search with [Yes], provided that there is an internet connection.

7. Binary file transfer (BLOB) For devices supporting the transfer of binary files, the Norgren IO-Link Configuration Tool displays the category [Binary transfer (BLOB)] in the [Setup] menu.



- ▶ Click on [Binary transfer (BLOB)].
- ▶ Select the requested value from the [ObjectID] list.
- ▶ Click on [Read data].
- ▶ Assign a file name and save the file.
 - » Norgren IO-Link Configuration Tool saves the bin file in the default download directory of the logged-in user.

8. Cockpit

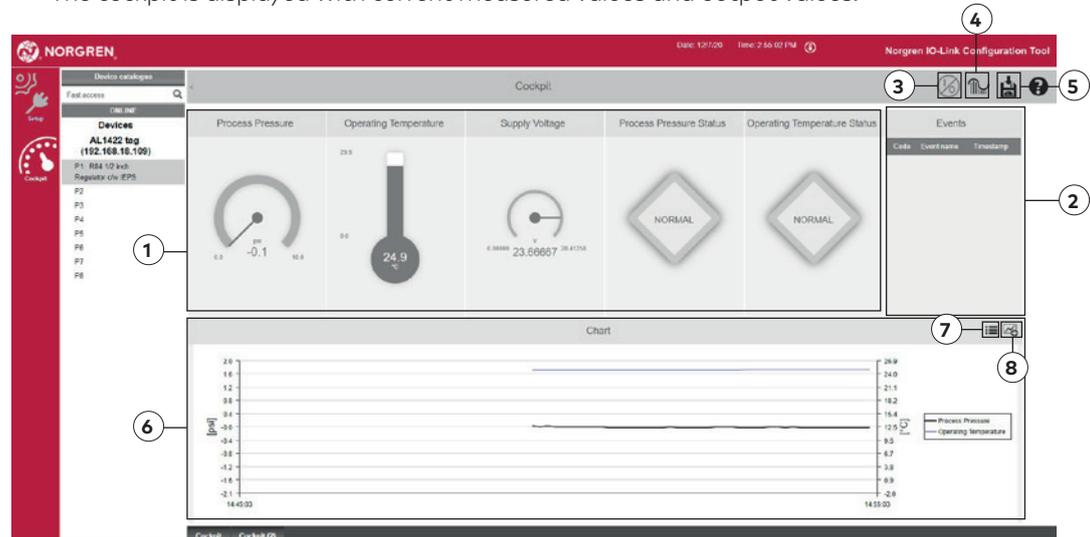
The cockpit offers the following options:

Display instruments: Current measured values and switching states are displayed in the form of display instruments.

Chart: Current measured values / switching states are logged against time in a chart.

► Click on [Cockpit].

» The cockpit is displayed with current measured values and output values.



①	Display instruments	Simplified graphical representation of the outputs.
②	Events	Events are displayed with code, name and time. A tool tip shows further detailed information about the event.
③	Process data output	Status / values of the process data outputs are displayed. Outputs can be set.
④	Set the device sampling rate	Setting of the transmission rate of new measured values (number of measured values detected per time unit).
⑤	Export measured values	Measured values of the chart are stored in a csv file.
⑥	Chart	The measured values and switching states over a defined period of time are visualised. The legend illustrates which characteristic curve refers to which measured value.
⑦	Edit / Configuration	Editing of the diagram labelling. Definition of the time range of the X axis. Activation or deactivation of the legend.
⑧	Add / delete data sources	The display of detected data sources in the chart can be activated or deactivated.

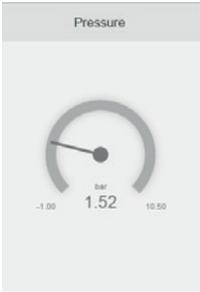
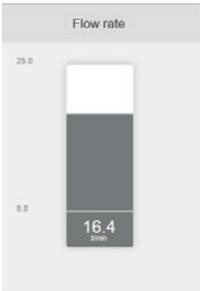
 Information concerning the export of measured values:

The maximum recording time for capturing process data via the cockpit is 60 min. The possible recording time, however, may vary and depends on the set time range of the x axis (standard value: 10 min.)

 Norgren IO-Link Configuration Tool only records the measured values of the device selected in the cockpit: As soon as a device is selected in the cockpit that provides process values, Norgren IO-Link Configuration Tool starts to record the measured values. Selecting another device interrupts the recording of the measured values of this device. When the first device is selected again, the recording is continued with a time gap. This gap in the measured values will also be present in the exported CSV file.

Norgren IO-Link Configuration Tool only exports the recorded measured values of the device selected at the time of the export.

8.1 Indicators used for measuring points / data sources

Indicator type	Description	Symbol
Gauge	This display format is typically used for pressure measurements in bar / psi / MPa .	
Bar graph	This indicator is used for process values typically not displayed as a gauge or thermometer.	
Thermometer	This display format is typically used for temperature measurements in °C / °F / ...	
Switching status	This indicator is used to display digital I/O signals. Only one display format is indicated <ul style="list-style-type: none"> • Display "ON" = active / output "high" or <ul style="list-style-type: none"> • Display "OFF" = inactive / output "low" 	
Events panel	<ul style="list-style-type: none"> • This indicator is used to display IO-Link events. 	

8.2 Set process data outputs

For some IO-Link devices it is possible to set the outputs.

The process data outputs are set in the cockpit. The window for the process data outputs is shown/hidden via .

The following operating elements are available to change the outputs:

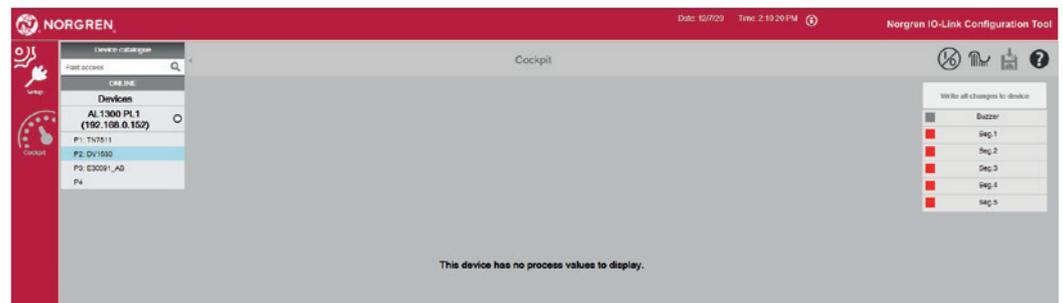
- Switch
- Input field
- Slider bar
- List



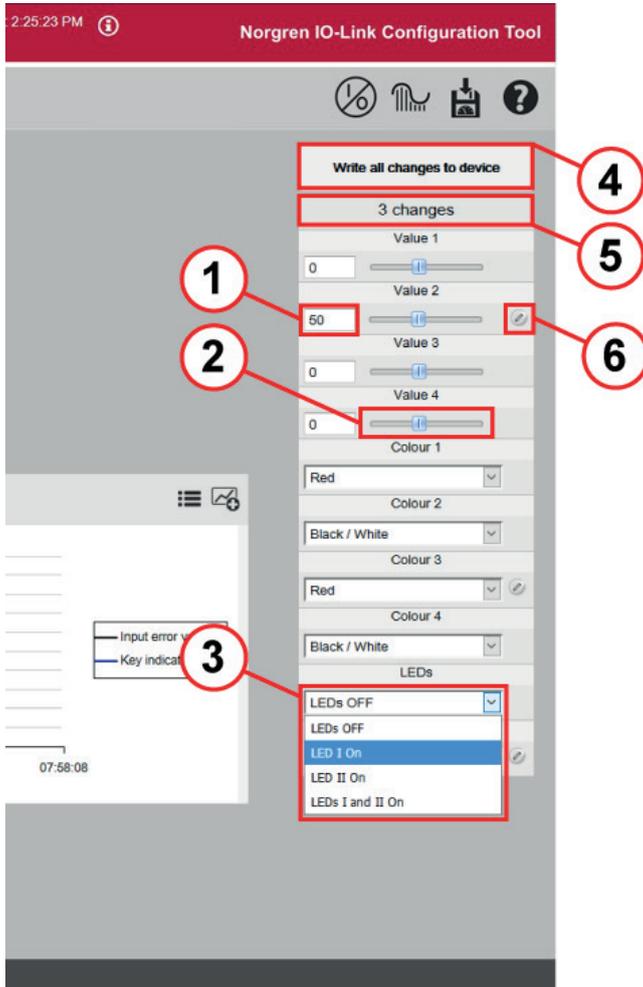
The setting options and operating elements available depend on the connected device and possibly on the configured operating mode. If the operating mode can be set, it can be changed in the [Setup] menu.

Change outputs via switch:

- ▶ Click on .
- » A window with all process data outputs that can be changed is displayed (in the example via switches as operating elements).
- » Activated outputs are marked with a red square, deactivated with a grey square.
- ▶ Activate / deactivate the requested outputs by clicking.
- ▶ Click on [Write all changes to device] to set all changed outputs with the displayed values.
- » All changed outputs are set with the configured values.



Change outputs via other operating elements:



- ▶ Enter the requested values in the input fields ① and confirm with Enter.
 - » The respective sliders are adapted accordingly.
- ▶ Use the mouse to move the slider ② to the required positions.
 - » The values in the corresponding input fields adapt accordingly.
 - » Select the required values from the lists ③.

The total number of changed parameters is indicated in the 2nd line of the window ⑤.

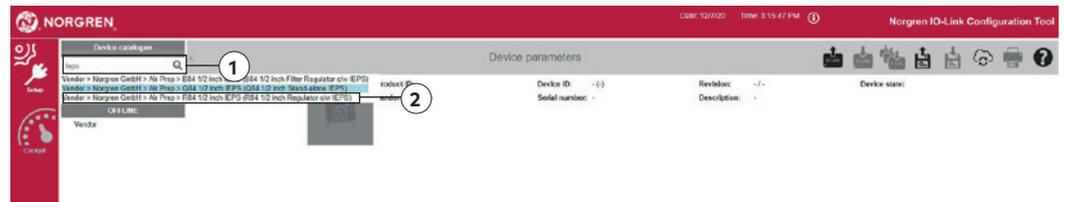
Changed values are marked with the pen icon ⑥.

- ▶ Click on the pen icon to set only this output with the displayed value.
 - » The output is set with the configured value.
 - » The pen icon disappears.
 - » The number of changed parameters is reduced by 1.
- ▶ Click on [Write all changes to device] ④ to set all changed outputs with the displayed values.
 - » All changed outputs are set with the configured values.
 - » All pen icons disappear.
 - » The number of changed parameters is set to 0.

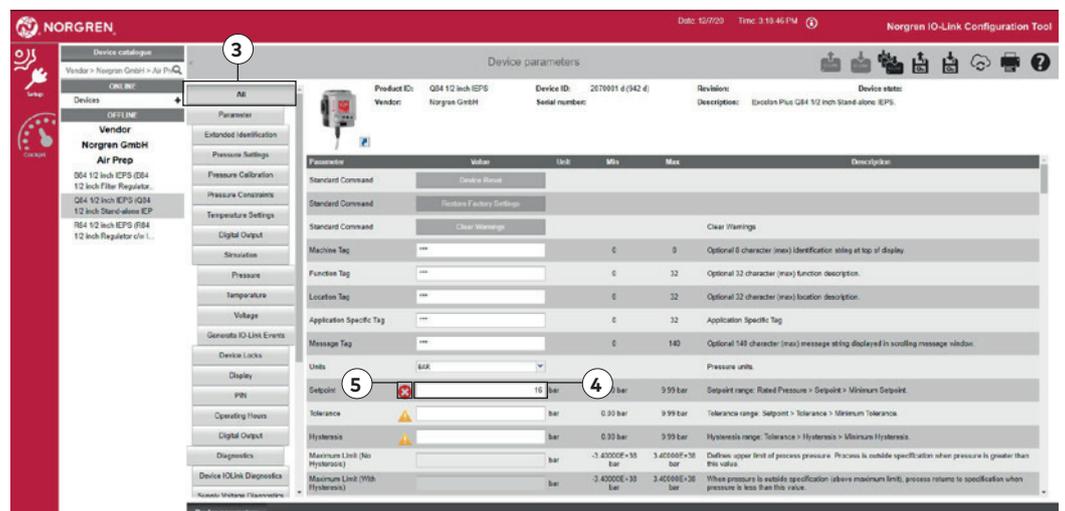
9. Offline parameter setting

Offline parameter setting allows editing of a set of parameters without connecting a corresponding device. Only the IODD is required for the device to be set. For most Norgren devices, the IODD is stored in the Norgren IO-Link Configuration Tool. For devices from other manufacturers, the corresponding IODDs can be downloaded and installed from the internet.

- ▶ Under [Device catalogue], enter the requested part number or search term in the fast access box ①, e.g. [IEPS], to access the group of Integrated Electronics Pressure Sensors.
- » A preselection with product IDs is shown in the device catalogue.



- ▶ Click on [Q84 1/2 inch IEPS] ② for example.
- » The set of device parameters for Q84 1.2 inch IEPS is displayed for editing.



- » [All] ③ parameters are activated and can be edited.
- ▶ Edit [Setpoint] ④ for example. (In the screenshot an invalid value was entered.)
 - » Invalid values are marked with [X] ⑤. The value must be selected from the range between min value and max value.
 - ▶ Correct the value [Setpoint] ④, observe the min / max limits
 - ▶ Click on [Save] to save the parameter set as an lrp file.
 - » The lrp file is saved in the download directory.
 - If only 1 parameter contains an invalid value, the lrp file cannot be saved. A corresponding message is provided.
 - ▶ Missing values are marked with [!]. These values do not need to be completed to be able to save the parameter set as an lrp file.

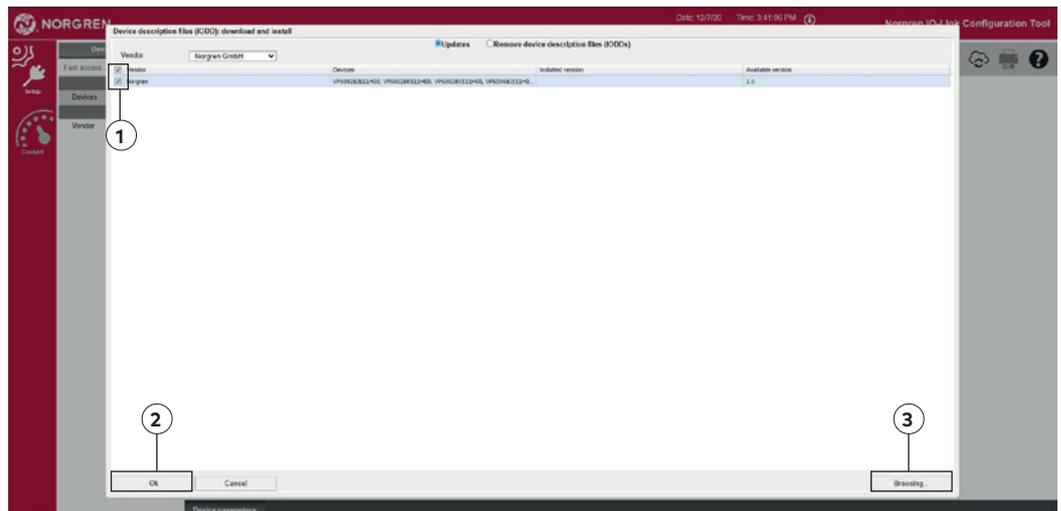
 In the offline mode, reading of  or writing to  a connected device is not possible. The saved file with the parameters can only be accessed in the online mode and then be written to the device.  (→ 5.5) allows writing to a connected and detected device in the offline mode.

10. Update IODD / device catalogue

The Norgren IO-Link Configuration Tool software provides an easy way to keep the IODDs in the device catalogue up to date. For an online update, an internet connection is required.

10.1 Download and install IODDs

- ▶ Click on .
- » The window [Device description files (IODD): download and install] opens.
- » Updates for installed IODDs are shown by default. The option [Updates] is selected.



- ▶ If necessary, select another manufacturer to download new IODDs.
- ▶ Mark IODDs ① which are to be installed / updated.
- ▶ Click on [OK] ②.
 - » A window with information about the update of the device definitions (IODDs) appears.
- As an alternative, IODDs can be saved as a file on a storage medium and imported later.
- ▶ Click on .
- ▶ Click on [Browsing...] ③ .
- ▶ Select the storage medium and highlight the file.
- ▶ Click on [Open].
 - » A window with information about the update of the device definitions (IODDs) appears.

10.2 Delete IODDs

- ▶ Click on .
- » The window [Device description files (IODD): download and install] opens.
- ▶ Select [Remove device description files (IODDs)].
- ▶ Mark the IODDs to be deleted.
- ▶ Click on [OK].
- ▶ Confirm that the IODDs are to be deleted at the next prompt.
 - » A window with information about the update of the device definitions (IODDs) appears.

11. Troubleshooting

List of frequently asked questions and their solutions
 (FAQ and Troubleshooting)

Question	Solution
Software does not start	<ul style="list-style-type: none"> ▶ Reboot the computer
Sensor is not detected. Error message "No connected device was found!" appears	<ul style="list-style-type: none"> ▶ Check the network connection. ▶ Check the network settings. ▶ Check IP address of the computer, and, if necessary, assign a static IP address. ▶ Check the firewall settings. If necessary, deactivate firewall.
The installation routine is not completed	<p>A module may not have been detected correctly, or a wrong driver may have been selected.</p> <ul style="list-style-type: none"> ▶ End the installation ▶ Start deinstallation. ▶ Reboot the computer. ▶ Restart the installation process.
Poor display in the web browser.	<ul style="list-style-type: none"> ▶ Refresh browser window (key F5). ▶ Use an alternative browser (→ 4.1.2 PC software). > A poor display does not have any impact on the function.

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Incorporating



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