

Software manual

LR DEVICE Version 1.7



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1 Preliminary note

This document explains the set-up and use of the LR DEVICE software from ifm.

1.1 Symbols used

- Instructions
- > Reaction, result
- [...] Designation of keys, buttons or indications
- \rightarrow Cross-reference
- Important note

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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 without any restrictions.

If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property can occur. That is why installation, set-up and maintenance of the article 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 ifm electronic gmbh.

3 Functions and features

Using the LR DEVICE software offers the following options:

- Parameter setting of IO-Link masters and devices
 - Via the network
 - Devices "point-to-point" via USB IO-Link master
- Online and offline set-up of ifm 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 LR DEVICE software 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 an LR DEVICE. Simultaneous parameter setting of devices and sensors with several LR DEVICE 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 LR DEVICE. 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
- 1 free USB 2.0 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.
- As an option, ifm USB IO-Link master (incl. plug-in power supply, USB cable and M12 connection cable for IO-Link devices).
- As an option, ifm IO-Link master, e.g. AL11xx, AL12xx, AL13xx, AL19xx (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 LR DEVICE is installed on the PC using the file "LR_DEVICE_x.x.x.xxx_INSTALL.exe".



If an LR SENSOR version is installed on the PC, it will be upgraded to LR DEVICE by agreement. Installation of LR SENSOR and LR DEVICE 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 "LR_DEVICE_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 ifm contract partner for available upgrades.
- Follow the installation routine as in \rightarrow 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.



Language versions of the software manual \rightarrow www.ifm.com

5 Program start

5.1 Limited software

The LR DEVICE software can be used in a limited environment without a licence key.

Functions of the limited environment:

- IO-Link masters are displayed with network address via the network.
- Read parameters from the master
- Read the device parameters via "point-to-point" connection
- Edit parameters on the LR DEVICE surface (offline)
- Writing data to a master or device is not possible.
- Cockpit functions for monitoring devices is offered without any restrictions, only when the point-to-point connection is used.

5.2 Licensing procedures

The licence key is checked by clicking on the [LIMITED] information.

The licence key consists of:

- Licence number
- Licence



The licence key is supplied with the device.

It is printed on the inside of the packaging for version QA0011. The licence key of the download version QA0012 is provided by e-mail.

5.3 Functions depending on the licence keys used

| Licence | Reading IO-Link files via USB IO-Link master or network | Writing data via network to network IO-Link master | Writing data via USB IO-Link master to IO- Link device | Writing data via network IO-Link master to IO-Link device |
|-----------|--|--|--|---|
| LIMITED | YES | YES | NO | NO |
| LR SENSOR | YES | YES | YES | NO |
| LR DEVICE | YES | YES | YES | YES |

5.4 Connection of the hardware

When the network is used:

► Connect the PC to the network via a suitable network cable.

When the USB IO-Link master is used:

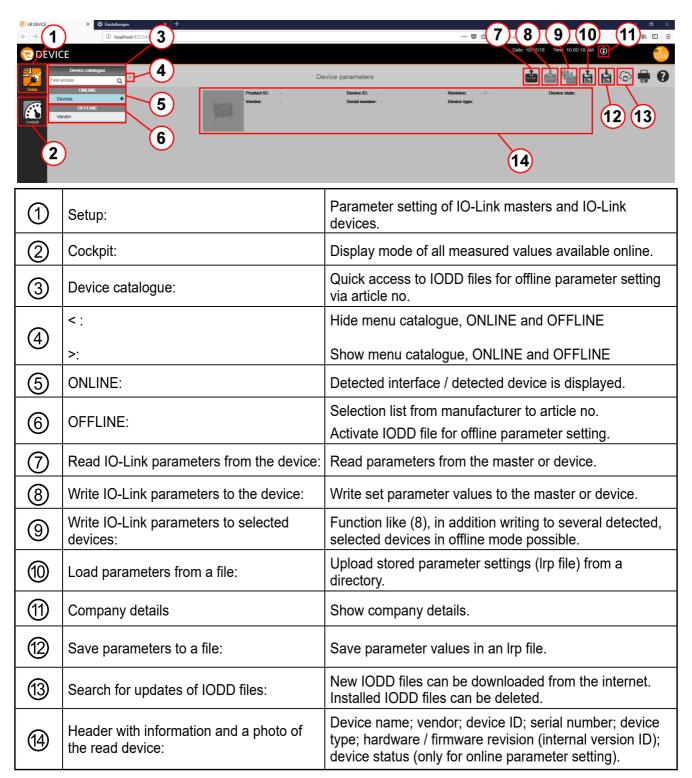
- ► Connect the USB IO-Link master to the PC and the plug-in power supply.
- Connect the USB IO-Link master to the IO-Link sensor via the M12 connection cable.
- For sensors with display or indication of the readiness for operation, check whether the unit is in operation.



The corresponding device is supplied with voltage via the USB IO-Link master.

5.5 Start screen

> The start screen is displayed in the language that is set in the browser $(\rightarrow 4.4 \text{ Language selection}).$



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 [^{the}].
- > Parameters of the connected IO-Link master are loaded into the software.

| DE | VICE | | | | Date: 3/2/18 Time: 3:26:50 PM | ilo |
|-------------------|---|-------------------------|----------------------------------|-----------------------------------|-------------------------------|-------|
| Viela Seta | Device catalogue | | Device parameters | | 📥 📥 🏪 🛔 🧔 | ି 🖶 🕄 |
| Schap Coodspit | ONU IFE Devices AL1300 (1192 1880 1650) OFER INE Manufacturer fim electronic gmbh | Protect ID: - Vendor: - | Device ID: - Serial number: - | Revision: - / - Device type: - | Device state: | |

If, in addition, there is an IO-Link device connected via a USB IO-Link master, this device will be displayed under [USB] first. To additionally display the IO-Link masters in the connected network:

- Click on [Devices].
- Click on [⁴] again.
- > ONLINE (1) shows all detected IO-Link masters.
- > In this case the network address ② of the IO-Link masters is shown.
- ► Adapt the network address of the PC in the network and sharing center.

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LR DEVICE detects IO-Link masters with network addresses deviating from the PC network address in the networks. The parameters cannot be changed in this case.

Click on [¹/₁].

| | | | | Date: 3/2/18 Time: 4:14:41 PM | ilm |
|--|-------------------------|----------------------------------|-------------|-------------------------------|-----|
| Device catalogue | | Device parameters | | 📩 📩 🕍 📩 🖒 | • |
| Crear CML R/E Devices Crear CML R/E Devices CML R/E Devices | Product ID: - Vendor: - | Device ID: - Sental number: - | Revision: - | -/- Device state: | |

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

| DEVICE | | 5_ | | | | | Date: 3/2/18 Time: 4:30:44 PM |
|--|------------------|--------------------------------|---------------------------------------|------------------------------|--------------|---------------|--|
| Device catalogue Fast access Q | | | Devi | ce parameters | | | 📩 🎃 🕍 🛓 🕞 🖶 |
| ONLINE Devices + | All | Product ID: | AL1300 | Device ID: Serial number: | 4000000000 d | | Revision: AA / AL 1x0x_cn_pn_v2.0.35 Device state: |
| AL1300 PL1 0 | Parameter | Auto refres | · · · · · · · · · · · · · · · · · · · | | 000111110201 | | |
| P1: TN7511 | loT | | | | | | |
| P2: DV1530 | Fieldbus | Parameter | Value | Unit | Min | Max | Description |
| P4 / | Port 1 | Access rights | Fieldbus + IoT | * | | | Defines the access rights for the IO-Link Master |
| OFFLINE | Port 2 | DHCP | Static IP | * | | | IP address setting with DHCP or static IP |
| Manufacturer ifm electronic gmbh | Port 3 Port 4 | IP address | 192.168.0.152 | | | | IoT IP address of IO-Link Master |
| | Port 4 | Subnet mask | 265.255.0.0 | | | | IoT subnet mask of IO-Link Master |
| (6) | Firmware | Default gateway IP address | 0.0.0.0 | | | | IoT default gateway IP address |
| | T HITMAN | MAC address | 00:02:01:05:60:03 | | | | IoT MAC address of IO-Link Master |
| | | IP address LR SMARTOBSERVER | 192.168.0.100 | | | | Target IP of LR SMARTOBSERVER for sending process data |
| | | Port LR SMARTOBSERVER | | 35100 | 0 | 65535 | Target port of LR SMARTOBSERVER for sending process data |
| | | Interval LR SMARTOBSERVER | Off | ✓ ms | 500 ms | 2147483647 ms | Type in the sending interval to LR SMARTOBSERVER for process data |
| | | Application Tag | AL1300 PL1 | | | | Name for IO-Link Master in LR SMARTOBSERVER structure |
| | | IP address | 192.168.0.152 | | | | Fieldbus IP address of IO-Link Master |
| | | Subnet mask | 255 255 256 0 | | | | Fieldbus subnet mask of IO-Link Master |
| | | Default gateway IP address | 0.0.0.0 | | | | Fieldbus default gateway IP address |
| | | Hostname | Ì | | | | Fieldbus name. Allowed characters: "a-2" (lower case letters), "0-9" (digits)," (minus)," (point, separate between labels). Further conditions: The string must not begin or end with a point or minus sign. The string must not begin with a number. The minus sign must not be used before or after a dot. |
| | | MAC address | 00:02:01:05:60:00 | | | | Fieldbus MAC address of IO-Link Master |

- > 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 respective operating instructions of the IO-Link master.
- > [Devices] shows the used ports of the IO-Link master \bigcirc .
- ĺ
- ► To identify the physical device displayed in LR DEVICE, click on [○] on the right next to the displayed IO-Link master. (The symbol [○] is only displayed if the device supports this function).
- For some seconds,
 the LED RDY on the IO-Link master flashes
 the symbol [O] in LR DEVICE flashes orange
- ▶ While they do so, click on [○] again.
- > The LED on the device and the symbol [O] in LR DEVICE flash permanently.
- ▶ Click on [O] again.
- The flashing of the LED on the device and the symbol [O] in LR DEVICE is stopped.Refreshing or closing the browser window will stop the flashing as well.

From version 1.5 or higher, LR DEVICE supports the safety function of IO-Link masters, provided that the devices are equipped with this function.

The safety function allows for the 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] ⑦ to show the device on port 1.
- > The parameters of the connected IO-Link device open.

| DEVICE Device catalogue | 8 | | | | | | Date: 3/2/18 Time: 4:40:13 PM |
|-------------------------------|-------------------------------|--------------------------|------------------------------------|-----------------------------|-----------------------|----------|--|
| Fast access Q | | | Device | parameters | | | 📩 📩 🏰 📩 🕞 🖶 (|
| ONLINE Devices + | All | Product ID: Vendor: | | Device ID: Serial number | 583 d g00301101183 | | Revision: AA / V1.18 Device state: Device type: Electronic temperature sensor, -50150 °C, IO-Link, |
| AL1300 PL1 | Identification | Auto retres | U U | | | | |
| (192.168.0.152) P1: TN7511 | Parameter | Ιa | - <i>/</i> - | | | | |
| P2: DV1530 | Output configuration | Parameter | Value | Unit | Min | Max | Description |
| P3: E30391_AB | Digital output 1 | Application Specific Tag | ••• | | 0 | 32 | Application Specific Tag |
| P4 / | Digital output 2 | ou1 | Hno / Hysteresis fct normally open | * | | | Output configuration [OUT 1] |
| Manufacturer | Memory | ou2 | Hno / Hysteresis fct normally open | ~ | | | Output configuration [OUT 2] |
| ifm electronic gmbh | Fault Configuration Output 1 | | | | | | |
| | Fault Configuration Output 2 | P-n | PnP | * | | | Output polarity for the switching outputs |
| | Setting of the sensor display | dS1 | | 0,0 s | 0,0 s | 50,0 s | Switching delay for [OUT 1] |
| | Calibration | dr1 | | 0,0 s | 0,0 s | 50,0 s | Reset delay for [OUT 1] |
| | Setup | SP_FH1 | | 26,5 °C | -49,8 °C | 150,0 °C | Switch point 1, [SP1] must be greater than [rP1]. Please take into account the current [rP1] value. [SP1 will be refused if below [rP1]. [SP] = [FH] and [rP] = [FL] if [OU1] = Fnc, Fnc. |
| | Diagnosis | rP_FL1 | | 24,0 °C | -50,0 °C | 149,8 °C | Reset point 1, (rP1) must be smaller than (SP1). Please take into account the current (SP1) value !(rP1) will be refused if above (SP1). [rP] = [FL] and [SP] = [FH] if [OU1] = Fno, Fnc. |
| | 1 | d52 | | 0,0 s | 0,0 s | 50,0 s | Switching delay for [OUT 2] |
| | (10) | dr2 | | 0,0 s | 0,0 s | 50,0 s | Reset delay for [OUT 2] |
| | U | SP_FH2 | | 120,0 °C | -49,8 °C | 150,0 °C | Switch point 2, [SP2] must be greater than [rP2]. Please take into account the current [rP2] value. [SP2 will be refused if below [rP2], [SP] = [FH] and [rP] = [FL] if [OU2] = Fno, Fnc. |
| | | rP_FL2 | | 100,0 °C | -50,0 °C | 149,8 °C | Reset point 2, (rP2) must be smaller than (SP2). Please take into account the current (SP2) value. (rP2) will be refused if above (SP2). (rP) = (FL) and (SP) = (FH) if (OU2) = Fno, Fnc. |
| | | Lo | 20,6 | * °C | -50,0 °C | 150,0 °C | Minimum memory value |
| | | н | 60,0 | * *C | -50,0 °C | 150,0 °C | Maximum memory value |
| | | Standard Command | Reset [Hi] and [Lo] memory | | | | |
| | Device parameters | | | | | | |

- > The setting [All] ⑧ is preset.
- > All parameters (9) are displayed and can be edited.
- For a targeted input of parameters, select the requested category (1) and edit the parameters.
- Click on [¹] to write parameters to the device.



The function [Auto refresh] allows to display 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, LR DEVICE enquires if a corresponding IODD is to be searched on the internet. The user can start the search with [Yes], provided that there is an internet connection.

7 Online parameter setting via USB IO-Link master

- > The IO-Link device is connected to the PC via the USB IO-Link master.
- Click on [¹].
- > Parameters of the connected sensor are loaded into the software.

| | | | | | | | Date: 3/12/18 Time: 9:54 08 AM |
|--|--|--------------------------------------|------------------------------------|------------------------------|-----------------------|----------|--|
| Device catalogue Fast acces | | | Device | parameters | | | 📫 🏜 📸 🗄 🗇 🖶 😧 |
| Cooper Concept | All Identification Parameter | Product ID Vendor: Auto refres | ifm electronic gmbh | Device ID: Serial number: | 583 d g00301101183 | | Revision: AA / V1.18 Device statis: Device type: Electronic temperature sensor, -50150 °C, IO-Link, |
| OFFLINE Manufacturer | Output configuration | Parameter | Value | Unit | Min | Max | Description |
| | Digital output 1 | Application Specific Tag | | | 0 | 32 | Application Specific Tag |
| | Digital output 2 | out | Hno / Hysteresis fct normally open | * | | | Output configuration [OUT 1] |
| | Memory | ou2 | Hno / Hysteresis fct normally open | • | | | Output configuration [OUT 2] |
| | Fault Configuration Output 1 | P-n | PnP | ¥ | | | Output polarity for the switching outputs |
| | Fault Configuration Output 2 | dS1 | | 0,0 s | 0,0 s | 50,0 s | Switching delay for (OUT 1) |
| | Setting of the sensor display Calibration | dr1 | - | 0,0 s | 0.0 s | 50,0 s | Reset delay for [OUT 1] |
| | Setup | SP_FH1 | | 26,5 °C | -49,8 °C | 150,0 °C | Switch point 1, [SP1] must be greater than (rP1]. Please take into account the current (rP1) value. [SP1] will be refused if below (rP1]. [SP] = [FH] and (rP] = [FL] if (DU1) = Fno, Fnc. |
| | Diagnosis | rP_FL1 | | 24,0 °C | -50,0 °C | 149,8 °C | while the relosed in beam (in Fig. br) = (rh) and (rh) = (rh) in (contrarting, ring, |
| | | dS2 | | 0,0 s | 0,0 s | 50,0 s | Switching delay for (OUT 2) |
| | $\overline{\mathbf{A}}$ | dr2 | | 0,0 s | 0,0 s | 50,0 s | Reset delay for [OUT 2] |
| | $\mathbf{\Theta}$ | SP. FH2 | | 120.0 °C | -49.8 °C | 150.0 °C | Switch point 2, [SP2] must be greater than [rP2]. Please take into account the current [rP2] value. [SP2] |
| | | rP_FL2 | | 100,0 °C | -50.0 °C | 149,8 °C | will be refused if below [rP2]. [SP] = [FH] and [rP] = [FL] if [OU2] = Fno, Fnc. Reset point 2, [rP2] must be smaller than [SP2]. Please take into account the current [SP2] value ![rP2] |
| | | Lo | 20.6 | * *C | -50,0 °C | 150,0 °C | will be refused if above (SP2). [rP] = [FL] and [SP] = [FH] if [OU2] = Fno, Fnc. Minimum memory value |
| | | Hi | 60,0 | × •c | -50,0 °C | 150,0 °C | Maximum memory value |
| | | Standard Command | Reset [Hi] and [Lo] memory | | | | |
| | | | (cost p in and [cost indition) | _ | | | × . |
| | Device parameters | | | | | | |

- > ONLINE (1) shows the used interface and the detected sensor.
- > The setting [All] ② is always preset.
- > All parameters ③ are displayed and can be edited.
- ► For a targeted input of parameters, select the requested category ④ and edit the parameter.

Example:

- ► Select [Output configuration] ⑤.
- > Parameters in the category [Output configuration] are shown and can be edited.

| | Device catalogue | | | | | | | | | | | | | | | | |
|------------|------------------|-----|-------------------------------|-----------|--------------|------------------------|--|--------------|-----------|---------------------|-----|---------------------------|--|--------------------------|------------|---|--|
| 7 R | | 0 4 | | | | | C | evice parame | ters | | | | , di |) 📩 🖏 🗄 | - E | 6 | |
| | ast access | Q | | | | | | | | | | | | | <u>V</u> 0 | ~ | |
| | ONLINE | | All | | | Product ID: Vendor: | TN7511 ifm electronic gmbh | Device | | 83 d 00301101183 | | Revision: Device type: | AA / V1.18 Electronic temperature ser | Device state: | | | |
| 3 | USB | - | Identification | | | Auto refresh: | | Senain | umber: gl | 00301101183 | | Device type: | Electronic temperature ser | sor, -50150 °C, 10-Link, | | | |
|) | TN7511 | | Parameter | l ¥ | | | | | | | | | | | | | |
| | OFFLINE | i i | | | 2 | | | | | | | | | | | | |
| | Manufacturer | | Output configuration | Parameter | 2 | | Value | u | lnit | Min | Max | | | Description | | | |
| | | 1 | Digital output 1 | ou1 | | | Hno / Hysteresis fct norm | aly open 💌 | | | | Output confi | Iguration (OUT 1) | | | | |
| | G | | Digital output 2 | ou2 | | a | Hnc / Hysteresis fct norm | ally closed | | | | Output confi | iguration [OUT 2] | | | | |
| | (5 | | Memory | | | - | Hno / Hysteresis fct norm | aly open | | | | | | | | | |
| | | - | Fault Configuration Output 1 | P-n | | | Hnc / Hysteresis fct norm Fno / Window fct normal | | | | | Output polar | rity for the switching outputs | | | | |
| | | | | | 1 | | Fnc / Window fct normal | | | | | | | | | | |
| | | | Fault Configuration Output 2 | - | \checkmark | 8 . | × × | | | | | | | | | | |
| | | | Setting of the sensor display | (7 | | | ` | \sim | | | | | | | | | |
| | | | Calibration | C. | | | 1 | 6 | | | | | | | | | |
| | | | Setup | | | | | | | | | | | | | | |
| | | | Diagnosis | | | | | | | | | | | | | | |

Select [ou2] parameter from the list 6 (other parameters are changed via input fields).

- > The pen icon ⑦ indicates a changed parameter which has not yet been transferred to the device.
- ► Click on [[▲]] to write parameters to the device.

7.1 Memory plug parameter setting

A memory plug (E30398) can be used to store and transfer parameter values of various devices. The parameter values can be directly copied from the sensor to the memory plug, or written to it by the LR DEVICE. For further details refer to the operating instructions of the memory plug.

If a memory plug is connected, the following additional information is shown in the header:

| B | No parameters are stored on the memory plug, no write protection activated. or Parameters are stored on the memory plug, they can be edited, no write protection activated. Attention! Inconsistent data may be generated! |
|----------|---|
| ß | Parameters are stored on the memory plug, they cannot be edited, write protection is activated. |
| (| When a memory plug containing data is read, \textcircled{D} appears. By clicking on the icon, the parameters of the stored device are displayed (\rightarrow 7.2 Display of the data stored on the memory plug). |
| Q | appears when \textcircled{P} has been clicked. By clicking on \swarrow the parameter list of the memory plug is displayed again. The icon changes again to \textcircled{P} (\rightarrow 7.2). |



The memory plug only provides memory space for the parameters of one device.

Writing to the memory plug:

- Read IO-Link parameters from a device using the LR DEVICE software or select offline parameter setting.
- Edit parameters.
- ► Connect the memory plug to the USB IO-Link master.
- Click on [¹] to save data on the memory plug.



The write protection is activated via the system command [Write protect]. The system command [Read Write] deactivates the write protection.

7.2 Display of the data stored on the memory plug

- ► Connect the memory plug to the USB IO-Link master.
- ► Click on [^{the}].
- > The parameter list of the connected memory plug is loaded into the software.

| DE | VICE | | | | | | | | Date: 3/12/18 Time: 11:11:09 AM |
|------------------|------------------------------------|---|------------------------------------|--|-----------------------------------|--|------------------------------|-----|--|
| 2 | Device catalogue Fast access | Q | < | | Device pa | rameters | | | 🗩 📥 📥 ት 🖶 🗇 🖶 🕢 |
| Sedap Cockpit | ONLINE Devices USB E30398 | + | All Identification Parameter | Product ID: Vendor: Auto refresh | ifm electronic gmbh | Device ID: Serial number: Write protection | 288 d q0128250118 Tr 🔒 | | Revision: AD / 682085101 Device state: Device type: Memory Pug, Parameter memory for IO-Link devices Stored device: LR3000 |
| | OFFLINE Manufacturer | | Setup | Parameter | Value | Unit | Min | Маж | Description |
| | | | | Application Specific Tag | | | 0 | 16 | Application Specific Tag |
| | | | | MP.S | fm-IO-Link-DTM_WP | Y | | | Memory Plug State |
| | | | | MP.Header | 0x00,0x00,0x00,0x00,0x01,0x36,0x0 | U | 0 | 64 | IO-Link Identification of the stored device |
| | | | | MP.VName | ifm electronic gmbh | 1 | 0 | 64 | Vendor name of the stored device |
| | | | | MP.Pld | LR3000 | | 0 | 64 | Product ID of the stored device |
| | | | | MP.DataPage1 | 0x00,0x47,0x00,0x02,0x00,0xD2,0x0 |), | 0 | 64 | Stored device data [page 1] |
| | | | | MP.DataPage2 | 0x00,0x01,0x00,0x00,0x72,0x00,0x0 | 9 | 0 | 64 | Stored device data [page 2] |
| | | | | MP.DataPage3 | | | 0 | 64 | Stored device data [page 3] |
| | | | | MP.DataPage4 | | | 0 | 64 | Stored device data [page 4] |
| | | | | Standard Command | Restore Factory Settings | | | | |
| | | | | Standard Command | Command 'Write protect' | | | | |
| | | | | Standard Command | Command 'Read Write' | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | Device parameters | | | | | | |

- ► Click on [).
- > All stored parameters are displayed and can be edited.

| 🔁 DE' | VICE | | | | | | | Date: 3/12/18 Time: 11:11:25 AM |
|------------------|--------------------------------------|--|--------------------------------|--------------------------------------|---------------------------|---------|----------|---|
| 2 | Device catalogue Fast access Q | ¢ | | Device | parameters | | | 🔎 🏜 🏜 💺 🖧 🕀 🖶 🔾 |
| Setur Cockpit | ONLINE Devices + USB E30398 | All Identification Parameter | Product ID: Vendor: | LR3000 ifm electronic gmbh | Device ID: Serial number: | 344 d | | Revision: Device state: Device state: Device type: Electronic level sensor, 1.0167.0 cm, Process connection G 3/4 A |
| | OFFLINE | Output configuration | Parameter | Value | Unit | Min | Max | Description |
| | | Digital output 1 | Application Specific Tag | · | | 0 | 16 | Application Specific Tag |
| | | Analog Output 2 | OU1 | Hnc / Hysteresis fct normally closed | ~ | | | Output configuration [OUT 1] |
| | | Fault Configuration | OU2 | 1/ Analog signal 420 mA | * | | | Output configuration [OUT 2] |
| | | Fault Configuration Output 1 Fault Configuration Output 2 | SP1 | | 21,0 cm | 1,5 cm | 157,0 cm | Switch point 1 from bottom edge of probe; [SP1] must be greater than [rP1]. Please take into account the current [rP1] value; [SP1] will be refused if below (rP1]. The maximum [SP1] can be [LEnG] minus 3.0 |
| | | Setting of the sensor display | rP1 | | 20.5 cm | 1.0 cm | 156.5 cm | cm Reset point 1 from bottom edge of probe, [/P1] must be smaller than [SP1]. Please take into account the current [SP1] value. [/P1] will be refused if above [SP1]. The maximum [/P1] can be [LEnG] minus 3.5 |
| | | Setup | | | | | | cm i i i i i i i i i i i i i i i i i i i |
| | | | dr1 | | 0,0 s | 0,0 s | 60,0 s | Switch-OFF delay [OUT 1] |
| | | | ASP | | 1,0 cm | 1,0 cm | 118,0 cm | Analog start point from bottom edge of probe, [ASP] must be at least 25% below [AEP]. For more information please refer to the operating manual. |
| | | | AEP | | 21,0 cm | 11,6 cm | 157,0 cm | Analog end point from bottom edge of probe, [AEP] must be at least 25% above [ASP]. The maximum [AEP] is [LEnG] minus 3.0 cm. For more information please refer to the operating manual. |
| | | | dFo | | 0,0 s | 0,0 s | 5,0 s | Delay time of outputs after fault |
| | | | FOU1 | OFF | * | | | [OUT 1] behaviour in case of fault |
| | | | FOU2 | OFF | • | | | [OUT 2] behaviour in case of fault |
| | | | Uni | cm | * | | | Selection of unit on the sensor display |
| | | | SELd. Display On / OFF | On | • | | | Selection of measurement on the sensor display |
| | | | SELd. Displayed measurement | L | ~ | | | Selection of measurement on the sensor display |
| | | | 1.00 | lutar | | _ | _ | . It will be to be to be the top of the device to accurat unintentiable of shearens. It will be maditable of the device 🔍 |
| 5-1 | | Device parameters | | | | | | |

- ► Click on [戶].
- > The parameter list of the connected memory plug is displayed.

8 Binary file transfer (BLOB)

For devices supporting the transfer of binary files, LR DEVICE displays the category [Binary transfer (BLOB)] in the [Setup] menu.

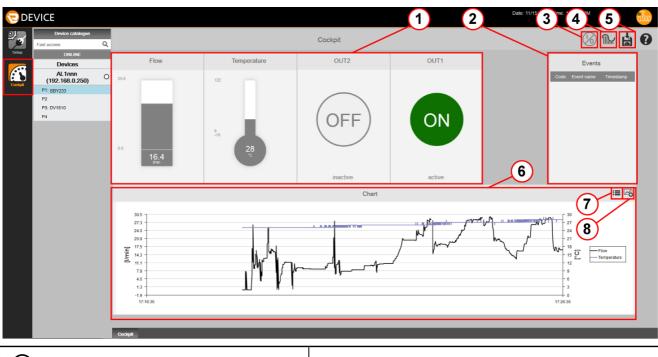
| DE | VICE | | | | | | | | | Da | te: 10/18/18 T | me: 3:06:4 | 4 PM 🚯 | | il. |
|---------|---------------------------------|----|--------------------------------------|------------------|------------------------|--|-----------------------------|--------------------------------|---------------------------|---------------------------------|----------------|------------|--------|---|-----|
| 2 | Device catalogue Fast access | Q, | | | | Device | parameters | | | | <u>.</u> | | | 9 | - |
| Selup | ONLINE Devices | • | All | | Product ID: Vendor: | MVQ101 Ifm electronic gmbh | Device ID: Serial number | 595 d MVQ101000984 | Revision: Device type: | AA / 1.0.1 Valve sensor, SVS | | ce state: | - | | |
| Cockpit | AL1300 PL1 (192.168.0.152) | 0 | Identification | | Auto refresh: | | Conta Hambor. | | bonno (jpo. | 1010 001001,010 | | | | | |
| Cockpit | P1: TN7611 | 1 | Parameter | 2 | | | | | | | | | | | |
| | P2: MVQ101 P3 | - | Digital output 1 | Read BLOB from o | | | No. | | | | | | | | |
| | P4 | 1 | Digital output 2 Digital output 3 | ObjectID: | | Opening time history (binary) Road data | ~ | | | | | | | | |
| | OFFLINE Vendor | | Teach | This menu is c | only used for bina | ary object (BLOB) transmission. | Other device parame | eters will not be transmitted! | | | | | | | |
| | | | Calibration | | | | | | | | | | | | |
| | | | Setting of the sensor display | | | | | | | | | | | | |
| | | | Setup | | | | | | | | | | | | |
| | | - | Diagnosis | | | | | | | | | | | | |
| | | | Binary transfer (BLOB) | | | | | | | | | | | | |

- 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.
- > LR DEVICE saves the bin file in the default download directory of the logged-in user.

9 Cockpit

The cockpit offers the following options:

- Display instruments: Measured values and switching states are displayed in the form of display instruments in the respective current condition.
- Chart: Representation of the measured values / switching states in a time diagram.
- ► Click on [Cockpit].
- > The cockpit is displayed with current measured values and output response.



| | 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.)

!

LR DEVICE 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, LR DEVICE 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 CVS file.

LR DEVICE only exports the recorded measured values of the device selected at the time of the export.

| Indicator type | Description | Symbol |
|--------------------|---|---------------------|
| Pointer instrument | This display format is typically used for pressure measurements in bar / psi / MPa It is inspired by manometers. | Pressure |
| Bar graph | This indicator is used for process values typically not displayed as a manometer or thermometer. | 25.0 0.0 16.4 |

9.1 Indicators used for measuring points / data sources

| Indicator type | Description | Symbol | |
|------------------|--|--------------------|--------------------|
| Thermometer | This display format is typically used for temperature measurements in °C / °F / | Tempe | rature |
| | Based on measurement equipment in thermometer design. | | |
| | | °-10 | 8 |
| Switching status | This indicator is used to display digital I/O signals. | Switchstate [OUT1] | Switchstate [OUT2] |
| | Only one display format is indicated Display "ON" = active / output "high" or | ON | OFF |
| | Display "OFF" = inactive / output "low" | active | inactive |

9.2 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 [20].

The following operating elements are available to change the outputs:

- Switch
- Input field
- Slider bar
- List



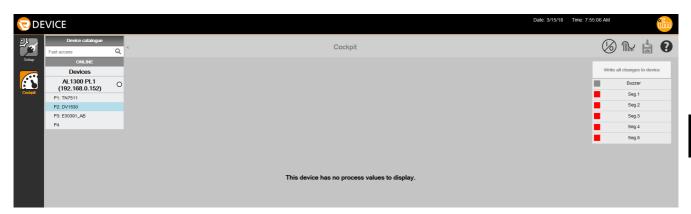
The setting options and operating elements available depend on the connected device and possibly on the configured operating mode. If the operating mode can be set, it can be changed in the "Setup" menu.

Change outputs via switch:

- ► Click on [¹⁶].
- > 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.

UK

- 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:

| Date: 3/15/18 | Time: 7:58:08 AM | | |
|-----------------|------------------|-------------------------|------|
| | (% |) 🖭 🛔 (| 9 |
| | Write | e all changes to device | |
| | | 3 changes | יי ר |
| _ | | Value 1 | |
| (1 | 0 | | (5) |
| L L | | Value 2 | |
| \sim | 50 | | |
| (2 | | Value 3 | (6) |
| <u> </u> | | | |
| | | Value 4 | |
| | 0 | Colour 1 | |
| | Red | ~ | |
| i 🔳 🗠 | | Colour 2 | |
| | Black / V | | |
| | [Didder / F | Colour 3 | |
| | Red | | 0 |
| | 1 | Colour 4 | |
| - Input error y | Black / V | Vhite | |
| Key indicat | 2 | LEDs | |
| | LEDs OF | F 🗸 | |
| | LEDs OFF | _ | |
| 07:58:08 | LED I On | | 0 |
| 01.00.00 | LED II Or | · | |
| | LEDs I an | id II On | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

- 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).

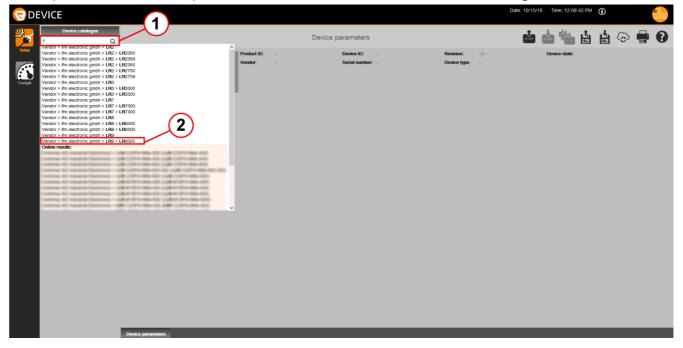
Changed values are marked with the pen icon 6.

- 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.

10 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 ifm devices, the IODD is stored in LR DEVICE. For devices from other manufacturers, the corresponding IODDs can be downloaded and installed from the internet.

- Under [Device catalogue], enter the requested article no. in the quick access ①, e.g. [LR], to access the group of LRxxxx level sensors.
- > A preselection with product IDs is shown in the device catalogue.



- ▶ Click on [LR9020] ② for example.
- > The set of device parameters for LR9020 is displayed for editing.

| Device catalogue | | | | | | | |
|---|------------------------------|----------------------------|---|----------------|-------------|---------|--|
| Vendor > ifm electronic gmbh > L \mathbf{Q} | < | 3 Device parameters | | | 💼 🤖 🍓 🛓 🕞 🖷 | | |
| ONLINE | | Product ID |): LR9020 | Device ID: | 578 d | | Revision: Device state: |
| Devices + | All | Vendor: | ifm electronic gmbh | Serial number: | | | Device type: Electronic level sensor, 101570 mm, IO-Link, cULus, |
| OFFLINE | Identification | -63 | | | | | Rohrgewinde ISO 228 - G3/4 A |
| Vendor ifm electronic | Parameter | | | | | | |
| gmbh | Output configuration | La | | | | | |
| LR9 | Fault Configuration | Parameter | Value | Unit | Min | Max | Description |
| LR9020 | | Application Specific Tag | *** | | 0 | 32 | Application Specific Tag |
| | Fault Configuration Output 2 | ou2 | I / Analog signal 420 mA | ~ | | | Output configuration [OUT 2] |
| | Setup | | | | | | |
| | | dFo | | 0.0 s | 0.0 s | 5.0 s | Delay time of outputs after fault |
| | | FOU2 | OFF | × | \frown | | [OUT 2] behaviour in case of fault |
| | | Device Access Locks. | Unlocked | | 4) | | Device Access Locks |
| | | Data Storage | (Assessment of the second s | \neg | | | |
| | | LEnG | | 99 mm | 100 mm | 1600 mm | Entering the probe length |
| | | MEdi | HIGH | * | | | Medium selection |
| | | Prob 5 | rod | * | | | Entering the probe type Only applicable, if [MEdI]='HIGH' |
| | | | | | | | Entening the proce type only approache, in [in:Edi]= 1 nor 1 |
| | | Standard Command | Restore Factory Settings | | | | |

> [All] ③ parameters are activated and can be edited.

- ► Edit [LEnG] ④ for example. (In the example an invalid value was entered.)
- > Invalid values are marked with [9] (5). The value must be selected from the range between min value and max value.
- ► Correct the value [LEnG] ④, observe the min / max limits!
- ► Click on [] to save the parameter set as an Irp file.
- > The Irp file is saved in the download directory. If only 1 parameter contains an invalid value, the Irp file cannot be saved. A corresponding message is provided.
- 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.

[] (\rightarrow 5.5) allows to write to a connected and detected device in the offline mode.

11 Update IODD / device catalogue

The LR DEVICE software provides an easy way to keep the IODDs / the device catalogue up to date. For an online update, an internet connection is required.

11.1 Download and install IODDS

- ▶ Click on [^C].
- > The window [Device description files (IODD): download and install] opens.
- It is checked by default whether new versions of installed IODDs are available. The option [Updates] is selected.

| Ue | Vendor | v | ORemove device description files (IODDs) | | 6 |
|--------------|-------------------------|---------|--|-------------------|---|
| Vendor > ifm | Vendor | Devices | Installed version | Available version | |
| | 📝 ifm electronic gmbh | LK 1022 | | 1.3.35.621612 | |
| Devices | 😨 ifm electronic gmbh | LK1023 | | 1.3.36.625698 | |
| | ifm electronic gmbh | LK1024 | | 1.3.35.621612 | |
| V | Ifm electronic gmbh | UK3122 | | 1.3.35.621612 | |
| | 2 if a electronic ombit | UK3123 | | 1.3.36.625698 | |
| ifm e | ifm electronic gmbh | UK3124 | | 1.3.35.621612 | |
| | ifm electronic gmbh | UK7022 | | 1.3.35.621612 | |
| | ifm electronic gmbh | LK7023 | | 1.3.36.625698 | |
| LR9020 | If nelectronic gmbh | LK7024 | | 1.3.35.621612 | |
| | ifm electronic gmbh | UK8122 | | 1.3.35.621612 | |
| | Ifm electronic gmbh | UK8123 | | 1.3.36.625698 | |
| | ifm electronic gmbh | LK8124 | | 1.3.35.621612 | |
| | | | | | |
| | | | | | |
| | | | | | |
| | (1) |) | | (3) | i |

- ▶ 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 [^G].
- ▶ 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.

11.2 Delete IODDS

- ► Click on [^C].
- > 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].
- Acknowledge the confirmation prompt whether the selected IODDs are to be deleted.
- > A window with information about the update of the device definitions (IODDs) appears.

12 Troubleshooting

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

| Question | Solution | | |
|---|--|--|--|
| Software does not start | Reboot the computer | | |
| Sensor is not detected. Error message "No connected device | Disconnect USB connection PC / USB IO-Link master. | | |
| was found!" appears | Reconnect after a waiting time of about 30 s. | | |
| | Restart the procedure. | | |
| | Enter the LR DEVICE licence key. | | |
| | 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 | A module may not have been detected correctly, or a wrong driver may have been selected. | | |
| | End the installation | | |
| | Start deinstallation. | | |
| | Reboot the computer. | | |
| | Restart the installation process. | | |
| Poor display in the web browser. | 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. | | |