




Instructions for set-up
Fluid monitoring system
Application package

UK



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1 Preliminary note


 You will find detailed instructions, technical data, approvals and further information using the QR code on the individual units / packagings or at www.ifm.com.

1.1 Symbols used

- ▶ Instruction
- > Reaction, result
- [...] Designation of keys, buttons or indications
- Cross-reference
-  Important note
Non-compliance may result in malfunction or interference.
-  Information
Supplementary note.

1.2 Further documents

- Quick reference guide fluid monitoring system
- Operating instructions flow meter
- Operating instructions temperature transmitter
- Operating instructions IO-Link masters
- Operating instructions power supply

 The documents can be downloaded at: www.ifm.com

2 Safety instructions

- The devices described are integrated into a system as components.
 - The manufacturer is responsible for the safety of the system.
 - The system manufacturer undertakes to perform a risk assessment and to create a documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the manufacturer of the system.
 - The system manufacturer is responsible for the functioning of the application programs.
- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ 3 Functions and features)
- Only use the product for permissible media (→ Technical data).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.
- Installation, electrical connection, set-up, operation and maintenance of the product must be carried out by qualified personnel authorised by the machine operator.
- Protect units and cables against damage.



► Read the instructions of the individual components of the application package before use.

3 Functions and features

The product package is used to monitor cooling water systems.

It allows the detection of malfunctions such as soiling, flow disturbances, leakages or loss of a welding tip.

The sensors of the fluid monitoring system detect the process values flow velocity, flow quantity, consumed quantity and medium temperature and transmit these process values to an IO-Link master via an IO-Link interface.



The following applies to the SM6000 flow meter: The device complies with the Pressure Equipment Directive and is designed and manufactured for group 2 fluids in accordance with the sound engineering practice. Use of media from group 1 fluids on request.

4 System requirements

A PC is required for the installation of the LR DEVICE parameter setting software. For the system requirements please see the LR DEVICE software manual at www.ifm.com.

5 Function

5.1 Fluid monitoring system

The ZZ0600 fluid monitoring system contains the following components:

- SM6000 flow meter for monitoring and display of the flow temperature and the cooling water volumetric flow quantity. The setting of 2 switch points allows the detection of overflow (leakage / burst pipes / worn caps).
- String regulator valve to regulate the volumetric flow quantity
- TA2405 temperature sensor to monitor the return temperature

The fluid monitoring system transfers the process values to an IO-Link master via the IO-Link interface.

5.2 IO-Link master

The IO-Link master serves as a gateway for the process data of the connected sensors. The IO-Link master enables setting of the parameters of the connected sensors via the LR DEVICE parameter setting software.

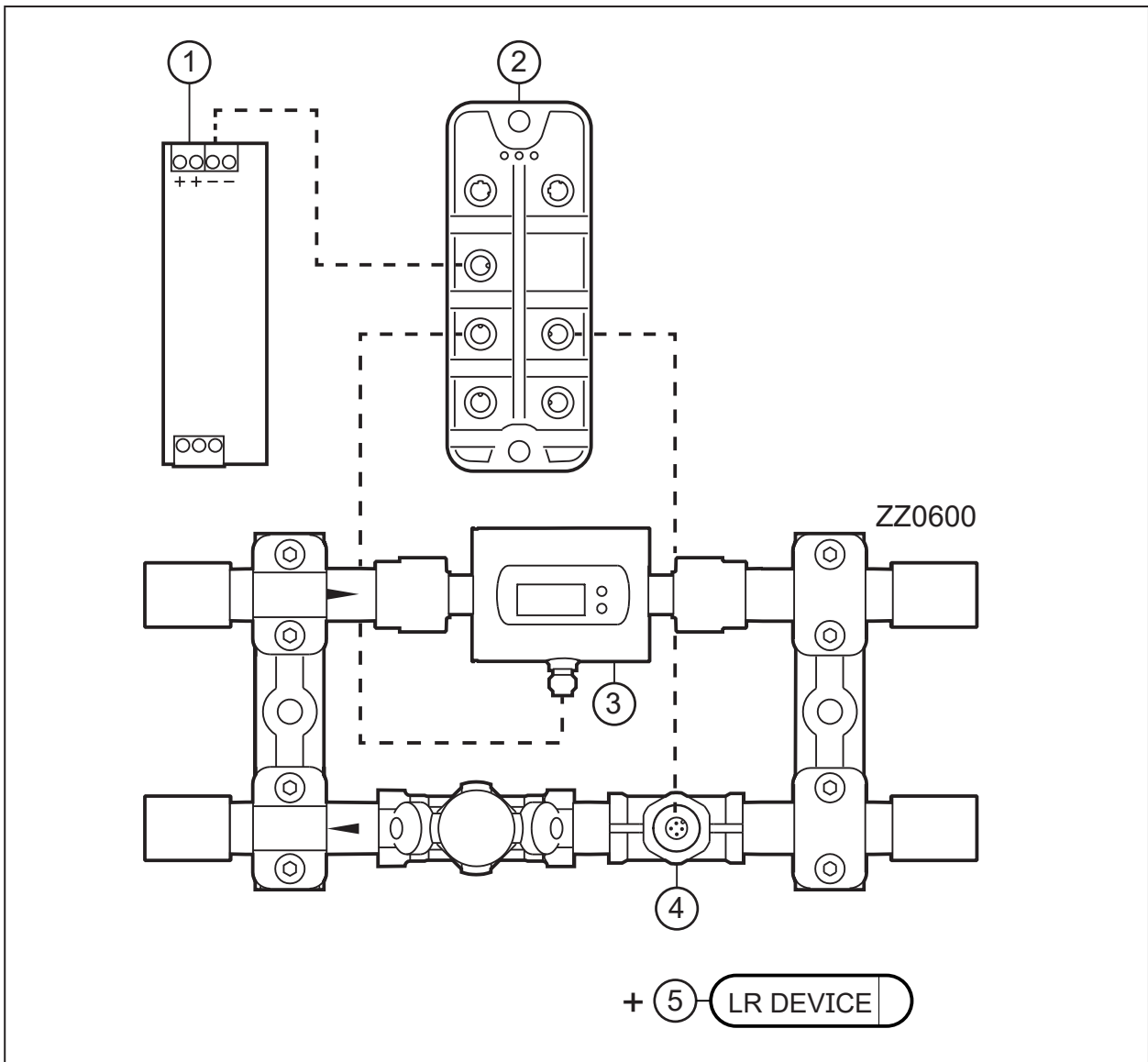


Fig. 1: Overview application package

- 1: Power supply
- 2: AL13nn IO-Link master
- 3: SM6000 flow meter
- 4: TA2405 temperature sensor
- 5: ifm memory stick with LR DEVICE parameter setting software

6 Installation

- ! ▶ Disconnect the power of the machine before installation.
- ▶ Adhere to the instructions enclosed to the individual devices.

6.1 Fluid monitoring system

- ▶ Mount the fluid monitoring system in the cooling water process.
- ▶ Adhere to the flow direction during installation (black arrow mark).

6.2 IO-Link master

- ▶ Fix the IO-Link master to a flat installation surface.

- ▶ Use 2 mounting screws and washers of size M5 for fixing. Tightening torque: 1.8 Nm.

6.3 Power supply

- ▶ Integrate the power supply into the control cabinet. The following has to be observed:
 - Suited for DIN rails according to EN 60715 with a height of 7.5 or 15 mm.
 - Align the input terminals downwards.
 - In case of continuous full load adhere to the following installation distances:
Left / right: 5 mm (15 mm for adjacent heat sources)
Top: 40 mm, bottom 20 mm from the device.

! The device is rated for convection cooling.

- ▶ Do not impede the air circulation. Adhere to installation distances.

7 Electrical connection

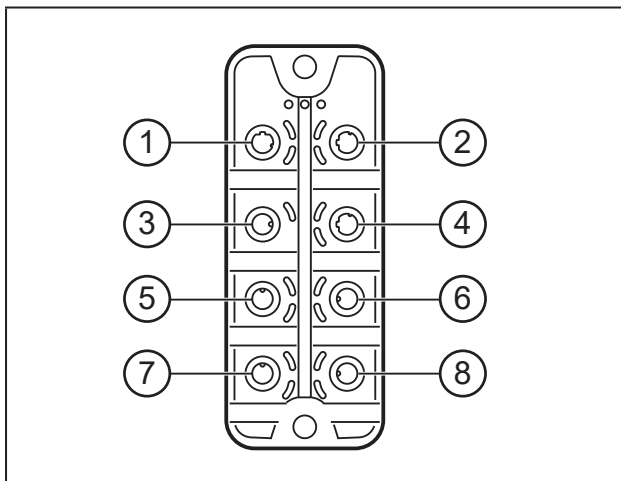
! The unit must be connected by a qualified electrician.

- ▶ Observe the national and international regulations for the installation of electrical equipment.
- ▶ Adhere to the instructions enclosed to the individual devices.
- ▶ Disconnect power.

1. Connect the sensors of the fluid monitoring systems to the IO-Link master.
2. Connect the IO-Link master to the secondary side of the power supply.
3. Connect the IO-Link master to the PC via the IoT interface.
4. Connect the primary side of the power supply to the supply voltage.

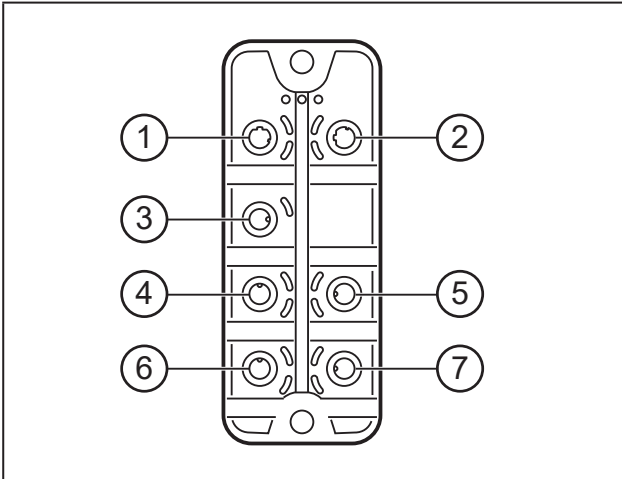
4.1 Pin assignment of the IO-Link master

AL1300 / AL1320 / AL1330 / AL1340



- 1: Fieldbus (optional)
- 2: Fieldbus (optional)
- 3: Power supply
- 4: IoT interface to the PC with LR DEVICE
- 5: SM6000
- 6: TA2405
- 7: Not connected
- 8: Not connected

AL1350



- 1: IoT interface to the PC with LR DEVICE
- 2: Not connected
- 3: Power supply
- 4: SM6000
- 5: TA2405
- 6: Not connected
- 7: Not connected

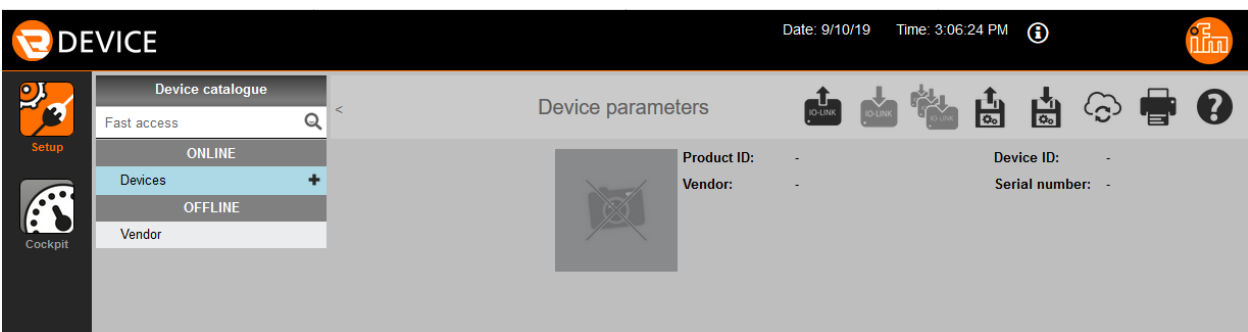
5 Set-up

When the operating voltage has been applied, the components of the application package function according to the factory settings. The LEDs show the status of the devices and interfaces (→ Instructions of the individual components).

5.1 Install LR DEVICE

LR DEVICE allows the parameter setting of the IO-Link master and the connected sensors.

- ▶ Start the PC.
 - ▶ Log in with administrator rights.
 - ▶ Install the LR DEVICE parameter setting software from the ifm memory stick to PC (→ Software manual LR DEVICE).
 - ▶ Start LR DEVICE.
- > The user interface of the LR DEVICE appears.



5.2 Configure the interface to the IO-Link master

For parameter setting, the IoT interface of the IO-Link master and the Ethernet interface of the PC must be configured for the same subnet:

- ▶ Click on the symbol [🔍] to scan the network for available devices.
- > LR DEVICE finds the connected IO-Link master.
- ▶ In the [ONLINE] area: Click on the IO-Link master found.
- > The detail window shows the IP settings of the IoT interface of the IO-Link master.
- ▶ Adapt the IP settings of the IoT interface to the IP settings of the Ethernet interface of the PC.

Example:

Parameter	Ethernet interface (PC)	IoT interface (IO-Link master)
IP address	192.168.0.50	192.168.0.1
Subnet mask	255.255.255.0	255.255.255.0
Gateway address	0.0.0.0	0.0.0.0

- ▶ Click on the symbol [📌] to write the changed values to the IO-Link master.
- > LR DEVICE reads the unit with the changed values once again.
- > LR DEVICE has access to the parameters of the connected sensors (→ 6 Parameter setting).

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6 Parameter setting

The parameters can be set before installation or during operation via the IO-Link interface.

- ! If you change parameters during operation, this will influence the function of the plant.
 - ▶ Ensure that there will be no malfunctions in your plant.

During parameter setting the sensors remain in the operating mode. They continue to monitor with the existing parameter until the parameter setting has been completed.

- ! The sensors' IODD at www.ifm.com contains a complete list of adjustable parameters.

6.1 Change limit values and switch points

Adjust the limit values and switch points of the sensors:

In LR DEVICE:

- ▶ Click on the symbol [📌] to scan the network for available devices.
- > LR DEVICE finds the connected IO-Link master.
- ▶ In the [ONLINE] area: Click on the IO-Link master found.
- > LR DEVICE shows the sensors connected to the ports.
- ▶ Click on Port ([P1: SM6000] or [P2: TA2405]).
- > Adjustable parameters of the connected sensor are displayed.

The screenshot shows the 'Device parameters' configuration screen for a flow sensor. The main area displays a table of parameters:

Parameter	Value	Unit	Min	Max	Description
Application Specific Tag	---		0	32	Application Specific Tag
ou1	Fno / Window fct normally open				Output configuration [OUT 1]
ou2	Fno / Window fct normally open				Output configuration [OUT 2]
SEL2	FLOW				Selection of the measurand for the evaluation via [OUT 2]
P-n	PnP				Output polarity for the switching outputs
SP1_FLOW	5.00	l/min	0.22 l/min	25.00 l/min	Switch point 1 / Flow. [SP1] must be greater than [P1]. Please take into account the current [P1] value. [SP1] will be refused if below [P1].
IP1_FLOW	3.00	l/min	0.10 l/min	24.88 l/min	Reset point 1 / Flow. [P1] must be smaller than [SP1]. Please take into account the current [SP1] value. [P1] will be refused if above [SP1].
SP2_FLOW	6.50	l/min	0.22 l/min	25.00 l/min	Switch point 2 / Flow. [SP2] must be greater than [P2]. Please take into account the current [P2] value. [SP2] will be refused if below [P2].

- ▶ Change limit values and switch points.
- ▶ Click on the symbol [📌] to write the changed parameter values to the sensor.
- > The sensor functions with the changed parameter values.

7 Operation

7.1 Monitor the process data

In normal operation, LR DEVICE can display the process data of the application package graphically.

In LR DEVICE:

- ▶ Click on the symbol [🔍] to scan the network for available devices.
- > LR DEVICE finds the connected IO-Link master.
- ▶ In the [ONLINE] area: Click on the IO-Link master found.
- ▶ Click on the symbol [Cockpit].
- > The current state and the chronological curve of the process values are displayed.

