OCTOGON

MANUAL

FSMA

LEVEL SENSOR WITH FLOAT

Operating manual



Document	Version	Date	Applies to
Operating manual	V00x	10/2026	FSMA, all process connections, fitting lengths and connector types

This operating manual describes transport, mounting, electrical connection, operation and configuration with the three buttons of the display unit, fault recovery and maintenance of the FSMA level sensor with float.

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1 General

1.1 Information

– This operating manual contains important information on handling the level sensor. Working safely requires that all safety instructions and work instructions are observed.

– Skilled personnel must have carefully read and understood the operating instructions prior to beginning any work.

– The operating instructions are part of the product and must be kept in the immediate vicinity of the level sensor and readily accessible to skilled personnel at any time.

– Observe the relevant local accident prevention regulations and general safety regulations for the level sensor's range of use.

– If the serial number gets illegible (e.g. by mechanical damage), the retraceability of the instrument is not possible any more.

– The level sensors described in this operating manual are carefully designed and manufactured using state-of-the-art technology. Every component undergoes strict quality inspection in all stages of manufacture.
– The manufacturer's liability is void in the case of any damage caused by using the product contrary to its intended use, non-compliance with these operating instructions, unauthorised modifications to the level sensor or assignment of insufficiently qualified skilled personnel.

1.2 Signs and abbreviations

Sign	Meaning
Warning	Non-compliance can cause injuries to persons and/or the destruction of the device. There can be danger to life.
Attention	Non-compliance can cause a faulty operation of the device or lead to property damage.
Information	Non-compliance can have influence on the operation of the device or cause unintentional reactions of the device.
Danger	When not observing the safety instructions, there is a risk of serious or fatal injuries caused by electrical power.
Warning (hot surfaces)	Occurrence of a dangerous situation is possible, which can result in burns because of hot surfaces or liquids, if not avoided.

Abbreviation	Meaning
U+	Positive supply connection
U–	Negative supply connection
SP1	Switching point 1
SP2	Switching point 2

1.3 Device

Feature	Version
Output	4 ... 20 mA, 2-wire
Limit contacts	2 × NPN or PNP (section 4.8)
Operation	display unit with 7-segment display and 3 buttons (section 5)
Manufacturer type	MELS-F

2 Transport, packaging, storage

2.1 Transport

Check the instrument for any damage that may have been caused during transportation. If there is any, report it immediately.

2.2 Packaging

Do not remove packaging until just before mounting. Keep the packaging as it will provide optimum protection during transport (e.g. change in installation site, sending back).

2.3 Storage

For longer term storage avoid the following influences:

– Direct sunlight or proximity to hot objects
– Mechanical vibration, mechanical shock (putting it hard down)
– Soot, vapour, dust and corrosive gases

If possible store the device in its original package or an equivalent one.

3 Safety instructions

Warning Before installation, commissioning and operation ensure that the appropriate level sensor has been selected in terms of measuring range, design, specific measuring conditions and appropriate wetted parts materials (corrosion).

Info More important safety instructions can be found in the individual chapters.

3.1 Intended use

The level sensor FSMA is used for the measurement of levels up to 2000 mm in non-corrosive liquids. It can be used for pressures up to 25 bar.

The sensor has been designed and built solely for the intended use described here and may only be used accordingly.

The technical specifications contained in these operating instructions must be observed. Improper handling or operation of the instrument outside of its technical specifications requires the instrument to be taken out of service immediately and an inspection by the manufacturer.

When the instrument is transported from a cold into a warm environment, the formation of condensation may result in the instrument malfunctioning. Before putting it back into operation, wait for the instrument temperature and the room temperature to equalise.

The manufacturer shall not be liable for claims of any type based on operation contrary to the intended use.

3.2 Personnel qualification

Warning Risk of injury if qualification is insufficient. Improper handling can result in considerable injury and damage to equipment. The activities described in these operating instructions may only be carried out by skilled personnel who have the qualifications described below. Keep unqualified personnel away from hazardous areas.

For installation and starting of the level sensor the personnel has to be familiar with the relevant regulations and directives of the country and must have the qualification required. They must have knowledge on measurement and control technology, have to be acquainted with electric circuits, are capable of carrying out the work described and can independently recognise potential hazards. Depending on the operation conditions of the application they have to have the corresponding knowledge, e.g. of aggressive media.

3.3 Special hazards

Warning For hazardous media such as oxygen, acetylene, flammable or toxic gases or liquids, refrigeration plants, compressors, etc., in addition to all standard regulations, the appropriate existing codes or regulations must also be followed. If you do not comply with the appropriate regulation, serious injuries and/or damage can occur!

Warning A protection from electrostatic discharge (ESD) is required. The proper use of grounded work surfaces and personal wrist straps is required when working with exposed circuitry (PCB, printed circuit boards), in order to prevent static discharge from damaging sensitive electronic components.

Danger There is a danger of death caused by electric current. Upon contact with live parts, there is a direct danger of death. Electrical instruments may only be installed and connected by skilled electrical personnel. Operation using a defective power supply unit (e.g. short circuit from the mains voltage to the voltage output) can result in life-threatening voltages at the instrument.

Warning Residual media in dismounted instruments can result in a risk to personnel, the environment and equipment. Take sufficient precautionary measures. Do not use this instrument in safety or Emergency Stop devices. Incorrect use of the instrument can result in injury. Should a failure occur, corrosive media with extremely high temperature and under high pressure or vacuum may be present at the instrument.

4 Start-up, operation

4.1 Function

The FSMA is fitted directly into the process via the thread of the process connection. The float has a built-in magnet which has an effect on a measurement chain inside the tube. The output signal of the measurement chain is proportional to the level and is the input signal of the device's measuring amplifier.

4.2 Before mounting

Info Check if a completely assembled level sensor is supplied. Inspect the level sensor for possible damage during transportation. Should there be any obvious damage, inform the transport company and supplier without delay. Keep the packaging, as it offers optimal protection during transportation. Ensure that the process connection thread and the connection contacts will not be damaged.

4.3 Product label (example)

Field	Meaning
OL...	Product code
Art.Nr.	Part number
SN	Serial number
Range	Measuring range
Contact	Limit value contact
Supply	Supply and connection
Output	Output signal

4.4 Mounting

Tools: wrench (flats 27)

The level sensors are designed for screw fitting directly into the process.

- The insertion length may reduce the maximum loading on the protecting tube.
- The medium may not have heavy pollution and not tend to crystallization.
- When mounting, take care of a proper vertical fitting position.
- Tighten the process connection with a suitable gasket.
- The level sensor may not be stressed by strong mechanical loads.
- Avoid proximity of electromagnetic fields (malfunction).
- Long connection cables can cause malfunction by voltage peaks.
- It is recommended to use shielded connection cables (one side has to be grounded).

You have to provide for a sealing element which corresponds to the application. Exceptions may be instruments with self-sealing threads (e.g. NPT thread). When mounting the instrument, ensure that the sealing faces of the instrument and the measuring point are clean and undamaged.

Screw in or unscrew the instrument only via the flats using a suitable tool and the prescribed torque. The appropriate torque depends on the dimension of the process connection and on the sealing element used (form/material). Do not use the case as working surface for screwing in or unscrewing the instrument. When screwing the transmitter in, ensure that the threads are not jammed.

If necessary observe information about tapped holes and welding sockets.

When the opening for mounting is smaller than the diameter of the float, the float has to be removed before mounting. Mark the direction of mounting on the float. After mounting the level sensor install the float inside the tank again.

Example level sensor mounting: maximum approx. 25 mm, minimum approx. 45 mm (section 9).

Important The devices are not suitable for liquids with a permanent turbulent surface and/or on vibrating machines.

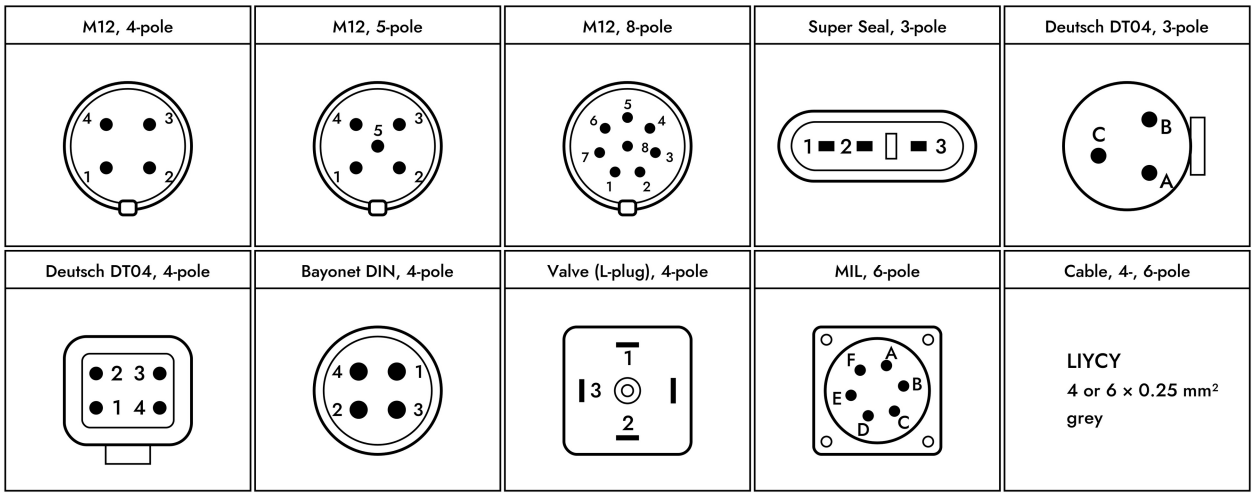
4.5 Electrical connection

Attention Connect the instrument to earth via the process connection. The ingress protection specified only applies while the level transmitter is connected with the female connectors that provide the corresponding ingress protection. Ensure that the cable diameter you select fits to the cable gland of the connector. Ensure that the cable gland of the mounted connector is positioned correctly and that the sealings are available and undamaged. Tighten the threaded connection and check the correct position of the sealings to ensure ingress protection. Make sure that the ends of cables with flying leads do not allow any ingress of moisture. Route the cable without applying a force or turning moment to the device.

4.6 Pin assignment

Connection	U+	U–	Common	SP 1	SP 2
M12, 4-pole	1	3	2	4	–
M12, 5-pole	1	3	5	4	2
M12, 8-pole	1	3	5	4	2
Super Seal, 3-pole	1	3	–	–	–
Deutsch DT04, 3-pole	A	B	–	–	–
Deutsch DT04, 4-pole	1	3	2	4	–
Bayonet DIN, 4-pole	1	2	3	4	–
Valve (L-plug), 4-pole	1	2	3	GND	–
Cable, 4-pole	yellow	white	green	brown	–
Cable, 6-pole	yellow	white	green	brown	grey
MIL, 6-pole	A	C	E	D	B

U+ and U–: current loop 4 ... 20 mA. Common, SP 1 and SP 2: limit contacts. Cable: LIYCY, 4 or 6 × 0.25 mm², grey.



View: plug pins of male connector

4.7 Connection example

Two-wire current loop 4 ... 20 mA:

From	To
FSMA terminal 1 (+)	Supply +
FSMA terminal 3 (–)	Evaluation + (e.g. PLC)
Evaluation –	Supply –

4.8 Connecting the switching outputs

The switching outputs are potential-free. They are electrically isolated from the current loop.

In case of using only one switching point it is possible to connect the load on both sides of the contact, e.g. NPN style: load connected to high or low side (see below).

Use an appropriate recovery diode if you want to switch inductive loads.

Switching outputs with common on low side (NPN)

Wiring	Terminal 4 (SP1)	Terminal 2 (SP2)	Terminal 5
Two outputs are used	via RL1 to +	via RL2 to +	to –
One output is used, load on high side	via RL to +	–	to –
One output is used, load on low side	directly to +	–	via RL to –

Switching outputs with common on high side (PNP)

Wiring	Terminal 4 (SP1)	Terminal 2 (SP2)	Terminal 5
Two outputs are used	via RL1 to +	via RL2 to +	to –
One output is used, load on high side	directly to +	–	via RL to –
One output is used, load on low side	via RL to +	–	to –

4.9 Functional test

Info The output signal must be proportional to the level. If not, this might point to a damage of the sensor. In that case refer to chapter Fault recovery (section 6).

Warning Open pressure connections only after the system is without pressure. Observe the ambient and working conditions outlined in chapter Technical data (section 8). When touching the transmitter, keep in mind that the surfaces of the instrument components might get hot during operation.

4.10 Error detection / error current

The device detects wire break and short circuit (sensor element <> measuring amplifier) as well as levels outside of the measuring range and indicates this with an error current in the current loop circuit.

The current output is proportional to the level from 3.6 to 21 mA. If the measured level would result in a current below 3.6 mA the current output is set to 21 mA (also for a wire short circuit). If the current would exceed 21 mA, the current output is set to 21 mA (also for wire break).

If the device is equipped with switching outputs, these will be disabled if an error is detected for more than 10 seconds. This ensures that the switches are in a safe state, comparable to the loss of voltage supply.

4.11 Adjusting the display unit

It is possible to turn the display unit approx. 300° to optimize the reading. To do so, hold the plastic body with one hand and turn the display unit with the other hand into the wanted position.

Attention The turning angle is limited by an internal limit stop. Do not try to force the display beyond that point. It might be destroyed.

5 Configuration

Description of handling and configuration of the device with the three buttons on the head of display. An overview of the menu tree is shown in section 5.7.

The 3 buttons on the display head are working capacitive (no mechanical components), so there is no movement when pressing a button. The buttons are sensing the presence of a finger. Withdraw a finger at least 1 cm after pressing a button. This is useful for a proper detection of a keypress.

The following description is for the configuration with the three buttons. The configuration via HART communication modem is described in a separate manual.

5.1 System operating principles

5.1.1 System feedback to operator when buttons are pressed

The LEDs for switching output are used to give a feedback to operator when buttons are pressed. This does not affect the switching outputs themselves. When no button is pressed the LEDs are showing the state of switching outputs.

Button	Feedback
Arrow button down (left)	Left LED is flashing
Arrow button up (right)	Right LED is flashing
Both arrow buttons simultaneously	Both LEDs are flashing
Center button	Both LEDs are flashing rapidly

5.1.2 Display mode / measured value indication

After power up the device starts in display mode. The current measured value is displayed or is displayed alternately with the unit (see 5.4.1).

The displayed value is flashing when the measured value is greater than the maximal presentable value. This can be caused by a fixed decimal point (see 5.4.3).

As long as the center button is pressed the selected unit will be displayed (example: measured value **1234**, unit **cn**). A single arrow button has no function in display mode.

5.1.3 Activating the configuration mode

When pressing both arrow keys simultaneously for at least 2 s the configuration mode is entered. The first entry of the operator menu appears on the display (**bASE**). If both buttons are not released within 4 s the device switches back to display mode, showing the current measured value again.

5.1.4 Configuration mode / operator menu

The configuration mode always starts with the first item of the main menu (**bASE**). Within the menu you navigate with the arrow buttons. The center button selects a menu item respectively enters a submenu. Menu items which just show a value (e.g. maximum pointer) can be exited to the next upper menu item with the center button.

Every menu has the item **-rEt-** (return) which allows you to go back to the next upper menu. In the main menu it goes back to the display mode.

At the end of a menu (typically **-rEt-**) you return to the first menu item when pressing the down arrow button again. Similarly, you jump to the end of the menu when pressing the up arrow in the first menu item.

In each menu item it is possible to return to the next upper menu by pressing both arrow buttons simultaneously. The feedback is a flashing **-rEt-**. When doing this for more than 1 s, the device returns to display mode with the feedback of a flashing **-ESc-** (escape).

If no button is pressed for 5 minutes in the configuration mode, the device automatically switches back to the display mode.

5.1.5 Setting values

There are 2 types of values that can be altered:

- values which can be selected from a predefined parameter list
- numerical values

Selecting a value from a list

Parameter lists are used for example for the units. Within the list you navigate with the arrow buttons. With the center button a selected value is stored, confirmed with indicating **Stor**. After that the device is in the next upper menu.

The list can be left by pressing both arrow buttons simultaneously to the next upper menu without changing the present value.

Setting a numerical value

Numerical values are entered digit by digit. The selected digit flashes and is incremented with the up arrow button and decremented with the down arrow button. The more significant digit will also be incremented or decremented when stepping over zero. If a change of the active digit would exceed the allowable value (e.g. the lower or upper range limit) the allowable value will be shown. With the opposite arrow button you can return to the previous value.

The selected digit is confirmed with the center button and the device proceeds to the next digit. You can cancel the value entry at any time by pressing both arrow buttons simultaneously. The device will then switch back to the corresponding menu entry. The partially edited value will not be saved.

When the right-most digit is selected, the center button confirms the whole value. **Stor** appears on the display to confirm that the value has been stored and the device switches back to the menu item for the value. You can store a partially edited value at any digit position by holding the center button until **Stor** appears on the display (approx. 2 s).

5.2 Main menu

The main menu has the following functions:

Display	Designation	Description
bASE	Basic functions	Setting of unit, lower and upper range value, minimum and maximum pointer
diSP	Display functions	All settings relating to the display
SP	Switch point settings	Configuration of the switching outputs (option)
SYS	System data	Reset to factory settings, loop test, displaying of hardware version, software version, serial number
-rEt-	Return	Return to display mode

5.3 Basic menu (bASE)

The basic menu has the following functions:

Display	Designation	Description
unit	Measuring unit	Setting the measuring unit (parameter list)
Lo	Trailing pointer minimum (low)	Display and/or delete the minimum trailing pointer
Hi	Trailing pointer maximum (high)	Display and/or delete the maximum trailing pointer
-rEt-	Return	Return to main menu

5.3.1 Setting the measuring unit (unit)

A selected unit applies to data entries (e.g. switching points) and to the displaying of numerical values (e.g. the trailing pointers). Possible are the following units:

Display	Unit
nn	mm
cn	cm
n	m
inch	Inch
FEEt	Foot
°o	% of measuring range
nA	mA
-rEt-	Return to **unit**

Example for the needed steps for changing the unit from m to cm:

Step	Button	Display	Meaning
1	both arrow buttons > 2 s and < 4 s	**bASE**	Operator menu
2	center button	**unit**	Menu item
3	center button	**n**	List item (currently m)
4	up arrow button (right)	**cn**	List item up
5	center button	**Stor**	Store selection, then **unit**
6	both arrow buttons > 1 s	**-rEt- -ESc-**	To upper menu, to display mode
7	–	**1234**	Measured value

5.3.2 Trailing pointers (Lo / Hi)

The trailing pointers for minimum and maximum values can be displayed or reset. A reset is confirmed with **----** on the display. The trailing pointer shows **Er.Lo** respectively **Er.Hi** if the current output has been set to an error current (see 4.10).

Display	Designation	Description
1234	Value of min/max pointer	Value of the min/max pointer in the selected measuring unit
clr	Clear	Reset the stored pointer value
-rEt-	Return	Return to **Lo** or **Hi**

The steps to reset the minimum pointer:

Step	Button	Display	Meaning
1	both arrow buttons > 2 s	**bASE**	Operator menu
2	center button	**unit**	Menu item
3	down arrow button (left) until **Lo**	**Lo**	Item Lo
4	center button	**0.234**	Minimum value (example)
5	down arrow button (left)	**clr**	Reset value
6	center button	**----**	Reset, then **Lo**
7	both arrow buttons > 1 s	**-ESc- 1234**	To display mode, measured value

5.4 Display menu (diSP)

The display menu has the following functions:

Display	Designation	Description
td	Display period for measured value (time data)	Setting between 0.5 ... 99.9 s possible
tu	Display period for unit (time unit)	Setting between 0.0 ... 99.9 s possible
rot	Rotate 180°	Rotate screen by 180° when the device is mounted upside down
dEcP	Decimal places	Setting the decimal places (0 ... 3 fixed decimal places or automatic)
-rEt-	Return	Return to **diSP**

5.4.1 Display period for measured value/unit (td / tu)

The unit can be shown either by pressing the center button in display mode or alternately with the measured value. The display periods of measured value and unit can be configured independently of one another. Setting the period for the unit to 0.0, only the measured value will be displayed.

5.4.2 Rotating the display by 180° (rot)

In case of mounting the device upside down, the 7-segment display and buttons can be rotated by 180° so that reading and operating are possible as is usual.

Display	Designation	Description
0°	Standard (0°)	
180°	Upside down (180°)	Display rotated by 180° for upside down operation
-rEt-	Return	Return to **rot**

5.4.3 Decimal point setting (dEcP)

Possible is a fixed or an automatic positioning of the decimal point.

Display	Designation	Description
Auto	Automatic	The decimal point is set so that all digits are fully used
0000	No decimal place	
000.0	One decimal place	
00.00	Two decimal places	
0.000	Three decimal places	
-rEt-	Return	Return to **dEcP**

Please note that when the decimal point is fixed the measured value may not be displayed if there are insufficient digits left of the decimal point. In this case the maximum number that can be shown on the display will appear flashing, e.g. **99.99**, when two decimal places are set for a measured value of 110 cm.

5.5 Switch point menu (SP)

The menu has items for the settings of the two switch points. The output behaviour can be a hysteresis or a frame function where the menu items are different. The switching delays can be defined independently from the output function.

Display	Designation	Description
SP 1	Switch point	Switch point in the selected measuring unit
rP 1	Reset point	Reset point in the selected unit
dS 1	Delay switch	Output delay at switch point
dr 1	Delay reset	Output delay at reset point
out 1	Output function	Configuring the output behaviour (normally open, normally closed, hysteresis / frame function)
LEd 1	LED switch point	Configuring the behaviour of the LED for switch point (electrically, logically)
...	Menu items for switch point 2	
-rEt-	Return	Return to **SP**

The switch point (SP) must be between the upper range value (URV) and the reset point. The reset point (rP) must be between the lower range value (LRV) and the switch point. The minimum hysteresis (difference between switch point and reset point) is 0.5 % of the measuring range (MR) which is configured under 5.3.2.

It is possible to define a delay for the switch point as well as the reset point, e.g. to avoid that short temperature peaks trigger the switch. The factory setting is the maximum measurement range.

When the frame function is used, the menu items for switch point and reset point are replaced by the upper and lower frame limits. The minimum difference of the frame limits is 0.5 % of the measuring range (MR) which is configured under 5.3.2.

Display	Designation	Description
FH 1	Frame high	Upper frame limit in the selected measuring unit
FL 1	Frame low	Lower frame limit in the selected measuring unit
dS 1	Delay switch	Output delay when entering the frame
dr 1	Delay reset	Output delay when leaving the frame
out 1	Output function	Configuring the output behaviour (normally open, normally closed, hysteresis / frame function)
LEd 1	LED switch point	Configuring the behaviour of the LED for switch point (electrically, logically)
...	Menu items for switch point 2	
-rEt-	Return	Return to **SP**

5.5.1 Configuring the output function (out 1 / out 2)

Possible are hysteresis or frame functions and the output as normally open or closed contacts.

Display	Designation	Description
Hno	Hysteresis, normally open	If the level is above the switch point the switch is closed. At the lower range limit the switch is open.
Hnc	Hysteresis, normally closed	If the level is above the switch point the switch is open. At the lower range limit the switch is closed.
Fno	Frame, normally open	Inside of the frame the switch is closed. At the lower range limit the switch is open.
Fnc	Frame, normally closed	Inside of the frame the switch is open. At the lower range limit the switch is closed.
-rEt-	Return	Return to **out 1** or **out 2**

5.5.2 Configuring the behaviour of the LED switch point (LEd 1 / LEd 2)

Possible is electrical or logical behaviour.

Display	Designation	Description
ELEc	Electrical behaviour	The LED is "ON" when the switch point contact is closed
Logi	Logical behaviour	The LED is "ON" when the switch point value is reached or within frame
-rEt-	Return	Return to **LEd 1** or **LEd 2**

5.6 System menu (SYS)

The system menu has the following functions:

Display	Designation	Description
LooP	Loop test	Setting a fixed current in order to test the current loop
inFo	Information	Indicating of hardware and software version, serial number
rES	Reset	Reset to factory settings
-rEt-	Return	Return to **SYS**

5.6.1 Information (inFo)

The information menu has the following functions:

Display	Designation
HW1	Hardware version 1
HW2	Hardware version 2
SW1	Software version 1
SW2	Software version 2
Sn 1	Serial number 1
Sn 2	Serial number 2
-rEt-	Return to **InFo**

Due to the limited number of alphanumerical segments on the display the values for these items are split.

5.6.2 Reset to factory settings (rES)

It is possible to reset the device to the configuration as delivered with the menu item "Reset" (**rES**). When entering the menu the entry points to **rEt**. To confirm the reset go to **YES** with one of the arrow buttons and press the center button. After this final confirmation all parameters will be changed to the settings as delivered.

When confirming with the center button **donE** appears on the display which confirms that the device has been reset to factory settings. Then the device switches back to the initial menu item (**rES**).

Display	Designation	Description
-rEt-	Return	Return to **rES**
YES	Yes	Resetting the device to factory settings

5.7 Menu tree overview

Menu	Item	Function
bASE		Basic functions menu

Menu	Item	Function
	`inFo`	Display of hard and software versions, serial number
	`rES`	Reset to factory settings

6 Fault recovery

Warning Open connections only after the system is unpressurized. Residual media in dismounted instruments can result in a risk to personnel, the environment and equipment. If the sensor becomes damaged or unsafe for operation, remove the level sensor from service and mark it to prevent it from being used again by accident.

Failure	Possible cause	Procedure
No output signal, no indication	Cable break	Check connectors and cable
	No supply voltage	Check wiring/supply
No/false output signal	Incorrectly wired instrument	Follow pin assignment (see label / operating instructions)
Erroneous measured values	Surface of medium is too turbulent	Choose a suitable location of installation for the sensor
	Configuration of the sensor is not proper	Check configuration and adjust
Erroneous measured values (too low)	Float hangs or doesn't slide properly	Clean tube/float, check the medium for pollution
Erroneous measured values and response time too long	Wrong mounting geometry, e.g. mounting is not vertical	Mount the sensor vertically
	Deposits on the sensor	Remove deposits
Measurement signal "comes and goes"	Cable break in connecting cable or loose contact caused by mechanical overload	Replace the sensor with a suitable design, e.g. thicker conductor cross section
Corrosion	Composition of medium not as expected or modified or wrong material of protecting tube	The sensor is not suitable for this application
Signal interference	Stray currents caused by electric fields or earth loops	Use of screened connecting cables, increase the distance to motors and power lines
	Earth circuits	Elimination of potentials, use of supply isolators or galvanically isolated measuring amplifiers

Note: In case of unjustified reclamation an additional charge is possible.

7 Maintenance, dismounting, return, cleaning, disposal

7.1 Maintenance

The level sensors FSMA require no maintenance and contain no components which could be repaired or replaced.

7.2 Dismounting

Warning Residual media in dismounted instruments can result in a risk to personnel, the environment and equipment. Take sufficient precautionary measures.

Warning (hot surfaces) There is a risk of burns. Let the instrument cool down sufficiently before dismounting. During dismounting there is a risk of dangerously hot pressure media escaping. Only disconnect the level sensor once the system has been depressurised.

7.3 Return

Warning Before the return of an instrument see section 7.4. When returning the instrument, use the original packaging or a suitable package. To avoid damage, use for example antistatic plastic film, shock-absorbent material, a marking as highly sensitive measuring instrument.

7.4 Cleaning

Attention Before cleaning the instrument disconnect the electrical connection. Clean the instrument with a moist cloth. Electrical connections must not come into contact with moisture. Wash or clean the dismounted instrument before returning it in order to protect personnel and the environment from exposure to residual media. Residual media in dismounted instruments can result in a risk to persons, the environment and equipment. Take sufficient precautionary measures.

7.5 Disposal

Info Dispose of instrument components and packaging materials in accordance with the respective waste treatment and disposal regulations of the region or country to which the sensor is supplied.

8 Technical data

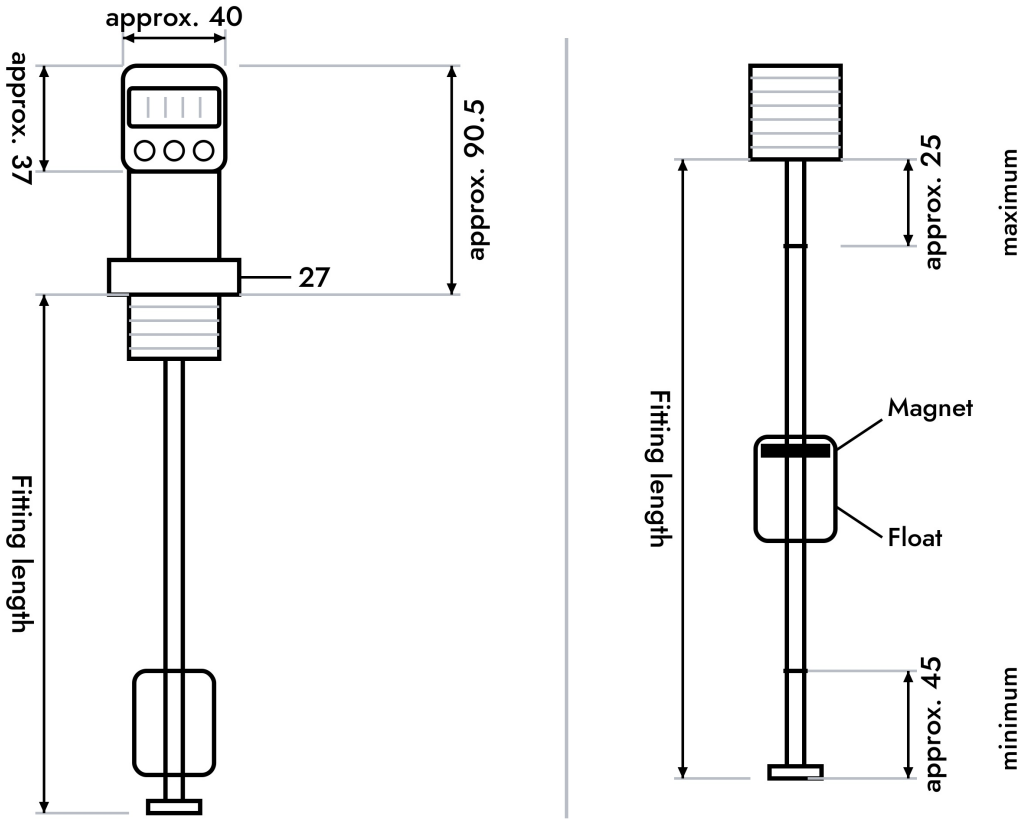
Item	Value
Input	
Level	100 ... 2000 mm
Medium	non-aggressive fluids
Output	
Current signal	4 ... 20 mA, 2-wire
Current range	3.8 ... 20.5 mA
Signal on error	3.6 mA (sensor short circuit, underflow); 21 mA (sensor break, sensor open circuit, overflow)
Performance	
Sensor: resolution	4.5 mm
Sensor: hysteresis	approx. 3 mm
Measuring amplifier: accuracy	0.3 % of range
Measuring amplifier: resolution	16 bit
Measuring amplifier: filter setting	0 ... 99 s
Measuring amplifier: transmission behaviour	linear with level
Measuring amplifier: measuring rate	10 measurements/s
Measuring amplifier: configuration	keys on display / via software (TrComm)
Measuring amplifier: turn-on delay time	< 5 s
Measuring amplifier: response time	20 ms
Indicator / limit values: resolution	–9999 ... 9999 digit
Indicator / limit values: error of measurement	± 0.2 % of range, ± 1 digit
Indicator / limit values: temperature drift	100 ppm/K
Features, operation	according to VDMA 24574-1 up to 24574-4
Programmable features	
Measuring amplifier	measuring range start / measuring range end / filter
Display	range of indication / time of indication / decimal point / units / stabilisation of zero point / locking of programming / calibration points / TAG number
Limit contacts	limit value 1 and 2 / hysteresis 1 and 2 / delay times 1 and 2
Indication	
Display	7 segment, 8.5 mm, red, 4 digits, representation mirror-inverted 180° possible
Head of display	rotatable approx. 330°
Memory	minimum / maximum values
Indication	measuring value, unit of measurement, control menu
Decimal point	automatically or manually, dependent on measuring range / unit
Representation	xxxx / xxx.x / xx.xx / x.xxx
Limit contacts	
Electronically	2 × NPN or PNP (30 V DC, 200 mA)
Option	2 × NPN or PNP (30 V DC, 1000 mA)
Indication	1 LED red for each limit value
Voltage across	< 1 V
Settings	with 3 keys (TouchM technology)
Setting range	switch point and hysteresis: any value within measuring range
Switching delay	0.0 ... 999.9 s

Item	Value
Failsafe function	adjustable
Galvanic isolation	switch outputs are separated from measuring amplifier
Supply	
Voltage	12 ... 35 V DC
Reverse battery protection	available (no function, no damage)
Short-circuit resistance	yes
Environmental conditions	
Operating range	–40 ... +85 °C
Storage	–40 ... +85 °C
Medium	0 ... +100 °C
Condensation	uncritical

8.1 Mechanics

Item	Value
Dimensions	see section 9
Process connection	3/4″ / 1″ / 1.5″ / 1″ NPT (adaptor)
System pressure	25 bar
Electrical connection	see sections 4.5 ... 4.8
Material	
Protecting tube	stainless steel 1.4571
Float	PE Ø 24 (density medium: 1 or more); PE Ø 29; option: stainless steel Ø 29 (1.4571)
Adaptor	stainless steel 1.4571
Process connection	stainless steel 1.4571
Body	PBT GF30
Display head	polycarbonate
Other	
Weight	approx. 200 g (300 mm, 1″, M12)
Fitting position	vertical
System pressure	PN 25
Protection class	at least IP65 (electronics), IP68 (sensor)
PCB	potted

9 Dimensions



Dimensions in mm. Left: the device, right: travel of the float (maximum approx. 25 mm, minimum approx. 45 mm). Drawn by octogon from the manufacturer's documentation, contour schematic.