# Level Sensor with Float HART — MELS-F

## Characteristics

1500 - MODULAR - ECONOMIC -

| | |
|---|---|
| - Input: | level 100...2000 mm |
| - Output: | 4...20 mA current loop HART (2-wire) |
| - Voltage supply: | out of current loop (12...40 VDC) |
| - Accuracy: | see technical details |
| - Process connection: | several options |
| - Electrical connection: | several plugs |
| - Temperature range: | -20...+80 °C (operation) |
| - Limit value contacts: | 2 electronically (NPN, PNP) |
| - Adjustment: | keys / software |
| - Medium: | non aggressive fluids |
| - Protection: | at least IP65 / IP68 |

## Technical Data

**Input**

| | |
|---|---|
| Level: | 100...2000 mm |
| Medium: | non aggressive fluids |

**Output**

| | |
|---|---|
| Current signal: | 4...20 mA with superimposed communication signal (HART), 2-wire current loop |
| Current range: | 3,8...20,5 mA |
| Signal on error: | 3,6 mA (sensor short circuit, underflow)<br>21 mA (sensor break, sensor open circuit, overflow) |

**Performance**

| | | |
|---|---|---|
| Sensor: | Resolution: | 4,5 mm, |
| | Hysteresis: | ca. 3mm |
| Measuring amplifier: | Accuracy: | 0,3% of range |
| | Resolution: | 16 Bit |
| | Filter setting: | 0...99 s |
| | Transmission behaviour: | linear with level |
| | Measuring rate: | 10 measurements / s |
| | Configuration: | keys on display / via software (HART-communication) |
| | Turn-on delay time: | <5 s |
| | Response time: | 20 ms |
| Indicator / limit values: | Resolution: | -9999...9999 digit |
| | Error of measurement: | ±0,2% of range, ±1 digit |
| | Temperature drift: | 100 ppm/K |
| | Features, operation: | according 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 value contacts: | limit value 1 and 2 / hysteresis 1 and 2 / delay times 1 and 2 |

## Applications

For use in industrial plants, terotechnology and public utility (eg tanks for hydraulic oil). With it's two configurable limit value contacts, the integrated display and the numerous electrical connections, the level sensor is also suitable for applications with higher requirements.

## Technical Data (Continued)

| | | |
|---|---|---|
| **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<br>Representation: xxxx / xxx.x / xx.xx / x.xxx | |
| **Limit Contacts** | | |
| Electronically: | 2x NPN or PNP (30 VDC, 200 mA)<br>Option: 2x NPN or PNP (30 VDC, 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 | |
| Failsafe function: | adjustable | |
| Galvanical insulation: | switching outputs are separated from measuring amplifier | |
| **Supply** | | |
| Voltage: | HART current loop: 12...40 VDC VDC | |
| Load: | R = ($U_B$-12 V) / 22 mA | |
| Reverse battery protection: | available (no function, no damage) | |
| **Environmental Conditions** | | |
| Temperature: | Operating range: | -20...+80 °C |
| | Storing: | -20...+85 °C |
| | Medium: | 0...+100 °C |
| Condensation: | uncritical | |
| **Mechanics** | | |
| Dimensions: | see page 3 | |
| Process connection: | 3/4" / 1" / 1,5" / 1"NPT (adaptor) | |
| System pressure: | 25 bar | |
| Electrical connection: | see page 3 | |
| Material: | Protecting tube: | stainless steel 1.4571 |
| | Float: | PE Ø24 (density medium: 1 or more)<br>PE Ø29<br>Option: stainless steel Ø29 (1.4571) |
| | Adaptor: | stainless steel 1.4571 |
| | Process connection: | stainless steel 1.4571 |
| | Body: | PBT GF30 |
| | Head of display: | polycarbonate |
| Weight: | approx. 200 g (300 mm, 1", M12) | |
| Fitting position: | vertical | |
| System pressure: | PN 25 | |
| Protection of device: | Ingress protection: | at least IP 65 (electronics)<br>IP68 (sensor) |
| | PCB: | potted |

## Connection M12x1-Plug (Example)

Assignement plug M12x1, 8-pole

| Current loop 4...20 mA HART | Electronical limit value contacts | Shield | | |
|---|---|---|---|---|
| + - | | | | |
| 1 3 | 2 4 5 | 8 | | |

## Electrical Connection

| M12x1 | Super Seal | Deutsch | Deutsch | Bayonet | Valve | MIL | |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  | |
| 4-pole<br>5-pole<br>8-pole | 3-pole | 3-pole | 4-pole | 4-pole | 4-pole | 6-pole | |

## Option Limit Values

| Connection<br>Limit value (LV) | M12<br>4-pole | M12<br>5-pole | M12<br>8-pole | Bayonet<br>4-pole | Deutsch<br>4-pole | Deutsch<br>3-pole | Super<br>Seal<br>3-pole | Valve<br>4-pole | MIL<br>6-pole | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 electronical LV | X | X | X | X | X | | | X | X | |
| 2 electronical LV | | X | X | | | | | | X | |

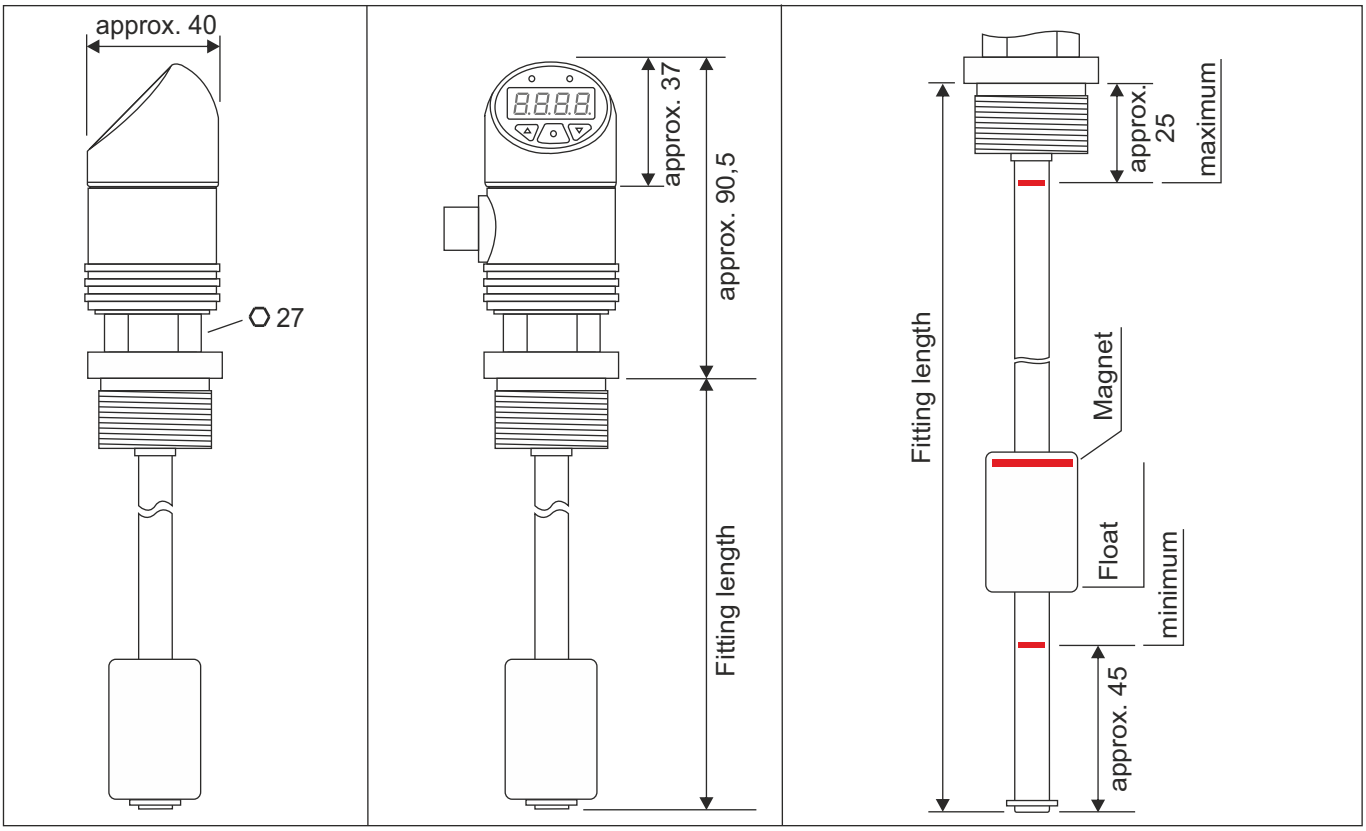
## HART Communication and Configuration

The HART-Tool is a graphical user interface for the ME series with menu-driven progam for configuration. It can be used for start-up, configuration, signal analysis, data backup and device documentation. Operating systems: Windows 2000, Windows XP, Windows 7, 8.1 and 10.
Connection via HART interface (modem) with USB interface of a PC or hand-held HART communicator

Settings:
- Adjustment of output current
- Limits of measuring range
- 2-point calibration
- Simulation of output current
- Linear output signal
- up to 10-point calibration (linearization)
- Filter function
- HART address

**Please note:** When using communication via a HART modem, take the comunication resistance of 250 Ω into account.

## Dimensions (in mm)



## Ordering Code

| O | L | X | X | X | X | - | X | - | X | X | X | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | |
|---|---|---|
| **Input:** | Level | 0 |
| **Resolution:** | 4,5 mm | 1 |
| **Float:** | Plastics Ø24[1)] | 1 |
| | Plastics Ø29 (Standard) | 2 |
| | Stainless steel Ø29 | 3 |
| **Process connection:** | 1” | 0 |
| | 1,5” | 1 |
| | 1”NPT | 2 |
| | 3/4" (for float 24 mm) | 3 |
| **Fitting length:**[2)] | 100 mm | 100 |
| | 200 mm | 200 |
| | 300 mm | 300 |
| | 400 mm | 400 |
| | 600 mm | 600 |
| | 1000 mm | A00 |
| **Limit value contacts:** | 2x PNP, 30 VDC, 200 mA (standard) | 0 |
| | 1x PNP, 30 VDC, 200 mA | 1 |
| | Without | 2 |
| | 2x NPN, 30 VDC, 200 mA | 3 |
| | 1x NPN, 30 VDC, 200 mA | 4 |
| | 2x PNP, 30 VDC, 1000 mA | 5 |
| | 1x PNP, 30 VDC, 1000 mA | 6 |
| | 2x NPN, 30 VDC, 1000 mA | 7 |
| | 1x NPN, 30 VDC, 1000 mA | 8 |
| **Electrical connection:** | M12, 4-pole | 0 |
| | M12, 5-pole | 1 |
| | M12, 8-pole | 2 |
| | Deutsch DT04, 3-pole | 3 |
| | Deutsch DT04, 4-poe | 4 |
| | Super Seal 1.5, 3-pole | 5 |
| | Bayonet (DIN), 4-pole | 6 |
| | Valve plug, 4-pole | 7 |
| | MIL, 6-pole | 9 |
| **Configuration:** | Factory setting[3)] | 0 |
| | Customized (please indicate)[4)] | 1 |
| **Other:** | Special model | 0 |

1) For float with Ø24 mm the minimum density is 1

2) Other fitting lengths: 150 = 150 mm / 250 = 250mm / 350 = 350 mm / 450 = 450 mm / 500 = 500 mm / 550 = 550 mm / 650 = 650 mm / 700 = 700 mm / 800 = 800 mm / 850 =850 mm / 900 = 950 mm / A05 = 1050 mm / A10 = 1100 mm / A15 = 1150 mm / A20 = 1200 mm / A25 = 1250 mm / A30 = 1300 mm / A35 = 1350 mm / A40 = 1400 mm / A45 = 1450 mm / A50 = 1500 mm / A55 = 1550 mm / A60 = 1600 mm / A65 = 1650 mm / A70 = 1700 mm / A75 = 1750 mm / A80 = 1800 mm / A85 = 1850 mm / A90 = 1900 mm / A95 = 1950 mm / B00 = 2000 mm

3) Measuring range: Indicating range / Limit values: 40% / 80%

4) All settings possible according technical data can be selected. For not given values factory-settings will be used.

**Accessories:**

DEV-HM (Interface HART, USB, software) Order No.: 1310-00220