

FILLING LEVEL AND TEMPERATURE SENSOR HFT C4 / R / MD

Level measuring range 0.25-5.0 m

Pressure measuring range 0-0.5 bar

Temperature measuring range -10–100 °C

Voltage supply 18–30 V DC



Features

- Filling level detection through measuring the hydrostatic medium pressure
- suitable for foaming medium types
- for filling level measurement up to a 5 m water column in pressure-free containers
- integrated temperature sensor
- Alternative signal output interfaces (current loop / relay / Modbus RTU)

Note

The display and control unit (UNI display) is required for setting the sensor in the relay and Modbus version.

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Filling level and Temperature Sensor HFT C₄ / R / MD



HFT Compact

Version: Fitted to pipe

HFT Flex



Signal inputs:



Pressure
0–0,5 bar

Connection material

- 1 PVC-U socket **DIN**
- 2 PP socket **DIN**
Spigot **DIN**
- 3 PVDF socket **DIN**
Spigot **DIN**
- 4 Sealing
 - » EPDM
 - » FPM

Output - Signal

- C4** Current: 4 wire, 2 x 0/4–20 mA
Output can be calibrated/adjusted optional
Operating voltage: 18–30 V DC
- R** Relay: 4 relays, 2 inputs, 1 MicroUSB
Programmable NC/NO switching function
Operating voltage: 18–30 V DC
- MD** Modbus: 2 relays, 2 inputs
Change-over contact switching function
Operating voltage: 18–30 V DC

Uni-Display



Sensor: Al₂O₃ 96 %

Housing material



Connection

Sealing



Socket

Spigot



- available
- not available

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Application

- Designed for measurements in fountains, basins and open or closed pressure-free containers

Use

- Pressure transducer for filling level and temperature detection for suspended installation from the top or installation in the piping.
- Comprehensive operating and display options with relay, signal output 0/4–20 mA or Modbus RTU connection

Function

- The hydrostatic pressure is registered by a ceramic transducer made of AL_2O_3 . In addition, this system is equipped with a temperature sensor. The values are converted in the connection housing.
- The output values can be indicated by the UNI display and/or transmitted via the respective outputs.
- Versions
 C4:
 The current module transmits pressure and temperature via normalised 0/4–20 mA signals.
 R:
 The relay module is equipped with four programmable relay outputs. It is particularly suitable for the direct control of sensitive plant components, e.g. for dry run protection of pumps or independent filling level regulation in containers.
 MD:
 The Modbus module enables data bus communication. It contains two additional freely programmable relay outputs which can be used for directly intervening in the process if necessary.

Type

- HFT Compact as compact one-piece variant
- HFT Flex with the sensor separate from the connection housing, connected by a 7 m long sensor cable

Interfaces

- Signal output, current loop (C4):
 0/4–20 mA
 Output can be calibrated/adjusted

- Signal output, relay (R):
 4 relays, 5 A / 230 V AC
 Programmable NC/NO switching function
 2 inputs
- Signal output, Modbus RTU (MD):
 RS485
 2 relays, 1 A / 30 V AC/DC
 2 DC isolated inputs

Operation

- 4-wire current version (C4):
 using the integrated potentiometer,
 optionally using the display and control unit (display)
- Relay version (R):
 using the display and control unit (display)
- Modbus RTU version (MD):
 using the display and control unit (display),
 relay / inputs via Modbus

Measured variables

- Pressure (filling level) and temperature

Device connection

- Socket end for solvent welding (PVC-U): d32
- Fusion socket end (PVDF or PP): d32
- Fusion spigot end (PVDF or PP): d32

Voltage supply

- U = 18–30 V DC

Cable connections

- Cable outside diameter: 5–11 mm
- Nominal cross-section, voltage supply: 0.25 mm²
- Nominal cross-section, relay outputs: 0.5 mm²
- Nominal cross-section, gate inputs: 0.25 mm²
- Nominal cross-section, Modbus: 0.35 mm²

Materials, wetted parts

- Sensor: AL_2O_3 96 %
- Sensor housing: PVC-U, PVDF or PP
- Sensor seal: EPDM, FPM
- Sensor cable, Flex version: FEP
- Cable fastening elements: PVDF
- Cable fastening seals, FEP cables: FPM
- Device connection: HFT Compact
- Union end and union nut: PVC-U, PVDF or PP
- Sealing: EPDM, FPM

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Materials, no medium contact

- Housing: PP-GF
- Housing cover: PP-GF / PA transparent
- Cover seal: NBR

Weights

- Basic weight: 0.6 kg
- Sensor cable: 0.1 kg/m
- Additional weight: 0.5 kg

Type of protection

- IP 67

Output behaviour

- Power up: 10 s
- Step response (10-90%) < 300 ms
- Integration time: 0-60 s, adjustable

Sensor data (pressure)

- Measured variable: pressure
- Measuring range: 0-0.5 bar
- Precision at 0-85°C: ±0.2 % (after calibration basic correction, from maximum value)
- Resolution: 0.1 mbar
- Maximum overpressure: 1.0 bar

Sensor data (temperature)

- Measuring range: -10–100 °C
- Resolution: 0.1 K

Ambient conditions

- Ambient temperature: -20-70 °C
- Atmospheric ambient pressure: 0.8-1.1 bar
- Relative humidity: 20–85 %

Process temperature

- PVC: 0-50 °C
- PP: 0-70 °C
- PVDF: -10–100 °C
- PVDF: -10–80 °C (Flex version)

Process pressure

- max. 1 bar

Mounting position

- As required

Accessories

- Display and control unit (UNI display)
- Mounting kit, wall fixture
- Additional weight

Display and control unit (UNI display)

- Can be used for all measuring instruments of the UNI display platform (PTM, HFT or UFM).
- Housing: ABS
- Cover: PA, transparent
- Display: illuminated LCD
- Operation: 4-key function
- Front film: polyester
- Data logger function with date stamp
- Firmware update possible
- Parameter settings can be saved and transmitted to other sensors.
- Storage function on a microSD card
- Battery: CR1220, 3 V
- The display unit can be removed from the sensor housing after the settings have been made.
- The display unit is required for setting the relay and Modbus version.



Mounting kit, wall fixture

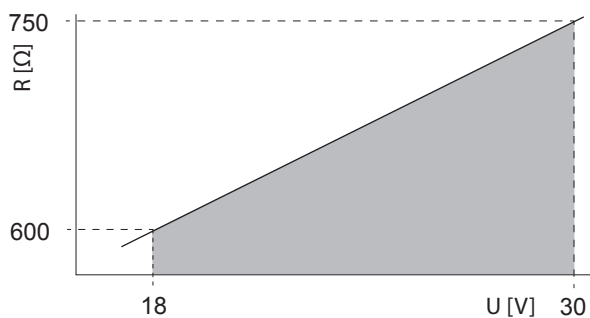


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Additional weight

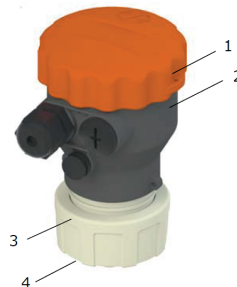


Ohmic resistance



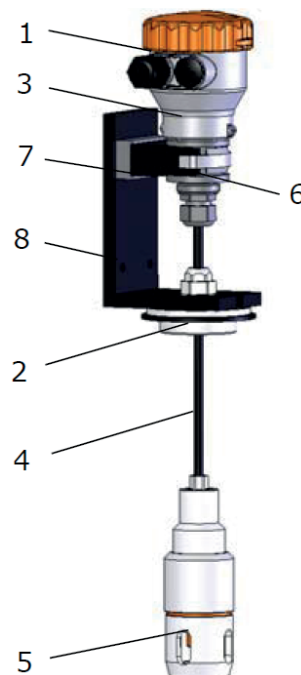
Description	
R	Max. ohmic resistance
U	Voltage supply

HFT Compact



No.	Description
1	Housing cover
2	Sensor and connection housing
3	Device connection
4	Sensor

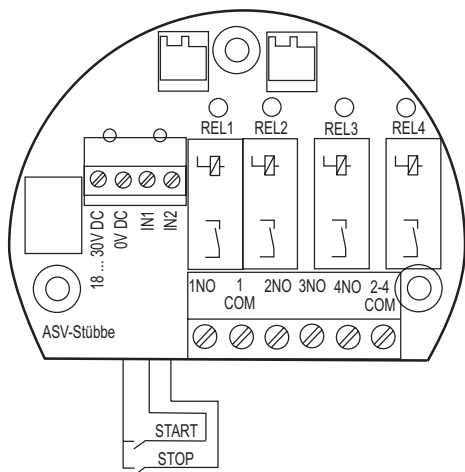
HFT Flex with mounting kit, wall fixture



No.	Description
1	Housing cover
2	Cable feedthrough
3	Connection housing
4	Sensor cable
5	Sensor
6	Pipe clamp
7	Spacer
8	Holding bracket from mounting kit, wall fixture

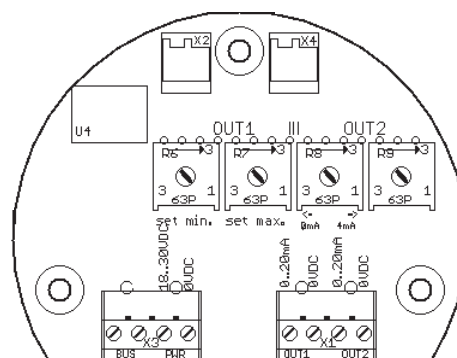
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Terminal connection plan, relay version



Terminal	Connection
18–30 V DC	Voltage supply (18–30 V DC)
0 V DC	Voltage supply (–)
IN1	Start button
IN2	Stop button
1NO	Relay 1 normally open contact
1COM	Relay 1 COM
2NO	Relay 2 normally open contact
3NO	Relay 3 normally open contact
4NO	Relay 4 normally open contact
2–4 COM	Relay 2–4 COM

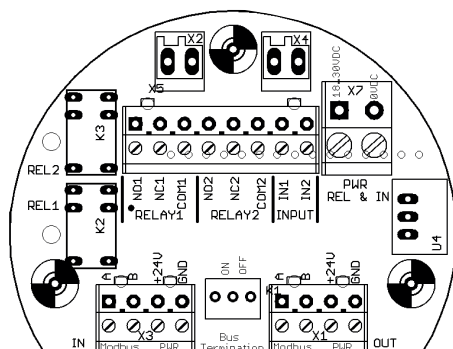
Terminal connection plan, 4-wire current version



Terminal	Connection
Connector X3	
PWR: 18–30 V DC	Voltage supply (18–30 V DC)
PWR: 0 V DC	Voltage supply (–)
Connector X1	
OUT1: 0–20 V DC	0/4–20 mA pressure
OUT1: 0 V DC	Earth, pressure
OUT2: 0–20 V DC	0/4–20 mA temperature
OUT2: 0 V DC	Earth, temperature

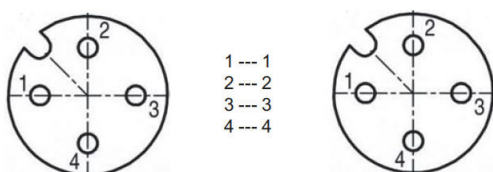
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Terminal connection plan, Modbus RTU version



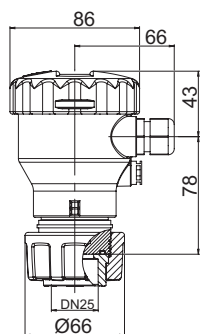
Terminal	Connection
Connector X2 / X4	
Plug-type connection	UNI display
Connector X5	
IN1	Start button
IN2	Stop button
NO1	Relay 1 normally open contact
NC1	Relay 1 normally closed contact
COM1	Relay 1 COM
NO2	Relay 2 normally open contact
NC2	Relay 2 normally closed contact
COM2	Relay 2 COM
Connector X7	
PWR: 18–30 V DC	External voltage supply (inputs / relays)
PWR: 0 V DC	External earth
Connector X3 / X1	
A	RS485 A
B	RS485 B
PWR: +24 V	Operating voltage supply, sensor
PWR: GND	Operating voltage supply, sensor (earth)

Pin assignment, 4 pole

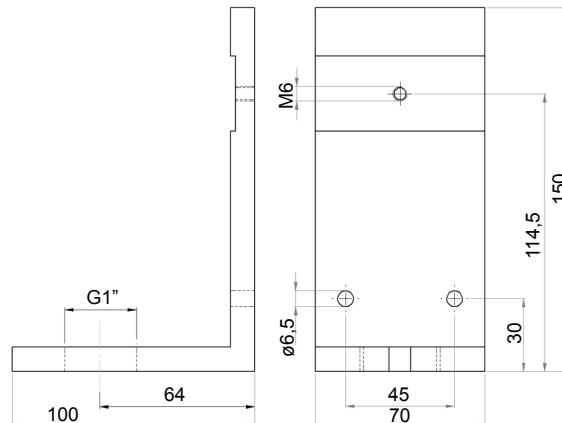


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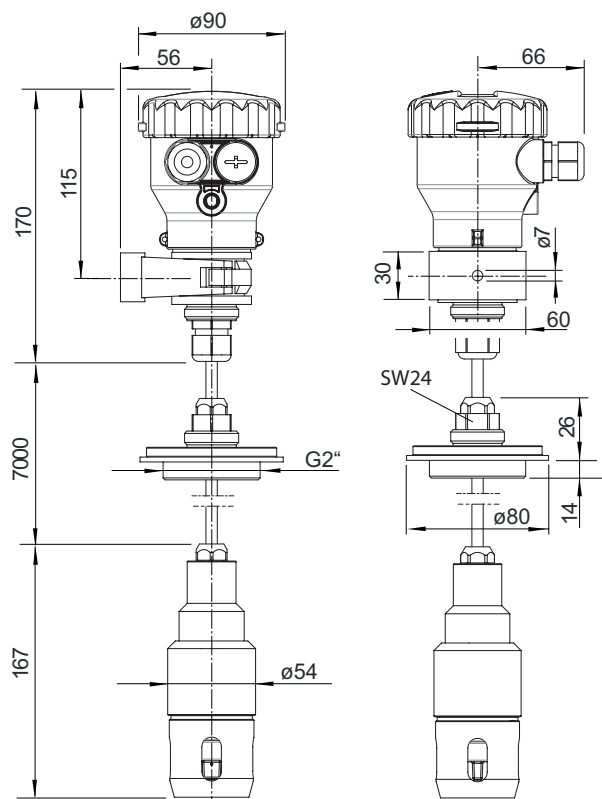
HFT Compact



Holding bracket from mounting kit, wall fixture



HFT Flex



Additional weight

