

FILLING LEVEL AND TEMPERATURE SENSOR HFT C4 / R / MD

Measuring range 0–5 m water column
0–10 m water column

Temperature measuring range -10–100 °C



Features

- Filling level detection through measuring the hydrostatic medium pressure
- suitable for foaming medium types
- for filling level measurement up to a 10 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!

www.stuebbe.com/en/products-systems/instrumentation/

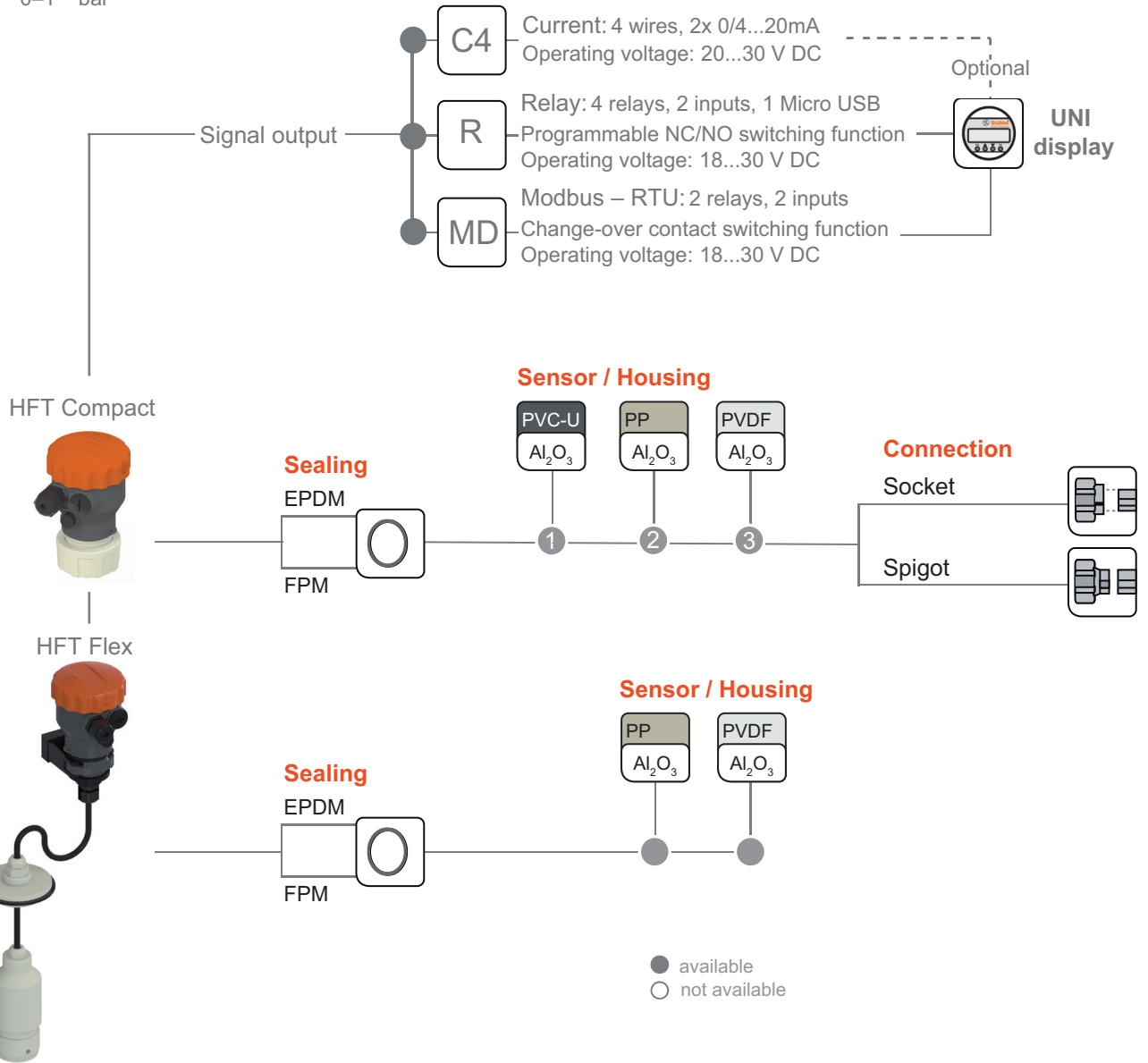
HFT Compact / Flex R / C4 / MD



Pressure
0–0.5 bar
0–1 bar



Temperature
-10–100 °C



HFT C4 / R / MD Compact

Connection Material (process connection)

- 1 PVC-U socket DIN
- 2 PP socket DIN
spigot (IR)
- 3 PVDF socket DIN
spigot (IR)

HFT C4 / R / MD Flex

Connection Material (process connection)

- Immersion probes* for
 - 5 m water column with 7 m FEP cable
 - 10 m water column with 12 m FEP cable

* included in the scope of delivery

Filling level and Temperature Sensor HFT C₄ / R / MD

Application

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

Use

- Pressure transducer for filling level detection, for suspended installation from the top or installation in the piping.

Restricted accuracy

due to:

- changing medium density

Application limits

- Container is subject to pressure or vacuum
- Adhering medium types
- AL₂O₃ incompatible medium types

Function

- The hydrostatic pressure is registered by a ceramic transducer made of AL₂O₃. 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 7/12 m long sensor cable

Display and control unit (UNI display)

- Can be used for all measuring instruments of the UNI display platform (USF, 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.



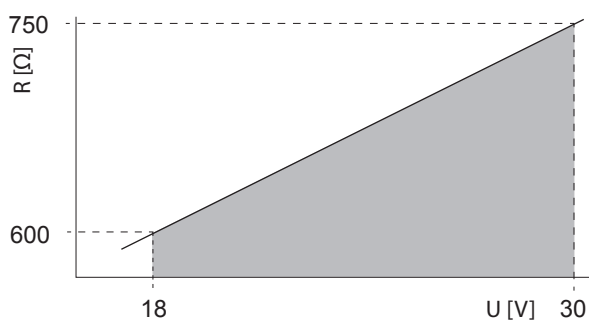
Technical data

| | | Value | | | | | |
|--|-----------------|--|------|---------|---|------|--------|
| | | HFT-C ₄ , R, MD Compact | | | HFT-C ₄ , R, MD suspended probe (Flex) | | |
| | | PVC-U | PP | PVDF | - | PP | PVDF |
| Measuring | | | | | | | |
| Measuring range water column | m | 0–5 or 0–10 | | | | | |
| Measuring range pressure | bar | 0–0.5 or 0–1 | | | | | |
| Measuring range temperature | °C | -10–100 | | | | | |
| Measuring resolution pressure | mbar | ≤ 1 | | | | | |
| Measuring resolution temperature | kelvin | ≤ 0.1 | | | | | |
| Step response (10–90%) | ms | 300 | | | | | |
| Integration time adjustable | s | 0–60 | | | | | |
| Measuring deviation absolute (after adjustment) | % | ±0.2 at 0–85 °C | | | | | |
| Power up | s | 8 | | | | | |
| Temperature compensation | | Automatic | | | | | |
| Voltage supply | | | | | | | |
| Voltage supply | V DC | 18–30 | | | | | |
| Power consumption max. | W | 2.5 | | | | | |
| Signal output | | | | | | | |
| Current loop C ₄ | mA | 0/4–20 | | | | | |
| Relay R | | 4 relays, 5 A / 230 V AC, 2 inputs | | | | | |
| Modbus RTU MD | | 2 relays, 1 A / 30 V DC 2 inputs, RS485 | | | | | |
| Cable outside diameter | mm | 5–11 | | | | | |
| Nominal cross-section (max.) | mm ² | 0.3 | | | | | |
| Connection | | pluggable screw connectors | | | | | |
| Material coming into contact with the media | | | | | | | |
| Sensor | | Al ₂ O ₃ | | | | | |
| Sensor housing | | PVC-U | PP | PVDF | - | PP | PVDF |
| Sensor seal | | FPM or EPDM | | | | | |
| Union nut | | PVC-U | PP | PVDF | - | - | - |
| Process sealing | | FPM or EPDM | | | | - | |
| Sensor cable (firmly connected) | | - | | | | FEP | |
| Material not coming into contact with the media | | | | | | | |
| Housing | | PP-GF | | | | | |
| Housing cover | | PP-GF / PA transparent | | | | | |
| Cover seal | | NBR | | | | | |
| Process conditions | | | | | | | |
| Ambient temperature | °C | -20–70 | | | | | |
| Atmospheric ambient pressure | bar | 0.8–1.1 | | | | | |
| Relative humidity | % | 20–85 | | | | | |
| Process temperature | °C | 0–50 | 0–70 | -10–100 | - | 0–70 | -10–80 |
| Maximum pressure range | bar | 2x nominal pressure | | | | | |

Filling level and Temperature Sensor HFT C4 / R / MD

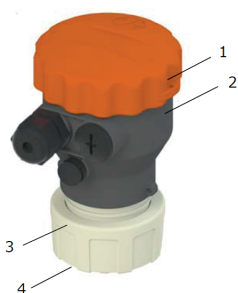
| | | Value | | | | | |
|---------------------------------|------|--------------------------------------|-----|------|---|------|------|
| | | HFT-C4, R, MD Compact | | | HFT-C4, R, MD suspended probe (Flex) | | |
| | | PVC-U | PP | PVDF | - | PP | PVDF |
| Mechanical data | | | | | | | |
| Weight of sensor | kg | 0.4 | 0.3 | 0.4 | - | 0.78 | 0.86 |
| Sensor cable | kg/m | | - | | | 0.1 | |
| Mounting position | | preferably horizontal | | | suspended up to the tank base | | |
| Connection thread (male thread) | inch | 1 1/2" | | | 2" | | |
| Type of protection | | IP65 | | | IP67 | | |
| Accessories | | UNI display, PSU power pack, - | | | UNI display, PSU power pack, Mounting kit, wall fixture | | |

Ohmic resistance



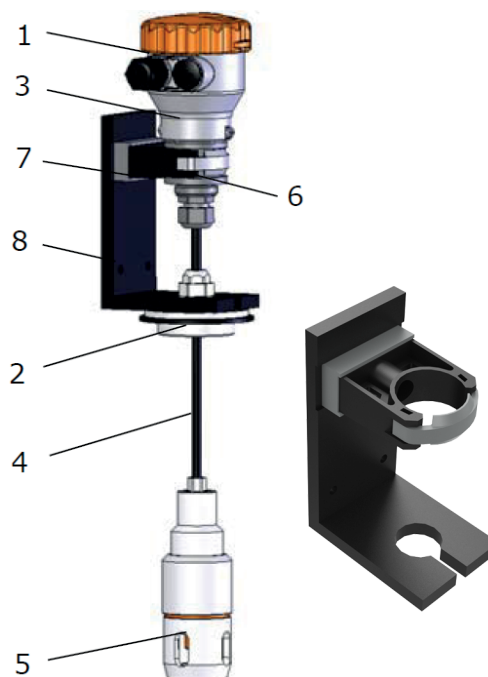
| Description | |
|-------------|-----------------------|
| R | Max. ohmic resistance |
| U | Voltage supply |

HFT Compact



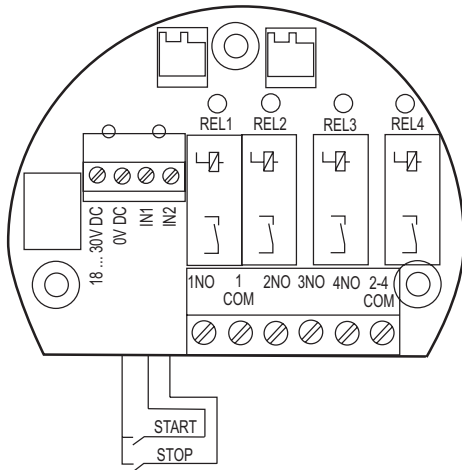
| No. | Description |
|-----|-------------------------------|
| 1 | Housing cover |
| 2 | Sensor and connection housing |
| 3 | Device connection |
| 4 | Sensor |

HFT Flex with mounting kit, wall fixture



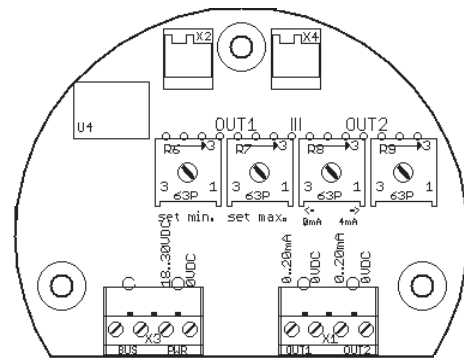
| No. | Description |
|-----|---|
| 1 | Housing cover |
| 2 | Cable feedthrough |
| 3 | Connection housing |
| 4 | Sensor cable |
| 5 | Sensor |
| 6 | Pipe clamp |
| 7 | Spacer |
| 8 | Holding bracket from mounting kit, wall fixture |

Terminal connection plan, relay version

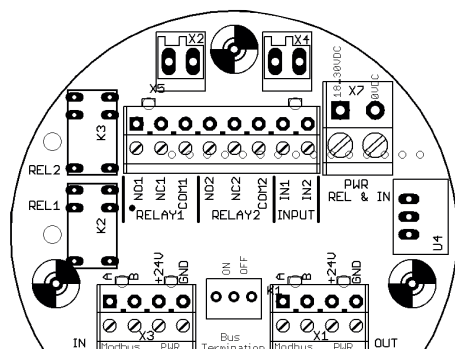


| Terminal | Connection |
|------------|-------------------------------|
| 18–30 V DC | Voltage supply (18–30 V DC) |
| 0 V DC | Voltage supply (-) |
| IN1 | Start button |
| IN2 | Stop button |
| 1NO | Relay 1 normally open contact |
| 1COM | Relay 1 COM |
| 2NO | Relay 2 normally open contact |
| 3NO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



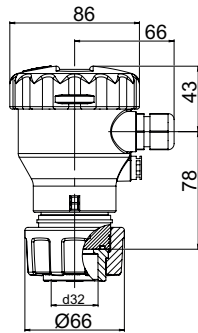
| Terminal | Connection |
|---------------------|-----------------------------|
| Connector X3 | |
| PWR: 18–30 V DC | Voltage supply (18–30 V DC) |
| PWR: 0 V DC | Voltage supply (-) |
| Connector X1 | |
| OUT1: 0–20 mA | 0/4–20 mA signal |
| OUT1: 0 V DC | Earth, signal |
| OUT2: 0–20 mA | 0/4–20 mA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

Filling level and Temperature Sensor HFT C₄ / R / MD
Terminal connection plan, Modbus RTU version


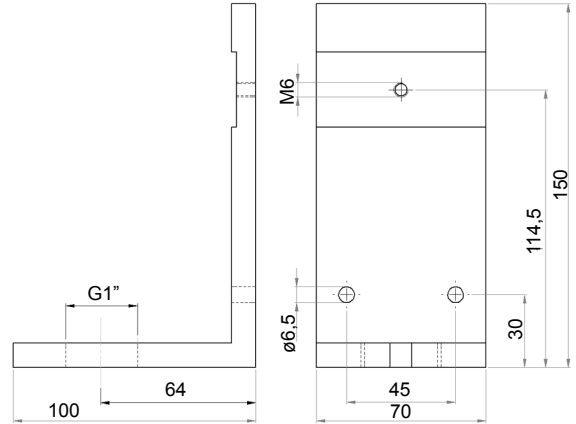
| Terminal | Connection |
|--------------------------|---|
| Connector X2 / X4 | |
| Plug-type connection | UNI display |
| Connector X5 | |
| IN1 | Start button |
| IN2 | Stop button |
| NO1 | Relay 1 normally open contact |
| NC1 | Relay 1 normally closed contact |
| COM1 | Relay 1 COM |
| NO2 | Relay 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) |

Filling level and Temperature Sensor HFT C₄ / R / MD

HFT Compact



Holding bracket from mounting kit, wall fixture



HFT Flex

