

# VFF Series

## IMMERSION TEMPERATURE SENSOR

### PRODUCT DATA



### GENERAL

The VFF Immersion Temperature Sensor is used in heating, cooling or domestic hot water applications requiring fast response temperature measurement.

### TYPES

OS no.	Sensor element / sensor length	Sensing range
VFF00-75P65	PT1000 / 75 mm	-20...+140 °C (-4...+284 °F)
VFF00-220P65	PT1000 / 220 mm	
VFF00-300P65	PT1000 / 300 mm	
VFF01-75P65	Ni 1000 / 75 mm	
VFF01-220P65	Ni 1000 / 220 mm	
VFF01-300P65	Ni 1000 / 300 mm	-20...+110 °C (-4...+230 °F)
VFF10-75P65	NTC10kΩ / 75 mm	
VFF10-220P65	NTC10kΩ / 220 mm	
VFF10-300P65	NTC10kΩ / 300 mm	-20...+140 °C (-4...+284 °F)
VFF20-75P65	NTC20kΩ / 75 mm	
VFF20-220P65	NTC20kΩ / 220 mm	
VFF20-300P65	NTC20kΩ / 300mm	

### FEATURES

- Fast response time
- Operating range of -20...+140 °C (with NTC10kΩ: -20...+110 °C)
- Easy installation
- Adjustable well length
- Stainless steel body material

### SPECIFICATIONS

#### Nominal value

VFF00 (PT1000)	1000 Ω at 0 °C
VFF01 (Ni 1000)	1000 Ω at 0 °C
VFF10 (NTC10kΩ)	10 kΩ at 25 °C
VFF20 (NTC20kΩ)	20 kΩ at 25 °C

#### Accuracy

VFF00 (PT1000)	IEC751 Class B ±0.3 °C at 0 °C (32 °F)
VFF01 (Ni 1000)	±0.4 °C at 0 °C (32 °F)
VFF10 (NTC10kΩ)	±0.2 °C at 25 °C (77 °F)
VFF20 (NTC20kΩ)	±0.2 °C at 25 °C (77 °F)

#### Sensitivity

VFF00 (PT1000)	≈ 3.85 Ω / K
VFF01 (Ni 1000)	≈ 6.81 Ω / K
VFF10 (NTC10kΩ)	≈ -440 Ω / K at 25 °C (non-linear)
VFF20 (NTC20kΩ)	≈ -934.5 Ω / K at 25 °C (non-linear)

#### Response time

$\tau_{63} < 2.5$  seconds (using brass / stainless steel well)

#### Well

Pressure rating PN16 (nominal)

#### Max. flow rate in water at

##### 16 bar and < 140°C (VFF10: <110 °C)

75 mm length	8 m/s
220 mm length	1.5 m/s
300 mm length	0.5 m/s

#### Medium

Mineral and synthetic oil, glycol-water mixture, domestic hot water, swimming pool water

#### Material

Stainless steel, 1.4571

#### Dimensions

ø 4 mm, length ~ 75/220/300 mm

#### Outlet size

R1/2"

#### Tightening torque

10 ±2 Nm, 13-mm wrench

#### Cable

Length 2.5 m

#### Protection class

IP 65

## ELECTRICAL CONNECTION

The wiring of the temperature sensor must be in accordance with the overall wiring circuit diagram. The terminals are not polarized; thus, even if the wires are connected in reverse, no malfunction will occur.

## DIMENSIONS

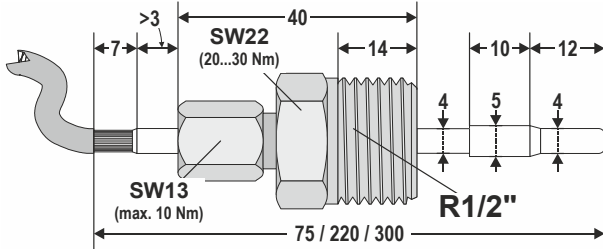


Fig. 1. Dimensions (in mm)

## MOUNTING

**NOTE:** Do not dismount the device by pulling the connection cable – which is sheathed with silicone and therefore easily damaged by mechanical stress.

Screw the device into place with a max. torque of  $10 \pm 2$  Nm. The device should be inserted so that the tip is well past the laminar flow at the inner wall of the pipe (min. 25 mm) – ideally at the middle of the pipe, though this may result in excessive mechanical stress of the well in the event of high flow rates. See also Fig. 2 through Fig. 4.

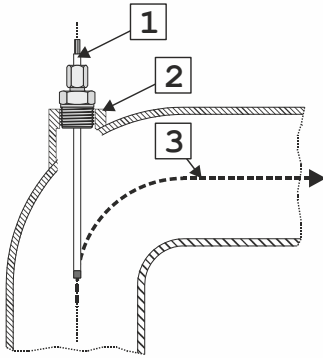


Fig. 2.  $\leq$  DN50, elbow pipe

1. Temperature sensor (max. torque =  $10 \pm 2$  Nm)
2. Weld junction with the screw thread
3. Direction of flow

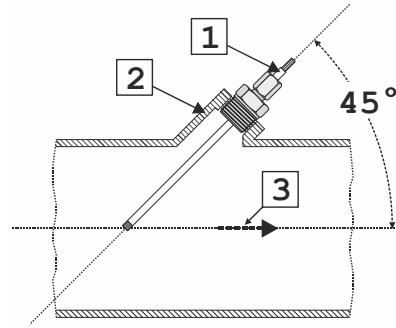


Fig. 3.  $\leq$  DN50, straight pipe

1. Temperature sensor (max. torque =  $10 \pm 2$  Nm)
2. Weld junction with the screw thread
3. Direction of flow

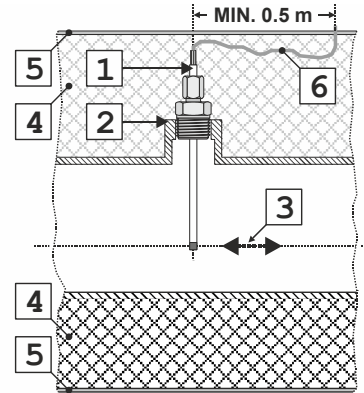


Fig. 4. DN65...150, coldwater application

1. Temperature sensor (max. torque =  $10 \pm 2$  Nm)
2. Weld junction with the screw thread
3. Flow in either direction
4. Insulation material
5. Water vapor barrier
6. Minimum 0.5 meter through insulation material before exit.

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