

# VFG54 RS485 Modbus

Contact temperature sensor

**thermokon**  
Sensortechnik GmbH

## Datasheet

Subject to technical alteration  
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## Application

Contact temperature sensor for measurement of pipes and round surfaces. Spring loaded brass contact sensor. Designed for control and monitoring applications.

## Types available

VFG54 RS485 Modbus                      active, with output RS485 Modbus

## Security Advice – Caution



The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Please comply with

- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

## Notes on Disposal



As a component of a large-scale fixed installation, Thermokon products are intended to be used permanently as part of a building or a structure at a pre-defined and dedicated location, hence the Waste Electrical and Electronic Act (WEEE) is not applicable. However, most the product may contain valuable materials that should be recycled and not disposed of as domestic waste. Please note the relevant regulations for local disposal.

## Build-up of Self-Heating by Electrical Dissipative Power

Temperature sensors with electronic components always have a dissipative power, which affects the temperature measurement of the ambient air. The dissipation in active temperature sensors shows a linear increase with rising operating voltage. This dissipative power has to be considered when measuring temperature. In case of a fixed operating voltage ( $\pm 0,2$  V) this is normally done by adding or reducing a constant offset value. As Thermokon transducers work with a variable operating voltage, only one operating voltage can be taken into consideration, for reasons of production engineering. Transducers 0..10 V / 4..20 mA have a standard setting at an operating voltage of 24 V =. That means, that at this voltage, the expected measuring error of the output signal will be the least. For other operating voltages, the offset error will be increased by a changing power loss of the sensor electronics. If a re-calibration should become necessary later directly on the sensor, this can be done by means of a trimming potentiometer on the sensor board.

**Remark: Occurring draft leads to a better carrying-off of dissipative power at the sensor. Thus temporally limited fluctuations might occur upon temperature measurement.**

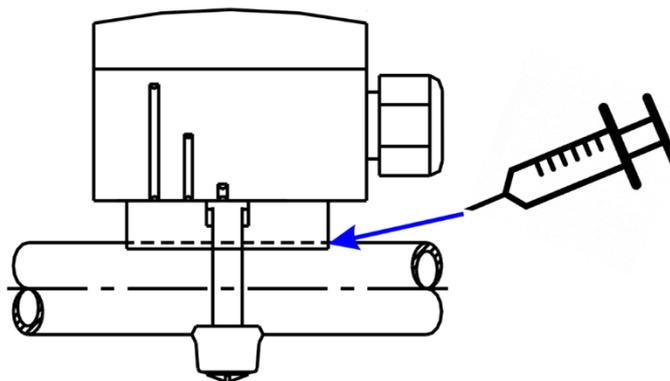
## Technical Data

Measuring values	Temperature
Network technology	RS485 Modbus, RTU or ASCII, baud rate 9.600, 19.200, 38.400 or 57.600, parity: none, even or odd
Power supply	15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ )
Power consumption	typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temperature	-20..+120 °C
Accuracy temperature	$\pm 1\%$ of measuring range (typ. at 21 °C)
Enclosure	PA6, pure white
Protection	IP65 according to EN 60529
Cable entry	M20 for wire max. $\varnothing=8$ mm, seal insert for double cable entry for wire max. $\varnothing=6$ mm
Connection electrical	terminal block max. 1,5 mm <sup>2</sup> , 4-wire
Pocket	brass, spring loaded sensor
Ambient condition	enclosure: -35..+70 °C, max. 85% rH short term condensation
Weight	130 g

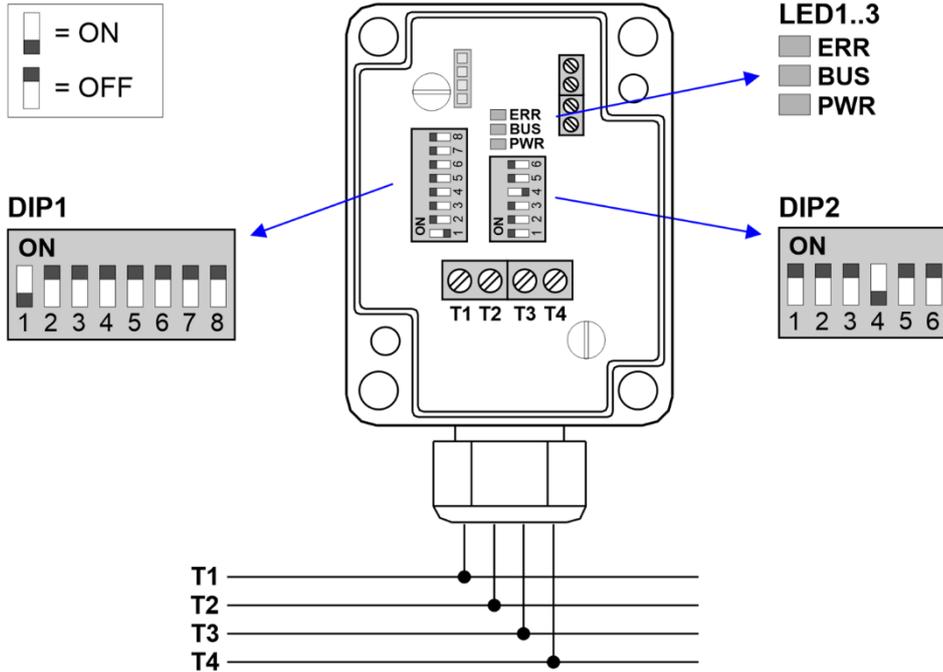
## Mounting Advices

The device is fixed using the tightening strap. **Use contact fluid for better heat transfer between sensor and measuring medium.**

To avoid permeation of condensate, mount the sensor on top of the tube, if possible.



## Terminal Connection Plan



**Terminal assignments/LEDs:**

Terminal assignments	
T1	RS485 Modbus B
T2	RS485 Modbus A
T3	GND
T4	15..24 V =   24 V ~

LEDs	
ERR	Indicator for error notification
BUS	Indicator for RS485 traffic
PWR	Power supply OK

**DIP1 Device address (binary coded):**

DIP 1.1	DIP 1.2	DIP 1.3	DIP 1.4	DIP 1.5	DIP 1.6	DIP 1.7	DIP 1.8	Address
2 <sup>0</sup>	2 <sup>1</sup>	2 <sup>2</sup>	2 <sup>3</sup>	2 <sup>4</sup>	2 <sup>5</sup>	2 <sup>6</sup>	2 <sup>7</sup>	Valence
ON	OFF	1						
OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	2
ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	3
...	...	...	...	...	...	...	...	...
ON	ON	ON	ON	OFF	OFF	OFF	OFF	15
...	...	...	...	...	...	...	...	...
ON	ON	ON	OFF	ON	ON	ON	ON	247

default

**DIP2 Options:**

DIP 2.1	Mode
OFF	RTU
ON	ASCII

DIP 2.2	DIP 2.3	Baud
OFF	OFF	9.600
ON	OFF	19.200
OFF	ON	38.400
ON	ON	57.600

DIP 2.4	DIP 2.5	Parity
ON	OFF	even
OFF	ON	odd
OFF	OFF	none
ON	ON	not used

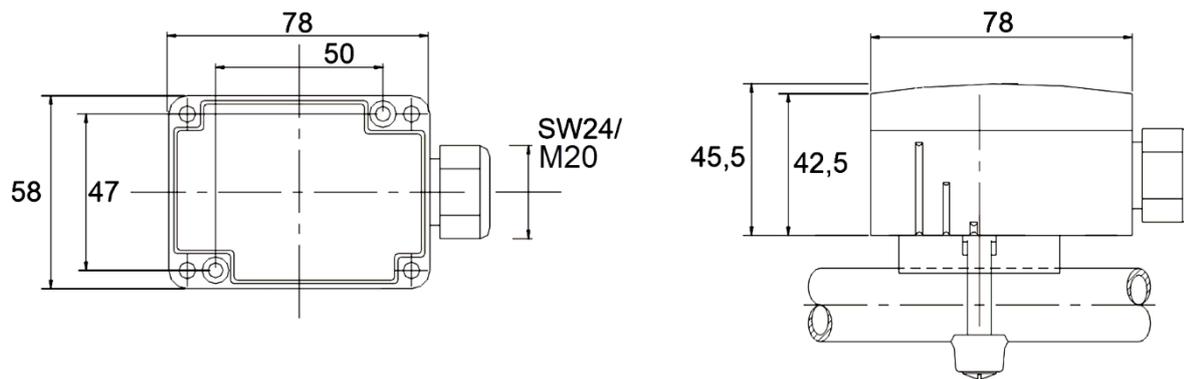
DIP 2.6	not used
OFF	not used
ON	not used

When using ASCII mode, the parity must be set to EVEN or ODD; no parity is not available in ASCII mode.

## RS485 Modbus Register

Data-Address	Function Code	Description	Type
Input Register			
580 <sub>dec</sub> 0x244 <sub>hex</sub>	4	temperature [1/100] °C	SIGNED 16 Bit
581 <sub>dec</sub> 0x245 <sub>hex</sub>	4	temperature [1/100] °F	SIGNED 16 Bit

## Dimensions (mm)



## Accessories

Tightening strap 2" with contact fluid

Item No. 102254

Tightening strap 900 mm with contact fluid

Item No. 102315