


● Characteristics

1510 - RESISTANCE THERMOMETER - RTD - PT100 -

	Input:	RTD Pt 100, Pt 1000
	Measurement range:	-50...+200 °C maximum
	Accuracy transmitter:	0,3% of range
	Accuracy RTD Pt100(0):	Class A, Class AA, Class B
	Output:	Several, see Technical Data
	Resolution:	16 bit
	Configuration:	Via software (HART communication)
	Connection:	Several plugs, cable
	Internal protection:	Inside completely potted
	Material:	Stainless steel 1.4571, PBT GF30
Protection:	At least IP65	

● Technical Data

Input

Sensor:	1x Pt100 / 1x Pt1000 / 2x Pt100 / 2x Pt1000
Connection:	2-wire / 3-wire / 4-wire
Accuracy:	Class A / Class B / Class AA
Maximum range:	-50...+200 °C
Minimum range:	50 °C

Output

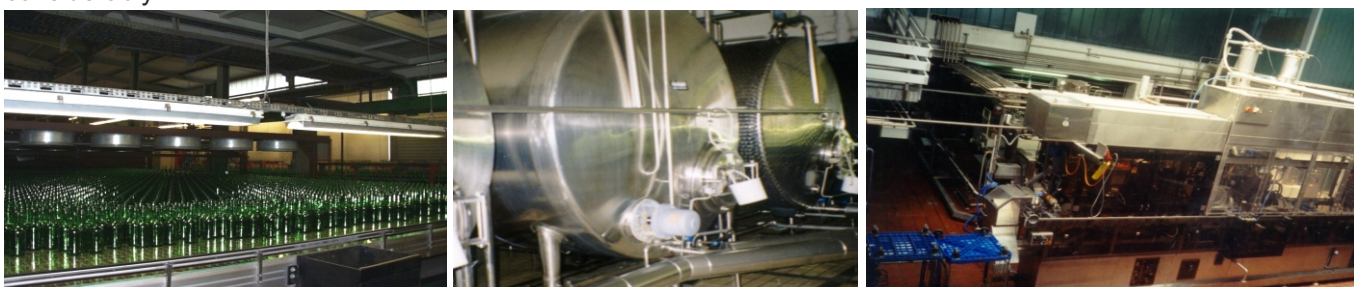
Transmitter Analog:	Current:	4...20 mA HART
	Connection:	2-wire current loop
	Current range:	3,6...21 mA
	Signal on error:	21 mA (sensor break, open circuit, short circuit, underflow)
Transmitter CANopen:	Protocol:	CANopen CiA 404 / CAN 2.0A / CAN 2.0B
	Number of PDO:	2 transmit PDO
	Transmitter Analog:	Voltage: 0...10 VDC
Resistance thermometer:	Connection lead through onto plug, cable lead through	

Measuring Amplifier

Transmitter HART:	Combined error:	0,3% of range
	Resolution:	16 Bit
	Filter:	0...99 s
	Transmission behaviour:	Linear with temperature
	Rise-delay time:	<5 s
	Measuring rate:	10 measurements/s
	Configuration:	Via software (HART-Communication)
	Transmitter CANopen:	Accuracy:
Resolution:		16 bit, 0,1 K
Sampling rate:		20 ms
Baud rate:		50 kBit/s...1MBit/s
Configuration:		Baud rate, module address via LSS

● Applications

For use in climating, ventilating and heating installations. Due to the used materials and the compact design, this sensor with its small dimensions is very robust. The programmable transmitter reduces storekeeping considerably.



● Technical Data (Continued)

Measuring Amplifier (Continued)

Transmitter voltage:	Accuracy:	<1% FS
	Temperature coefficient:	<100 ppm / °C
	Response time:	<0,1 s
	Sensor break:	>10 VDC
	Sensor short circuit:	=0 VDC

Supply

Transmitter HART:	Current loop:	10...35 VDC
	Load:	$R = (U_B - 12 \text{ V}) / 21 \text{ mA}$
	Reverse voltage protection:	Available (no function, no damage)
Transmitter CANopen:	Voltage:	8...40 VDC
	Reverse voltage protection:	Available
	Power consumption:	500 mW maximum
Transmitter voltage:	Voltage:	15...35 VDC
	Reverse voltage protection:	Available
	Current consumption:	10 mA

Environmental Conditions

Operating temperature:	With transmitter:	-20...+80 °C
	Without transmitter:	-30...+100 °C
Storage temperature:		-40...+85 °C
Medium temperature:		-50...+200 °C
System pressure:		25 bar maximum
Condensation:		<95% rH

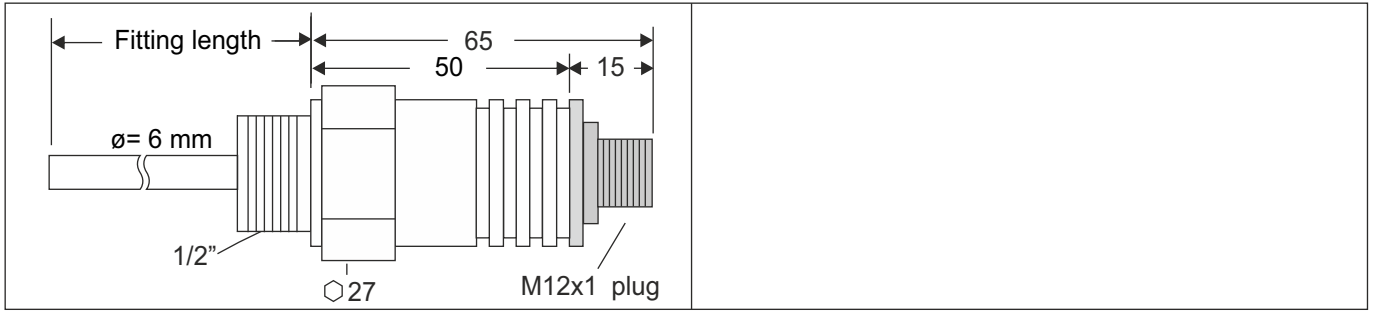
Mechanics

Dimensions:	See page 3	
Process connection:	Without / 1/4" / 3/8" / 1/2" / 3/4" / 1" / 1/4NPT / 3/8NPT / 1/2NPT	
Electrical connection:	see pages 4-5	
Sensor tube:	Ø6 mm	
Material:	Sensor tube:	Stainless steel 1.4571
	Process connection:	Stainless steel 1.4571
	Body:	Stainless steel 1.4571
	Inset electr. connection:	PBT GF30
		Option: Stainless steel 1.4571
Weight:	Ca.200 g (1/2", 50 mm, M12)	
Fitting position:	Any	
Device protection:	Protection class:	At least IP65 (electronics) IP68 (sensor)
	Enclosure:	Inside completely potted

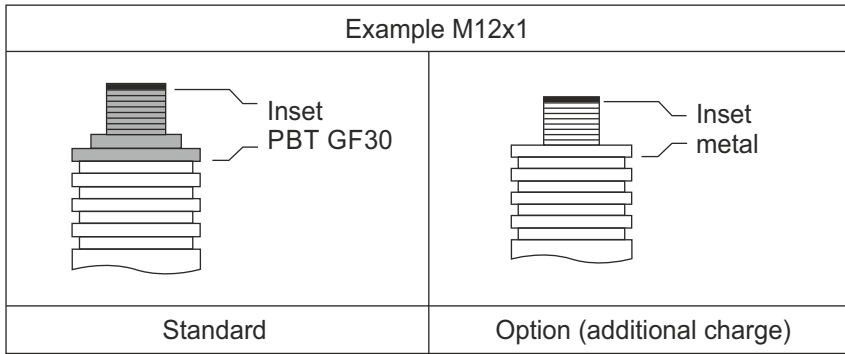
Configurable Parameter HART

Measuring amplifier:	Nominal measuring range start (LRL) / Nominal measuring range end (URL) / Measuring range start (LRV) / Measuring range end (URV) / Filter function / Adjustment output current / Simulation output current / HART address / Linear output signal / 2-point calibration
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● **Dimension, Connection (M12x1)**




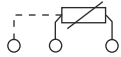
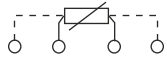

● **Inset of Electrical Connection**



● Electrical Connection

M12x1	Super Seal	Deutsch	Deutsch	Bayonet	Valve ¹⁾	MIL	Cable
							
4-pole 5-pole 8-pole	3-pole	3-pole	4-pole	4-pole	4-pole	6-pole	n-pole
Connection with inset metal							
4-pole					4-pole	6-pole	n-pole

1) According to EN 175301-803, type A

Pin Assignment											
	2-wire		3-wire			4-wire				Transmitter Current Output U+ U-	
											
Connection for 1 sensor											
M12, 4-pole	3	2	4	3	2	4	3	2	1	1	3
M12, 5-pole	3	2	4	3	2	4	3	2	1	1	3
M12, 8-pole	3	2	4	3	2	4	3	2	1	1	3
Super Seal, 3-pole	3	2	1	3	2					1	3
Deutsch DT04, 3-pole	C	B	A	C	B					A	B
Deutsch DT04, 4-pole	3	2	4	3	2	4	3	2	1	1	3
Bayonet, 4-pole	3	2	4	3	2	4	3	2	1	1	3
Valve, 4-pole	3	2	⊥	3	2	⊥	3	2	1	1	2
MIL, 6-pole	B	C	A	B	C	A	B	C	D	A	C
Cable, n-pole	bn	gn	ge	bn	gn	ge	bn	gn	ws	ge	ws
Cable, n-pole (DIN 60751)	rt	ws	rt	rt	ws	rt	rt	ws	ws		
Connection for 2 sensore											
M12, 4-pole											
		Sensor 1	4	3							
		Sensor 2	2	1							
M12, 5-pole											
		Sensor 1	4	3							
		Sensor 2	2	1							
M12, 8-pole											
		Sensor 1	3	2	4	3	2	4	3	2	1
		Sensor 2	7	6	8	7	6	8	7	6	5
Deutsch DT04, 4-pole											
		Sensor 1	4	3							
		Sensor 2	2	1							
Bayonet, 4-pole											
		Sensor 1	4	3							
		Sensor 2	2	1							
Valve, 4-pole											
		Sensor 1	⊥	3							
		Sensor 2	2	1							
MIL, 6-pole											
		Sensor 1	E	D	F	E	D				
		Sensor 2	B	A	C	B	A				
Cable, n-pole (DIN 60751)											
		Sensor 1	rt	ws	rt	rt	ws	rt	rt	ws	ws
		Sensor 2*	sw	ge	sw	sw	ge	sw	sw	ge	ge

Sensor 2*: Grey (gr) is a possible alternative to black (sw).



Cable coding translation:

bn:	brown	ge:	yellow
gn:	green	ws:	white
rt:	red	sw:	black

● **Electrical Connection (Continued)**

Pin Assignment (Continued)								
	Transmitter Voltage			Transmitter CANopen				
	U+	V	GND	Shield	U+	U-	CAN_High	CAN_Low
Connection for 1 sensor								
M12, 4-pole	1	2	3					
M12, 5-pole	1	2	3	1	2	3	4	5
M12, 8-pole	1	2	3					
Super Seal, 3-pole	1	2	3					
Deutsch DT04, 3-pole	A	B	C					
Deutsch DT04, 4-pole	1	2	4					
Bayonet, 4-pole	1	2	4					
Valve, 4-pole	1	3	2					
MIL, 6-pole	A	B	C					
Cable, n-pole	bn	gn	ge					

● **Order Code**

M K X X X X - X - X X X X X X

Transmitter:	Without 4...20 mA HART CANopen Voltage 0...10 VDC	F G H 4																		
Sensor:	RTD Pt100 RTD Pt1000 RTD 2x Pt100 RTD 2x Pt1000	1 2 3 4																		
Sensor connection:	2-wire 3-wire 4-wire	1 2 3																		
Accuracy:	Class A Class B Class AA Class C (on request)	1 2 3 4																		
Fitting length:¹⁾	50 mm 100 mm 160 mm 200 mm 250 mm 400 mm 600 mm 1000 mm																			
Diameter sensor tube:	6 mm (standard)																			6
Process connection:	Without 1/4" 3/8" 1/2" 3/4" 1" 1/4NPT 3/8NPT 1/2NPT																			
Inset electr. connection:²⁾	Plastics (standard) Metal																			
Electrical connection:	M12x1, 4-pole M12x1, 5-pole M12x1, 8-pole Deutsch DT04, 3-pole Deutsch DT04, 4-pole Super Seal, 3-pole Bayonet DIN, 4-pole Valve plug DIN EN 175301-803, 4-pole Cable, 2 m MIL-plug, 6-pole																			
Configuration:	Without Factory setting ³⁾ Customized (to specify) ⁴⁾																			
Special model:	No Yes (to specify)																			

1): Coding see price list, in steps of 5 mm
 2): See bottom of page 2
 3): Factory setting: Nominal measuring range: -50...200 °C (LRL...URL) / Measuring range: 0...100 °C (LRV...URV) / Damping: 0 s
 4): Please select settings as per technical data. For values not given, factory settings will be used.