Baumer
Passion for Sensors

CombiTemp™ TFRN

Industrial – RTD temperature sensor

IP 69K | Ex | V2A | Parameter

Main features

- Pt100 sensor element, 2- or 4-wire
- *HART*®, PA
- Built in graphical display, *CombiView*™ DFON optional
- Head mounted 4...20 mA transmitter, FlexTop type 22xx
- ATEX (pending)
- Programmable by touch screen
- Easy and full programmable with FlexProgrammer 9701

Applications

- Food and beverage
- Pharmaceutical
- Water treatment
- General process industry

Main characteristics (20 °C)	
Standard process temperature	-50 … 400 °C
Accuracy	Pt100 output as to DIN/EN/IEN 60751 Transmitter output <±0.1 °C / <±0,25 °C
Connections	Threaded
Technical specification	
Measuring principle	Resistance Temperature Detector (RTD)
Measuring ranges	-50...400 °C
Immersion tube, diameter Immersion tube, length Immersion tube, tip	ø 6 mm, ø 8 mm Min. 20 mm - Max. 3000 mm Normal response - ø6/ø8 mm Fast response - ø6/ø4 or ø8/ø4 mm
Process connections	See page 3
Environment	
Temperature, Ambient	-40…160 °C
- w. transmitter	-40…85 °C
- w. display	-30...80 °C
Protection rating, IEC 529	IP67 / IP69K, depending on electrical connection
Humidity, IEC 68-2-38	98%, condensing
Vibration IEC60068-2-6	1.5 mm (10 - 50 Hz), 20g (55 Hz - 2 KHz)

Sensor element and electrical specification	
Sensor type	RTD type Pt100 (acc. to DIN/EN/IEC 60751) Single or Double 2-wire or 4-wire
Accuracy	Class 1/1 B ±(0,3 + (0,005 x T)) °C Class 1/3 B ±1/3 x (0,3 + (0,005 x T)) °C Class 1/6 B ±1/6 x (0,3 + (0,005 x T)) °C Class 1/1 A ±(0,15 + (0,002 x T)) °C
Analog output	4-20 mA, 4-20mA+*HART*®, *Profibus*® See separate data sheet, series 22xx

Time constant, τ 0,5

Medium	Liquid	Air	Air
Velocity	0,4 m/sec.	0 m/sec.	3 m/sec.
ø 6 mm	<6,1	<138	<27,2
ø 6/4 mm	<1,5	<136	<21,4
ø 8 mm	<7,6	<201	<47,7
ø 8/4 mm	<1,5	<181	<33,6

EN/120805

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Display specifications	
Type	Graphically LCD
Front glass	Polycarbonate
Display modes	8 modes, programmable, e.g. value, bar graph, analogue, tank illustration
Background	White, green, red - programmable
Measuring range	-9999...99999
Digit height	Max. 22 mm
Accuracy	0,1% @ ambient -10…70 °C
Voltage drop	4V...6,5 V
Output	2 configurable relay output, 60 Vp, 75 mA
Programming	Touch screen or FlexProgrammer 9701

Further information can be found in separate data sheet for DFON, D21.09.

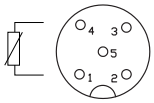
Material	
Process connection	SS 1.4404, AISI 316L
Housing	SS 1.4301, AISI 304
Sealing	See ordering table

Approvals	
Apply to	EMC directive 2004/108/CE in accordance with EN61000-6-2, EN 61000-6-3 Pressure directive 97/23/CE

ATEX	
Ex ia IIC T4/T5, ATEX II 1G	(Preliminary) (Pending)

Electrical connections

M12, 5-wire

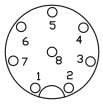


4...20 mA

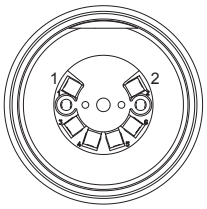
RTD	Single	Double
1+2	Pt100-1	
3+4	Pt100-1	
1		Pt100 – 1
2		Pt100 – 1
3		Pt100 – 2
4		Pt100 – 2
5	N.C.	N.C.

1	+ supply, 4...20 mA
2	Common for relays
3	- supply, 4...20 mA
4	Relay 1
5	Relay 2

M12, 8-wire



1	N.C.
2	+ supply, 4...20 mA
3	Relay 1
4	Relay 1
5	Relay 2
6	Relay 2
7	- supply, 4...20 mA
8	N.C.



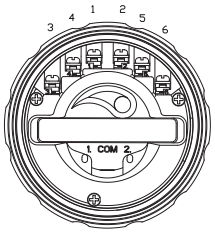
Cable gland

Transmitter

1	+24VDC / - 4...20mA
2	- 24VDC / +4...20mA
1	Red clip (FlexProgrammer)
2	Black clip (FlexProgrammer)

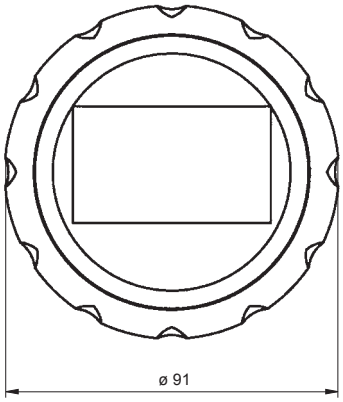
Display

1	+ 4...20 mA
2	- 4...20 mA
3	Relay 1
4	Relay 1
5	Relay 2
6	Relay 2
Com 1	Red clip (FlexProgrammer)
Com 2	Black clip (FlexProgrammer)

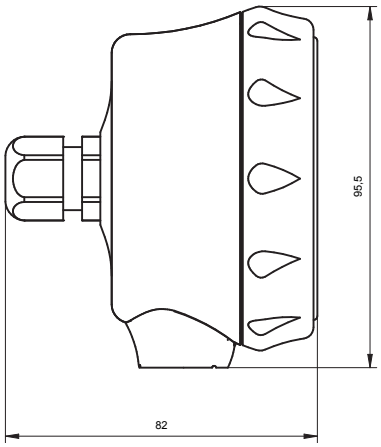


Dimensions (mm)

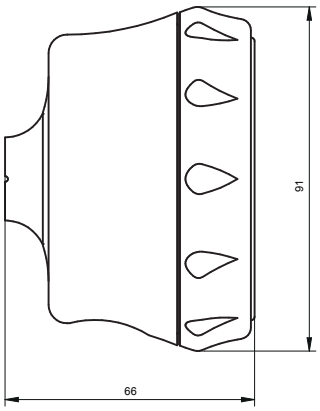
Front view



Bottom connection



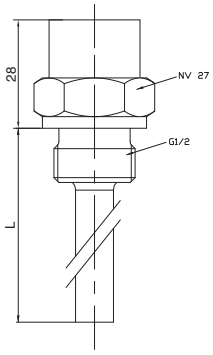
Rear connection



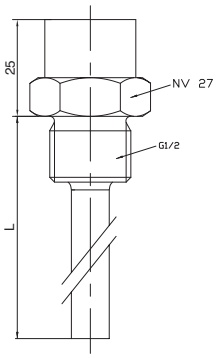
Disposal of product and packing.
According to national laws or by returning to Baumer.

Process connections dimensions (mm)

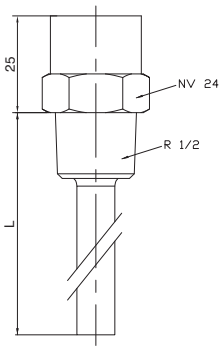
G½A DIN 3852-E
Code 11



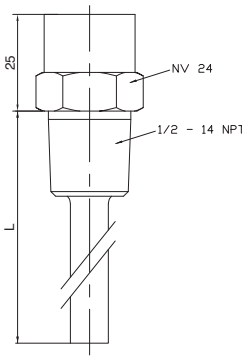
G½A DIN 3852-A
Code 12

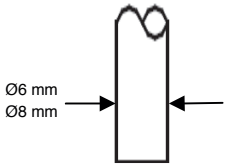


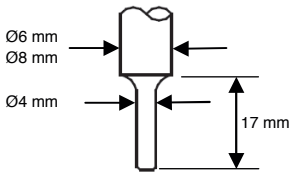
R½
Code 13



½" NPT
Code 30







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Ordering details

	–																				
Model																					
CombiTemp™	TFRN																				
Housing material																					
ø 80 mm, Stainless steel, AISI 304 Bottom		5																			
ø 80 mm, Stainless steel, AISI 304 Rear		6																			
Electrical connection																					
M12, 5 pins			1																		
M12, 8 pins			3																		
Cable gland, M16			5																		
Material el. connection																					
Plastic				1																	
AISI 304				3																	
Display																					
Without display					1																
With display No relays activated					2																
With display With activated relays					4																
Transmitter / socket																					
Flying leads						0															
Ceramic socket Pt100						1															
Transmitter 2202 4-20 mA ±0,25 °C (Accuracy class)						2															
Transmitter 2211 4-20 mA ±0,10 °C (Accuracy class)						3															
Transmitter 2221 4-20 mA / *HART*® ±0,10 °C (Accuracy class)						4															
Transmitter 2231 *Profibus*® ±0,10 °C (Accuracy class)						5															
Safety																					
Standard							0														
Configuration																					
No configuration								0													
Configuration of Range								1													
Configuration of Range + Display								2													
Configuration of Range + Display incl. 2 x relays								3													
Sensor element (DIN/EN/IEC 60751)																					
None (for cable sensor)									0												
1x Pt100 Class 1/1 B									1												
2x Pt100 Class 1/1 B									2												
1x Pt100 Class 1/1 B (fast response)									3												
2x Pt100 Class 1/1 B (fast response)									4												
1x Pt100 Class 1/3 B									5												
2x Pt100 Class 1/3 B									6												
1x Pt100 Class 1/6 B									7												
2x Pt100 Class 1/6 B									8												
1x Pt100 Class 1/1 A									A												
2x Pt100 Class 1/1 A									B												
Sensor insert type																					
Sensor tube with embedded sensor element 2-wire										1											
Sensor tube with embedded sensor element 4-wire										2											
Cable sensor Pt100 Class 1/1 B (1xPt100 only, for ø 8 mm only)										A											
Cable sensor Pt100 Class 1/3 B (1xPt100 only, for ø 8 mm only)										B											
Cable sensor Pt100 Class 1/6 B (1xPt100 only, for ø 8 mm only)										C											
Cable sensor Pt100 Class 1/1 A (1xPt100 only, for ø 8 mm only)										D											
Cooling neck																					
None											0										
Process connection																					
None												00									
Tube without connection												10									
G½ Male DIN 3852												11									
G½ Male ISO 228/1												12									
R½ Male ISO 7/1												13									
½"-14 NPT Male ANSI/ASME B1.20.1												30									
Seal																					
No seal													0								
Seal NBR For G½ DIN 3852													1								
Seal EPDM For G½ DIN 3852													2								
Seal FKM (*Viton*®) For G½ DIN 3852													3								
Sensor diameter																					
No sensor														0							
ø 6 mm AISI 316														1							
ø 8 mm AISI 316														2							
Sensor tip																					
No sensor															0						
Standard Normal response															1						
Fast Fast response ø 4 mm tip															2						
Approvals																					
None																0					
Sensor tube length																					
Length in mm																	x	x	x	x	

If the product wanted is not available from above list please inquire.