



CombiTemp

- User-configurable system
- Stainless steel ø 80mm housing or DIN-B housing
- Standard or hygienic process connection

TE system

- Hygienic design - rugged, nice looking, compact, flexible
- TE1 - field housing
- TE2 - industrial housing

Model	CombiTemp	CombiTemp	CombiTemp			TE1	TE2			
Operating temperature	Sensor -50 ... +400 °C Transmitter -40 ... +85 °C ambient	Sensor -50 ... +400 °C Transmitter -40 ... +85 °C ambient	Sensor -50 ... +400 °C Transmitter -40 ... +85 °C ambient			Sensor -50 ... +250 °C Transmitter -40 ... +85 °C ambient	Sensor -50 ... +250 °C Transmitter -40 ... +85 °C ambient			
Response time (6 mm tube) $\tau_{0,5}$	1.5 ... 6.1 sec., measured in liquids	1.5 ... 6.1 sec., measured in liquids	1.5 ... 6.1 sec., measured in liquids			3 sec., measured in liquids	3 sec., measured in liquids			
Housing	DIN-B	Ø 80 mm	Ø 55 mm			Stainless steel	Stainless steel			
Material	Metal Alloy, grey	Stainless steel	Stainless steel			10 standard or hygienic	6 standard or hygienic			
Process connections	20 standard or hygienic	20 standard or hygienic	20 standard or hygienic			Ø 55 mm field housing M16 cable gland or M12 plug	Ø 18 mm case M12 or DIN 43650-A plug			
Pt100 elements	DIN-A 1/1 ; DIN-B 1/1, 1/3, 1/6 Single or duplex	DIN-A 1/1 ; DIN-B 1/1, 1/3, 1/6 Single or duplex	DIN-A 1/1 ; DIN-B 1/1, 1/3, 1/6 Single or duplex			DIN-A 1/1 ; DIN-B 1/3 Single or duplex	DIN-A 1/1 ; DIN-B 1/1, 1/3, 1/6 Single or duplex			
Additional data	- User-configurable building block system - FlexTop transmitter	- User-configurable building block system - Cover, FlexView, BattTemp - FlexTop transmitter	- User-configurable building block system - FlexTop transmitter			- User-configurable building block system - FlexTop transmitter	- Integrated transmitter			

# Electronic temperature measurement



## Pt100 sensors




- Part of the CombiTemp system
- DIN-A or DIN-B – single or duplex element
- Pt100 sensors for standard mounting in a protection pipe for easy service
- Air sensor for mounting in a ventilation duct
- Insertion sensor for meat cooking
- Hygienic conical sensor for welding into a pipe or tank wall



# Electronic temperature measurement



## BattTemp digital Pt100 thermometer

- Memorisation of highest and lowest temperature
  - Offset function for precise calibration
  - High readability even in faint light
  - Battery life time over 3 years
- ### TAR Temperature probe
- All parts in stainless steel and welded
  - Surface measurement – at the inner side of the pipe
  - No "dead zones"

			
Model	Cable sensors	Insertion sensors	Conical sensors
Temperature range	-50 ... +205 °C	-50 ... +205 °C	-50 ... +205 °C
Accuracy	DIN/EN/IEC 60751 1/1 DIN-B: ±(0.3 + 0.005 x t) °C 1/1 DIN-A: ±(0.15 + 0.002 x t) °C	DIN/EN/IEC 60751 1/1 DIN-B: ±(0.3 + 0.005 x t) °C 1/1 DIN-A: ±(0.15 + 0.002 x t) °C	DIN/EN/IEC 60751 1/1 DIN-B: ±(0.3 + 0.005 x t) °C 1/1 DIN-A: ±(0.15 + 0.002 x t) °C
Sensor tube	Acid-proof stainless steel AISI 316 (W 1.4571)	FPM and Acid-proof stainless steel AISI 304 (W 1.4301)	Acid-proof stainless steel AISI 316L (W 1.4404)
Sheath dimensions	5.8 x 60 mm standard or air sensor with 8 holes	105 x Ø 3 mm	Tip Ø 3 mm Length 20 or 25 mm
Response time $\tau_{0.5}$	< 8 sec., measured in liquids 0.4 m/sec.	< 1.5 sec. in Water at 0.4 m/sec., < 25 sec. in Air at 3 m/sec.	< 1 sec., measured in liquids 0.4 m/sec.
Media pressure	< 25 bar (water flow 3 m/sec.)		< 25 bar (water flow 3 m/sec.)
Protection class	IP 65 (not air sensor)	IP 65	IP 65
Additional data	- Sensors with 4-wire silicone cable - For pockets or tubes - 4-wire sensors - High-flexible silicone grey cable	- Sensor tube in stainless steel - Fast response time - Tolerates damp - 4-wire sensors - High-flexible silicone grey cable	- Hygienic, without gasket - Compact mounting - Fast response time - Wide temperature range - Acid-proof, stainless steel - High-flexible silicone grey cable

		
Model	BattTemp	TAR
Temperature range	-200 ... +850 °C	Temperature range -20 ... +200 °C
Accuracy	±0.3 °C	Accuracy Pt100 class B
Operating temperature	-10 ... +70 °C	Ambient temperature -25 ... +80 °C
Temperature sensor input	Pt100, 2-wire, DIN/EN/IEC 60751	Process connection Clamp ISO 2852 Thread type DIN 11887
Protection class	IP 65	Wetted parts W 1.4571 or W 1.4435
Approvals	Ex ia IIC T4/T5, ATEX II 1G	Protection class IP 65
Additional data	- Ø 80 mm housing in stainless steel AISI 304 (W 1.4301) - Front-configurable display - Battery powered - Part of the CombiTemp series - Direct or remote mounting - High cleanability and rugged design	Additional data - Hygienic pipe system - SIP and CIP

## Temperature switch



### Temperature Switch




- Ideal for safety circuit
- On site configuration suitable for hazardous area
- Good vibration resistance
- Nuclear versions




## Configurable temperature transmitter



### DIN-rail mounted transmitter

- Compact DIN-rail housing
- User-configurable transmitters like FlexTop
- Damping and status indication
- On-site configuring with the dedicated tool, FlexProgrammer 9701
- 4...20 mA or HART® output
- Designed for OEM







				
Model	ETTN / YTTN	RTA / RTN	RT2N / RT2E / RT2Y	
Type	Digital	Mechanical	Mechanical	
Temperature range	-200 ... +400 °C	-46 ... +350 °C	-46 ... +350 °C	
Ambient temperature	-25 ... +85 °C	-30 ... +55 °C	-30 ... +70 °C	
Repeatability	±0.2% F.S.	±1% F.S.	±1% F.S.	
Set points	2	1 or 2	1	
Current rating	4 ... 20 mA, 2 threshold outputs, PNP transistors, 400 mA at 24 VDC	5 mA ... 10 A 250 VAC max. / 220 VDC max.	10 mA ... 10 A 250 VAC max. / 220 VDC max.	
Electrical connection	M12-5 pin connector	Via internal terminal block	Via internal terminal block	
Sensor type	Pt1000 probe, class A	Rigid stem or Capillary tube	Rigid stem or Capillary tube	
Sensor material	Stainless steel	Stainless steel	Stainless steel	
Connection	Sliding union G¼, G½, ¼ NPT or ½ NPT	Stainless steel sliding male connection (G½-½ NPT)	Stainless steel sliding male connection (G½-½ NPT)	
Body / Housing material	St. steel AISI 316L (1.4404)	Aluminium Alloy	Zamak plated black / Plastic	
Protection class	IP 67	IP 66	IP 66	
Approval	YTTN: Intrinsically safe	RTNE: Explosion Proof RTXY: Intrinsically safe	RT2E: Explosion Proof RT2Y: Intrinsically safe	
Additional data	- ETTNM: Modbus communication, outputs: static relays, 400 mA at 60 VDC or 40 VAC	- Electronuclear version		

				
Model	FlexTemp 2301	FlexTemp 2311	FlexTemp 2321	
Output	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA with HART®	
Pt100, 2-, 3-, 4-wire	yes	yes	yes	
T/C, mVolt and Ohm input		yes	yes	
Namur NE21	yes			
Linearisation table		0 ... 30 points	0 ... 30 points	
Damping	0 ... 30 sec.	0 ... 30 sec.	0 ... 15 sec.	
Accuracy (Pt100)	< 0.25 °C	< 0.1 °C	< 0.1 °C	
Galvanic isolation		2 kVAC	2 kVAC	
Resolution	14 bit	16 bit	16 bit	
Operating temperature	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	
Status indication	23/3.5 mA	23/3.5 mA	23/3.5 mA	
Power supply	8 ... 35 VDC	6.5 ... 35 VDC	8 ... 35 VDC	



FlexTop In-head mounted transmitter

- User-configurable, in-head transmitters
- On-site configuring with the dedicated tool, FlexProgrammer 9701
- 4...20 mA, HART® or ProfiBus PA output
- Designed for OEM

										
Model	FlexTop 2202	FlexTop 2203	FlexTop 2204			FlexTop 2211	FlexTop 2221	FlexTop 2231		
Output	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA			4 ... 20 mA	4 ... 20 mA / HART®	Profibus PA		
Measuring range	-200 ... +850 °C	-100 ... +1820 °C -10 ... 100 mV	-100 ... 160 °C 0 ... 1000 Ohm			-270...2300 °C 0 ... 2200 Ohm	-270...2300 °C 0 ... 2200 Ohm	-270...2300 °C 0 ... 2200 Ohm		
Input	Pt100, 2-, 3-, 4-wire	T/C, mV	Pt500 and Ohm			RTD, T/C, mV and R inputs	RTD, T/C, mV and R inputs	RTD dual, RTD, T/C, mV and R		
Accuracy	< 0.1% FS	< 0.1% FS	< 0.1% FS			< 0.1 °C	< 0.1 °C	< 0.1 °C		
Operating temperature	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C			-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C		
Power supply	8 ... 35 VDC	8 ... 35 VDC	8 ... 35 VDC			6.5 ... 35 VDC / 8 ... 35 VDC	8 ... 35 VDC / 8 ... 35 VDC	9 ... 32 VDC		
Approvals	Ex ia IIC T5/T6, ATEX II 1G	Ex ia IIC T5/T6, ATEX II 1G	Ex ia IIC T5/T6, ATEX II 1G			Ex ia IIC T5/T6, ATEX II 1G	Ex ia IIC T5/T6, ATEX II 1G	Ex ia IIC T5/T6, ATEX II 1G		
Additional data	- NAMUR NE21	- NAMUR NE21 - Compensation for "cold junction" (CJC) internal, external or fixed	- NAMUR NE21			- NAMUR NE21 - Local, remote or fixed compensation for "cold junction" (CJC)	- NAMUR NE21 - Local, remote or fixed compensation for "cold junction" (CJC)	- NAMUR NE21 - Local, remote or fixed compensation for "cold junction" (CJC)		



### Bi-metal

- Versions for HVAC and Industry
- All housings in stainless steel
- TBHI liquid fillable for applications with heavy vibration
- Protection up to IP 68
- High accuracy

										
Model	TB	TBH	TBI	TBHI		TBA	TBL	TBX / TBW		
Housing	Ø 40, 63, 80, 100, 160 mm	Ø 80, 100 mm	Ø 80, 100, 120, 130, 160 mm	Ø 100, 130 mm		Ø 72 mm	Ø 80, 100, 160 mm	Ø 80, 100, 160 mm		
Temperature range	-30 ... +500 °C	-20 ... +250 °C	-70 ... +600 °C	-70 ... +600 °C		0 ... 120 °C / 0 ... 60 °C -20 ... +40 °C	-30 ... +50 °C / -20 ... +60 °C 0 ... 80 °C	-20 ... +250 °C		
Accuracy	Class 1 (≤ 250 °C) Class 2 (> 250 °C) According to EN 13190	Class 1 According to EN 13190	Class 1 (≤ 250 °C) Class 2 (> 250 °C) According to EN 13190	Class 1 (≤ 250 °C) Class 2 (> 250 °C) According to EN 13190		Class 1 According to EN 13189	Class 1 According to EN 13190	Class 1 According to EN 13190		
Case material	Stainless steel AISI 304 (1.4301)	Stainless steel AISI 304 (1.4301)	Stainless steel AISI 304 (1.4301)	Stainless steel AISI 304 (1.4301)		Synthetic	Stainless steel AISI 304 (1.4301)	Stainless steel AISI 304 (1.4301)		
Sensing element	Bi-metal	Bi-metal	Bi-metal	Bi-metal		Bi-metal	Bi-metal	Bi-metal		
Immersion tube material	Cu-Alloy (≤ 250 °C) Stainless steel AISI 316 Ti (1.4571) (> 250 °C)	Cu-Alloy (≤ 120 °C) Stainless steel AISI 316 Ti (1.4571) (> 200 °C)	Stainless steel AISI 316 Ti (1.4571)	Stainless steel AISI 316 Ti (1.4571)		Cu-Alloy	Cu-Alloy	Cu-Alloy		
Zero adjustment	Yes	Yes	Yes	Yes		Yes	Yes	Yes		
Protection class	IP 52	IP 50	IP 67	IP 68		IP 50	IP 50	IP 50 (TBX) / IP 65 (TBW)		
Additional data	- Especially suitable for use in chemistry and in the food industry	- Especially suitable for central heating units	- Usable in ATEX Zone 1 + 2	- "Every angle" housing - Safety glass - Stainless steel housing AISI 316L (1.4404) - Oil filling - "S" version available		- For temperature measurement on pipes from 1 ... 5 inches	- Special thermometer for climate applications			



### Gas filled thermometer

- Flexible system with fix stem or capillary tube
- Wide range of diameters
- All stainless steel design
- Suitable for high temperature up to 800 °C
- Electrical contacts available

Our electronic temperature instruments includes a wide range of standard and hygienic process connections.

Mechanical thermometers are still a good solution for the local indication near to process. They work reliably even if there is no power on the system and allow to check the state of the process.

Our highly reliable temperature switches are especially suited for critical applications in power plants and in the process industry.

Model	TSS	TSF		
Housing	Ø 63, 80, 100, 160, 250 mm	Ø 63, 80, 100, 160, 250 mm		
Temperature range	-200 ... +800 °C	-200 ... +800 °C		
Accuracy	Class 1 (Option 0.5 and 0.6)	Class 1 (Option 0.5 and 0.6)		
Case and sleeve material	Stainless steel AISI 304 (1.4301) or AISI 316L (1.4404)	Stainless steel AISI 304 (1.4301) or AISI 316L (1.4404)		
Sensing element	Plunger	Capillary tube + plunger		
Material wetted parts	Stainless steel 1.4541	Stainless steel 1.4541		
Protection	IP 65	IP 65		
Additional data	- Electrical contacts (TSFE): 100 and 160 mm case	- Electrical contacts (TSFE): 100 and 160 mm case		

