

THERMOPOINT

MULTI-POINT TEMPERATURE TRANSMITTERS

5 YEARS WARRANTY



WIVELCO

TEMPERATURE MEASUREMENT

THERMOPOINT 2-wire temperature transmitters are designed for continuous multi-point temperature measurement, -indication and -transmission of normal and hazardous liquids, powders or granular solids. The temperature of grain, feed stored in silos needs to be monitored for maintaining quality of the stored medium. Monitoring of the total volume of the silo is needed to provide information on accidental quality loss or appearance of germs or fungus. Eventual temperature increases will alert the operator to perform operation or recycling the medium. Temperature measurement is done by electronic temperature sensors placed at equal distances in a plastic-coated stainless steel flexible tube. Each sensor sends the actual measured temperature of its environment to the transmitter head.

The 2-wire loop-operated transmitter head communicates through HART® with control room devices such as a **MultiCONT** or a PC for further processing or datalogging. An advantage of **MultiCONT** based systems is that, if level measurement is required, the system can be augmented with level transmitters. The advantage of using a multi-function system is that new transmitters can be easily added to the existing loop using HART® communication.

FEATURES

- 2-wire multi-point temperature transmitter
- Communicates via HART®
- PACTware™ compatible
- Up to 50 m (164 ft) probe length
- Up to 15 sensors
- Max. 35 kN tensile force
- Plug-in display
- Replaceable sensors
- Digitally addressed sensors
- -40...+125 °C (-40...+257 °F) process temperature
- IP67
- Ex variant
- 5 years warranty

APPLICATIONS

- For normal and hazardous materials
- Temperature measurement of powdered, granular or free-flowing solids
- For transmitting temperature data from remote locations
- Grain, feed and food industry

CERTIFICATES

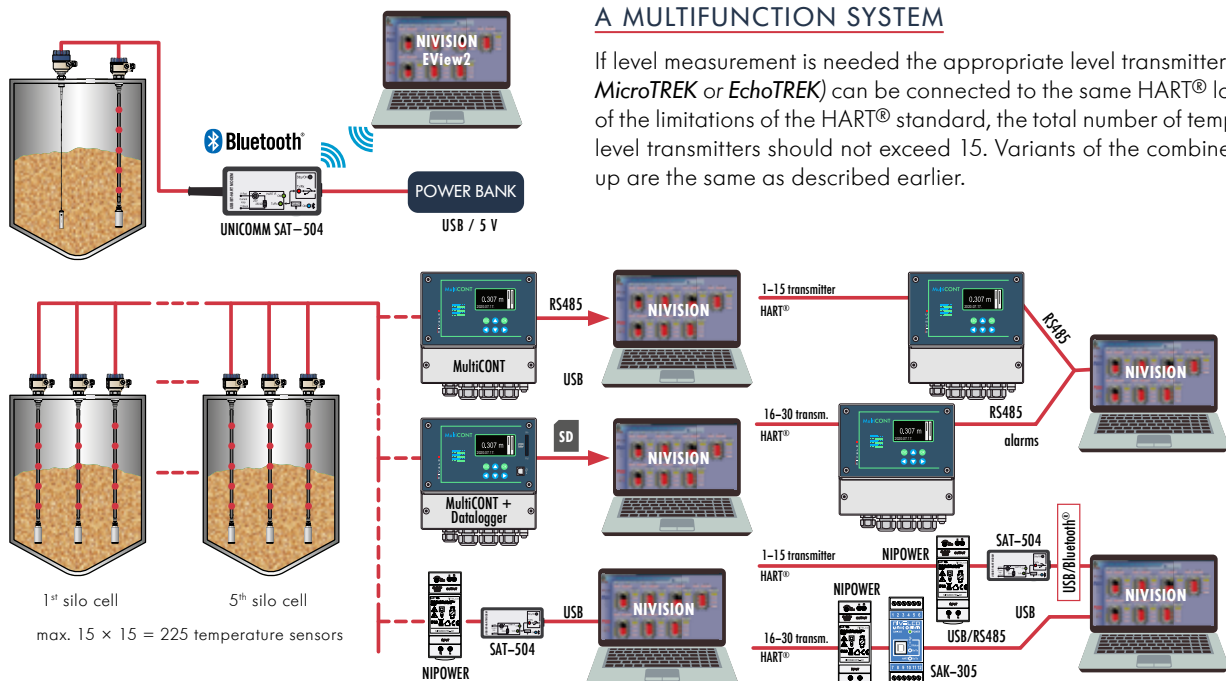
- ATEX (Ex ia G)
- ATEX (Ex ia D)
- ATEX (Ex ta/tb D)
- ATEX (Ex ta D)



SYSTEM SET-UP VARIATIONS

Depending on the application, the system set up can be the following

1. Information transmitted by the cable via HART® communication are received by MultiCONT and re-transmitted to a PC via RS485 protocol. The relays of the of MultiCONT can serve alarm functions.
2. Same as above, but a MultiCONT with datalogger function stores the incoming data on an SD card. The stored data can be processed or archived on a PC.
3. HART® signals are transmitted to a PC via a USB/RS485 connection using a UNICOMM SAK-305 or SAT-304 modem while using an SAT-504 modem wirelessly via a Bluetooth® connection. With the EView2 configuration program, the transmitters can be programmed from a PC, and with the NIVISION process display software, they can be integrated into a process control system.



A MULTIFUNCTION SYSTEM

If level measurement is needed the appropriate level transmitter (for example: **MicroTREK** or **EchoTREK**) can be connected to the same HART® loop. Because of the limitations of the HART® standard, the total number of temperature and level transmitters should not exceed 15. Variants of the combined system set up are the same as described earlier.

TECHNICAL DATA

		For liquids		For solids
		Rigid Probe version	Flexible Probe version	Flexible plastic-coated Probe version
Insertion length		1...4 m (3.3...13 ft)	1...50 m (3.3...164 ft)	
Number of temp. sensors		Up to 15		
Position of sensors		Up to 10 m (33 ft): 1 sensor at every one meter, between 11 and 50 m (36...164 ft): 1 sensor at every two meters from the bottom positioned sensor		
Temperature range		-40...+105 °C (-40...+221 °F) (for max. 1 hour: +125°C [+257 °F])		-40...+80 °C (-40...+176 °F) (for max. 1 hour: +85°C [+185 °F])
Highest process pressure		25 bar (363 psi)	16 bar (232 psi)	3 bar (43.5 psi)
Resolution (digital)		0.1 °C		
Accuracy		-40...-10 °C: ±2 °C; -10...+85 °C: ±0.5 °C; +85...+125 °C: ±2 °C (-40...+14 °F: ±3.6 °F; +14...+185 °F: ±0.9 °F; +185...+257 °F: ±3.6 °F)		
Measurement cycle		Maximum (Nx1) seconds, where N is the number of sensors		
Probe	Tensile force	-		35 kN
	Dimension	Ø14 mm (Ø.55")	Ø16 mm (Ø.63")	Ø17 mm (Ø.67") + 1 mm (.04") coating
Material of wetted parts		Stainless steel: 1.4571 (316Ti)	Stainless steel: 1.4571 (316Ti) + 1.4301 (1.4301)	Stainless steel: 1.4571 (316Ti) + Antistatic PE-coated steel + 1.4301
Ambient temperature		With plastic housing: -30... +65 °C (-22...+149 °F); with metal housing: -30...+65 °C (-22...+149 °F); with SAP-300 display: -20...+65 °C (-4...+149 °F)		
Output	Analog	4...20 mA		
	Digital	HART®		
	Display	Plug-in display (SAP-300)		
Output load		R _{max} = (U _{Supply} - U _{Supply min.})/0.02 A [Ω], load during HART® communication: R _{min} = 250 Ω		
Supply voltage		11...36 V DC (in case of HART® multi-drop: 10...36 V DC)		
Electrical protection		Class III		
Ingress protection		Electronic housing: IP67		
		Probe: IP68 (up to process pressure)		Probe: IP66
Process connection		As per order code		
Electrical connection		2× M20×1.5 plastic cable gland, cable outer diameter: Ø6...Ø12 mm (Ø.236...Ø.472"), wire cross section: max. 1.5 mm ² (AWG16); 2× internally threaded ½" NPT connection for protective pipes		
Housing material		Painted aluminum (EN AC-42000), stainless steel (1.4571/316Ti) or plastic (PBT)		
Weight		1.7 kg (3.75 lb) + probe: 0.6 kg/m (0.4 lb/ft)	2.9 kg (6.4 lb) + probe cable: 0.3 kg/m (0.2 lb/ft) + weight 3 kg (6.6 lb)	2.9 kg (6.4 lb) + probe cable: 0.7 kg/m (0.5 lb/ft)

Ex INFORMATION

	T00-000-6 Ex	T00-500-5 Ex, T00-700-5 Ex	T00-500-8 Ex, T00-700-8 Ex, T00-500-9 Ex, T00-700-9 Ex
Ex marking	II 1 G Ex ia IIB T6...T4 Ga	II 1 D Ex ia IIC T85°C Da	II 1 D Ex ta IIIC T105°C Da ⁽¹⁾
Waiting time for opening the cover	-	-	0 minutes
Ex electrical limits	Only Ex ia power supply may be used! U _i ≤ 30 V DC I _i ≤ 140 mA P _i ≤ 1 W C _i ≤ 15 nF L _i ≤ 200 µH		U _o ≤ 30 V DC I _o ≤ 1 A
Supply voltage	U _i = 11...30 V DC (in case of HART® multi-drop U _i = 10...30 V DC)		
Process temperature	See Thermal Limits of Ex Compliant Models Table		
Ambient temperature	See Thermal Limits of Ex Compliant Models Table, for SAP-300 display: -20...+60 °C (-4...+140 °F)		
Cable introduction	M20×1.5 cable gland		certified "Ex ta" protective gland M20×1.5
Cable diameter	Ø7...12 mm (0.275...0.472")		
Electrical connection	Wire cross section: 0.5...1.5 mm ² (AWG20...16)		

⁽¹⁾ Ex ta IIIC protection class devices are available only with a windowless cap.

THERMAL LIMITS OF Ex COMPLIANT MODELS

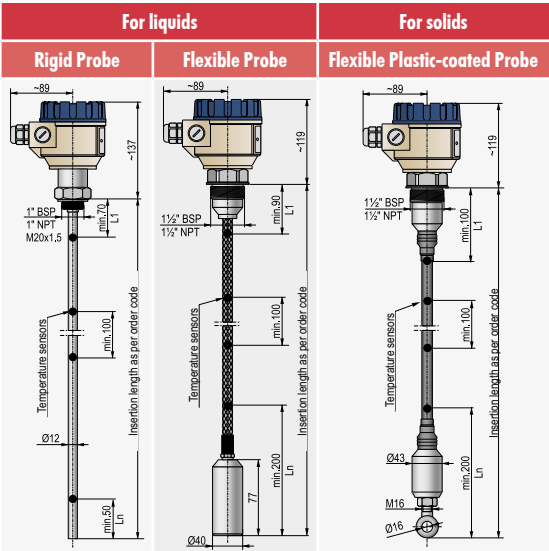
Thermal limits of Ex ia IIB compliant models

Housing / probe	Ambient temperature	Process temperature	Temperature class
Metal housing with rigid or flexible probe	-30...+65 °C (-22...+149 °F)	-40...+80 °C (-40...+176 °F)	T6
		-40...+95 °C (-40...+203 °F)	T5
		-40...+105 °C (-40...+221 °F)	T4
Plastic housing with rigid or flexible probe	-20...+65 °C (-4...+149 °F)	-40...+80 °C (-40...+176 °F)	T6
		-40...+95 °C (-40...+203 °F)	T5
		-40...+105 °C (-40...+221 °F)	T4
Metal housing with plastic-coated flexible probe	-30...+65 °C (-22...+149 °F)	-40...+80 °C (-40...+176 °F)	T6

Thermal limits of Ex ta/tb IIIC, Ex ta IIIC and Ex ia IIIC compliant models

Transmitter location	Ambient temperature	Process temperature	Temperature class		
			Ex ta/tb IIIC	Ex ta IIIC	Ex ia IIIC
Outside the bin/silo	-30...+65 °C (-22...+149 °F)	-40...+80 °C (-40...+176 °F)	T85°C	T105°C	T85°C
Inside the bin/silo	-30...+65 °C (-22...+149 °F)	-	-		

DIMENSIONS

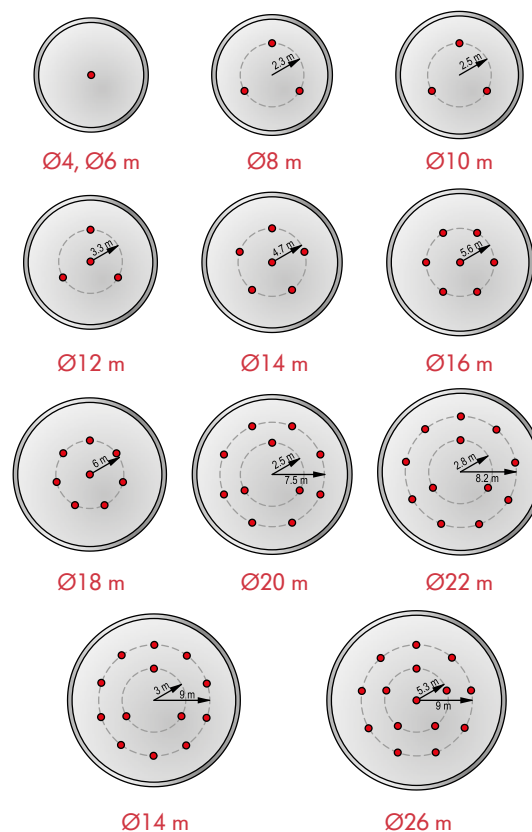


INSTALLATION (APPLICATION EXAMPLE)

Because the mediums stored in silos are usually good heat-insulating materials the reliable measurement of the temperature is critical. Depending on the diameter of the silo the following arrangements are recommended.

Silo diameter (m [ft])	Number of probes (pcs)	Number of probes in the centre (pcs)	Probe in the first arc		Probe in the second arc	
			(pcs)	R (m/ft)	(pcs)	R (m/ft)
4 [13.1]	1	1	–	–	–	–
6 [19.6]	1	1	–	–	–	–
8 [26.2]	3	–	3	2.3 [7.54]	–	–
10 [32.8]	3	–	3	2.5 [8.2]	–	–
12 [39.4]	4	1	3	3.3 [10.8]	–	–
14 [45.9]	6	1	5	4.7 [15.4]	–	–
16 [52.5]	7	1	6	5.6 [18.4]	–	–
18 [59]	8	1	7	6 [19.7]	–	–
20 [65.6]	11	–	3	2.5 [8.2]	8	7.5 [24.6]
22 [72.2]	12	–	3	2.8 [9.2]	9	8.2 [26.9]
24 [78.7]	13	–	3	3 [9.8]	10	9 [29.5]
26 [85.3]	15	1	5	5.3 [17.4]	9	10.5 [34.4]

ARRANGEMENT OF THE PROBES (APPLICATION EXAMPLE)



ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

THERMOPOINT T ■■■■■■ (1)

Version	Code
Multi-point transmitter	M
Multi-point transmitter with local display	J

Housing	Code
Painted aluminum	5
Plastic, PBT, glass fiber reinforced ⁽²⁾	6
Stainless Steel	7

Code	Probe length (m)		Code
1	1 / 31	19 / 49	K
2	2 / 32	20 / 50	L
⋮	⋮	21	M
9	9 / 39	22	N
A	10 / 40	23	P
B	11 / 41	24	R
C	12 / 42	25	S
D	13 / 43	26	T
E	14 / 44	27	U
F	15 / 45	28	V
G	16 / 46	29	W
H	17 / 47	30	Z
J	18 / 48		

Output / Ex	Code
HART®	4
HART® / Ex ia D ⁽³⁾	5
HART® / Ex ia G	6
HART® / Ex ia/tb D ⁽³⁾	8

Process connection / Probe length		Code
Rod probe	1" BSP / 1...4 m	R
	1" NPT / 1...4 m	A
	M20x1.5 / 1...4 m	J
Cable probe	1½" BSP / 1...30 m	K
	1½" NPT / 1...30 m	E
	1½" BSP / 31...50 m	N
	1½" NPT / 31...50 m	L
Coated cable probe	1½" BSP / 1...30 m	H
	1½" NPT / 1...30 m	C
	1½" BSP / 31...50 m	F
	1½" NPT / 31...50 m	G

Number of sensors	Code
1	1
⋮	⋮
9	9
10	A
⋮	⋮
15	F

ACCESSORIES AVAILABLE TO ORDER

- Counterweight, Ø80 x 150 mm (CTN-103-0M-400-00)
- HART®–USB/Bluetooth® modem (SAT-504)
- HART®–USB/RS485 modem / Ex ia G (SAK-305)
- Plug-in display (SAP-300)
- Multichannel process controller (MultiCONT)
- Process visualization software (NIVISION)

⁽¹⁾ The order code of an Ex version should end in "Ex"

⁽²⁾ Only normal or Ex ia version is available

⁽³⁾ Only with coated cable probe

