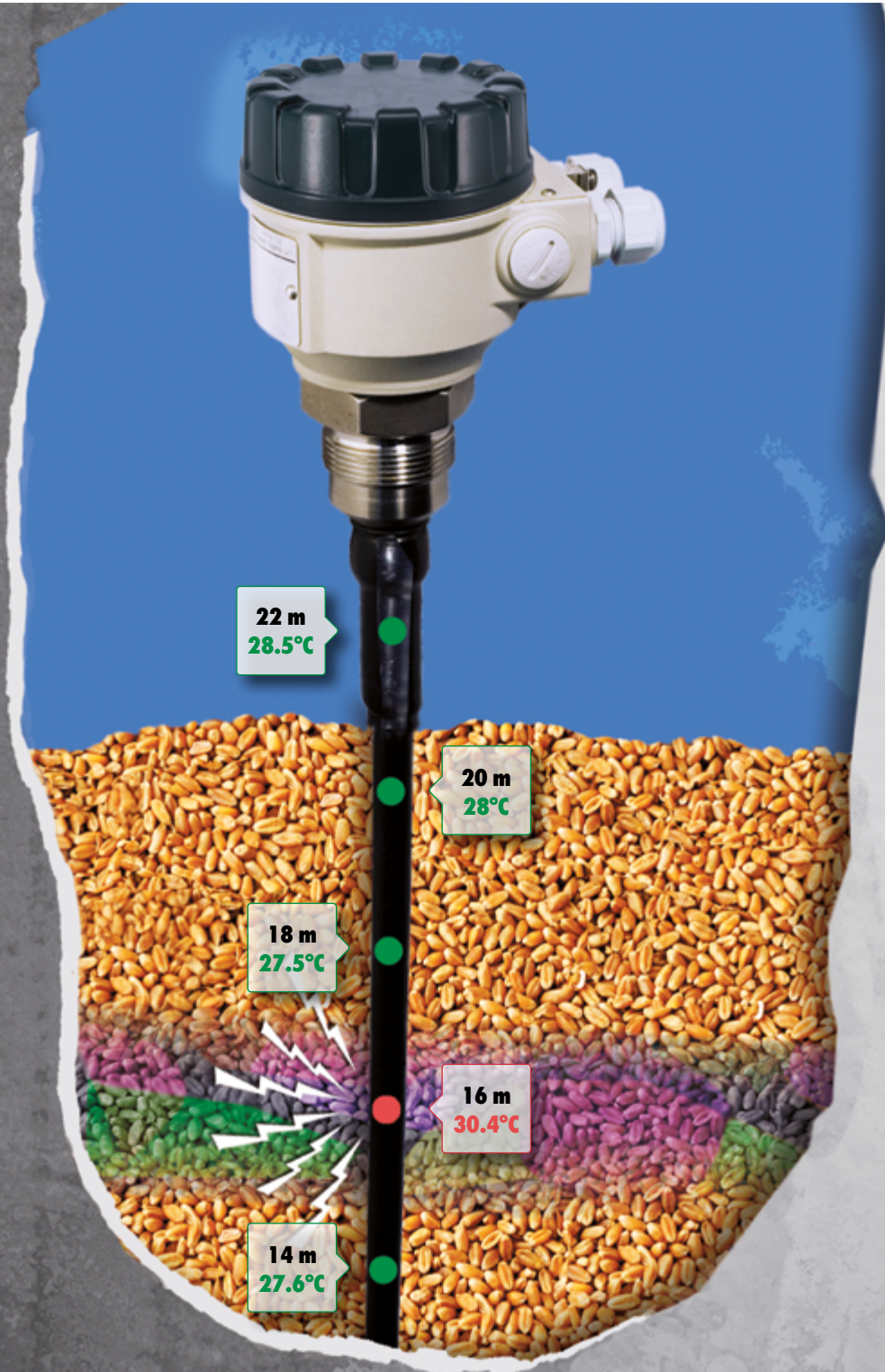


THERMOPPOINT

MULTI-POINT TEMPERATURE TRANSMITTER



5 YEARS WARRANTY

PIVELCO

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

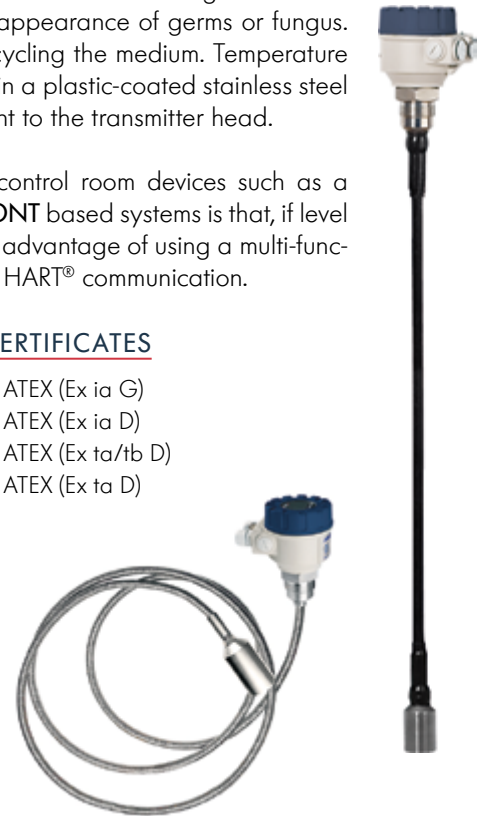
- 2-wire multi-point temperature transmitter
- Communicates via HART®
- PACTware™ compatible
- Up to 50 m probe length
- Up to 15 sensors
- Max. 35 kN tensile force
- Plug-in display
- Replaceable sensors
- Digitally addressed sensors
- -40...+125 °C process temperature
- IP67
- Ex variant
- 5 years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

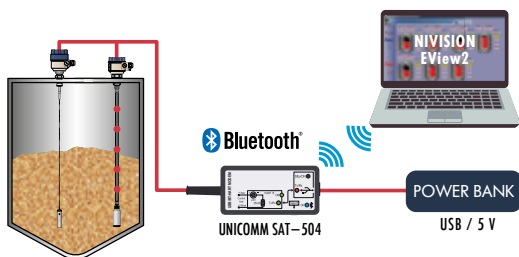
- ATEX (Ex ia G)
- ATEX (Ex ia D)
- ATEX (Ex ta/tb D)
- ATEX (Ex ta D)



SYSTEM SET-UP VARIATIONS

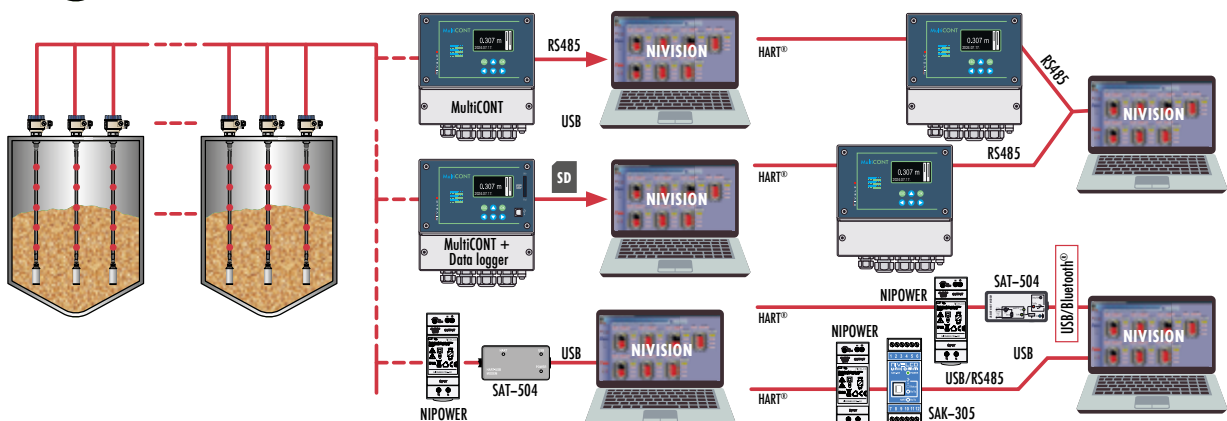
Depending on the application, the system set up can be the following:

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 data logger 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 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	1...50 m	
Number of temperature sensors		Up to 15		
Position of sensors		Up to 10 m: 1 sensor at every one meter, between 11 and 50 m: 1 sensor at every two meters from the bottom positioned sensor		
Temperature range		-40...+105 °C (for max. 1 hour: +125 °C)		-40...+80 °C (for max. 1 hour: +85 °C)
Highest process pressure		25 bar (2.5 MPa)	16 bar (1.6 MPa)	3 bar (0.3 MPa)
Resolution (digital)		0.1 °C		
Accuracy		-40...-10 °C: ±2 °C; -10...+85 °C: ±0.5 °C; +85...+125 °C: ±2 °C		
Measurement cycle		Maximum (Nx1) seconds, where N is the number of sensors		
Probe	Tensile force	-		35 kN
	Dimension	Ø14 mm	Ø16 mm	Ø17 mm + 1 mm coating
Material of wetted parts		Stainless steel: 1.4571	Stainless steel: 1.4571 + 1.4301	Stainless steel: 1.4571 + Antistatic PE-coated steel + 1.4301
Ambient temperature		With plastic housing: -30...+65 °C; with metal housing: -30...+65 °C; with SAP-300 display: -20...+65 °C		
Output	Analog	4...20 mA		
	Digital	HART®		
	Display	SAP-300 LCD		
Output load		$R_{max} = (U_{Supply} - U_{Supply\ min}) / 0.02\ A\ [\Omega]$, load during HART® communication: $R_{min} = 250\ \Omega$		
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: IP66
Process connection		As per order code		
Electrical connection		2x M20x1.5 plastic cable gland, cable outer diameter: Ø6...Ø12 mm, wire cross section: max. 1.5 mm ² ; 2x internally threaded ½" NPT connection for protective pipes		
Housing material		Painted aluminum (EN AC-42000), stainless steel (1.4571/Ti316) or plastic (PBT)		
Weight		1.7 kg + probe: 0.6 kg/m	2.9 kg + probe cable: 0.3 kg/m + weight 3 kg	2.9 kg + probe cable: 0.7 kg/m

Ex INFORMATION

	T□□-□□□-6 Ex	T□□-5□□-5 Ex, T□□-7□□-5 Ex	T□□-5□□-8 Ex, T□□-7□□-8 Ex, T□□-5□□-9 Ex, T□□-7□□-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 IIC T105°C Da ⁽¹⁾ ⊕ II 1/2 D Ex ta/tb IIC T85°C Da/Db
Waiting time for opening the cover	-	-	0 minutes / 30 minutes
Ex electrical limits	Only Ex ia power supply may be used! $U_i \leq 30\ V\ DC$ $I_i \leq 140\ mA$ $P_i \leq 1\ W$ $C_i \leq 15\ nF$ $L_i \leq 200\ \mu H$		$U_o \leq 30\ V\ DC$ $I_o \leq 1\ A$
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		
Cable introduction	M20x1.5 cable gland	certified "Ex ta" protective gland M20x1.5	
Cable diameter	Ø7...12 mm		
Electrical connection	Wire cross section: 0.5...1.5 mm ²		

⁽¹⁾ Ex ta IIC 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	-40...+80 °C	T6
		-40...+95 °C	T5
		-40...+105 °C	T4
Plastic housing with rigid or flexible probe	-20...+65 °C	-40...+80 °C	T6
		-40...+95 °C	T5
		-40...+105 °C	T4
Metal housing with plastic-coated flexible probe	-30...+65 °C	-40...+80 °C	T6

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

Transmitter location	Ambient temperature	Process temperature	Temperature class		
			Ex ta/tb IIC	Ex ta IIC	Ex ia IIC
Outside the bin/silo	-30...+65 °C	-40...+80 °C	T85°C	T105°C	T85°C
Inside the bin/silo	-30...+65 °C	-	-	T105°C	T85°C



THERMOPOINT TM-500 with cable probe 5 years

2-wire compact multipoint temperature transmitter for liquids with stainless steel cable probe and weight, max. cable length: 50 m

Version

T	□	□	-	□	□	□	-	□
M	Multipoint transmitter							
J	Multipoint transmitter with plug-in display							

Process connection / Probe length

T	□	□	-	□	□	□	-	□
K	1½" BSP / 1...30 m							
E	1½" NPT / 1...30 m							
N	1½" BSP / 31...50 m							
L	1½" NPT / 31...50 m							

Housing

T	□	□	-	□	□	□	-	□
5	Painted aluminum							
6	Fiberglass-reinforced plastic (PBT)							
7	Stainless steel							

Number of sensors

T	□	□	-	□	□	□	-	□
n	1...9; each sensor							
o	10...15; each sensor							
n = 1...9 : 1...9								
o = A...F : 10...15								

Cable length

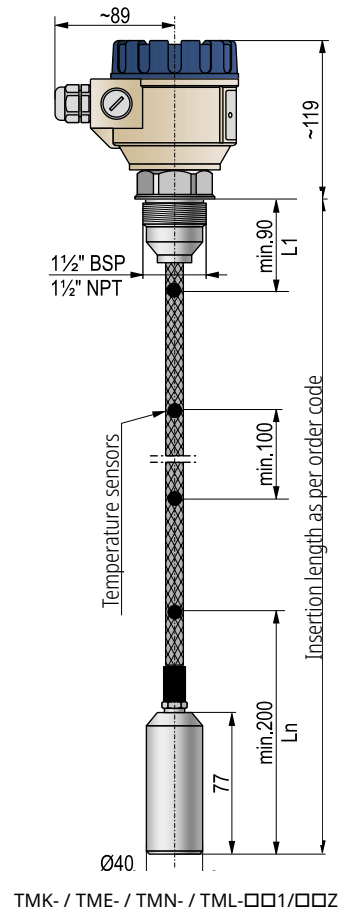
T	□	□	-	□	□	□	-	□
p	2...9 m; sold by the meter							
q	10...30 m; sold by the meter							
r	31...39 m; sold by the meter							
s	40...50 m; sold by the meter							
p = 2...9 : 2...9 m								
q = A...Z : 10...30 m (letters I, O, Q, X, Y not used)								
r = 1...9 : 31...39 m								
s = A...L : 40...50 m (letter I not used)								

Output / Certificates

T	□	□	-	□	□	□	-	□
4	HART®							
6	HART® / Ex ia G							

Accessories to order (see relevant page for details)

TMK-555-4M-200-01	Stainless steel Counterweight (comes with the unit)
S A P - 3 0 0 - 0	Graphic plug-in display module
S A T - 5 0 4 - □	HART®-USB/Bluetooth® modem



TMK- / TME- / TMN- / TML-□□1/□□Z

THERMOPOINT TM-500 with rod probe

5 years

2-wire compact multipoint temperature transmitter for liquids with stainless steel rod probe, max. probe length: 4 m

Version

T	□	□	-	□	□	□	-	□
M	Multipoint transmitter							
J	Multipoint transmitter with plug-in display							

Process connection

T	□	□	-	□	□	□	-	□
R	1" BSP							
A	1" NPT							
J	M20x1.5							

Housing

T	□	□	-	□	□	□	-	□
5	Painted aluminum							
6	Fiberglass-reinforced plastic (PBT)							
7	Stainless steel							

Number of sensors*

T	□	□	-	□	□	□	-	□
n	1...9; each sensor							
o	10...15; each sensor							

n = 1...9: 1...9

o = A...F: 10...15

* Number of temperature sensors is depending on the insertion length!

Probe length**

T	□	□	-	□	□	□	-	□
p	1...4 m; sold by the meter							

p = 1...4: 1...4 m

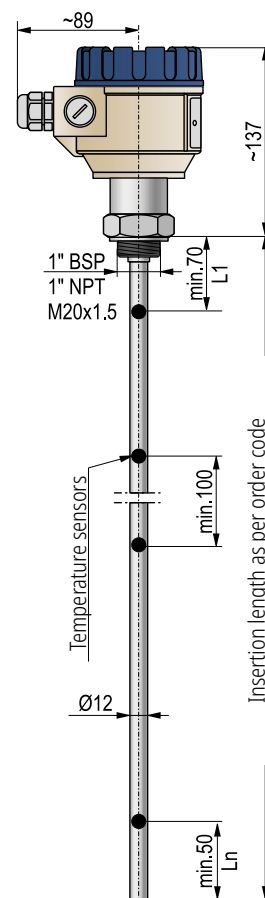
** Special probe length is available on request

Output / Certificates

T	□	□	-	□	□	□	-	□
4	HART®							
6	HART® / Ex ia G							

Accessories sold separately; see relevant page for details

S	A	P	-	3	0	0	-	0
Graphic plug-in display module								
S	A	T	-	5	0	4	-	□
HART®-USB/Bluetooth® modem								
S	A	K	-	3	0	5	-	□
HART®-USB/RS485 modem								



TMR- / TMA- / TMJ-□□1/□□4

THERMOPOINT TM-500 with coated cable probe

5 years

2-wire compact multipoint temperature transmitter for free-flowing solids with PE-coated stainless steel cable probe and weight, max. cable length: 50 m

Version

T	□	□	-	□	□	-	□
M	Multipoint transmitter						
J	Multipoint transmitter with plug-in display						

Process connection / Probe length

T	□	-	□	□	-	□
H	1½" BSP / 1...30 m					
C	1½" NPT / 1...30 m					
F	1½" BSP / 31...50 m					
G	1½" NPT / 31...50 m					

Housing

T	□	□	-	□	□	-	□
5	Painted aluminum						
7	Stainless steel						

Number of sensors

T	□	□	-	□	□	-	□
n	1...9; each sensor						
o	10...15; each sensor						
n = 1...9 : 1...9							
o = A...F : 10...15							

Cable length

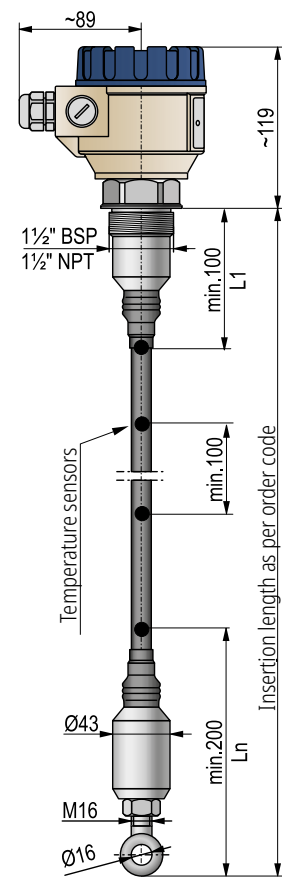
T	□	□	-	□	□	-	□
p	2...9 m; sold by the meter						
q	10...30 m; sold by the meter						
r	31...39 m; sold by the meter						
s	40...50 m; sold by the meter						
p = 2...9 : 2...9 m							
q = A...Z : 10...30 m (letters I, O, Q, X, Y not used)							
r = 1...9 : 31...39 m							
s = A...L : 40...50 m (letter I not used)							

Output / Certificates

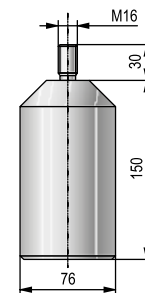
T	□	□	-	□	□	-	□
5	HART® / Ex ia D						
6	HART® / Ex ia G						
8	HART® / Ex ta/tb D						
9	HART® / Ex ta D						

Accessories sold separately; see relevant page for details

CTN-103-0M-400-00	Stainless steel Counterweight, Ø80 x 150 mm
S A P - 3 0 0 - 0	Graphic plug-in display module
S A T - 5 0 4 - □	HART®-USB/Bluetooth® modem



TMH- / TMC- / TMF- / TMG-□□1/□□Z



CTN-103-0M-400-00

TEMPERATURE MEASUREMENT