30 YEARS

NIVELCO

3 YEARS WARRANTY

THERMOPOINT

MULTIPOINT TEMPERATURE TRANSMITTERS

OUR PROFESSION IS YOUR LEVEL

TEMPERATURE TRANSMITTERS

THERMOPOINT MULTIPOINT TEMPERATURE TRANSMITTERS

MAIN FEATURES

- *2-wire multipoint temperature transmitter*
- *Communicates with HART*
- *Max. 30 m probe length*
- *Max. 15 sensors*
- *Max 35 kN tensile force*
- *Replaceable sensors*
- *Digitally addressed sensors*
- *-40°C...+125°C medium temperature*
- *IP 67 protection*
- *Ex version*

APPLICATIONS

- *For normal and hazardous materials*
- *Temperature measurement of powdered, granular, or free flowing solids*
- *For transmitting temperature data from faraway locations*
- *Grain industry*
- *Feed industry*
- *Food industry*

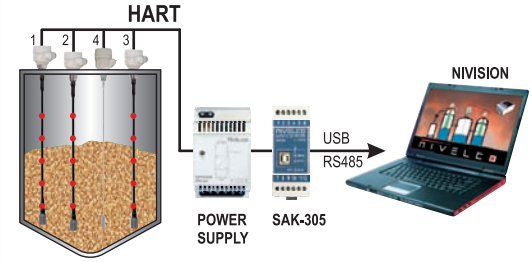
GENERAL DESCRIPTION

THERMOPOINT two-wire temperature transmitters are suitable for continuous multipoint temperature-measurement, -indication and -transmission of normal and hazardous liquids, powders or granular solids. 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 the probe. Each sensor sends the actual measured temperature of its environment to the transmitter head. The 2-wire loop-operated transmitter head communicates through HART protocol with control room devices, such as a MultiCONT or a PC. A solient advantage of the MultiCONT based system is that, if level measurement is required the system can be extended with a level transmitter. The advantage of using a multifunction system is that a new transmitter can easily be inserted into the existing loop, using the existing HART communication.

SYSTEM SET-UP VARIATIONS

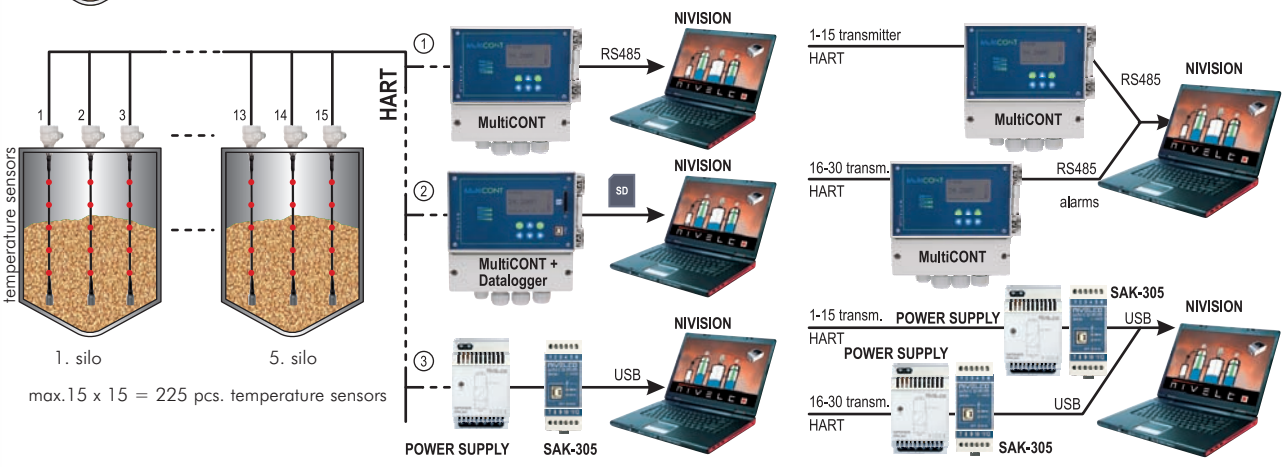
Depending on the required processing the system set up can be the following:

1. Information transmitted by the cable via HART communication are received by **MultiCONT** and will be re-transmitted to a PC via RS485 protocol. Relays of **MultiCONT** can serve alarm functions.
2. Same as above but a **MultiCONT** with Datalogger function stores the incoming data in an SD card. The stored data can be processed or archived in any PC.
3. HART signals are directly transferred to a PC using an **UNICOMM HART-USB modem**. Data processing can be done by NIVELCO's **NIVISION** software. If more than 15 transmitters are needed they have to be redistributed between multiple MultiCONT or HART modem units.



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 multifunction system set up are the same as described earlier.



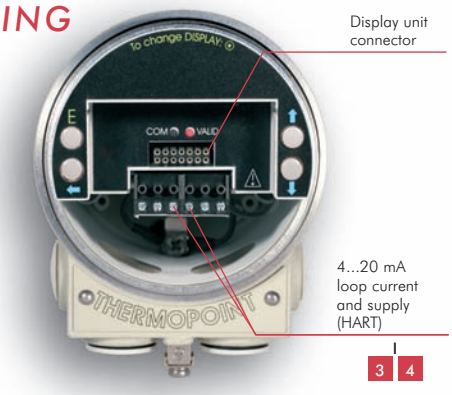
TECHNICAL DATA

Type		For liquids		For solids
		Rigid Probe version	Flexible Probe version	Flexible Plastic coated Probe version
Insertion length		0.5 m ... 4 m	2 m ... 30 m	5 m ... 30 m
Number of temperature sensors		Max. 15		
Position of sensors*		up to10 m: 1 sensor at every one meter, between11 and 30 m: 1 sensor at every two meters from the bottom positioned sensor		
Temperature range		–40 °C ... +125 °C		–10 °C ... +85 °C
Max. medium pressure		2.5 MPa (25 bar)	1.6 MPa (16 bar)	0.3 MPa (3 bar)
Resolution (digital)		0.1 °C		
Accuracy		± 0.5 °C		
Measurement cycle		max. (Nx1) sec, where N is the number of sensors		
Probe	Tensile force			35 kN
	Dimension	Ø 12 mm	Ø 16 mm	Ø 16 mm + 1 mm coating
Material of wetted parts		Stainless steel: DIN 1.4571		Stainless steel: DIN 1.4571 + Antistatic PP
Ambient temperature		With plastic housing: –20 °C...+65 °C; with metal housing: –30 °C...+65 °C; with SAP-300 display: –20 °C...+65 °C		
Output	Digital	HART communication		
	Display	SAP-300 LCD		
Output load		$R_t = (U_t - 12.5V) / 0.004$ A		
Power supply		Standard version:12V....36 V DC, Ex version: 12.5 V ... 30 V DC		
Electrical protection		Class III.		
Ingress protection		IP 67		
Process connection		As per order codes		
Electrical connection		M 20 x1.5 cable gland, cable outer diameter: Ø 6 ...Ø12 mm, wire cross section: max.1.5 mm^2		
Housing material		Paint coated aluminium cast or plastic (PBT)		
Mass		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

SPECIAL DATA FOR EX CERTIFIED MODELS

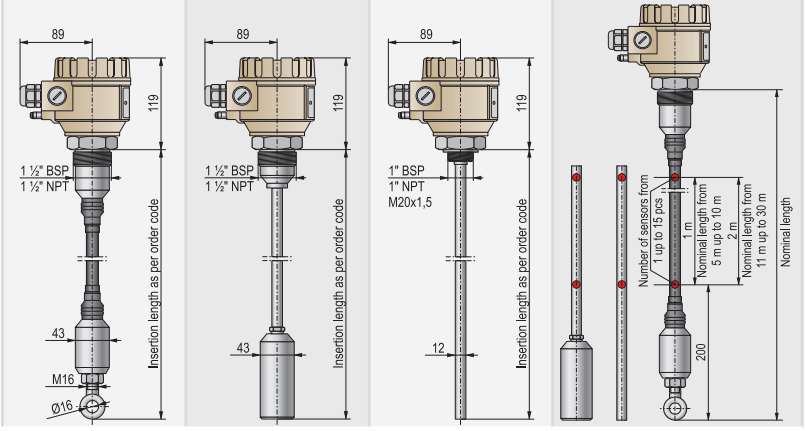
Protection type	ia	ia D	tD
Ex marking	⟨Ex⟩ II 1 G Ex ia IIB T6...T4	⟨Ex⟩ II 1 D Ex iaD A20/A21 T85°C IP 67	⟨Ex⟩ II 1 D Ex ta/tb IIIC T85°C Da IP67
Ex electrical limit data	Uimax = 30 V Iimax = 80 mA Pimax = 0.8 W Ci < 30 nF Li < 100 µH		Umax = 30 V Imax = 200 mA
Electrical connection	M20x1.5 cable gland, Ø 7...13 mm, Wire cross section: 0.5...1.5 mm^2		
Ambient temperature	With display: -20 °C ... +65 °C Without display: see temperature limits in certification		With display: -20 °C ... +65 °C Without display, with metal housing: -30 °C ... +65 °C

WIRING



DIMENSIONS

For solids	For liquids		Position of sensors in standard version*
	Cable	Rod	



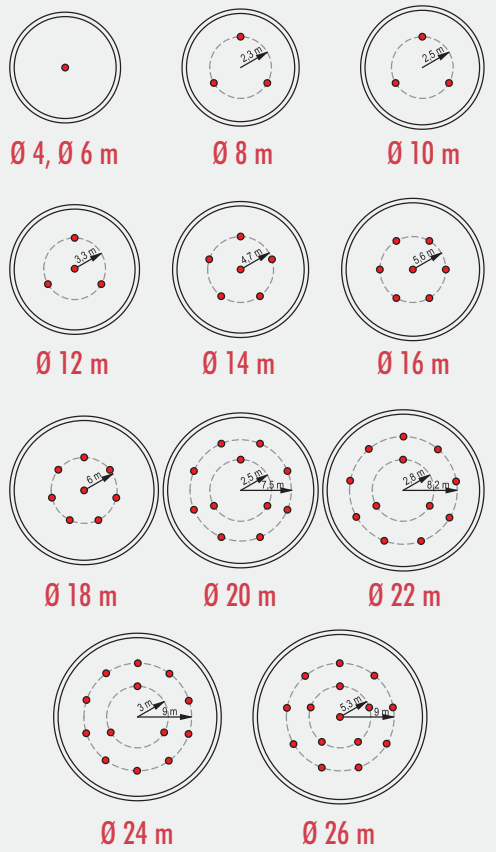
* Different scale is available in case of special orders

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)	Number of probes (pcs)	Number of probes in the centre (pcs)	Probe in the first arc		Probe in the second arc	
			(pcs)	R (m)	(pcs)	R (m)
4	1	1	–	–	–	–
6	1	1	–	–	–	–
8	3	–	3	2.3	–	–
10	3	–	3	2.5	–	–
12	4	1	3	3.3	–	–
14	6	1	5	4.7	–	–
16	7	1	6	5.6	–	–
18	8	1	7	6	–	–
20	11	–	3	2.5	8	7.5
22	12	–	3	2.8	9	8.2
24	13	–	3	3	10	9
26	15	1	5	5.3	9	10.5

ARRANGEMENT OF THE PROBES (APPLICATION EXAMPLE)



ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

THERMOPOINT multipoint temperature transmitters

THERMOPOINT T ■■ – ■■■ – ■ (1)

Funtion	Code
Multipoint transmitter	M
Multipoint transmitter + display	J

Housing	Code
Aluminium	5
Plastic (2)	6

Probe / Process connection	Code
Rod 1" NPT	A
Rod M20x1.5	J
Cable 1 ½" BSP	K
Cable 1 ½" NPT	E
Coated cable 1 ½" BSP	H
Coated cable 1 ½" NPT	C
Rod 1" BSP	R

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

Code	Insertion length		Code
1	1 m	19 m	K
2	2 m	20 m	L
⋮	⋮	21 m	M
9	9 m	22 m	N
A	10 m	23 m	P
B	11 m	24 m	R
C	12 m	25 m	S
D	13 m	26 m	T
E	14 m	27 m	U
F	15 m	28 m	V
G	16 m	29 m	W
H	17 m	30 m	Z
J	18 m		

Output / Ex	Code
HART	4
HART / Ex iaD	5
HART / Ex ia	6
HART / Ex tD	8

Accessories	
CTN-103-0M-400-00	Counterweight Ø 80 x 150 mm
SAT-304 / SAK-305	HART – USB / RS485 Modem
SAP-300	Plug-in display
MultiCONT P□□-200	Multichannel process controller
NIVISION	Process visualization software

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

(2) *Only normal or Ex ia version is available*