Thank you for choosing NIVELCO instrument.

THERMOCONT

TEMPERATURE SENSORS
WITH DRILLED THERMOWELL

USER'S MANUAL

NIVELCO

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1. APPLICATION

Resistance thermometer and thermo-couple with drilled thermowell case are used as sensors of temperature measurement in industrial process control. The temperature sensors are installed in various kinds of mediums (e.g. liquids, gas, fumes) inside pipes, tanks or furnaces.
The TN type temperature sensors are mechanically protected by means of double pipe construction. Process connection and electrical connection are provided as detailed below.
The THERMOCONT TN sensors are designed first of all for oil, gas and steam pipeline industrial applications. The shock proof stainless steel construction includes the inner and outer (double) tube and well, the welded flange, the nipple with union and cable gland. The cover of housing has a security chain against loss.

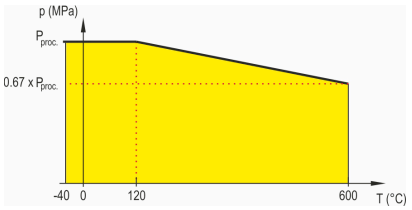
2. TECHNICAL DATA

Model		TNP–□□□–□	TNK–□□□–□
Sensor	Class of accuracy	Pt100 "A" or "B" (EN 60751) see order code	1 or 2 class NiCr-thermo-couple (EN 60584.1); see order code
	Type	See order code	
	Internal protection tube	DIN 1.4571 stinless steel	
	Mounting	Spring loaded	
	Shock resistance	EN 60751.4.4.2	
	Electrical insulation	Ungrounded	
Housing	Material of housing	ENAC-43100 Al alloy, painted	
	Gland connection	M20x1.5 or ½" NPT	
	Gland	1.4571 stainless steel – for Ø7.5…12 mm cable or plug	
	Wire connection	Screw type terminal	
	Ingress protection	IP65, EN 60529:2001	
Wetted parts	Process connection	Flange or 1" NPT	
	Material	1.4571 Stainless steel	
	Insertion length	See order code	
	Flange	See order code	
	Process pressure	4 MPa (40 bar) with process connection 1" NPT (see diagram)	
Measuring range		–50…+600 °C	
Ambient temperature		–20…+80 °C	
Electrical protection		Class III	
Ex safe data "d" protection type:		Power supply: max. 28 V, Current: max. 100 mA	
Ex safe data "ia" protection type:		U_i = 30 V, I_i = 100 mA, P_i = 750 mW, C_i = 0 nF, L_i = 0 mH	
Ex safe data "d ia" protection type:		U_i = 30 V, I_i = 140 mA, P_i = 1.4 W, C_i = 0 nF, L_i = 0 mH	
Ex marking		Ex II 1 G Ex ia IIC T6…T1 Ga Ex II 2 G Ex d IIB T6…T1 Gb Ex II 1/2 G Ex d ia IIB T6…T1 Ga/Gb	

2.2 Ex Temperature classes

Temperature class	T6	T5	T4	T3	T2	T1
Max. $T_{ambient}$	+65 °C	+70 °C	+70 °C	+80 °C	+80 °C	+80 °C
Max. $T_{process}$	+85 °C	+100 °C	+135 °C	+200 °C	+300 °C	+450 °C

2.1 Pressure – Temperature diagram



2.3 Accessories

– Users Manual, – Warranty Card, – EU Declaration of Conformity

2.4 Order Code

THERMOCONT T □ □ – □ □ □ – □ Ex

Sensor tube	Code
Standard 1.4571	N
Standard with Stellite coating	C
Protecting tube INCONEL 600	I
Straight with Stellite coating	K
Straight 1.4571	U

Sensor type	Code
Fe-CuNi th. couple	J
NiCr-Ni th. couple	K
Pt100 resist.	P

Process connection	Code
1" NPT	1
DN40 PN40 [PN25]	2
DN40 PN64	3
DN40 PN100	4
DN50 PN40 [PN25]	5
DN50 PN64	6
DN50 PN160 [PN100)	7
DN80 PN40 [PN25)	8
DN80 PN64	9
DN100 PN40 [PN25]	A
DN100 PN64	B
DN150 PN40 [PN25)	C
DN150 PN64	D
2" ANSI 150 RF	E
2" ANSI 300 RF	F
2" ANSI 600 RF	G
2" ANSI 900 RF	H
3" ANSI 150 RF	J
3" ANSI 300 RF	K
3" ANSI 600 RF	L
3" ANSI 900 RF	M

Pt100 sensor	Code
"A" class single	1
"B" class single	2
"A" class twin 3-wire	4
"B" class twin 3-wire	5
"B" class single 4-wire	6
"A" class single 4-wire	7

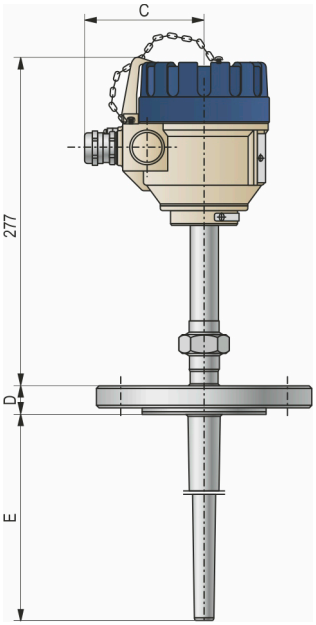
Sensor: th.-couple	Code
1st class single	1
2nd class single	2
1st class twin	4
2nd class twin	5

Process conn.	Code
4" ANSI 150 RF	N
4" ANSI 300 RF	P
4" ANSI 600 RF	R
4" ANSI 900RF	S
1½" ANSI 300RF	T
DN25 PN40	O
M33x2	V

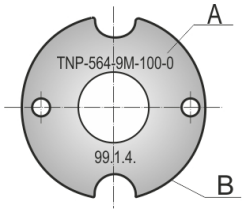
Insertion length	Code
160 mm	1
200 mm	2
250 mm	3
300 mm	4
350 mm	5
400 mm	6
450 mm	7
500 mm	8
600 mm	9
700 mm	A
800 mm	B
900 mm	C
1000 mm	D

Ex certification / cable gland	Code
None	0
Ex d ia / M20x1.5; without cable gland	5
Ex d ia / ½" NPT; without cable gland	6
Ex ia	7
Ex d ia	8
Ex d	9
Ex d / M20x1.5 without cable gland	A
Ex d / ½" NPT without cable gland	B

2.5 DIMENSIONS



LABEL OF MOUNTED SENSOR



LEGEND

A: Drawing No.,
B: Date (year, week)
C: Depends on size of gland
D, E: See order code
F: 2nd sensor connection
G: 1st sensor connection

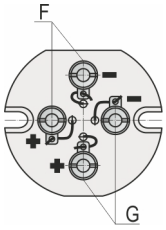
3. INSTALLATION

Installation may be done by process connection (including flange) detailed in Technical Data and figures. Ex version installation claims Ex certificated cable glands.

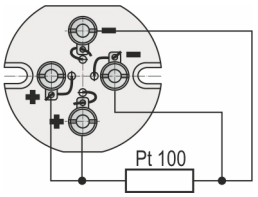
3.1 SPECIAL CONDITIONS FOR SAFE USE

The temperature sensors certified according to protection mode ⟨Ex⟩ II 1/2 G Ex d ia IIB T…Ga/Gb or ⟨Ex⟩ II 1G Ex ia IIB T…Ga must be operated only with certified [Ex ia] IIC or [Ex ia] IIB protected intrinsically safe circuit according to the following technical data:
$U_{o\ max} \leq 30$ V, $I_{o\ max} \leq 140$ mA, $P_{o\ max} \leq 1.1$ W

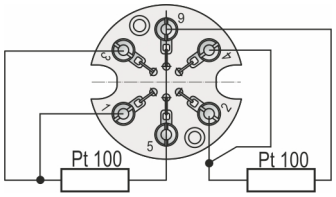
4. ELECTRICAL CONNECTION



Single and twin thermocouple connection



4-wire thermo resistor connection



3-wire twin thermo resistor connection

5. MAINTENANCE, REPAIR

The device does not require regular maintenance. The warranty card contains the terms and conditions. Before returning the device for repairs, it must be cleaned thoroughly. The parts in contact with the medium may contain harmful substances; therefore, they must be decontaminated.
Our official form (Returned Equipment Handling Form) must be filled and enclosed in the parcel. Download it from our website nivelco.com. The device must be sent back with a declaration of decontamination. A statement must be provided in the declaration that the decontamination process was successfully completed and that the device is clean from any hazardous substances.

6. STORAGE CONDITIONS

Environment temperature: –25…+55 °C.

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