WIRELESS SENSORS TECHNOLOGY

UNIVERSAL TEMPERATURE TRANSMITTER THU1102

The Tekon Electronics In Head 2-Wire Temperature Transmitters are specifically designed to meet the most rigorous requirements of operation in the industrial process environments. Due to their reduced dimensions they can be installed in the the DIN Form B sensor conncetion head in place of traditional terminal blocks.

The THU1102 is an ultra-flexible universal temperature transmitter which accepts the most commonly used temperature sensors (Resistance thermometers: 2,3 or 4-wire system, Thermocouples, Resistance-based sensors and DC voltage sources) and generates a linear 4 to 20mA current signal with high stability as output.

Dimensions	45ø x 23 mm
Weight	Approx. 50g
Material	Nylon 66
Protection Index	IP40

KEY FEATURES

UNIVERSAL SENSOR INPUT
RTD / RESISTANCE / THERMOCOUPLES / DC VOLTAGE

4 TO 20 MA ANALOG OUTPUT

HIGH MEASUREMENT ACCURACY

NAMUR NE 43 FAULT DETECTION

CONFIGURABLE OVER PC
TEKON CONFIGURATOR SOFTWARE

DS_INHD_THU1102_E01B

TEKON ELECTRONICS | AVEIRO, PORTUGAL
P.: +351 234 303 320 **M.:** +351 933 033 250 **E.:** sales@tekonelectronics.com

TECHNICAL SPECIFICATIONS

INPUT RESISTANCE THERMOMETER (RTD)	
Measured variable	Temperature
Sensor type	PT100, PT500, PT1000
Connection	1 Resistance thermometer (RTD) in 2-wire, 3-wire or 4-wire system Resistance compensation in 2-wire systems available through software
Units	ºC
Sensor current	<0,05 mA (50 uA)
Response time	<500 ms
Open-circuit monitoring	Always active (cannot be disabled)
Short-circuit monitoring	Always active (cannot be disabled)
Measuring range	Configurable (see “Digital measuring accuracy” table)
Minimum measured span	50ºC
Characteristic curve	Temperature-linear

INPUT RESISTANCE-BASED SENSORS (R)	
Measured variable	Resistance
Sensor type	Resistance, potentiometers
Units	Ω
Connection	2-wire
Sensor current	<0,05 mA (50 uA)
Response time	<500 ms
Open-circuit monitoring	Always active (cannot be disabled)
Short-circuit monitoring	Always active (cannot be disabled)
Measuring range	Configurable (see “Digital measuring accuracy” table)
Minimum measured span	25 Ω
Characteristic curve	Resistance-linear

INPUT THERMOCOUPLES (TC)	
Measured variable	Temperature
Sensor type	E, J, K, N, R, S, T
Units	ºC
Connection	1 Thermocouple (TC)
Sensor current	<0,05 mA (50 uA)
Response time	<500 ms
Open-circuit monitoring	Always active (cannot be disabled)
Short-circuit monitoring	Not available
Cold junction compensation (CJC)	Integrated resistance thermometer
Measuring range	Parameterizable (see “Digital measuring accuracy” table)
Minimum measured span	50ºC
Characteristic curve	Temperature-linear

INPUT (mV)	
Measured variable	DC Voltage
Sensor type	DC Voltage source
Units	mV
Response time	<500 ms
Open-circuit monitoring	Always active (cannot be disabled)
Short-circuit monitoring	Not available
Measuring range	- 100mV to 100mV
Minimum measured span	2mV or 20mV
Overload capability of the input	-1,2V to 3V
Input resistance	> 1MΩ
Characteristic curve	Voltage-linear

OUTPUT	
Output signal	4 to 20 mA
Power supply (Uaux)	9 to 30V DC
Max. load	(Uaux - 9) / 0.022 A
Overrange	3 to 22 mA
Error signal (e.g. following sensor fault) (conforming to NE43)	Software configurable ≤ 3,6mA or ≥ 21mA
Sample cycle	< 1s
Protection	Against reversed polarity Surge protection

MEASUREMENT ACCURACY	
Reference conditions	
Auxiliary power	24V DC ± 1%
Ambient temperature	23°C
Warming-up time	> 5min
Error in the analog output (digital/analog converter)	< 0,025% of span
Digital measuring errors	See “Digital measuring accuracy” table
Error due to internal cold junction	<0,5°C
Influence of ambient temperature	<0,006° C/°C
with resistance thermometers	0,06°C / 10°C
with thermocouples	0,6°C / 10°C
Analog measuring error	0,02% of span / 10°C

OPERATING ENVIRONMENT	
Ambient temperature range	-20 to 80°C
Storage temperature range	-20 to 80°C
Relative humidity	≤95%, without condensation

CASING	
Material	Nylon 66
Weight	Approx. 50g
Dimensions	See “Dimensional drawings”
Cross section	2,5 mm^2
Protection type	IP40

CERTIFICATIONS AND APPROVALS	
EN 61326	Electrical equipment for measurement, control and laboratory use. EMC requirements.
IEC 61000-4-2	Electrostatic discharge immunity test
IEC 61000-4-3	Radiated, radio-frequency, electromagnetic field immunity test
IEC 61000-4-4	Electrical fast transient/burst/immunity test
IEC 61000-4-5	Surge immunity test

FACTORY DEFAULT SETTINGS	
Sensor	PT100 with 3-wire circuit
Measuring range	0 to 100ºC
Output configuration	4 to 20 mA

DIGITAL MEASURING ACCURACY

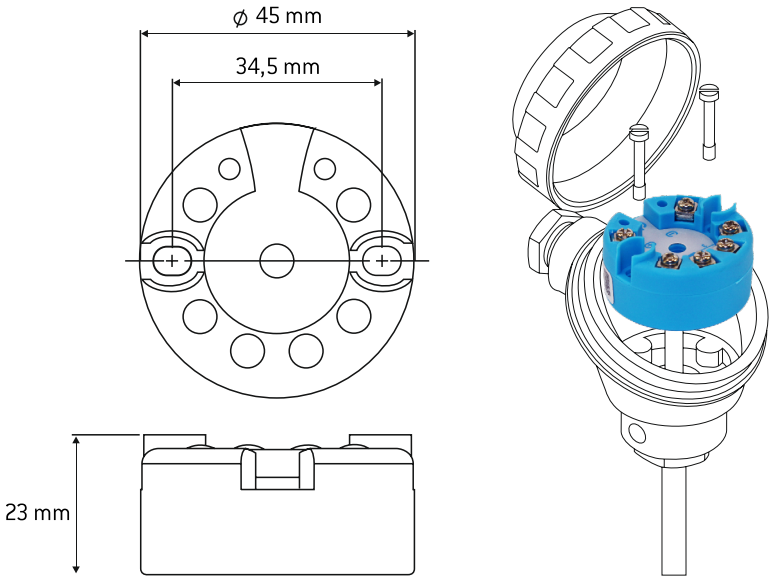
RESISTANCE THERMOMETER (RTD)		
SENSOR	RANGE ºC	DIGITAL ACCURACY ºC
PT100	-200 to 850	0,1
PT500	-200 to 850	0,2
PT1000	-200 to 350	0,2

THERMOCOUPLES (TC)		
SENSOR	RANGE ºC	DIGITAL ACCURACY ºC
E	-200 to 1000	1
J	-210 to 1200	1
K	-230 to 1370	1
N	-200 to 1300	1
R	-50 to 1760	2
S	-50 to 1760	2
T	-200 to 400	1

RESISTANCE-BASED SENSORS (R)		
SENSOR	RANGE Ω	DIGITAL ACCURACY Ω
Resistance	0 to 2200	0,25

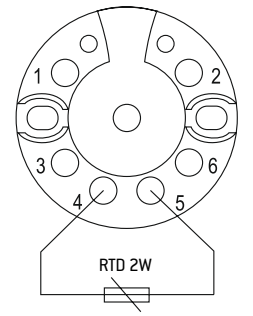
TECHNICAL DRAWINGS AND INFORMATION

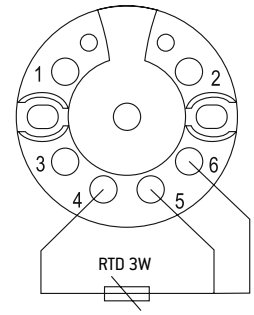
DIMENSIONAL DRAWINGS & INSTALLATION DIAGRAM

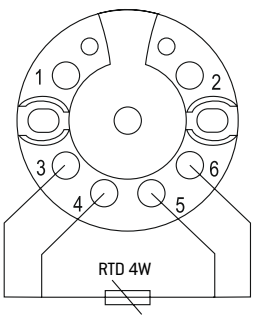


ELECTRICAL CONNECTIONS

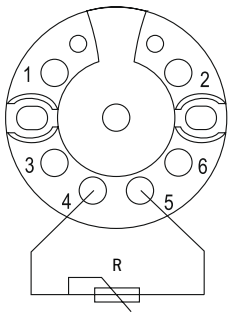
RESISTANCE THERMOMETER

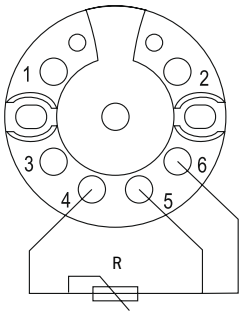


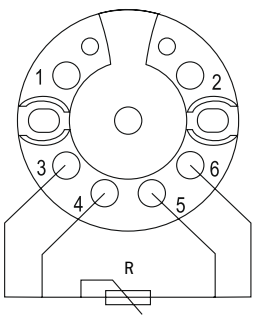




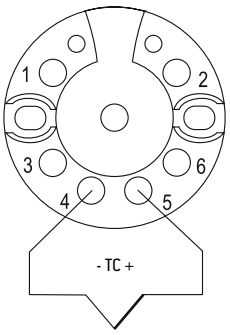
RESISTANCE



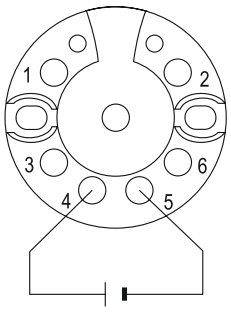




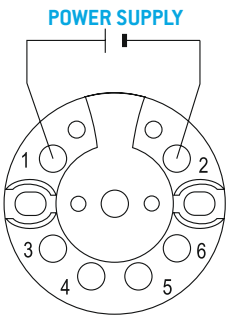
THERMOCOUPLE



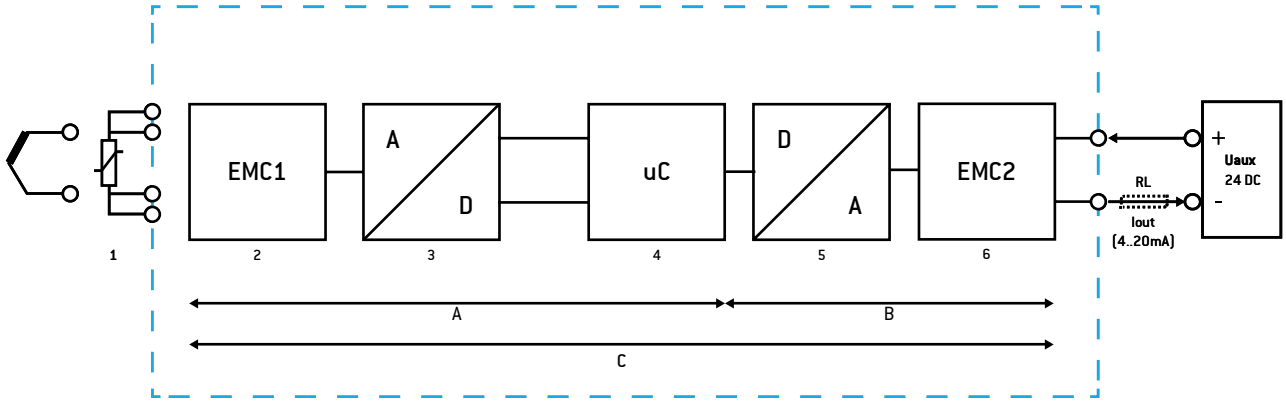
VOLTAGE



POWER SUPPLY



BLOCK DIAGRAM



1 - Sensor (RTD, TC, Ohm, mV)
2 - Sensor input protection module
3 - Analog-Digital converter (16 Bits)
4 - Microcontroller
5 - Digital-Analog converter (16 bits)
6- Output protection module

RL - Loop load
Uaux - Power supply
Iout - Output current
A - Digital measure accuracy
B - Digital / Analog conversion accuracy
C - Total measure accuracy

RELATED PRODUCTS

SARC1105 - USB CONFIGURATOR

REF.: PA110050100

Connection between a PC USB port and THU1102 universal temperature head transmitter.
USB powered for easy off-process configuration

TEKON ELECTRONICS
a brand of Bresimar Automação S.A.

Quinta do Simão
3800-230 Aveiro
PORTUGAL

P.: +351 234 303 320
M.: +351 933 033 250
E.: sales@tekonelectronics.com

Cofinanciado por:

COMPETE 2020

PORTUGAL 2020

UNIÃO EUROPEIA
Fundo Europeu
de Desenvolvimento Regional