INTRINSIC SAFETY PROGRAMMABLE CONVERTERS

TPI-SI 820

This converter has **intrinsic safety inputs:** they are associated equipment, to be placed in safe area. They have input circuits for connection to a sensor placed in hazardous area and output circuits for connection in safe area only.

These instruments have obtained a CE examination certificate of the type according to the prescriptions of the standards EN 60079-0 (2006), EN 60079-11 (2007), EN 60079-26 (2007), EN 61241-0 (2006) et EN 61241-11 (2006) in accordance with the directive ATEX 94/9/CE.
CE 0344 Ex II(1)GD, [Ex ia] IIC and [Ex iaD].

- **Universal input:**
  ±100mV, ±1V, ±10V, ±20mA, Pt100 3 wire, ΔPt100
  2 wire, Ni 100, thermocouple, resistance and potentiometer.
  Typical response time: 100ms (+40ms for the analog output).
- Supply for 2-wire sensor
- **1 analog output**, insulated, programmable in 0-4-20mA (active) current.
- **2 relay outputs**: 2 inverting relays.
  (8A/250 VAC on resistive load).
- **1 digital output**, insulated RS485 Modbus/Jbus

TPI-SI 820

Digital data link RS485 (Modbus/Jbus)
Allows the communication with processing and explotation systems (PLC's), as well as a complete configuration of the input, the output and the safeties. The reading of the measures via the digital data link can be programmed either in ASCII format or in double integer format.

Features

Detection of the sensor rupture.

Insulation between input / outputs / power supply.

Self-zero, self-calibration and self-diagnosis

Mode driver: the analog output and the relays are piloted either by the digital data link, or locally by the micro-console.
Function simulation of the input measure

Easy programming on front face by a micro-console or by the PC software SUPERVISION.

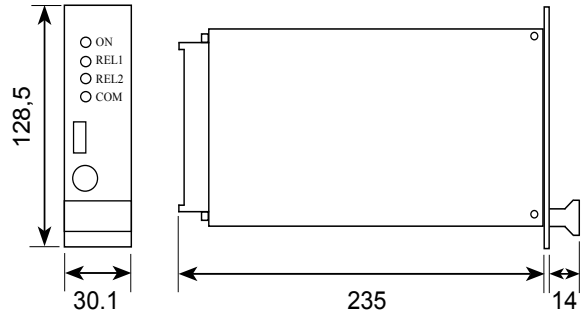
Programming with the Micro-console

This miniaturised micro-console which can be clipped on the front face of the instruments with an extension flex allows:
- the visualisation of the measure and the status of the analog and relay outputs,
- the visualisation and modification of the programming,
- the teleloading of programming files for duplication to other converters.

Programming by PC : SuperVision

Software for programming and analysis (Windows environment) allowing:
the storage of configurations as files which can be consulted, modified, duplicated or loaded into the conveters,
-the edition and printing of files with or without having a converter connected.

Format: rack drawer 19" 3U Europe board 100 x 220 mm front face 6TE (30.42 mm).
Mounting: outside the hazardous area
Accessories: empty rack equipped for 1 to 14 cards
Blank front face 6TE



Operating T°: -10° to 60°C
Storage T°: -20 to 70°C

Coding
Power supply: *High or low voltage (specify)*
(2) high voltage : 90...265 VAC or 88...350 VDC
(3) low voltage : 20...40 VAC or 20...64 VDC
Frequency of the power supply: 50 Hz to 400 Hz (VAC)
Power draw: 4 W max. 6 VA max.
For a converter with universal IS input + analog output + 2 relays + digital data link, powered in 230 V, request reference:
TPI-SI 820ARN-2

ARDETEM 69510 SOUCIEU EN JARREST - France - **Tél. 04 72 31 31 30 - Fax. 04 72 31 31 31**

Technical features at 23°C

Inputs of the TPI-SI

Types of **INPUTS**	Measure range adjustable from:	Intrinsic error	Console resolution	Input impedance
mA	-22 to +22mA with √♣	< ±0.05% of the MR Input resolution : 14 bits	10 µA	Drop 0.9V max.
mV♠	-110 to +110mV with √♣		10 µV	≥ 1MΩ
V	-11 to +11V with √♣		1 mV	
Thermocouples ♠ Standard IEC 581 J K B R S T E N L W W3 WRE5	°C °F -160/1200 -256/2192 -270/1370 -454/2498 200/1820 392/3308 -50/1770 -58/3218 -50/1770 -58/3218 -270/410 -454/770 -120/1000 -184/1832 0/1300 -32/2372 -150/910 -238/1670 1000/2300 1832/4172 0/2480 32/4496 0/2300 32/4172	♦(3) <±0.1% of the MR	0.1°C / 0.1°F	≥ 1 MΩ
Sensor Pt100Ω (1)♠ 3 wire, Standard IEC 751 (DIN 43760)	°C °F -200/850 -328/1562	<±0.1% of the MR	0.1°C / 0.1°F	Current 250µA
Sensor Ni100 3 wr (1)♠	-60/260 -76/500			
Differential measures from 2 sensors Pt100Ω 2 wire Stand. IEC 751(2)♠	°C °F -200/270 -328/518			
Resistive sensors	Calibers 0-440 Ω and 0-2.2 kΩ ♣ (0-8.8 kΩ optional)	<±0.1% of the MR (0.5% for 0-2KΩ)	-	
Potentiometer	100Ω to 10 kΩ ♣			
Supply for 2-wire sensor	14.0 min. (at 22mA), 14.5V min. (at 20mA), 23.1V max. protection from short-circuits : 25 mA max.			
Special linearisation *programming up to 20 points*	On input: mV, V, mA. Resistive sensors and potentiometer			

(1) Line resistance <25Ω
(2) Line resistance <10Ω and R. max. 400Ω
(3) Or 25 µV typical (50µV Max.)
♦ CJC efficiency : ±0.03°C/°C ±0.5°C from -10°C to +60°C
MR Measure range
√ Square root extraction

♠ A 12 µA pulsed current allows the detection of line or sensor rupture

♣ Cut off: the display of the console and the output of the TPI remain at down scale for an input signal < than the cut off value, programmable from 0% to 100% of the input scale.

Thermic drift <150ppm /°C

Outputs of the TPI-SI

OUTPUT types	Features
1 analog output (mA active)	DC or reversed current 0-20mA Load impedance ≤ Lr 600Ω
2 NO-NC contact relays	2 setpoints per relay, configurable on the whole MR. Hysteresis programmable from 0 to 100%. Time delay programmable from 0 to 25s. (8A/250 VAC on resistive load).
Insulated digital data link	RS485 (Modbus/Jbus) (IEA RS485) 1 start bit, 8 data bits, without parity and 1 stop bit.

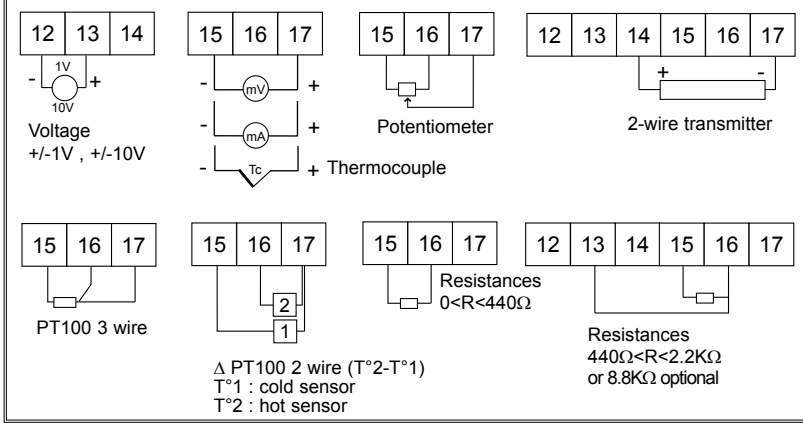
Galvanic partition:

1kV-50Hz-1min.: between analog and digital output
2kV-50Hz-1min.: between supply and [analog output / relay contact].
between analog outputs and relay contact
3.8kV-50Hz-1min.: between input and [supply / outputs].

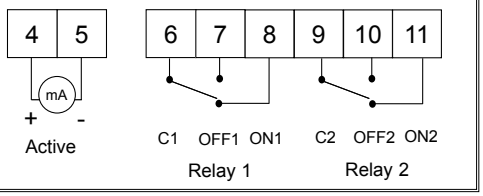
ELECTRICAL PARAMETERS RELATED TO THE SAFETY							
	Terminals		Uo	Io	Po	Lo	Co
Sensor supply	14 - 17		23.1V	100mA	578mW	4mH	138nF
Current (mA) Voltage (mV) Thermocouple (tc)	15 - 17		6.5V	20.9mA	34mW	75mH	25µF
Voltage (1V, 10V)	12 - 13						
Resistance (440Ω)	15 - 16						
Sensor (Ni100, Pt100, ΔPt100) Potentiometer	15-16-17	16-17 13-16	13V	6.4mA	21mW	600mH	1µF
Resistance (2kΩ, 8kΩ)	13-15-16	15-17 13-15 15-16	6.5V	20.9mA	34mW	75mH	25µF
Um < 350 Vdc and Um < 265 Vac							

Wiring

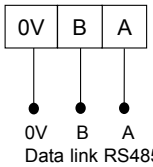
INTRINSIC SAFETY inputs



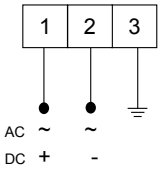
ANALOG AND RELAY OUTPUTS



Output RS485



Power supply



This appliance is dedicated to industrial applications. It has to be installed in an electrical switchbox, or equivalent.

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