

PROGRAMMABLE SIGNAL CONDITIONER

TPIv4001



Features

- **Typical response time 5ms**
- **Universal power supply:**
20 to 250 Vac and 20 to 250 Vdc
- **Universal input:**
 $\pm 100\text{mV}$, $\pm 1\text{V}$, $\pm 10\text{V}$, $\pm 270\text{V}$, $\pm 20\text{mA}$, Pt100, Ni 100 (2, 3 ou 4 fils), $\Delta\text{Pt}100$ thermocouple, resistance and potentiom.
- **Supply for 2-wire sensor**
- **Isolated analog output(s) (A/2A)**
0-4-20mA current (active/passive) or 0-10V voltage.

Relay outputs (R): 2 or 4 relays, NO contact (70mA/150 VAC on resistive load).

Digital communications (N) isolated RS485 Modbus/Jbus

Sensor break detection and self-diagnosis.

*Isolation input / outputs / supply.
Mode simulation allowing to validate the configuration or the installation.*

Programming either with micro-console or by the PC software SlimSET via a standard USB/ μ USB cable.

Configuration

Easy programming on front face with a micro-console or with the PC software SlimSET (via a standard USB/ μ USB cable).

Programming with the Micro-console

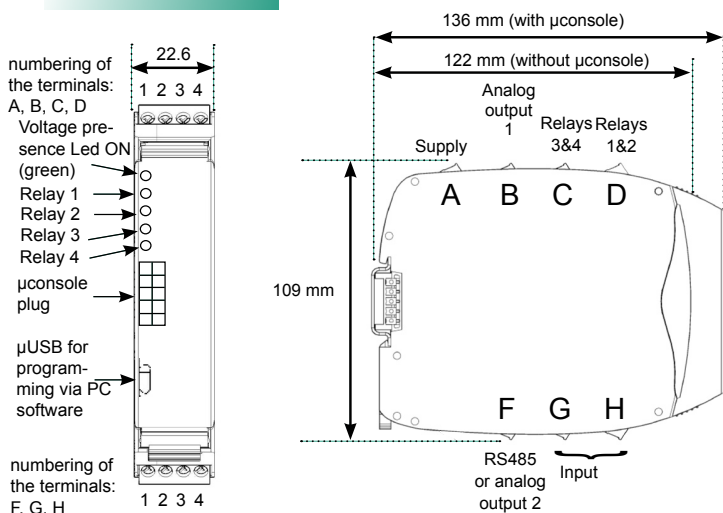
The graphical rear-lit LCD with tactile keyboard allows to visualise the following information:

- the measured value with its unit,
- the value(s) of the analog output(s),
- the product tag name,
- the status of the relay outputs and the RS485 communications.
- Scrolling message for programming help in various languages
- Passcode protected programming
- Programmable keys for direct access

Programming by PC : SlimSET

Programming software (Windows environment) allowing:
The storage of the configurations as files which can be consulted, modified, duplicated or loaded into the converters.
The edition and printing of files with or without having a signal conditioner connected.

Dimensions



Features

Power supply: 20 to 250 Vac and 20 to 250Vdc

Power consumption: 2.6 W max. 8 VA max.

Dielectric withstanding: 3.0 kV-50Hz-1min.

Operating temperature: -20 to +60°C

Storage temperature: -20 to +70°C

Installation: Pollution degree 2 / voltage surge II

Protection: housing / terminals: IP 20
Removable terminals blocks for screwed connections (2.5 mm², flexible or rigid)

Weight: 290g (with packaging)

Self-extinguishing case of black UL 94VO PA66.

Mounting in switchbox: latching on symmetrical DIN rail.

Compliance with standards:

Directive LV 2014/35/UE EN 61010-1

Standard for UL electrical safety UL 61010-1

..... CSA C22.2 NO.61010-1-12

Directive ATEX 2014/34/UE area 2..... EN 60079-0

..... EN 60079-15

Directive EMC 2014/30/UE EN 61326-1

Marking:



II 3 G Ex nA IIC T4 Gc



Process
Control
Equipment
E482453

Coding

Type	TPIv 4001 ARN	Outputs:
		A analog I/U isolated
		2A analog I/U isolated
		R 2 relays NO contact
		R4 4 relays NO contact
		N RS 485 comms

Available versions:

TPIv 4001	A	AR	2AR	N	2AR4	AR4N
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(consult with us for different configurations)

Order example: For a converter with universal input + 1 analog output + 2 relays: **référence TPIv 4001 AR**

• **Standard programming cable USB type A male to μ USB type B male : reference C1- μ USB**

• **CJC terminal (option): reference B1CSF-4**

Features

Inputs

Types of INPUTS	Measure range adjustable from:		Permanent overload	Intrinsic error	Input impedance
mA (1)	----- -2 to +22mA -22 to +22mA		±100mA	< ±0.1% of the MR	Max. drop 0.9V
mV (1)	----- -10 to +110mV -110 to +110mV		±1V		≥ 1MΩ
V	----- -0.1 to +1.1V -1.1 to +1.1 V		±50V		
	----- -1 to +11V -11 to +11V				
	----- -30 to +300V -300 to +300V		±300V		
Thermocouples (1) Standard IEC 581	°C	°F	-	<±0.1% ⁽³⁾ of the MR oR 30µV typical (60µV max.)	≥ 1 MΩ
J	-160/1200	-256/2192			
K	-270/1370	-454/2498			
B	200/1820	392/3308			
R	-50/1770	-58/3218			
S	-50/1770	-58/3218			
T	-270/410	-454/770			
E	-120/1000	-184/1832			
N	0/1300	-32/2372			
L	-150/910	-238/1670			
W	1000/2300	1832/4172			
W3	0/2480	32/4496			
WRE5	0/2300	32/4172			
Pt100Q sensor (1) (2) Standard IEC 751 (DIN 43760)	°C	°F	-	<±0,1% de l'EM	Current 250µA
	-200/850	-328/1562	-		
Ni 100 3-wire sensor (1) (2)	-60/260	-76/500	-		
Differential measures from 2 sensors Pt100Q 2-wire Standard IEC 751 (1)	-200/270	-328/518	-		
Resistive sensors	Calibers 0-440 Ω (1) (2) and 0-11 kΩ		-	<±0.1% of the MR	Max. current 250µA
Potentiometer	from 100Ω to 10 kΩ		-		Max. voltage 100mV
Supply for 2-wire sensor	24 Vdc ±15% with protection from short-circuits. 25 mA max.				
Special linearisation: pro- gramming up to 20 points	On inputs: mV, V, mA, resistive sensors and potentiometer				
Extraction of the square root	On inputs mV, V or mA				

(1) Sensor break detection: mA input (if down scale ≥ 3,5mA)
Other inputs: a 12µA pulsed current allows the detection of line or sensor break.

(2) Wiring possible in 2, 3 and 4 wire
Influence of the line resistance (0<Rl<25Ω) included in the announced intrinsic error.

(3) CJC efficiency (-20 to +60°C):
Internal CJC: ±2°C ±0.03°C/°C
CJC (option terminal): ±1°C

MR Measure range

Thermal drift <150ppm/°C

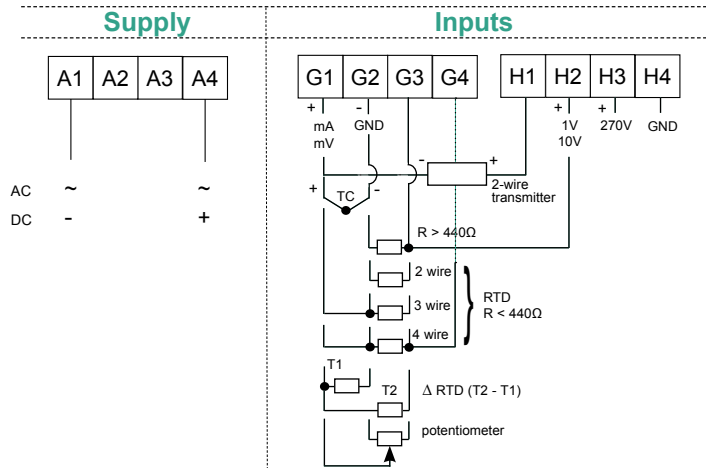
Outputs

Code	Types of OUTPUTS	Features
A	1 analog	Current: Direct or reversed 0-20mA Load impedance ≤ Lr 600Ω Voltage: Direct or reversed 0-10V Load impedance ≥ Lr 5KΩ
	2 analog isolated	Accuracy: 0.1% in relation to the display Ripple: 0.2% Response time in relation to the display: 40ms
R	2 relays	2 setpoints per relay configurable over the whole MR. Hysteresis programmable from 0 to 100%.
R4	4 relays	Time delay programm. from 0 to 999.9 sec. NO contact (70mA/150 VAC on resistive load)
N	RS485 digital communications	Protocole MODBUS/JBUS (EIA RS485)

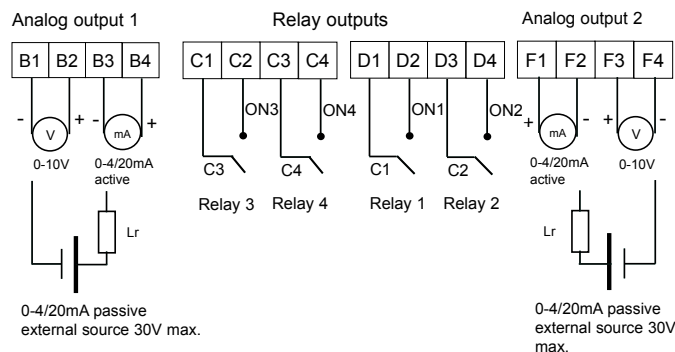
Galvanic isolation:

3.0kV-50Hz-1min. between supply, input, analog output n°1, analog output n°2, relay output n°1, relay output n°2, relay output n°3, relay output n°4, RS485 output.

Connectings



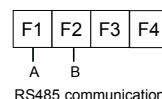
Outputs of the TPIV 4001 A/AR/2AR/2AR4



The voltage or current outputs are not independent. One output type only to be activated by programming (V or mA).

Outputs of the TPIV 4001N/AR4N

RS485 output



Response time of the outputs

Programmed acquisition time	Cycle times (without µconsole or RS485)	Rejection
1 ms	2.5 ms	-
16.6 ms	18 ms	60 Hz
20 ms	22.5 ms	50 Hz

Max. response time: 2 cycle times (1).

The response times are guaranteed 10 minutes after setting the converter on tension and 30 seconds after a saving of the programming, a revert from measure overrange or a sensor break.

For the inputs requiring several measures (TC, PT100 and NI100 in 3 and 4 wire, ΔPT100 and potentiometer) the 2nd measure is performed every 25s (except in ΔPT100 where it will alternate with the main measure). In this case the response time can be increased by 1 cycle time.

(1)

Add 3 ms for the response time on the relay outputs.

Add 3 ms max. to the response time if you are using the RS485.

Add 15 ms max. to the response time if the µconsole is connected.



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