

PROGRAMMABLE CONVERTERS series TPI 401

TPI 400/401 1 output

TPI 450/451 2 insulated analog outputs



Features

- **Universal power supply:**
20 to 270 Vac and 20 to 300 Vdc
- **Process input: (TPI 400/450)**
 $\pm 100\text{mV}$, $\pm 1\text{V}$, $\pm 10\text{V}$, $\pm 300\text{V}$, $\pm 20\text{mA}$
- **Universal input: (TPI 401/451)**
 $\pm 100\text{mV}$, $\pm 1\text{V}$, $\pm 10\text{V}$, $\pm 300\text{V}$, $\pm 20\text{mA}$,
Pt100 3 wire, Ni 100, Δ Pt100, thermo-
couple, resistance and potentiometer.
- Average response time: 150ms
- Supply for 2-wire sensor
- **Insulated analog outputs (A)**
0-4-20mA current (active/passive)
or 0-10V voltage.

Relay outputs (R) : 2 inverting relays
(8A/250 VAC on resistive load).

Digital data link (N) insulated RS485
Modbus/Jbus

Detection of the sensor rupture.

Insulation between input/outputs/supply.

Self-zero and self-diagnosis.

*Mode driver: the analog output is
piloted by the digital data link, or
locally by the micro-console.*

Function simulation of the input measure.

*Programming either with the micro-console
or by PC via the software SUPERVISION.*

Configuration

Easy programming with a micro-console or by the PC software SUPERVISION.

Programming with the micro-console

The series TPI accepts 2 types of μ consoles :

- The old generation with 4 electroluminescent alphanumerical green digits
- The new generation with graphical rear-lit LCD

The LCD allows visualising 4 pieces of information:

- the value of the measure,
- the unit of the displayed value,
- the value of the analog output or the marking name of the product,
- the status of the relay outputs and the RS485 data link.

This μ console with LCD also allows the display of this information either vertically or horizontally, according to the sense in which the converter is mounted.

Programming by PC : SUPERVISION

Programming software (Windows environment) allows:

- the storage of 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 converter connected.

Protection: case / terminals: IP20

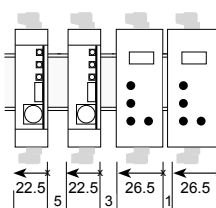
Plug-off connectors for screwed connectings
(2.5mm², flexible or rigid)

Weight: 240g (with packaging)

Self-extinguishing case of black UL 94VO ABS.

Mounting in switchbox: latching on symmetrical DIN rail.

Rack version: consult.



Dimensions: 22.5x75x120 mm
with μ console: 26.5x80x130 mm

Operating T°: -10° to 50°C
Storage T°: -20 to 70°C

• **CE** according to the directive EMC 2004/108/CE.

Conform with standards:

IEC 61000-6-4 on emissions, IEC 61000-6-2 immunity (industrial environment)

IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-6 (level 3)

Sensitiveness $< \pm 1\%$ of the measure range for all the TPI 400/401 and the TPI 450/451 (A)(R)

Sensitiveness $< \pm 3\%$ for the TPI 451 N

Coding

Type	TPI 4xx ARN
Outputs: A I/U insulated analog R 2 inverting relays N digital RS 485	

Power supply: 20 to 270 Vac and 20 to 300Vdc

Power draw : 3.5 W max. 6 VA max.

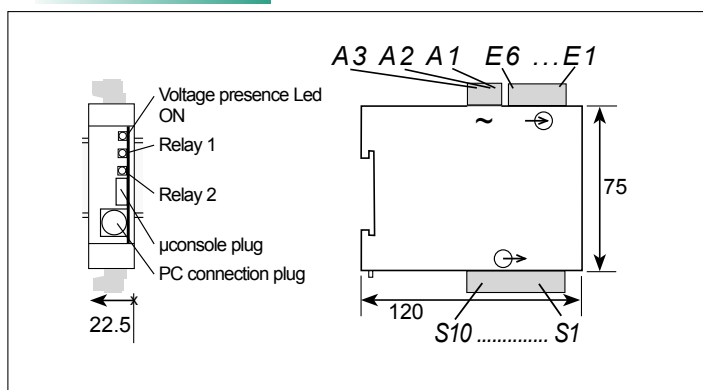
Dielectric withstanding : 2 kV-50Hz-1min.

Order example: For a converter with universal input + 1 analog output + 2 relays, powered in 230 V, request reference **TPI 401 AR**

Available versions:

TPI 401/400	A	AR	ARN	-	(consult for different configurations)
TPI 451/450	-	R	-	N	

Dimensions



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Features

Inputs

TPI 400/ 450	TPI 401/ 451	Types of INPUTS	Measure range adjustable from:		Permanent overload	Intrinsic error	Console resolution	Input impedance
●	●	mA	-22 to +22mA with $\sqrt{\clubsuit}$		±100mA	< ±0.05% of the MR	10 µA	Max. drop 0.9V
●	●	mV♣	-110 to +110mV with $\sqrt{\clubsuit}$		±1V		10 µV	
●	●	V	- 1.1 to +1.1V with $\sqrt{\clubsuit}$ ♣		±50V		1 mV	
			-11 to +11V with $\sqrt{\clubsuit}$ ♣				1 mV	
			-330 to +330V with $\sqrt{\clubsuit}$ ♣		±600V		10mV	
	●	Thermocouples ♣ Standard IEC 581 J K B R S T E N L W W3 WRE5	°C -160/1200 -270/1370 200/1820 -50/1770 -50/1770 -270/410 -120/1000 0/1300 -150/910 1000/2300 0/2480 0/2300	°F -256/2192 -454/2498 392/3308 -58/3218 -58/3218 -454/770 -184/1832 -32/2372 -238/1670 1832/4172 32/4496 32/4172	-	♦(2) <±0.1% of the MR	0.1°C / 0.1°F	≥ 1 MΩ
	●	Sensor Pt100Ω (1)♣ 3 wire, Standard IEC 751 (DIN 43760)	°C -200/850	°F -328/1562	-	<±0.1% of the MR	0.1°C / 0.1°F	Current 250µA
	●	Sensor Ni 100 3 wire(1)♣	-60/260	-76/500	-			
	●	Differential measures from 2 sensors Pt100Ω 2 wire Standard IEC 751 ♣**	-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	from 100Ω to 10 kΩ ♣		-			
●	●	Supply for 2-wire sensor	24 Vdc ±15% with protection from short-circuits. 25 mA max.					

- (1) Line resistance <25Ω
(2) Or 30 µV typical (60µV Max.)
♦ CJC efficiency: ±0.03°C/°C ±0.5°C from -5°C to +55°C
MR measure range
** line resistance <10Ω and R. max. 400Ω
√ Extraction of the square root

- ▲ 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

TPI 401/400	TPI 451/450	Code	Types of OUTPUTS	Features
•	•	A	1 analog	Current: direct or reversed 0-20mA Load impedance ≤ Lr 600Ω
•	•	•	2 analog (insul. from each other)	Voltage: direct or reversed 0-10V Load impedance ≥ Lr 5kΩ(TPI 400/401 TPI 450/451 N) Lr 500kΩ(TPI 450/451 TPI 450/451 R)
•	•	R	2 inverting relays	2 setpoints per relay, configurable on the whole MR. Hysteresis programmable from 0 to 100%. Time delay programmable from 0 to 25 sec. (8A/250VAC on resistive load)
•	•	N	Digital data link RS485 Protocole Modbus/Jbus (EIA RS485) insulated. (with or without parity, even or odd; 1 or 2 stop bits)	

- (4) The relay outputs R and the digital data link N are not available simultaneously.
(5) The digital data link N and the voltage output A are not available simultaneously.

Response time of the outputs:

(for a variation from 0 to 90% of the input signal)

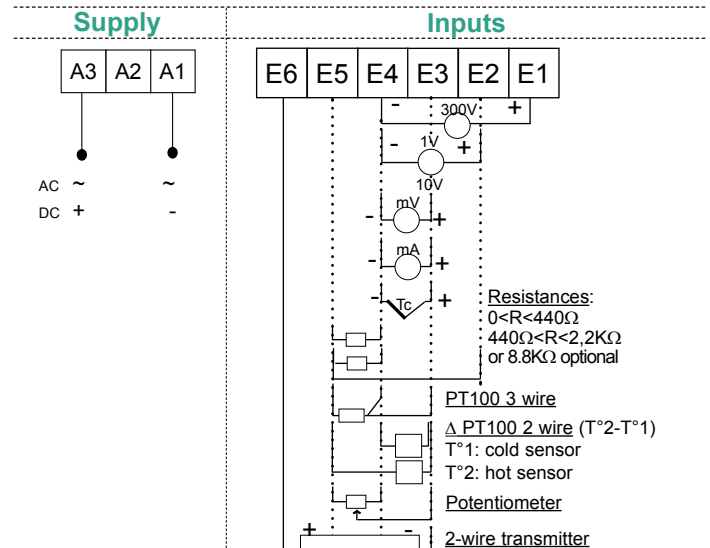
Average response time: 150 ms (1)

(1) Add 40 ms for the response time on the analog output.

Galvanic partition: 2kV-50Hz-1min. between supply, input, analog output, relay outputs and digital data link 1kV-50Hz-1min. between analog and digital output, or between 2 analog outputs.

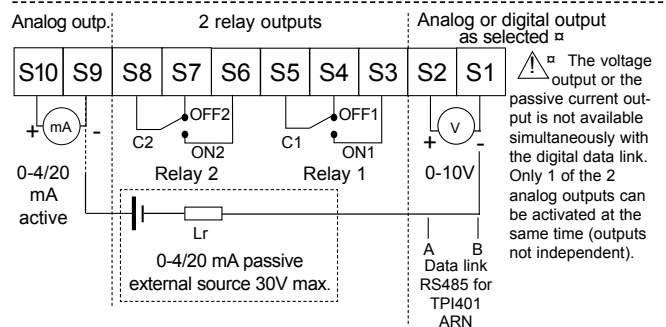
Wiring

Upper connectors



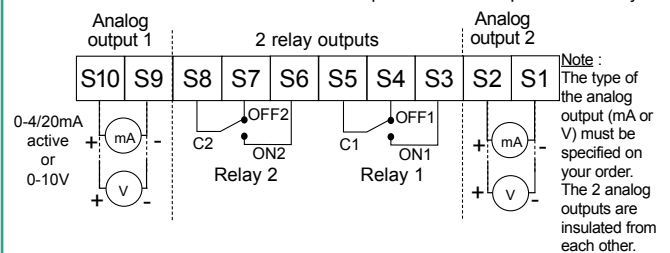
Lower connector

Outputs of the TPI 401 / 400



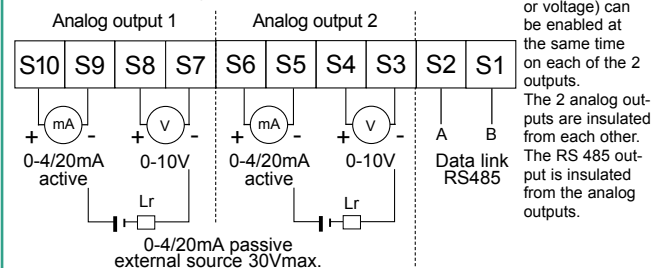
Outputs of the TPI 451 / 450 (R)

TPI451/450 Version with 2 insulated independent analog outputs.
TPI451/450 R Version with 2 insulated independent anal. outputs and 2 relays.



Outputs of the TPI 451 / 450 N

Version with 2 insulated independent analog outputs and insulated RS485 digital data link.



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