# UNIVERSAL SETPOINT RELAY WITH DISPLAY

# TPAv401


## Features

- **Universal power supply:** 20 to 250 Vac and 20 to 250 Vdc
- **Universal input:** ±100mV, ±1V, ±10V, ±270V, ±20mA, Pt100, Ni 100 (2, 3 or 4 wire), ΔPt100 thermocouple, resistance and potentiometer.
- **Average response time** 150ms (15ms for the version F)
- **Supply for 2-wire sensor**
- **Isolated analog output** (A) 0-4-20mA (active/passive) current or 0-10V voltage.

**4-relays output** (R4): 4 change-over relays (8A/250 VAC on resistive load).

*Detection of the sensor break and self-diagnosis.*

*Isolation between input/outputs/supply.*

*Mode simulation: allows to validate the configuration or the installation.*

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

## Configuration

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

### Programming with the Micro-console

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

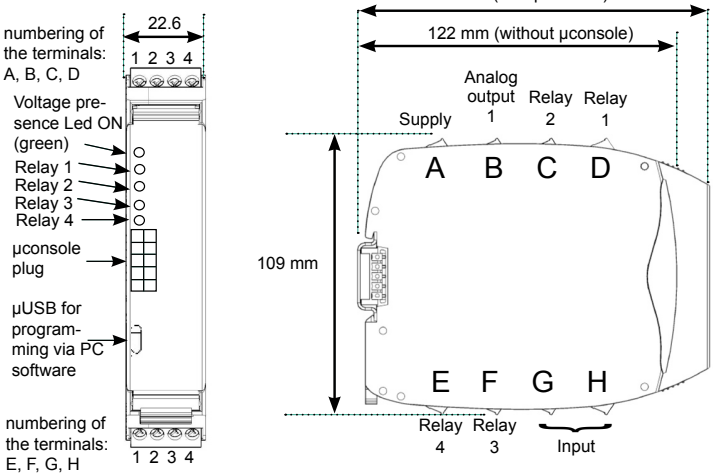
- the measured value with its unit,
- the value of the analog output,
- the product tag name,
- the status of the relay outputs

• 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 setpoint relay connected.

## Dimensions




## Features

**Supply**: *20 to 250 Vac and 20 to 250Vdc*
**Power draw**: 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: case / terminals: IP 20
Removable terminal 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:**

CE

Ex II 3 G Ex nA IIC T4 Gc

c UL us LISTED — Process Control Equipment E482453

## Coding

**Type** TPAv 401 F AR4

**Outputs:**
**R4** 4 change-over relays
**A** analog I/U isolated
**F** fast version

**Available versions**:

| | | | |
|---|---|---|---|
| TPAv 401 | A | AR4 | R4 |

(consult with us for different configurations)

*Order example:* For a setpoint relay with universal input + *1 analog output + 4 relays + micro console: reference* ***TPAv 401 AR4***

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

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

# Features

## Inputs

| Types of **INPUTS** | Measure range adjustable from: | | Permanent overloas | Intrinsic error | Input impedance |
|---|---|---|---|---|---|
| mA(1) | -2 to +22mA (U)<br>-22 to +22mA (B) | | ±100mA | < ±0.1% of the MR for inputs of the type (U)<br>< ±0.05% of the MR for inputs of the type (B) (4) | Max. drop 0.9V |
| mV(1) | -10 to +110mV (U)<br>-110 to +110mV (B) | | ±1V | | ≥ 1MΩ |
| V | -0.1 to +1.1V (U)<br>-1.1 to +1.1 V (B) | | ±50V | | |
| | -1 to +11V (U)<br>-11 à +11V (B) | | | | |
| | -30 to +300V (U)<br>-300 to +300V (B) | | ±300V | | |
| Thermocouples(1) Standard IEC 581<br>J<br>K<br>B<br>R<br>S<br>T<br>E<br>N<br>L<br>W<br>W3<br>WRE5 | °C<br><br>-160/1200<br>-270/1370<br>200/1820<br>-50/1770<br>-50/1770<br>-270/410<br>-120/1000<br>0/1300<br>-150/910<br>1000/2300<br>0/2480<br>0/2300 | °F<br><br>-256/2192<br>-454/2498<br>392/3308<br>-58/3218<br>-58/3218<br>-454/770<br>-184/1832<br>-32/2372<br>-238/1670<br>1832/4172<br>32/4496<br>32/4172 | - | (3)<br><±0.1% of the MR or 30µV typical (60µV max.) | ≥ 1 MΩ |
| Pt100Ω sensor(1)(2) Standard IEC 751 (DIN 43760) | °C<br>-200/850 | °F<br>-328/1562 | -<br>- | <±0.1% of the MR | Current 250µA |
| Ni 100 sensor (1)(2) | -60/260 | -76/500 | - | | |
| Differential measures from de 2 sensors Pt100Ω 2 wire Standard IEC 751 (1) | -200/270 | -328/518 | - | | |
| Resistive sensors | Calibers 0-440 Ω(1)(2) and 0-10 kΩ | | - | <±0.1% of the MR | Max. current 250µA |
| Potentiometer | from 100Ω to 10 kΩ | | - | | Max. voltage 100mV |
| 2-wire sensor supply | 24 VDC ±15% with protection from short-circuits. 25 mA max. | | | | |
| Special linearisation programming up to 20 points | On input: mV, V, mA. resistive sensor and potentiometer | | | | |
| Extraction of the square root | On input 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

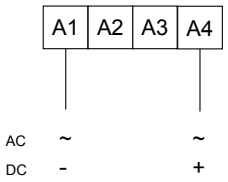
(4) <±0.1% of the MR (B) for the version F if acquisition time <100ms

## Outputs

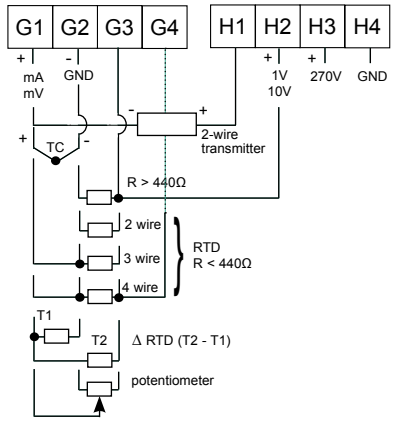
| Code | Types of OUTPUTS | | Features |
|---|---|---|---|
| **A** | 1 analog | Current<br>active/passive<br>Voltage | Current: Direct or reversed 0-20mA<br>Load impedance ≤ Lr 600Ω<br>Voltage: Direct or reversed 0-10V<br>Load impedance ≥ Lr 5KΩ<br>Accuracy: 0.1% in relation to the display |
| **R4** | 4 change-over relays | | 2 setpoints per relay configurable over the whole MR.<br>Hysteresis programmable from 0 to 100%.<br>Time delay programm. from 0 to 999,9 sec.<br>(8A/250 VAC on resistive load) |

# Connectings

## Supply

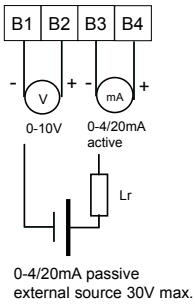



## Inputs




## Outputs

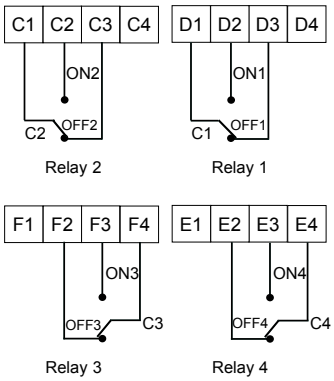
### Analog output




0-4/20mA passive external source 30V max.

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

### Relay outputs




## Response time of the outputs:

(for a variation from 10 to 90% of the input signal)

Average response time: 150 ms (15ms for the version F)

Add 40 ms for the response time on the analog output, or 10 ms for the response time on the relay outputs.

## Galvanic isolation:

3.0kV-50Hz-1min. between Supply, Input, Analog output, Relay outputs

3.0kV-50Hz-1min. between relay outputs



ARDETEM®

RCS Lyon 444-429-476 - Printed in France.

e-mail : info@ardetem.com
http : //www.ardetem.com

Route de Brindas
Parc d'activité d'Arbora N°2
69510 SOUCIEU EN JARREST
- FRANCE -

Tél. : 33 (0)4 72 31 31 30
Fax. : 33 (0)4 72 31 31 31

**your representative**