

# TPIv SI / $\mu$ CvSI

ARDETEM

SFERE



## Features

- **Universal power supply:**  
20 to 250 Vac and 20 to 250 Vdc
- **Universal input:**  
 $\pm 100\text{mV}$ ,  $\pm 1\text{V}$ ,  $\pm 10\text{V}$ ,  $\pm 150\text{V}$ ,  $\pm 270\text{V}$ ,  $\pm 20\text{mA}$ , Pt100, Ni 100 (2, 3 or 4 wire),  $\Delta$ Pt100, thermocouple, resistance and potentiom.
- **Average response time** 150ms
- **Supply for 2-wire sensor**
- **Isolated analog output (A)**  
0-4-20mA current (active/passive) or 0-10V voltage.

**Relay outputs (R):** 2 change-over relays (5A/250 VAC on resistive load).

**Digital communications (N)** isolated RS485 Modbus/Jbus  
**Sensor break detection and self-diagnosis.**  
**Isolation between input/outputs/supply.**  
**Mode simulation:** allows validating the configuration or the installation.  
**Programming with the micro-console or with the PC software SlimSET via a standard USB /  $\mu$ USB cable.**



This series has intrinsically safe inputs: they are associated equipment, to be placed in safe area or ATEX/IECEx area 2. They have input circuits for connection to a sensor placed in hazardous area and output circuits for connection only in safe area or ATEX/IECEx area 2. These appliances have obtained a UE examination certificate of the type according to the prescriptions of the standards EN 60079-0, EN 60079-7, EN 60079-11 and EN 60079-15 in accordance with the directive ATEX 2014/34/UE.

Marking: II 3 (1) G Ex ec nC [ja Ga] IIC T4 Gc

## Configuration

Easy programming with a micro-console or by PC software SlimSET (via a standard USB /  $\mu$ USB cable).

### Programming with the Micro-console

The graphical rear-lit LCD with tactile keyboard allows the visualisation of the following information:

- the value of the measure with its unit,
- the value of the analog output,
- 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

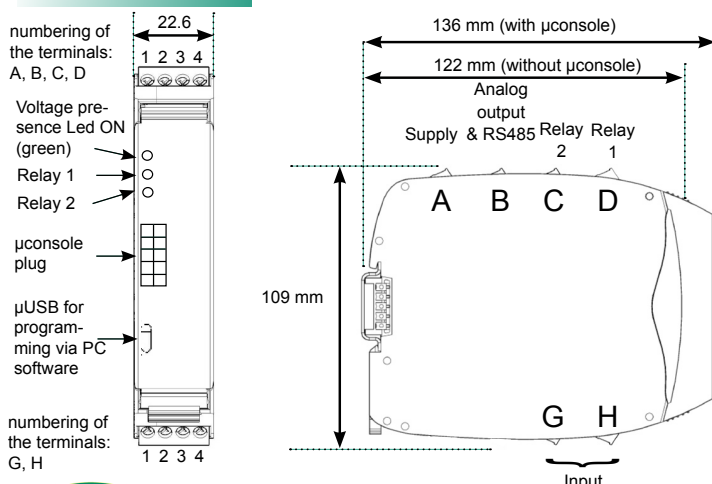
### Programming by PC: SlimSET

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

**Supply:** 20 to 250 Vac and 20 to 250Vdc

**Power draw:** 2.5 W max. 6 VA max.

**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 terminal blocks for screwed connections (2.5 mm<sup>2</sup>, 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 .....EN 60079-0, EN 60079-7
- .....EN 60079-11, EN 60079-15
- IECEx .....IEC 60079-0, IEC 60079-7
- .....IEC 60079-11, IEC 60079-15
- Directive EMC 2014/30/UE .....EN 61326-1

## Coding

| Type | ARDETEM reference | Outputs:                |
|------|-------------------|-------------------------|
|      | TPIv-SI 40/41     | A analog I/U isolated   |
|      | SFERE reference   | R 2 change-over relays  |
|      | $\mu$ Cv-SI 32/31 | N RS 485 communications |

### Available versions:

|   |    |   |
|---|----|---|
| A | AR | N |
|---|----|---|

(consult with us for different configurations)

**Order example:** For a signal conditioner with universal input + 1 analog output + 2 relays: reference **TPIv/ $\mu$ Cv-SI 41AR**

- Standard programming cable USB type A male to  $\mu$ USB type B male: reference **C1- $\mu$ USB**
- CJC terminal (option): reference **B1CSF-4**



# Features

## Inputs

| TPIV SI 40<br>μCv SI 32 | TPIV SI 41<br>μCv SI 31 | Types of INPUTS                                                      | Measure range adjustable from:                                     |          | Permanent overload                                                                                   | Intrinsic error                                                                                                                                      | Input impedance    |                                                                                                                                                       |                  |                                                     |
|-------------------------|-------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------|----------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------|
| ●                       | ●                       | mA(1)                                                                | -2 to +22mA (U)<br>-----<br>22 to +22mA(B)                         |          | ±100mA                                                                                               | < ±0.1% of the MR for inputs of the type (U)<br><br>< ±0.05% of the MR for inputs of the type (B)                                                    | Max. drop 0.9V     |                                                                                                                                                       |                  |                                                     |
| ●                       | ●                       | mV(1)                                                                | -10 to +110mV (U)<br>-----<br>-110 to +110mV (B)                   |          | ±1V                                                                                                  |                                                                                                                                                      | ≥ 1MΩ              |                                                                                                                                                       |                  |                                                     |
| ●                       | ●                       | V                                                                    | -0.1 to +1.1V (U)<br>-----<br>-1.1 to +1.1V (B)                    |          | ±50V                                                                                                 |                                                                                                                                                      |                    |                                                                                                                                                       |                  |                                                     |
|                         |                         |                                                                      | -1 to +11V (U)<br>-----<br>-11 to +11V (B)                         |          |                                                                                                      |                                                                                                                                                      |                    |                                                                                                                                                       |                  |                                                     |
|                         |                         |                                                                      | -15 to +165V (U)<br>-----<br>-165 to +165V (B)                     |          | ±300V                                                                                                |                                                                                                                                                      |                    |                                                                                                                                                       |                  |                                                     |
|                         |                         |                                                                      | -30 to +300V (U)<br>-----<br>-300 to +300V (B)                     |          |                                                                                                      |                                                                                                                                                      |                    |                                                                                                                                                       |                  |                                                     |
|                         |                         |                                                                      |                                                                    |          | Thermocouples(1)<br>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>-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/<br>2300<br>0/2480<br>0/2300 |                    | °F<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.) |
|                         |                         |                                                                      |                                                                    | ●        | Pt100Ω sensor (1)(2)<br>Standard IEC 751 (DIN 43760)                                                 | °C<br>-200/850                                                                                                                                       | °F<br>-328/1562    | -                                                                                                                                                     | <±0.1% of the MR | Current 250μA                                       |
|                         | ●                       | Ni 100 sensor (1)(2)                                                 | -60/260                                                            | -76/500  | -                                                                                                    |                                                                                                                                                      |                    |                                                                                                                                                       |                  |                                                     |
|                         | ●                       | Differential meas. from 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 |                                                                                                                                                       |                  |                                                     |
| ●                       | ●                       | Supply for 2-wire sensor                                             | 27...17 Vdc / 0...20mA with protection from short-circuits: 25 mA. |          |                                                                                                      |                                                                                                                                                      |                    |                                                                                                                                                       |                  |                                                     |
| ●                       | ●                       | Special linearisation programming up to 20 points                    | On inputs: mV, V, mA.<br>resistive sensor 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<RI<<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

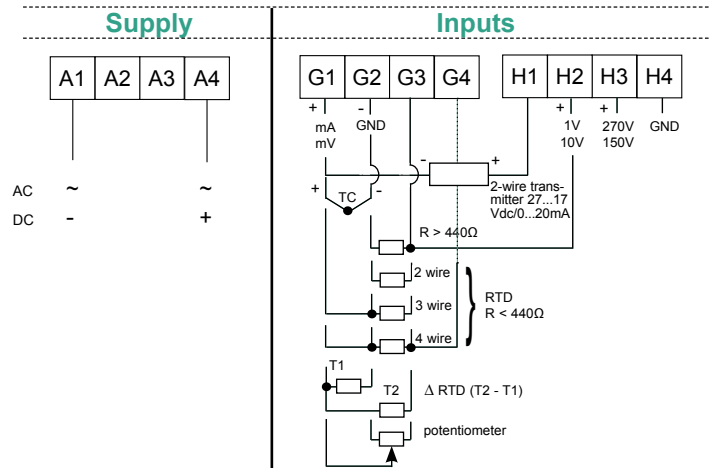
MR Measure range

Thermal drift <150ppm /°C

## Outputs

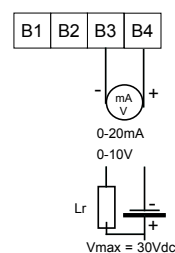
| Code | Types of OUTPUTS             | Features                                                                                                                                                                        |
|------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A    | 1 analog                     | Current<br>active/passive<br>Voltage<br>Accuracy: 0.1% in relation to the display<br>Ripple: 0.2%<br>Response time in relation to the display: 40ms                             |
| R    | 2 change-over relays         | 2 setpoints per relay configurable over the whole MR.<br>Hysteresis programmable from 0 to 100%.<br>Time delay programmable from 0 to 999.9 sec. (5A/250 VAC on resistive load) |
| N    | RS485 digital communications | Protocole MODBUS/JBUS (EIA RS485)                                                                                                                                               |

# Connectings

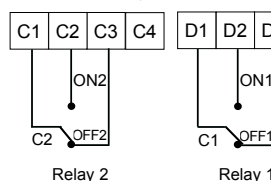


## Outputs

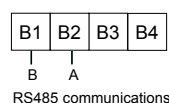
### Analog output



### Relay outputs



### RS485 output



## PARAMETRES ELECTRIQUES RELATIFS A LA SECURITE SAFETY ELECTRICAL PARAMETERS

| Type de mesure<br>Measure type                                               | Câblage<br>Wiring          | Uo<br>(V) | Io<br>(mA) | Po<br>(mW) | Co<br>(μF) | Lo<br>(mH) |
|------------------------------------------------------------------------------|----------------------------|-----------|------------|------------|------------|------------|
| Alimentation capteur<br>2-wire sensor supply                                 | G1-H1                      | 28.4      | 90.5       | 643        | 0.077      | 4          |
| mV, V, mA, Tc, RTD<br>Résistance, potentiomètre<br>Resistance, potentiometer | G1-G2-G3<br>G4-H2<br>H3-H4 | 8.0       | 2.0        | 2.0        | 8.4        | >1000      |

Um < 250 Vdc et Um < 250 Vac

## Response time of the outputs:

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

Average response time: 150 ms

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

## Galvanic isolation:

3.8kV-50Hz-1min. between input and [supply/outputs]

3.0kV-50Hz-1min. between relay outputs and [analog output/RS485 output/ supply]

3.0kV-50Hz-1min. between relay output 1 and relay output 2

1.0 kV-50Hz-1min. between analog output and RS485 output

## Marking:



II 3(1)G Ex ec nC [ia Ga] IIC T4 Gc  
SIRA 17ATEX4222 X  
IECEx CSA 17.0025 X



ATEX  
ZONE 2



Process  
Control  
Equipment  
E482453



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