

PROGRAMMABLE SIGNAL CONDITIONERS

INTRINSIC SAFETY

TPIv-SI 40/41



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), $\Delta\text{Pt}100$ 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 / μUSB 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 / μUSB cable).

Programming with the Micro-console

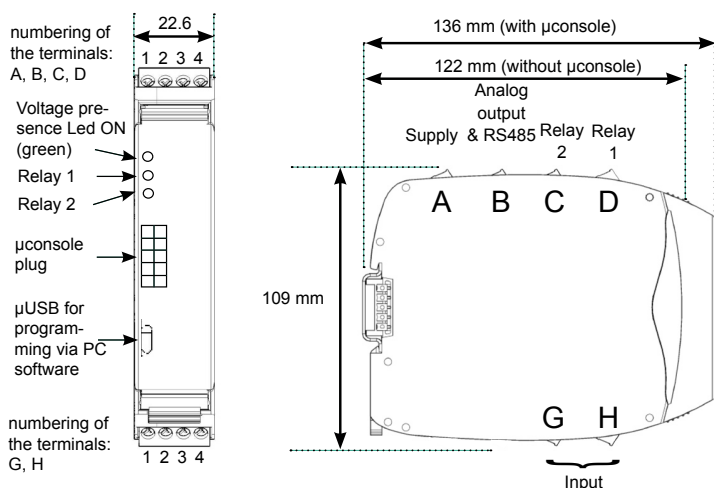
The graphical rear-lit LCD with tactile keyboard allows the visualisation of the following information:

- 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 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 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	TPIv-SI 40/41	ARN	Outputs:
			A analog I/U isolated
			R 2 change-over relays
			N RS 485 communications

Available versions:

TPIv-SI 40/41	A	AR	N
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(consult with us for different configurations)

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

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

Features

Inputs

TPIV-SI		Types of INPUTS	Measure range adjustable from:		Permanent overload	Intrinsic error	Input impedance
40	41						
•	•	mA(1)	-2 to +22mA (U) 22 to +22mA (B)		±100mA		Max. drop 0.9V
•	•	mV(1)	-10 to +110mV (U) -110 to +110mV (B)		±1V	< ±0.1% of the MR for inputs of the type (U)	
•	•	V	-0.1 to +1.1V (U) -1.1 to +1.1V (B) -1 to +11V (U) -11 to +11V (B) -15 to +165V (U) -165 to +165V (B) -30 to +300V (U) -300 to +300V (B)	±50V ±300V		< ±0.05% of the MR for inputs of the type (B)	≥ 1MΩ
•	•	Thermocouples(1) 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	-	(3) < ±0.1% of the MR or 30µV typical (60µV max.)	≥ 1 MΩ
•	•	Pt100Ω sensor (1)(2) Standard IEC 751 (DIN 43760)	°C -200/850	°F -328/1562	-		
•	•	Ni 100 sensor (1)(2)	-60/260	-76/500	-	< ±0.1% of the MR	Current 250µA
•	•	Differential measures 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, 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<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

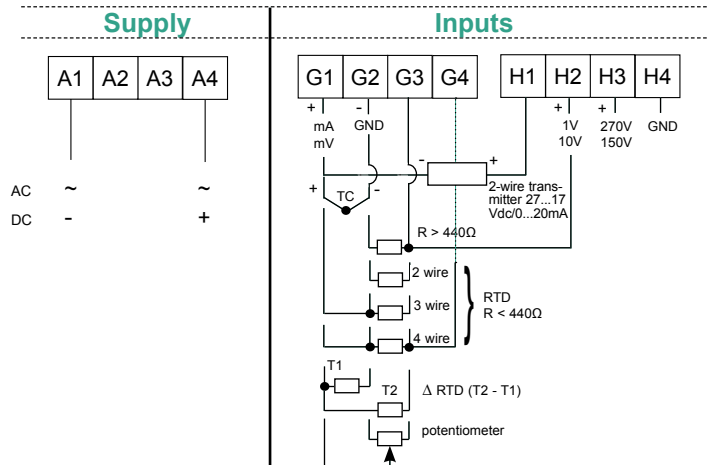
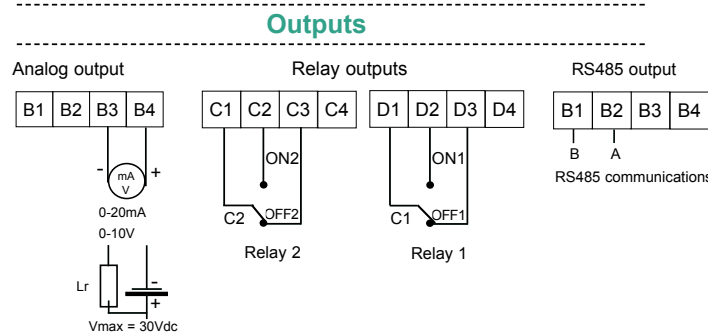
MR Measure range

Thermal drift <150ppm /°C

Outputs

Code	Types of OUTPUTS		Features
A	1 analog	Current active/passive Voltage	Current: Direct or reversed 0-20mA Load impedance ≤ Lr 600Ω Voltage: Direct or reversed 0-10V Load impedance ≥ Lr 10KΩ Accuracy: 0.1% in relation to the display Ripple: 0.2% Response time in relation to the display: 40ms
R	2 change-over relays		2 setpoints per relay configurable over the whole MR. Hysteresis programmable from 0 to 100%. 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



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

Um < 250 Vdc and 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



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