LABOR–ASTER

INDUSTRIAL AUTOMATION

CE   3 LATA   PCA POLSKIE CENTRUM AKREDYTACJI   CERTYFIKACJA SYSTEMÓW ZARZĄDZANIA   AC 083 QMS

TENSOMETRIC CONVERTER TYPE T-S2

- **Cooperation with tensometric bridge or half-bridge (or any other resistance bridge)**
- **Simple auto calibration of "zero" and "span"**
- **Wide range of calibration (see order code)**
- **Adjustable digital measurement filtering**
- **Galvanic separation of input, output and supply circuits**

PURPOSE :

Converter **T-S2** is designed to work with typical tensometric bridges (or half-bridges). It can also work with any other resistance bridges.

Converter contains source of bridge reference supply controlled by internal microprocessor, which takes into account its supply fluctuations. Measure differential amplifier converts the signal from diagonal of the bridge. Analog output of the converter works in any current or voltage standard. All circuits are mutually separated.

User can easily calibrate the tensometric bridge and choose digital filter which suppress object noises. On the front side of the housing are two LEDs and two calibration buttons.

TECHNICAL PARAMETERS :

Input signal

bridge sensitivity	-	**standard: 2mV/1V**
		or according to the order
bridge resistance	-	**standard: 140...1000Ω**
		or according to the order
<u>"zero" calibration range</u>		**standard: -5mV … +10mV**
		-16%...+33% of range gain
<u>"span" calibration range</u>		**standard: +10mV +30mV**
		30%...150% przyrostu zakresowego
Input resistance	-	≥ 3MΩ
Output signal /	-	0/4..20mA / 0…650Ω
Load resistance		0/2..10V / >2kΩ
Accuracy	-	0,1% of range
temperature coefficient	-	0,006%/°C
load resistance changes error	-	0,05%
Reference source voltage	-	**standard: Uref=10V**
		or other e.g. 2V…50V
Load current limit of		
reference source	-	max 70mA for Uref=10V
		or more for Uref<10V
Time constants of the	-	0,1s , 0,5s , 1s , 2s
digital filter		
Galvanic separation	-	2kV, 50Hz between all circuits
Supply voltage	-	typically 21...28Vdc/70mA
Housing	-	22,5 x 99 x 114,5mm
mounting	-	on TS35 rail

Working conditions:

a. ambient temperature	-	0 ÷+55°C
b. relative humidity	-	do 90%
Safety requirements	-	PN-EN 61010-1:2002
EMC requirements	-	PN-EN 61000-6-1
	-	PN-EN 61000-6-3

DESCRIPTION OF FUNCTIONING:

Converter measures input signals, converts them according to programmed parameters and calculates analog output signal. Lit green LEDs indicates that there is power supply and internal microprocessor is working.

Programming selected digital filter:

- Press simultaneously "zero" and "span" buttons.
- Converter indicates selected filter by speed of alternately blinking LEDs.
- Pressing "span" button will increase the value of digital filter time constant and will decrease frequency of blinking LEDs.
- Pressing "zero" button will store the time constant value of the filter in non-volatile memory and return to normal work. The table below contains values of time constants and way they are indicated:

Filter time constant	Blinking LEDs frequency
2 sec.	1 Hz
1 sec.	2 Hz
0,5 sec.	4 Hz
0,1 sec.	8 Hz

"zero" / "span" calibration process

- Check with voltmeter polarization of tensometric bridge voltage. With bridge loaded positive signal should be connected to terminal 9 of the converter. Wrong polarization will not allow to have the converter correctly calibrated.
- Force the minimum / maximum bridge load.
- Press "zero" / "span" button and hold it for about 6 sec until the corresponding LED begins to flash.

- Release the button. LED blinks during the calibration (for about 10 sec) – converter averages the measurements and stores "zero" / "span" values to non-volatile memory. Device is reset and returns to normal work. Wait about 30 seconds before next "zero" / "span" calibration for the device's measurements to stabilize after its reset. Calibration process can be repeated several times.
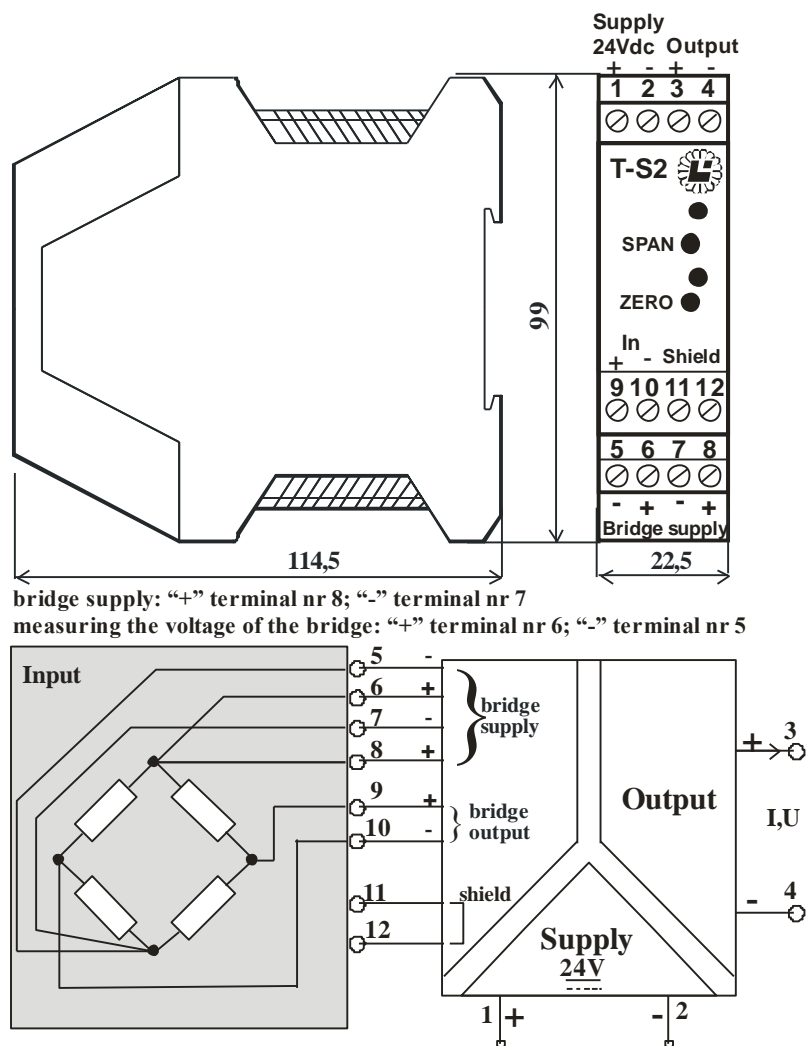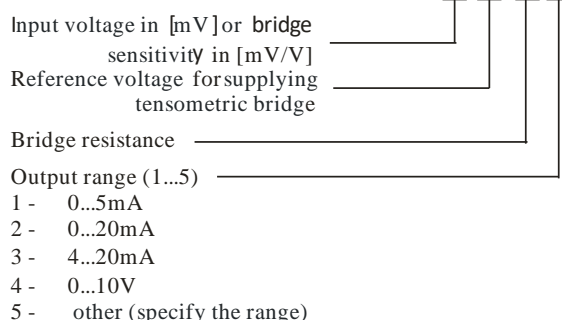
bridge supply: "+" terminal nr 8; "-" terminal nr 7
measuring the voltage of the bridge: "+" terminal nr 6; "-" terminal nr 5

Block diagram and terminals description of the T-S2 converter.

HOW TO ORDER :

HOW TO ORDER: T-S2-__-__-__-__

Input voltage in [mV] or bridge sensitivity in [mV/V]
Reference voltage for supplying tensometric bridge
Bridge resistance
Output range (1...5)
1 - 0...5mA
2 - 0...20mA
3 - 4...20mA
4 - 0...10V
5 - other (specify the range)

ORDER EXAMPLE:

1. Tensometric converter: input voltage 20mV (sensitivity 2mV/V), reference voltage 10V, bridge resistance 350Ω, output signal 4...20mA: **T-S2 - 2mV/V - 10V - 350Ω - 3**
2. Tensometric converter: input voltage 6,5mV, reference voltage 7V, bridge resistance 240Ω, output signal 0...10V: type **T-S2 - 6,5mV - 7V - 240Ω - 4**