



TLM8



RS485 ANALOG

ALIBI

MODBUS RTU



#### DESCRIPTION

- Digital/analog weight transmitter suitable for back panel mounting on Omega/DIN rail or junction box for field mounting (on request box versions).
- Weighing system with 8 independent reading channels with display of the total weight.
- The TLM8 transmitter allows to have same benefits and performance of an advanced digital weighing system even using analog load cells.
- Dimensions: 148x92x60 mm.
- Backlit graphic LCD display, transmissive STN, white on blue, 128x64 pixel resolution, 60x32 mm visible area.
- Five-key keypad for the system calibration.
- TEST key for direct access to the diagnostic functions.
- Extractable screw terminal boards.

#### **INPUT/OUTPUT**

- Current or voltage 16 bit analog output
- RS485 serial port for communication via ModBus RTU protocol, ASCII bidirectional or continuous one way transmission.
- 5 relay digital outputs controlled by the setpoint values or via protocols.
- 3 optoisolated PNP digital inputs: status reading via serial communication protocols.
- 8 load cell dedicated inputs.

#### FIELDBUSES



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	DESCRIPTION	CODE
	<b>RS485</b> port Baud rate: 2400, 4800, 9600, 19200, 38400, 115200 (bit/s). 16 bit <b>analog output</b> Current: 0÷20 mA; 4÷20 mA (up to 400 Ω). Voltage: 0÷10 V; 0÷5 V (min 2 kΩ)	TLM8
	<b>CANopen</b> port Baud rate: 10, 20, 25, 50, 100, 125, 250, 500, 800, 1000 (kbit/s). The instrument works as <i>slave</i> in a synchronous CANopen network. Equipped with RS485 serial port. and analog output.	TLM8CANOPEN
	<b>DeviceNet</b> port Baud rate: 125, 250, 500 (kbit/s). The instrument works as <i>slave</i> in a DeviceNet network. Equipped with RS485 serial port. and analog output.	TLM8DEVICENET
	<b>CC-LINK</b> port Baud rate: 156, 625, 2500, 5000, 10000 (kbit/s). The instrument works as <i>Remote Device Station</i> in a CC-LINK network and occupies 3 stations. Equipped with RS485 serial port. and analog output.	TLM8CCLINK
TLMO recriments	<b>PROFIBUS DP</b> port Baud rate: up to 12 (Mbit/s). The instrument works as <i>slave</i> in a Profibus-DP network. Equipped with RS485 serial port. and analog output.	TLM8PROFIBUS
ļ mi	<b>Modbus/TCP</b> port Type: RJ45 10Base-T or 100Base-TX (auto-sensing) The instrument works as <i>slave</i> in a Modbus/TCP network. Equipped with RS485 serial port. and analog output.	TLM8MODBUSTCP
ļ inte	<b>Ethernet TCP/IP</b> port Type: RJ45 10Base-T or 100Base-TX (auto-sensing). The instrument works in an Ethernet TCP/IP network and it is accessible via web browser. Equipped with RS485 serial port. and analog output.	TLM8ETHETCP
	<b>Ethernet/IP</b> port Type: RJ45 10Base-T or 100Base-TX (auto-sensing) The instrument works as <i>adapter</i> in an Ethernet/IP network. Equipped with RS485 serial port. and analog output.	TLM8ETHEIP
	<b>2x PROFINET IO</b> ports Type: RJ45 100Base-TX The instrument works as <i>device</i> in a Profinet IO network. Equipped with RS485 serial port. and analog output.	TLM8PROFINETIO
	<b>2x EtherCAT</b> ports Type: RJ45 10Base-T or 100Base-TX (auto-sensing) The instrument works as <i>slave</i> in an EtherCAT network. Equipped with RS485 serial port. and analog output.	TLM8ETHERCAT
<u>len</u>	<b>2x POWERLINK</b> ports Type: RJ45 10Base-T or 100Base-TX (auto-sensing) The instrument works as <i>slave</i> in a Powerlink network. Equipped with RS485 serial port. and analog output.	TLM8POWERLINK
	<b>2x SERCOS III</b> ports Type: RJ45 10Base-T or 100Base-TX (auto-sensing) The instrument works as <i>slave</i> in a Sercos III network. Equipped with RS485 serial port. and analog output.	TLM8SERCOS

#### CERTIFICATIONS

OIML	OIML R76:2006, III class, 3x10000 divisions 0.2 $\mu$ V/VSI	
	CERTIFICATIONS ON REQUEST	
М	Initial verification (Legal Metrology)	
c <b>FL'</b> us	UL Recognized component - Complies with the United States and Canada regulations	
EAC	Complies with the Eurasian Custom Union regulations (Russia, Belarus, Kazakhstan)	

#### **TECHNICAL FEATURES**

Power supply and consumption		12÷24 VDC ±10%; 5 W		
Number of load cells • Load cells supply		up to 16 (350 Ω) - 4/6 wires • 5 VDC/240 mA		
Linearity • Linearity of the analog output		<0.01% full scale • <0.01% full scale		
Thermal drift • Thermal drift of the analog output		<0.0005% full scale/°C • <0.003% full scale/°C		
A/D Converter		8 channels - 24 bit (16000000 points) - 4.8 kHz		
Divisions	(with measure range $\pm 10$ mV and sensitivity 2 mV/V)	±999999 • 0,01 µV/d		
Measure	range	±39 mV		
Load cell's sensitivity		±7 mV/V		
Conversion per second		600/s		
Display range		±999999		
Decimals • Display increments		0÷4 • x1 x2 x5 x10 x20 x50 x100		
Digital filter • Conversion rate		0.006÷7 s • 5÷600 Hz		
Relay logic outputs		n. 5 - 115 VAC/150 mA		
Optoisolated logic inputs		n. 3 - 5÷24 VDC PNP		
Serial ports		RS485		
Baud rate		2400, 4800, 9600, 19200, 38400, 115200 (bit/s)		
Analog output		16 bit = 65535 divisions. 0÷20 mA; 4÷20 mA (up to 400 $\Omega)$ 0÷10 V; 0÷5 V (min 2 k $\Omega)$		
Humidity (condensate free)		85%		
Storage temperature		-30°C +80°C		
Working temperature		-20°C +60°C		
	Delever distinct as decide			
	Helay digital outputs	n. 5 - 30 VAC, 60 VDC/150 mA		
c <b>FL</b> us	Working temperature	-20°C +50°C		
	Power supply device marked "I PS" (limited neuron equires) or "Clease 9"			

#### Power supply device marked "LPS" (limited power source) or "Class 2"

#### METROLOGICAL SPECIFICATIONS OF TYPE-APPROVED INSTRUMENTS

Applied standards	2014/31/UE - EN45501:2015 - OIML R76:2006
Accuracy class	III or IIII
Maximum number of scale verification divisions	10000 (class III); 1000 (class IIII)
Minimum input signal for scale verification division	0.2 µV/VSI
Working temperature	-10°C +40°C

#### MAIN FUNCTIONS

- 8 independent channels for load cells: monitoring and direct management of the individual load cells connected.
- Digital equalization: the instrument allows to equalize the connected load cells response, in a fast and reliable over time.
- Load distribution synoptic analysis on 8 channels with archive backups: storing, retrieving, printing.
- Automatic diagnostics: the instrument is designed to store the percentage value of load distribution for each channel. The diagnostic function makes comparisons between the recorded values and if a significant variation between the values is detected during normal operation, the instrument displays an alarm alternating with the weight value.

Depending on the weighing system type it's possible to perform:

- Load automatic diagnostics: load distribution control in constant barycentre systems (e.g. liquids silo).
- Automatic diagnostics on zero: check on load cells drift state (eg. silo, weighbridge, platformes).
- Event log: data backups archive in chronological order of the last 50 events related to calibrations, zero settings, errors and equalizations. The information can be stored, retrieved and printed.
- All TLM8 functions can be managed by a weight indicator W series connected via RS485 serial port (excluding indicators with graphic display).
- Transmission of the divisions for the 8 independent reading channels via RS485 (Modbus RTU) or fieldbus. Only the points of each load cell connected are transmitted, without any filter applied; the calculation of the weight value, the zero setting and calibration are performed by the customer.
- Connections to:
  - PLC via analog output.
  - PC/PLC via fieldbus.
  - PC/PLC via RS485 (up to 99 instruments with line repeaters, up to 32 without line repeaters).
  - W series weight indicator via RS485.
- remote display and printer via RS485.
- max. 16 load cells in parallel.
- Digital filter to reduce the effects of weight oscillation.
- Theoretical calibration (via keyboard) and real (with sample weights and the possibility of weight linearization up to 5 points).
- Tare weight zero setting.
- Automatic zero setting at power-on.
- Gross weight zero tracking.
- Semi-automatic tare (net/gross weight) and predetermined tare.
- Semi-automatic zero.
- Direct connection between RS485 and RS232 without converter.
- Hysteresis and setpoint value setting.
- TCP/IP WEB APP Integrated software in combination with Ethernet TCP/IP version, for supervision, management and remote control of the weight transmitter.

#### CE-M version: 2014/31/EU-EN45501:2015-OIML R76:2006

- Weight subdivisions displaying (1/10 e).
- Three operation mode: single interval or multiple ranges (max 3) or multi-interval (max 3).
- Net weight zero tracking.
- Calibration correction via keyboard is protected through seals for the access to a setting jumper or installer password or hardware device.
- Alibi memory (option on request).





The TLM8 displays graphically the load cells response signal in mV for each active channel.





#### **EQUALIZATION WITH JUNCTION BOXES**

The equalization procedure with junction boxes and trimmer requires more manual steps and over time it can undergo drift phenomena over time, requiring subsequent repetitions of the same procedure.



#### **DIGITAL EQUALIZATION**

The TLM8 does not require the use of junction box, thanks to the support of 8 independent channels; furthermore the digital equalizer function simplifies the procedure to a single step and it is free of drift over time.



#### **OPTIONS ON REQUEST**

DESCRIPTION	CODE
Alibi memory	OPZWALIBI
IP67 ABS waterproof box 190x190x130 mm (4 fixing holes Ø4 mm; centre distance164x164 mm) - transparent cover - transparent cover: 8+3 PG9 cable glands-plugs	CASTLG CASTLG8PG9
<ul> <li>transparent cover; 8+3 PVC fittings for sheath</li> <li>external keyboard</li> <li>external keyboard; 8+3 PG9 cable glands-plugs</li> <li>external keyboard; 8+3 PVC fittings for sheath</li> </ul>	CASTLG8GUA CASTLGTAST CASTLGTAST8PG9 CASTLGTAST8GUA

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