# TLM8

## WEIGHT TRANSMITTER - 8 INDEPENDENT CHANNELS


### DESCRIPTION

- Weight transmitter with 8 independent reading channels with display of the total weight.
- The TLM8 series allows to have same benefits and performance of an advanced digital weighing system even using analog load cells.
- TEST key for direct access to the diagnostic functions.
- Back panel mounting on Omega/DIN rail or junction box (on request).
- Dimensions: 148x92x60 mm.
- Backlit LCD graphic display, resolution: 128x64 pixel, visible area: 60x32 mm.
- 5-key keyboard.
- Extractable screw terminal blocks.
- The instrument can be configured and managed using the free "Instrument Manager" PC software, which you can download from www.laumas.com.

### INPUTS/OUTPUTS AND COMMUNICATION

- RS485 serial port for communication via protocols ModBus RTU, ASCII Laumas or continuous one way transmission.
- 5 relay 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.

### CERTIFICATIONS

| | |
|---|---|
| OIML | OIML R76:2006, class III, 3x10000 divisions, 0.2 $\mu$V/VSI |
| c UL us | UL Recognized component - Complies with United States and Canada regulations |
| EAC | Complies with the Eurasian Customs Union regulations |
| UKCA | Equivalent of the CE marking for the United Kingdom |
| INMETRO | Complies with the Brazilian regulations for legal for trade use |
| | CERTIFICATIONS ON REQUEST |
| M | Conformity assessment (initial verification) in combination with Laumas weighing module |

### FIELDBUSES

MODBUS RTU · MODBUS/TCP · ETHERNET POWERLINK certified product · DeviceNet · EtherNet/IP · PI CERTIFIED PROFIBUS • PROFINET

CC-Link CLPA PARTNER ASSOCIATION · PROFIBUS · CC-Link · CANopen · SERCOS interface · ETHERNET TCP/IP · EtherCAT

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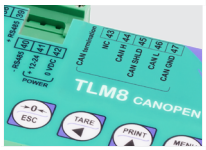
| | DESCRIPTION |
|---|---|
|  | **RS485** serial port.<br>Baud rate: 2400, 4800, 9600, 19200, 38400, 115200 (bit/s).<br>16 bit **analog output.**<br>Current: 0÷20 mA; 4÷20 mA (up to 400 Ω).<br>Voltage: 0÷10 V; 0÷5 V (min 2 kΩ) |
|  | **CANopen** port.<br>Baud rate: 10, 20, 25, 50, 100, 125, 250, 500,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

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### 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 • Analog output linearity (only for TLM8) | <0.01% full scale • <0.01% full scale |
| Thermal drift • Analog output thermal drift (only for TLM8) | <0.0005% full scale/°C • <0.003% full scale/°C |
| A/D Converter | 8 channels - 24 bit (16000000 points) - 4.8 kHz |
| Divisions (with measurement range ±10 mV and sensitivity 2 mV/V) | ±999999 • 0.01 μV/d |
| Measurement range | ±39 mV |
| Usable load cells sensitivity | ±7 mV/V |
| Conversions per second | 600 |
| Display range | ±999999 |
| Decimals • Display increments | 0÷4 • x1 x2 x5 x10 x20 x50 x100 |
| Digital filter • Readings per second | 21 levels • 5÷600 |
| Relay outputs | 5 - max 115 VAC/150 mA |
| Optoisolated digital inputs | 3 - 5÷24 VDC PNP |
| Serial ports | RS485 |
| Baud rate | 1200, 2400, 4800, 9600, 19200, 38400, 115200 (bit/s) |
| Analog output (only for TLM8) | 16 bit = 65535 divisions. 0÷20 mA; 4÷20 mA (up to 400 Ω)<br>0÷10 V; 0÷5 V (min 2 kΩ) |
| Humidity (condensate free) | 85% |
| Storage temperature | -30 °C +80 °C |
| Working temperature | -20 °C +60 °C |

| | | |
|---|---|---|
| c UL us | Relay outputs | 5 - max 30 VAC, 60 VDC/150 mA |
| | Working temperature | -20 °C +60 °C |
| | Equipment to be powered by 12-24 VDC LPS or Class 2 power source | |

| METROLOGICAL SPECIFICATIONS OF TYPE-APPROVED INSTRUMENTS | OIML | INMETRO |
|---|---|---|
| Applied standards by region | EU: 2014/31/UE - EN45501:2015 - OIML R76:2006<br>United Kingdom: Non-automatic Weighing Instrument Regulations 2016 | Brazil: Portaria Inmetro N°157/2022 |
| Operation modes | single interval, multi-interval, multiple range | single interval, multi-interval, multiple range |
| Accuracy class | III or IIII | III |
| Maximum number of scale verification divisions | 10000 (class III); 1000 (class IIII) | 10000 (class III) |
| Minimum input signal for scale verification division | 0.2 μV/VSI | 0.2 μV/VSI |
| Working temperature | -10°C +40°C | -10°C +40°C |

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### MAIN FUNCTIONS

- 8 independent channels for load cells: monitoring and direct management of each connected load cell.
- Immediate reporting of anomalies (also on the connected weight indicator display).
- TLM8 functions can be managed by a W series weight indicator connected via RS485 serial port (excluding instruments with graphic display) or remotely via the communication interfaces.
- Digital equalization of active channels for a single load cell or an axis.
- Load distribution analysis on the 8 channels with backups archive: storing, consultation, printing.
- Single channel overload function.
- Detailed diagnostics of each load cell (max 8): depending on the type of weighing system you can perform:
  - load automatic diagnostics;
  - automatic diagnostics on zero.
- Tilt compensation of the weighing system up to ±10 degrees via inclinometer (not included). The weight correction is also valid for systems approved for legal for trade use.
- Archive of the last 50 significant events (zeroing, calibration, equalization, alarms): storing, consultation, printing.
- Transmission via RS485 (Modbus RTU) or fieldbus of the divisions for the 8 reading channels. Only the points of each load cell connected are transmitted, with no filter applied; the calculation of the weight value, the zero setting and calibration are made by the customer.
- Transmission of load distribution percentages via RS485 (Modbus RTU) or fieldbus.
- Connections to:
  - PLC via analog output and fieldbus;
  - PC/PLC via RS485 (up to 99 instruments with line repeaters, up to 32 without line repeaters);
  - remote display, inclinometer and printer via RS485;
  - up to 16 load cells in parallel;
  - W series weight indicator via RS485.
  - IoT gateway for cloud connection via RS485.
- TCP/IP WEB APP: integrated software in combination with the Ethernet TCP/IP version for remote supervision, management and control of the instrument.
- Digital filter to reduce the effects of weight oscillation.
- Possibility to define the condition of stable weight.
- Theoretical calibration (via keyboard) and real calibration (with sample weights and the possibility of weight linearization up to 8 points).
- Tare weight zero setting.
- Automatic zero setting at power-on.
- Gross weight zero tracking.
- Semi-automatic tare (net/gross weight) and preset tare.
- Semi-automatic zero.
- Direct connection between RS485 and RS232 without converter.
- Hysteresis and setpoint value setting.

**Approved versions for legal for trade use**

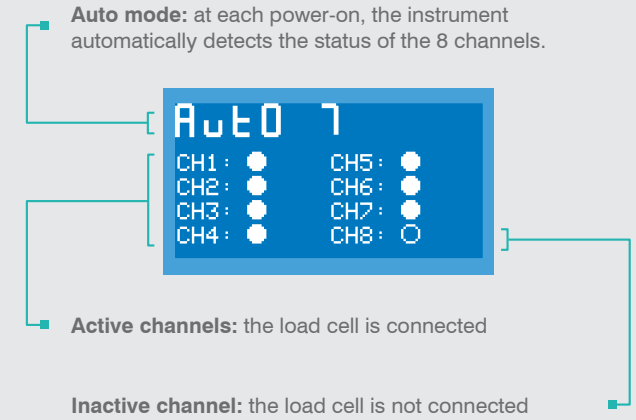
- System parameters management protected by qualified access via software (password), hardware or fieldbus.
- Weight subdivisions displaying (1/10 e).
- Three operation mode: single interval or multiple ranges or multi-interval.
- Net weight zero tracking.
- Calibration.
- Alibi memory (option on request).

### SINGLE PRODUCT LOADING PROGRAM

- Settable dosage formula.
- Automatic fall calculation.
- Tolerance error control.
- Precision batching through slow function.
- Precision batching through tapping function.
- Consumption storage.
- Printing of batching data.
- Alarm contact management.
- Batching start via external contact or fieldbus.
- Autotare at batching start.

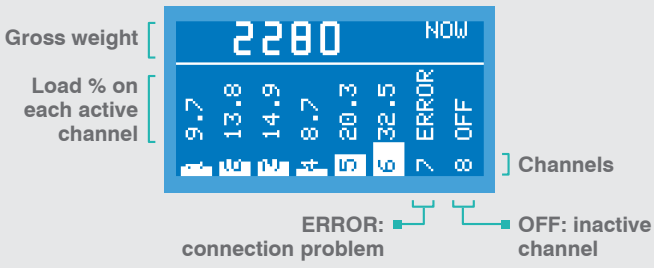
### 8 INDEPENDENT CHANNELS

The screen shows the standard automatic operating mode: the activation/deactivation status of each channel indicates the presence/ absence of connection with the load cells.



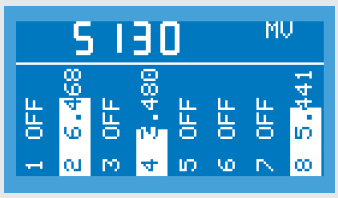

### LOAD DISTRIBUTION

The TLM8 displays, in graphical form, the current load distribution on each active channel.




### LOAD CELLS INPUT TEST

The TLM8 displays, in graphical form, the load cells response signal in mV for each active channel.

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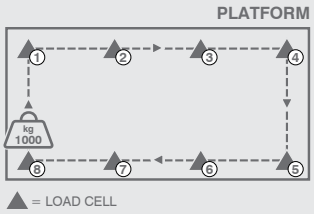
### DIGITAL EQUALIZATION

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

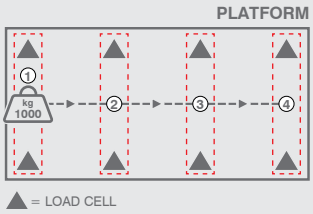
**CORNER mode**

The sample weight is positioned in correspondence with each load cell

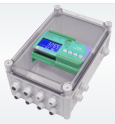



**AXIS mode**

The sample weight is positioned in correspondence with the axes formed by the pairs of load cells




## OPTIONS ON REQUEST

| | DESCRIPTION |
|---|---|
|  | Alibi memory. |
| | AISI 304 stainless steel box; dimensions: 286x206x85 mm |
|  | CASTLM8I<br>- IP68 protection rating.<br>- 10 M12x1.5 cable glands.<br>- Adjustable stainless steel bracket included.<br>- Dimensions with bracket: 290x206x187 mm.<br>- Kit for front panel mounting (option on request).<br><br>Available versions:<br>Standard<br>ATEX (zone 2-22) |
|  | CASTLM8I 3A<br>- IP69K front panel protection rating<br>- Hygienic version RPSCQC authorized by 3-A SSI<br>- 6 M12x1.5 cable glands<br>- Supports for front panel mounting included |
| | IP67 polycarbonate box; dimensions: 188x188x130 mm<br>(four fixing holes Ø4 mm; centre distance: 164x164 mm) |
|  | CASTLG<br>- transparent cover<br>- transparent cover; 8+3 M16x1.5 cable glands - plugs<br>- transparent cover; 8+3 PVC end-fittings for sheath |
|  | CASTLGTAST<br>- external keyboard<br>- external keyboard; 8+3 M16x1.5 cable glands - plugs<br>- external keyboard; 8+3 PVC end-fittings for sheath |
| | IP67 polycarbonate box; dimensions: 188x278x130 mm<br>(four fixing holes Ø4 mm; centre distance: 164x254 mm) |
|  | CASTLGBUS<br>- transparent cover; 8+4 M16x1.5 cable glands - plugs |

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