

TLB4

WEIGHT TRANSMITTER - 4 INDEPENDENT CHANNELS

LAUMAS®
ELETTRONICA



MODBUS RTU



FRONT PANEL MOUNTING (fixing kit included)



DESCRIPTION

- Weight transmitter with 4 independent reading channels with display of the total weight
- The TLB4 series allows to have same benefits and performance of an advanced digital weighing system even using analog load cells.
- Back panel mounting on Omega/DIN rail or front panel (except PROFIBUS DP version) with fixing kit included (panel drilling template 23x96 mm; panel thickness 2.5 mm).
- Dimensions: 26x115x120 mm.
- Six-digit red LED semialphanumeric display (8 mm height), 7 segment.
- Six indicator LED.
- Four buttons for the system calibration.
- Extractable screw terminal boards.

INPUT/OUTPUT

- RS485 serial port for communication via Modbus RTU protocol, ASCII Laumas bidirectional or continuous one way transmission.
- 3 relay logic outputs controlled by the setpoint values or via protocols.
- 2 optoisolated PNP logic inputs: status reading via serial communication protocols.
- 4 load cell dedicated inputs.

FIELD BUSES

MODBUS RTU

MODBUS/TCP

ETHERNET
POWERLINK
certified product

DeviceNet

EtherNet/IP

PIV
CERTIFIED
PROFIBUS - PROFINET

PROFIBUS

CC-Link

CANopen

SERCOS
interface

ETHERNET
TCP/IP

EtherCAT

TLB4

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| | DESCRIPTION | CODE |
|---|--|----------------|
|  | RS485 serial port Baud rate: 2400, 4800, 9600, 19200, 38400, 115200 (bit/s) | TLB4RS485 |
|  | 16 bit optoisolated analog output = 65535 divisions Current: 0÷20 mA; 4÷20 mA (up to 300 Ω). Voltage: 0÷10 V; 0÷5 V; ±10 V; ±5 V (min 10 kΩ). It is equipped with RS485 serial port. | TLB4 |
|  | CANopen port Baud rate: 10, 20, 25, 50, 100, 125, 250, 500, 800, 1000 (kbit/s). The instrument operates as <i>slave</i> in a synchronous CANopen network. It is equipped with RS485 serial port. | TLB4CANOPEN |
|  | DeviceNet port Baud rate: 125, 250, 500 (kbit/s). The instrument operates as <i>slave</i> in a DeviceNet network. It is equipped with RS485 serial port. | TLB4DEVICENET |
|  | CC-LINK 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. It is equipped with RS485 serial port. | TLB4CCLINK |
|  | PROFIBUS DP port Baud rate: up to 12 (Mbit/s). The instrument operates as <i>slave</i> in a Profibus-DP network. It is equipped with RS485 serial port. | TLB4PROFIBUS |
|  | Modbus/TCP port Type: RJ45 10Base-T or 100Base-TX (auto-sensing) The instrument operates as <i>slave</i> in a Modbus/TCP network. It equipped with RS485 serial port. | TLB4MODBUSTCP |
|  | Ethernet TCP/IP port Type: RJ45 10Base-T or 100Base-TX (auto-sensing). The instrument operates as <i>slave</i> in an Ethernet TCP/IP network and it is accessible via web browser. It is equipped with RS485 serial port. | TLB4ETHETCP |
|  | 2x Ethernet/IP ports Type: RJ45 10Base-T or 100Base-TX (auto-sensing) The instrument operates as <i>adapter</i> in an Ethernet/IP network. It is equipped with RS485 serial port. | TLB4ETHEIP |
|  | 2x PROFINET IO ports Type: RJ45 10Base-T or 100Base-TX (auto-sensing) The instrument operates as device in a Profinet IO network. It is equipped with RS485 serial port. | TLB4PROFINETIO |
|  | 2x EtherCAT ports Type: RJ45 10Base-T or 100Base-TX (auto-sensing) The instrument operates as <i>slave</i> in an EtherCAT network. It is equipped with RS485 serial port. | TLB4ETHERCAT |
|  | 2x POWERLINK ports Type: RJ45 10Base-T or 100Base-TX (auto-sensing) The instrument operates as <i>slave</i> in a Powerlink network. It is equipped with RS485 serial port. | TLB4POWERLINK |
|  | 2x SERCOS III ports Type: RJ45 10Base-T or 100Base-TX (auto-sensing) The instrument operates as <i>slave</i> in a Sercos III network. It is equipped with RS485 serial port. | TLB4SERCOS |

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CERTIFICATIONS

 OIML R76:2006, III class, 3x10000 divisions 0.25 μ V/VSI


CERTIFICATIONS ON REQUEST

| | |
|---|--|
| M | Initial verification (Legal Metrology) |
| cULus | UL Recognized component - Complies with the United States and Canada standards |
| ERC | Complies with the Eurasian Custom Union standards (Russia, Belarus, Kazakhstan) |
|  | NMI Trade Approved - Complies with the Australian standards for legal use with third parties |

OPTIONS ON REQUEST

| | DESCRIPTION | CODE |
|---|--------------|-----------|
|  | Alibi memory | OPZWALIBI |

TECHNICAL FEATURES

| | | |
|---|---|-----------------------------------|
| Power supply and consumption | 12÷24 VDC \pm 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 (only for TLB4) | <0.01% full scale • <0.01% full scale | |
| Thermal drift • Thermal drift of the analog output (only for TLB4) | <0.0005% full scale/ $^{\circ}$ C • <0.003% full scale/ $^{\circ}$ C | |
| A/D Converter | 4 channels - 24 bit (16000000 points) - 4.8 kHz | |
| Divisions (with measure range \pm 10 mV and sensitivity 2 mV/V) | \pm 999999 • 0,01 μ V/d | |
| Measure range | \pm 39 mV | |
| Load cell's sensitivity | \pm 7 mV/V | |
| Conversion per second | 600/s | |
| Display range | \pm 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. 3 - 115 VAC/150 mA | |
| Optoisolated logic inputs | n. 2 - 5÷24 VDC PNP | |
| Serial ports | RS485 | |
| Baud rate | 2400, 4800, 9600, 19200, 38400, 115200 (bit/s) | |
| Analog output (only for TLB4) | 16 bit = 65535 divisions. 0÷20 mA; 4÷20 mA (up to 300 Ω) 0÷10 V; 0÷5 V; \pm 10 V; \pm 5 V (min 10 k Ω) | |
| Humidity (condensate free) | 85% | |
| Storage temperature | -30 $^{\circ}$ C +80 $^{\circ}$ C | |
| Working temperature | -20 $^{\circ}$ C +60 $^{\circ}$ C | |
|  | Relay digital outputs | n. 3 - 30 VAC, 60 VDC/150 mA |
| | Working temperature | -20 $^{\circ}$ C +50 $^{\circ}$ C |
| | 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 | 0.25 μ V/VSI |
| Working temperature | -10 $^{\circ}$ C +40 $^{\circ}$ C |

MAIN FUNCTIONS

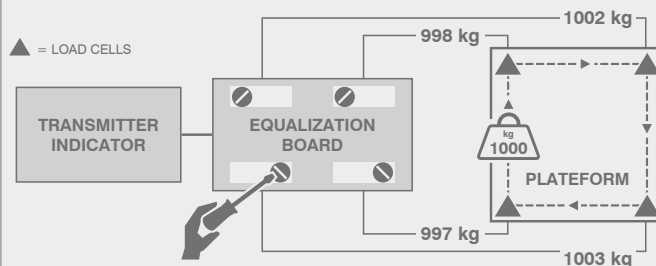
- 4 independent channels for load cells: monitoring and direct management of the individual load cells connected.
 - Digital equalization: the instrument allows to equalize the connected load cells response, in a fast and reliable way over time.
 - Load distribution signaling on 4 channels with archive 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 (e.g. silo, weighbridge, platforms).
- 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 TLB4 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 4 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 or fieldbuses
 - 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).
- Two operation modes: single interval 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).

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 TLB4 does not require the use of junction box, thanks to the support of 4 independent channels; furthermore the digital equalizer function simplifies the procedure to a single step and it is free of drift over time.

