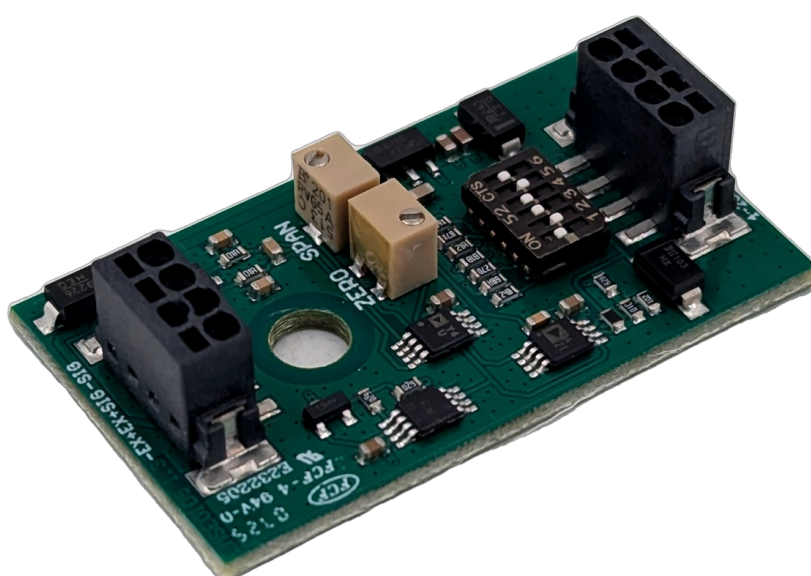


MANUAL

EOLA

ANALOG WEIGHT TRANSMITTER, OEM BOARD

Installation and user manual



Document	Version	Date	Applies to
Installation and user manual	V00x	10/2026	EOLA

This manual describes installation, connection, commissioning and calibration of the EOLA analog weight transmitter – the rectangular board and the circular board with current or voltage output.



Contents

1 About this manual	2
1.1 Symbols	2
2 Safety, warranty and disposal	2
2.1 Recommendations for proper use	2
2.2 Warranty	3
2.3 Guidelines for proper disposal	3
3 Installation	3
3.1 Installation of the instrument	3
3.2 Installation of the load cells	3
4 Load cell testing	4
5 Product description	5
5.1 Versions	5
5.2 IP67 box (option on request)	5
6 Technical specifications	5
6.1 Conditions of the UL recognition	6
7 Electrical connections	6
7.1 Rectangular board	6
7.2 Circular board	6
7.3 Connection legend	6
8 Instrument commissioning	7
8.1 Rectangular board: DIP switches	7
8.2 Circular board: resistors	7
9 Zero and full scale calibration	7
9.1 One-way applications	7
9.2 Two-way applications	8
10 Use in safety applications	8
11 Directives and standards	8

1 About this manual

The EOLA is an analog weight transmitter for installation: it converts the signal of load cells into an analog output 4 ... 20 mA or 0 ... 10 V. It is available as a rectangular board (standard) and as a circular board (option on request) with current or voltage output. Where the versions differ, the manual names them explicitly.

1.1 Symbols

Notice	Meaning
Caution	Risk of electric shock, or: this operation must be performed by skilled personnel.
Important	Pay particular attention to the following instructions.
Note	Further information.

2 Safety, warranty and disposal

2.1 Recommendations for proper use

- Keep away from heat sources and direct sunlight.
- Protect the instrument from rain (except special IP versions).
- Do not wash with water jets (except special IP versions).
- Do not dip in water.
- Do not spill liquid on the instrument.
- Do not use solvents to clean the instrument.
- Do not install in areas subject to explosion hazard (except special Atex versions).

2.2 Warranty

24 months from the date of the delivery note. Warranty covers only failures of defective components (due to construction defects or defects in materials) and includes replacement or repair of the components and related labor costs.

Warranty is automatically forfeited in the event of:

- tampering, deletion, removal of the identification label and/or serial number of the product;
- misuse, transformation, alteration, repair of products not carried out by the manufacturer.

2.3 Guidelines for proper disposal

- This is electrical/electronic equipment and cannot be disposed of as municipal solid waste, but must be delivered to a recycling center.
- Improper use or disposal can pollute the environment or damage human health.
- Non-compliance with these guidelines will be penalized in accordance with the regulations in force in the country of destination.
- It is recommended to dispose of the packing and packaging as required by local regulations.

3 Installation

3.1 Installation of the instrument

The terminals indicated on the instrument's wiring diagram to be connected to earth must have the same potential as the weighed structure (same earthing pit or earthing system). If you are unable to ensure this condition, connect the terminals of the instrument (including the terminal GND, –supply) to the weighed structure with an earthing wire.

- Lead the cell cable individually to its panel input and do not share a conduit with other cables; connect it directly to the instrument terminals without breaking its route with support terminal strips.
- Use RC filters on the instrument-driven solenoid valve and remote control switch coils.
- Avoid inverters in the instrument panel; if inevitable, use special filters for the inverters and separate them with sheet metal partitions.
- The panel installer must provide electric protections for the instruments (fuses, door lock switch etc.).
- It is advisable to leave the equipment always switched on to prevent the formation of condensation.

Maximum cable lengths

Connection	Length
Analog current output	up to 500 m with 0.5 mm ² cable
Analog voltage output	up to 300 m with 0.5 mm ² cable

3.2 Installation of the load cells

Sizing of load cells capacity

For safety reasons, in case of static weighing, it is advisable to use the load cells at a maximum of 70 ... 80 % of their nominal capacity (assuming that the load is uniformly distributed over the entire weighed structure); depending on the handling mode of the load to weigh, consider further reducing the % of load with respect to the nominal capacity (e.g. forklift handling, bridge cranes). In case of weighing with dynamic loads, the installer has to estimate the thrust speed, the acceleration, the frequency, etc.

Installing load cells

The load cells must be placed on rigid, stable in-line structures; it is important to use the mounting modules for load cells to compensate for misalignment of the support surfaces.

Connecting several cells in parallel

Connect several cells in parallel by using, if necessary, a watertight junction box with terminal box. The cell connection extension cables must be shielded, led individually into their piping or conduit and laid as far as possible from the power cables (in case of 4-wire connections, use cables with 4 × 1 mm² minimum cross-section).

Protection of the cell cable

Use water-proof sheaths and joints in order to protect the cables of the cells.

Mechanical restraints (pipes etc.)

When pipes are present, use hoses and flexible couplings with open mouthpieces with rubber protection; in case of hard pipes, place the pipe support or anchor bracket as far as possible from the weighed structure (at a distance at least 40 times the diameter of the pipe).

Welding

Avoid welding with the load cells already installed. If this cannot be avoided, place the welder ground clamp close to the required welding point to prevent sending current through the load cell body.

Windy conditions, knocks, vibrations

The use of weigh modules is strongly recommended for all load cells to compensate for misalignment of the support surfaces. The system designer must ensure that the plant is protected against lateral shifting and tipping relating to shocks and vibration, windy conditions, seismic conditions in the installation setting and stability of the support structure.

Earthing the weighed structure

By means of a copper wire with suitable cross-section, connect the cell upper support plate with the lower support plate, then connect all the lower plates to a single earthing system. Electrostatic charges accumulated because of the product rubbing against the pipes and the weighed container walls are discharged to the ground without going through or damaging the load cells. Failure to implement a proper earthing system might not affect the operation of the weighing system; this, however, does not rule out the possibility that the cells and connected instrument may become damaged in the future. It is forbidden to ensure earthing system continuity by using metal parts contained in the weighed structure.

Important Failure to follow the installation recommendations will be considered a misuse of the equipment.

4 Load cell testing

Load cell resistance measurement (use a digital multimeter)

- Turn off the instrument.
- Disconnect the load cells from the instrument and check that there is no moisture in the cell junction box caused by condensation or water infiltration. If so, drain the system or replace it if necessary.
- The value between the positive signal wire and the negative signal wire must be equal or similar to the one indicated in the load cell data sheet (output resistance).
- The value between the positive excitation wire and the negative excitation wire must be equal or similar to the one indicated in the load cell data sheet (input resistance).
- The insulation value between the shield and any other cell wire and between any other cell wire and the body of the load cell must be higher than 20 M Ω .

Load cell voltage measurement (use a digital multimeter)

- Turn on the instrument.
- Take out the load cell to be tested from underneath the container, or alternatively, lift the container support.
- Make sure that the excitation of the load cell connected to the instrument is 5 V DC $\pm$ 3 %.
- Measure the response signal between the positive and the negative signal wires by directly connecting them to the tester, and make sure that it is comprised between 0 and $\pm$ 0.5 mV.
- Apply load to the cell and make sure that there is a signal increment.

Important If one of the above conditions is not met, please contact the technical assistance service.

5 Product description

5.1 Versions

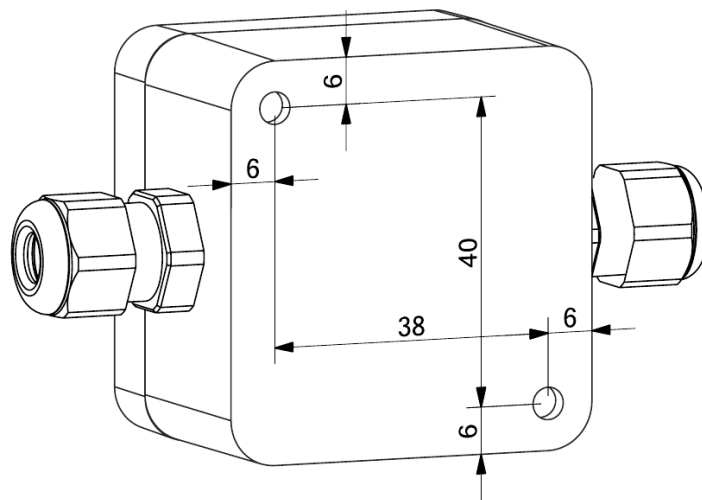
Analog weight transmitter.

Item	Rectangular board	Circular board, current	Circular board, voltage
Supply	standard (manufacturer type TLC)	option on request	option on request
Output	selectable: 4 ... 20 mA or 0 ... 10 V	4 ... 20 mA	0 ... 10 V
Connection	spring terminal blocks	solder connections	solder connections
Rated output and operating mode	selection with DIP switches	by changing resistors	by changing resistors
Dimensions	45 × 26 × 11 mm	Ø 20 mm	Ø 20 mm
Fixing	1 fixing hole Ø 4 mm	fixing hole Ø 3 mm	fixing hole Ø 3 mm

According to the product sheet, the circular board is 8 mm high and intended for 1 load cell; the rectangular board supplies up to 4 load cells in parallel by junction box.

5.2 IP67 box (option on request)

- Available in two versions: ABS; polycarbonate, UL certified.
- Protection rating IP67.
- 2 M12 × 1.5 cable glands.
- Dimensions: 94 × 53 × 40 mm (cable glands included); 2 fixing holes Ø 4 mm.
- Separate octagon datasheet: EALAA.



IP67 box: position of the fixing holes, dimensions in mm.

6 Technical specifications

Item	Value
Power supply and consumption	12/24 V DC ± 10 %; 2 W
No. of load cells in parallel and supply	max. 4 (350 Ω); 5 V DC / 60 mA
Linearity	< 0.01 % F.S.
Thermal drift	< 0.005 % F.S./°C
Measurement range	1 ... 3 mV/V
Humidity (non condensing)	85 %
Storage temperature	–30 ... +80 °C
Working temperature	–20 ... +60 °C
Analog output	4 ... 20 mA (max. 300 Ω); 0 ... 10 V (min. 10 kΩ)
Terminals of the rectangular board	cable cross-section 0.2 ... 0.5 mm ²

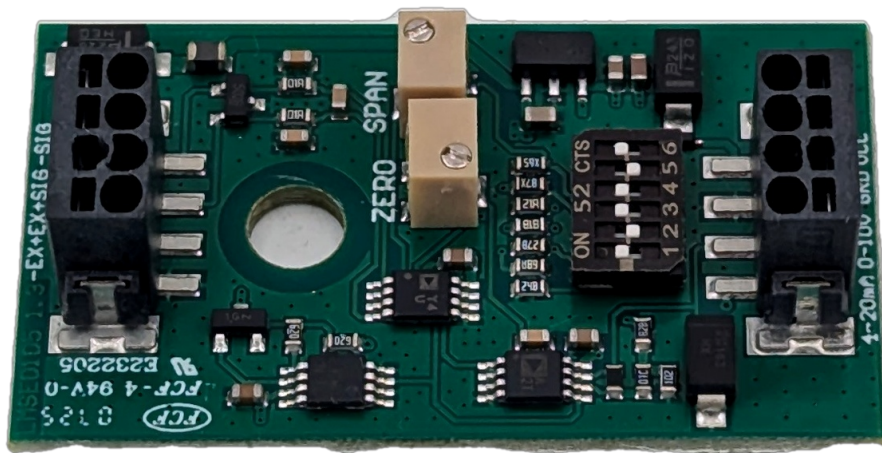
6.1 Conditions of the UL recognition

The board is recognised as a UL Recognized Component (USA and Canada) – a component for installation in complete equipment, not a stand-alone listed device. The certificate names the rectangular board. The following conditions apply:

Condition	Value
Max wall mounting height	2 m
Use	indoor use only
Power supply	Equipment to be powered by PS2 power source.

7 Electrical connections

7.1 Rectangular board



Top view: load cell terminals on the left, output and supply on the right, ZERO and SPAN trimmers in the middle, DIP switch 1 ... 6 to their right.

Terminal block	Terminals (order as printed)
Load cell	–EX · +EX · +SIG · –SIG
Output and supply	4 ... 20 mA · 0 ... 10 V · GND · VCC

The terminals take cables with a cross-section between 0.2 and 0.5 mm².

7.2 Circular board

The circular board has solder connections: VCC, GND and – depending on the version – 4 ... 20 mA or 0 ... 10 V for supply and output, +EX, –EX, +SIG and –SIG for the load cell. It also carries a ZERO and a SPAN trimmer and the positions RS (SPAN), RZ1 and RZ2 (ZERO) for the resistors according to section 8.2.

7.3 Connection legend

Terminal	Function
VCC	+supply (12/24 V DC)
GND	–supply (12/24 V DC); analog output common
4 ... 20 mA	+analog output 4 ... 20 mA
0 ... 10 V	+analog output 0 ... 10 V
–EX	–load cell excitation
+EX	+load cell excitation
–SIG	–load cell signal
+SIG	+load cell signal

Important All analog outputs of the instrument are ACTIVE and SINGLE ENDED type, therefore they can be connected only to PASSIVE receiver devices. The minimum load allowed for voltage outputs is 10 k Ω , the maximum load allowed for current outputs is 300 Ω .

The active analog output delivers the voltage or current analog signal against the common (–, GND) to the passive receiver.

8 Instrument commissioning

The instrument can work in one-way or two-way applications. In one-way applications, under tension or compression, the minimum output value (4 mA or 0 V) corresponds to the minimum load, and the maximum output value (20 mA or 10 V) corresponds to the maximum load. In two-way tension/compression applications, the minimum output value (4 mA or 0 V) corresponds to the maximum negative load, and the maximum output value (20 mA or 10 V) corresponds to the maximum positive load.

8.1 Rectangular board: DIP switches

Set the DIP switches based on the load cell's rated output and its operating mode:

Rated output	Mode	SW1	SW2	SW3	SW4	SW5	SW6
1 mV/V	one-way	ON	OFF	ON	ON	OFF	–
1 mV/V	two-way	OFF	ON	ON	OFF	ON	–
2 mV/V	one-way	ON	OFF	ON	OFF	ON	–
2 mV/V	two-way	OFF	ON	OFF	ON	ON	–
3 mV/V	one-way	ON	OFF	ON	OFF	OFF	–
3 mV/V	two-way	OFF	ON	OFF	OFF	ON	–

8.2 Circular board: resistors

Solder the required resistors onto the PCB according to the load cell's rated output and its operating mode:

Rated output	Mode	RS [Ω]	RZ1 [Ω]	RZ2 [Ω]
1 mV/V	one-way	40.2	8660	499
1 mV/V	two-way	78.7	6810	2260
2 mV/V	one-way	78.7	8660	499
2 mV/V	two-way	162	6810	2260
3 mV/V	one-way	118	8660	499
3 mV/V	two-way	243	6810	2260

9 Zero and full scale calibration

Note Rectangular board: it is possible to calibrate only one output at a time (current or voltage). The adjustment range offered by the trimmers is approximately 10 % of the full-scale value.

To achieve the best possible accuracy, it is advisable to repeat the calibration two or three times.

9.1 One-way applications

Example: 4 ... 20 mA output

- Unload the weighing system.
- Adjust the ZERO trimmer to bring the output value to 4 mA.
- Load the weighing system with a weight equal to 50 % of the full scale.
- Adjust the SPAN trimmer to bring the output value to 12 mA.
- Load the weighing system with a weight equal to the full scale.
- Adjust the SPAN trimmer to bring the output value to 20 mA.

9.2 Two-way applications

Example: 4 ... 20 mA output

- Apply the maximum tensile force to the weighing system.
- Adjust the ZERO trimmer to bring the output value to 4 mA.
- Apply the maximum compressive force to the weighing system.
- Adjust the SPAN trimmer to bring the output value to 20 mA.

10 Use in safety applications

Note These instructions refer to the use of the 4 ... 20 mA current output.

The safety function identified for the device is to “transfer and convert the load cell’s analog signal into a current signal”; the related performance specifications:

Item	Value
Category	B
PFHd [1/h]	$1.26 \cdot 10^{-5}$
Service life [years]	20
Test interval [years]	1

When used in safety applications, a current value of 0 mA must be considered an alarm condition, indicating incorrect operation of the product.

11 Directives and standards

According to the manufacturer’s declarations of conformity (EU and United Kingdom, 23/10/2025) for the rectangular and the circular boards:

Mark applied	Legislation	Standards
CE	2014/30/EU EMC Directive	EN 55011:2016+A1+A11:2020
		EN 61000-6-2:2019
		EN 61000-6-4:2019
UKCA	Electromagnetic Compatibility Regulations 2016	BS EN 55011:2016+A1+A11:2020
		BS EN 61000-6-2:2019
		BS EN 61000-6-4:2019

UL Recognized Component (USA and Canada) to UL 62368-1, 3rd edition; the certificate names the rectangular board. For the conditions see section 6.1.

The declarations of conformity and the UL certificate are available from octogon on request.