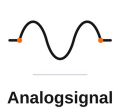


STRAIN GAUGE BRIDGE AMPLIFIER SIL3 / PL e · IP65



- ONE OR TWO 350 Ω FULL BRIDGES · UP TO 4 mV/V · 5 VDC SUPPLY
- TWO ISOLATED 4 ... 20 mA OUTPUTS PER BRIDGE · TEST PULSE INPUT
- SIL3 (EN 61508, EN 62061) · PL e CAT. 3 · U-CASE 2 FIELD · IP65



KEY DATA

Property	Value	Property	Value
Sensor input	1 or 2 $\times$ full bridge 350 Ω	Bridge sensitivity	up to 4 mV/V
Bridge supply	5 VDC	Analog output	2 $\times$ 4 ... 20 mA per bridge
Nominal range	8 ... 16 mA of 4 ... 20 mA	Load resistance	500 Ω max.
Supply voltage	24 VDC $\pm$ 10 %, 100 mA max.	Housing · protection	U-CASE 2 field · IP65
Safety rating	SIL3 · PL e category 3	Order numbers	0600-00493 · 0600-00494

A safety component, not a measuring instrument: each bridge signal goes to two galvanically isolated current outputs, so that a safety controller can check them against each other. One or two amplifiers sit in the same IP65 housing. The nominal range of the full bridge is 8 ... 16 mA within the 4 ... 20 mA signal.



INPUT AND OUTPUT

Sensor input 1	1 × strain gauge full bridge 350 Ω
Sensor input 2	1 × strain gauge full bridge 350 Ω – optional, second amplifier in the same housing
Bridge sensitivity	up to 4 mV/V
Bridge supply	5 VDC
Output of input 1, A	Nominal operation range 8 ... 16 mA · valid signal range 4 ... 20 mA
	Zero point 8 mA (compression) or 12 mA (tension and compression)
	Load resistance 500 Ω maximum · galvanically isolated from the supply and from output B
Output of input 1, B	Same values as output A
Outputs of input 2	Same values as strain gauge input 1
Test pulse input	24 VDC ±20 % · raises the current of channel B by 1 mA · ≤250 Hz
I ² C interface	Calibration by the manufacturer only

AMPLIFIER PERFORMANCE

Current symmetry	±5 % deviation of current (0,8 mA) between the channels
Temperature coefficient	<50 ppm/K

POWER SUPPLY

Supply voltage	24 VDC ±10 %
Current consumption	100 mA maximum
Sensor supply	5 VDC
Test pulse	24 VDC ±20 %
Electrical connection	Per strain gauge input: plug-in terminal strips 1 × 10-pole, 1 × 6-pole, 1 × 4-pole

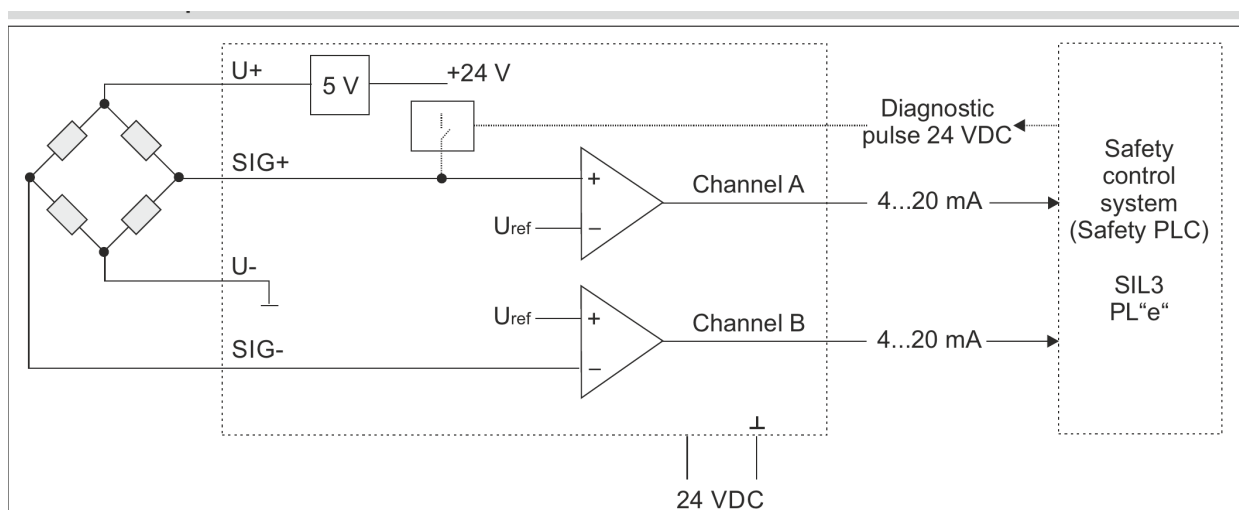
MECHANICS AND ENVIRONMENT

Housing	U-CASE 2 · 162,2 × 92,2 (101,1) × 60,2 mm
Material · colour	ASA 757G Luran S · black · flammability UL94 HB
Mounting	4 fixing holes
Cable entry	3 plastic glands M16×1,5 with one amplifier · 6 with two
Protection	IP65 · no vibration protection
Weight	approx. 450 g (one amplifier) · 590 g (two)
Temperature, operating	-10 ... +60 °C
Temperature, storage	-20 ... +70 °C
Humidity	96 % rH without condensation

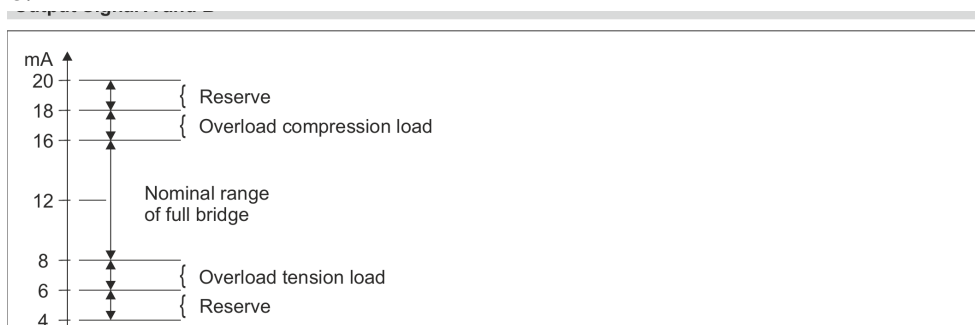
The nominal range of the full bridge is 8 ... 16 mA. Above and below it sit the overload bands (16 ... 18 mA for compression, 6 ... 8 mA for tension) and the reserve (18 ... 20 mA and 4 ... 6 mA).



FUNCTION



The general principle. One 350 Ω full bridge, two comparators against a common reference, two galvanically isolated 4 ... 20 mA channels, and a 24 VDC test pulse fed back from the safety controller. The controller compares the two channels; a deviation of more than 10 % takes the system to the safe state.

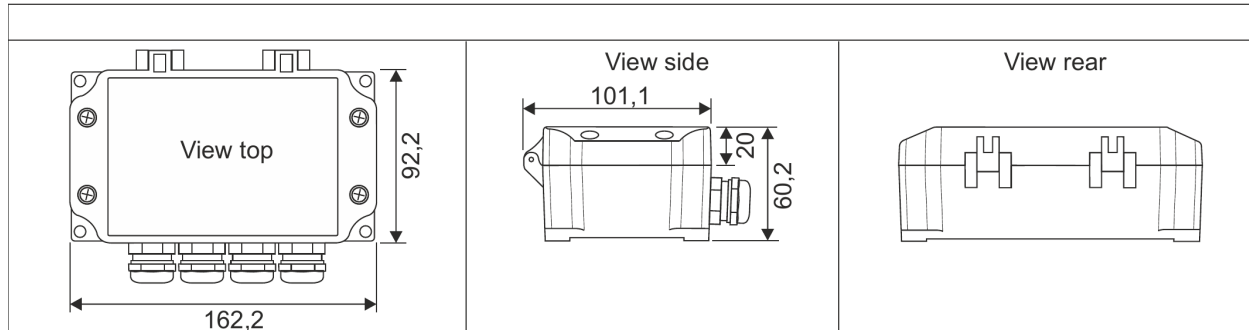


The output signal of both channels. The nominal range of the full bridge is 8 ... 16 mA; above and below it sit the overload bands and the reserve.

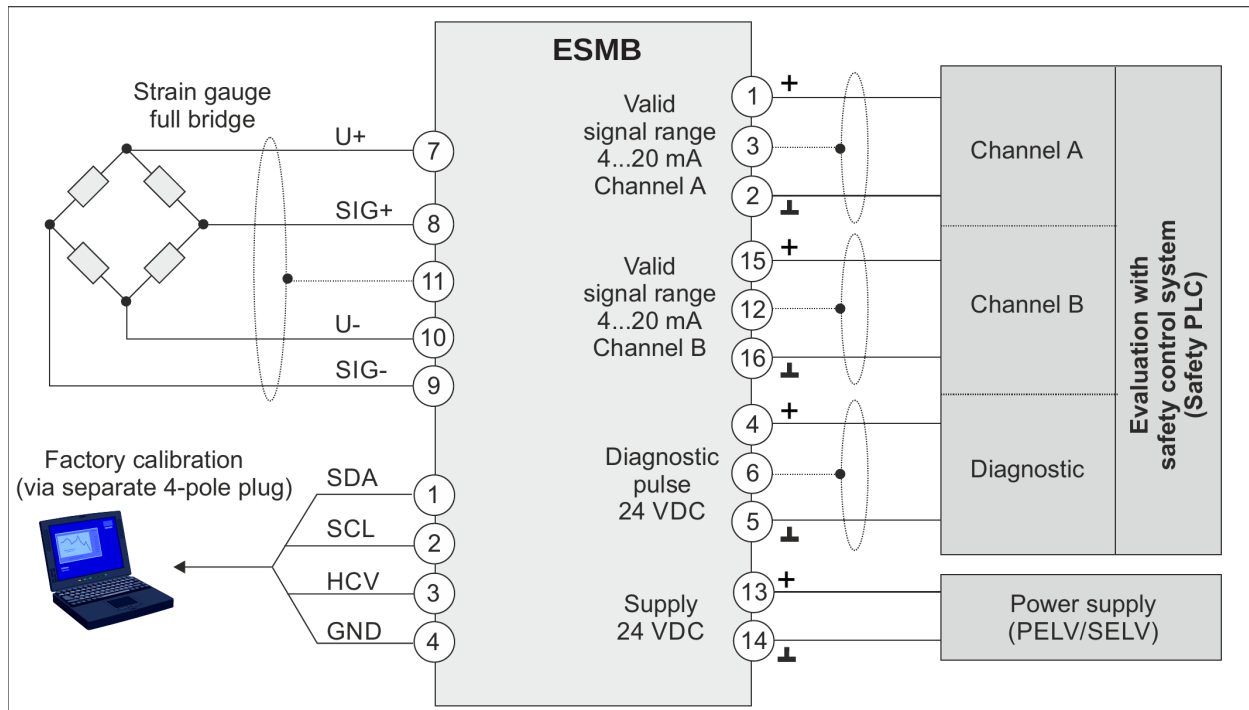


DIMENSIONS AND CONNECTION

Dimensions in mm.



Top view, side view and rear view of the U-CASE 2 field housing. The drawing shows the version with three cable glands; with two amplifiers there are six.



Connection example for strain gauge input 1: bridge on 7/8/9/10 with 11, channel A on 1/2 with 3, channel B on 15/16 with 12, test pulse on 4/5 with 6, supply on 13/14. The 4-pole plug 1 ... 4 (SDA, SCL, HCV, GND) is the manufacturer's calibration interface and is not for the user. The second input has its own set of three terminal strips.



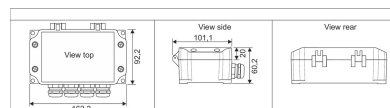
CONFORMITY AND SAFETY

Safety Integrity Level	SIL3 — EN 61508, EN 62061
Performance Level	PL e, category 3 — EN ISO 13849-1
EMC	EN 61326-1, EN 61326-2-1, EN 61326-3-1
Environment	EN 60068-2-1, EN 60068-2-2, EN 60068-2-6, EN 60068-2-30, EN 60068-2-31, EN 60592
Protection	IP65
Evaluation	The two analog signals must be evaluated by a safety controller approved for SIL3 / PL e. The program concept is specified by the manufacturer
Certificate	SIL3 / PL e certificate 968_FSP_1102_01_20
Vibration protection	None

ORDER INFORMATION

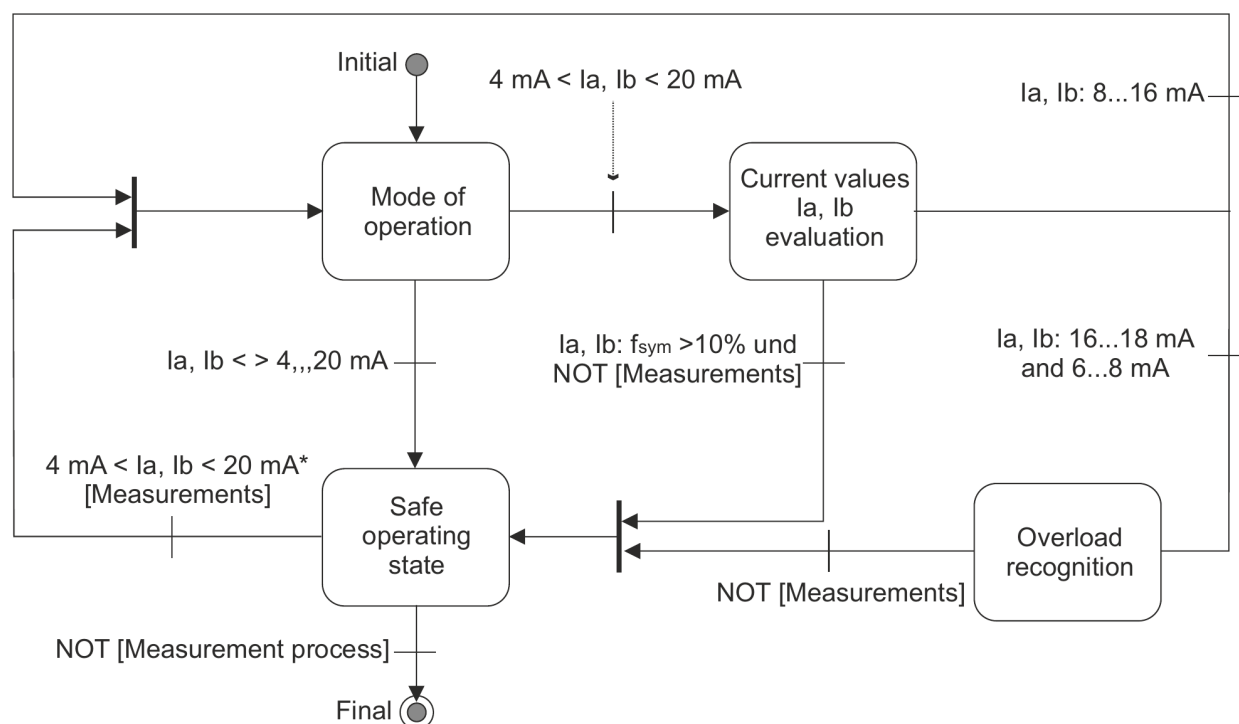
Accessories

- The plug-in terminal strips and the plastic cable glands M16x1,5 are part of the device. A safety controller is required for operation but is not part of this device — ESMD is the matching unit.



Housing
U-CASE 2 · IP65

Matching controller
ESMD



The evaluation concept the safety controller has to implement: operating mode, evaluation of the two currents, overload detection and safe operating state. Without a controller that implements it, the SIL3 chain is not closed; the program concept is specified by the manufacturer.



Two versions with one order number each — one or two amplifiers in the same housing.

ORDER NUMBER

Field	Code	Meaning
Product	ESMB	octogon product code — strain gauge bridge amplifier SIL3 / PL e, IP65 field housing
Manufacturer order no.	0600-00493	1 bridge input and 2 analog outputs · 3 cable glands · approx. 450 g
	0600-00494	2 bridge inputs and 2 analog outputs each · 6 cable glands · approx. 590 g

