

## DA68



### Description

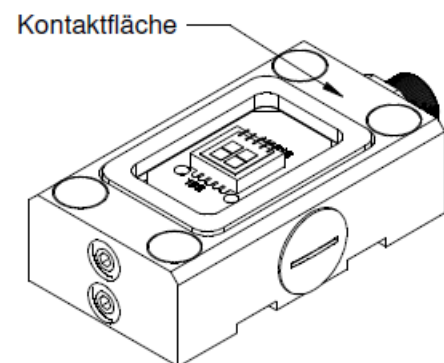
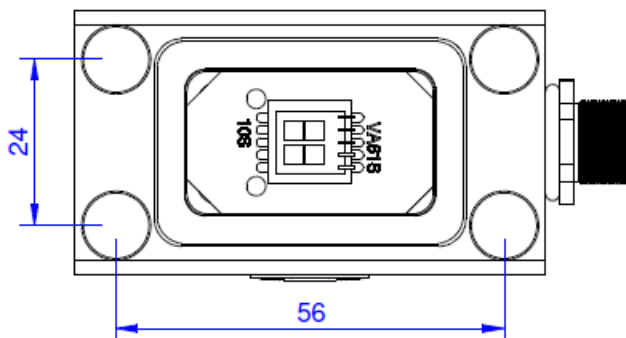
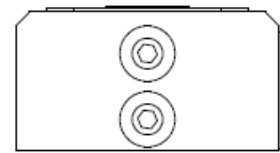
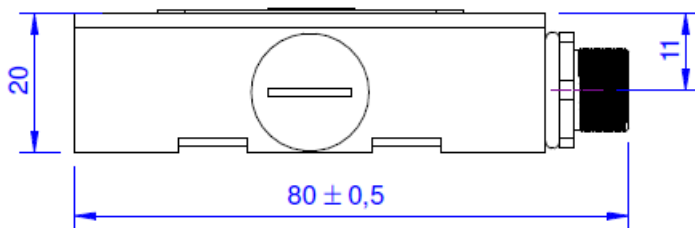
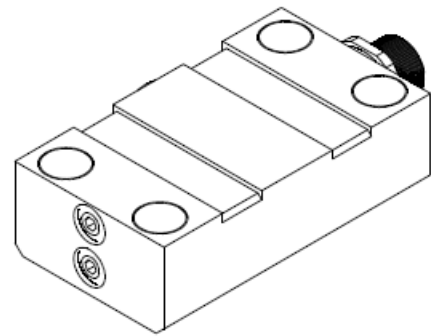
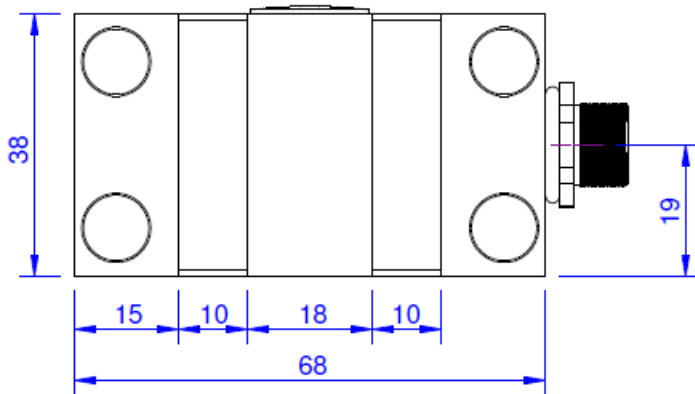
The strain sensor DA68 is suitable for high-resolution detection of forces and deformation of structural works such as bridges, silo legs, offshore wind farms, railway lines, etc.

With these models in an anodised aluminium or stainless steel housing, the same performance features are achieved as when applying strain gauges (DMS) directly. These features include a high resolution, very low drift effects and the options for both static and dynamic measurement.

The strain sensor includes a completely wired DMS that is pressed onto the component by a specially formed pressing mechanism when mounting the strain sensor. An integrated seal provides an initial layer of protection against dust and damp. The strain sensor has two filler pipes for casting with cable resin after installation. Depending on the planned duration of use, additional measures to protect against damp, such as waterproofing the joints with silicone, encapsulation with additional surrounding hoods, etc. are applied after installation. Unlike strain sensors DA40 and DA54, the contact with the surface is generated by integrated high-performance magnets. Time-consuming drilling of threads is not required as a result. The housing of the strain sensor and the strain gage are glued with the surface in a common process. The strain sensor can also be used for stress analysis in offshore applications. The strain gauges are also evaluated as active quarter bridges and are supplemented with passive precision resistors within the strain sensor.

The strain sensors of the series DA68e contain an integrated measurement amplifier of type GSV-15L.

### Dimensions



## Technical Data

### Basis Data

Type	Dehnungsaufnehmer
Nominal strain	1000 $\mu\text{m/m}$
Operating strain	150 %Fn
Material	Aluminium alloy

### Electrical Data

Input resistance	350 Ohm
Tolerance input resistance	7 Ohm
Output resistance	350 Ohm
Tolerance output resistance	7 Ohm
Insulation resistance	5 GOhm
Rated range of excitation voltage f	2.5 ... 5 V
Operating range of excitation voltage f	1 ... 10 V
Zero signal to	-2 mV/V
Zero signal from	2 mV/V
Rated output	1.3 mV/V

### Precision

Temperature effect on zero signal	0.005 mV/V/10K
Temperature effect on characteristic value	1 %v.S./10K

### Connection Data

Connection type	Connector
Name of the connection	M12

### Temperature

Rated temperature range f	-10 ... 65 °C
Operating temperature range f	-20 ... 85 °C
Storage temperature range f	-20 ... 85 °C
Environmental protection	IP65

Strain gauge is used with k-factor = 2.



## Pin Configuration

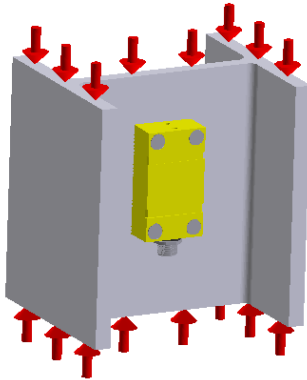
Symbol	Description	Wire colour	PIN
+Us	positive bridge supply	brown	1
-Us	negative bridge supply	white	2
+Ud	positive bridge output	blue	3
-Ud	negative bridge output	black	4

*Compressive load: positive output signal.*

## Mounting

With compressive strain in the longitudinal axis, a negative output signal results.




The strain sensor may also be mounted transversely to the direction of the load. In this case, a positive output signal is obtained under compression. By exchanging the lines + Ud and -Ud the sign of the output signal of the strain sensor can be inverted.



The full pressure strength of the magnets is only achieved on a flat surface. If there are small surface irregularities, air gaps occur between the magnet and the component meaning that the pressure strength is potentially insufficient to compress the strain gauge and the seal. Therefore please check whether the pressure strength of the integrated magnets is sufficient before applying the adhesive. For series DA68e, the following should be observed in particular:

- The strain gauge AND the housing bottom are coated with adhesive; it is only on the seal that no adhesive is applied.
- The same adhesive, "M-bond 30", is recommended for the strain gauge AND housing bottom.
- Alternatively, adhesive "M-bond 31" or Epoxy 1x-280 is recommended. This adhesive is characterised by a longer working life and a higher final strength.
- The extension sensor is put down with light pressure. Excessive adhesive is squeezed on the gap by means of a light, oscillating ( $\pm 1$ mm) movement.
- Stop the oscillating movement when the metal surface of DA68 rubs noticeably on the surface of the component.
- It is recommended that an additional sealing gap with silicone TSE397C or similar silicone is laid around the housing.
- The sensor can also be attached to the designated pockets using stainless steel cable ties.
- After attaching, the sensor must be filled with casting compound (cable resin). Two M4 threaded holes (sealed with round-headed screws) are provided for filling and ventilation.
- The cable resin must be mixed thoroughly before being drawn into the syringe. In doing so, the centre bar must be removed. Both liquids must be mixed for approximately 3 minutes by kneading, moving and spreading out from the corners.
- Fill syringe and inject the cable resin with the syringe;
- the pot life of cable resin is approximately 10 minutes.

## accessories

Description	Description
 M-Bond-31	gelatinous, 2-component adhesive in 50 ml double cartridge, 50ml Methacrylate, 50ml Hardener; Operating temperature -55 ° C ... 120 ° C
 Mixing-tool Pack10	Mixing nozzles for double cartridge 50g M-Bond-30 and M-Bond-31; package of 10;
 WS-14	Dispensing gunl for 37ml and 50ml double cartridges.