

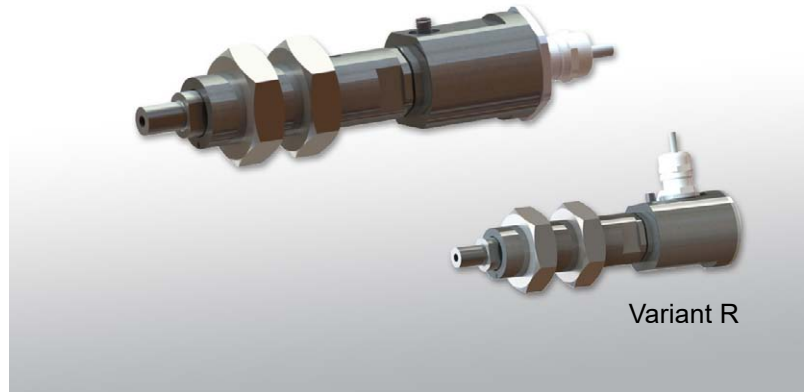
## Force Sensor ZAD-A

### Scope of Supply

Force sensor with 5 m cable (PVC)  
with amplifier output C  
(current output 4 ...20 mA),  
incl. fixing nuts M25x1,5  
and connection variant T:  
cable gland, straight

### Variants

- U: Voltage output ( $\pm 0 - 10$  V)
- N2: Plug connection straight, M12, moulded
- S2: Plug connection right-angled, M12, moulded
- R: Radial cable outlet



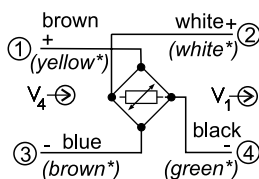
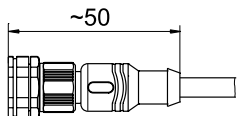
### Connections

#### Variant T

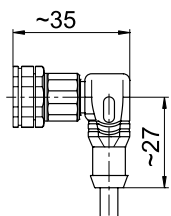


#### Variant N2

$V_4$ : Supply voltage  
 $V_1$ : Signal voltage



#### Variant S2



\*Alternative color coding

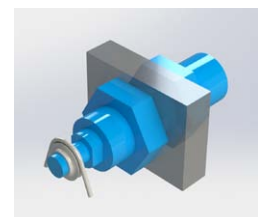
### Special Features

- With intergrated amplifier
- Externally operated zero point potentiometer
- Easy assembly and small space requirement
- Overload protection utilizing mechanical stops
- Measuring range from 10 to 1000 N

Tension force sensors of the type ZAD were specifically developed for direct measurement of forces acting in cables, wires, ropes, or tapes. They can best be installed in places where the design of the machine already requires the use of deflection rollers or guide rollers.

This is e. g. the case in situations such as

- cable making machines
- stranding machines
- foil capacitor manufacturing
- label printing machinery etc.



The different cable outlets allows in most cases a simple installation on the machine. Mechanical stops limit the measurement path and serve as overload protection.

The signals present at the outputs of the measuring amplifier are proportional to the tension force in the material and serve for display or use as actual value in a closed control loop. Strain gauges applied to the active surfaces of the cantilever beam measure the acting forces.

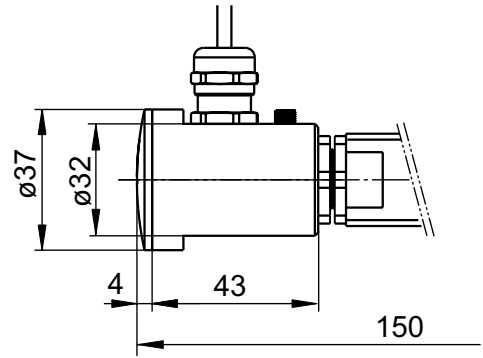
The permanently installed potentiometer neutralises the individual preload force after assembly. The measurement signals are processed via an integrated amplifier.

### Ordering Example

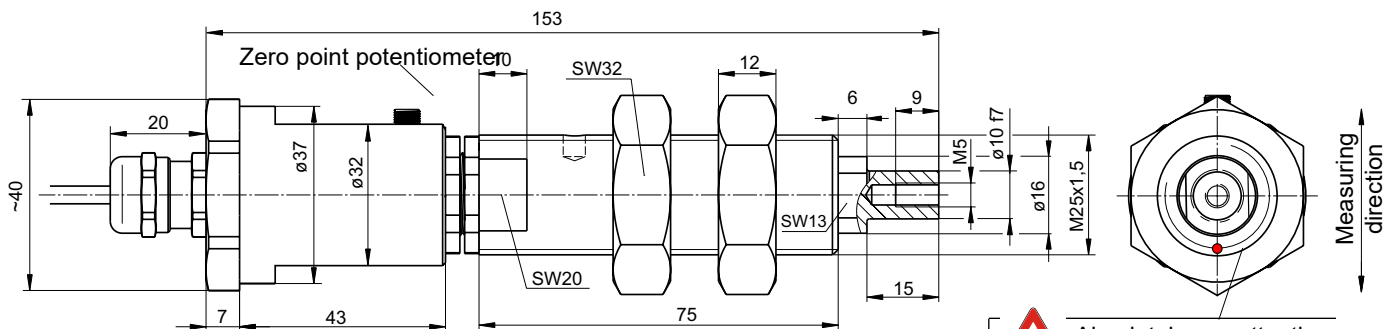
**ZAD-AC100-T**

|                     |  |
|---------------------|--|
| Type                |  |
| Output signal       |  |
| Nominal force       |  |
| Connection variants |  |

| Technical Data                  | Values (%) based on nominal force |
|---------------------------------|-----------------------------------|
| Nominal force (measuring range) | 10; 20; 50; 100; 200; 500; 1000 N |
| Overload protection             | 1000 %, max. 2000 N               |
| Max. operating force            | 160 %                             |
| Max. lateral force              | 100%                              |
| Combined error                  | 0,5 %                             |
| Nominal ambient temperature     | +10... +60° C (+50...+140° F)     |
| Operational temperature range   | -10... +70° C (+14... +158° F)    |
| Enclosure protection            | IP54                              |



Variant R with radial cable outlet

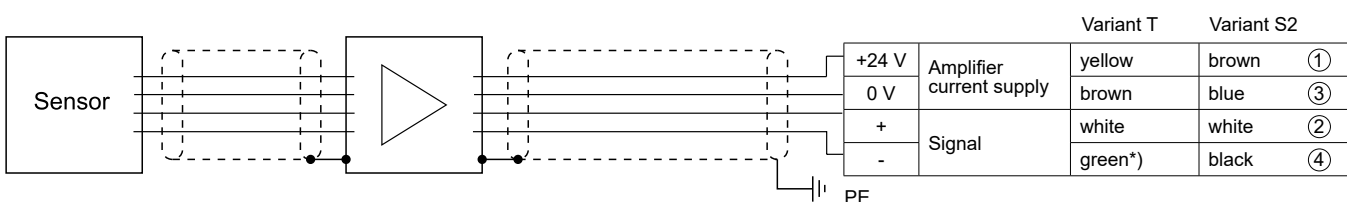


Absolutely pay attention:  
**Red dot in measuring direction!**



**\* Attention!** When assembling axes adapters, pulleys or similar devices no torque should act on the inner sensor part. For this reason assembly should be made before installation into a machine; use wrench for counterling.

| Technical Data Amplifier |                          |   |
|--------------------------|--------------------------|---|
| Signal output            | Variant U                | Voltage $\pm 10$ V                            |
|                          |                          | min. load resistance 5 k $\Omega$             |
|                          | Variant C                | Strom 4...20 mA                               |
|                          |                          | max. load resistance 1 k $\Omega$             |
|                          | Band width               | DC bis 1 kHz                                  |
| Signal raising time      | < 1 ms                   |   |
| Power supply             | Voltage                  | min. 14 V<br>typ. 24 V $\pm 3$ V<br>max. 27 V |
|                          | typ. current consumption | approx. 22 mA                                 |



\*) With variant U this line is not in use. The reference potential of the signal is 0 V of the amplifier supply