



**Main features:**

- Measure strain in deep holes
- With calibrated digital amplifier
- Quick and easy mounting with torque-wrench
- High linearity on tension and compression
- For dynamic applications
- Used in injection moulding and die-casting machines or any cylinder
- Very high accuracy (like bonded strain gauges)
- Protected against overload

The measuring-lance ML1018 is inserted into a borehole in a tie bar and then preloaded to measure the strain at the sensortip. The 2 strain gauges in the sensor tip are then pressed so hard onto wall of the hole that friction replaces the bonding normally used to fix strain gauges.

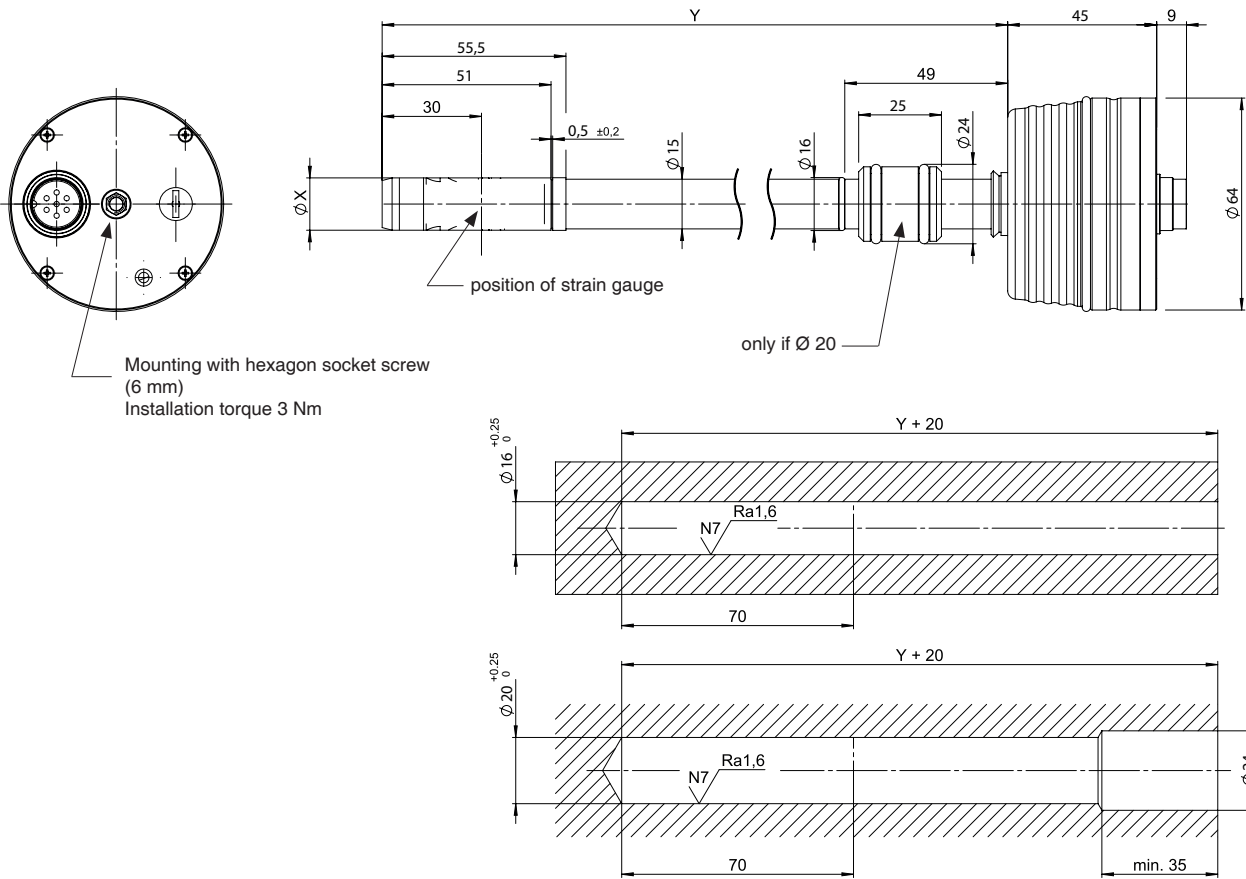
The strain gauge is protected. The sensor can not be overloaded. There is no easier and faster way to fix strain gauges in deep holes.

**TECHNICAL DATA**

|                                     |                            |
|-------------------------------------|----------------------------|
| Strain gauge type                   | Foil (GF = 2.0)            |
| Bridge resistance                   | 350Ω                       |
| Measuring range                     | ±1000µε                    |
| Span adjustment                     | ±200% FS                   |
| Zero adjustment                     | ±500% FS                   |
| Sampling rate                       | 8kHz                       |
| Output rate                         | 8kHz                       |
| Low-pass filter                     | 1kHz                       |
| Output signal                       | 0...±10VDC                 |
| Noise                               | < 10mV                     |
| Sensitivity tolerance               | ± 1%                       |
| Accuracy                            | < ± 0.5% FS                |
| Accuracy of zero point              | < ± 0.1% FS                |
| Linearity                           | < ± 0.5% FS                |
| Hysteresis                          | < ± 0.3% FS                |
| Repeatability                       | < 1% (max 2%)              |
| Output resistance                   | 0Ω                         |
| Reset time                          | > 25ms                     |
| Reset voltage                       | 15...28VDC                 |
| Supply voltage                      | 20...28VDC                 |
| Supply current                      | < 60mA                     |
| Inverse polarity protection         | Yes                        |
| Accidental short-circuit protection | Yes                        |
| Operating temperatur range          | -10...65°C                 |
| Storage temperatur range            | -10...65°C                 |
| Temperature coefficient at 10°C     | < 0.1 (0.05 typical)       |
| Overload capability                 | indefinite (offset occurs) |
| Protection class                    | IP52                       |
| EMC                                 | 2014/30/EU                 |
| Case material                       | Aluminium / Steel          |
| Cover material                      | Aluminium / Steel          |

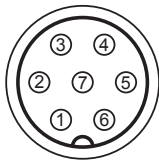
## DIMENSION

|        |        |
|--------|--------|
| Ø16    | Ø20    |
| X = 16 | X = 20 |



Dimensions in mm

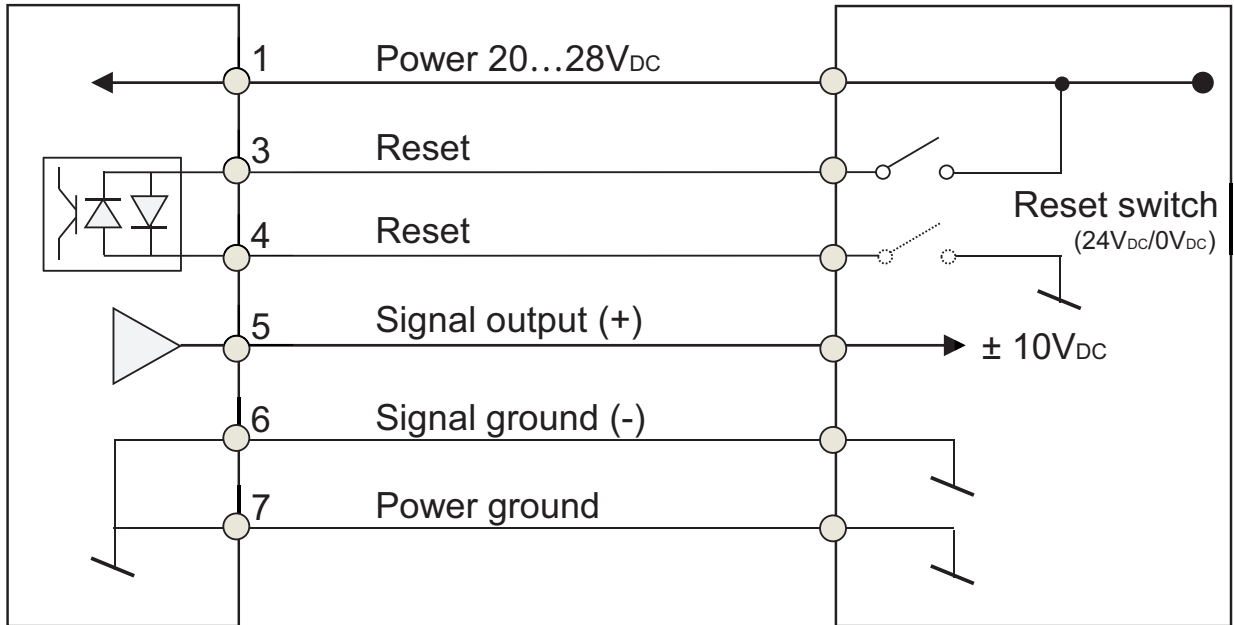
## ELECTRICAL CONNECTIONS



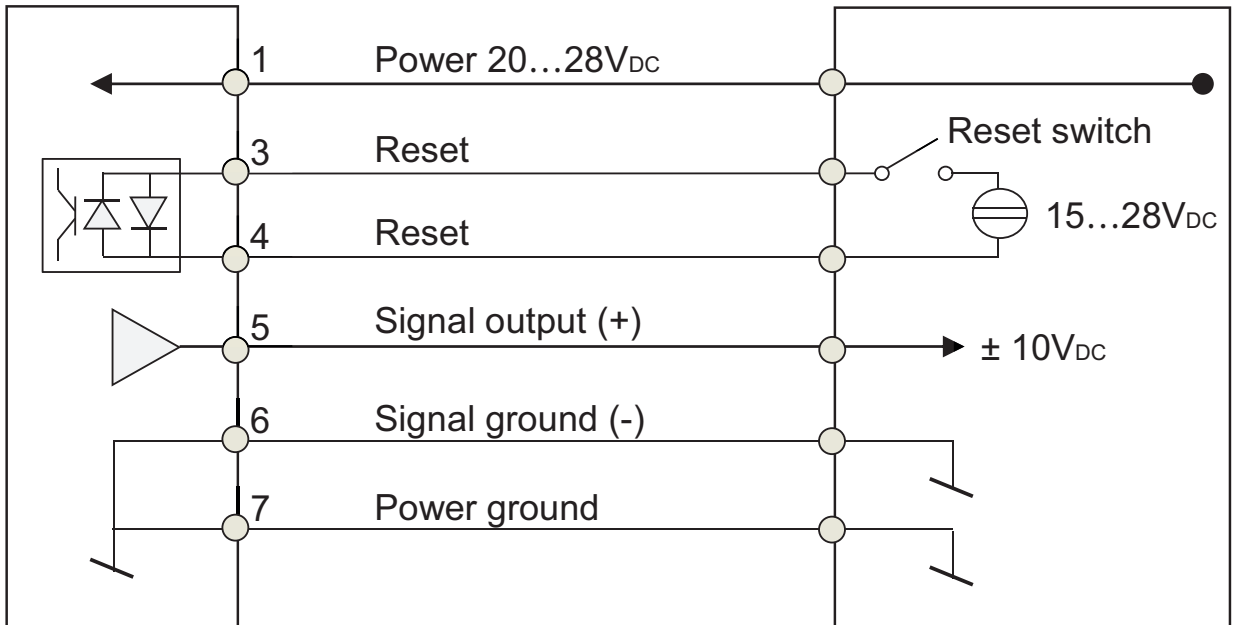
| Connector PIN | Function                 |
|---------------|--------------------------|
| 1             | Power supply 20...28 VDC |
| 2             | n.c.                     |
| 3             | Reset                    |
| 4             | Reset                    |
| 5             | Signal output            |
| 6             | Signal ground            |
| 7             | Power ground             |

# RESET FUNCTION

| ML1018 | Non isolated reset | Controller |
|--------|--------------------|------------|
|--------|--------------------|------------|



| ML1018 | Galvanic isolated reset | Controller |
|--------|-------------------------|------------|
|--------|-------------------------|------------|



Switch closed = reset active

Switch open = measurement active

## ORDER CODE

Measuring lance

ML1018

- [ ] - [ ] - [ ] - [ ]

| Borehole diameter X (Sensor-tip) |    |
|----------------------------------|----|
| Sensor-tip Ø 16 mm               | 16 |
| Sensor-tip Ø 20 mm               | 20 |

| Lance lenght Y |      |
|----------------|------|
| 270 mm         | 0270 |
| 315 mm         | 0315 |
| 320 mm         | 0320 |
| 350 mm         | 0350 |
| 430 mm         | 0430 |
| 530 mm         | 0530 |
| 650 mm         | 0650 |
| 880 mm         | 0880 |
| 950 mm         | 0950 |
| 1000 mm        | 1000 |
| 1090 mm        | 1090 |
| 1400 mm        | 1400 |
| 1580 mm        | 1580 |
| 1850 mm        | 1850 |
| 1900 mm        | 1900 |
| 2270 mm        | 2270 |

| Measuring range |      |
|-----------------|------|
| 500 µε          | 0500 |
| 1000 µε         | 1000 |

| Features |   |
|----------|---|
| No       | O |

Example: ML1018 - 20 - 0650 - 0500 - O

Measuring lance type ML1018, Borehole diameter X = 20 mm, Lance lenght Y = 650 mm, Measuring range = 500µε, No features

## ACCESSORIES

| Description                                  |      | Order code            | Code    |
|--|------|-----------------------|---------|
| Connection cable for control with open leads | 3 m  | C - 680 - 030 - O - A | F064975 |
|  | 5 m  | C - 680 - 050 - O - A | F064232 |
|  | 10 m | C - 680 - 100 - O - A | F061262 |
|  | 15 m | C - 680 - 150 - O - A | F065912 |
|  | 20 m | C - 680 - 200 - O - A | F063389 |

GEFRAN spa reserves the right to make any kind of design or functional modification at any moment without prior notice.



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