

## PIEZORESISTIVE TRANSMITTERS

INDUSTRIAL APPLICATIONS. ABSOLUTE AND GAUGE REFERENCES.

This new range of KELLER OEM pressure transmitters offers the user the high accuracy and stability of the KELLER piezoresistive pressure capsule in a low cost OEM package. Applications include reffridgeration, hydraulic controls, air compressors, ink jet printers, vacuum pumps etc.

The Series 21 R is offered with soldered brass transducers (Series 21 MR), soldered steel transducers (Series 21 SR) or fully welded (Series 21 R), all providing a highly stable measuring cell with negligible hysteresis, unrivalled linearity, high output and a life of millions of pressure cycles.

The transmitters are supplied with 2 metres of screened cable, or a square connector and mating plug, type mPm-193.

Accuracy is achieved by very large scale predictable production quantities of the pressure capsule (over 2 million produced today).

Reliability is assured by the inherent properties of the perfectly elastic silicon chip, and ensuring that neither the pressure media nor the reference media (in the gauge version) come into contact with any sensitive parts.

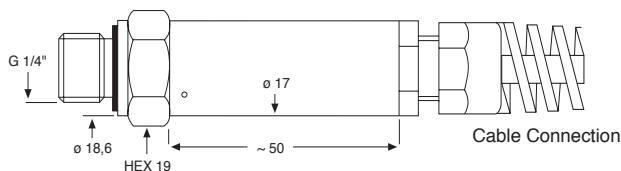
Temperature Compensation: Each unit is fully tested and compensated. Span errors are reduced by selecting the semiconductor doping levels so that the gauge factor of the strain gauges ( $\Delta R$ ) is constant with temperature. Thermal zero compensation is achieved by an automatic test procedure which fits a single resistor across one arm of the bridge.

Shock and vibration performance is excellent due to the silicon chip being suspended in the oil-filled capsule. It is isolated mechanically from the body. Similarly, the effects of mounting torque are eliminated.



### SERIES 21 R / 21 SR / 21 MR

with cable

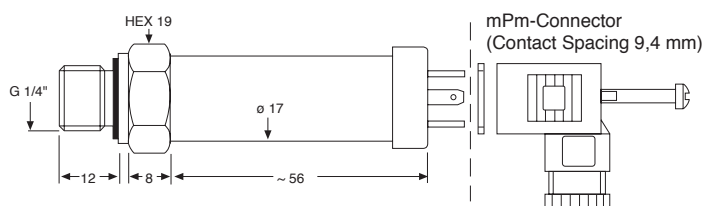


### ELECTRICAL CONNECTIONS

|       | 2-WIRE  | 3-WIRE | 4-WIRE       |
|-------|---------|--------|--------------|
| GREEN |         | GND    | GND (WHITE)  |
| WHITE | OUT/GND | +OUT   | +OUT (RED)   |
| BROWN | +VCC    | +VCC   | +VCC (BLACK) |
|       |         |        | -OUT (BLUE)  |

### SERIES 21 R / 21 SR / 21 MR

with plug



|   | 2-WIRE  | 3-WIRE | 4-WIRE |
|---|---------|--------|--------|
| 1 | OUT/GND | GND    | GND    |
| 2 |         | +OUT   | +OUT   |
| 3 | +VCC    | +VCC   | +VCC   |
| 4 |         |        | -OUT   |



# KELLER

## SPECIFICATIONS

### SERIES 21 R / 21 SR / 21 MR

|                             |     |   |   |    |    |    |     |                     |     |     |     |     |     |     |                     |
|-----------------------------|-----|---|---|----|----|----|-----|---------------------|-----|-----|-----|-----|-----|-----|---------------------|
| PR 21 R/SR/MR <sup>1)</sup> | 0,5 | 1 | 2 | 5  | 10 | 16 | bar | <i>vented gauge</i> |     |     |     |     |     |     |                     |
| PAA 21 R/SR/MR              |     | 1 | 2 | 5  | 10 | 16 | bar | <i>absolute</i>     |     |     |     |     |     |     |                     |
| PA 21 R/SR/MR <sup>2)</sup> |     | 1 | 2 | 5  | 10 | 16 | 30  | 50                  | 100 | 160 | 200 | 400 | 600 | bar | <i>sealed gauge</i> |
| Over Range                  | 2   | 3 | 4 | 10 | 20 | 25 | 50  | 75                  | 150 | 250 | 300 | 500 | 700 | bar |                     |

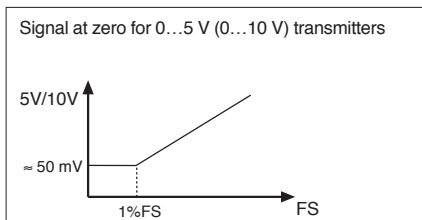
<sup>1)</sup> mPm connector only, not cable

<sup>2)</sup> Zero at 1000 mbar abs.

|                                                           |                           |                       |           |                       |                     |           |
|-----------------------------------------------------------|---------------------------|-----------------------|-----------|-----------------------|---------------------|-----------|
| Signal Output                                             | 4...20 mA                 | 0...5 Vdc             | 1...6 Vdc | 0...10 Vdc            | 0...100 mV          |           |
| Supply Voltage                                            | 8...28 Vdc                |                       |           | 13...30 Vdc           | 6...28 Vdc          | 10 Vdc    |
| Current required                                          | max. 25 mA                | 4 mA max.             |           |                       |                     | 2 mA max. |
| Zero/Span Tolerance                                       | 0,5% FS                   | 0,5% FS <sup>4)</sup> | 0,5% FS   | 0,5% FS <sup>4)</sup> | ± 0,1% FS           |           |
| Configuration                                             | 2 wire                    | 3 wire                |           |                       | 4 wire              |           |
| Electrical Connection:<br>mPm 193 or<br>cable 2 m, 4 core | OUT/GND: Pin 1 / White    | GND: Pin 1 / Green    |           |                       | GND: Pin 1 / White  |           |
|                                                           |                           | +OUT: Pin 2 / White   |           |                       | +OUT: Pin 2 / Red   |           |
|                                                           | +Vcc: Pin 3 / Brown       | +Vcc: Pin 3 / Brown   |           |                       | +Vcc: Pin 3 / Black |           |
|                                                           |                           |                       |           |                       | -OUT: Pin 4 / Blue  |           |
| Linearity                                                 | ± 0,2% typ. / ± 0,5% max. |                       |           |                       |                     |           |
| Total Error Band <sup>3)</sup><br>+18...+22 °C            | ± 0,5% typ. / ± 1% max.   |                       |           |                       |                     |           |
| Total Error Band <sup>3)</sup><br>0...+50 °C              | ± 1,0% typ. / ± 2% max.   |                       |           |                       |                     |           |
| Total Error Band <sup>3)</sup><br>-20...+80 °C            | ± 2,5% typ. / ± 4% max.   |                       |           |                       |                     |           |

<sup>3)</sup> Total error band includes linearity, hysteresis, repeatability, zero/span offsets and temperature effects.

<sup>4)</sup> Signal at zero ≈ 50 mV --> see chart



|                               |                                                                    |
|-------------------------------|--------------------------------------------------------------------|
| Operating Temperature         | -20...+80 °C (on demand -40...100 °C)                              |
| Pressure Port                 | G 1/4" male                                                        |
| Pressure Media                | Compatible with 316L stainless steel                               |
| Weight                        | ≈ 75 g                                                             |
| Electromagnetic Compatibility | CE marked: Fully tested to EN 50081-2 and EN 50082-2               |
| Enclosure Protection          | IP 65                                                              |
| Insulation                    | > 100 MΩ / 500 Vdc                                                 |
| Vibration                     | 20 g (5...2000 Hz, max. amplitude ± 3 mm), according to IEC 68-2-6 |
| Shock                         | 20 g (11 ms)                                                       |

User Notes: Basic 100 mV transmitters are calibrated at 10 Vdc to produce 0...100 mV signal (nominal), and require a stable voltage supply. They can be operated at 5 Vdc to give 0...50 mV signal or 20 Vdc to give 0...200 mV signal. The circuit is a compensated resistance bridge and is completely passive with no diodes or reactive components. Bridge resistance is 3,5 kΩ nominal. The 6...28 V supply transmitter is fitted with an internal regulator. The mPm connector has a PG7 cable gland entry suitable for cables between 4 and 6 mm diameter. Screw terminals and solder lugs are provided. The G 1/4 pressure connection has an integral Viton® seal at the shoulder. Alternatively it may be sealed using a face seal on the flat nose of the pressure port.

Subject to alterations

6/02