Description

The Series 2000 is a complete range of ‘intelligent’ pressure and level transmitters with local display and adjustment by three pushbuttons. The pushbuttons are used to set Zero and Span. Test pressures are not required for calibration.

The display which can indicate a number of chosen engineering units is also used during programming to assist the easy operation. Process temperatures can be shown and damping times can be adjusted from 0 to 25 secs. Also a 4–20 mA Current Simulation can be performed.

The Series 2000 is **fully temperature compensated**. Over 40 different process connections are available including many flush diaphragm designs. Options include ATEX approval, HART® protocol or PROFIBUS-PA output.

HART® is a registered trademark of the HART Communication Foundation
Series 2000

Description
The series 2000 pressure transmitter has been specially designed for measuring pressure in pulp- and paper mills and similar industries where plugging is a problem. The transmitters are fully temperature compensated, and have very strong, flush mounted diaphragms. Zero and span can be adjusted without test pressure by 3 pushbuttons or by hand-held-terminal (HART®, option).

Specifications
- Accuracy: 0.1% of adjusted span
- Measuring ranges: 0 - 0.1 bar to 0 - 100 bar
- Output signal: 4 - 20 mA / 2-wire
  - HART® protocol (option)
  - PROFIBUS-PA (option)
- Adjustment: by 3 pushbuttons or H.H.T.
- Power supply: 12 - 36 Vdc (Exi: 13 - 26.5 Vdc)
- External load: 600 Ohm/24V to 1200 Ohm/36V
- Protection grade: IP66
- Process temperature: -20°C to +80°C
- Ambient temperature: -20°C to +70°C*
- Temperature effect: ±0.010% / K
- Wetted parts: AISI 316 (standard)
- Electronic housing: AISI 304
- Process connections: See below. Also available PMC, Valcom, etc...
  - Specify code X..

Process connections
- Code W: Weld-on nipple ø 33 mm
- Code X12: PASVE connection
- Code S: 1” BSP (G1”)

Dimensions (mm)

See page 6 for ordering code and ranges.
Series 2000-SAN

Description

The 2000-SAN series are designed for all pressure and level measurements in the food and beverage, chemical and pharmaceutical industries. All hygienic process connections are available, most of them are according to the EHEDG, 3-A and FDA regulations. The transmitters are fully temperature compensated, and have very strong, flush mounted diaphragms. Zero and span can be adjusted without test pressure, over wide ranges, by 3 pushbuttons, or hand-held terminal (HART®, option).

Specifications

- **Accuracy**: 0.1% of adjusted span
- **Measuring ranges**: 0 - 0.04 bar to 0 - 100 bar
- **Output signal**: 4 - 20 mA / 2-wire
  - HART® protocol (option)
  - PROFIBUS-PA (option)
- **Adjustment**: by 3 pushbuttons or H.H.T.
- **Power supply**: 12 - 36 Vdc (Exi: 13 - 26.5 Vdc)
- **External load**: 600 Ohm / 24V to 1200 Ohm / 36V
- **Protection grade**: IP66
- **Process temperature**: -20°C to +100°C (130°C / 30 min)
- **Ambient temperature**: -20°C to +70°C*
- **Temperature effect**: ±0.010% / K
- **Wetted parts**: AISI 316 (standard)
- **Option**: Hastelloy C, Tantalum or Goldplated
- **Electronic housing**: AISI 304
- **Process connections**: See below (all industrial process connections available)

Process connections

- **Code M**: Milk coupling (DN 25, 40 or 50)
- **Code F**: Flange (DIN or ANSI)
- **Code W85**: Weld-on nipple ø 85 mm

Dimensions (mm)

See page 6 for ordering code and ranges.

Parts description

1. Cover
2. Push buttons + display (behind cover)
3. Cover with venting
4. Venting
5. Cable entry
6. O-ring
7. Electronics housing
8. Foot
9. Locking ring
10. Weld-on nipple (W) or Flange (F)
11. Packing
12. Flush diaphragm
Peramic ‘S’ Series CER 2000

**Description**

The Peramic ‘S’, series CER-2000, is a pressure transmitter based on a ceramic measuring sensor. The CER-2000 series is fully temperature compensated and is made for all pressure applications in clean liquids, gases and vapours. The ceramic measuring cell can withstand high overpressures, and is sealed by an o-ring (viton as standard, other materials on request). Zero and span can be adjusted without testpressure over wide ranges, by 3 push-buttons or by a hand-held terminal (HART®, option).

**Specifications**

- **Accuracy**: 0.1% of adjusted span
- **Measuring ranges**: 0 - 0.2 bar to 0 - 400 bar
- **Output signal**: 4 - 20 mA / 2-wire
  - HART® protocol (option)
  - PROFIBUS-PA (option)
- **Adjustment**: by 3 pushbuttons or H.H.T.
- **Power supply**: 12 - 36 Vdc (Exi: 13 - 26.5 Vdc)
- **External load**: 600 Ohm / 24V to 1200 Ohm / 36V
- **Protection grade**: IP66
- **Process temperature**: -20°C to +90°C
- **Ambient temperature**: -20°C to +70°C*
- **Temperature effect**: ±0.010% / K
- **Measuring sensor**: ceramic (Al₂O₃)
- **Sensor sealing**: viton o-ring (standard) other materials on request
- **Other wetted parts**: AISI 316 (standard)
- **Material housing**: AISI 304

**Process connections**

- **Code R**: 1/2” BSP (DIN 16288)
- **Code S**: 1/2” BSP M and 1/4” BSP F
- **Code N**: 1/2” NPT M and 1/4” NPT F

**Dimensions (mm)**

- **Code R**
- **Code S**

See page 6 for ordering code and ranges.
Calibration

As standard the Series 2000 is always equipped with a display and 3 pushbuttons for easy calibration. Both the measured and the calibrated value can be read locally. A full calibration can be completed using the three pushbuttons or with the optional handheld terminal (HART®), or with special software from Klay Instruments.

Zero and span can be calibrated very easy, without testpressure, also in vacuumranges. Linearisation can be made for various tankshapes like horizontal and conical tanks (P111). For all other adjustable points see table right.

The series 2000 will as standard be delivered with 2 closed covers, so the 3 pushbuttons and the standard display are behind the cover.

A cover with transparent plastic can be delivered as an option (I). In that case you can use the display as a local indicator.

Adjustable points

| P101 | Zero adjustment (4 mA) |
| P102 | Span adjustment (20 mA) |
| P103 | Cancel mounting position effect |
| P104 | Adjustment pressure unit (see conversion table) |
| P105 | 4 - 20 mA * |
|      | 20 - 4 mA (reverse output) |
| P106 | Damping adjustment (0 to 25 sec) |
| P107 | Indication of process temperature (read out on display) |
| P108 | 0 = CELC °C * |
|      | 1 = FAHR °F |
| P109 | Read out on display: |
|      | 0 = current (4 - 20 mA) * |
|      | 1 = pressure unit |
|      | 2 = percent % |
| P110 | Current simulation (4 - 20 mA) |
| P111 | Linearisation (Various tankshapes) |
|      | * = factory setting |

Certificates and options

Temperature Compensation

All our transmitters are fully temperature compensated. All Klay transmitters with flush diaphragm are equipped with the unique KLAY Flush Diaphragm Technology. (Detailed documentation available).

For High Temperature Applications where the process temperature is continuously above 100°C we manufacture special transmitters with cooling fins to reduce the temperature (Series 2000-SAN with HT option). With a compact 2000-SAN transmitter with option HT we can go up to 200°C and with separation by a cable between process connection and electronics housing (Type: 2000-SAN-Cable-HT) we can go up to 350°C continuously!

The HT option is only available on series 2000-SAN (except range 1 and 2)

* Transparent cover (I) with option Ex: Min. amb. temp. -10°C
### SERIES 2000

<table>
<thead>
<tr>
<th>Ranges (bar)</th>
<th>Max. overpressure (bar)</th>
<th>Adjustable span range:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 0.04 ...0.4</td>
<td>6.4</td>
<td>0 - 0.04 to 0 - 0.4 bar 1</td>
</tr>
<tr>
<td>0 - 0.12 ...1.2</td>
<td>10.5</td>
<td>0 - 0.12 to 0 - 1.2 bar 2</td>
</tr>
<tr>
<td>0 - 1 ...10</td>
<td>30</td>
<td>0 - 1 to 0 - 10 bar 3</td>
</tr>
<tr>
<td>0 - 5 ...30</td>
<td>100</td>
<td>0 - 5 to 0 - 30 bar 4</td>
</tr>
<tr>
<td>0 - 20 ...100</td>
<td>200</td>
<td>0 - 20 to 0 - 100 bar 5</td>
</tr>
</tbody>
</table>

**PROCESS CONNECTIONS:**
- Weld-on nipple diam. 33 mm. (flush diaphragm / pulp & paper) W
- G” (1” BSP) threaded connection (flush diaphragm) S
- PASVE 1” connection (Valmet/Satron) X12
- Other process connections: i.e. PMC(X2), Valcom, Vega, etc. (specify X code) X

**OPTIONS:**
- Transparent cover, display functions as local indicator I
- Vacuum Ranges (Specify Relative or absolute) Compound ranges available (example -1 / +1 bar) V
- Intrinsically safe: ATEX Ex II 1 G Ex ia IIC T4 Ga and/or II 1 D Ex ia IIIC T100° C Da IP6X Ex
- HART® Protocol H
- PROFIBUS-PA output (Not available in Ex) P

### SERIES 2000-SAN

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<td>0 - 20 ...100</td>
<td>200</td>
<td>0 - 20 to 0 - 100 bar 5</td>
</tr>
</tbody>
</table>

**PROCESS CONNECTIONS:**
- Milk coupling DIN 11851, DN 25 (only ranges 3 and 4), DN 40, DN 50 (all ranges) M
- Hygienic weld-on nipple diam 62 mm or 85 mm (specify, for example: W85) W
- Tri-clamp 1/””, 2” or 3” (specify size) L
- Flange: DN 25, 40, 50 or 80 (DIN) or 1/2”, 2” or 3” (ANSI) (specify size) F
- Other connections: G1 1/2” (X3), Varivent(X4), IDF(X5), DRD(X7), SMS (X9), etc... (specify X code) X

**OPTIONS:**
- Transparent cover, display functions as local indicator I
- Vacuum Ranges (Specify Relative or absolute) Compound ranges available (example -1 / +1 bar) V
- HIGH Temperature version with cooling fins. Always specify Process Temperature HT
- Intrinsically safe: ATEX Ex II 1 G Ex ia IIC T4 Ga and/or II 1 D Ex ia IIIC T100° C Da IP6X Ex
- HART® Protocol H
- PROFIBUS-PA output (Not available in Ex) P

### SERIES CER-2000

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<th>Adjustable span range:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 0.2 ...0.8</td>
<td>5</td>
<td>0 - 0.2 to 0 - 0.8 bar 1</td>
</tr>
<tr>
<td>0 - 2 ...10</td>
<td>50</td>
<td>0 - 2 to 0 - 10 bar 3</td>
</tr>
<tr>
<td>0 - 10 ...40</td>
<td>120</td>
<td>0 - 10 to 0 - 40 bar 4</td>
</tr>
<tr>
<td>0 - 40 ...200</td>
<td>350</td>
<td>0 - 40 to 0 - 200 bar 5</td>
</tr>
<tr>
<td>0 - 150 ...320</td>
<td>600</td>
<td>0 - 150 to 0 - 400 bar 6</td>
</tr>
</tbody>
</table>

**PROCESS CONNECTIONS:**
- G 1/”” (1/” BSP) manometer (gauge) connection DIN 16288 R
- G 1/”” (male) and G 1/”” (female) S
- 1/”” NPT (male) and 1/”” NPT (female) N

**OPTIONS:**
- Transparent cover, display functions as local indicator I
- Vacuum Ranges (Specify Relative or absolute) Compound ranges available (example -1 / +1 bar) V
- Intrinsically safe: ATEX Ex II 1 G Ex ia IIC T4 Ga and/or II 1 D Ex ia IIIC T100° C Da IP6X Ex
- HART® Protocol H
- PROFIBUS-PA output (Not available in Ex) P