The 830 X loop-powered digital indicators are universally applicable. The range (either 0 to 20 mA or 4 to 20 mA) is simply selected via terminals. Display starts working at an operating current of only 0.3 mA. The low voltage drop of 0.5 V allows application in current loops with low load voltage.

Bargraph for quick range overview
The digital indicators provide a bar-graph in addition to the digital display. This gives you all information on your process variable at a single glance.

Versatile setting capabilities
Zero, span, and min/max outputs can be adjusted as desired, enabling direct readout of measured values such as temperature, power, displacement, pH value etc. The indicator comes with a symbol set for standard engineering units. The symbols can easily be replaced. Thanks to microprocessor technology, you do not require a high-precision external reference current for parameter setting. Even during operation, the settings can be changed without problems.

Loop-powered.
Your advantage.
The digital indicators are simply inserted into the current loop like passive analog indicators. Since power supplies and their wiring are not required, costs could decisively be reduced, allowing for displays which have been too expensive before. Applications in hazardous locations become easier and less expensive since the costs for intrinsically safe power supplies and wirings can be saved.
In addition, the reliability has considerably been improved since a power failure in the control room does not interrupt the data flow. And, in contrast to conventional digital indicators, there is no coupling between measuring loop and power supply.

Construction
The product line includes indicators in modular cases as well as large and small cases for installation in equipment and control panels. The cases are sealed to IP 65.

Floating min/max outputs on request
The two optionally available min/max outputs with IS/IS separation can be set as normally closed or normally open contacts. Limit values, hysteresis and switch-on delay can be set as desired.

EMV to NAMUR*
EMC design ensures reliable measurements even under unfavorable ambient conditions.

HART communication
The indicators transmit HART signals disturbance-free. Measured value display is not affected.

The facts
- Digital indication without power supplies and supply leads
- No signal interference due to power supply coupling
- Power failure without effect on indication
- No parasitic voltages
- Unproblematic, extremely low-cost application in hazardous area

Universal range selection
- Exchangeable unit symbols
- Adjustable, floating min/max outputs, optional
- Signal isolation between IS circuits

IP 65
- Large 23 mm characters,
  – 4-digit display
  – Span up to 10,000 counts
  – Display range –9999 to +9999
- Range overview by integrated bargraph
- Voltage drop 0.5 V
- Settings user defined without external reference current
- Change of settings also during operation
- Settings protected by passcode
- For hazardous-area applications
- For use in HART circuits

* German committee for measurement and control standards in the chemical industry

Warranty 3 years!
Warranty
Defects occurring within 3 years from delivery date shall be remedied free of charge at our works (carriage and insurance paid by sender).
Loop-Powered Digital Indicators

830 X Process Indicator

**Product Line**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Ref. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>830 X R Process Indicator</td>
<td>830 X R</td>
</tr>
<tr>
<td>830 X S1 Process Indicator</td>
<td>830 X S1</td>
</tr>
<tr>
<td>830 X S2 Process Indicator</td>
<td>830 X S2</td>
</tr>
</tbody>
</table>

**Options**

<table>
<thead>
<tr>
<th>Additional Pg cable gland</th>
<th>Outputs</th>
<th>Range selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>For version R as branching box</td>
<td>Versions S1 and S2 with two min/max outputs (60 V DC, 150 mA, 0.7 / 0.35 V)</td>
<td>Range fixed according to customer requirements</td>
</tr>
</tbody>
</table>

**Accessories**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Pipe mount kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other unit symbol (not standard symbol set)</td>
<td>Pipe-mount kit (only version R)</td>
</tr>
</tbody>
</table>

**Standard symbol set**

- °C
- pH
- µS/cm
- mS/cm
- mm
- %
- ppm
- 1/min
- kg
- t
- mA
- A
- mbar
- bar
- kPa
- mV
- V
- m³
- m³/h
- dm³/h
- Nm³/h
# 830 X Process Indicator

## Specifications

<table>
<thead>
<tr>
<th>Input</th>
<th>II 2(1) G EEx ia IIC T4/T6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 to 20 mA, voltage drop approx. 0.5 V</td>
</tr>
<tr>
<td></td>
<td>0.3 to 20 mA, voltage drop approx. 3.2 V</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Display</th>
<th>LCD: character height 23 mm (R, S2), 16 mm (S1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4-digit measured value display, sign, 3 decimal points</td>
</tr>
<tr>
<td></td>
<td>Function indicators: par, 0 mA, 4 mA, 20 mA, min, max, hyst, s, n/c, n/o, adj, bargraph limits</td>
</tr>
<tr>
<td></td>
<td>Bargraph with 2 % resolution, height approx. 3.5 mm (R, S2), approx. 2.5 mm (S1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Display range</th>
<th>–9,999 to +9,999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range selection</td>
<td>Span up to 10,000 counts, displacement up to ±9,999 counts</td>
</tr>
<tr>
<td></td>
<td>Bargraph user defined within span</td>
</tr>
<tr>
<td></td>
<td>Rising / falling characteristic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Keypad</th>
<th>4 buttons [TAB]par, [±] span, [↑] mA, ent par</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[TAB]Activate parameter mode</td>
</tr>
<tr>
<td></td>
<td>[±] span: [TAB]In parameter mode: select submenu, count up selected digit, In measuring mode: alternately display start/end of scale</td>
</tr>
<tr>
<td></td>
<td>[↑] mA: [TAB]In parameter mode: select digit, In measuring mode: display loop current ent</td>
</tr>
<tr>
<td></td>
<td>[TAB]Confirm entered value</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decimal point</th>
<th>User defined, without, P1, P2, P3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring rate</td>
<td>1/s</td>
</tr>
<tr>
<td>Accuracy</td>
<td>&lt;0.1 % of measured value ±2 counts</td>
</tr>
<tr>
<td>Temperature coefficient</td>
<td>&lt;0.01 % of span / K ±0.1 count / K</td>
</tr>
<tr>
<td>(average over permissible temperature range)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overload capacity</th>
<th>±150 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min/Max outputs</td>
<td>II 2(1) G EEx ia IIC T4/T6</td>
</tr>
<tr>
<td></td>
<td>Floating solid-state switches (min and max), 60 V DC, 350 mA</td>
</tr>
<tr>
<td></td>
<td>Voltage drop when switched approx. 0.5 V</td>
</tr>
<tr>
<td></td>
<td>With input currents &lt;0.3 mA (&lt;3.8 mA or &gt;approx. 24 mA</td>
</tr>
<tr>
<td></td>
<td>the solid-state switches block</td>
</tr>
<tr>
<td></td>
<td>Hysteresis: [TAB]0 to 9,999 counts, user defined</td>
</tr>
<tr>
<td></td>
<td>Switch-on delay: [TAB]0 to 9,999 s, user defined</td>
</tr>
<tr>
<td></td>
<td>Contact type: [TAB]normally closed (n/c) or normally open (n/o), user definable</td>
</tr>
<tr>
<td></td>
<td>Separate indication of switching state on display</td>
</tr>
<tr>
<td></td>
<td>Display flashing can be turned off</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Set of 20 symbols and five blank labels included</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosion protection</td>
<td>II 2(1) G EEx ia IIC T4/T6</td>
</tr>
<tr>
<td>Terminals</td>
<td>Stranded wire: [TAB]up to 1.5 mm²</td>
</tr>
<tr>
<td></td>
<td>Single wire: [TAB]up to 2.5 mm² (S1, S2), up to 1.5 mm² (R)</td>
</tr>
<tr>
<td>Data retention</td>
<td>Parameters and calibration data &gt;10 years (EEPROM)</td>
</tr>
<tr>
<td>Product family standard</td>
<td>EN 61326</td>
</tr>
<tr>
<td>EMC</td>
<td>Accuracy during disturbance &lt;1 % span</td>
</tr>
</tbody>
</table>
### 830 X Process Indicator

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**Ambient temperature**

- **Operation:**
  - 830 X R: –25 to +40 °C (T6)
  - 830 X S1: –25 to +45 °C (T5)
  - 830 X S2: –25 to +65 °C (T4)
- **Storage:**
  - 830 X R: –30 to +70 °C
  - 830 X S1: –20 to +70 °C
  - 830 X S2: –20 to +70 °C

**Adjustments**

- **Internal**
- **Front panel**
- **Yes (Option 291)**

**Enclosure**

- **Version R:** modular
- **Version S1:** panel
- **Version S2:** panel

**Material**

- **Al Si 12, DIN 1725,** with glass pane,
- **Insert made of Byblend,** Rating plate: polyester
- **Front panel overlay:** polyester, with window, Front: Al, Sides: Al, Rear: PA + GF
- **Material:**
  - **Front panel overlay:** polyester, with window, Front: Al, Sides: Al, Rear: PA + GF
  - **Color:**
    - Lid: iron gray RAL 7011,
    - Bottom: gray RAL 7001,
    - Insert: black
  - **Dimensions in mm (incl. terminals and cable glands):**
    - W 200 x H 80 x D 57
    - W 96 x H 48 x D 118
    - W 144 x H 72 x D 57
  - **Protection (EN 60529):**
    - Front to control panel: IP 65
    - Rear: IP 65
  - **Weight:**
    - Approx. 750 g
    - Approx. 300 g
    - Approx. 300 g
Typical applications

Application with 2-wire transmitter and repeater power supply (e.g. Knick WG 20 or WG 21)
Indicators can be mounted either in hazardous or safe area and due to different enclosure versions on the site or in the control panel.

Application with 4-wire transmitter and IS/non-IS isolator (e.g. Knick IsoTrans® 36 A7)
Indicators can be mounted either in hazardous or safe area and due to different enclosure versions on the site or in the control panel.
Loop-Powered Digital Indicators

830 X Process Indicator

- Dimension drawings

830 X R Process Indicator

Bottom view

Front view with cover

Unit symbol
Rating plate

Front view without cover

Rating plate
Terminal assignments

Note: All dimensions in mm [in]
830 X Process Indicator

- Dimension drawings

830 X R Process Indicator

Rear view

Note: All dimensions in mm [in]

Keypad

Subject to change!
830 X Process Indicator

Dimension drawings

ZU 0154 Pipe mount kit
for 830 X R Process Indicator

Pipe mount plate, stainless steel 1.4301

Hose clamp with worm gear drive,
stainless steel 1.4301, according to DIN 3017

Note: All dimensions in mm [in]
830 X Process Indicator

Dimension drawings

830 X S1 Process Indicator

Front view

Lateral view

Top view

Rear view

Rating plate

Clamp and spindle

Terminals for switching outputs (Opt. 290)

Note: All dimensions in mm [in]
Loop-Powered Digital Indicators

830 X Process Indicator

- Dimension drawings

830 X S2 Process Indicator

Note: All dimensions in mm [in]
830 X Process Indicator