Product Catalog

Indicators

Knick

Blue – our sign of perfection.


25.0
°C

Always better.

Knick is introducing the third generation of loop-powered digital indicators which feed themselves from a low voltage drop from the 0 (4) to 20 mA current loop.
Back in 1980, Knick revolutionized the indicator market with this patented circuit technology (German patent 30 27 398).
Since power supplies and their wiring are omitted, the indicators are particularly suited for applications in hazardous locations.
The new indicator series 830 uses latest microprocessor technology in redesigned enclosures that provide IP 65 protection even when mounted in a control panel. All units provide high immunity to radiated disturbances and even exceed the NAMUR* recommendations concerning EMC.

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

Indicators from Knick

The measurement is highly precise (accuracy < 0.1 % of measured value). Display starts working at an operating current of only 0.3 mA – a value that is ignored by conventional pointer instruments.

Indicators

A reliable range.

Indicators for application in hazardous locations and connection to Ex-i current loops are marked by an "X" in the model name.

Four different design versions are available:

830 (X) R
Process Indicator

Loop-powered indicator in modular case. LCD character height 23 mm.

830 (X) S1
Process Indicator

Loop-powered indicator in panel-mount case. LCD character height 16 mm.

830 (X) S2
Process Indicator

Loop-powered indicator in panel-mount case. LCD character height 23 mm.

803 T
Digital Indicator

Loop-powered indicator in panel-mount case. LCD character height 13 mm.

Loop-Powered Digital Indicators

To monitor and control processes, various variables must be reliably measured.

Depending on the process, these measurements are done under extremely different conditions. Here are a few examples of especially demanding measuring situations:

- Outside at high environmental temperature and moisture fluctuations
- In chemical operations with aggressive and potentially explosive atmospheres
- On engines and machines with strong vibrations, etc.

A typically-used measuring system consists of a sensor, transmitter, and an analyzing unit for monitoring and controlling.

Analyzing process-relevant measured values is normally carried out centrally in a control room, e. g., using a stored program controller (SPC) or using a process control system (PCS) for complex systems.

In order not to have to route vulnerable sensor signals over longer lines, the transmitter is installed as near as possible to the sensor on the field level. A non-susceptible measuring signal is available at the transmitter output which can then be transmitted trouble-free over a few kilometers. In process and system technology, the analog 0(4) to 20 mA current signal is often used.

Parallel to the measured value processing mentioned above, the measured values are also visualized, i. e., they are shown as a display on instruments and even more increasingly on monitors in the control room.

An additional measured value display on site is irreplaceable during malfunctions or maintenance.

A few transmitters have their own measured value displays, but are often very small or barely recognizable if adversely mounted.

In recent years digital indicators have also become common along with conventional analog indicators. Digital indicators have the advantage that they can be configured as needed for a respective process variable. An expensive scale marking is not required here.

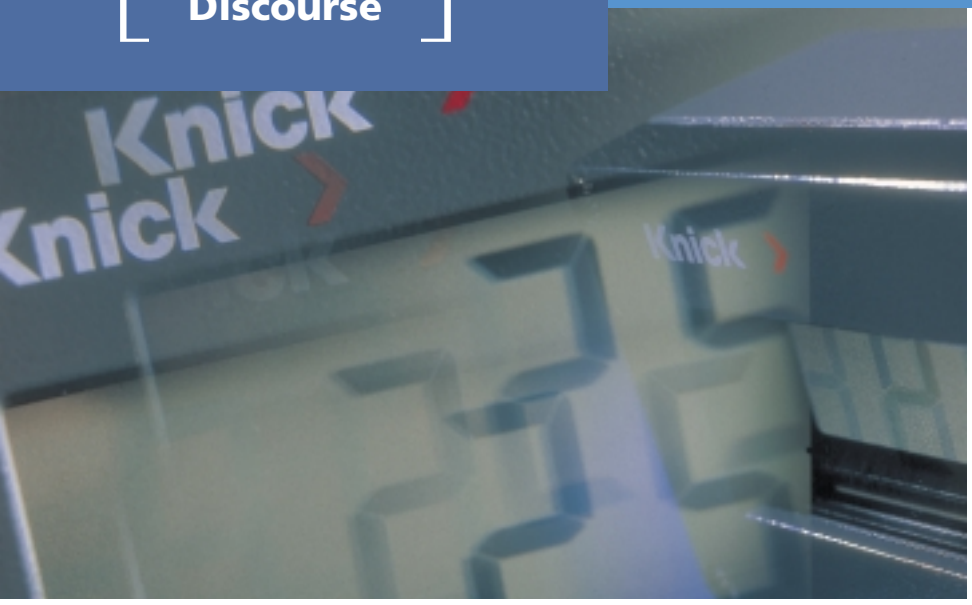
Modern digital indicators also feature an additional bargraph which, in accordance with analog indicators, allows a quick overview of the currently measured value and its recent trends.

Function of the loop-powered indicator

How does a loop-powered digital indicator function? The digital indicator in an analog 20 mA current loop (connection in series) takes a small portion of the permissible compliance voltage from the circuit. Thus it is powered by the 20 mA current loop.
A circuit can be loaded with any number of consumers up to its compliance voltage without affecting the current. Additional measuring errors only result when the permissible load is exceeded.

The measuring electronics of the indicator is therefore supplied from the voltage drop multiplied with the smallest measuring current.
Example Model 830 S1:
0.5 V x 4 mA = 2 mW or
3.2 V x 0.3 mA = 0.96 mW
And this extremely small amount of power is sufficient to also supply the switches.

With this developmental achievement, Knick is once again setting new standards.



Two points must be noted when using these loop-powered indicators:

- If the measured current in 0 to 20 mA circuits is zero (dead zero), the measured value display goes off.
  In dead zero circuits, a distinction cannot be made between zero measured current and an interrupted cable.
  For this reason, 4 to 20 mA circuits are preferred. If the measured value is zero, there are still 4 mA flowing. I.e., the loop-powered indicator operates perfectly, and shows zero. The display goes off only when there is an interrupted cable.
- Circuits can become overloaded. When this happens, the current loop no longer operates fault-free.

Therefore the load from the indicator, the so-called natural voltage requirement or voltage drop, is an important quality feature. The lower the voltage drop, the more it can be used in circuits having low load voltage or having several consumers (Fig. 1).

The current outputs of a typical transmitter can be loaded by a load voltage of up to 10 V (500 Ohms at 20 mA).

I.e., a current loop can only be operated fault-free when the sum of the loads connected in series is smaller than its maximum permitted load.
This can be calculated using a resistance or voltage analysis (See Fig. 1).
It is as follows:

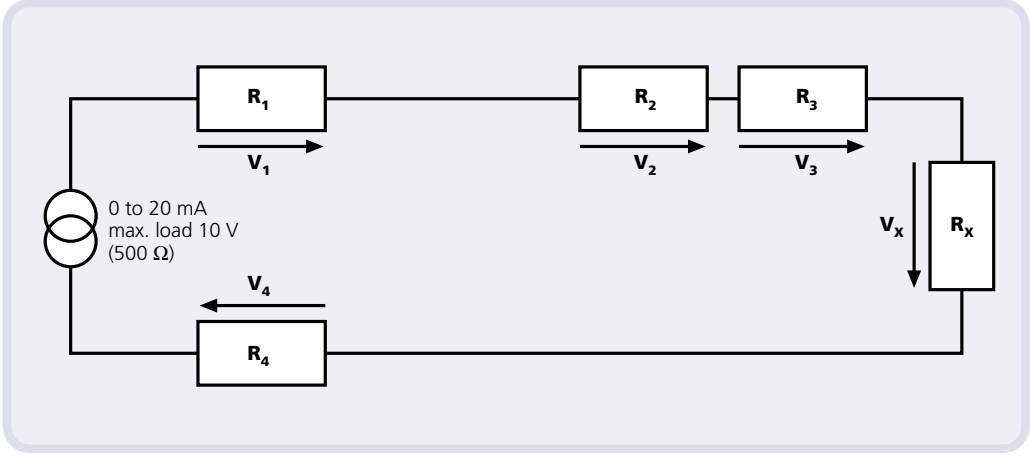
$R_{max\ load} \geq R_1 + R_2 + R_3 + \ldots + R_X$

or

$V_{max\ load} \geq V_1 + V_2 + V_3 + \ldots + V_X$

A voltage analysis is always required when the voltage drop is independent of the measured current, as is the case with the Series 830 (X) Process Indicators.

Figure 1



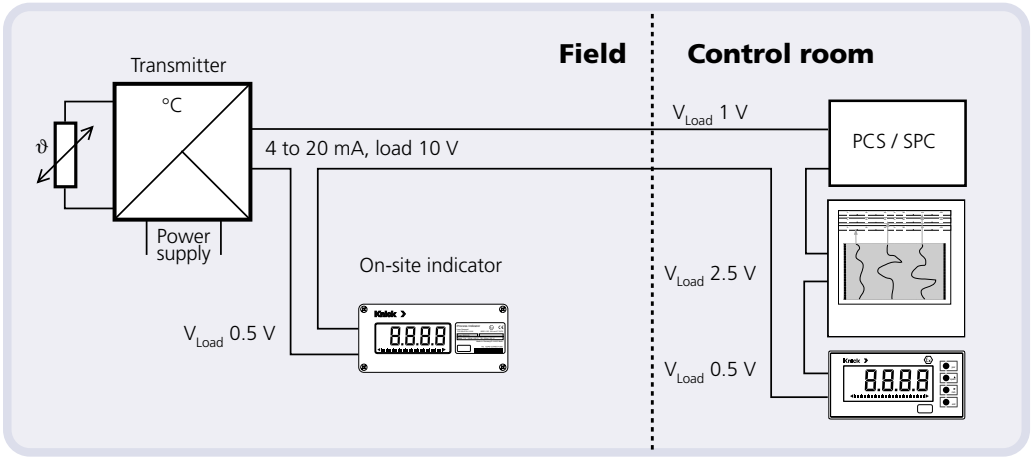


Figure 2: System with several devices in 4 to 20 mA current loop

The Series 830 Process Indicators from Knick are easily reconnectable for 0 to 20 mA and 4 to 20 mA current loops.

The voltage drop for the "0 to 20 mA" operating mode is 3.2 V and for the "4 to 20 mA" operating mode is only 0.5 V. Thus practically every 4 to 20 mA current loop is suitable for these indicators from Knick.

The reliability (MTBF) is increased for all loop-powered devices because heat-providing power supplies are not needed.

Even during control room power failure, the measured value can be read without any problems. This is also a requirement for displays used for safety purposes.

Signal interferences resulting from power supply cross coupling are effectively avoided. When loop-powered, wiring and cabling requiring high installation costs is not required.

Explosion protection

Loop-powered indicators are preferred in hazardous locations. They have been standard equipment in the chemical industry since 1980.

The loop-powered indicators are manufactured having the type of protection intrinsic safety "i". Intrinsically safe devices do not produce ignitable sparks or impermissible heating, even in a fault scenario.

A typical application is the temperature measurement with 2-wire transmitter in a hazardous location as shown in Fig. 3. In contrast to Fig. 1, here the power is supplied via a repeater power supply.

The new digital indicators from Knick are approved according to directive 94/9/EC [ATEX-100a], which will replace the former Ex directive 76/117/EEC on June 30, 2003 after a transition period (for differences in designations, please see Fig. 4).

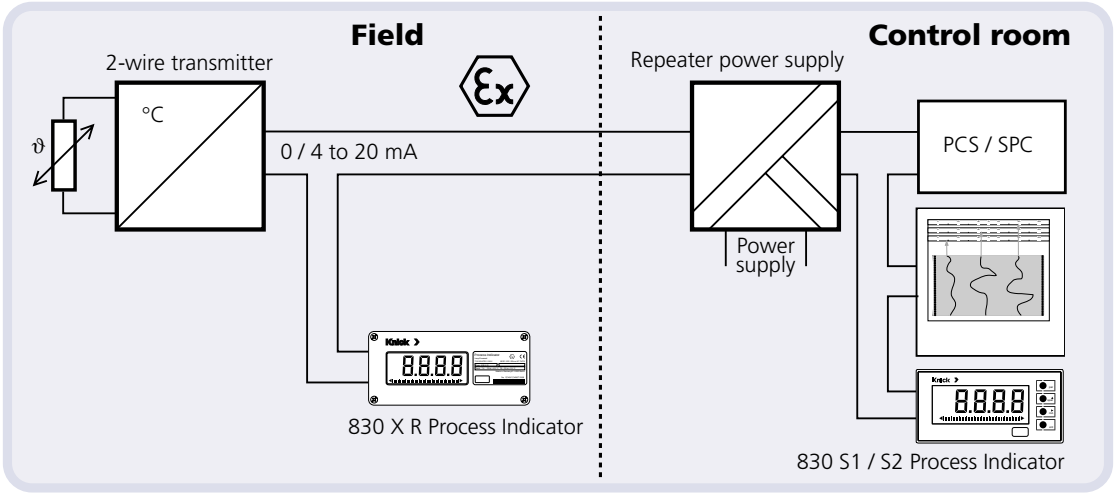


Figure 3:
Temperature measurement in hazardous locations

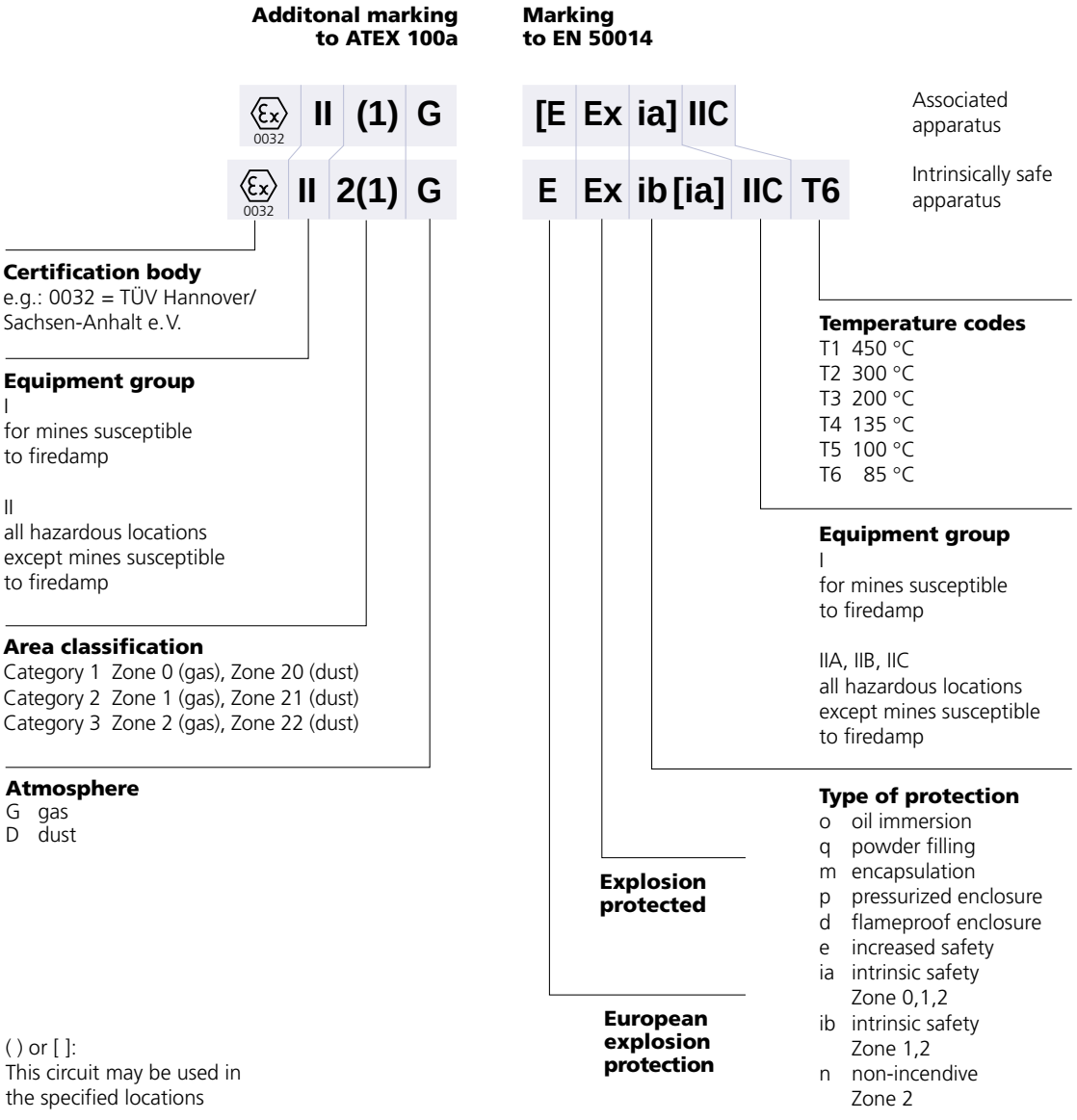


Figure 4:
Comparison of old and new markings of devices for hazardous locations

Switches for alarms, limit values, and simple controllers

There is ongoing demand for switching contacts in measurement technology and control engineering.
The panel-mount units of the new Series 830 Process Indicators from Knick are equipped with min/max switches on request.
These floating solid-state switches are capable of switching 60 VDC, 350 mA in a non-intrinsically safe design, and in an intrinsically safe design 60 VDC, 150 mA, max. 0.7 W.

The switches can be configured individually as normally closed contact or normally open contact, with switch on delay and hysteresis.
Through this, valves, pumps, warning lights, emergency off functions, etc., can be controlled.

Advantageous flexibility

The trend for more flexible, adjustable devices which can be adjusted individually to any measuring task is fully taken into account with the Series 830 (X) Process Indicators from Knick.
The universal applicability of the new devices simplifies purchasing, storage, as well as maintaining spare-parts, thus significantly reducing costs.

Of course the devices must remain easy to operate. For the new digital indicator, Knick has adopted the proven, simple operation from the previous 820 series. Using only four keys, the user is guided by an easily understandable, function-oriented menu structure (Fig. 5).

The settings can be protected against unauthorized access by entering a passcode.

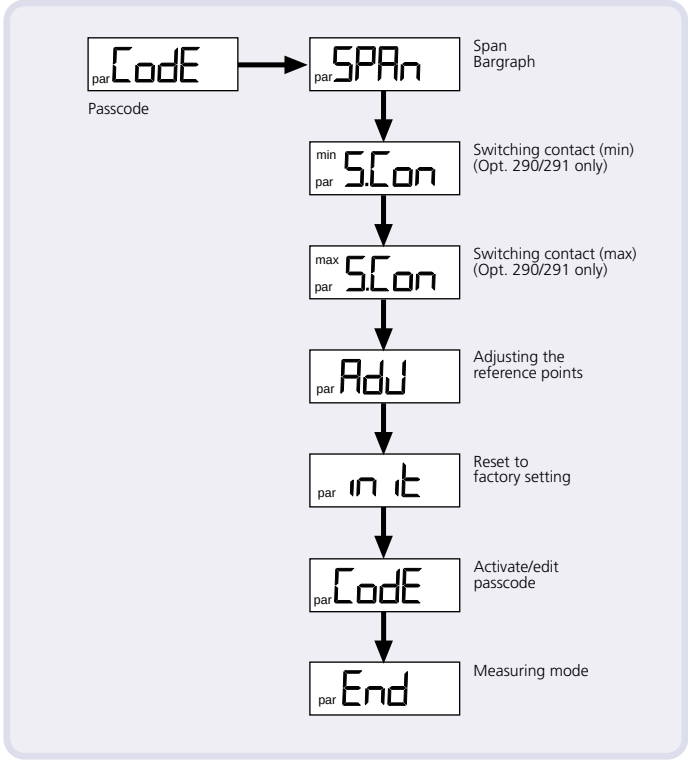


Figure 5:
Parameter menu of Series 830 Process Indicators

An application example:

In process chemistry, large centrifuges with three-phase motors are often used in hazardous locations. Enormous forces are produced here, which when exceeding the highest permissible values can lead to significant damage such as destruction of a boiler or the centrifuge, the loss of filling goods due to production stop, etc. Therefore the current consumption of centrifuges is monitored. By measuring the current consumption of the individual AC motor phases, an unbalance (non-symmetrical load) can be detected.

Exceeding the permissible filling level or agglomerating the processed goods can also lead to an overload.

In process chemistry, the current of the individual phases (e.g., 100 A per phase) is therefore transformed by a current transformer and an AC/DC transducer into a 4 to 20 mA signal. The transformed signal is displayed by digital indicators from Knick in the control room as well as on site in the hazardous locations. The digital indicators indicate the current in amperes. The transformation of a non-intrinsically safe 4 to 20 mA signal into an intrinsically safe signal is achieved by Knick with loop-powered IS isolators. Figure 6 shows the block diagram of the measuring installation.

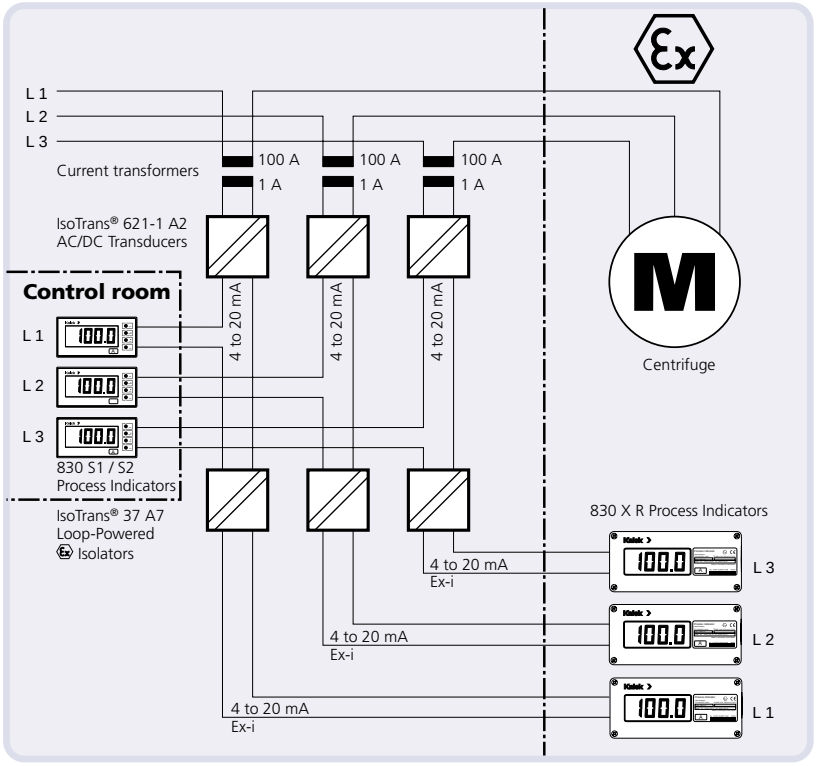


Figure 6: Monitoring a centrifuge

Indicators

Hazardous-Area Indicators

830 X Loop-Powered Process Indicator

830 X R Process Indicator

830 X S1 Process Indicator

830 X S2 Process Indicator

The 830 X loop-powered digital indicators are universally applicable. The range (either 0 - 20 mA or 4 - 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 bargraph 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.

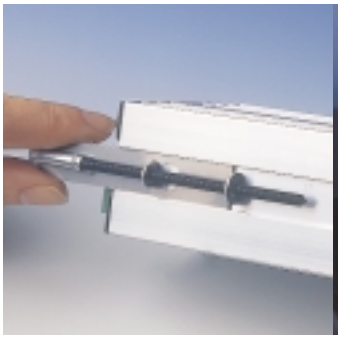
The digital indicators are simply inserted into the current loop like passive analog indicators.

Since power supplies and their wiring are not required, costs could decisively be reduced, allowing for displays which have been too expensive before.

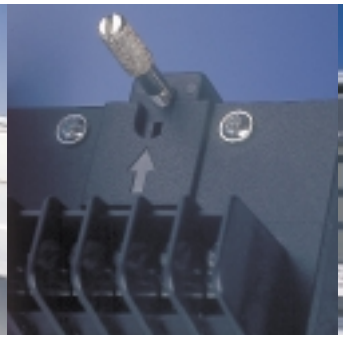
Applications in hazardous locations become easier and less expensive since the costs for intrinsically safe power supplies and wirings can be saved.

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.

IP 65



Easy installation in the control panel



Easy handling with only four pushbuttons

Convenient plug-in terminals make mounting easy

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.

EMC 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.

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

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 23mm characters, 4-digit display
  Span up to 10,000 counts
  Display range
  –9,000 to +9,000
- 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

Warranty
Defects occurring within 3 years from delivery date shall be remedied free of charge at our works (carriage and insurance paid by sender).
Accessories: 1 year

Product Line

Instrument		Ref. No.
830 X R Process Indicator	Loop-powered Ex indicator in modular case with standard symbol set	830 X R
830 X S1 Process Indicator	Loop-powered Ex indicator in panel-mount case (96 mm x 48 mm) with standard symbol set	830 X S1
830 X S2 Process Indicator	Loop-powered Ex indicator in panel-mount case (144 mm x 72 mm) with standard symbol set	830 X S2
Options		
Additional Pg cable gland	For version R as branching box	119
Outputs	Versions S1 and S2 with two min/max outputs (60 V DC, 150 mA, 0.7 / 0.35 V)	291
Range selection	Range fixed according to customer requirements	365
Accessories		
Symbol	Other unit symbol (not standard symbol set)	ZU 0129
Pipe-mount kit	Pipe-mount kit (only version R)	ZU 0154

Standard symbol set

°C	pH	µS/cm	mS/cm	mm
%	ppm	1/min	kg	t
mA	A	mbar	bar	kPa
mV	V	m^3	m^3/h	Nm^3/h

Specifications

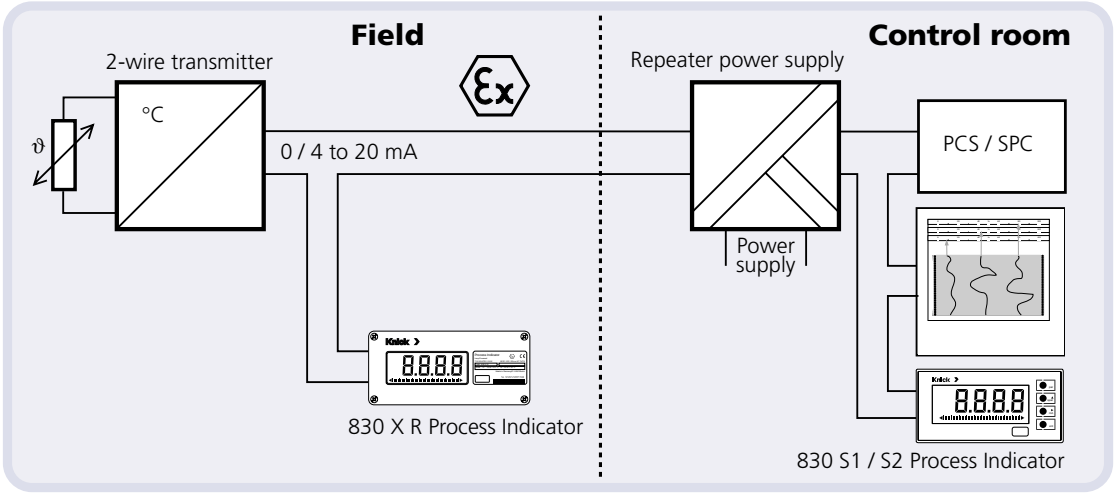
Input II 2(1) G EEx ia IIC T4/T6	4 to 20 mA, voltage drop approx. 0.5 V 0.3 to 20 mA, voltage drop approx. 3.2 V
Display	LCD: character height 23 mm (R, S2), 16 mm (S1) 4-digit measured value display, sign, 3 decimal points Function indicators: par, 0 mA, 4 mA, 20 mA, min, max, hyst, s, n/c, n/o, adj, bargraph limits, Bargraph with 2 % resolution, height approx. 3.5 mm (R, S2), approx. 2.5 mm (S1)
Display range	–9,999 to +9,999
Range selection	Span up to 10,000 counts, displacement up to ±9,999 counts Bargraph user defined within span Rising/falling characteristic
Keypad	4 buttons: par, ▲ span, ► mA, ent par: Activate parameter mode ▲ span: In parameter mode: select submenu count up selected digit, In measuring mode: alternately display start/end of scale ► mA: In parameter mode: select digit, In measuring mode: display loop current ent: Confirm entered value
Decimal point	User defined, without, P1, P2, P3
Measuring rate	1/s
Accuracy	<0.1 % of measured value ±2 counts
Temperature coefficient	<0.01 % of span/K ±0.1 count/K (average over permissible temperature range)
Overload	±150 mA
Min/Max outputs II 2(1) G EEx ia IIC T4/T6	Floating solid-state switches (min and max), 60 V DC, 150 mA, 0.7 W (T 4)/0.35 W (T 6) Voltage drop when switched approx. 0.5 V, With input currents <0.3 mA (<3.8 mA) or >approx. 24 mA the solid-state switches block Hysteresis: 0 to 9,999 counts, user defined Switch-on delay: 0 to 9,999 s, user defined Contact type: normally closed (n/c) or normally open (n/o), user definable Separate indication of switching state on display Display flashing can be turned off
Symbol set	Set of 20 symbols and five blank labels included
Explosion protection	II 2 (I)G EEx ia IIC T4/T6

Specifications

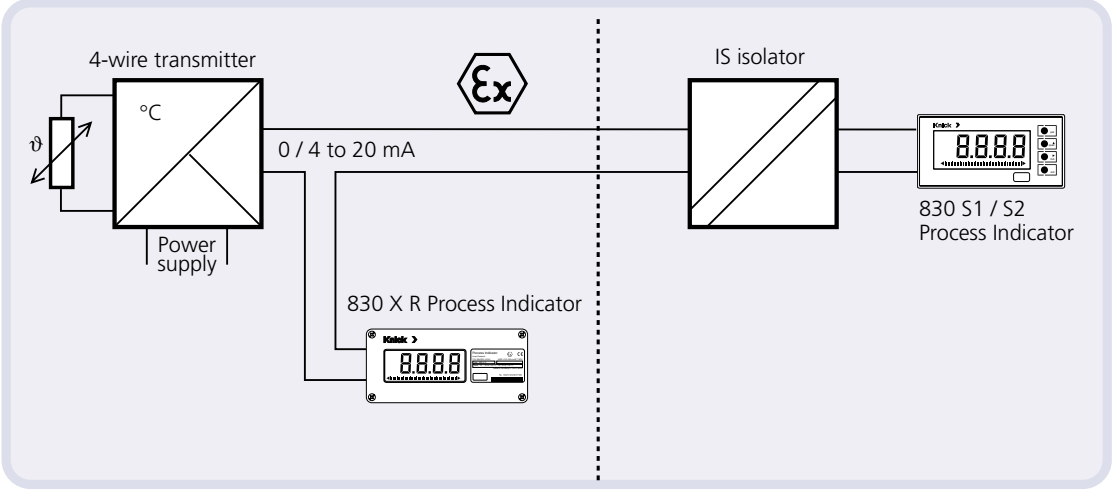
Terminals	For version R, two wires can be connected to one terminal (Opt. 119) Stranded wire: up to 1.5 mm² Single wire: up to 2.5 mm² (S1, S2), up to 1.5 mm² (R)		
Data retention	Parameters and calibration data >10 years (EEPROM)		
Product family standard	EN 61326-1, EN 61326/A1		
Generic standards	EN 50081-1, EN 50081-2, EN 50082-1, EN 50082-2		
EMC	Accuracy during disturbance <1 % span		
	830 X R	**830 X S1**	**830 X S2**
Ambient temperature Operation: Storage:	–25 to +40 °C (T6) –25 to +55 °C (T5) –25 to +65 °C (T4) –30 to +70 °C	–10 to +40 °C (T6) –10 to +55 °C (T4, T5) –20 to +70 °C	
Adjustments	Internal	Front panel	
Min/Max outputs	No	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: PA + GF, sides: Al Rear: PA + GF	Front panel overlay: polyester, with glass pane, Front and sides: PA + GF, Rear: PA + GF
Color	Lid: iron gray RAL 7011, Bottom: gray RAL 7001, Insert: black	Front: iron gray RAL 7011, Sides: Al, Rear: black Buttons: black	Front: iron gray RAL 7011, Sides and rear: black Buttons: black
Dimensions in mm (incl. terminals and Pg 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: Rear:	IP65	 IP65 IP20	
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.

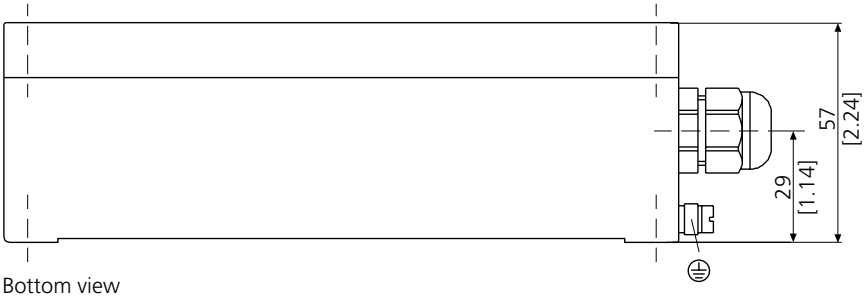


Application with 4-wire transmitter and IS/non-IS isolator (e. g. Knick IsoTrans® 36 A7)
Indicators can be mounted either in hazardous or safe area and due to different enclosure versions on the site or in the control panel.

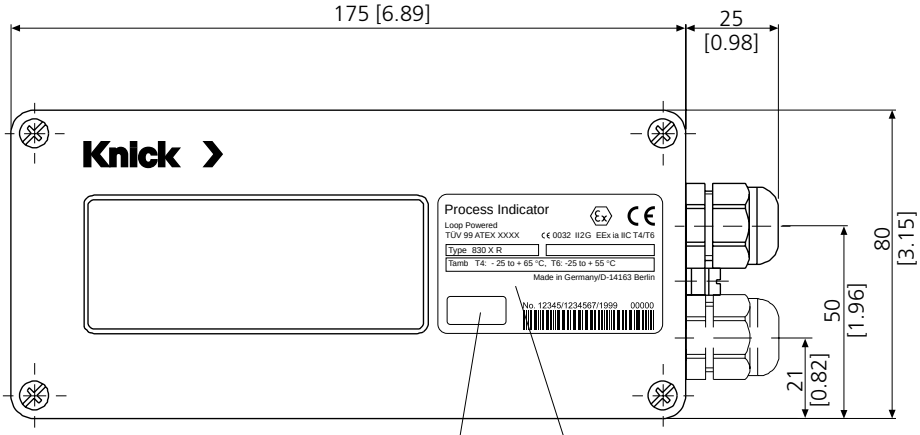


Dimension drawings

830 X R Process Indicator



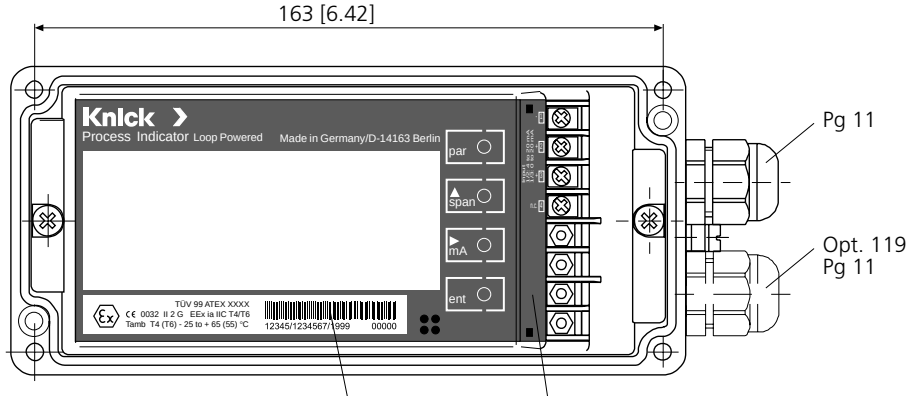
Bottom view



Front view with cover

Unit symbol

Rating plate



Front view without cover

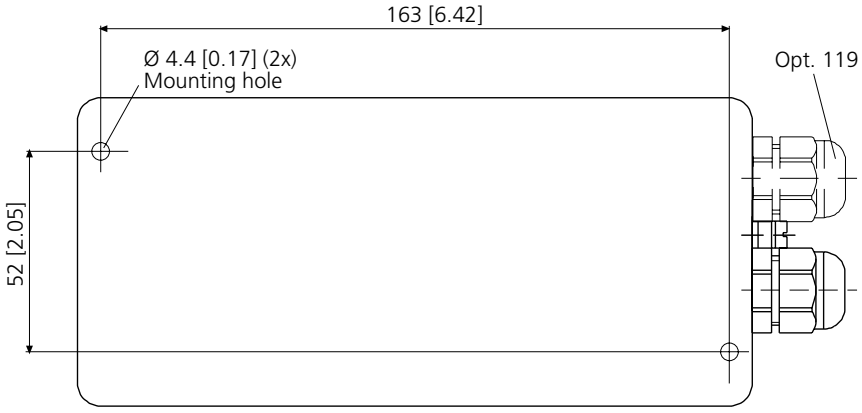
Rating plate

Terminal assignment

Note: All dimensions in mm [in]

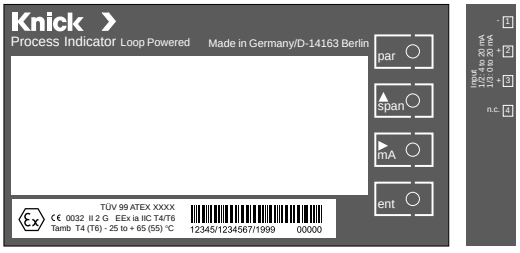
Dimension drawings

830 X R Process Indicator



Rear view

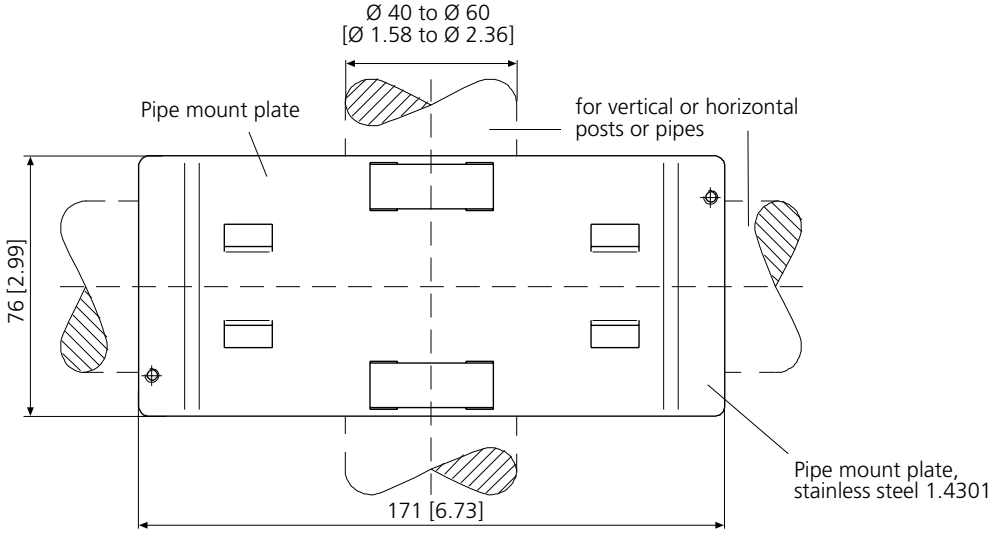
Note: All dimensions in mm [in]

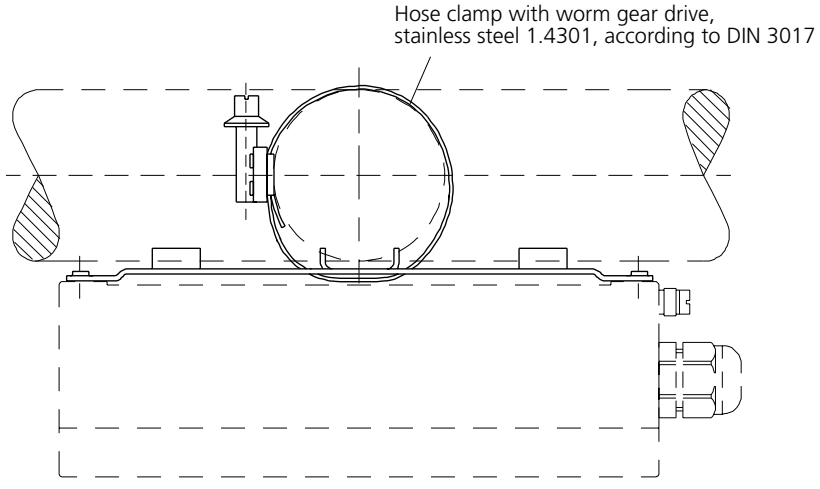


Keypad

Dimension drawings

ZU 0154 Pipe-mount kit
for 830 X R Process Indicator

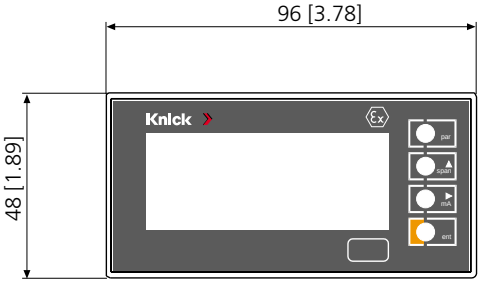




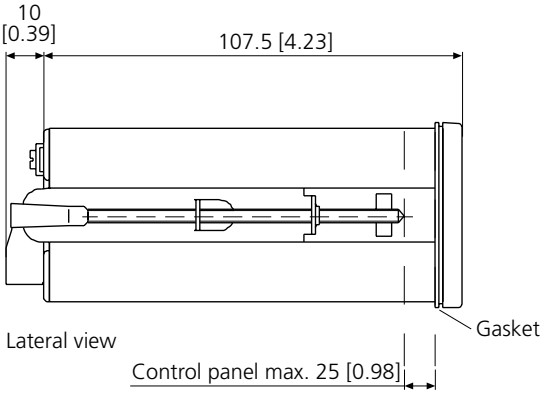
Note: All dimensions in mm [in]

Dimension drawings

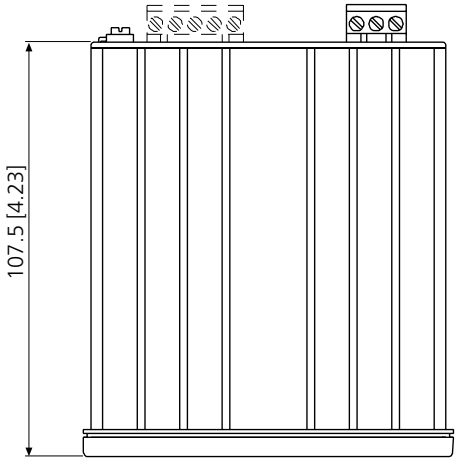
830 X S1 Process Indicator



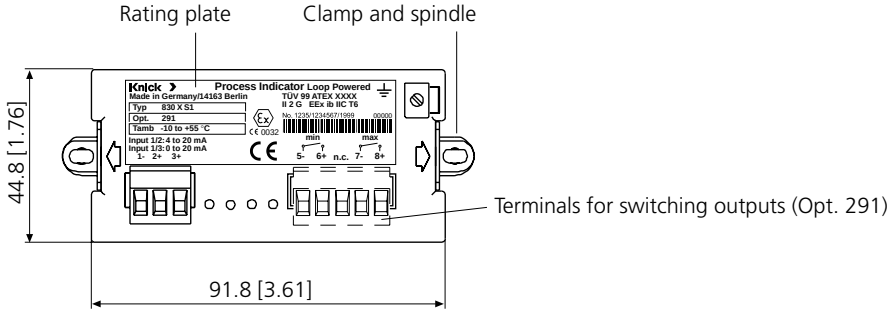
Front view



Lateral view



Top view

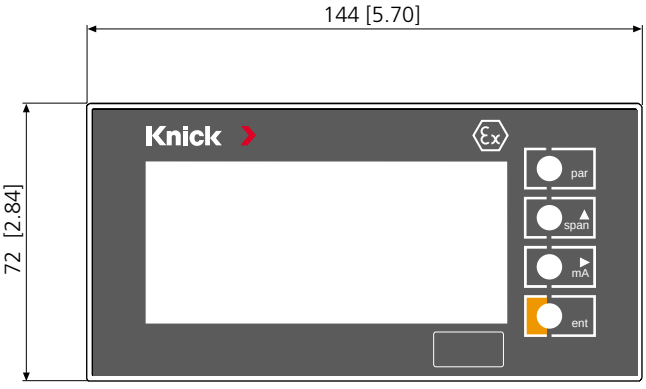


Rear view

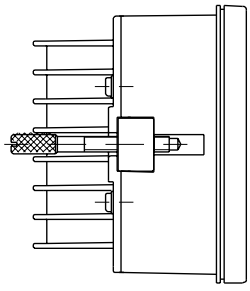
Note: All dimensions in mm [in]

Dimension drawings

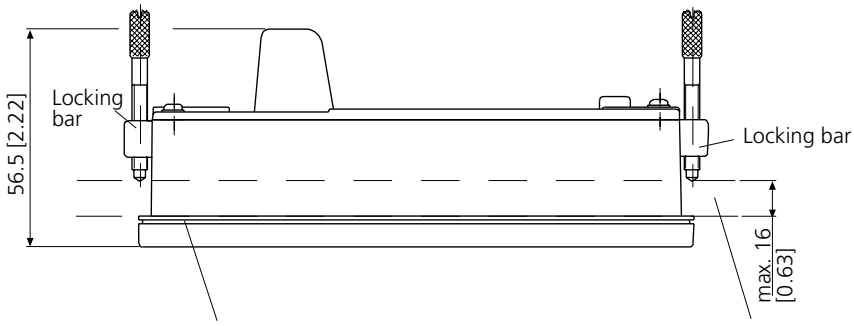
830 X S2 Process Indicator



Front view



Lateral view



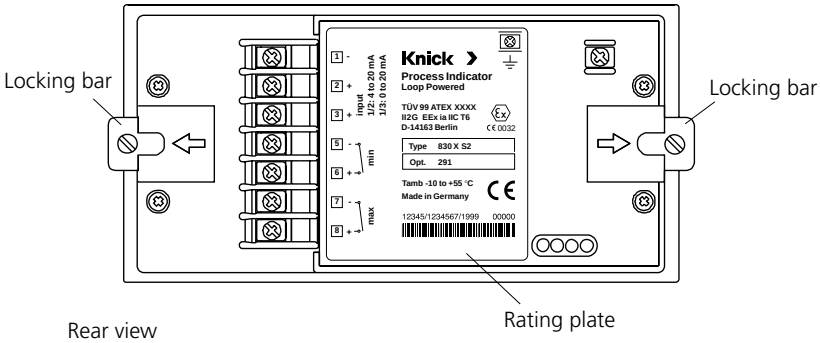
Gasket

Top view

Panel cutout according to DIN 43 700
138^{+1} x $68^{+0,7}$
$[5.43^{+0.04}$ x $2.68^{+0.03}]$

Control panel

Note: All dimensions in mm [in]



Rear view

Certificate of Conformity 830 X S1

print preview

Prüf- und Zertifizierungsstelle
ZELM Ex

EC-TYPE-EXAMINATION CERTIFICATE
(Translation)

ZELM 00 ATEX 0026

Prüf- und Zertifizierungsstelle
ZELM Ex

SCHEDULE

EC-TYPE-EXAMINATION CERTIFICATE ZELM 00 ATEX 0026

Prüf- und Zertifizierungsstelle
ZELM Ex

Schedule to EC-TYPE-EXAMINATION CERTIFICATE ZELM 00 ATEX 0026

Certificate of Conformity 830 X S2/R

print preview

Prüf- und Zertifizierungsstelle
ZELM Ex

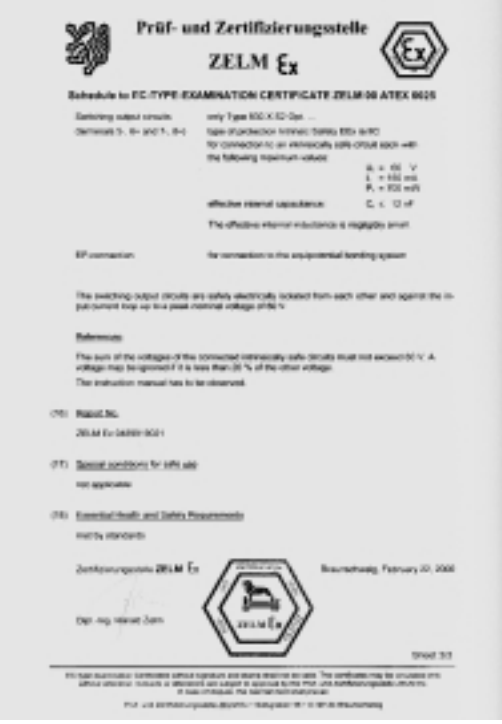
EC-TYPE-EXAMINATION CERTIFICATE
(Translation)

ZELM 00 ATEX 0025

Prüf- und Zertifizierungsstelle
ZELM Ex

SCHEDULE

EC-TYPE-EXAMINATION CERTIFICATE ZELM 00 ATEX 0025



Prüf- und Zertifizierungsstelle
ZELM Ex

Schedule to EC-TYPE-EXAMINATION CERTIFICATE ZELM 00 ATEX 0025

Indicators

Safe-Area Indicators

830 Loop-Powered Process Indicator

830 R Process Indicator

830 S1 Process Indicator

830 S2 Process Indicator

The 830 loop-powered digital indicators are universally applicable.
The range (either 0 - 20 mA or 4 - 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 bargraph 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.

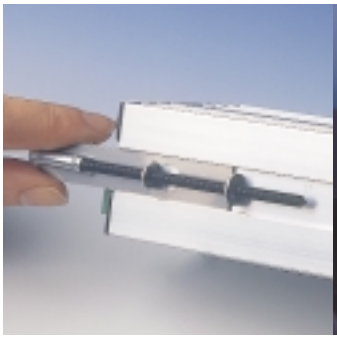
Loop-powered.
Your advantage.
The digital indicators are simply inserted into the current loop like passive analog indicators.

Since power supplies and their wiring are not required, costs could decisively be reduced, allowing for displays which have been too expensive before.

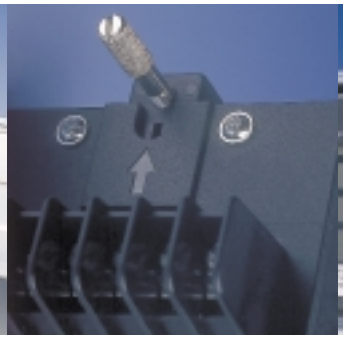
In addition, the reliability has considerably been improved since a power failure in the control room does not interrupt the data flow. And, in contrast to conventional digital indicators, there is no coupling between measuring loop and power supply.

Construction
The product line includes indicators in modular cases, as well as large and small cases for installation in equipment and control panels.

IP 65



Easy installation in the control panel



Easy handling with only four pushbuttons

Convenient plug-in terminals make mounting easy

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

EMC 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.

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

The facts:

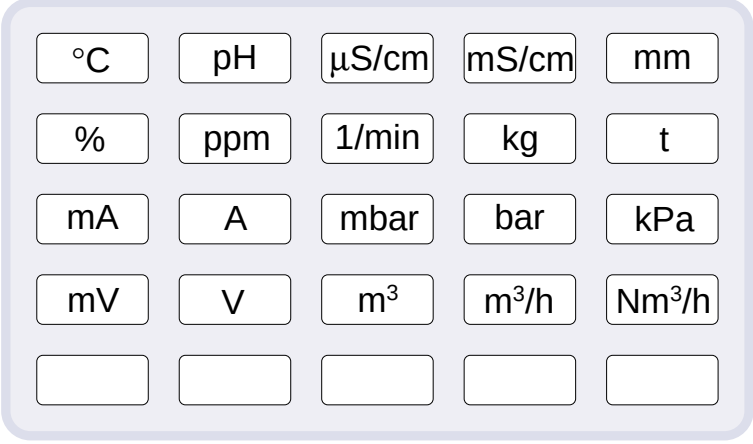
- Digital indication without power supplies and supply leads
- No signal interference due to power supply coupling
- Power failure without effect on indication
- No parasitic voltages
- Universal range selection
- Exchangeable unit symbols
- Adjustable, floating min/max outputs, optional
- IP 65
- Large 23 mm characters, 4-digit display
  Span up to 10,000 counts
  Display range
  –9,999 to +9,999
- 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 use in HART® circuits

Warranty
Defects occurring within 3 years from delivery date shall be remedied free of charge at our works (carriage and insurance paid by sender).
Accessories: 1 year

Product line

Instrument		Ref. No.
830 R Process Indicator	Loop-powered indicator in modular case with standard symbol set	830 R
830 S1 Process Indicator	Loop-powered indicator in panel-mount case (96 x 48 mm) with standard symbol set	830 S1
830 S2 Process Indicator	Loop-powered indicator in panel-mount case (144 x 72 mm) with standard symbol set	830 S2
Options		
Additional Pg cable gland	For version R as branching box	119
Outputs	Versions S1 and S2 with two min/max outputs, (60 V DC, 350 mA)	290
Range selection	Range fixed according to customer requirements	365
Accessories		
Symbol	Other unit symbol (not standard symbol set)	ZU 0129
Pipe mount kit	Pipe mount kit (only version R)	ZU 0154

Standard symbol set



Specifications

Input	4 to 20 mA, voltage drop approx. 0.5 V 0.3 to 20 mA, voltage drop approx. 3.2 V
Display	LCD: character height 23 mm (R, S2), 16 mm (S1) 4-digit measured value display, sign, 3 decimal points Function indicators: par, 0 mA, 4 mA, 20 mA, min, max, hyst, s, n/c, n/o, adj, bargraph limits Bargraph with 2 % resolution, height approx. 3.5 mm (R, S2), approx. 2.5 mm (S1)
Display range	–9,999 to +9,999
Range selection	Span up to 10,000 counts, displacement up to ±9,999 counts Bargraph user defined within span Rising/falling characteristic
Keypad	4 buttons: par, ▲ span, ► mA, ent par: Activate parameter mode ▲ span: In parameter mode: select submenu, count up selected digit, In measuring mode: alternately display start/end of scale ► mA: In parameter mode: select digit, In measuring mode: display loop current ent: Confirm entered value
Decimal point	User defined, without, P1, P2, P3
Measuring rate	1/s
Accuracy	<0.1 % of measured value ±2 counts
Temperature coefficient	<0.01 % of span/K ±0.1 count/K (average over permissible temperature range)
Overload capacity	±150 mA
Min/Max outputs	Floating solid-state switches (min and max), 60 V DC, 350 mA Voltage drop when switched approx. 0.5 V, With input currents <0.3 mA (<3.8 mA) or >approx. 24 mA the solid-state switches block Hysteresis: 0 to 9,999 counts, user defined Switch-on delay: 0 to 9,999 s, user defined Contact type: normally closed (n/c) or normally open (n/o), user definable Separate indication of switching state on display Display flashing can be turned off
Symbols	Set of 20 symbols and five blank labels included

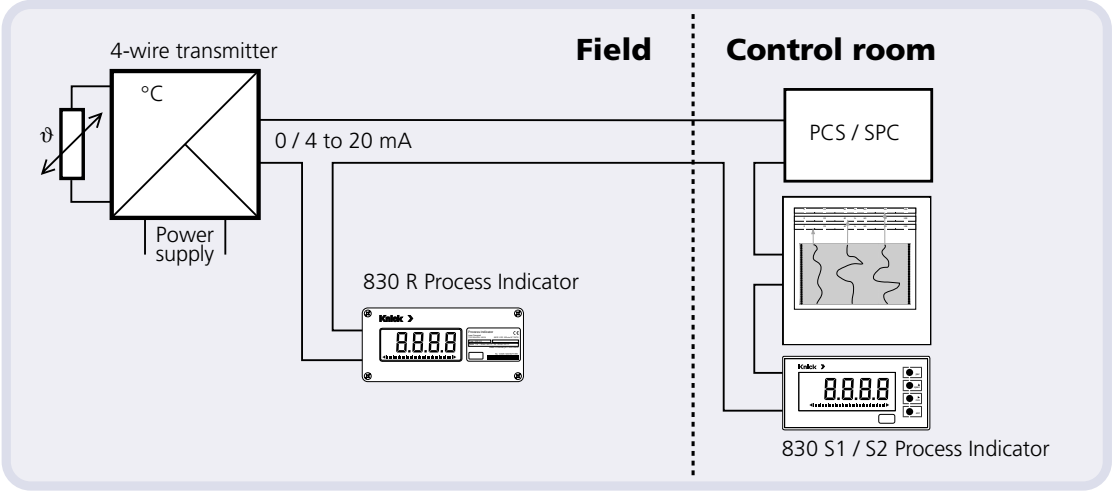
Specifications

Terminals	For version R, two wires can be connected to one terminal (Opt. 119) Stranded wire: up to 1.5 mm² Single wire: up to 2.5 mm² (S1, S2), up to 1.5 mm² (R)
Data retention	Parameters and calibration data >10 years (EEPROM)
Product family standard	EN 61326-1, EN 61326/A1
Generic standards	EN 50081-1, EN 50081-2, EN 50082-1, EN 50082-2
EMC	Accuracy during disturbance <1 % span

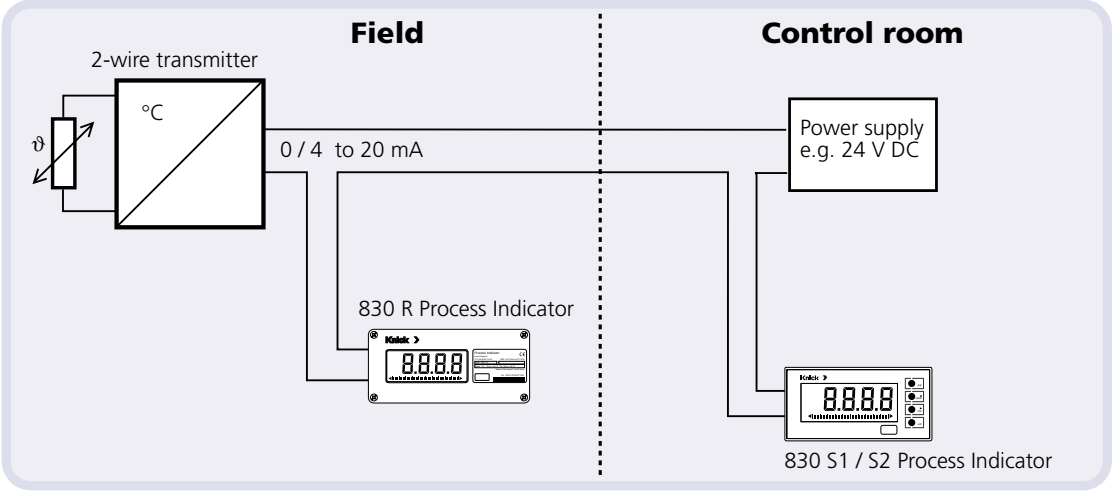
	830 R	**830 S1**	**830 S2**
Ambient temperature Operation: Storage:	 –25 to +65 °C –30 to +70 °C	 –10 to +65 °C –20 to +70 °C	
Adjustments	Internal	Front panel	
Min/max outputs	No	Yes (Option 290)	
Enclosure	Version R: modular	Version S1: panel	Version S2: panel
Material	Al Si 12, DIN 1725, with glass pane, Insert made of Byblend, Rating plate: polyester	Front panel overlay: polyester, with window Front: PA + GF, sides: Al Rear: PA + GF	Front panel overlay: polyester, with glass pane, Front and sides: PA + GF, Rear: PA + GF
Color	Lid: iron gray RAL 7011, Bottom: gray RAL 7001, Insert: black	Front: iron gray RAL 7011, Sides: Al, Rear: black Buttons: black	Front: iron gray RAL 7011, Sides and rear: black Buttons: black
Dimensions in mm (incl. terminals and Pg 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: Rear:	IP65	 IP65 IP20	
Weight	Approx. 750 g	Approx. 300 g	Approx. 300 g

Typical applications

Application with 4-wire transmitter
Different design versions allow to install the indicators on the site and/or in the control panel

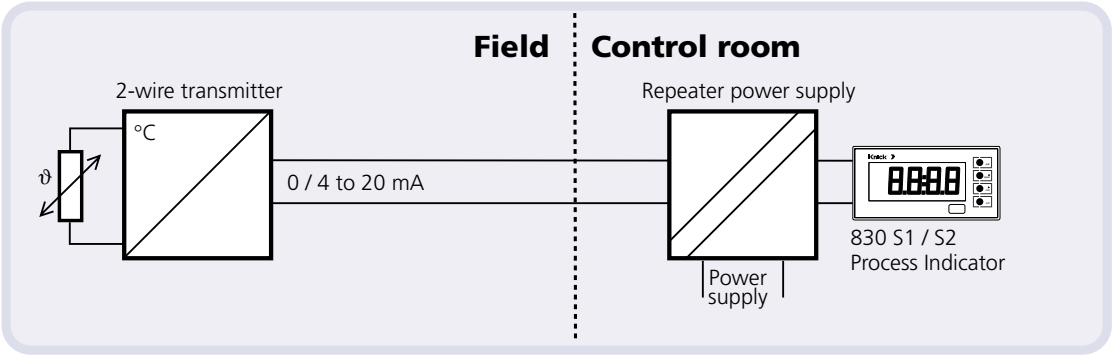


Application with 2-wire transmitter and power supply / mains adapter
Different design versions allow to install the indicators on the site and/or in the control panel



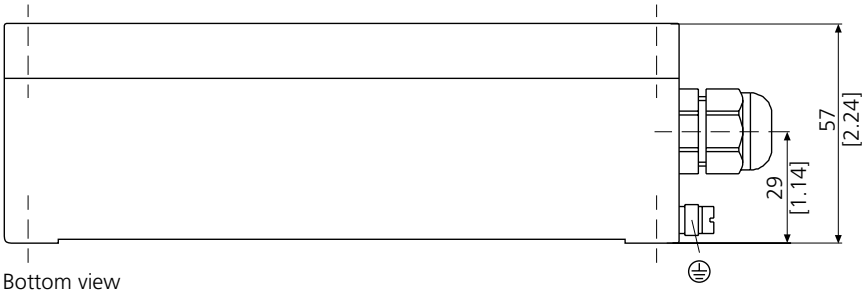
Typical applications

Application with 2-wire transmitter and repeater power supply

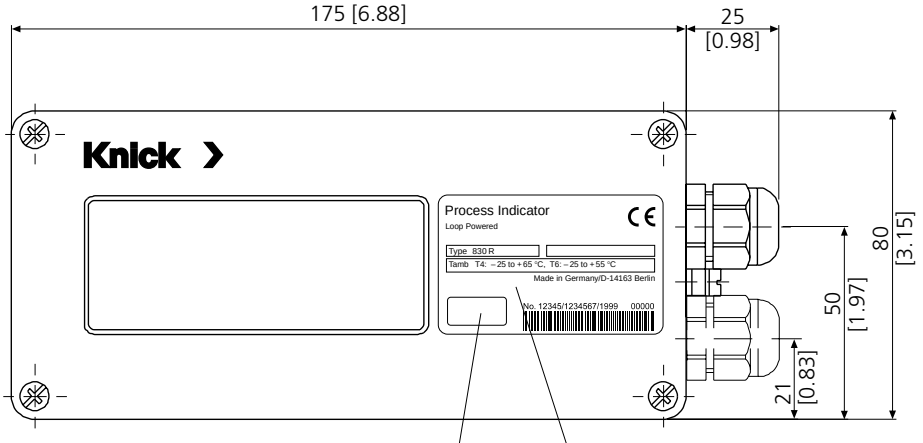


Dimension drawings

830 R Process Indicator



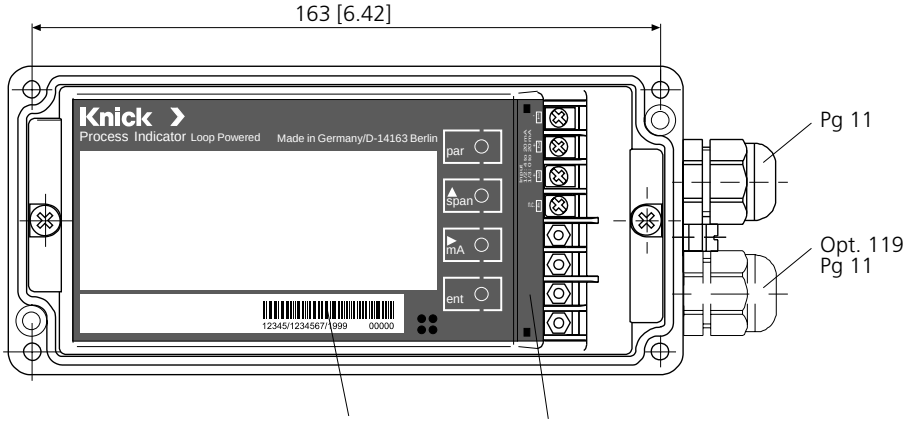
Bottom view



Front view with cover

Unit symbol

Rating plate



Front view without cover

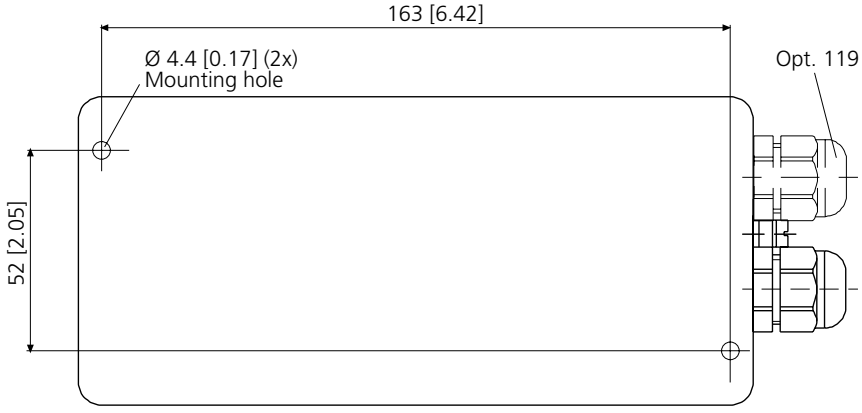
Rating plate

Terminal assignments

Note: All dimensions in mm [in]

Dimension drawings

830 R Process Indicator



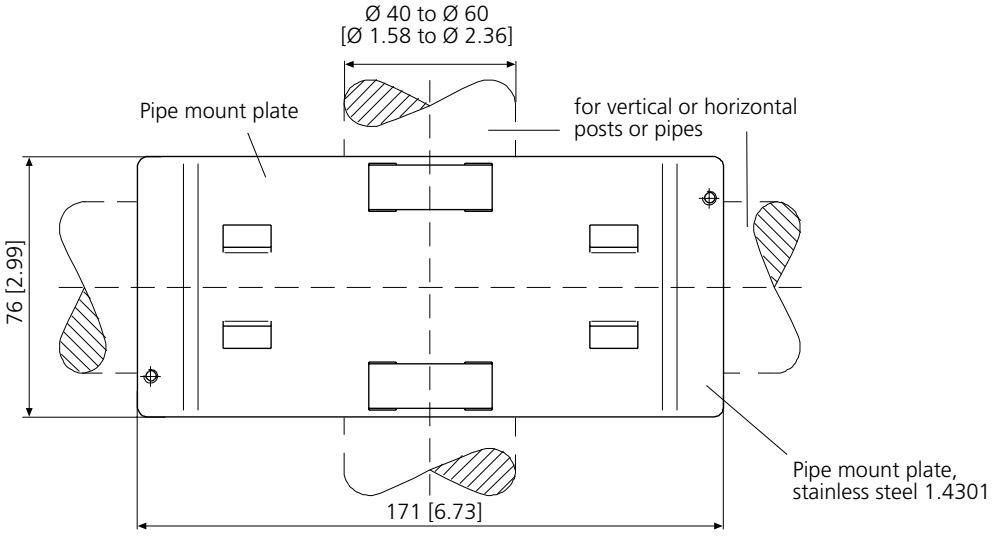
Rear view

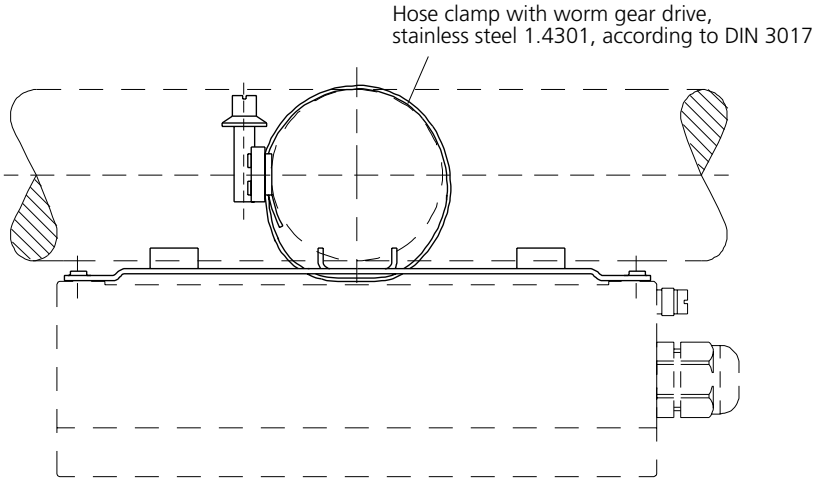
Note: All dimensions in mm [in]

Keypad

Dimension drawings

ZU 0154 Pipe mount kit
for 830 R Process Indicator

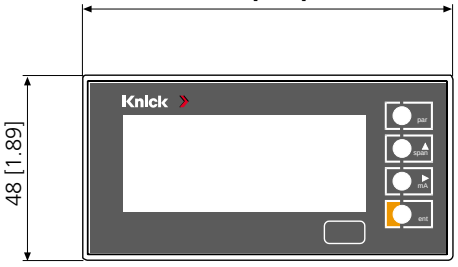




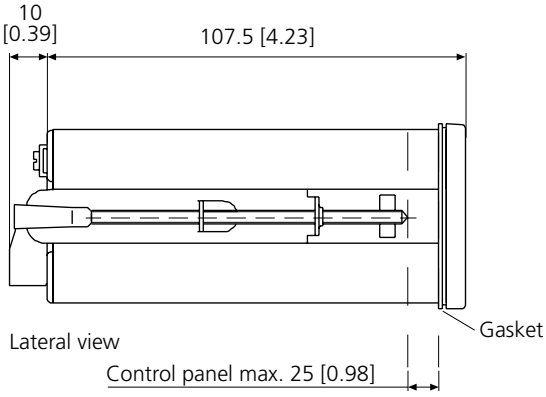
Note: All dimensions in mm [in]

Dimension drawings

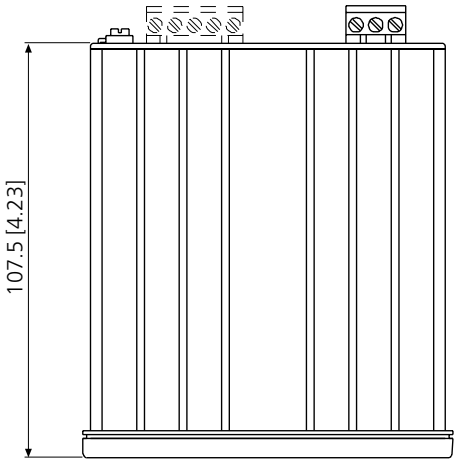
830 S1 Process Indicator



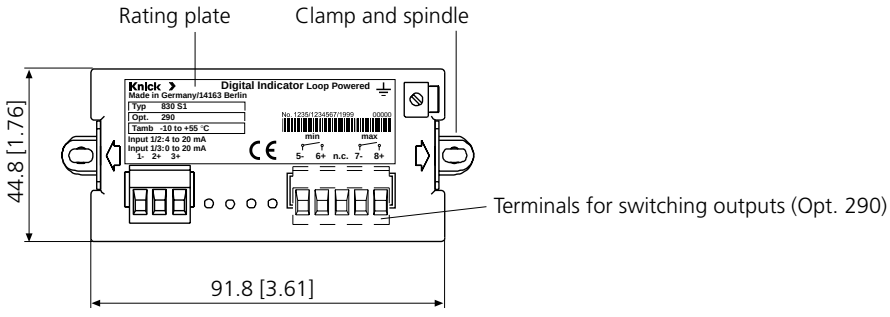
Front view



Lateral view



Top view

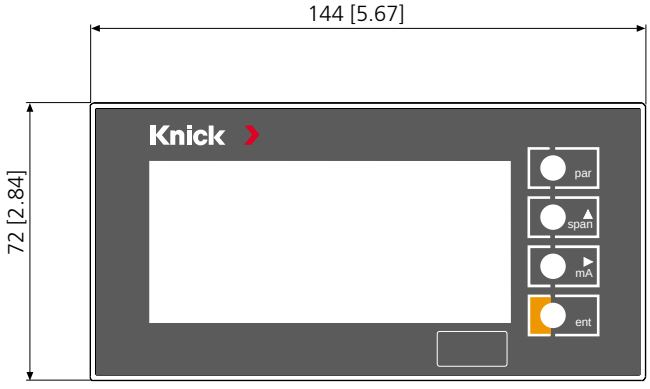


Rear view

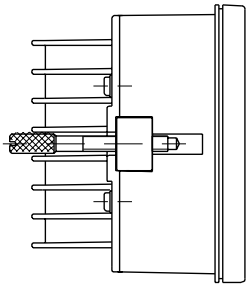
Note: All dimensions in mm [in]

Dimension drawings

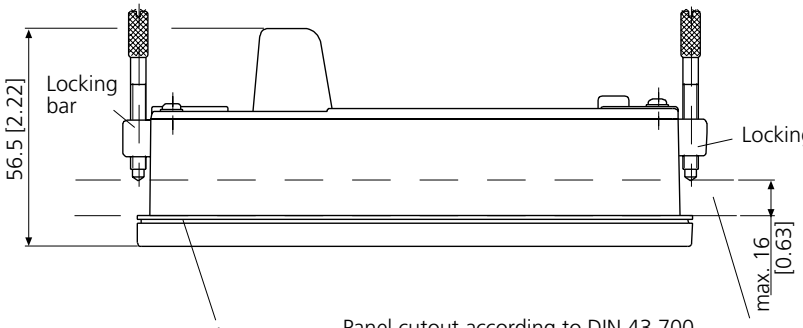
830 S2 Process Indicator



Front view



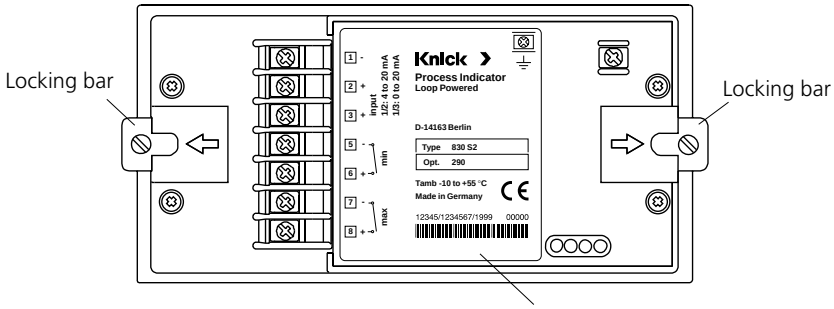
Lateral view



Top view

Panel cutout according to DIN 43 700
138^{+1} x $68^{+0,7}$
$[5.43^{+0.04}$ x $2.68^{+0,03}]$

Note: All dimensions in mm [in]



Rear view

803 T Loop-Powered Digital Indicator

803 T
Digital Indicator

The compact Model 803 T Loop-Powered Digital Indicator from Knick is universally applicable in 0/4 to 20 mA current loops. Display starts working at an operating current of only 0.3 mA.

Versatile setting capabilities

Zero and span can be adjusted as desired, enabling direct read-out 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. Settings are changed using switches and potentiometers. For parameter setting, you require an adjustable reference current source.

Loop-powered. Your advantage.

The digital indicators are simply inserted into the current loop like passive analog indicators, the voltage drop being approx. 3 V.

Since power supplies and their wiring are not required, costs could decisively be reduced, allowing for displays which have been too expensive before.

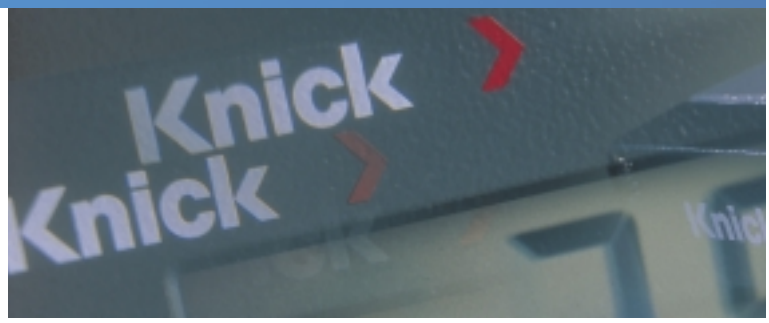
In addition, the reliability has considerably been improved since a power failure in the control room does not interrupt the data flow. And, in contrast to conventional digital indicators, there is no coupling between measuring loop and power supply.

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
- Universal range selection by means of 10-step rotary switch and spindle-operated potentiometer
- Exchangeable unit symbols

Warranty

Defects occurring within 3 years from delivery date shall be remedied free of charge at our works (carriage and insurance paid by sender).
Accessories: 1 year



Product line

Instrument		Ref. No.
803 T Digital Indicator	Loop-powered indicator in panel-mount case with standard symbol set	803 T
Options		
Range selection	Range fixed according to customer requirements	178
Zero offset	Extended zero offset up to 500 % fixed according to customer requirements (only in conjunction with Opt. 178)	184
Accessories		
Symbols	Other unit symbol (not standard symbol set)	ZU 0129

Standard symbol set

pH	mbar	%	°C	1/min
mV	kg	ppm	bar	kPa
mA	mS/cm	t	µS/cm	

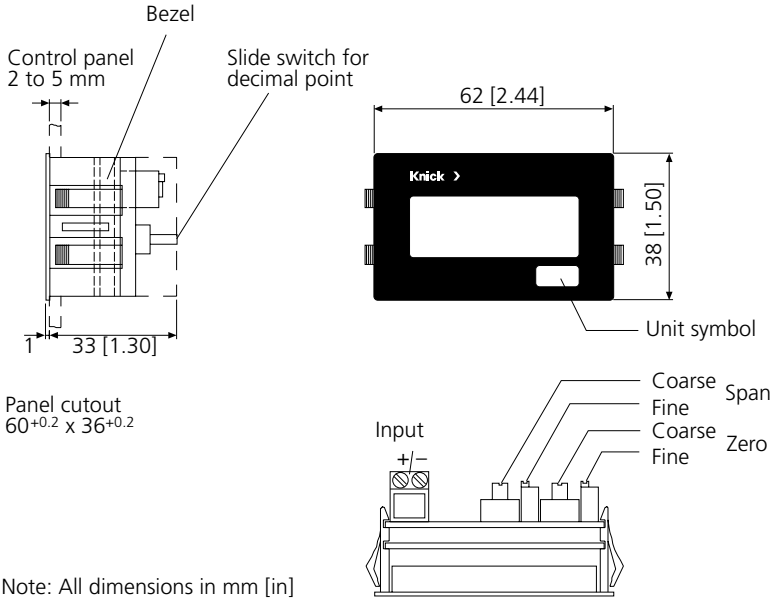
Specifications

Input	0.3 to 22 mA, voltage drop < 3 V
Display	3½ digit LCD 13 mm high characters –1,999 to +1,999
Range adjustments	Span adjustable in the range 125 counts/mA to 10 counts/mA (switch and potentiometer) Offset adjustable up to ±100% of adjusted span (switch and potentiometer)
Symbols	Set of 13 symbols and one blank label included in supply, any other symbols: ZU 0129
Decimal point	Slide switch: 0, P1, P2, P3
Accuracy	<0.1 % ±1 count
Temperature coefficient	<0.1 count/K[1)]
Operating temperature	–10 to +50 °C
Storage temperature	–20 to +70 °C
Overload capacity	±150 mA
Enclosure	Panel-mount case
Dimensions in mm	W 62.5 x H 38.5 x D 34.0
Ingress protection	IP 20
Material	Cover: polycarbonate (PC)
Weight	Approx. 120 g

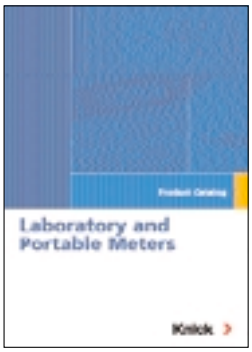
1) Average TC in the range –10 to +50 °C

Dimension Drawings

803 T Digital Indicator



Note: All dimensions in mm [in]



Knick
Elektronische Meßgeräte
GmbH & Co. KG
Beuckestraße 22, D-14163 Berlin
P.O. Box 37 04 15, D-14134 Berlin

Phone: +49 (0)30 - 801 91 - 0
Fax: +49 (0)30 - 801 91 - 200
E-mail: knick@knick.de
Internet: www.knick.de

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