Loop-Powered Digital Indicators
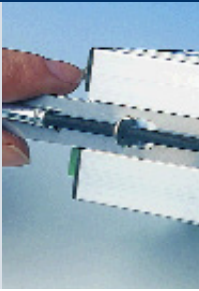
Knick ›

The 830 X loop-powered digital indicators are uni-versally appli-cable. 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.

830 X Loop-Powered Process Indicator

CE ⟨Ex⟩ IP 65

Bargraph for quick range overview
The digital indicators provide a bar-graph in addition to the digital dis-play. 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, en-abling direct readout of measured values such as temperature, power, displacement, pH value etc. The in-dicator 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 in-serted into the current loop like passive analog indicators. Since power supplies and their wir-ing are not required, costs could decisively be reduced, allowing for displays which have been too expensive before. Applications in hazardous loca-tions become easier and less expensive since the costs for intrin-sically safe power supplies and wirings can be saved.

830 X Process Indicator
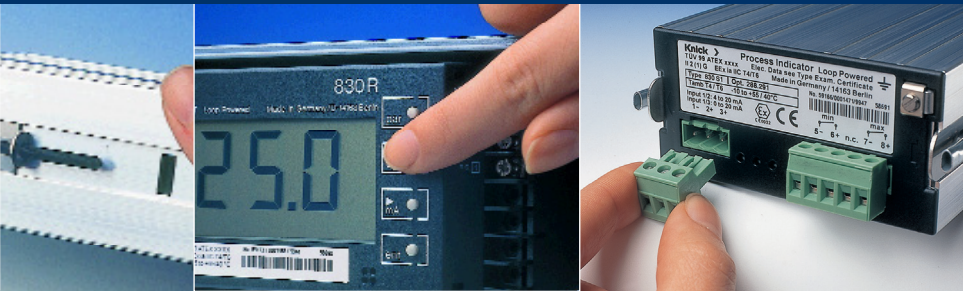
Knick ›

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.

* 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 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

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

Instrument		Ref. No.
830 X R Process Indicator	Loop-powered ⊗ indicator in modular case with standard symbol set	**830 X R**
830 X S1 Process Indicator	Loop-powered ⊗ indicator in panel-mount case (96 x 48 mm) with standard symbol set	**830 X S1**
830 X S2 Process Indicator	Loop-powered ⊗ indicator in panel-mount case (144 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	m³	m³/h	Nm³/h

830 X Process Indicator

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■ 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 [TAB]par, [▲] span, [►] mA, ent par: [TAB]Activate parameter mode [▲] span: [TAB]In parameter mode: select submenu, count up selected digit, In measuring mode: alternately display start/end of scale [►] mA: [TAB]In parameter mode: select digit, In measuring mode: display loop current ent: [TAB]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 II 2(1) G EEx ia IIC T4/T6	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: [TAB]0 to 9,999 counts, user defined Switch-on delay: [TAB]0 to 9,999 s, user defined Contact type: [TAB]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
Explosion protection	II 2(I)G EEx ia IIC T4/T6
Terminals	Stranded wire: [TAB]up to 1.5 mm² Single wire: [TAB]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
EMC	Accuracy during disturbance <1 % span

Loop-Powered Digital Indicators

830 X Process Indicator

continued – **Specifications** 830 X Process Indicator

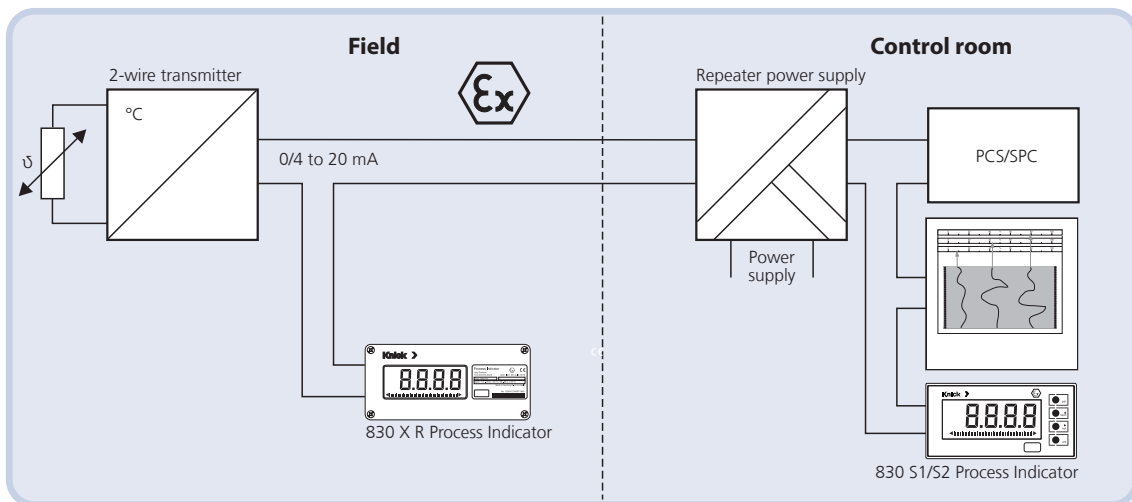|	830 X R	830 X S1	830 X S2
Ambient temperature Operation: Storage:	–25 to +40 °C (T6) –25 to +55 °C (T5) –25 to +65 °C (T4) –30 to +70 °C	–10 to +40 °C (T6) –20 to +55 °C (T4, T5) –20 to +70 °C	
Adjustments	Internal	Front panel	
Min/max outputs	No	Yes (Option 291)	
Enclosure	Version R: modular	Version 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 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:	IP 65	IP 65 IP 20	
Weight	Approx. 750 g	Approx. 300 g	Approx. 300 g

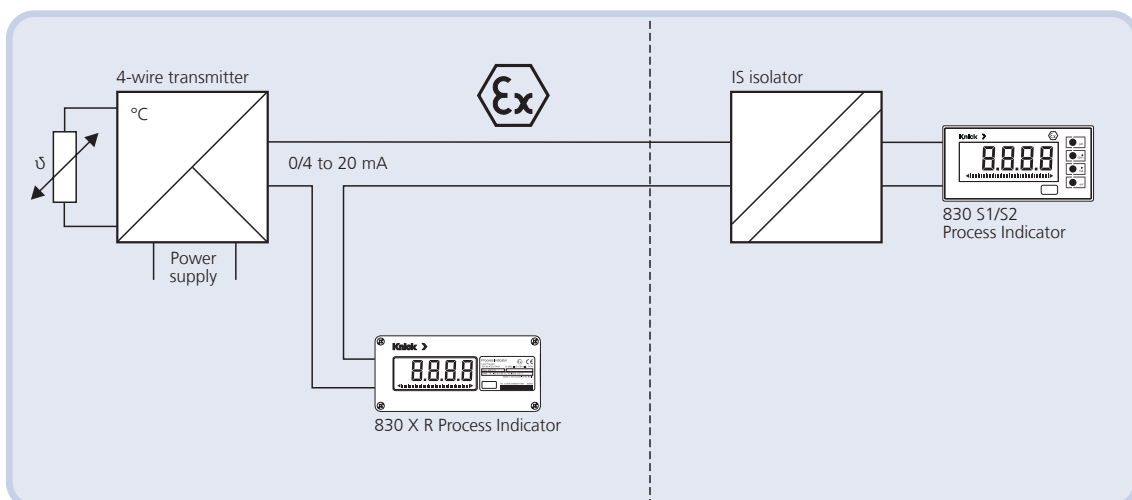# 830 X Process Indicator

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■ **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.

Field — Control room

2-wire transmitter
°C
0/4 to 20 mA
830 X R Process Indicator

Repeater power supply
Power supply
PCS/SPC
830 S1/S2 Process Indicator

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.
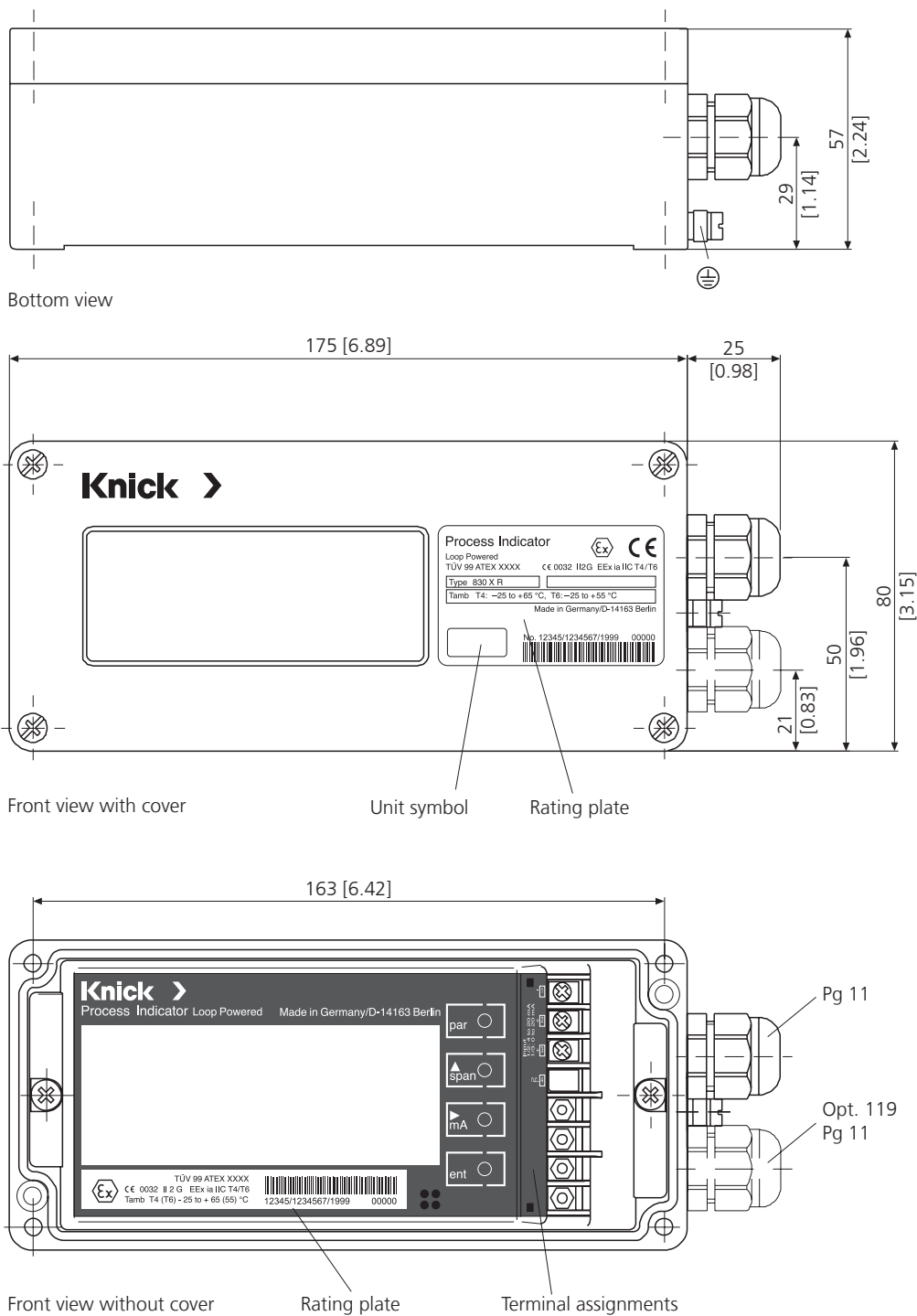

4-wire transmitter
°C
0/4 to 20 mA
Power supply
830 X R Process Indicator

IS isolator
830 S1/S2 Process Indicator

25

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

Knick

■ Dimension drawings

830 X R Process Indicator

163 [6.42]

Ø 4.4 [0.17] (2x)
Mounting hole

Opt. 119

52 [2.05]

Rear view

Note: All dimensions in mm [in]

Knick
Process Indicator Loop Powered   Made in Germany/D▪14163 Berlin

par
▲ span
► mA
ent

TÜV 99 ATEX XXXX
Ex CE 0032 II 2 G   EEx ia IIC T4/T6
Tamb T4 (T6) − 25 to + 65 (55) °C
12345/1234567/1999   00000

Input
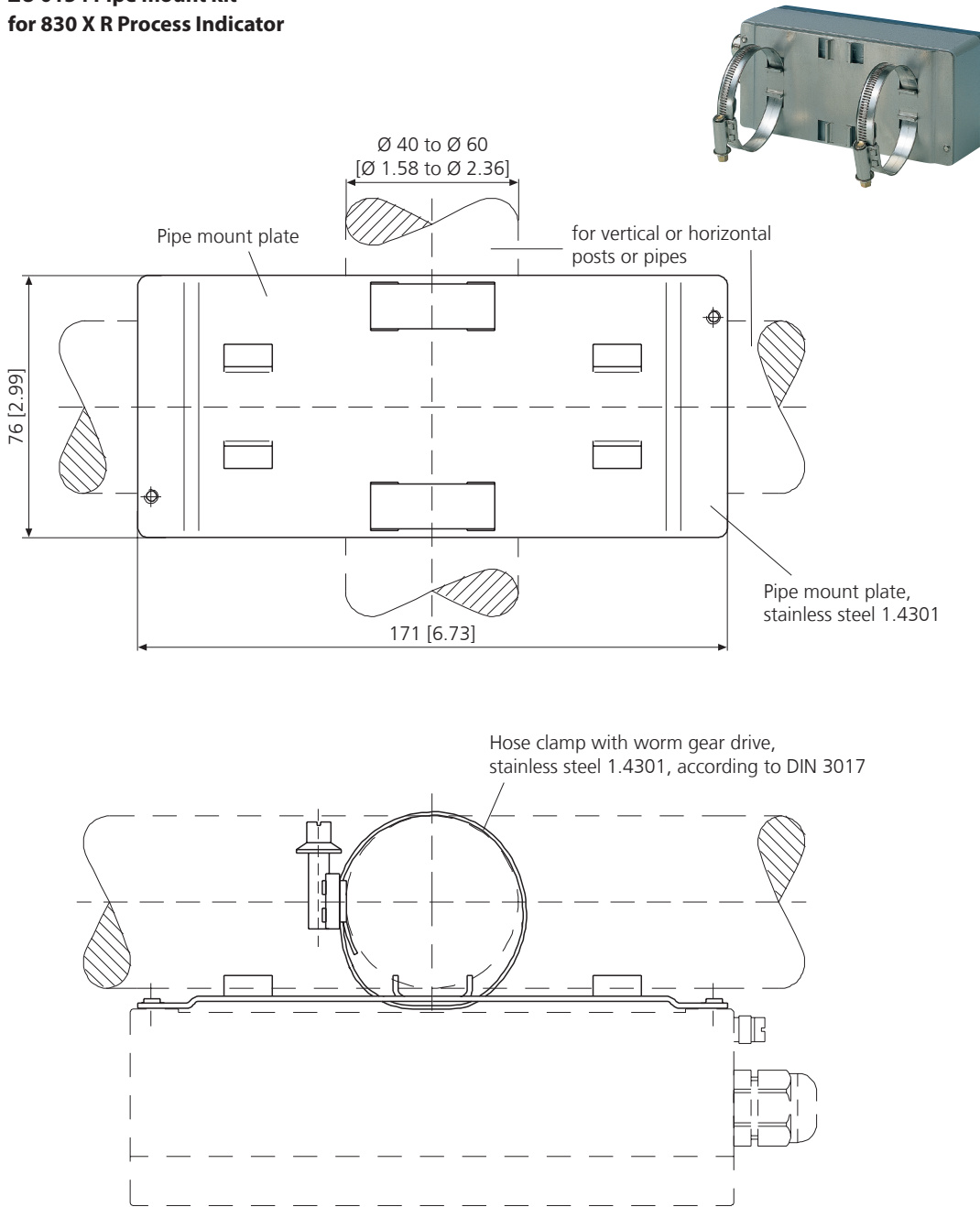1/2: 4 to 20 mA
1/3: 0 to 20 mA

− 1
+ 2
+ 3
n.c. 4

Keypad

Loop-Powered Digital Indicators

830 X Process Indicator

■ **Dimension drawings**

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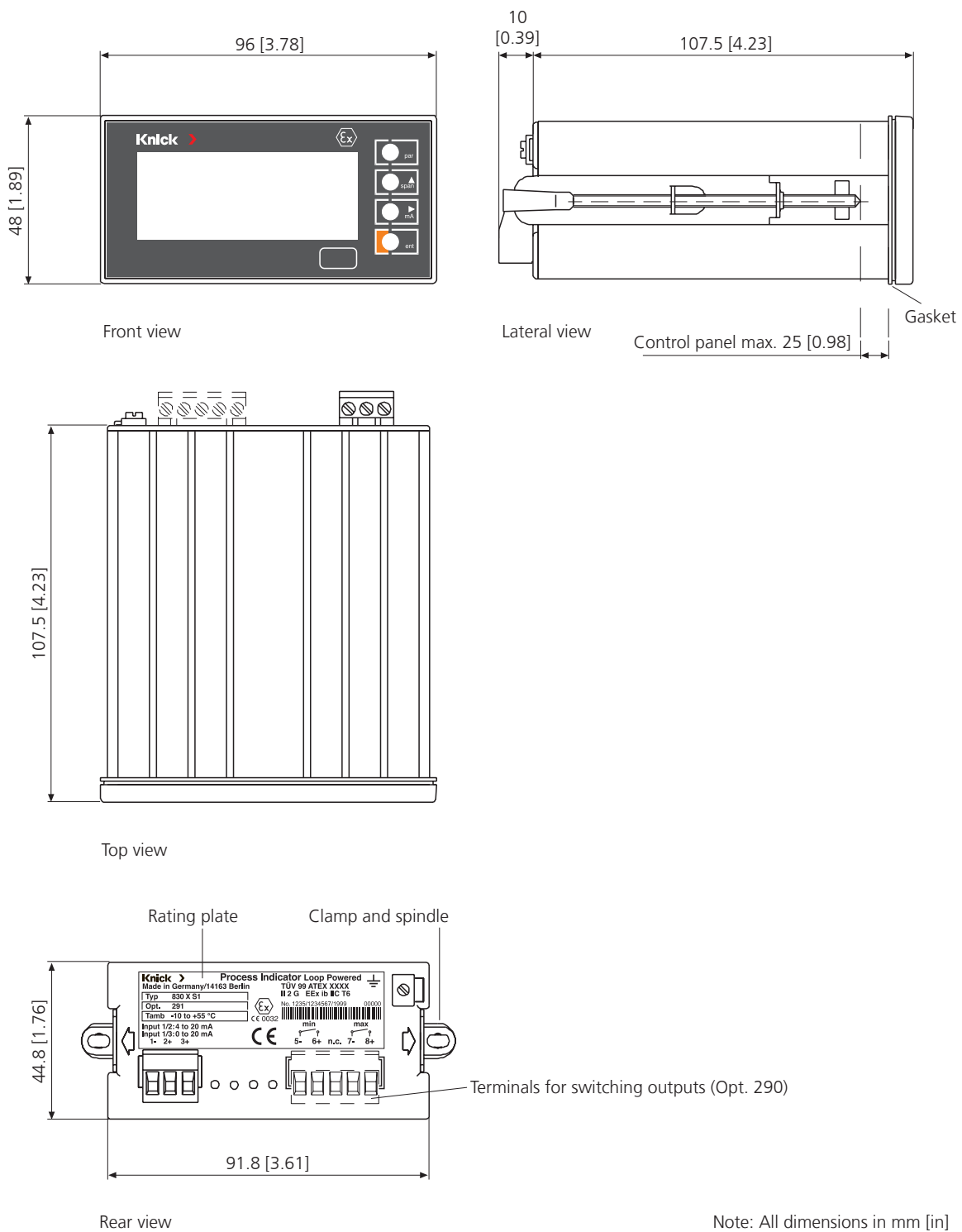**for 830 X R Process Indicator**

Ø 40 to Ø 60
[Ø 1.58 to Ø 2.36]

Pipe mount plate

for vertical or horizontal
posts or pipes

76 [2.99]

171 [6.73]

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

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■ **Dimension drawings**

830 X S1 Process Indicator

96 [3.78]

48 [1.89]

Front view

10 [0.39]

107.5 [4.23]

Lateral view

Gasket

Control panel max. 25 [0.98]

107.5 [4.23]

Top view

Rating plate

Clamp and spindle

Process Indicator Loop Powered
Made in Germany/14163 Berlin
Typ 830 X S1
Opt. 291
Tamb -10 to +55 °C
Input 1/2:4 to 20 mA
Input 1/3:0 to 20 mA
TÜV 99 ATEX XXXX
II 2 G EEx ib IIC T6
No. 1235/1234567/1999 00000
CE 0032
min max
5- 6+ n.c. 7- 8+
1- 2+ 3+

44.8 [1.76]

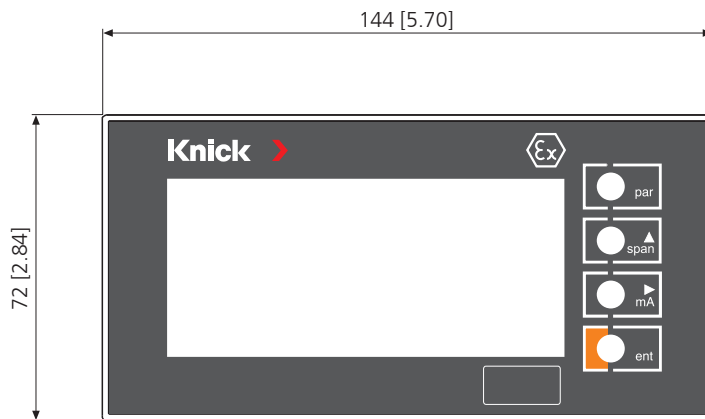Terminals for switching outputs (Opt. 290)

91.8 [3.61]

Rear view

Note: All dimensions in mm [in]

Loop-Powered Digital Indicators

830 X Process Indicator

■ **Dimension drawings**

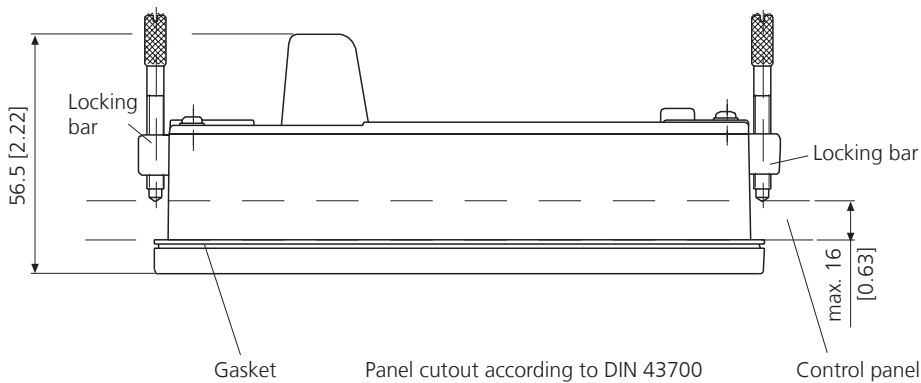**830 X S2 Process Indicator**

144 [5.70]

72 [2.84]

Front view

Lateral view

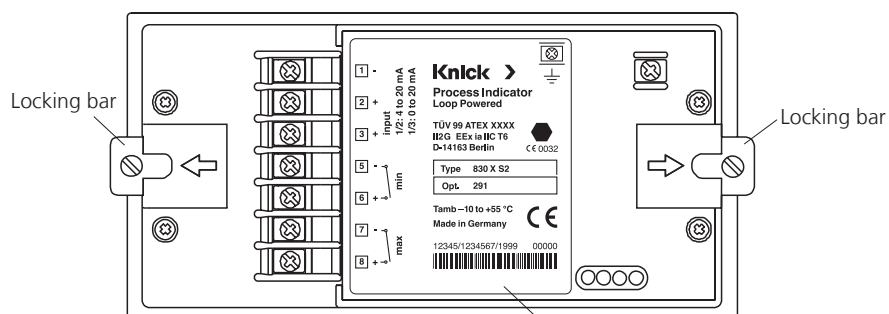56.5 [2.22]

Locking bar

Locking bar

max. 16 [0.63]

Gasket
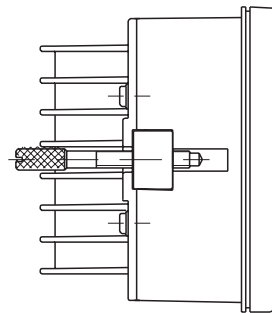
Panel cutout according to DIN 43700
138^{+1} x 68$^{+0.7}$
[5.43$^{+0.04}$ x 2.68$^{+0.03}$]

Control panel

Top view

Note: All dimensions in mm [in]

Locking bar

Locking bar

Knick ›
Process Indicator
Loop Powered

TÜV 99 ATEX XXXX
II2G EEx ia IIC T6
D-14163 Berlin

| Type | 830 X S2 |
| Opt. | 291 |

Tamb −10 to +55 °C
Made in Germany

12345/1234567/1999   00000

input 1/2: 4 to 20 mA
1/3: 0 to 20 mA

Rating plate

Rear view

830 X Process Indicator

Isolation Amplifiers Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings

Knick ❯