Differential pressure gauge
Model 712.15.100, Cu-alloy
Model 732.15.100, stainless steel version

Cryo Gauge

Applications

- Level measurements in closed tanks, particularly in cryotechnology
- Filter monitoring
- Monitoring and control of pumps
- For gaseous and liquid media that are not highly viscous or crystallising and have no suspended solids

Special features

- Differential pressure measuring ranges from 0 … 80 mbar to 0 ... 1725 mbar
- High working pressure (static pressure) of 50 bar
- Overpressure safety either side up to 50 bar
- Very compact design
- Optionally compact valve manifold with working pressure indication

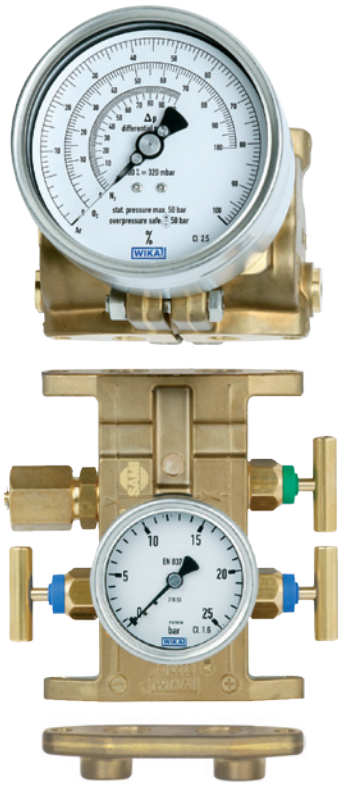


Fig. top: Differential pressure gauge model 712.15.100
Fig. centre: Option valve manifold with working pressure indication
Fig. bottom: Option adapter for flange mounting

Description

These high-quality gauges are characterised by their compact and robust design and are primarily used for level measurement on liquid gas tanks.

An optional valve manifold for flange mounting with working pressure indication makes the central measurement of both level and working pressure possible in the one instrument.

The level display can be supplied with an optional, integrated 4 … 20 mA, 2-wire transmitter. Switch contacts for level and working pressure, as well as a transmitter for the working pressure can be retrofitted on site.

The standard centre distance of 37 mm between the process connections can be adapted to a custom centre distance of 31 mm or 54 mm using adapters for flange mounting.

Data sheets showing similar products:
Differential pressure gauge; model 7x2.15.160; see data sheet PM 07.30

Design and operating principle

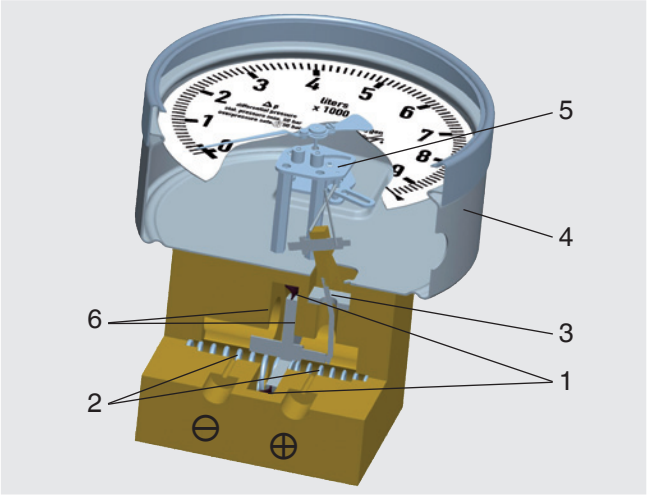
Pressures p_1 and p_2 act on the media chambers ⊕ and ⊖, which are separated by an elastic diaphragm (1).

The differential pressure ($\Delta p = p_1 - p_2$) leads to an axial deflection of the diaphragm against the measuring range spring (2).

The deflection, which is proportional to the differential pressure, is transmitted to the movement (5) in the indicating case (4) via a pressure-tight and low friction lever mechanism (3).

Overpressure safety is provided by metal bolsters (6) resting against the elastic diaphragm.

Illustration of the principle



Mounting according to affixed symbols,
⊕ high pressure and ⊖ low pressure

Standard version

Differential pressure gauge
Model 712.15.100
Model 732.15.100

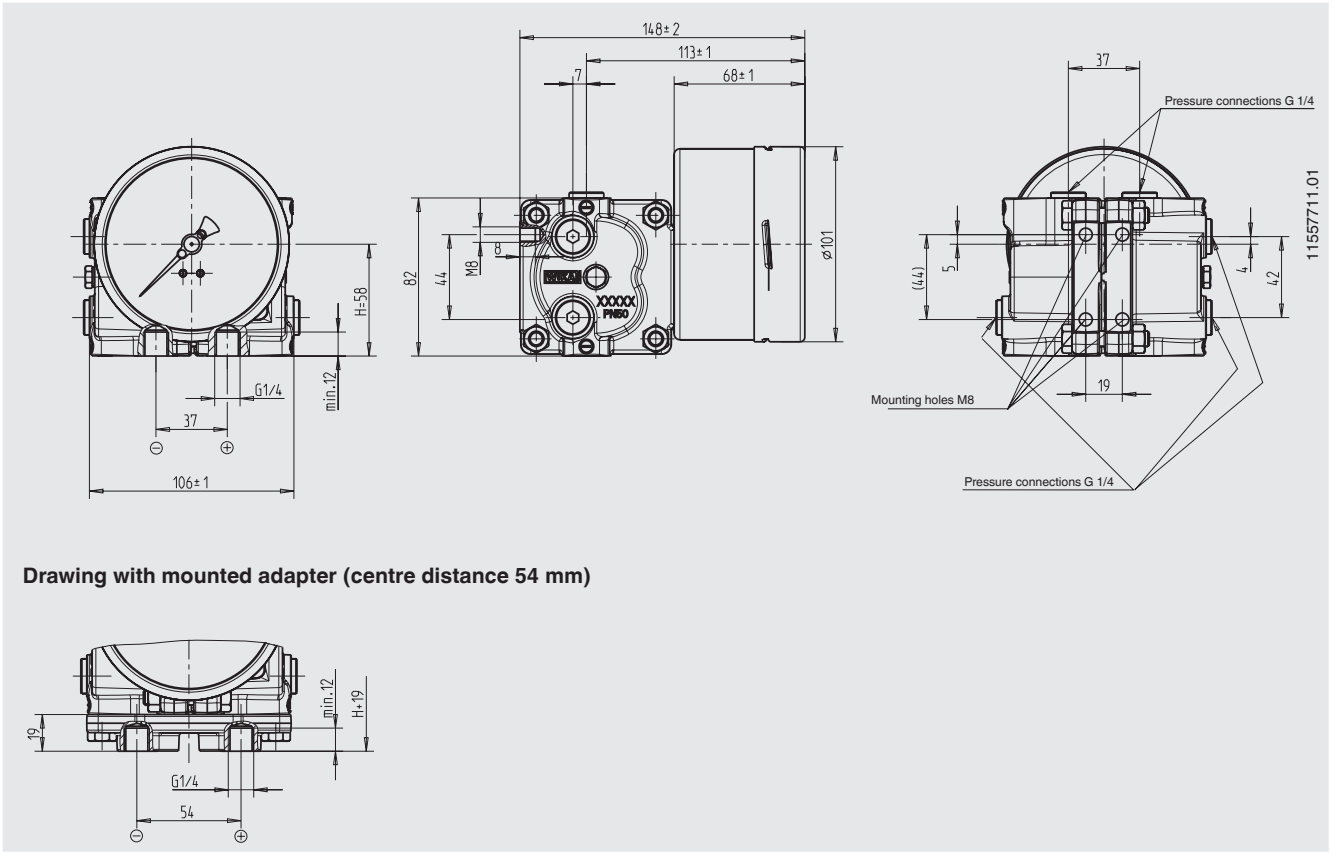
Specifications

Nominal size	NS 100 (level indication)
Accuracy class	2.5 (option: Class 1.6 or class 1.0)
Scale ranges	0 ... 80 mbar to 0 ... 1725 mbar
Max. working pressure (static pressure)	50 bar
Overpressure safety	either side up to 50 bar
Permissible ambient temperatures	-40 °C … +80 °C, -40 °C … +60 °C with oxygen
Permissible medium temperatures	-40 °C … +80 °C, -40 °C … +60 °C with oxygen
Ingress protection	IP 65 per EN 60529 / IEC 529
Process connections (wetted)	
Standard	2 x G 1/4, female, lower mount (LM), centre distance 37 mm
Option with adapter	see page 5
Measuring cell flanges (wetted)	Model 712.15: Cu-alloy CW614N (CuZn39Pb3)
	Model 732.15: Stainless steel 316L
Pressure elements (wetted)	Compression spring, stainless steel 1.4310
	Separating diaphragm, NBR
	Transmission parts, stainless steel 1.4301 and 1.4305
Movement	Wear parts stainless steel
Dial	White aluminium (see section 'Scale designs')
Pointer	Adjustable pointer, black aluminium
Zero adjustment	By means of adjustable pointer
Case / slip-on bezel	Stainless steel, with clip fasteners
Window	Polycarbonate (PC)

Scale designs

The dials can be made to customer‘s requirements and also with multiple scales.
These can be printed with all usual units on them, e.g. kg, litre, m^3, mmH_2O, $inchH_2O$, % etc.. Red marks for maximum fill level, customer logos and other custom printing are likewise possible. If desired, we can carry out the calculation for the tank fuel level from drawings of the tank geometry, and then make the appropriate scales.

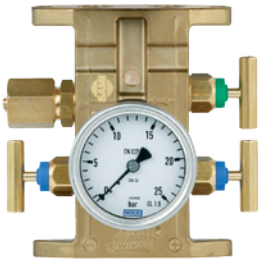
Dimensions in mm



Drawing with mounted adapter (centre distance 54 mm)

Option

Valve manifold (wetted)
with mounted working pressure gauge

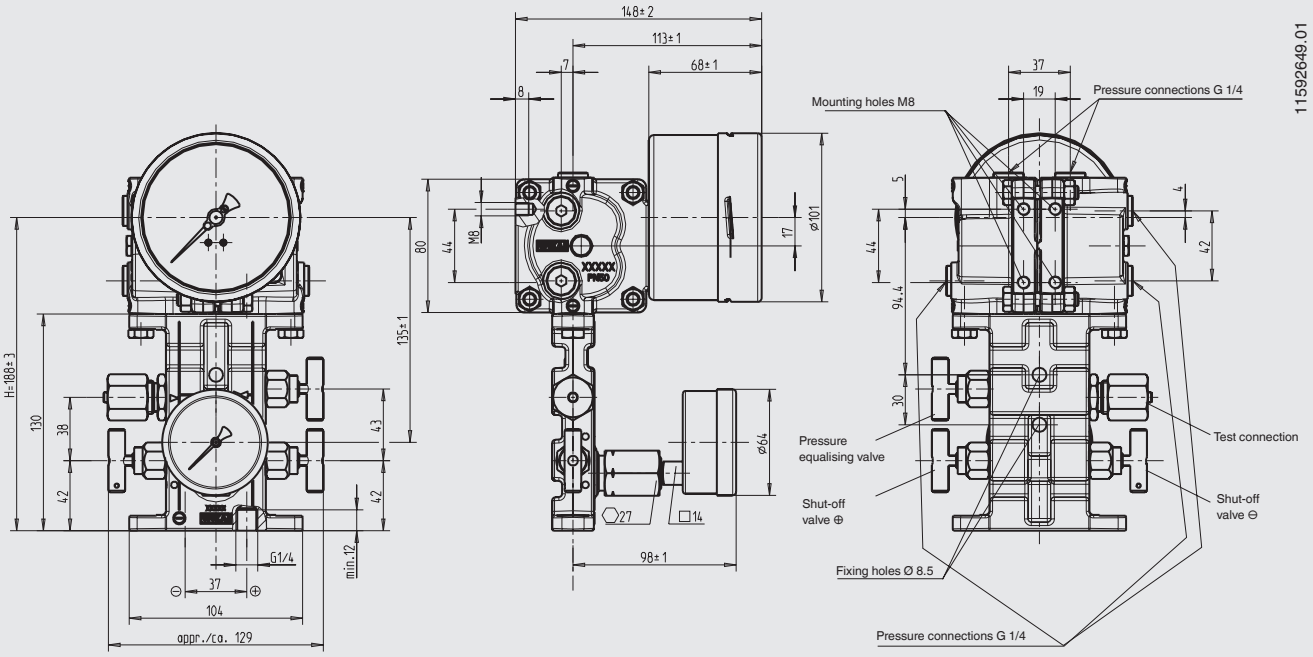


Specifications

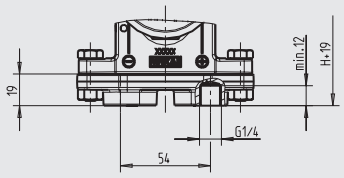
Valves	2 x shut-off valve, 1 x pressure equalising valve
Test connection	M20 x 1.5 with sealing cap (DIN 16287-A)
Valve body	Model 712.15: Cu-alloy CW614N (CuZn39Pb3); model 732.15: Stainless steel 316L
Spindle with conical nipple	Model 712.15: Cu-alloy; model 732.15: Stainless steel 316L
Packing/sealing	NBR/PTFE
	With the valve fully-opened, the spindle area is isolated from the process by a metallic seal, the packing is not loaded and the spindle thread is not in contact with the measured media.
Working pressure gauge	
Standard	Model 232.50.63, wetted parts stainless steel
	(for specifications and design details see data sheet PM 02.02)
Option	Model 212.20.100, wetted parts Cu-alloy
	(for specifications and design details see data sheet PM 02.01)

With a single order, all parts necessary for the fitting to the differential pressure gauge are included in the delivery: 4 x hexagon screws M8 x 16 , 2 x O-ring seal

Dimensions in mm



Drawing with mounted adapter (centre distance 54 mm)



Option

Adapter for process connection

The adapters can be flange mounted either directly to the differential pressure gauge or to the valve manifold.

Specifications

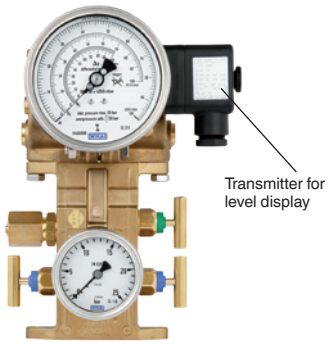
Material	Model 712.15: Cu-alloy CW614N (CuZn39Pb3); model 732.15: Stainless steel 316L
Process connections (wetted)	2 x G 1/4, female, lower mount (LM), centre distance 31 mm or 54 mm or 2 x 1/4 NPT, female, centre distance 31 mm, 37 mm or 54 mm

With a single order, all parts necessary for the fitting to the differential pressure gauge or to the valve manifold are included in the delivery:
2 x hexagon screws M8 x 16, 2 x hexagon screws M8 x 28, 2 x nut M8 and 2 x O-ring seal

Option

Transmitter for level indication

Standard version
model 891.44
Ex version model
892.44



WIKA differential pressure gauges with an integrated model 89x.44 transmitter combine all the advantages of an on-site mechanical display with the demands modern industry makes for electrical signal transmission for the acquisition of measured values.
The transmitter is integrated into the case of the level display. With multiple scales (option) the output signal of 4 ... 20 mA corresponding to each, can be stored in a microprocessor. The output signal can be changed over to the desired fluid type by rotating the optional BCD switch (accessible through a cover cap on the left side of the case) using a screwdriver.

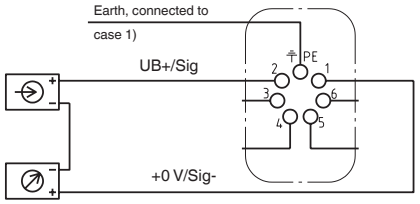
Specifications		Models 891.44 and 892.44 (Ex version)
Supply voltage U_B	DC V	12 < U_B ≤ 30 (min. 14 with Ex version)
Influence of supply voltage	% Full scale/10 V	≤ 0.1
Permissible residual ripple	% ss	≤ 10
Output signal		4 … 20 mA, 2-wire
Permissible max. load R_A		for non-Ex versions, model 891.44:
		R_A ≤ (U_B - 12 V) / 0.02 A with R_A in Ohm and U_B in Volt
		for Ex versions, model 892.44:
		R_A ≤ (U_B - 14 V) / 0.02 A with R_A in Ohm and U_B in Volt
Effect of load	% Full scale	≤ 0.1
Adjustment		
Zero point, electrical		Adjustment of the zero point through brief bridging of terminals 5 and 6
		or using the 'scale selection switch' option, selectable via button [1]
Scale selection		4 scales selectable via BCD switch
Linearity	% of span	≤ 1.0 % (terminal method)
Permissible		
ambient temperatures	°C	-40 … +80, -40 … +60 with oxygen
Compensated temp. range	°C	-40 … +80
Temperature coefficients in the compensated temp. range		
Mean TK of zero	% of span / 10 K	≤ 0.3
Mean TC span	% of span / 10 K	≤ 0.3

1) Only possible within 30 seconds of connecting the supply voltage

CE conformity

EMC directive
2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application)

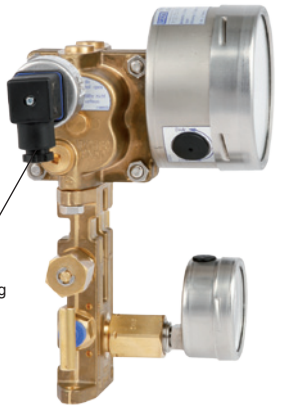
ATEX directive
94/9/EC, II 2 G Ex ia IIC

Further specifications		Models 891.44 and 892.44 (Ex version)
Conformity specifications		Ex version
■ Supply voltage Ui	DC V	14 ... max. 30
■ Short circuit current Ii	mA	max. 100
■ Power Pi	W	max. 1
■ Internal capacitance Ci	nF	12
■ Internal inductance Li	mH	negligible
Medium temperature	°C	-40 … +80, -40 … +60 with oxygen
Ambient temperature	°C	-40 … +60 (T6)
Electrical connection		Angular connector, 180° rotatable, wire protection, cable gland M20 x 1.5, incl. strain relief, connection cable: Outer diameter 7 ... 13 mm, conductor cross-section 0.14 ... 1.5 mm², temperature resistance up to 60 °C
Wiring protection		Protection against reverse polarity and overvoltage
Ingress protection		IP 65 per EN 60529 / IEC 529
Wiring details, 2-wire		 Terminals 3, 4, 5 and 6: only for internal use 1) This connection must not be used for equipotential bonding. The instrument must be incorporated in the equipotential bonding via the process connection.

Option

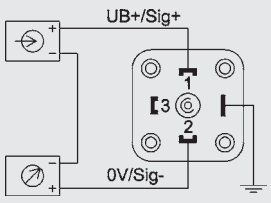
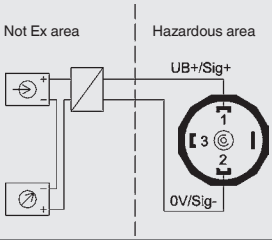
Transmitter for working pressure indication

Standard version model A-10
or Ex version model IS-20



Transmitter for working pressure indication

The transmitters for the working pressure are screwed in sideways on the left side of the minus media chamber and can, if necessary, be retrofitted on site.
Pressure connection of the transmitter:
G 1/4 (male)

Specifications		A-10	IS-20
Data sheet		PE 81.60	PE 81.50
Design		standard	intrinsically safe
Measuring ranges	bar	0 ... 6 bis 0 ... 60	0 ... 6 bis 0 ... 60
Outputs	mA	4 ... 20	4 ... 20 (transmitter supply isolator)
Medium temperature	°C	-30 ... +100	-20 ... +80
Ambient temperature	°C	-30 ... +80	-20 ... +80
Wetted parts		Stainless steel	Stainless steel
Supply voltage *UB*	DC	10 V < *UB* ≤ 30 V	10 V < *UB* ≤ 30 V
Permissible max. load *RA*	Ohm	*RA* ≤ (*UB* - 8 V) / 0.02 A	*RA* ≤ (*UB* - 10 V) / 0.02 A
Accuracy			
Best Fit Straight Line, BFSL	% of span	≤ 0.5	≤ 0.25
Compensated temperature range	°C	0 ... +80 °C	0 ... +80 °C
Designation of terminal connectors, 2-wire			

Option

Switch contacts
for level and/or working pressure indicators

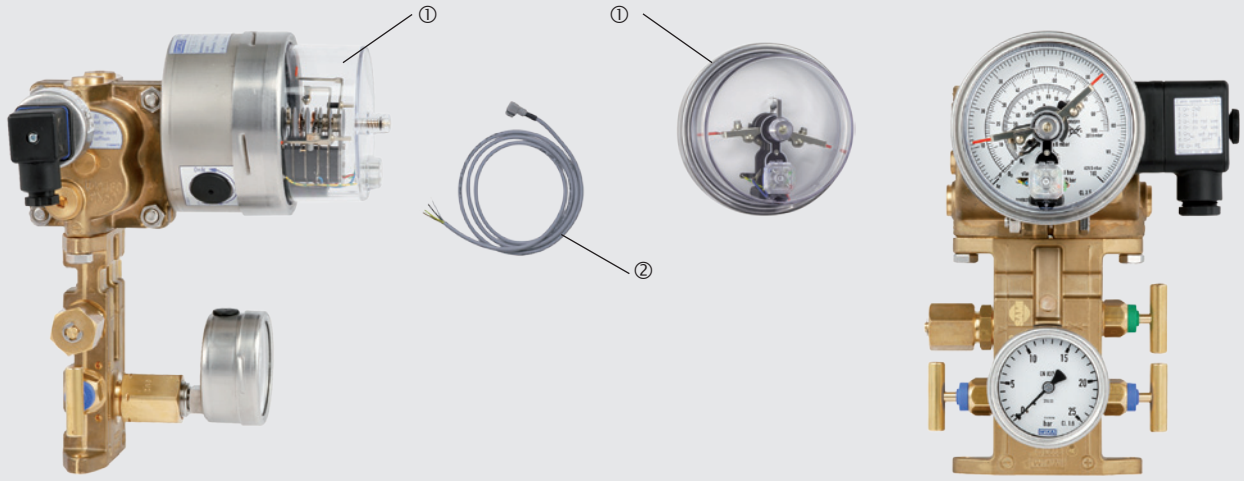
A modular system of electromechanical and electronic switch contacts with plug connection, also suitable for retrofitting on site, can be fitted both to the level display and to the working pressure indication. They consist of self-contained units, which can be fitted to any pointer pressure gauge within a few minutes. The connection to the instrument pointer is made by means of a special yoke so that a carrier pin at the pointer itself is not needed. The set value pointer of the installed switch contacts are adjusted, from the outside, to the value at which the switching operation is to take place, using the adjustment lock with a separate or integral key. A coupler connector, an M3 x 20 centring screw and a seal are included in the delivery.

Selectable are the following single and double contact models built into a self-contained unit
- Model 828 [1] , magnetic snap-action contact
- Model 838 [1] , inductive contact gauge

Switching functions
The following applies, as a general rule, to the contact functions of the model 828 1) in connection with our standard settings:
Index 1 according to the contact type no. means:
Contact closes the circuit when the set point is exceeded
Index 2 according to the contact type no. means:
Contact opens the circuit when the set point is exceeded
Index 3 according to the contact type no. means:
When the set value is exceeded, one circuit is opened and one circuit is closed **simultaneously** (change-over contact)

The following applies, as a general rule, to the contact functions of the model 838 [1] inductive contacts in connection with our standard settings:
Index 1 according to the contact type no. means:
Contact closes the control circuit when the set point is exceeded (flag disengages **from control head**)
Index 2 according to the contact type no. means:
Contact opens the control circuit when the set point is exceeded (flag engages **with control head**)

The switching functions are based on a clockwise rotational motion of the instrument pointer.



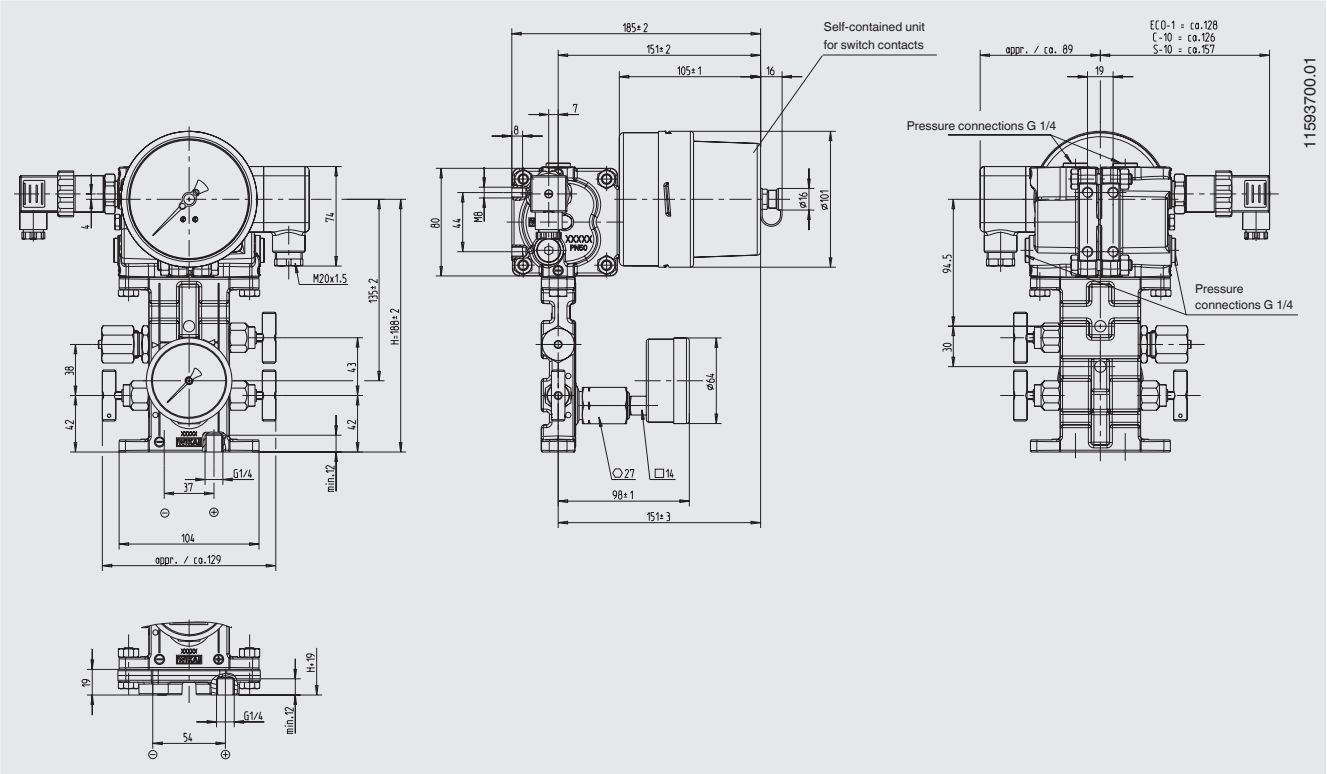
Legend
① Self-contained unit with switch contact for level indication
② Coupler connector

Pin assignments and data regarding allowable contact loads are given on the product label on the case circumference.

For further specifications and design details see data sheet AC 08.01 [1]

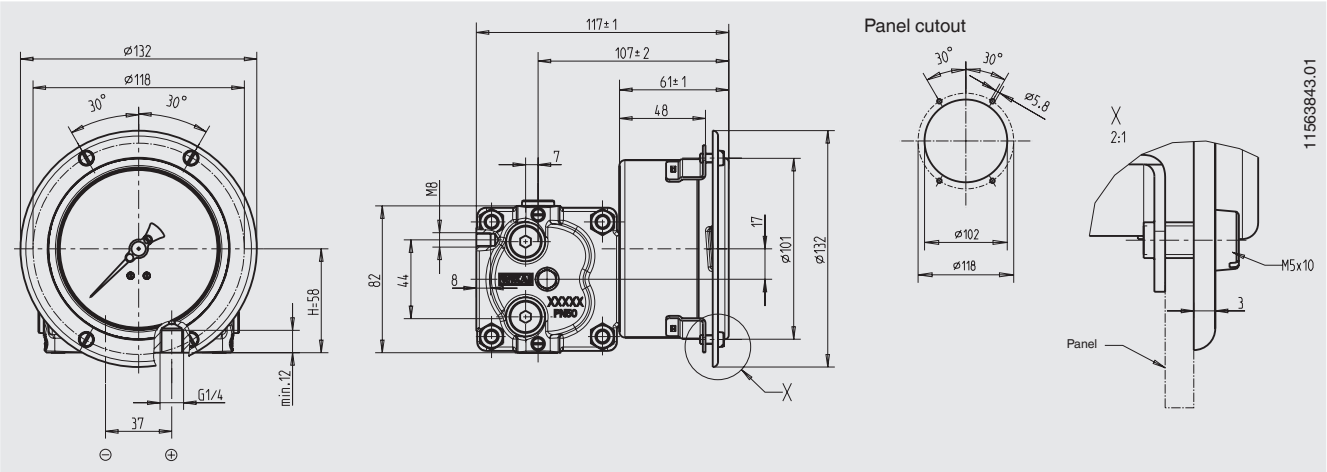
1) Specifications given in data sheet AC 08.01 for
Model 821 correspond to model 828 (built into a self-contained unit)
Model 831 correspond to model 838 (built into a self-contained unit)

Dimensions in mm



Option

Panel mounting



Ordering information

Model / Scale range (measuring cell) / Scale design / Process connections with centre distance / Options

WIKA Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30
63911 Klingenberg/Germany
Tel. (+49) 9372/132-0
Fax (+49) 9372/132-406
E-mail info@wika.de
www.wika.de

09/2011 GB