PM 111 digital pressure gauge and pressure transducer with process connection (i.e. with a diaphragm chemical seal)

- **4-digit LED display or 6-digit LCD display with backlighting**
- **selectable pressure units (LCD)**
- **analog output signal**
- **memory of the MIN / MAX value**
- **relay output: 1 to 4 independently adjustable relays (together with LED signaling)**
- **accuracy 0,5% FS and better**
- **high overloading capacity and long-term stability**
- **various process connection options**
- **special design for aggressive media**
- **hot media design**
- **sanitizable design (CIP)**

ATEX 0309

Options:

- **digital output RS 232, RS 485**
- **integrated data logger**
- **explosion-proof design (ATEX)**
- **pressure difference measurement (with the use of an external TSZ-M sensor)**
- **powered from a built-in accumulator**
- **display with color backlighting**

The basic structural element of the instrument is a piezoresistive pressure sensor with a stainless-steel isolating diaphragm. The use of a high-quality sensor is a prerequisite for high accuracy, overloading capacity and long-term stability of the instrument. The output signal of the sensor is processed by a microprocessor. The status of the relay is indicated on the panel with four LED's.

The front panel of polycarbonate foil contains four buttons that are used to program parameters of the pressure gauge and switching functions; e.g.: beginning and end of the measuring range, offset (tara), output signal, levels of switching points and functions of individual relays (switching on / off, switching differential, position of relays in case of a failure, etc.), number of decimal places.

Main applications

The diaphragm chemical seal prevents the measured fluid from entering the instrument. This is sometimes necessary due to the following circumstances:

- It must be possible to completely clean the instrument of residues of the measured product (CIP design CIP – cleaning on place); this requirement is usual in the food processing and pharmaceutical industry;
- The measured fluid would be solidifying, crystallizing or making sediments (e.g. when sludge, paint and varnish, adhesives, etc. are measured);
- The measured fluid is aggressive or abrasive while the isolating diaphragm makes it possible for the wetted parts to be made of special resistant materials (e.g. the most suitable material that resists most aggressive acids is tantalum);
- The measured fluid is hot (e.g. melted asphalt and plastic materials).

The body of the sensor and the process connection are usually made of stainless steel.

The isolating diaphragm is either made of stainless steel or of special materials: tantalum, nickel, special alloys (e.g. Hastelloy C-276), or it may be coated PTFE layer or gold-plated.

For measurement of high-temperature fluids (up to 400℃) the set contains a cooling tower that reduces transmission of heat to the instrument body.

Data logger

The instrument can be programmed to record values of the measured pressure with the sampling interval from 5 s to 24 hours. The capacity of the data logger memory is 13 thousand to 216 thousand records (depending on the size of the installed memory).

Battery power supply

In the LCD version the pressure gauge can be supplied from a built-in rechargeable battery; the battery is recharged with a controlled charger.

PM 111-M

BHV senzory, Družstevní 20
CZ 252 68 Kněževes u Prahy
tel.: +420 / 220 920 253
fax: +420 / 220 922 036
e-mail: bhvsenzory@bhvsenzory.cz
http://www.bhvsenzory.cz
rev 1106

Specification

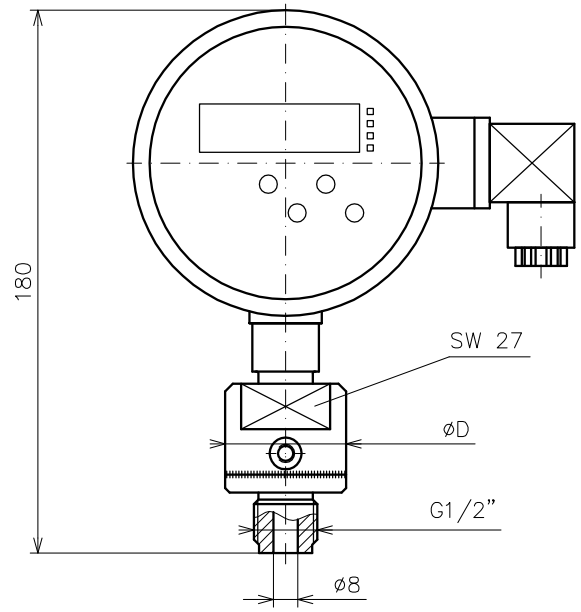
Pressure ranges:	0 … 6 kPa to 0 … 700 bar
Measurement type:	Gauge pressure, absolute pressure, level measurement
Accuracy:	0,5% FS for pressure range from 25 kPa, 1% FS for less Option: 0,25% FS – depends on the range and the type of the seal
Long-term stability:	better than 0,15 % FS per a year
Supply voltage:	15 - 36 V DC (3-wire configuration, LED or LCD display) 8 - 28 V DC (2-wire configuration, only with LCD display)
Output signal:	2-wire: 4 … 20 mA (only with LCD display) 3-wire: 4 … 20 mA, 0 … 20 mA, 0 … 1 (5; 10) V .. etc. (alternative on request) RS 232, RS 485 (9600 Bd)
Load driving capability:	2-wire configuration: Rz=(Usup – 8V) / Iout 3-wire configuration: Rz=(Usup – 3V) / Iout Rz – load resistance [kΩ], Usup - power supply voltage [V], Iout - output current [mA]
Relay output	1 to 4 relay (The setpoints are free programmable by means of buttons on the front panel, including hysteresis. The status of the relay is indicated by LED light.) Rating: 5 A / 250 V AC, 5 A / 30 V DC, max. 150 V / 1 A
Trends	Increasing or degreasing of pressure is indicated by LED light (option)
Operating temperature range:	Ambient: -20 to +70℃ Medium: -20 to +400℃ storage 5 to 40℃
Electrical connection:	K1 - mating socket with screw terminal connections to DIN 43650 (supply, analog output) K2 - Amphenol CA 6 (relays) K3 - socket for recharging (built-in accumulator) K4 - Canon 9-pin (digital output)
Seal rating:	IP 65

Process connection – chemical seal

Type C Clamp (Tri-Clamp) connection in accordance with ISO 2582, ISO 1127, DIN32676 and DIN 11864	PN 40: DN 25, 32, 40 PN 25: DN 50, 65
Type M Food-processing screw union in accordance with DIN11851	PN 40: DN 25, 32, 40 PN 25: DN 50, 65
Type F Threaded pin with the diaphragm on the frontal area	PN 600: G ½", ¾", 1", 1 ¼", 1 ½", 2"
Type P Flush flange in accordance with EN 1092-1 or ANSI B 16,5	PN 40: DN 25, 32, 40, 50, 65, 80 Class 150: ½", ¾", 1", 1 ½" , 2" alternative PN or class on request
Type S Sandwich design for counter-flange installation	PN40: DN 50, 80 Class 150: ½", ¾", 1", 1 ½" , 2" alternative PN or class on request
Type Q Semi flushed diaphragm in accordance with EN 1092-1 or ANSI B 16,5	PN 40: DN 25, 32, 40, 50, 65, 80 Class 150: ½", ¾", 1", 1 ½" , 2" alternative PN or class on request
Type K Internal diaphragm screwed type, with thread connection	PN 40: DN 70, 100
Type W Internal diaphragm with weld body, thread connection	PN 40: DN 40, 50 PN 160: DN 40; PN 600: DN 32
Type Z Flanges for the paper industry (FDP, IDBF, IDSF)	PN: DN 48
Alternative: Special food-processing connections: Varivent®, NEUMO Bio-Control®, DRD flange, APV flange, Finger type seal	
Body material:	AISI 316L PVDF (option for type K – bottom part)
Diaphragm material:	AISI 316L, tantal, Hastelloy Option: protection with coated PTFE cover
Filling liquid:	silicon oil, food-industry oil, high-temperature oil, halocarbon
Cool-tower	short, type A, up to 150℃ extended (capillary design), type B, up to 400℃

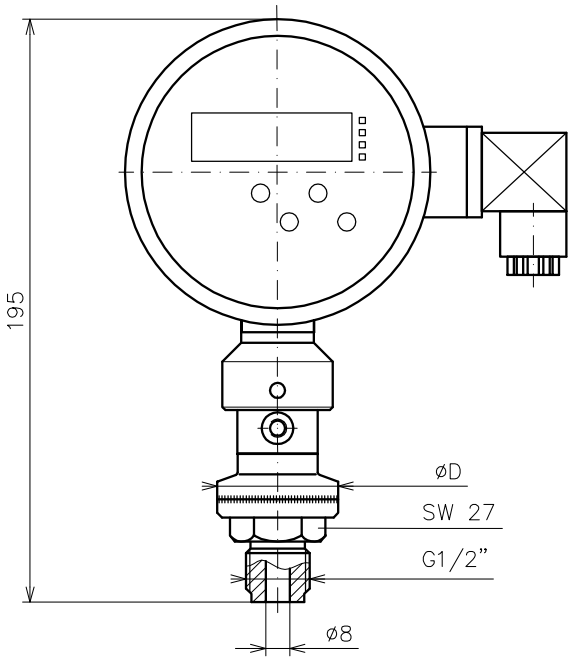
PM 111-M

Seal type W



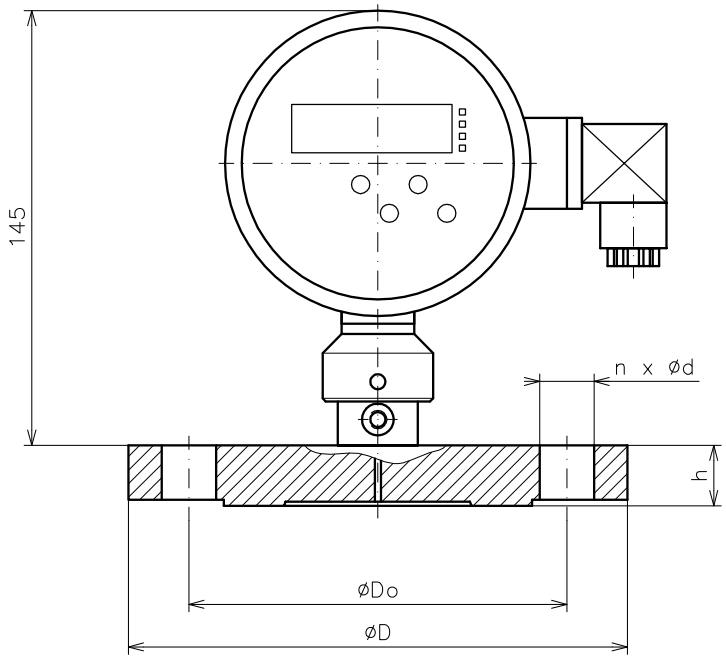
seal–type	W32	W41
øD [mm]	32.5	40
PN	600	160

Seal type W



seal–type	W40	W50
øD [mm]	40	50
PN	40	25

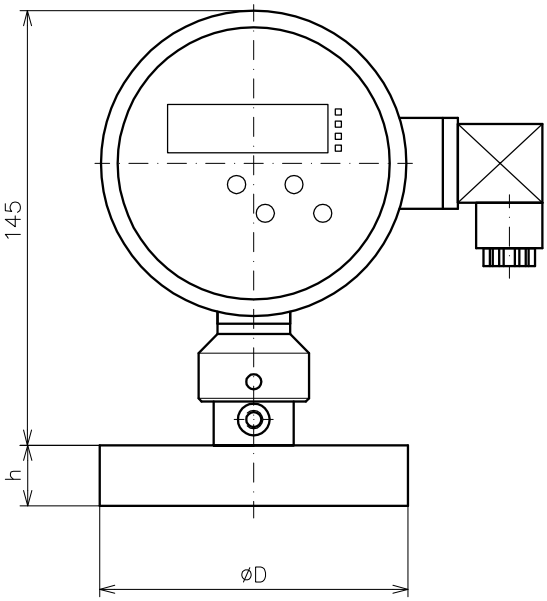
Seal type P



seal–type	P25	P32	P40	P50	P65	P80
øD [mm]	115	140	150	165	185	200
h [mm]	16	16	18	20	20	22
øDo [mm]	85	100	110	125	145	160
n	4	4	4	4	4	8
ød [mm]	14	18	18	18	18	18
PN	40	40	40	40	40	40

Dimensions accordance with ANSI B 16,5 available

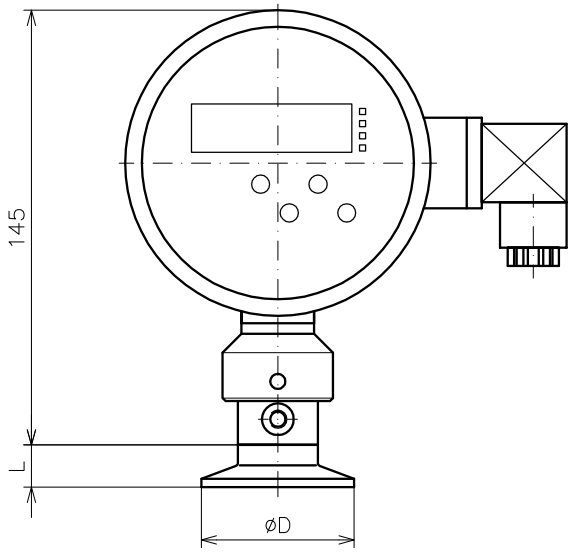
Seal type S



seal–type	S25	S50	S80
øD [mm]	68	102	133
h [mm]	18	20	22
PN	40	40	40

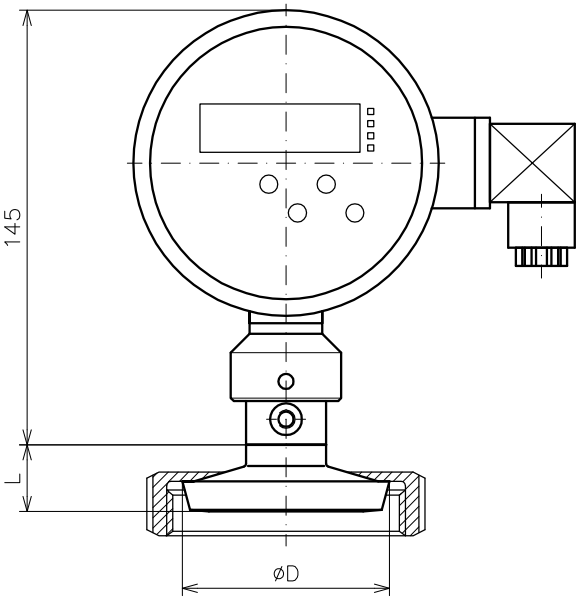
Dimensions accordance with ANSI B 16,5 available

Seal type C



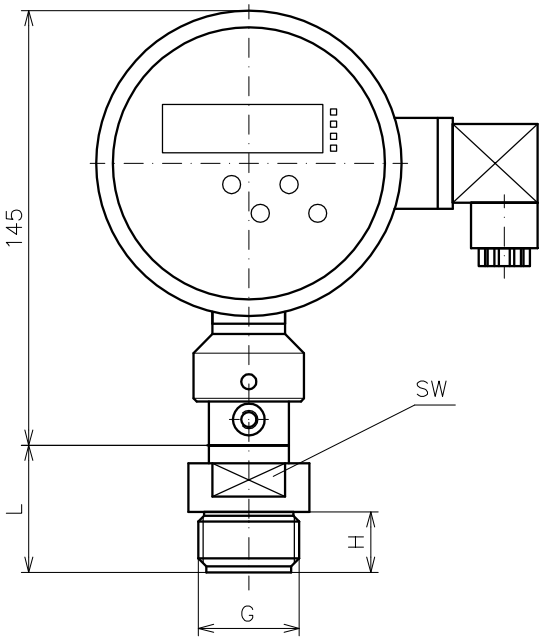
seal–type	C25	C32	C40	C50	C65
øD [mm]	50.5	50.5	50.5	64	91
L [mm]	15	15	15	15	15
PN	40	40	40	40	25

Seal type M

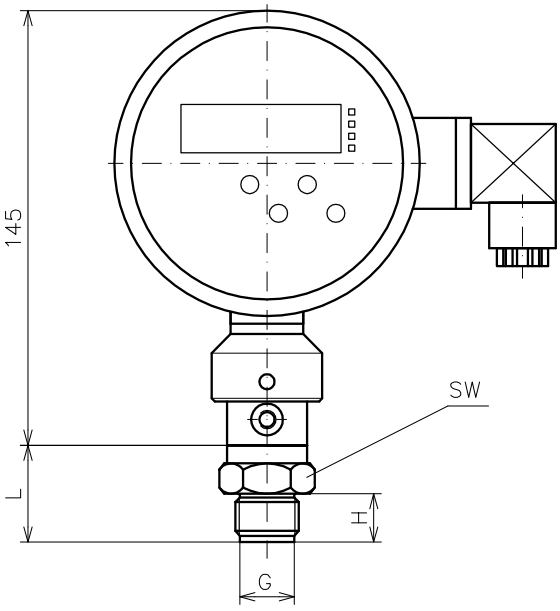


seal–type	M25	M32	M40	M50	M65
øD [mm]	44	50	56	68.5	86
L [mm]	22	22	22	22	24
PN	40	40	40	25	25

Seal type F

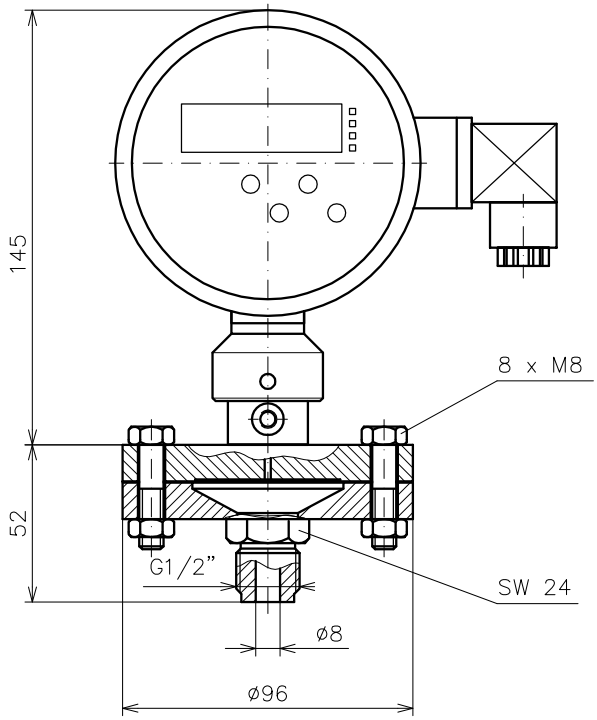


Seal type F



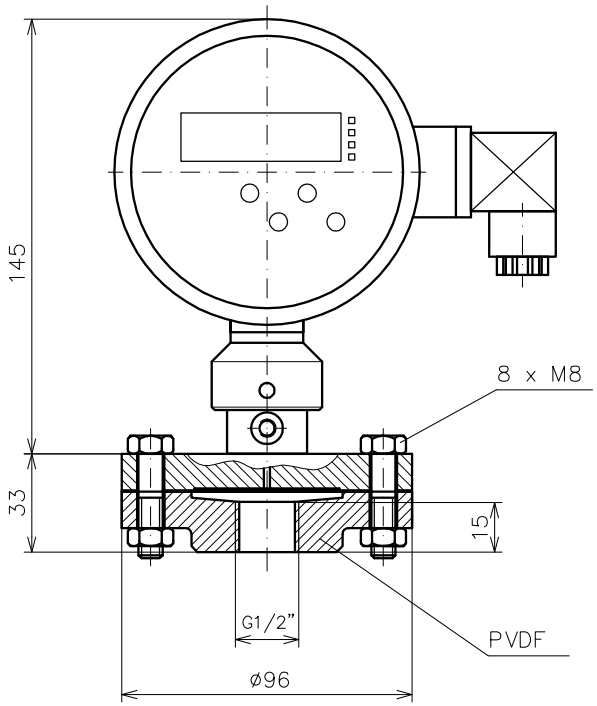
seal–type	F12	F34	F10	F54	F64	F20
G	1/2"	3/4"	1"	5/4"	6/4"	2"
H [mm]	16	20	20	30	30	30
SW	27	32	32	41	55	60
L [mm]	34	36	43	55	55	55
PN	600	600	600	600	600	600

Seal type K



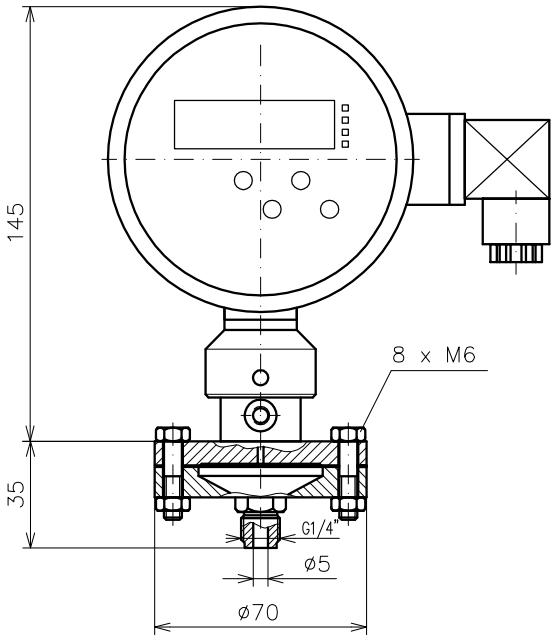
seal–type	K96
PN	40

Seal type K



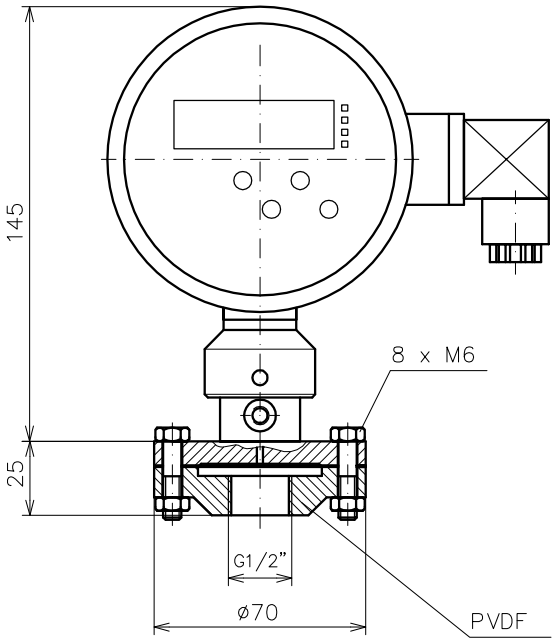
seal–type	K97
PN	40

Seal type K



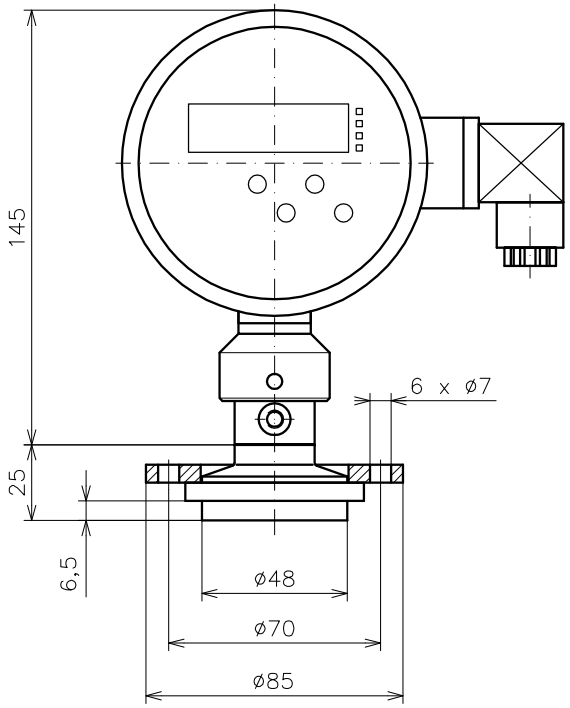
seal–type	K70
PN	40

Seal type K



seal–type	K71
PN	40

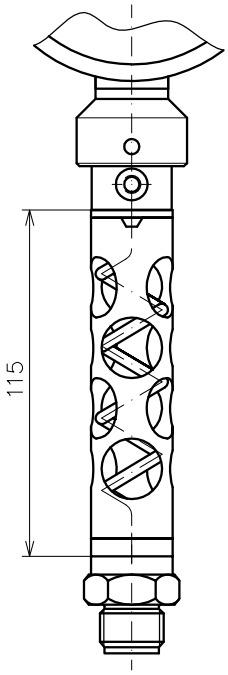
Seal type Z



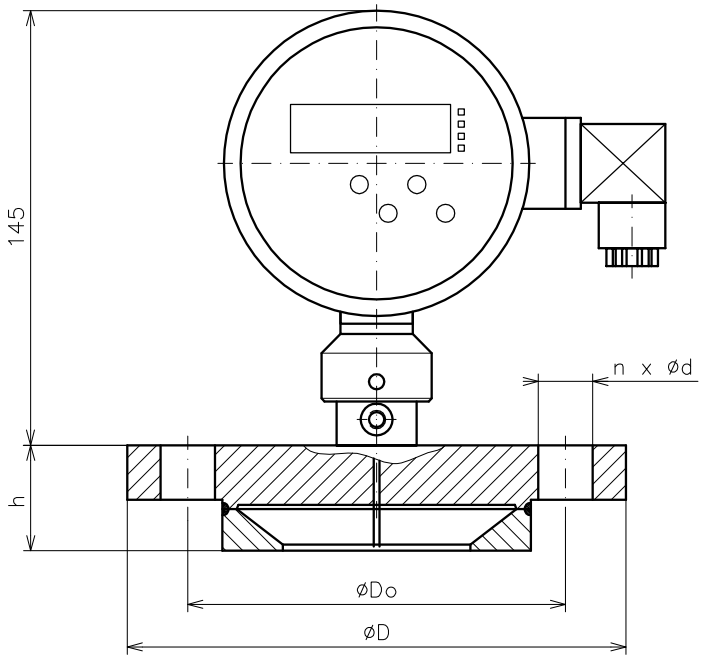
seal–type	Z48
PN	40

Cool tower – type B

Tmax 400°C



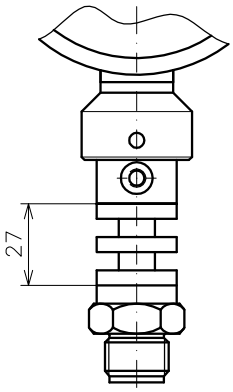
Seal type Q15, Q25, Q32, Q40



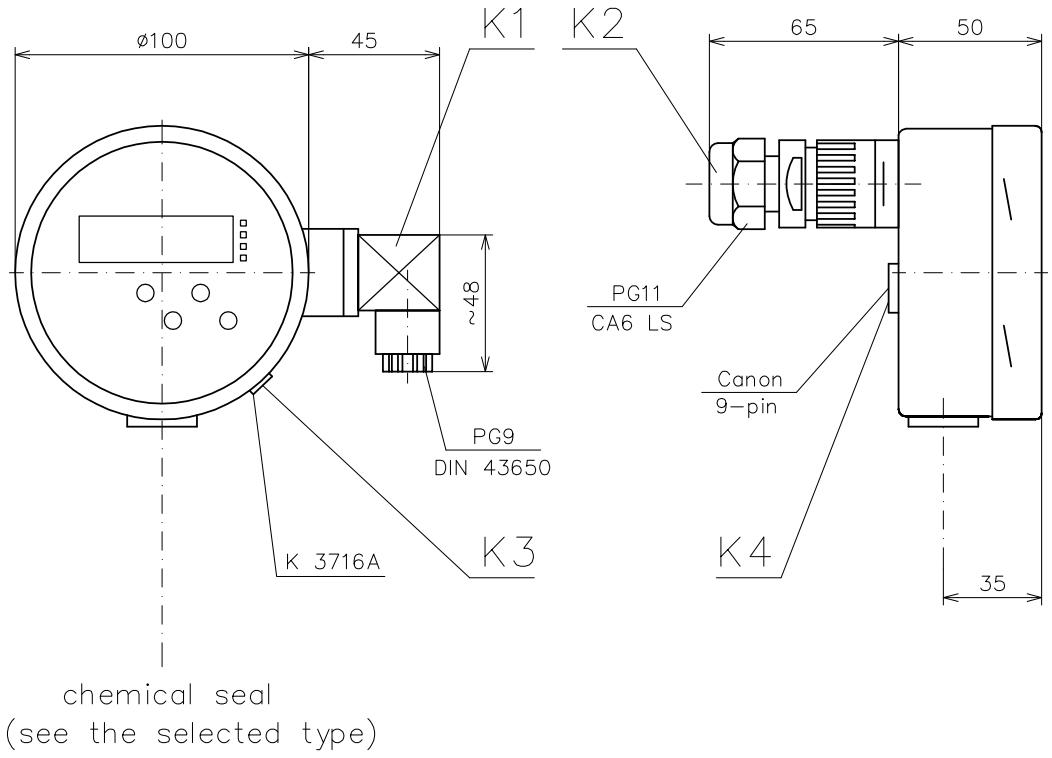
seal–type	Q15	Q25	Q32	Q40
øD [mm]	95	115	140	150
h [mm]	14	16	16	18
øDo [mm]	65	85	100	110
n	4	4	4	4
ød [mm]	14	14	18	18
PN	40	40	40	40

Cool tower – type A

Tmax 150°C



Dimensions


ø100
45
K1
K2
65
50
≈48
PG11
CA6 LS
Canon
9–pin
PG9
DIN 43650
K 3716A
K3
K4
35
chemical seal
(see the selected type)