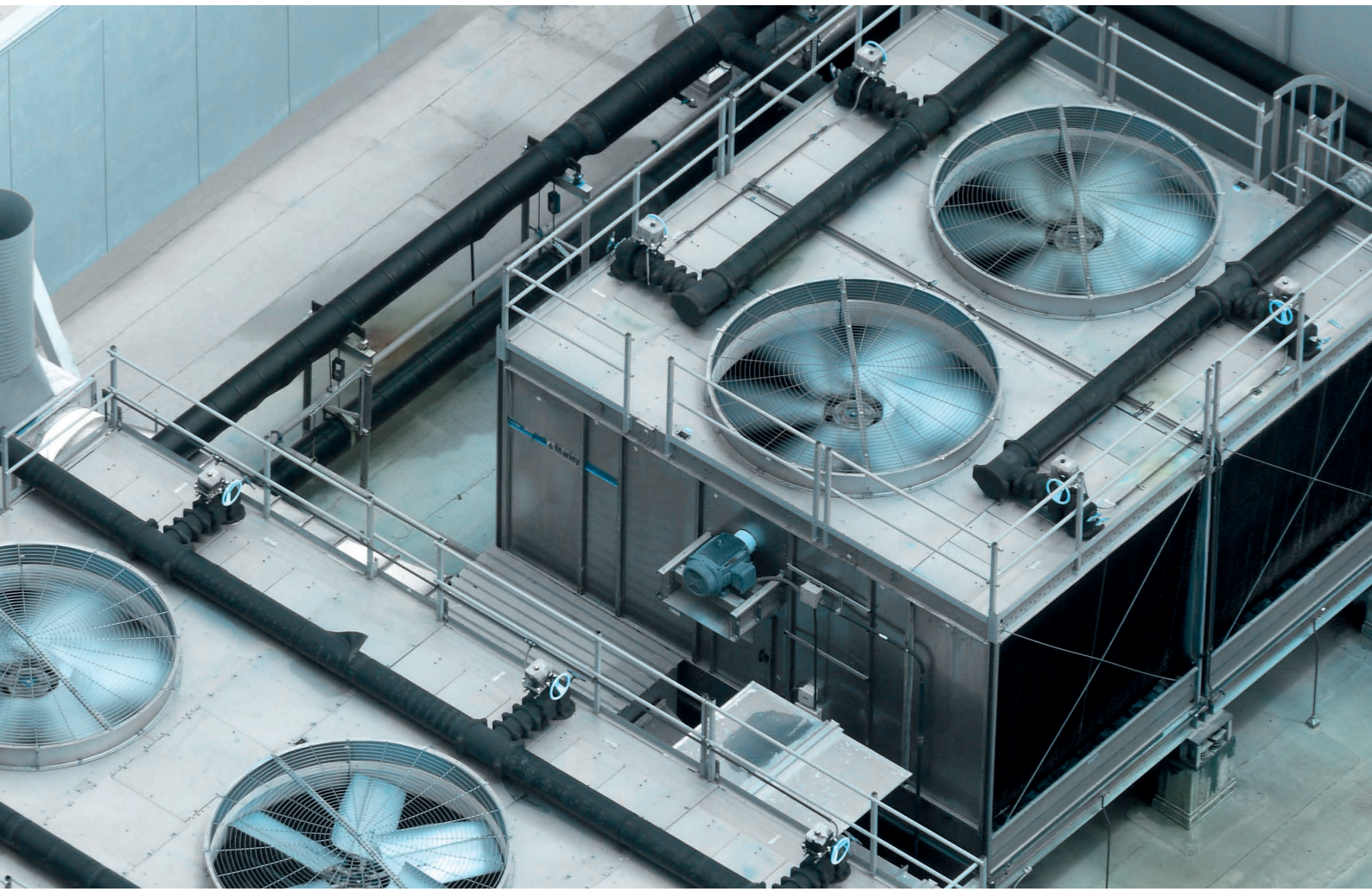
Pressure
Temperature
Level
Calibration technology

Refrigeration and air-conditioning technology



WIKA

Part of your business

Alexander Wiegand,
Chairman and CEO
WIKA

About us

As a family-run business acting globally, with over 7,900 highly qualified employees, the WIKA group of companies is a worldwide leader in pressure and temperature measurement. The company also sets the standard in the measurement of level and flow, and in calibration technology.

Founded in 1946, WIKA is today a strong and reliable partner for all the requirements of industrial measurement technology, thanks to a broad portfolio of high-precision instruments and comprehensive services.

WIKA ensures flexibility and the highest delivery performance. Every year, over 50 million quality products, both standard and customer-specific solutions, are delivered in batches of 1 to over 10,000 units.

With numerous wholly-owned subsidiaries and partners, WIKA competently and reliably supports its customers worldwide. Our experienced engineers and sales experts are your competent and dependable contacts locally.

Contents

This brochure

Within the refrigeration cycle and its periphery there are many points where pressure and temperature are measured and monitored. This serves to control the plant in order to guarantee a secure process run.

Some of the measuring tasks are: Indication of pressure and temperature in the lines of the refrigeration cycle on one of the main aggregates, control of fan speed or expansion valve speed, respectively, filter monitoring, temperature measurement in the cooling room, level measurement of pressure vessels or valve control.

In addition to the multitude of applications also the size of the refrigeration system, the refrigerant etc. place particular demands on the instruments. Here, WIKA is the competent partner for measuring instruments for pressure, temperature and calibration in all parts of refrigeration plants.

This brochure assists you in selecting the right instruments. Apart from the described products for refrigeration and air-conditioning applications, we offer a comprehensive standard program for the measurement of pressure, temperature and level.

In co-operation with you, we will develop tailored solutions geared to the individual requirements of your process.

Talk to us.

Perfection in material and form

In view of the increasing requirements on refrigeration plants due to new refrigerants or leak-free systems the quality requirements for measuring instruments are also increasing. Thus the right choice of materials is decisive in order to get the best possible instrument.

Case

Choosing the right material that determines the quality of the case means taking care of parameters such as pressure, temperature and field conditions. The refrigerant used is not decisive, as the case usually is not exposed to the process medium. WIKA offers plastic, brass and stainless steel cases.

Wetted metal parts

The main decider in this case is whether the refrigeration plant is operated with an (H)FCKW/HFKW refrigerant or with ammonia. If it is ammonia, the pressure element must be made of stainless steel (e.g. 1.4571, 1.4404). If it is an (H)FCKW/HFKW refrigerant, a copper-zinc-alloy (brass) is sufficient. The same is true for the pressure connection, the thermowell and the stem of the thermometer.

Thermowells

If the temperature instrument is not put into the process directly – which is always advisable because of the protection and exchangeability of the measuring instrument – but via a thermowell, various steels are suitable for this protective case. As standard material WIKA uses stainless steel 1.4571.

Sealings

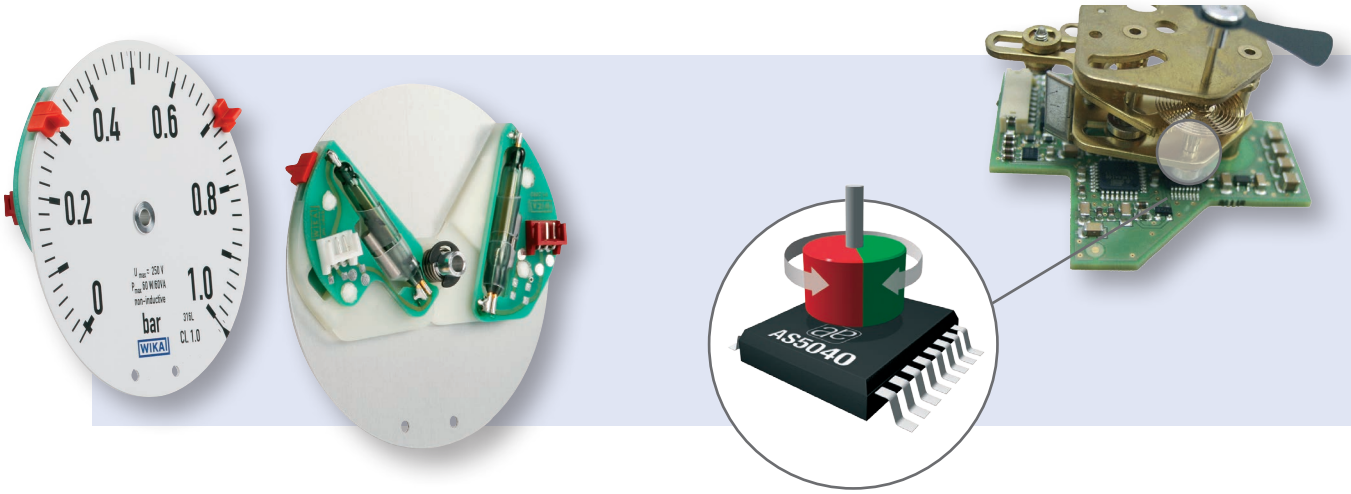
The process medium, which comes into direct contact with the sealing material, as well as the pressure and temperature are decisive factors for the selection of the suitable sealing material for O-rings or separating diaphragms. Especially formulated elastomer compounds are mostly used. As standard WIKA offers the materials NBR (acrylonitrile butadiene rubber), FPM (fluor propylene rubber) or EPDM (ethylene propylene diene monomer rubber), as an option FFPM (perfluor propylene rubber) or CR (chloroprene rubber) are partly possible as well.

Our instruments are manufactured in accordance with the appropriate standards, e.g. EN 837 for pressure measuring instruments.

Further test certificates in accordance with different standards are available on request, depending on the instrument version, e g. GL (Germanischer Lloyd), PTB (Physikalisch-Technische Bundesanstalt), BAM (Bundesamt für Materialforschung und Prüfung), Gost standard Russia, TÜV (Technischer Überwachungsverein), etc.

For thermowells certificates such as 3.1B can be requested as well.

Pressure gauges with electrical output signals

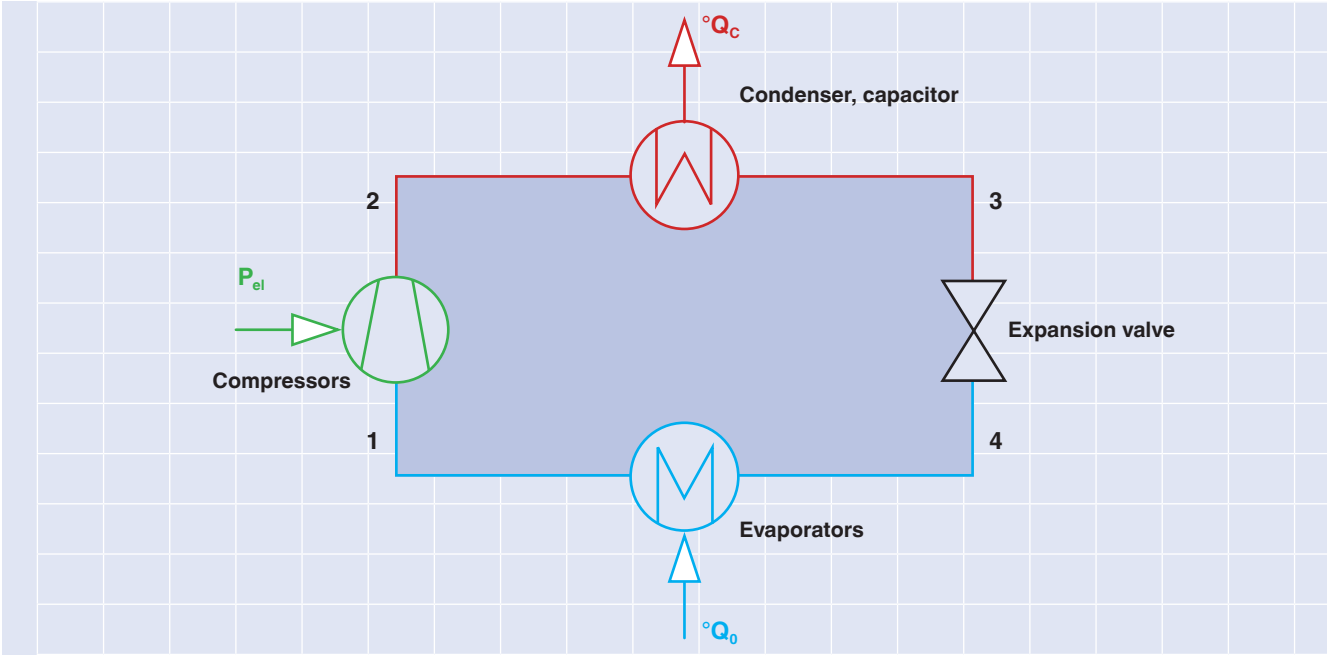


Control systems are gaining more and more importance in industrial applications. Consequently, pressure indication on the gauge itself is no longer sufficient, rather the measured value must be transferred to the control system via an electrical signal, e.g. by closing or opening of a circuit. WIKA is focusing on its mechatronic product line in order to satisfy this trend.

The switchGAUGEs are based on a high-quality WIKA mechanical pressure gauge which has, depending on the application, an integrated magnetic snap-action contact, inductive or electronic contact (PLC), reed contact, micro switch or a transistor output (NPN or PNP).

A pressure gauge with an electrical output signal from the intelliGAUGE series combines all the advantages of a local display, without the need for a power supply, with the requirements of an electrical signal transfer for a modern electronic measured value registration.

Refrigeration circuit



Optimum connections

The connection of pressure and temperature measuring instruments to the process can be carried out via thermowells and mounting devices. Thus the connection can be specifically adjusted to the individual process requirements.

Mounting flanges

There are three basic possibilities to mount a pressure gauge to the process – besides the connection location:

- Surface mounting flange
- Panel mounting flange
- Mounting clamp

Depending on the instrument version, these three options are available in several versions, e.g. steel, brass, chrome plated, polished, galvanised etc. Attention should be paid to the fact that not all versions can be combined with each other.

Thermowells

The process connection for thermometers usually is a thermowell. This has the advantage that you can remove the instrument (for replacement or test) without having to open the plant or stop the process.

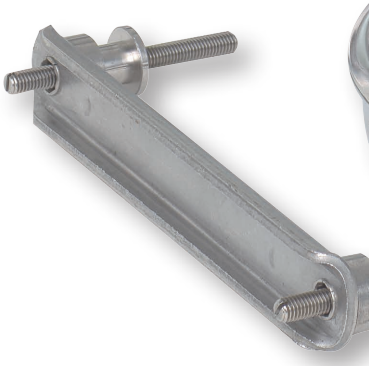
When choosing a suitable thermowell, one does not only have to take account of the parameters of pressure, temperature and process medium, but also the velocity of flow, the density and the insertion length.

In refrigeration technology, fabricated stainless steel thermowells or solid-machined thermowells machined from solid body material in accordance with DIN 43772 are frequently used. Depending on the threaded connection of the thermometer, different designs with female or male threads are used.

Capillaries

An additional type of process connection is by means of capillaries. They are used for pressure gauges and thermometers alike to bridge greater distances between measuring cell and reading point or to provide better protection for the measuring instrument against strong vibrations, high temperatures etc.

As a typical application WIKA offers expansion thermometers in edgewise design for measuring the temperature of refrigerated cabinets.



Resistance of the elastomers (selection)

Refrigerant	NBR	FKM	EPDM	FFKM	CR	PTFE
R 11	++	+	–	+	–	++
R 12	+	+	+	+	++	++
R 12 B1	–	–	–	–	+	++
R 13	++	+	++	+	++	++
R 13 B1	++	+	++	+	++	++
R 14	++	+	++	+	++	++
R 21	–	–	–	–	+	++
R 22	–	–	++	–	++	++
R 31	–	–	++	–	++	++
R 32	++	–	++	–	++	++
R 112	+	+	–	+	+	++
R 113	++	+	–	+	++	++
R 114	++	+	++	+	++	++
R 114 B2	+	+	–	+	+	++
R 115	++	+	++	+	++	++
R 124	–	–	+	–	+	++
R 134 a	+	–	+	–	+	++
R 142 b	++	–	+	–	++	++
R 152 a	++	–	++	–	++	++
R 218	++	++	++	++	++	++
R 290	+	+	k.A.	+	k.A.	k.A.
R 401 a	k.A.	k.A.	k.A.	k.A.	+	k.A.
R 401 b	k.A.	k.A.	k.A.	k.A.	+	k.A.
R 402 a	k.A.	k.A.	k.A.	k.A.	+	k.A.
R 403 b	k.A.	k.A.	k.A.	k.A.	+	k.A.
R 404 a	+	–	+	–	+	++
R 407 a	+	k.A.	k.A.	k.A.	+	k.A.
R 407 b	k.A.	k.A.	k.A.	k.A.	+	k.A.
R 407 c	k.A.	–	+	–	+	++
R 408 a	k.A.	k.A.	k.A.	k.A.	+	k.A.
R 409 a	k.A.	k.A.	k.A.	k.A.	+	k.A.
R 410 a	+	k.A.	k.A.	k.A.	++	k.A.
R 413 a	+	k.A.	k.A.	K.A.	k.A.	k.A.
R 502	+	+	++	+	++	++
R 507	+	k.A.	k.A.	k.A.	+	k.A.
R 600 a	+	+	k.A.	k.A.	+	k.A.
R717 (liquid)	+	–	++	–	++	++
R717 (gaseous)	++	–	++	–	++	++
R717 (gaseous hot)	–	–	+	–	+	++

++ = highly resistant

\+ = resistant

– = not resistant

k.A. = not specified

Data are only recommendations. These may deviate, e.g. if using flotation oils or additives. Furthermore, manufacturer-specific compositions of the individual elastomers may cause resistances to deviate in the maximum operating range. Even unknown parameters and conditions in practical use may result in deviations. We therefore accept no liability for the correctness of the recommendations in an application case.

Compressors

Due to the various structural shapes and design layouts of refrigeration plants there is also a great number of different compressors. Mainly reciprocating, screw and scroll compressors are used to suck in the refrigerant at a low pressure and compress it to a higher pressure.
Other criteria for differentiation are for example the number of compressing stages, the way of cooling or the ratio compressor – engine (open, semi-hermetic, hermetic).

In order to monitor oil pressure and pressure in suction and discharge line of the compressor WIKA offers all necessary measuring instruments.

Pressure measurement
For mechanical pressure measurement the product programme ranges from the tried and tested Bourdon tube pressure gauge with plastic case over the diaphragm and capsule pressure gauges to the sturdy stainless steel or special material pressure gauge. For electronic pressure measurement WIKA offers its customers a full range of sensor technology produced in-house – whether ceramic thick film, piezo-resistive or metal thin-film.

Temperature measurement
Mechanical temperature measuring instruments are available as bimetal, expansion or gas-actuated thermometers.
In electrical temperature measurement WIKA delivers resistance thermometers and thermocouples, temperature transmitters complete the programme.

R-1

Pressure transmitter with thin-film measuring cell

Accuracy (± % of span): ≤ 2	
Measuring range:	■ 0 … 6 to 0 … 160 bar ■ -1 … +7 to -1 … +45 bar
Special feature:	■ Special case design for the best possible condensation tightness ■ Resistant to all common refrigerants
Data sheet:	PE 81.45

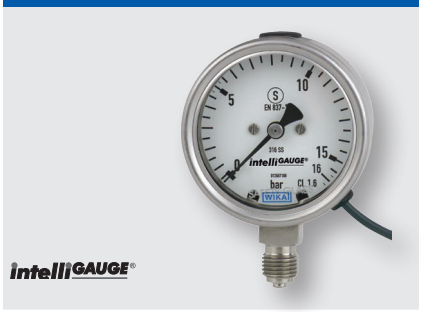
AC-1

Pressure transmitter with ceramic measuring cell

Accuracy (± % of span): ≤ 2	
Measuring range:	■ 0 … 6 to 0 … 60 bar ■ -1 … +7 to -1 … +45 bar
Special feature:	■ Special case design for the best possible condensation tightness ■ Resistant against the major refrigerants
Data sheet:	PE 81.46

PGT23

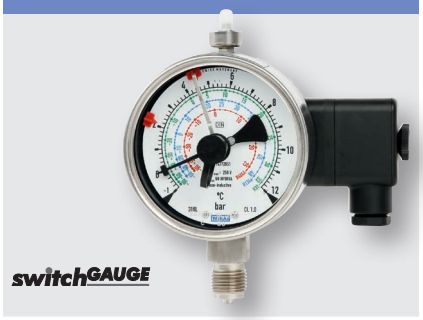
Bourdon tube pressure gauge with electrical output signal, stainless steel, safety version



Nominal size:	63 mm
Scale range:	0 … 1 to 0 … 1,000 bar
Accuracy class:	1.6
Ingress protection:	IP 54, filled IP 65
Data sheet:	PV 12.03

PGS23

Bourdon tube pressure gauge with switch contacts, stainless steel version



Nominal size:	100, 160 mm
Scale range:	0 … 0.6 to 0 … 1,600 bar
Accuracy class:	1.0
Ingress protection:	IP 65
Data sheet:	PV 22.02

DPG40

DELTA-plus, differential pressure gauge with integrated working pressure indication

Nominal size:	100 mm
Scale range:	0 … 0.25 to 0 … 10 bar
Accuracy class:	2.5
Ingress protection:	IP 54, IP 65 (optional)
Data sheet:	PM 07.20

DPGS40

DELTA-comb, differential pressure gauge with integrated working pressure indication and micro switch

Nominal size:	100 mm
Scale range:	0 … 0.25 to 0 … 10 bar
Accuracy class:	2.5 (optional 1.6)
Ingress protection:	IP 54 (optional IP 65)
Data sheet:	PV 27.20

DPS40

DELTA-switch, differential pressure switch

Nominal size:	100 mm
Measuring range:	0 … 0.25 to 0 … 10 bar
Switch point reproducibility:	1.6 %
Ingress protection:	IP 54 (optional IP 65)
Data sheet:	PV 27.21

DPGT40

DELTA-trans, differential pressure transmitter with integrated differential pressure and working pressure indication

Nominal size:	100 mm
Scale range:	0 … 0.25 to 0 … 10 bar
Accuracy class:	2.5 (optional 1.6)
Ingress protection:	IP 54 (optional IP 65)
Data sheet:	PV 17.19

Compressors

111.10

Bourdon tube pressure gauge, plastic case, lower mount (LM)

Nominal size:	40, 50, 63, 80, 100, 160 mm
Scale range:	0 … 0.6 to 0 … 400 bar (max. 40 bar with 160 mm)
Accuracy class:	2.5
Data sheet:	PM 01.01

111.12

Bourdon tube pressure gauge, plastic case, back mount (BM)

Nominal size:	27, 40, 50, 63, 80, 100 mm
Scale range:	0 … 0.6 to 0 … 400 bar
Accuracy class:	2.5/4
Data sheet:	PM 01.09, PM 01.17 (NS 27)

131.11

Bourdon tube pressure gauge, stainless steel version

Nominal size:	40, 50, 63 mm
Scale range:	0 … 0.6 to 0 … 400 bar
Accuracy class:	2.5
Data sheet:	PM 01.05

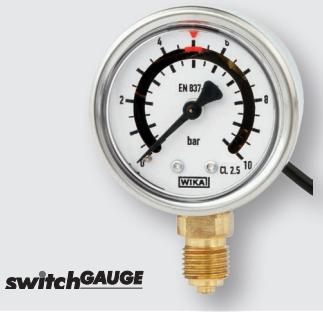
113.13

Bourdon tube pressure gauge, plastic case with liquid filling

Nominal size:	40, 50, 63 mm
Scale range:	0 … 1.0 to 0 … 400 bar
Accuracy class:	2.5
Ingress protection:	IP 65
Data sheet:	PM 01.04

PGS21

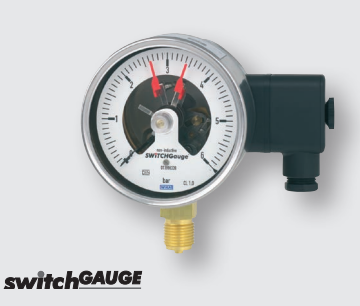
Bourdon tube pressure gauge, stainless steel, fixed contacts



Nominal size:	40, 50, 63 mm
Scale range:	0 … 2.5 to 0 … 400 bar
Accuracy class:	1.6 or 2.5
Ingress protection:	IP 65
Data sheet:	PV 21.02

PGS21.100/160

Bourdon tube pressure gauge with switch contacts, industrial series



Nominal size:	100, 160 mm
Scale range:	0 … 0.6 to 0 … 600 bar
Accuracy class:	1.0
Ingress protection:	IP 54
Data sheet:	PV 22.01

213.40

Bourdon tube pressure gauge, forged brass case with liquid filling

Nominal size:	63, 100 mm
Scale range:	0 … 0.6 to 0 … 1,000 bar
Accuracy class:	1.0 (NS 100), 1.6 (NS 63)
Ingress protection:	IP 65
Data sheet:	PM 02.06

213.53

Bourdon tube pressure gauge, stainless steel case with liquid filling

Nominal size:	50, 63, 100 mm
Scale range:	■ 0 … 1 to 0 … 400 bar (NS 50) ■ 0 … 0.6 to 0 … 1,000 bar (NS 63, 100)
Accuracy class:	1.0 (NS 100), 1.6 (NS 50, 63)
Ingress protection:	IP 65
Data sheet:	PM 02.12

232.30, 233.30

Bourdon tube pressure gauge, stainless steel, safety version, without/with liquid filling

Nominal size:	63, 100, 160 mm
Scale range:	■ 0 … 1.0 to 0 … 1,000 bar (NS 63) ■ 0 … 0.6 to 0 … 1;000 bar (NS 100) ■ 0 … 0.6 to 0 … 1,600 bar (NS 160)
Accuracy class:	1.0 (NS 100, 160), 1.6 (NS 63)
Ingress protection:	IP 65
Data sheet:	PM 02.04

232.50, 233.50

Bourdon tube pressure gauge, stainless steel, without/with liquid filling

Nominal size:	63, 100, 160 mm
Scale range:	■ 0 … 1.0 to 0 … 1,000 bar (NS 63) ■ 0 … 0.6 to 0 … 1,000 bar (NS 100) ■ 0 … 0.6 to 0 … 1,600 bar (NS 160)
Accuracy class:	1.0/1.6 (NS 63)
Ingress protection:	IP 65
Data sheet:	PM 02.02

732.18, 733.18

Differential pressure gauge with Bourdon tube, parallel entry

Nominal size:	80, 100 mm
Scale range:	■ 0 … 2.5 to 0 … 60 bar ■ -1 … 0 … +40 bar
Accuracy class:	1.6
Ingress protection:	IP 65
Data sheet:	PM 07.03

PGT21

Bourdon tube pressure gauge with electrical output signal, stainless steel case

Nominal size:	50, 63 mm
Scale range:	0 … 1.6 to 0 … 400 bar
Accuracy class:	1.6/2.5
Ingress protection:	IP 65
Data sheet:	PV 11.03

Compressors

TF44

Strap-on temperature sensor with connecting cable

Measuring range:	-50 … +200 °C
Measuring element:	Pt100, Pt1000, NTC, KTY
Feature:	■ Connecting lead from PVC, silicone ■ Thermowell from aluminium ■ Mounting on pipe surfaces
Data sheet:	TE 67.14

TR33

Resistance thermometer in miniature design

Sensor element:	1 x Pt100, 1 x Pt1000
Measuring range:	-50 … +250 °C
Output:	Pt100, Pt1000, 4 … 20 mA
Data sheet:	TE 60.33

TR40

Cable resistance thermometer

Sensor element:	1 x Pt100, 2 x Pt100
Measuring range:	-200 … +600 °C
Pin assignment:	2-, 3- or 4-wire
Cable:	PVC, silicone, PTFE
Data sheet:	TE 60.40

TFS35

Bimetal temperature switch

Switching temperature:	40 … 200 °C, fixed
Special feature:	■ Compact design ■ Automatic reset ■ No capillary needed
Data sheet:	TV 35.01

TF35

OEM screw-in thermometer, with plug connection

Measuring range:	-50 … +250 °C
Measuring element:	Pt100, Pt1000, NTC, KTY
Special feature:	■ High vibration resistance ■ Compact design ■ Plug connector for electrical connection
Data sheet:	TE 67.10

SC15

Expansion thermometer with micro switch, indicating temperature controller

Nominal size:	60, 80, 100 mm
Scale range:	-100 … +400 °C
Wetted parts:	Copper alloy
Option:	■ Square case version ■ Sheet steel version ■ Various contact versions
Data sheet:	TV 28.02

OLS-C04

Optoelectronic OEM level switch, refrigerant version with transistor output

Material:	Steel, nickel-plated; glass
Process connection:	G 1/2", ½" NPT
Pressure:	Max. 40 bar
Temperature:	-40 … +100 °C
Data sheet:	LM 31.34

Liquid-cooled condensers/evaporators

In order to condense the gaseous, overheated refrigerant or to evaporate the liquid refrigerant one often uses liquid-cooled aggregates. Refrigerant pressure and temperature result, for example, from the coolant temperature (in- and outlet), the surface of the aggregate and the volume of refrigerant that has to be transformed. As the surface of the aggregate is fixed, pressure and temperature are measured to monitor the performance of the aggregates.

WIKA offers all pressure and temperature measuring instruments needed for these applications. The following instruments are especially suited for applications on liquid-cooled condensers and evaporators.

You can of course use other products that have already been mentioned above for monitoring pressure and temperature in the lines of the refrigeration cycle.

732.51

Differential pressure gauge with diaphragm, stainless steel, all-welded design

Nominal size:	100, 160 mm
Scale range:	0 … 16 mbar to 0 … 25 bar
Accuracy class:	1.6
Ingress protection:	IP 54 (with liquid filling IP 65)
Data sheet:	PM 07.05

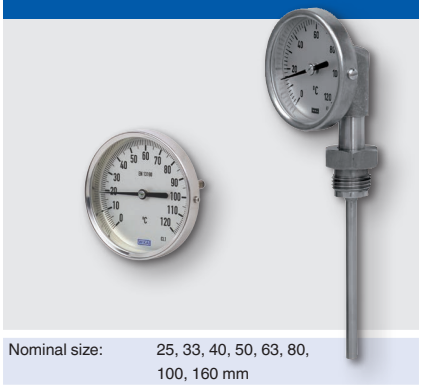
50

Bimetal thermometer Standard version

Nominal size:	63, 80, 100, 160 mm
Scale range:	-30 … +200 °C
Permissible operating pressure at thermowell/stem:	Max. 6 bar
Wetted parts:	Copper alloy
Data sheet:	TM 50.03

52

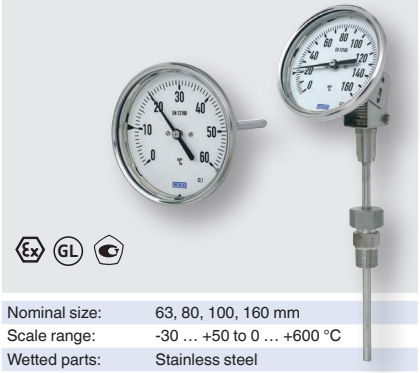
Bimetal thermometer, industrial series axial and radial



Nominal size:	25, 33, 40, 50, 63, 80, 100, 160 mm
Scale range:	-30 … +50 to 0 … +500 °C
Maximum permissible operating pressure at thermowell/ stem in bar: 25	
Wetted parts:	Stainless steel
Data sheet:	TM 52.01

54

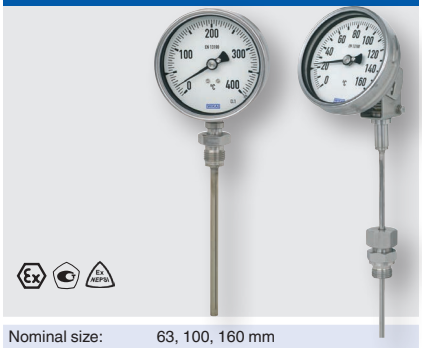
Bimetal thermometer, industrial series, axial and radial, adjustable stem and dial



Nominal size:	63, 80, 100, 160 mm
Scale range:	-30 … +50 to 0 … +600 °C
Wetted parts:	Stainless steel
Option:	Liquid damping to max. 250 °C (case and sensor)
Data sheet:	TM 54.01

55

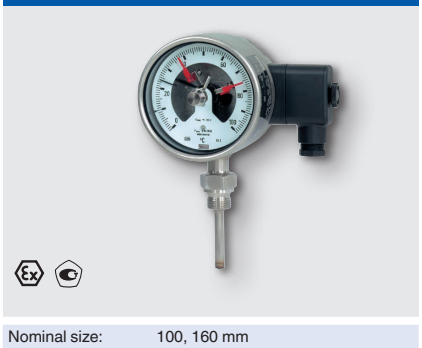
Bimetal thermometer, axial and radial, adjustable stem and dial



Nominal size:	63, 100, 160 mm
Scale range:	-70 ... +70 to 0 … +600 °C
Wetted parts	Stainless steel
Option:	Liquid damping to max. 250 °C (case and sensor)
Data sheet:	TM 55.01

55 with 8xx

Bimetal thermometer with switch contacts, stainless steel



Nominal size:	100, 160 mm
Scale range:	70 … +30 to 0 … 600 °C
Wetted parts	Stainless steel
Option:	Liquid damping to max. 250 °C (case and sensor)
Data sheet:	TV 25.01

TGT73

intelliTHERM® gas-actuated thermometer

Nominal size:	100, 160 mm
Scale range:	-200 … +100 to 0 … 700 °C
Wetted parts:	Stainless steel
Option:	■ Capillary ■ Liquid damping (case)
Data sheet:	TV 17.10

Further applications

Air channel/air-conditioning system

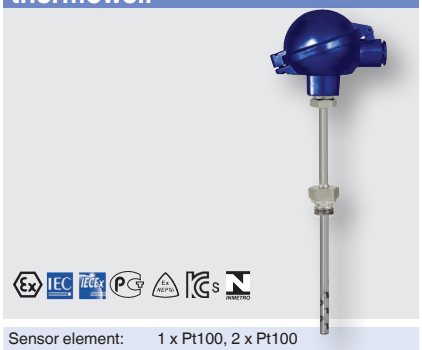
48

Bimetal thermometer

Nominal size:	63, 80, 100, 160 mm
Scale range:	-30 … +120 °C
Wetted parts:	Copper alloy
Data sheet:	TM 48.01

TR10-J

Threaded resistance thermometer, with perforated thermowell



Sensor element:	1 x Pt100, 2 x Pt100
Measuring range:	-200 … +600 °C
Pin assignment:	2-, 3- or 4-wire
Process connection:	Mounting thread
Data sheet:	TE 60.10

TR60

Indoor and outdoor resistance thermometer

Sensor element:	Pt100
Measuring range:	-40 … +80 °C
Pin assignment:	2-, 3- or 4-wire
Process connection:	Wall mounting
Data sheet:	TE 60.60

Precision/test instruments

TF40

Duct temperature sensor

Measuring range:	-50 … +200 °C
Measuring element:	Pt100, Pt1000, NTC
Feature:	■ Smallest case design, UV-resistant ■ Protected against dust and water jets, IP 65 ■ Plastic mounting flange
Data sheet:	TE 67.16

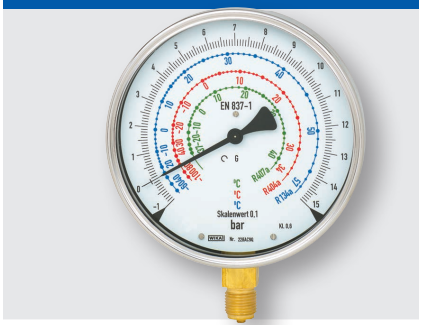
TF41

Ambient temperature sensor

Measuring range:	40 … +100 °C
Measuring element:	Pt100, Pt1000, NTC
Special feature:	■ Smallest case design, UV-resistant ■ Protected against dust and water jets, IP 65 ■ Clip-on sun protector
Data sheet:	TE 67.17

312.20

Bourdon tube pressure gauge, test gauge series



Nominal size:	160 mm
Scale range:	0 … 0.6 to 0 … 600 bar
Accuracy class:	0.6
Ingress protection:	IP 54
Data sheet:	PM 03.01

Cold stores

TF58, TF59

Expansion thermometer, standard version

Nominal size:	58 x 25 mm, 62 x 11 mm
Scale range:	-50 ... +250 °C
Wetted parts:	Copper alloy
Option:	■ Vertical arrangement ■ Special scales ■ Other case materials
Data sheet:	TM 80.02

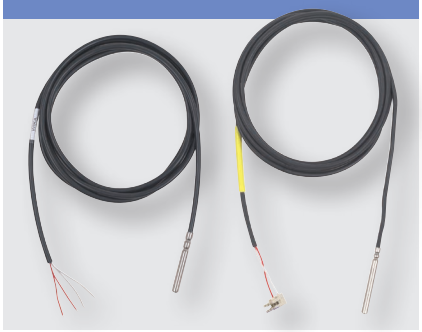
TF-LCD

Longlife digital thermometer

Measuring range:	-40 … +120 °C
Special feature:	■ Resistant to steam diffusion ■ Extremely long service life
Power supply:	Battery or solar powered
Data sheet:	TE 85.01

TF45

OEM insertion thermometer with connecting cable



Measuring range:	-50 … +260 °C
Special feature:	■ Connecting lead from PVC, silicone, PTFE ■ With single or dual measuring element ■ Thermowells from stainless steel
Data sheet:	TE 67.15

70

Expansion thermometer, stainless steel version

Nominal size:	63, 100, 160 mm
Scale range:	-60 … +400 °C
Wetted parts:	Stainless steel
Option:	■ Liquid damping (case) ■ with micro switch ■ Indication accuracy class 1
Data sheet:	TM 81.01

TGT70

intelliTHERM® expansion thermometer

Nominal size:	63, 100 mm
Scale range:	-40 … +250 °C
Wetted parts:	Stainless steel
Output signal:	4...20 mA, 0.5...4.5V
Option:	■ Capillary ■ Other connection designs
Data sheet:	TV 18.01

Air-handling technology

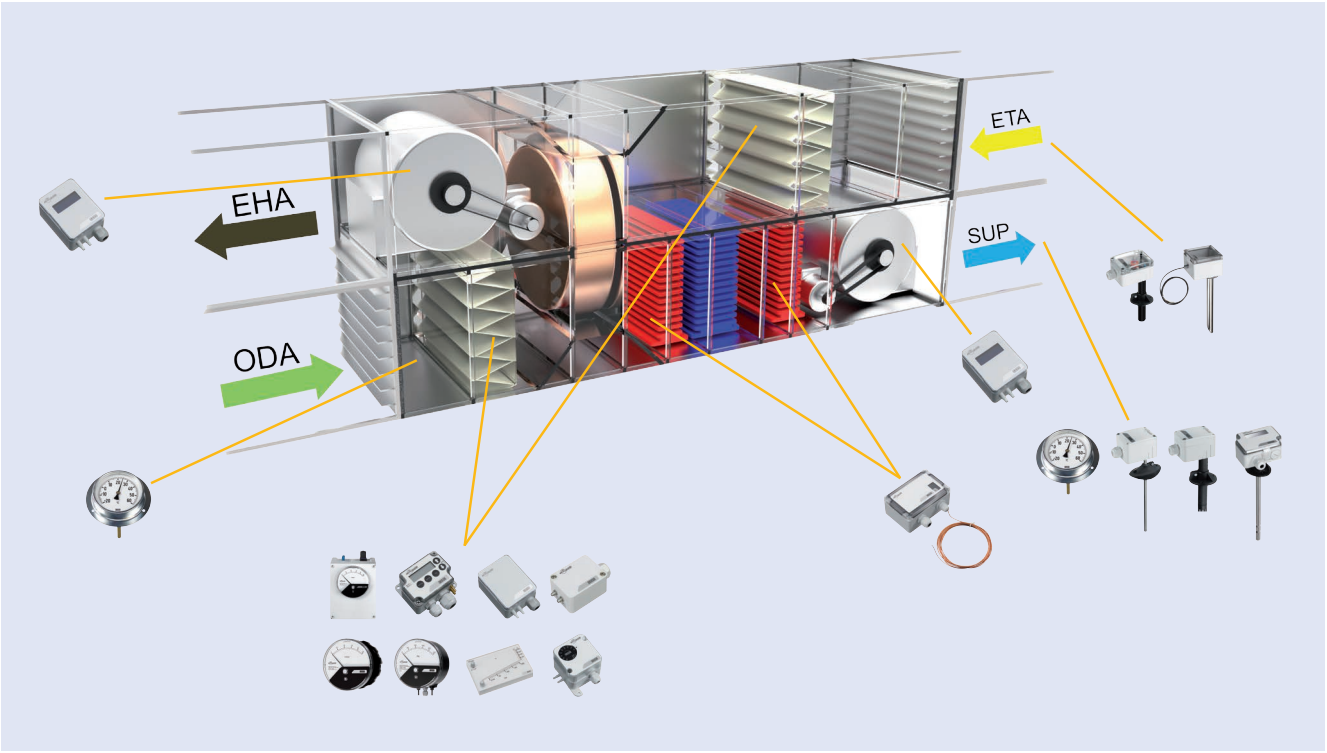
WIKA has developed ventilation and air-conditioning measuring instruments based on the «Value Innovations» philosophy. The measuring instruments are primarily intended for installation in air-conditioning units (monoblocks). The pressure measuring instruments can be used, for example, for filter monitoring in accordance with the V/AC (ventilation and air-conditioning) directive.

Further application areas are, amongst others, clean rooms, dust removal technology, extraction systems, emulsion mist separators and gas scrubbers.

Your benefits

- Easy to install and remove without tools
- Up to 50 % time saving during installation compared with conventional models
- Advanced design, optimised packaging for the target market
- Extended guarantee

Application examples air2guide



A2G-10

Differential pressure gauge

Nominal size:	110 mm
Measuring ranges:	■ 0 … 50 to 0 … 12,500 Pa ■ -25 … +25 to -1,500 … +1,500 Pa ■ others on request
Ingress protection:	IP 54 (optional IP 65)
Data sheet:	PM 07.40

A2G-15

Differential pressure gauge with electrical output signal

Nominal size:	110 mm
Measuring ranges:	■ 0 … 50 to 0 … 12,500 Pa ■ -25 … +25 to -1,500 … +1,500 Pa ■ others on request
Ingress protection:	IP 54 (optional IP 65)
Data sheet:	PV 17.40

A2G-50

Differential pressure transmitter

Measuring ranges:	■ 0 … 2,500 Pa standard ■ 0 … 7,000 Pa standard ■ -250 … +250 Pa ■ other measuring ranges adjustable via jumpers
Ingress protection:	IP 54
Data sheet:	SP 69.03

The range includes differential pressure measurement (mechanical and electronic), inclined tube manometers and differential pressure switches for filter monitoring, and also differential pressure transmitters, mainly used for the monitoring of ventilators and blowers. Duct/immersion temperature sensors and duct humidity and temperature sensors for measuring temperature and relative humidity in heating, ventilation and air-conditioning systems are used. The range is completed by measuring instruments for monitoring CO_2 content and VOCs (volatile organic compounds).

The brochure “Measuring instruments for air-handling technology” shows you the entire air2guide product family and their high technical specifications.

www.air2guide.com

Calibration services

Our calibration laboratory has been accredited for pressure since 1982 and for temperature since 1992 in accordance with DIN EN ISO/IEC 17025. Since 2014, our calibration laboratory has also been accredited for the electrical measurement parameters DC current, DC voltage and DC resistance.

From -1 … +8,000 bar

D-K-15105-01-00

We calibrate your pressure measuring instruments quickly and precisely:

- in the range (+ +8,000) bar
- using high-precision reference standards (pressure balances) and working standards (precise electrical pressure measuring instruments)
- with an accuracy from (0.003 ... 0.01) % of reading depending on the pressure range
- in accordance with the directives DIN EN 837, DAkkS-DKD-R 6-, EURAMET cg-3 or EURAMET cg-17

From -196 … +1,200 °C

D-K-15105-01-00

We calibrate your temperature measuring instruments quickly and precisely:

- in the range (-196 … +1,200) °C
- in calibration baths, tube furnaces or at fixed points using appropriate reference thermometers
- with an accuracy of 2 mK ... 1.5 K depending on temperature and the procedure
- in accordance with the appropriate DKD/DAkkS and EURAMET directives

CT Service Hotline

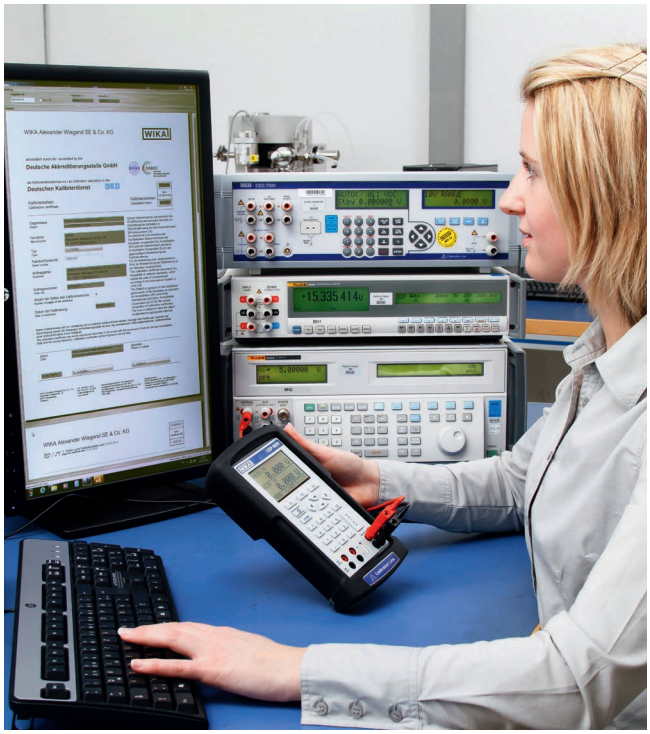
You will receive information about calibrations in the WIKA laboratory and on-site calibrations from our CT Service Team.

Tel. 09372 132-5049 · CTServiceteam@wika.com

Online services

If you would like to send your measuring instrument for calibration to the WIKA laboratory, please use our product return form at
www.wika.com – Service – Product return

DC current, DC voltage and DC resistance



D-K-15105-01-00

We calibrate your electrical measuring instruments quickly and precisely:

- DC current in the range 0 ... 100 mA
- DC voltage in the range 0 ... 100 V
- DC resistance in the range 0 Ω to 10 kΩ
- in accordance with the directives:
  VDI/VDE/DGQ/DKD 2622

On-site calibration

D-K-15105-01-00

In order to have the least possible impact on the production process, we offer you a time-saving, on-site DAkkS calibration throughout Germany (measurement parameter pressure).

We calibrate your pressure and temperature measuring instruments quickly and precisely:

- in our calibration van or on your workbench
- with a DAkkS accreditation for pressure
  - in the range from (-1 ... +8,000) bar
  - with accuracies between 0.025 % and 0.1 % of full scale of the standard used
- 3.1 inspection certificates for the measurement parameter temperature from (-55 ... +1,100) °C

Conversion factors for pressure

SI units – Engineering units (based on the metre)

		SI units					Engineering units					
	from/ to	bar	mbar	Pa	kPa	MPa	mmHg	mmWS	mWS	kp/mm²	kp/cm²	atm
SI units	bar	1	10^{3}	10^{5}	100	0.1	750.064	10.1972 · 10^{3}	10.1972	10.1972 · 10^{-3}	1.01972	0.986923
	1 mbar	10^{-3}	1	100	0.1	0.1 · 10^{-3}	750.064 · 10^{-3}	10.1972	10.1972 · 10^{-3}	10.1972 · 10^{-6}	1.01972 · 10^{-3}	0.986923 · 10^{-3}
	1 µbar	10^{-6}	10^{-3}	0.1	0.1 · 10^{-3}	0.1 · 10^{-6}	750.064 · 10^{-6}	10.1972	10.1972 · 10^{-6}	10.1972 · 10^{-9}	1.01972 · 10^{-6}	0.986923 · 10^{-6}
	1 Pa	10^{-5}	0.01	1	10^{-3}	10^{-6}	7.50064 · 10^{-3}	101.972	101.972 · 10^{-6}	101.972 · 10^{-9}	10.1972 · 10^{-6}	9.86923 · 10^{-6}
	1 kPa	0.01	10	10^{3}	1	10^{-3}	7.50064	101.972	101.972 · 10^{-3}	10.1972 · 10^{-6}	10.1972 · 10^{-3}	9.86923 · 10^{-3}
	1 MPa	10	10 · 10^{-3}	10^{6}	10^{3}	1	7.50064 · 10^{3}	101.972 · 10^{3}	101.972	101.972 · 10^{-3}	10.1972	9.86923
Engineering units	1 mmHg	1.33322 · 10^{-3}	1.33322	133.322	133.322 · 10^{-3}	133.322 · 10^{-6}	1	13.5951	13.5951	13.5951 · 10^{-6}	1.35951 · 10^{-3}	1.31579 · 10^{-3}
	1 mmWS	98.0665 · 10^{-6}	98.0665 · 10^{-3}	9.80665	9.80665	9.80665 · 10^{-6}	73.5561 · 10^{-3}	1	10^{-3}	10^{-6}	0.1 · 10^{-3}	96.7841 · 10^{-6}
	1 mWS	98.0665 · 10^{-3}	98.0665	9.80665	9.80665	9.80665 · 10^{-3}	73.5561	10^{3}	1	10^{-3}	0.1	96.7841 · 10^{-3}
	1 kp/ mm²	98.0665	98.0665 · 10^{3}	9.80665 · 10^{6}	9.80665 · 10^{3}	9.80665	73.5561 · 10^{3}	10^{6}	10^{3}	1	100	96.7841
	1 kp/ cm²	0.980665	0.980665 · 10^{3}	98.0665 · 10^{3}	98.0665	98.0665 · 10^{-3}	735.561	10 · 10^{3}	10	0.01	1	0.967841
	1 atm	1.01325	1.01325 · 10^{3}	101.325 · 10^{3}	101.325	101.325 · 10^{-3}	760	10.3323 · 10^{3}	10.3323	10.3323 · 10^{-3}	1.03323	1

Corresponding pressure units:

1 Pa = 1 N/m²

1 hPa = 1 mbar

1 mmHg = 1 Torr

1 kp/cm² = 1 at (atü)

Comments:

The table refers to DIN 1301 Part 1 (2002) and Part 3 (1979). According to the Regulation Implementing the Law on units of measurement (unit regulation - EinhV) of 13 December 1985, only the following units for pressure are allowed: • pascal (Pa) • bar (bar) • millimetres of mercury (mmHg), however, only for blood pressure and the pressure of other body fluids in medicine.

The definitions and conversion factors in accordance with DIN 1301 apply for these units according to EinhV. In part 1 of this standard it is specified: • pascal as a derived SI unit with a specific name and with a specific unit symbol • bar as a generally applicable unit outside SI • millimetre of mercury as a unit outside SI with a limited scope of application.

Part 3 of this standard defines, amongst other things, conversion factors for the following units: • conventional millimetre of mercury (mmHg) • conventional metre of water (mWS) • Torr (Torr) • technical atmosphere (at) • standard atmosphere (atm).

Pictures:

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SI units – Engineering units (based on the foot)

		SI units					Engineering units			
	from/ to	bar	mbar	Pa	kPa	MPa	psi	ft H_2O	in. H_2O	in. Hg
SI units	bar	1	10^3	10^5	100	0.1	14.50377	33.4553	401.463	29.52998
	1 mbar	10^{-3}	1	100	0.1	0.1 $\cdot 10^{-3}$	14.50377 $\cdot 10^{-3}$	33.4553 $\cdot 10^{-3}$	401.463 $\cdot 10^{-3}$	29.52998 $\cdot 10^{-3}$
	1 µbar	10^{-6}	10^{-3}	0.1	0.1 $\cdot 10^{-3}$	0.1 $\cdot 10^{-6}$	14.50377 $\cdot 10^{-6}$	33.4553 $\cdot 10^{-6}$	401.643 $\cdot 10^{-6}$	29.52998 $\cdot 10^{-6}$
	1 Pa	10^{-5}	0.01	1	10^{-3}	10^{-6}	0.1450377 $\cdot 10^{-3}$	0.334553 $\cdot 10^{-3}$	4.01463 $\cdot 10^{-3}$	0.2952998 $\cdot 10^{-3}$
	1 kPa	0.01	10	10^3	1	10^{-3}	0.1450377	0.334553	4.01463	0.2952998
	1 MPa	10	10 $\cdot 10^{-3}$	10^6	10^3	1	0.1450377 $\cdot 10^3$	0.334553 $\cdot 10^3$	4.01463 $\cdot 10^3$	0.2952998 $\cdot 10^3$
Engineering units	1 psi	68.94757	68.94757 $\cdot 10^{-3}$	6.894757	6.894757 $\cdot 10^3$	6.894757	1 $\cdot 10^{-3}$	2.30666	27.6799	2.036020
	1 ft H_2O	29.8907 $\cdot 10^{-3}$	29.8907	2.98907 $\cdot 10^3$	2.98907	2.98907 $\cdot 10^{-3}$	433.5275 $\cdot 10^{-3}$	1	12	0.8826709
	1 in. H_2O	2.49089 $\cdot 10^{-3}$	2.49089	0.249089 $\cdot 10^3$	0.249089	0.249089 $\cdot 10^{-3}$	36.12729 $\cdot 10^{-3}$	83.3333 $\cdot 10^{-3}$	1	73.55591 $\cdot 10^{-3}$
	1 in. Hg	33.86389 $\cdot 10^{-3}$	33.86389	3.386389 $\cdot 10^3$	3.386389	3.386389 $\cdot 10^{-3}$	0.4911542	1.132925	13.5951	1

Corresponding pressure units:

1 psi = 1 lbf/in.^{2}

Comments:

The table refers to ISO 31-1: 1992 and ISO 31-3: 1992. For lengths ISO 31-1 defines conversion factors for units no longer to be used: • inch (in) • foot (ft).

For pressures, ISO 31-3 defines conversion factors for units which should no longer be used: pound-force per square inch (lbf/in.2) • conventional millimetre of water (mmH_2O) • conventional millimetre of mercury (mmHg) • Torr (Torr) • technical atmosphere (at) • standard atmosphere (atm).

Conversion factors for temperature

Temperature scales

Water	°C	°Réaumur	°F	K	°Rankine
Boiling point (at 1 atm = 101,325 Pa)	100	80	212	373.15	671.67
Freezing point (at 1 atm = 101,325 Pa)	0	0	32	273.15	491.67
Interval freezing point boiling point of water (at 1 atm = 101,325 Pa)	100	80	180	100	180
Triple point (equilibrium solid-liquid-gaseous)	0.01	0.008	32.02	273.16	491.69

°C: degree Celsius, °F: degree Fahrenheit, K: Kelvin

Conversion formulae:

a °C = (4/5)a °Réaumur = [32 + (9/5)a] °F

b °Réaumur = (5/4)b °C = [32 + (9/4)b] °F

c °F = (5/9)(c - 32) °C = (4/9)(c- 32) °Réaumur

t °C = (t + 273.15) K

T_KK = (T_K - 273.15) °C = [1.80 * (T_K - 273.15) + 32] °F = 1.80 T_K °Rankine

Conversion table

°C	-20	0	20	37.8	60	80	100	121.1	140	160
°F	-4	32	68	100	140	176	212	250	284	320
K	253.2	273.2	293.2	310.9	333.2	353.2	373.2	394.3	413.2	433.2

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