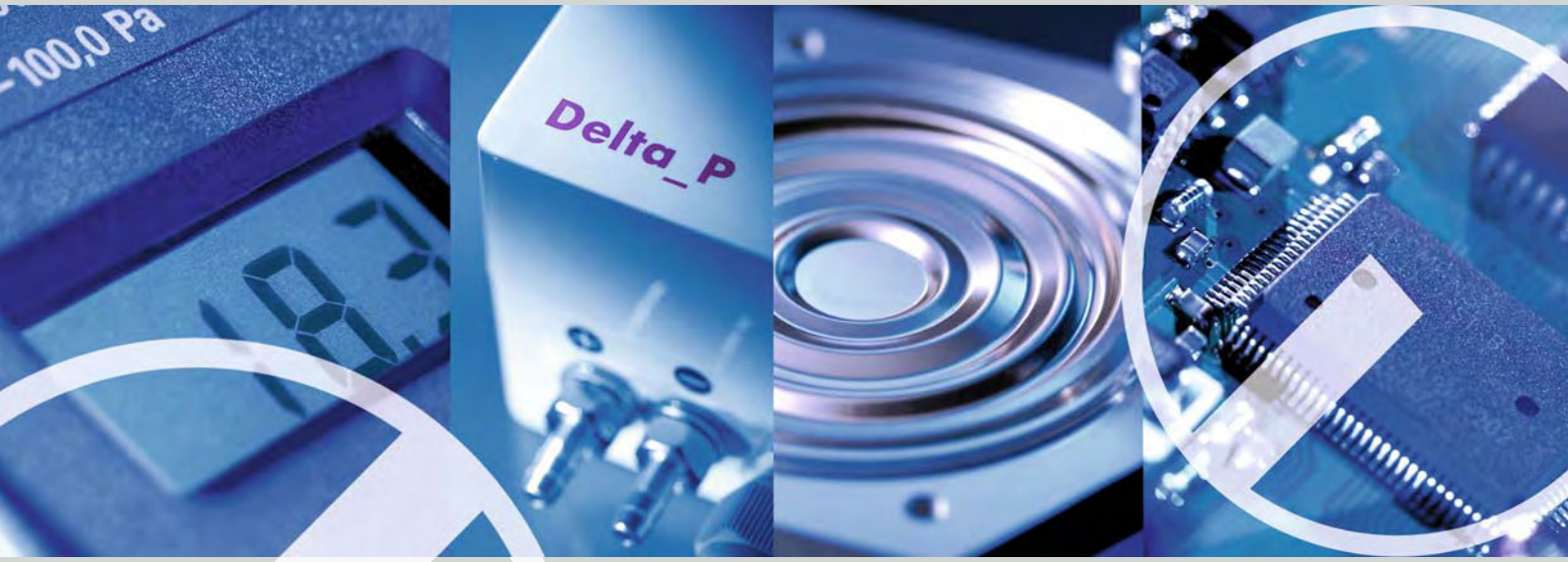
halstrup walcher

It's the detail that counts

Differential Pressure Transmitters
Handheld Pressure Gauges
Pressure Calibration Systems
Absolute Pressure Gauges



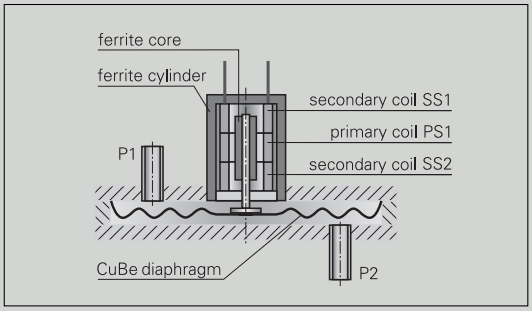
Properties of pressure gauges

Differential pressure transmitters made by halstrup-walcher GmbH have been designed for non-aggressive, gaseous media. These gauges work according to an inductive measurement principle whereby an inductive displacement transmitter measures the deflection of a beryllium bronze diaphragm without making contact. The diaphragm is situated between two measurement chambers, thereby making it possible to record both positive and negative differential pressures. The measuring cell has no frictional parts or parts subject to mechanical wear. Beryllium bronze is a highly elastic material that is stabile for long periods of time, behaves well under a variety of temperature conditions and is extremely resistant to hysteresis. As a result, this technology can be used to create high-quality pressure gauges capable of taking measurements at pressures as low as a few Pa.

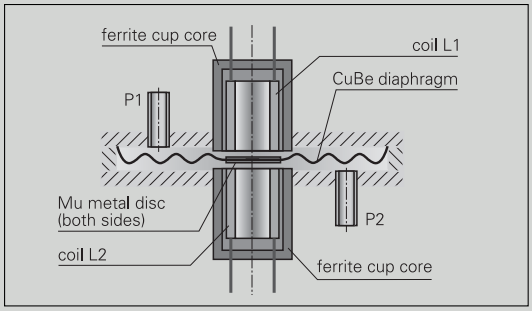
halstrup-walcher utilizes three different measuring systems:
Due to the excellent linearity afforded by its design, the linear variable differential transformer (LVDT) is primarily used for pressure calibration devices. The dual inductive pickup system sends a differential signal that is linearized by an electronic analysis unit. This system has been slated for use in manufacturing highquality differential pressure transmitters and hand-held pressure gauges. For basis applications will be used a piezoresistive precision cell (PS 27).

Advantages

- perfect for positive or negative differential pressures and for either symmetrical or non-symmetrical measuring ranges
- devices can be calibrated
- especially suitable for very small measuring ranges
- available with a variety of different display unit options
- calibration certificates available in German or English from either the factory or from the German Calibration Service (DAkkS)



Design of the LVDT



Design of the dual inductive pickup system

Type	Description	Special features	Page
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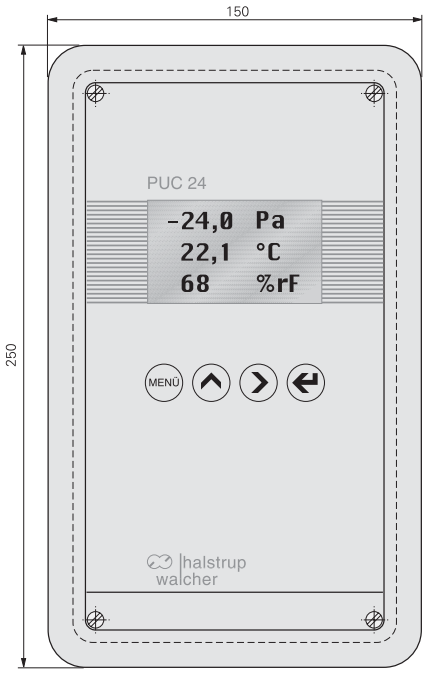
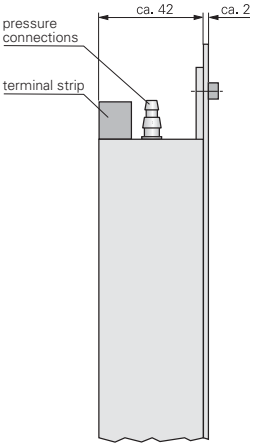
P 26	Differential pressure transmitter	Scalable differential pressure transmitter	8 – 9
P 29	Differential pressure transmitter	For flammable gases	10 – 11
P 82 R	Differential pressure transmitter	Pressure transmitter with root-extracted output for measuring volume flow	12 – 13
PU/PI	Differential pressure transmitter	For standard applications	14 – 15
PIZ	Differential pressure transmitter	In two-wire technology	14 – 15
PS 27	Differential pressure transmitter	Basic sensor for standard applications	16 – 17
REG 21	Differential pressure transmitter	With two limit switches in the control panel housing	18 – 19
EMA 200	Hand-held pressure gauge	Portable, digital pressure gauge with min./max. value memory	20 – 21
EMA 84	Hand-held pressure gauge	Provides highly accurate measurements	22 – 23
KAL 84	Pressure calibration device	Portable calibration device	24 – 25
KAL 100/200	Pressure calibration device	Portable, with integrated pressure generation	26 – 27
AD/BA 1000	Absolute pressure transmitter	Absolute pressure transmitter	28 – 29
BA 90	Absolute pressure transmitter	Digital precision barometer	30 – 31

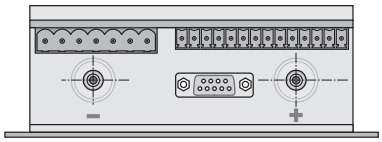
Walcher
Meßtechnik GmbH

PUC 24

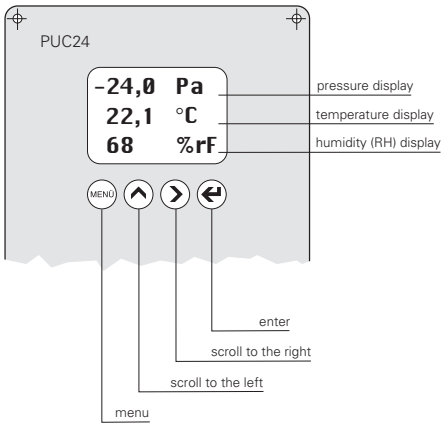
Dimension drawing



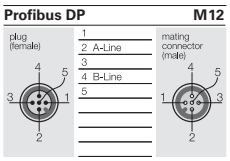


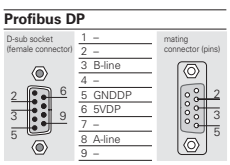


Operating elements

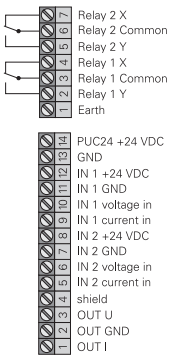


Connection diagram

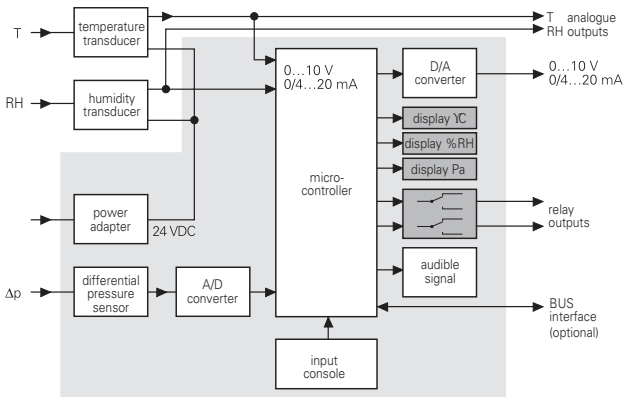




Supply voltage



Functional block diagram



PUC 24

Process monitoring device for clean rooms

Special features

- particularly suitable for use in clean rooms
- inputs for humidity and temperature sensors
- stable measurements thanks to cyclical self-calibration of the zero point (differential pressure)
- alarm thresholds (switching contacts)
- graphic LC display
- Profibus DP interface (optional)
- solvents resistant stainless steel surface
- acustic alarm when alarm thresholds are reached, may be reset by push-button
- bilingual menu (English/German)

Technical data

measurement ranges	± 100 Pa or ± 250 Pa freely scalable within this range
margin of error	0.5 % of end value
deflection drift / temperature	0.03 %/K (+10 °C...+50 °C)
zero point drift / temperature	± 0 % (cyclical zero-point correction)
overload capacity	200 x
medium	air, all non-aggressive gases
max. system pressure	10 kPa for measurement ranges ≤ 10 kPa for measurement ranges > 10 kPa max. nominal pressure of sensor
sensor response time	25 ms
time constants	25 ms … 40 s (adjustable)
input signal humidity/temperature module (galvanically separated)	0 … 10 V, R_i = 470 kΩ 0/4 … 20 mA, R_L = 50 Ω adjustable
operating temperature	+ 10 °C … + 50 °C
storage temperature	– 10 °C … + 70 °C
power consumption	approx. 7 VA
weight	approx. 1 kg
pressure ports	for hose Ø 3...6 mm
protection class	IP 65
testing	CE

measurement range	A
± 100 Pa	0
± 250 Pa	1

data interface	B
none	0
Profibus DP (optional)	DP
RS232 (optional)	2

bus connection	C
none	0
9-pin Sub D panel plug (not for wall thickness above 5 mm applycable)	D
Sub D plug with 150 mm cable	DK
round plug M12 with 150 mm cable	RK

supply voltage

24 VDC, ± 10 % smoothed

output signals

0 … 10 V (R_i > 2 kΩ)
0/4 … 20 mA (R_L < 500 Ω) adjustable

2 contact points, 6 A, 230 VAC,
may be configurated as desired within this pressure range

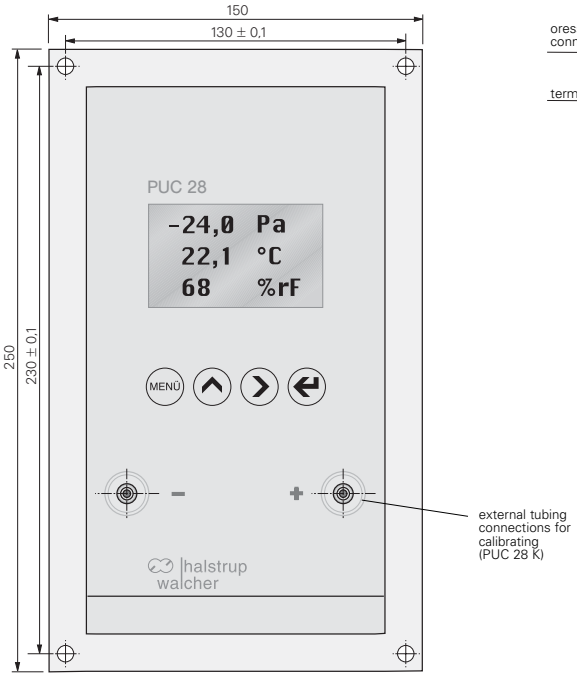
Order Key

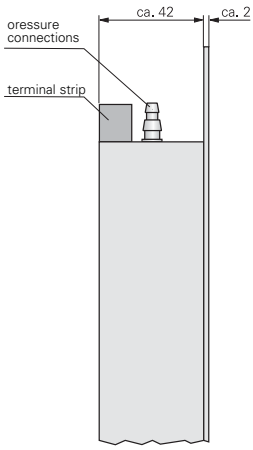
	A	B	C
PUC 24	-	-	-

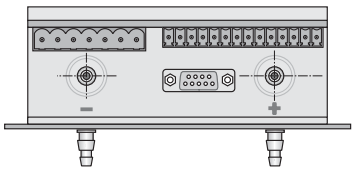
accessories	
☐ plug with switchable bus terminator	9601.-0104
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

PUC 28 / PUC 28 K

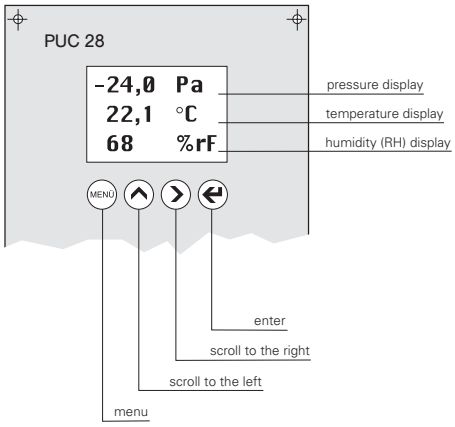
Dimension drawing



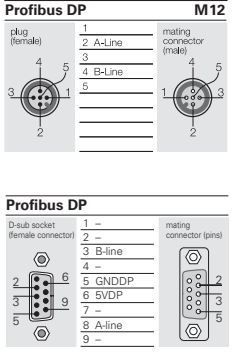




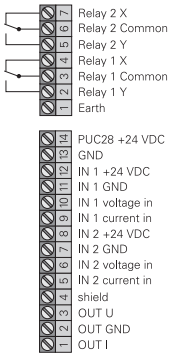
Operating elements



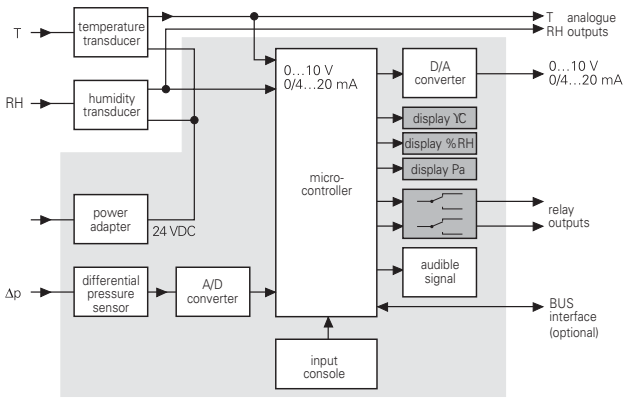
Connection diagram



Supply voltage



Functional block diagram



PUC 28 / PUC 28 K

Process monitoring

Special features

- inputs for humidity and temperature sensors
- stable measurements thanks to cyclical self-calibration of the zero point (differential pressure)
- alarm thresholds (switching contacts)
- graphic LC display
- Profibus DP interface (optional)
- acustic alarm when alarm thresholds are reached, may be reset by push-button
- bilingual menu (English/German)
- external tubing connections for calibrating (PUC 28 K optional)

Technical data

measurement ranges	± 100 Pa or ± 250 Pa freely scalable within this range
margin of error	0.5% of end value
deflection drift / temperature	0.03 %/K (+10 °C...+50 °C)
zero point drift / temperature	± 0 % (cyclical zero-point correction)
overload capacity	200 x
medium	air, all non-aggressive gases
max. system pressure	10 kPa for measurement ranges ≤ 10 kPa for measurement ranges > 10 kPa max. nominal pressure of sensor
sensor response time	25 ms
time constants	25 ms … 40 s (adjustable)
input signal humidity/temperature module (galvanically separated)	0 … 10 V, R_i = 470 kΩ 0/4 … 20 mA, R_i = 50 Ω adjustable
operating temperature	+ 10 °C … + 50 °C
storage temperature	– 10 °C … + 70 °C
power consumption	approx. 7 VA
weight	approx. 1 kg
pressure ports	for hose Ø 3...6 mm
protection class	IP 65
testing	CE

typ / measurement range	A
PUK 28 ± 100 Pa	0
PUK 28 ± 250 Pa	1
PUK 28 K ± 100 Pa	2
PUK 28 K ± 250 Pa	3
data interface	**B**
none	0
Profibus DP (optional)	DP
RS232 (optional)	2
bus connection	**C**
none	0
9-pin Sub D panel plug (not for wall thickness above 5 mm applycable)	D
Sub D plug with 150 mm cable	DK
round plug M12 with 150 mm cable	RK

supply voltage

24 VDC, ± 10 % smoothed

output signals

0 … 10 V (R_i > 2 kΩ)
0/4 … 20 mA (R_L < 500 Ω) adjustable

2 contact points, 6 A, 230 VAC,
may be configurated as desired within this pressure range

Order Key

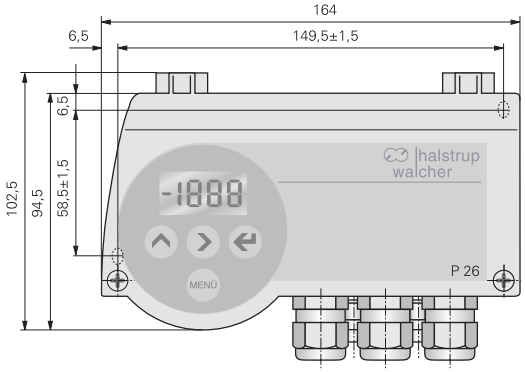
	A		B		C	
PUC 28	-		-		-	

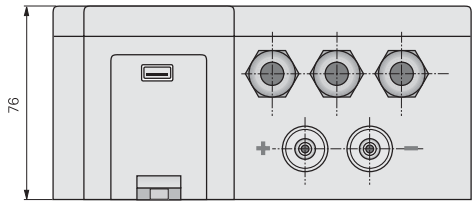
accessories	
☐ plug with switchable bus terminator	9601.-0104
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

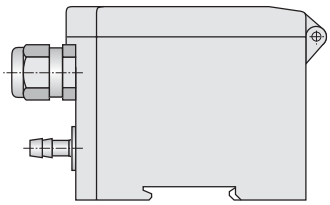
P 26

Dimension drawing

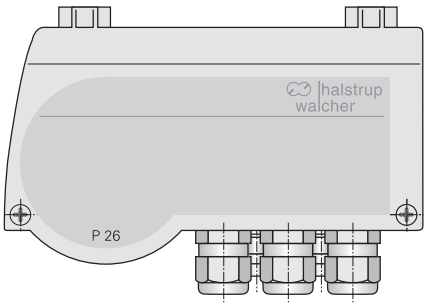
P 26 with LCD





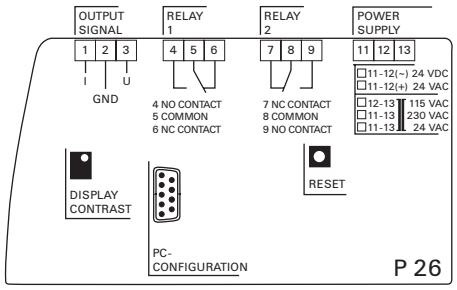


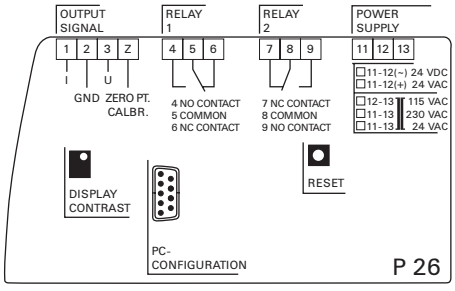
no LCD



P 26 Configuration software

Connection diagram





P 26

Intelligent differential pressure transmitter with scalable range

Special features

- range and display scalable
- switching contacts with adjustable switching thresholds
- output characteristics can be configured (root-extraction / linear)
- automatic zero-point calibration prevents zero-point drift
- unit conversion (e. g. mmH_2O, mmHg, etc.)
- integrated valve provides a high level of overpressure protection
- manually setting the zero point results in a high level of process safety (optional)
- available with interface USB (optional)
- also for top-hat rail mounting
- multilingual menu (English, German, Italian, French)
- ± measuring ranges

Technical data

measurement ranges (others available upon request)	10/50/100/250/500 Pa 1/2.5/5/10/20/50/100 kPa free scalable from 10..100% within a range
margin of error (0.3 Pa margin of error for reference)	0.5% + 0.3 Pa of scaled range (40...100% of end value)
deflection drift / temperature	0.03 %/K (+10 °C...+50 °C)
zero point drift / temperature	± 0 % (cyclical zero-point correction)
overload capacity	600 kPa for measurement ranges ≥ 2.5 kPa 200x for measurement ranges < 2.5 kPa
medium	air, all non-aggressive gases
max. line pressure	600 kPa for measurement ranges ≥ 2.5 kPa 200x for measurement ranges < 2.5 kPa
sensor response time	25 ms
time constants	25 ms ... 60 s (adjustable)
operating temperature	+10 °C ... +50 °C
storage temperature	−10 °C ... +70 °C
power consumption	approx. 6 VA
weight	approx. 0,75 kg
cable glands	3 x M 16
pressure ports	for hose NW 6 mm, others available upon request
protection class	IP 65, USB IP 40
testing	CE, CSA, GOST

output*	A	power supply	B
0 ... 10 V ($R_L \geq 2$ kΩ)	1	24 V AC/DC	24ACDC
0...20 mA ($R_L \leq 500$ Ω)	0	24 VAC with galvanic separation	24AC
4...20 mA ($R_L \leq 500$ Ω)	4	230/115 VAC	230/115
± 5 V ($R_L \geq 2$ kΩ)	5		

* output singal selectable

measurement range	C	margin of error	D
measurement range e. g., 0 – 10 Pa, mbar, mmHg, etc.		standard	S
		±0.2 % of end value, but min. 0.3 Pa	2

LCD	E	contact points	F
none	0	none	0
LCD and buttons for configuration	LC	2 switching relays max. 230 VAC, 6 A	2

interface / external zero-point calibration	G
none	0
USB, datacable included in delivery	US
external zero-point calibration	EX

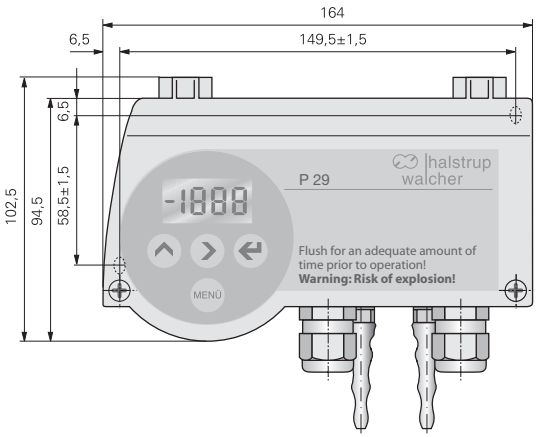
Order key

A	B	C	D	E	F	G
P 26 -		-		-		-		-		-		-	

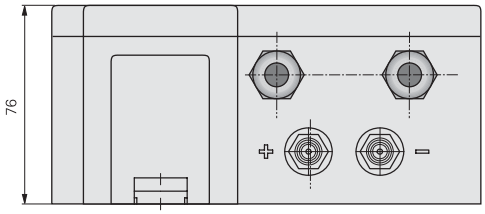
accessories	
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

P 29

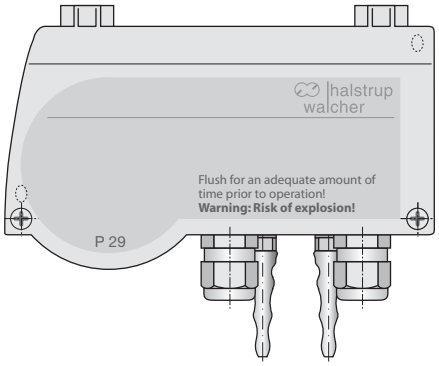
Dimension drawing

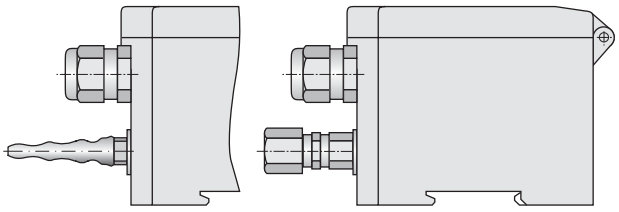


with LCD



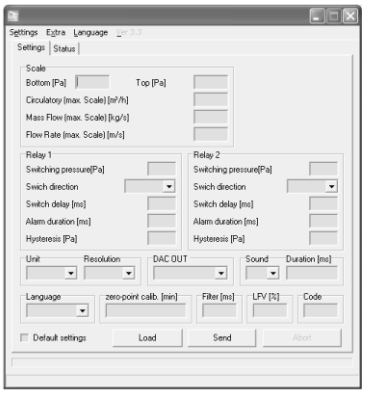
no LCD



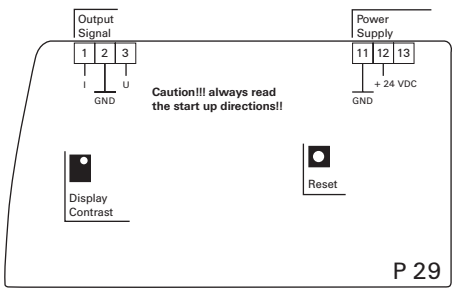


Cutting ring connector (optional)

P 29 Configuration software



Connection diagramm



P 29

Intelligent differential pressure transmitter for flammable gases

Special features

- TÜV-tested, differential pressure transducer for flammables gases
- does not generate any ATEX zone; design changes and technical modifications keep ignition source and gas safely mixture separated.
- time constants and output characteristics can be configured (root-extraction / linear)
- automatic zero-point calibration prevents zero-point drift
- unit conversion (e.g. mmH_2O, mmHg, etc.)
- integrated valve provides a high level of overpressure protection
- also for top-hat rail mounting
- multilingual menu (English, German, Italian, French)

Technical data

measurement ranges (other available upon request)	250/500 Pa 1/2.5/5/10/20/50/100 kPa free scalable from 10...100% within a range
margin of error (0.3 Pa margin of error for reference)	± 0.5 % + 0.3 Pa of scaled range (40...100 % of end value)
deflection drift / temperature	0,03 %/K (+ 10 °C...+ 50 °C)
zero point drift / temperature	± 0% (cyclical zero-point correction)
overload capacity	100 kPa for measurement ranges ≥ 2.5 kPa 200x for measurement ranges < 2.5 kPa
medium	flammable gases, all non-aggressive gases
max. line pressure	100 kPa
sensor response time	25 ms
time constants	25 ms … 60 s (adjustable)
operating temperature	+ 10 °C...+ 50 °C
storage temperature	– 10 °C...+ 70 °C
power sonsumption	approx. 6 VA
weight	approx. 0.75 kg
cable glands	2 x M 16
protection class	IP 65
testing	CE, EN1127-1:2007

output	A
0...10 V (R_L ≥ 2 kΩ)	1
0...20 mA (R_L ≤ 500 Ω)	0
4...20 mA (R_L ≤ 500 Ω)	4
± 5 V (R_L ≥ 2 kΩ)	5

power supply	B
24 V DC	24 DC

measurement range	C
measurement range e.g., 0 – 250 Pa, mbar, mmHg etc.	

margin of error	D
standard	S
± 0.2% (40...100 % of end value) but min. 0.3 Pa	2

LCD	E
none	0
LCD and buttons for configuration	LC

pressure ports	F
for hose NW 5-8 mm	0
cutting ring connector 8 mm	S

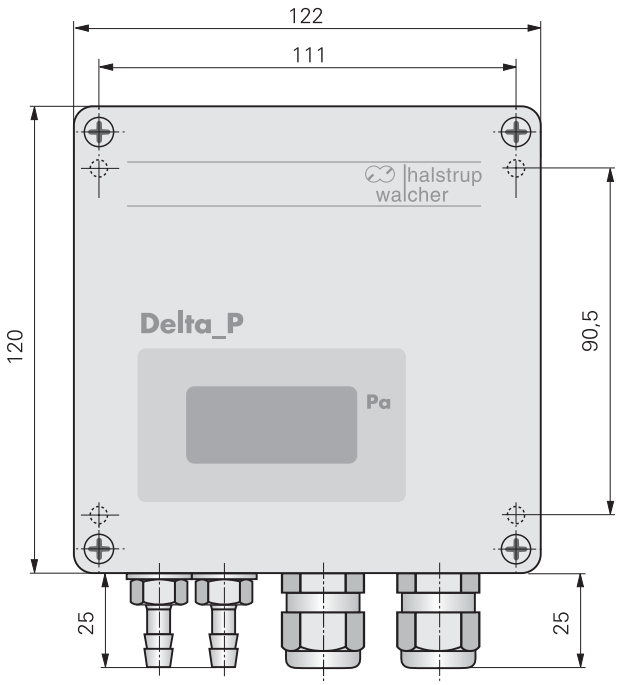
Order key

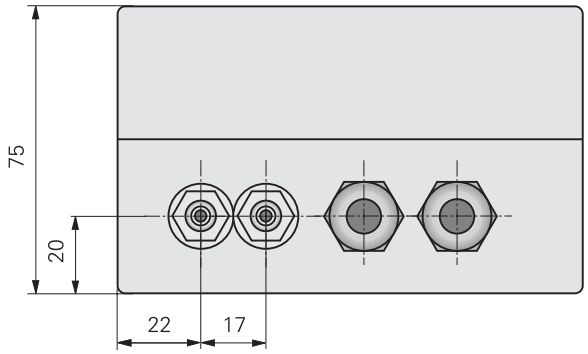
	A		B		C		D		E		F
P 29	-		-		-		-		-		

accessories	
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

P 82 R

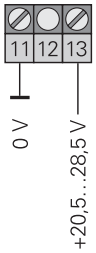
Dimension drawing



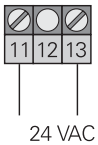


Connection diagram

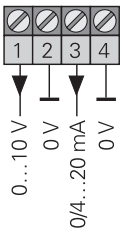
DC power supply



AC power supply



analogue outputs



P 82 R

Pressure transmitter with root-extracted output for measuring volume flow

Special features

- highly accurate and stable for long periods
- very little hysteresis; largely independent of temperature
- differential pressure Δp at the measuring orifice is expressed as either a linear (U_L,I_L)) or root-extracted function $U_{RAD} = \sqrt{10\ V} \times \sqrt{U_L}$, $I_R = \sqrt{20\ mA} \times \sqrt{I_L}$ or $I_R = 4\ mA + \sqrt{16\ mA} \times \sqrt{(I_L - 4\ mA)}$

Technical data

measurement ranges (others available upon request)	100/250/500 Pa 1/2.5/5/10/20 kPa
margin of error	1 % of end value
deflection drift / temperature	0.04 %/K (+10 °C...+50 °C)
zero point drift / temperature	0.05 %/K (+10 °C...+50 °C)
zero point drift / time	0.5 %/year
overload capacity	5x
medium	air, all non-aggressive gases
max. system pressure	10 kPa for measurement ranges ≤ 10 kPa for measurement ranges > 10 kPa max. nominal pressure of sensor
sensor response time	20 ms
leak flow suppression	adjustable from 0 ... 10% of end value
operating temperature	+10 °C... +60 °C
storage temperature	–10 °C... +70 °C
power consumption	approx. 3 VA
weight	approx. 0.8 kg
cable glands	2 x PG 11
pressure ports	for hose Ø 6 mm
protection class	IP 65
testing	CE, CSA

output	A	power supply	B
0...10 V ($R_L \geq 5$ kΩ)	1	24 VDC	24D
0...20 mA ($R_L \leq 500$ Ω)	0	24 VAC	24A
4...20 mA ($R_L \leq 500$ Ω)	4	115 VAC	115
		230 VAC	230

measurement range	C
measurement range in Pa, kPa, mmHg, etc. (e.g., 0 –100 Pa)	

time constants	D
none	0
1 s	1
2 s	2
5 s	5

LCD	E
none	0
3 1/2 digit	3
4 1/2 digit	4

Order key

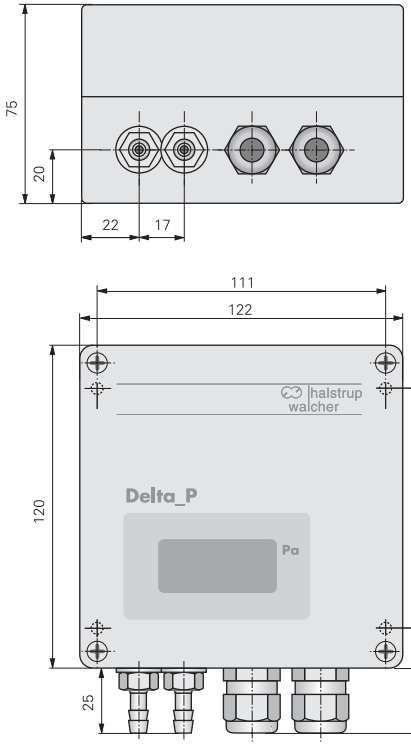
	A		B		C		D		E
P 82 R	-		-		-		-		

accessories	
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

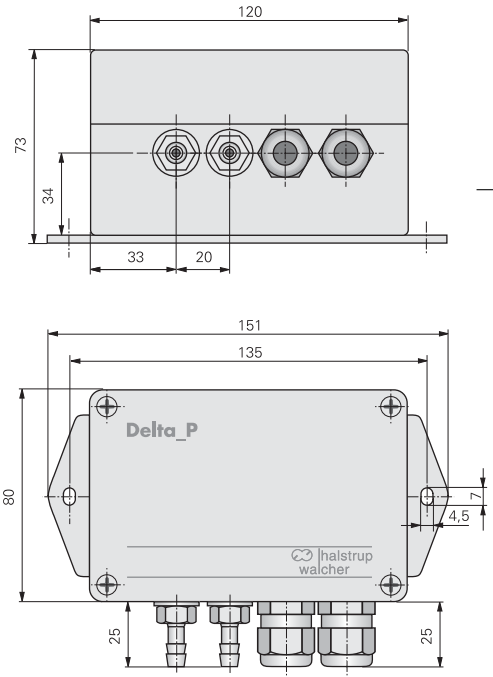
PU/PI/PIZ

Dimension drawing

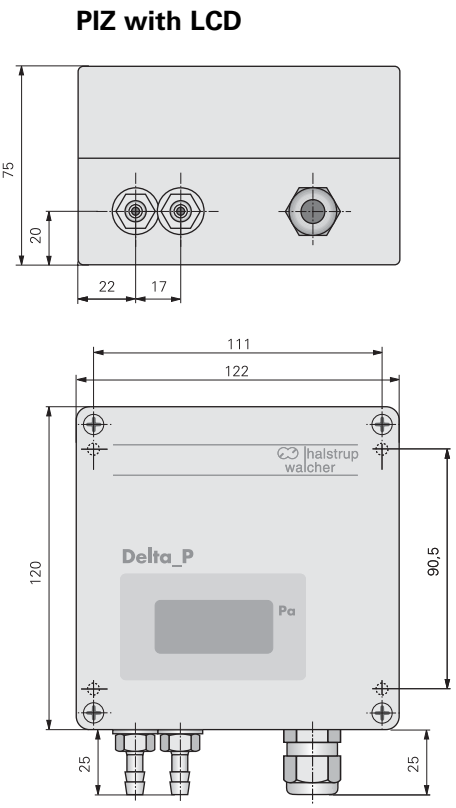
PU/PI with LCD



no LCD



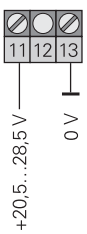
PIZ with LCD



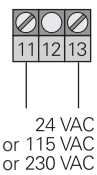
Connection diagram

PU/PI

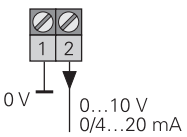
DC power supply



AC power supply

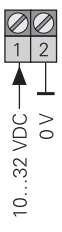


analogue outputs



PIZ

DC power supply
4...20 mA output



PU/PI/PIZ

For standard applications

Special features

- for positive and negative differential pressures
- highly accurate and stable for long periods
- little zero point drift or hysteresis; largely independent of temperature
- also available as a two-wire system (PIZ model)

Technical data

measurement ranges (others available upon request)	50/100/250/500 Pa 1/2.5/5/10/20/50/100 kPa
margin of error	1 % of end value, 0.5 % of end value for measurement ranges ≥ 250 Pa, 0.2 % of end value for measurement ranges ≥ 250 Pa
deflection drift / temperature	0.04 %/K (+10 °C...+50 °C)
zero point drift / temperature	0.04 %/K (+10 °C...+50 °C)
zero point drift / time	0.5 %/year
overload capacity	10x for measurement ranges ≤ 20 kPa 2x for measurement ranges > 20 kPa
medium	air, all non-aggressive gases
max. system pressure	10 kPa for measurement ranges ≤ 10 kPa for measurement ranges > 10 kPa max. nominal pressure of sensor
sensor response time	20 ms
operating temperature	+10 °C ... +60 °C
storage temperature	−10 °C ... +70 °C
power consumption	approx. 3 VA
weight	0.8 kg
cable glands	PU/PI: 2x PG 7, others available upon request PIZ: 1x PG 7, others available upon request
pressure ports	for hose Ø 6 mm
protection class	IP 65
testing	CE, CSA

output signals	A
0...10 V ($R_L \geq 2$ kΩ)	U
0...20 mA ($R_L \leq 500$ Ω)	I0
4...20 mA ($R_L \leq 500$ Ω)	I4
4...20 mA two-wire ($R_L \leq 50$ [U_B (V) −10 V] Ω)	IZ

measurement range	B	margin of error	C
measurement range (e. g., 0 ...100 Pa, mbar, mmHg etc.)		1 % of end value	1
		0.5 %*, ≥250 Pa only	05
		0.2 %*, ≥250 Pa - ≤ 50 kPa	02

*of end value

supply voltage	D
24 VDC, +20 % / −15%	24D
24 VAC, +6 % / −15% (50/60 Hz)	24A
115 VAC, +6 % / −15% (50/60 Hz)	115
230 VAC, +6 % / −15% (50/60 Hz)	230
+10...+32 VDC (two-wire system)	PIZ

time constants	E	LCD	F
none	0	none	0
1 s	1	3 1/2 digit	3
2 s	2	4 1/2 LCD (PU/PI only)	4
5 s	5		

Order key

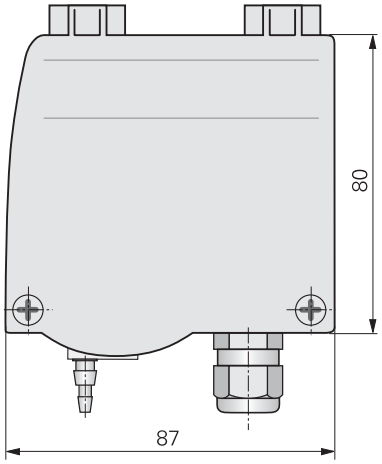
A	B	C	D	E	F
P					

accessories	
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

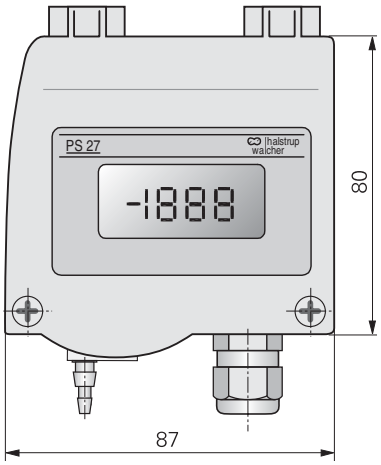
PS 27

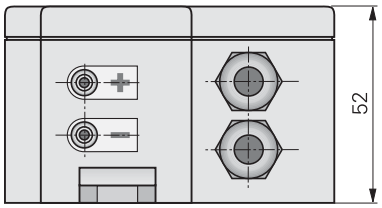
Dimension drawing

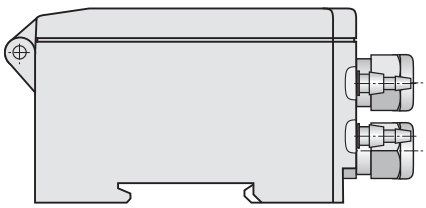
no LCD



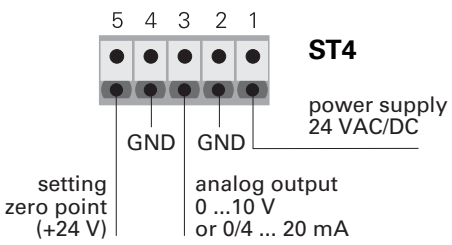
with LCD



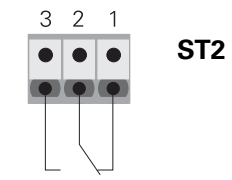




PS27 connection diagram

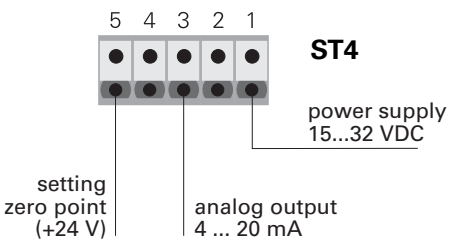


PS27 relay outputs



1 NC contact
2 middle contact
3 NO contact

PS27 connection diagram (two wire system)



PS 27

Basic sensor for standard applications

Special features

- for positive and negative differential pressures
- little zero point drift or hysteresis; largely independent of temperature
- also for top-hat rail mounting
- Zero-point calibration can be run via an external signal
- switching contact with adjustable thresholds (optional)
- output signals selectable via jumper
- four measurement ranges selectable via jumper (optional)
- with LCD (optional)

Technical datas

measurement ranges (others available upon request)	100/200/500 Pa 1/2,5/5/10/20/50/100 kPa
margin of error	2 % of end value
deflection drift / temperature	0,1 % / K
zero point drift / temperature	0,1 % / K
overload capacity	12x for measurement ranges ≤ 20 kPa 4x for measurement ranges ≥ 20 kPa
medium	air, all non-aggressive gases
max. system pressure	10 kPa for measurement ranges ≤ 10 kPa for measurement ranges 10 kPa max. nominal pressure of sensor
sensor response time	20 ms
time constants	20 ms ... 4 s adjustable (factory provided)
operating temperature	0 °C ... +60 °C, with LCD 0 °C ... +50 °C
storage temperature	–10 °C ... +70 °C
power consumption	approx. 1 VA
weight	approx. 0,25 kg
cable glands	2 x M12
pressure ports	for hose ø 4-6 mm
protection class	IP 65
testing	CE

output signals	A
0 ... 10 V ($R_L \geq 50$ kΩ)	1
2 ... 10 V ($R_L \geq 50$ kΩ)	2
0 ... 20 mA ($R_L \leq 500$ Ω)	0
4 ... 20 mA ($R_L \leq 500$ Ω)	4
0 ... 5 V ($R_L \geq 50$ kΩ)	5

output signals adjustable via jumper

power supply	B
24 V AC/DC (without galvanic separation)	AC/DC
15 ... 32 VDC (two wire system)	ZWL

measurement range	C
standard (e. g. 0-100 Pa)	
switchable: 100, 250, 500, 1000 Pa	1
switchable: 250, 500, 1000, 2500 Pa	2
switchable: 1, 2,5, 5, 10 kPa	3
switchable: 10, 25, 50, 100 kPa	4

contact point (not for two-wire system)	D
none	S
1 switch relay max. 230 VAC, 6 A (min. required switching capacity 300mW)	1

LCD	E
none	0
4 digit	1

Order key

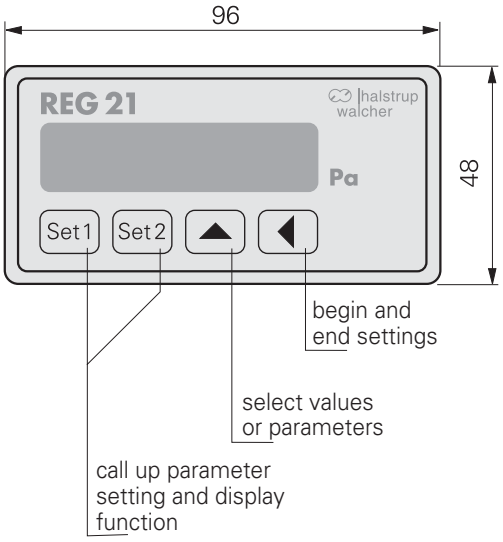
	A		B		C		D		E
PS 27		-		-		-		-	

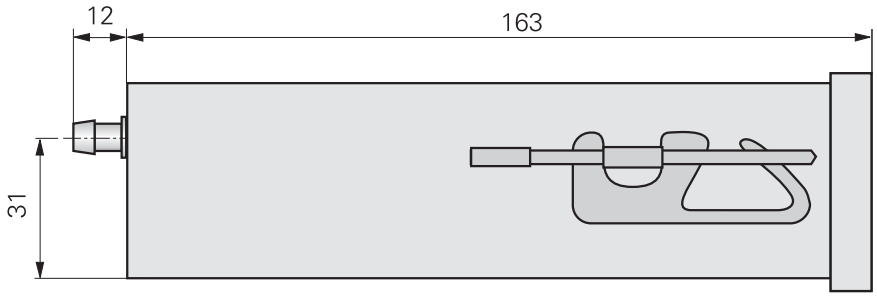
accessories	
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

REG 21

Dimension drawing

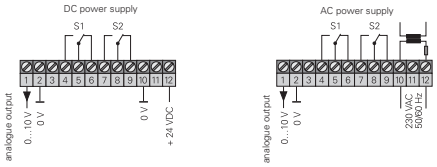
Panel housing



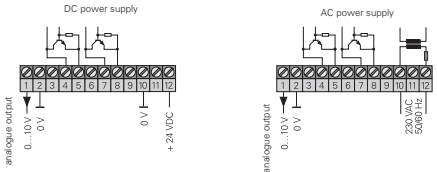


Connection diagram

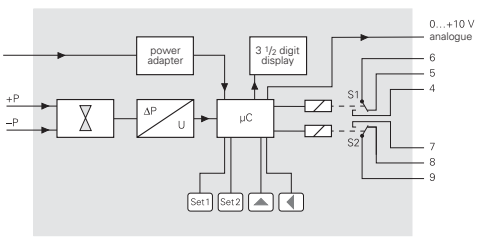
relay output



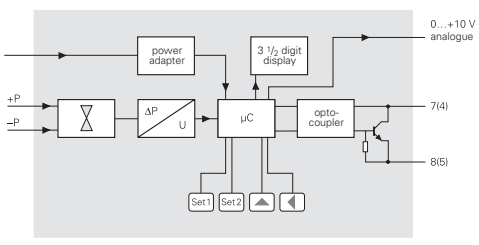
transistor output



Functional block diagram



REG21/relay output



REG21/transistor output

REG 21

Pressure transmitter with 2 switching contacts

Special features

- for positive and negative differential pressures
- can be used as a two- or three-position controller
- highly accurate and stable for long periods
- very little hysteresis; largely independent of temperature
- automatic zero-point calibration
- switching contacts available as relay or transistor outputs with adjustable switching thresholds
- panel housing
- Built-in valve offers a high level of overpressure protection

Technical data

measurement ranges (others available upon request)	50/100/250/500 Pa 1/2.5/5/10/20/50/100 kPa
margin of error	1 % of end value, 0.5 % of end value for measurement ranges ≥ 250 Pa
deflection drift / temperature	0.04 %/K (+10 °C...+50 °C)
zero point drift / temperature	± 0 % (cyclical zero-point correction)
overload capacity	200 x for measurement ranges < 2.5 kPa 600 kPa for measurement ranges ≥ 2.5 kPa
medium	air, all non-aggressive gases
max. system pressure	10 kPa for measurement ranges ≤ 10 kPa for measurement ranges > 10 kPa max. nominal pressure of sensor
sensor response time	20 ms
time constants	adjustable up to 10 s
operating temperature	+10 °C ... +60 °C
storage temperature	−10 °C ... +70 °C
power consumption	ca. 5 VA
weight	ca. 0.8 kg
pressure ports	for hose Ø 6 mm
The following may be adjusted from the keyboard	zero-point calibration for sensor control method (two- or three-position controller) switching point and hysteresis switching signal inversion response delay of relay outputs and analogue output
testing	CE

output signals	A
0...10 V (R_L ≥ 2 kΩ)	1
± 5 V (R_L ≥ 2 kΩ)	5
0...20 mA (R_L ≤ 500 Ω)	0
4...20 mA (R_L ≤ 500 Ω)	4

measurement range	B	margin of error	C
measurement range (e.g., 0...100 Pa, mbar, mmHg, etc.)		1 % of end value	1
		0.5 % of end value ≥ 250 Pa only	05

supply voltage	D
24 VDC, +20 %/−15%	24D
24 VAC, +6 %/−15% (50/60 Hz)	24A
115 VAC, +6 %/−15% (50/60 Hz)	115
230 VAC, +6 %/−15% (50/60 Hz)	230

switching contacts	E
2 relays with floating changeover contacts 230 VAC (50/60 Hz), 6 A	R
2 transistors with open collector U_{CE} ≤ 50 V; I_C ≤ 200 mA, floating	T

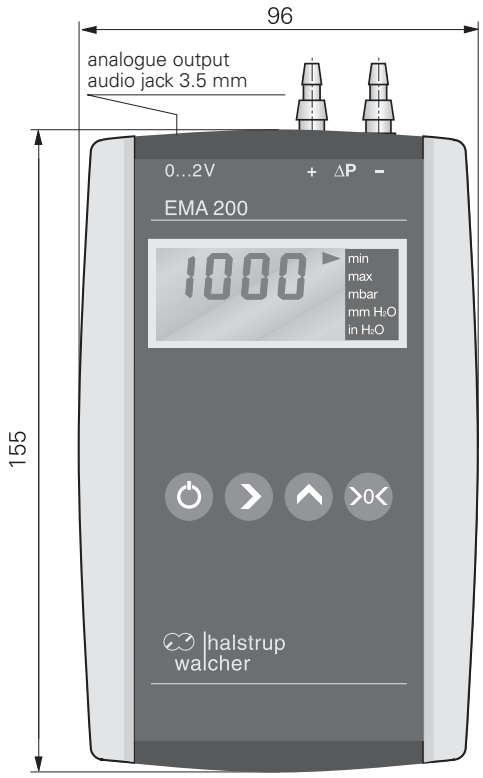
Order key

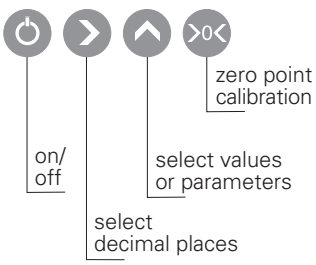
	A		B		C		D		E
REG 21		-		-		-		-	

accessories	
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

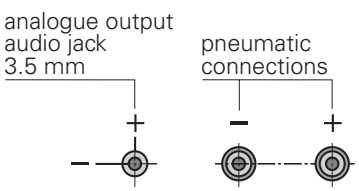
EMA 200

Dimension drawing





Connection diagram



EMA 200

Portable, digital pressure gauge with min./max. value memory

Special features

- flow-rate measurements taken in conjunction with a pitot tube
- displays pressure and flow rate
- stores min. and max. value
- scalable analogue output of 0 – 2 V
- can convert between Pa, kPa, mmHg, mmH_2O, inH_2O
- temperature measurement
- ± measuring ranges

Technical data

accuracy	0.5 % of end value
overload capacity	10 x for measurement ranges ≤ 10 kPa 2 x for measurement ranges > 10 kPa 1.2 x in the 200 kPa measurement range
air-speed calculation	$v = 1.291 * \sqrt{\Delta p}$ air-speed given in m/s and Δp = differential pressure at pitot tube in Pa
zero point calibration	electronically by pressing zero point key
medium	air, all non-aggressive gases
analogue output	0…2 V ($R_L \geq 2$ kΩ) only for positive range 0…1…2 V ($R_L \geq 2$ kΩ) for negative and positive range
display	3 1/2 digit LCD, character height = 10 mm
time constants	1 - 10 s

operating temperature	0 °C ... +50 °C
storage temperature	–10 °C ... +70 °C

power supply	9 V battery (lifetime 100h) (display reads "low bat" when power falls below a certain minimum level) power automatically switches off after approx. 20 min.
weight	approx. 0.4 kg
pressure ports	for hose Ø 6 mm
testing	CE

measurement range			A
± 200 Pa	(±2 mbar)	0 (1.5) …18 m/s	0
± 2 kPa	(±20 mbar)	0 (5) …58 m/s	1
± 20 kPa	(±200 mbar)	0 (15)…180 m/s	10
± 200 kPa	(±2000 mbar)		100

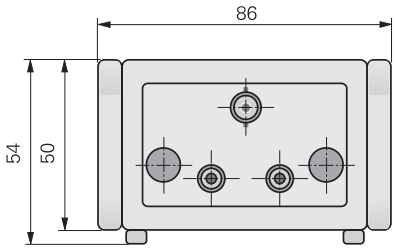
Order key

	A	
EMA 200	-	

accessories	
☐ carrying bag	9074.-0001
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

EMA 84

Dimension drawing



EMA 84

Portable digital pressure gauge

Special features

- highly accurate and stable for long periods
- extremely durable
- little zero point drift or hysteresis; largely independent of temperature
- analogue output of 0 – 1 V (optional)
- easy to operate

Technical data

margin of error	1 % of end value 0.5 % of end value for measurement ranges ≥ 1 kPa (optional) 0.2 % of end value for measurement ranges ≥ 1 kPa - ≤ 50 kPa (optional)
overload capacity	10x for measurement ranges ≤ 10 kPa 2x for measurement ranges > 10 kPa
zero point calibration	via potentiometer on front face
medium	air, all non-aggressive gases
analogue output	0 ... 1 V (R_L ≥ 2 kΩ) BNC connector
display	3 1/2 digit LCD, character height = 13 mm
time constants	toggles between 0.02 s; 0.2 s; 1 s

operating temperature	+10 °C ... +60 °C
storage temperature	–10 °C ... +70 °C

operating position	preferably horizontal
power supply	9 V battery
weight	approx. 0.8 kg
pressure ports	for hose Ø 6 mm
testing	CE

measurement ranges		A
0 ... 100 Pa	(0 ... 1 mbar)	0
0 ... 1 kPa	(0 ... 10 mbar)	1
0 ... 10 kPa	(0 ... 100 mbar)	10
0 ... 100 kPa	(0 ... 1000 mbar)	100

accuracy	B
1 % of end value	1
0.5 % of end value (only for measurement ranges ≥ 1 kPa)	5
0.2 % of end value (only for measurement ranges ≥ 1 kPa - ≤ 50 kPa)	2

analogue output	C
none	0
0...1 V (optional)	1

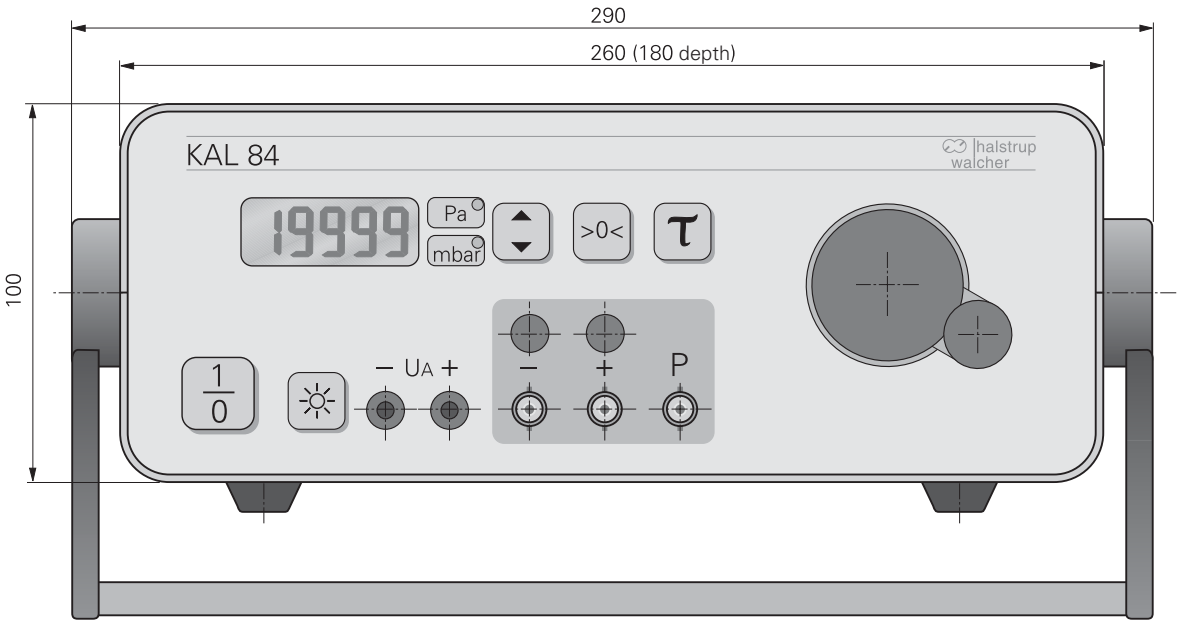
Order key

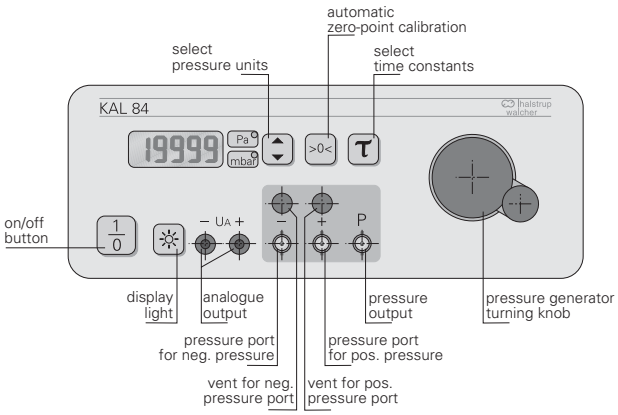
	A		B		C
EMA 84	-		-		-

accessories	
☐ carrying bag	9063.-0001
☐ shoulder bag	9064.-0001
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

KAL 84

Dimension drawing





KAL 84

Portable pressure calibration device

Special features

- highly accurate, reproducible results
- internal pressure generation
- extremely durable; excellent for service applications
- unit conversion, e.g. mmHg/kPa, mbar/kPa
- rechargeable battery allows for portable operation

Technical data

margin of error	0.5 % of end value ± 1 digit 0.2 % of end value ± 1 digit for measurement ranges ≥ 1 kPa - ≤ 50 kPa All measurement ranges have a 99 % overrange. Linearity data pertains to a measurement range of 0 – 100 %.
hysteresis	0.1 %
temperature effect (zero point)	not applicable; panel button available for resetting zero point
temperature effect (span)	0.04 %/K (+10 °C ... +50 °C)
calibration temperature	+22 °C
medium	air, all non-aggressive gases

displacement volume	pressure transmitter, approx. 100 cm^3 (1, 10, 100 kPa) approx. 200 cm^3 (100 Pa)
analogue output	0 ... 1 V (R_L ≥ 2 kΩ) two connectors Ø 4 mm
display	4 1/2 digit LCD, character height = 10 mm
time constants	toggles between 0.1 s; 1 s

operating temperature	+10 °C ... +40 °C
storage temperature	–10 °C ... +70 °C

power supply	NiCd rechargeable 9 V battery with AC adaptor
weight	approx. 3 kg
pressure ports	for hose Ø 6 mm
testing	CE

measurement ranges		A
0...100 Pa	(0...1 mbar)	0
0...1 kPa	(0...10 mbar)	1
0...10 kPa	(0...100 mbar)	10
0...100 kPa	(0...1000 mbar)	100
0...300 mmHg	(0...400 mbar)	300
0...750 mmHg	(0...1000 mbar)	750

(other measurement ranges and units available upon request)

margin of error	B
0.5 % of end value	1
0.2% of end value (measurement ranges ≥ 1 kPa - ≤ 50 kPa) (optional)	2

supply voltage	C
230 VAC adapter	230
115 VAC adapter	115

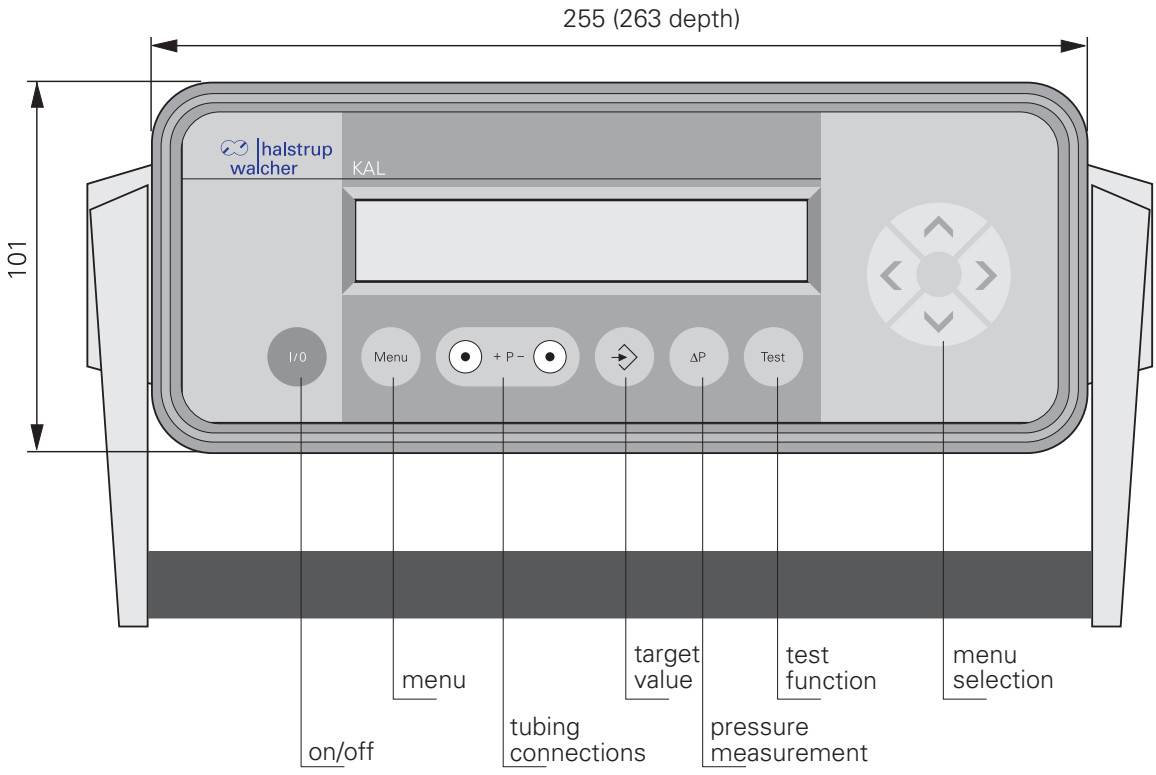
Order key

	A		B		C
KAL 84	-		-		-

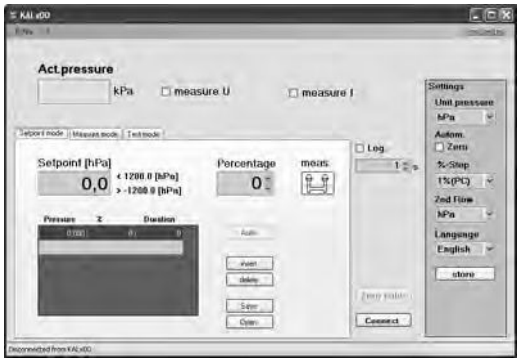
accessories	
☐ carrying bag	9062.-0001
☐ hand pump	9601.-0036
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

KAL 100 / 200

Dimension drawing



User software



KAL 100 / 200

Pressure calibration device with integrated pressure generation

Special features

- high mobility by battery-operation (optional)
- run-time with accumulator acc. 8h
- automatic zero point calibration provides high zero-point stability
- quickly provides positive or negative differential pressures up to 100 kPa
- USB Interface optional (standard for KAL 200)
- unit conversion (e.g., mmHg, mmH_2O, psi etc.)
- multilingual menu (English, German, Italian, French, Spanish)
- With power supply and measuring input for the external test object.

Technical data

margin of error KAL 100	0.5 % of end value ± 1 digit (100 Pa measurement range) 0.2 % of end value ± 1 digit (only for 1, 10 and 100 kPa measurement ranges)
margin of error KAL 200	0.3% of end value ± 1 digit (100 Pa measurement range) 0.1% of end value ± 1 digit (only for 1, 10 and 100 kPa measurement ranges)
hysteresis	0,1 %
overload capacity	600 kPa for 10 kPa and 100 kPa measurement ranges 200 at a time for 100 Pa and 1 kPa measurement ranges
temperature effect (zero point)	± 0 % (cyclical zero-point correction)
temperature effect (span)	KAL 100: 0,04 %/K (+10 °C ... +50 °C) KAL 200: 0,03 %/K (+10 °C ... +50 °C)
calibration temperature	+22 °C
medium	air, all non-aggressive gases

measuring input / power supply (external test object)	0-10 V, 0/4-20 mA Measuring accuracy of end value: 0,2% 24 VDC / 100 mA
display	alphanumerical display with 2x20 characters

operating temperature	+10 °C ... +40 °C
storage temperature	−10 °C ... +70 °C
power consumption	10 VA
weight	approx. 4.5 kg
pressure ports	Ø 6 mm, for hose Ø 5 mm
testing	CE

typ	A
KAL 100	100
KAL 200	200

measurement ranges		B
0...100 Pa	(0...1 mbar)	0
0...1 kPa	(0...10 mbar)	1
0...10 kPa	(0...100 mbar)	10
0...100 kPa	(0...1000 mbar)	100
± 100 Pa		0A
± 1 kPa		1A
± 10 kPa		10A
± 100 kPa		100A

supply voltage	C
115 VAC, +6 %/−15 % (50/60 Hz)	1
230 VAC, +6 %/−15 % (50/60 Hz)	2
115 VAC, +6 %/−15 % (50/60 Hz) and lithium-ionen accumulator	1A
230 VAC, +6 %/−15 % (50/60 Hz) and lithium-ionen accumulator	2A

data interface	D
none	0
USB + measuring input (standard for KAL 200)	1

Order key

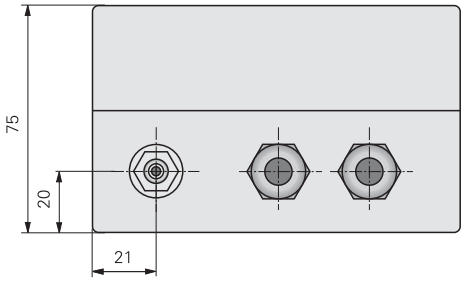
	A		B		C		D
KAL		-		-		-	

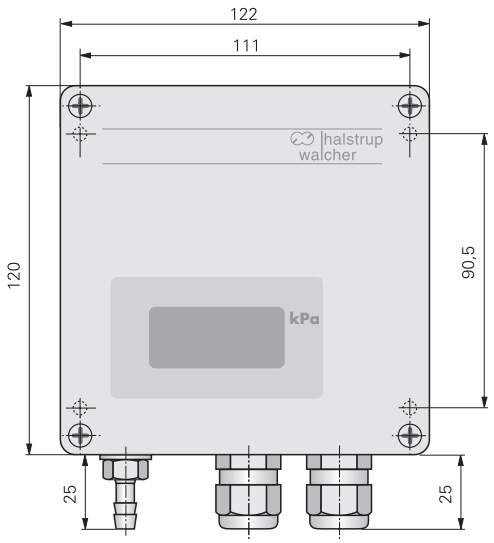
accessories	
☐ carrying case	9220.-0001
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

AD 1000/BA1000

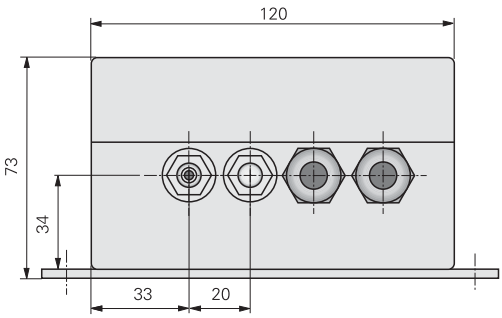
Dimension drawing

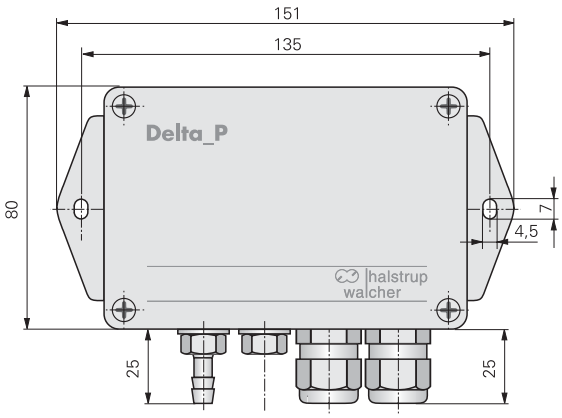
with LCD





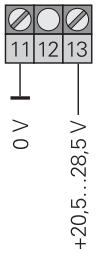
no LCD



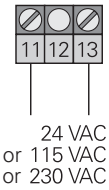


Connection diagram

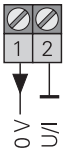
DC power supply



AC power supply



analogue outputs



AD 1000/BA 1000

Electronic barometer

Special features

- highly accurate and stable for long periods
- little zero point drift or hysteresis; largely independent of temperature
- display can be adjusted (reduced) to correspond to the height of installation site (see DIN ISO 2533)
- AD 1000 with pressure port for measuring absolute pressure
- BA 1000 for measuring barometric pressure

Technical data

margin of error	± 1 %, reference ± 0.5 hPa with respect to sea level
temperature effect	0.04 %/K (+10 °C ... +50 °C)
calibration temperature	+22 °C
operating temperature	+10 °C ... +60 °C
storage temperature	–10 °C ... +70 °C
long-term drift	0.3 hPa/year
reduction	0 – 850 m above sea level (please indicate when placing your order)

power consumption	approx. 3 VA
cable glands	2 x PG 7 (for a 80 x 120 housing) 2 x PG11 (for a 120 x 122 housing)

protection class	IP 65
weight	approx. 0.6 kg
pressure ports	for hose Ø 6 mm
testing	CE

measurement ranges	A
80...120 kPa [1]	80B
85...115 kPa [1]	85B
90...110 kPa [1]	90B
95...115 kPa [1]	95B
0...50 kPa [2]	50A
0...100 kPa [2]	100A
80...120 kPa [2]	80A
90...110 kPa [2]	90A
100...0 kPa [2]	0A

1) BA 1000 w/o pressure port 2) AD 1000 (w. pressure port)

output signals	B	power supply	C
0...10 V ($R_L \geq 2$ kΩ)	1	24 VDC	24D
0...20 mA ($R_L \leq 500$ Ω)	0	24 VAC	24A
4...20 mA ($R_L \leq 500$ Ω)	4	115 VAC	115
		230 VAC	230

LCD	D
none	0
3 1/2 digit	3
4 1/2 digit	4

reduction	E
none	0
(please indicate in meters)	

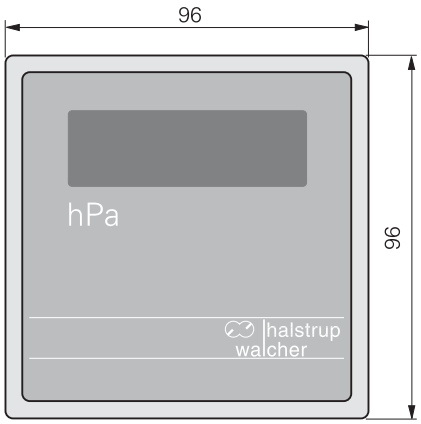
Order key

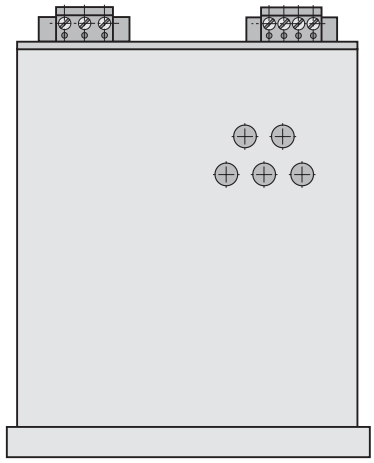
	A		B		C		D		E
AD-BA 1000		-		-		-		-	

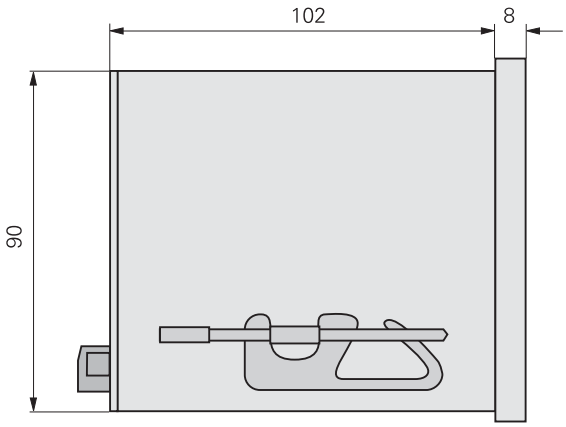
accessories	
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

BA 90

Dimension drawing

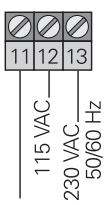




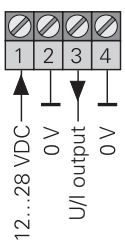


Connection diagram

AC power supply



DC power supply
analogue outputs



BA 90
Digital precision barometer

Special features

- a potentiometer can be used to adjust (reduce) display to correspond to the height of installation site (see DIN ISO 2533)
- highly accurate and stable for long periods
- little zero point drift or hysteresis; largely independent of temperature
- 3 supply voltages in one unit

Technical data

measurement range	913.3 – 1113.3 hPa
margin of error	± 0.4 hPa ± 1 digit, reference ± 0.5 hPa with respect to sea level
resolution	0.1 hPa
temperature effect	± 0.2 hPa / °C, for temperatures ranging between +20 °C…+50 °C
calibration temperature	+ 22 °C
operating temperature	0 °C … +50 °C (temperature compensation between + 20 °C...+50 °C)
storage temperature	– 10 °C... + 70 °C
long-term drift	0.3 hPa/year
supply voltage	230 VAC +6/–15 % or 115 VAC +6/–15 % or 12 … 28 VDC (universal voltage adapter)
reduction	0...850 m above sea level, via potentiometer
power consumption	approx. 5 VA
weight	approx. 0.8 kg
testing	CE

output signals	A
– 2 … + 2 V ($R_L \geq 5$ kΩ)	1
0...20 mA ($R_L \leq 250$ Ω)	0
4...20 mA ($R_L \leq 250$ Ω)	4

Order key

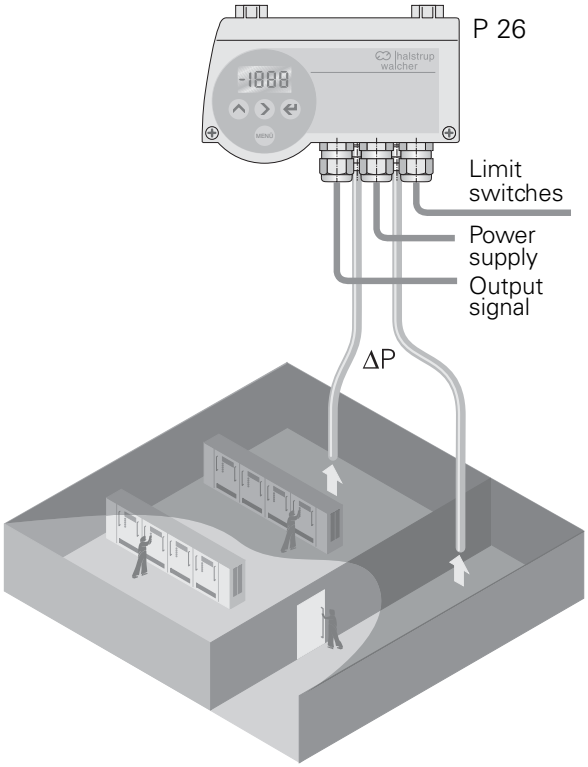
	A
BA 90 -	

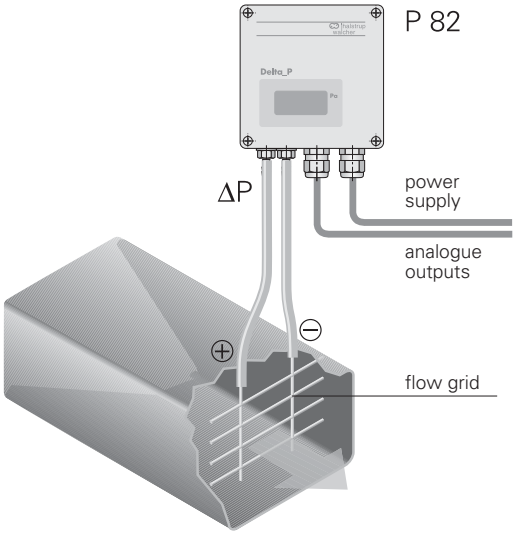
accessories	
☐ DAkkS-DKD calibration certificate, German	9601.-0003
☐ DAkkS-DKD calibration certificate, English	9601.-0004
☐ factory calibration certificate	9601.-0002

Sample applications

Volume flow measurement

If measured in conjunction with a differential pressure transmitter (measuring orifice, Wilson flow grid, pitot tube, etc.), the recorded differential pressure will be directly proportional to the volume flow as a result of the root-extracted function of the P 82 R / P 26 model pressure transmitter. The resulting value is then displayed on the built-in LCD. The output signal is also proportional to the volume flow, thereby eliminating the need for time-consuming calculations in the master control module.





Measuring differential pressure

Monitoring static room pressure, as is done, for instance, in clean rooms or operating rooms, requires a pressure transmitter that can operate within very small measurement ranges, often only a few Pascals. The P 26 pressure transmitter is perfectly suited for this type of task, as it is designed to operate in measurement ranges as small as 0…10 Pa.

Conversion table for the most common pressure units

	Pa	hPa/mbar	kPa	bar	psi	mmH_2O	inH_2O	mmHg	inHg
Pa	1	0.010	0.001	0.00001	0.0001	0.102	0.004	0.008	0.0003
hPa/mbar	100	1	0.100	0.001	0.015	10.197	0.401	0.750	0.030
kPa	1000	10	1	0.010	0.145	101.968	4.014	7.502	0.295
bar	100000	1000	100	1	14.514	10196.798	401.445	750.188	29.499
psi	6891.799	68.966	6.894	0.069	1	703.235	27.701	51.813	2.036
mmH_2O	9.804	0.098	0.010	0.000098	0.001	1	0.039	0.073	0.003
inH_2O	249.004	2.490	0.249	0.00249	0.036	25.381	1	1.865	0.073
mmHg	133.316	1.333	0.133	0.00133	0.019	13.624	0.536	1	0.039
inHg	3386.387	33.898	3.386	0.03386	0.491	345.901	13.624	25.381	1

DakkS-DKD pressure calibration laboratory

Germany's national metrology institute (Deutschen Akkreditierungsstelle GmbH) has certified Walcher Meßtechnik GmbH – a member of the halstrup-walcher group of companies – to perform pressure calibrations in accordance with DIN EN ISO / IEC 17025.
This allows Walcher Meßtechnik GmbH to issue DAkkS-DKD calibration certificates for differential pressure transmitters, calibration devices, absolute pressure transmitters and portable pressure gauges.
Absolute pressures between 0.25 and 20 bar can be measured here, as can negative and positive differential pressures of 0 to 20 bar between gases. Measuring and calibration devices are calibrated independently of the manufacturer.

Services also include recalibration of all of the products listed above as directed by the ISO 9000 quality management system for measuring equipment.

Walcher Meßtechnik

akkreditiert durch die / *accredited by the*

Deutsche Akkreditierungsstelle GmbH DAkkS

als Kalibrierlaboratorium im / *as calibration laboratory in the*

Deutschen Kalibrierdienst DKD

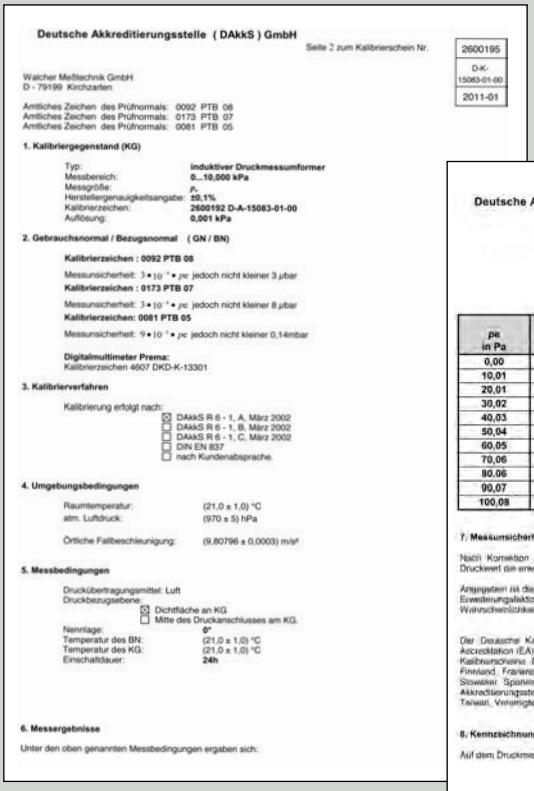
Kalibrierschein / *Calibration certificate* — Kalibrierzeichen / *Calibration mark*: 2600195 | D-K-15083-01-00 | 2011-01

Gegenstand / *Object*	Digitales automatisches Druckkalibriergerät
Hersteller / *Manufacturer*	halstrup-walcher GmbH
Typ / *Type*	KAL 200
Fabrikat/Serien-Nr. / *Serial number*	9609.0002 KI20474
Auftraggeber / *Customer*	Mustermann GmbH Parkstraße 111 D-74111 Gosttown
Auftragsnummer / *Order No.*	2600193
Anzahl der Seiten des Kalibrierscheines / *Number of pages of the certificate*	-3-
Datum der Kalibrierung / *Date of calibration*	24. November 2010

Datum / *Date*: 24. November 2010 — Leiter des Kalibrierlaboratoriums / *Head of the calibration laboratory*: R. Heizler — Bearbeiter / *Person in charge*: R. Heizler

Walcher Meßtechnik GmbH
Postfach 1208
D-79196 Kirchzarten

Telefon / Telefax / e-mail: info@walcher.de



Deutsche Akkreditierungsstelle (DAkkS) GmbH

Seite 2 zum Kalibrierschein Nr. 2600195 | D-K-15083-01-00 | 2011-01

Walcher Meßtechnik GmbH
D - 79199 Kirchzarten

Amtliches Zeichen des Prüfnormals: 0092 PTB 08
Amtliches Zeichen des Prüfnormals: 0173 PTB 07
Amtliches Zeichen des Prüfnormals: 0081 PTB 05

1. Kalibriergegenstand (KG)

Typ: **induktiver Druckmessumformer**
Messbereich: **0...10,000 kPa**
Messgröße: **p_e**
Herstellergenauigkeitsangabe: **±0,1%**
Kalibrierzeichen: **2600192 D-A-15083-01-00**
Auflösung: **0,001 kPa**

2. Gebrauchsnormal / Bezugsnormal (GN / BN)

Kalibrierzeichen : 0092 PTB 08
Messunsicherheit: $3 \cdot 10^{-4} \cdot p_e$ jedoch nicht kleiner 3 µbar
Kalibrierzeichen : 0173 PTB 07
Messunsicherheit: $3 \cdot 10^{-4} \cdot p_e$ jedoch nicht kleiner 8 µbar
Kalibrierzeichen: 0081 PTB 05
Messunsicherheit: $9 \cdot 10^{-4} \cdot p_e$ jedoch nicht kleiner 0,14mbar

Digitalmultimeter Prema:
Kalibrierzeichen 4607 DKD-K-13301

3. Kalibrierverfahren

Kalibrierung erfolgt nach:
- ☒ DAkkS R 6 - 1, A, März 2002
- ☐ DAkkS R 6 - 1, B, März 2002
- ☐ DAkkS R 6 - 1, C, März 2002
- ☐ DIN EN 837
- ☐ nach Kundenabsprache.

4. Umgebungsbedingungen

Raumtemperatur: (21,0 ± 1,0) °C
atm. Luftdruck: (970 ± 5) hPa

Örtliche Fallbeschleunigung: (9,80796 ± 0,0003) m/s²

5. Messbedingungen

Druckübertragungsmittel: Luft
Druckbezugsebene:
- ☒ Dichtfläche an KG
- ☐ Mitte des Druckanschlusses am KG.

Nennlage: **0°**
Temperatur des BN: (21,0 ± 1,0) °C
Temperatur des KG: (21,0 ± 1,0) °C
Einschaltdauer: **24h**

6. Messergebnisse

Unter den oben genannten Messbedingungen ergaben sich:

Deutsche Akkreditierungsstelle (DAkkS) GmbH

Seite 3 zum Kalibrierschein Nr. 2600195 | D-K-15083-01-00 | 2011-01

p_e in Pa	Mittelwert der Anzeige in Pa		Messabweichung in Pa		Messunsicherheit in Pa	
	Aufwärts	Abwärts	Aufwärts	Abwärts	Aufwärts	Abwärts
0,00	0,00	0,02	0,00	0,02	0,30	0,30
10,01	10,09	10,06	0,08	0,05	0,30	0,30
20,01	20,16	20,17	0,15	0,16	0,30	0,30
30,02	30,12	30,17	0,10	0,15	0,30	0,30
40,03	40,13	40,17	0,10	0,14	0,30	0,30
50,04	50,12	50,17	0,08	0,13	0,30	0,30
60,05	60,11	60,17	0,06	0,12	0,30	0,30
70,06	70,11	70,16	0,05	0,10	0,30	0,30
80,06	80,11	80,15	0,05	0,09	0,30	0,30
90,07	90,12	90,14	0,05	0,07	0,30	0,30
100,08	100,15	100,15	0,07	0,07	0,30	0,30

7. Messunsicherheit

Nach Korrektion der angezeigten Werte um die Messabweichung (siehe Tabelle) beträgt für den so korrigierten Druckwert die erweiterte Messunsicherheit U (siehe Tabelle).

Angegeben ist die erweiterte Messunsicherheit, die sich aus der Standardmessunsicherheit durch Multiplikation mit dem Erweiterungsfaktor k = 2 ergibt. Sie wurde gemäß DAkkS-3 ermittelt. Der Wert der Messgröße liegt mit einer Wahrscheinlichkeit von 95% im zugeordneten Wertebereich.

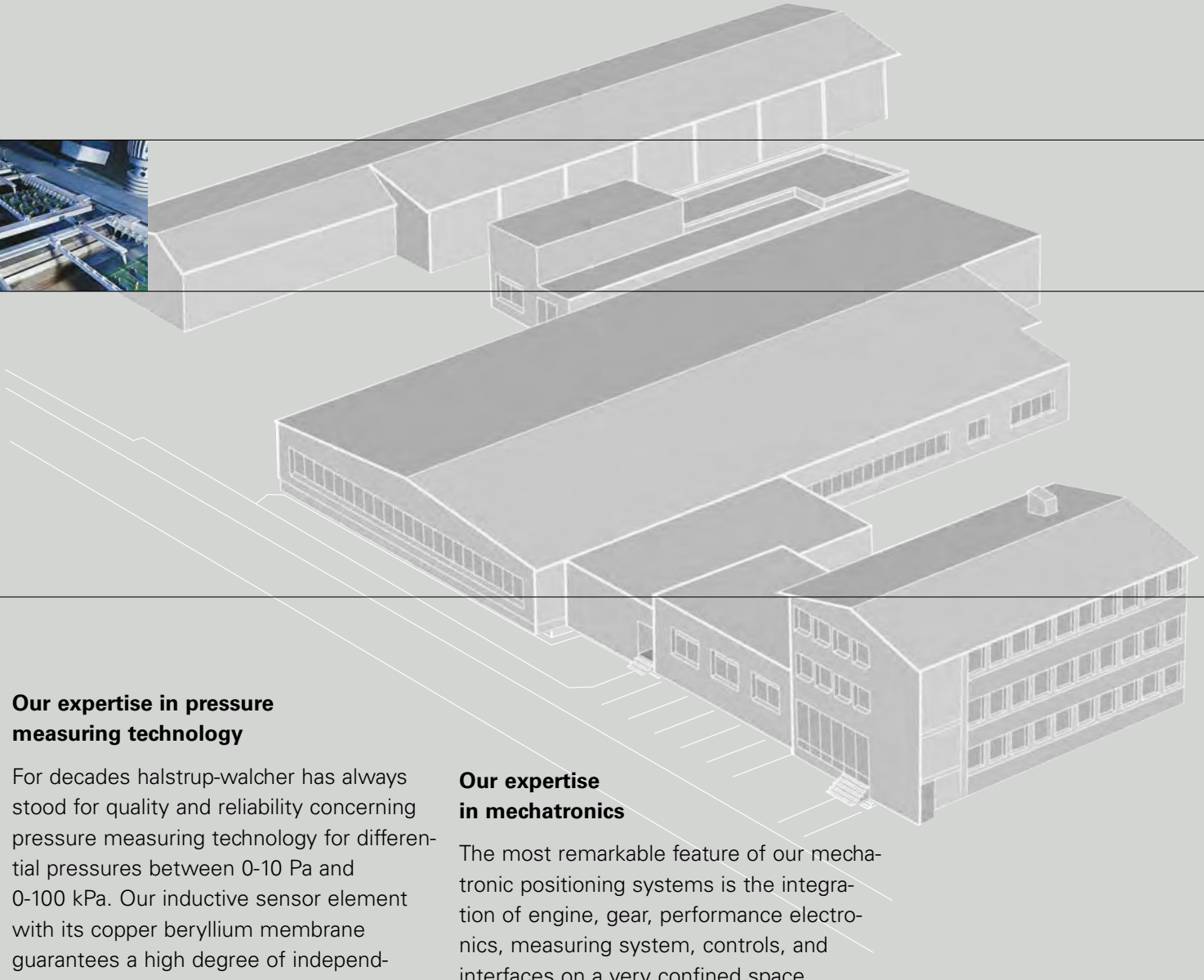
Der Deutsche Kalibrierdienst ist Unterzeichner der multilateralen Übereinkommen der European co-operation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine. Die anderen Unterzeichner aus Europa sind zur Zeit die Akkreditierungsstellen in Belgien, Dänemark, Finnland, Frankreich, Irland, Italien, den Niederlanden, Norwegen, Österreich, Portugal, Schweden, der Schweiz, der Slowakei, Spanien, der Tschechischen Republik und dem Vereinigten Königreich. Außerhalb Europas sind zur Zeit Akkreditierungsstellen der Länder Australien, Brasilien, China, Indien, Japan, Kanada, Neuseeland, Singapur, Südafrika, Taiwan, Vereinigte Staaten von America und Vietnam Mitunterzeichner der Übereinkommen.

8. Kennzeichnung

Auf dem Druckmessgerät wurde als Zeichen der Kalibrierung eine DAkkS-Kalibriermarke aufgebracht.

halstrup walcher

It's the detail that counts



Our expertise in pressure measuring technology

For decades halstrup-walcher has always stood for quality and reliability concerning pressure measuring technology for differential pressures between 0-10 Pa and 0-100 kPa. Our inductive sensor element with its copper beryllium membrane guarantees a high degree of independence from varying temperature as well as long-term stability.
For measuring volume flow and mass flow, we offer models with digital displays that have been precalibrated for these parameters. All pressure transmitters are available with a display and calibration protocol, alternatively in German or English.
In addition to pressure transmitters, we also produce extremely cost-effective pressure calibration devices, e.g. to be used for medical engineering.

Our expertise in mechatronics

The most remarkable feature of our mechatronic positioning systems is the integration of engine, gear, performance electronics, measuring system, controls, and interfaces on a very confined space.

Our expertise in drive technology

Our focal point in manufacturing spur Gears always lies on customer specific solutions offering a maximum of cost-effectiveness for every application.
Our scope of delivery includes complete solutions including motor control gear with position feedback signal and/or adjustable limit switches. You can also have your gearbox produced according to your specific requirements.

**halstrup-walcher GmbH –
precision for your success**

halstrup-walcher GmbH was founded as Erwin Halstrup Company in 1946. It was renamed Erwin Halstrup Multur GmbH in 1981 and assumed the name halstrup-walcher GmbH in the year 2000. It became a subsidiary of the Walcher Meßtechnik GmbH in 1990. Halstrup-walcher's technical solutions stand out for their extraordinary quality, precision and innovative nature.

**Our product range covers
the following devices**

- differential pressure transmitter for low pressures
- handheld pressure gauges
- pressure calibration systems
- absolute pressure measuring systems
- barometers
- spur gearboxes
- actuators
- linear drives
- positioning systems

Distribution

In-house salesmen and commercial agents take care of national sales; appointed retailers carry out international sales of our precision measuring instruments.

Manufacturing

Modern machines for fitting and soldering circuit boards are used for the manufacture of the electronic modules.
Climatic chambers are available for burn-ins as well as air-controlled labs for quality control and/or calibration of the end products.
The mechanical manufacturing process involves punches, milling cutters (CNC), lathes (CNC) as well as electronically controlled presses to mount the gear wheels.
Production cells are responsible for portions of the assembly process and perform the final inspection of mechanical parts.

Your competent partner
in pressure measuring technology between 10 Pa and 100 kPa

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It's the detail that counts

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