Operating instructions, mounting & installation

DF including hose set

Pressure and differential pressure measuring transducers calibrateable

SDF including hose set

Pressure and differential pressure measuring transducers with display, calibrateable

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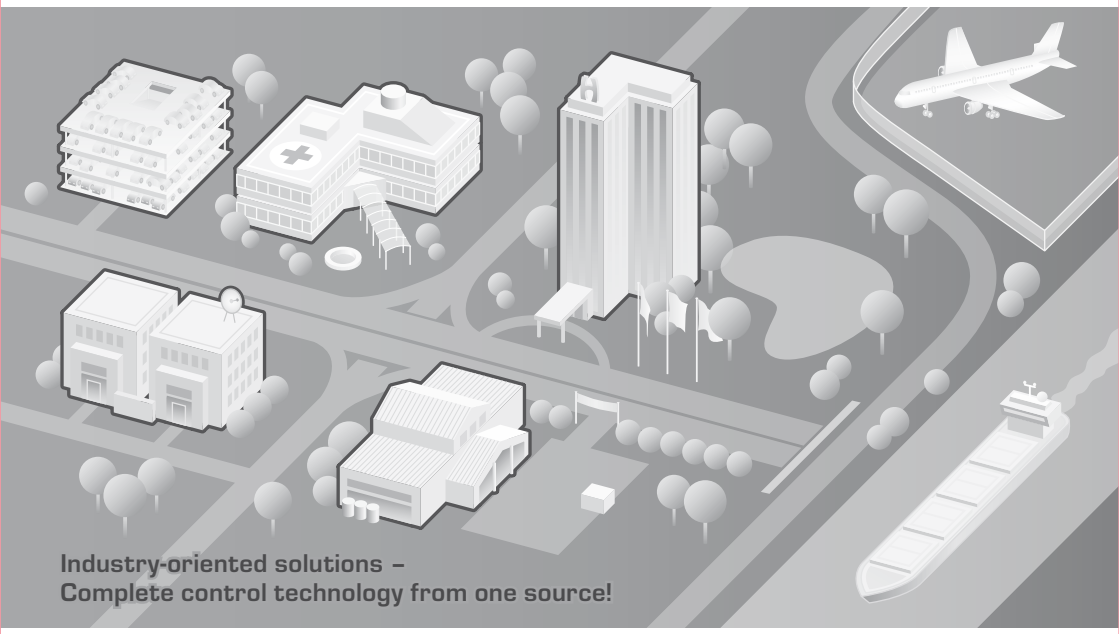


Industry-oriented solutions –
Complete control technology from one source!

DF including hose set

Pressure and differential pressure measuring transducers calibrateable, with active output

REGELTECHNIK

The calibrateable pressure sensors DF are used for measuring above-atmospheric, below-atmospheric or differential pressures in air. A piezo-resistive measuring element guarantees high reliability and accuracy. These pressure sensors are used in clean room, medical and filter technology, in ventilation and air conditioning ducts, in spray booths, in large-scale catering establishments, for monitoring filters, for level measuring, or for triggering frequency converters. Measured media are air (non-precipitating) or other gaseous, non-aggressive, non-combustible media.

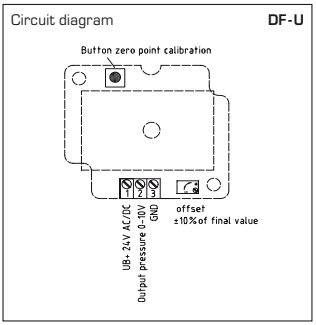
DF

ASD-06

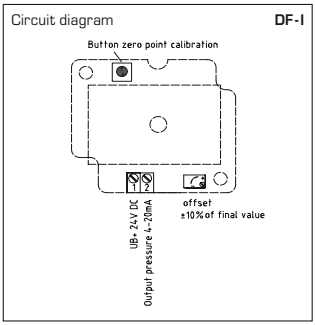
TECHNICAL DATA:

Power supply:	24 V AC/DC for output 0 -10V; 15 - 30 V DC for output 4...20 mA
Measuring ranges:	see table
Output signal:	0 -10V or 4...20 mA
Electrical connection:	2- 3-wire connection
Media temperature:	0... + 50 °C
Pressure connection:	4/6 x 11 mm (hoses Ø = 4/6 mm)
Type of pressure:	differential pressure
Medium:	air, non-aggressive, non-combustible gases
Accuracy:	± 3 % of final value (at 20°C)
Zero point offset:	max. + 2 % of final value (for voltage output)
Above-/below-atmospheric pressure:	max. 10 x measuring range
Long-term stability:	± 1 % per year
Build-up time:	ca. 0.05 s
Hysteresis:	0.1 % of final value, ranges 25, 50, 100 Pa: 1 Pa
Media contacting parts:	brass, Ni, Nylon, PU, Si
Temperature drift values:	± 2.5 % of final value/10 K
Current consumption:	< 20 mA
Linearity:	± 0.8 % of final value
Enclosure:	plastic, material polyamide, 30 % glass-globe-reinforced, with quick-locking screws, colour pure white (similar RAL 9010)
Dimensions:	72 x 64 x 39.4 mm
Electrical connection:	0.14 - 1.5 mm² via terminal screws
Cable union:	M16, including strain relief
Humidity:	< 95 % r.H., non-precipitating air
Protection class:	III (according to EN 60 730)
Protection type:	IP65 (according to IEC 529)
Standards:	CE conformity, electromagnetic compatibility according to EN 61 326 + A1 + A2, EMC directive 89/336/EWG low-voltage directive 73/23/EWG
ACCESSORIES:	including hose set ASD-06 (included in the scope of delivery)

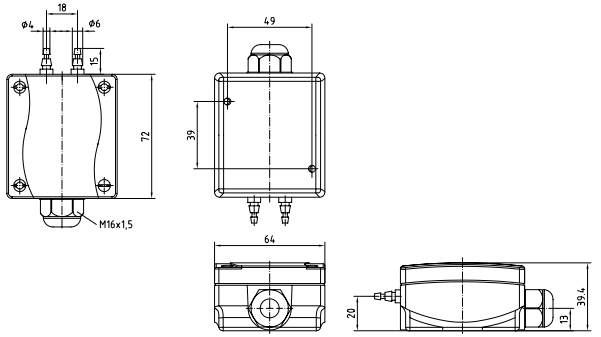
Circuit diagram **DF-U**



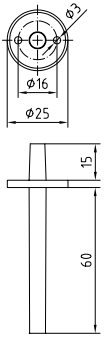
Circuit diagram **DF-I**



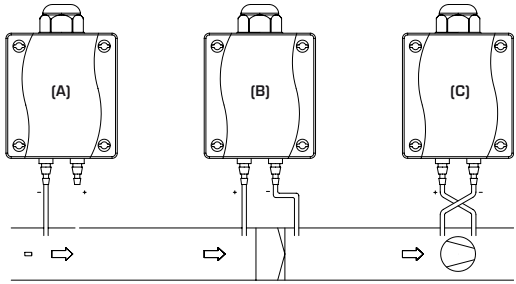
Dimensional drawing **DF**



Dimensional drawing **ASD-06**



Mounting diagram **DF/SDF**



The following types of monitoring

(A) Below-atmospheric pressure monitoring
P1 (+) is not connected. It is open against atmosphere.
P2 (-) connected to inside duct

(B) Filter monitoring
P1 (+) connected before filter
P2 (-) connected after filter

(C) Ventilator monitoring
P1 (+) connected after ventilator
P2 (-) connected before ventilator

Pressure connections are marked with
P1 (+) = higher pressure, and
P2 (-) = lower pressure.

Pressure measuring transducer DF-U, including hose set:

Typ/WG1	Range	Output
DF-50U	0...50 Pa	0-10 V
DF-100U	0...100 Pa	0-10 V
DF-300U	0...300 Pa	0-10 V
DF-500U	0...500 Pa	0-10 V
DF-1000U	0...1000 Pa	0-10 V
DF-2000U	0...2000 Pa	0-10 V
DF-5000U	0...5000 Pa	0-10 V
DF-25/+25U	-25...+25 Pa	0-10 V
DF-50/+50U	-50...+50 Pa	0-10 V
DF-100/+100U	-100...+100 Pa	0-10 V
DF-500/+500U	-500...+500 Pa	0-10 V
DF-1000/+1000U	-1000...+1000 Pa	0-10 V
DF-2000/+2000U	-2000...+2000 Pa	0-10 V

Other pressure ranges selectable at extra charge, see pricelist.

Pressure measuring transducer DF-I, including hose set:

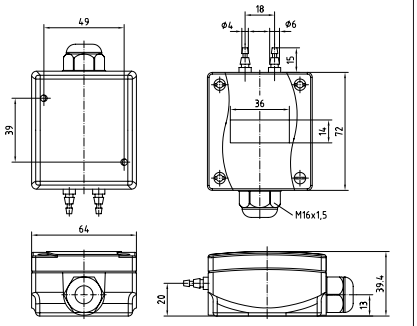
Typ/WG1	Range	Output
DF-50I	0...50 Pa	4...20 mA
DF-100I	0...100 Pa	4...20 mA
DF-300I	0...300 Pa	4...20 mA
DF-500I	0...500 Pa	4...20 mA
DF-1000I	0...1000 Pa	4...20 mA
DF-2000I	0...2000 Pa	4...20 mA
DF-5000I	0...5000 Pa	4...20 mA
DF-25/+25I	-25...+25 Pa	4...20 mA
DF-50/+50I	-50...+50 Pa	4...20 mA
DF-100/+100I	-100...+100 Pa	4...20 mA
DF-500/+500I	-500...+500 Pa	4...20 mA
DF-1000/+1000I	-1000...+1000 Pa	4...20 mA
DF-2000/+2000I	-2000...+2000 Pa	4...20 mA

Other pressure ranges selectable at extra charge, see pricelist.

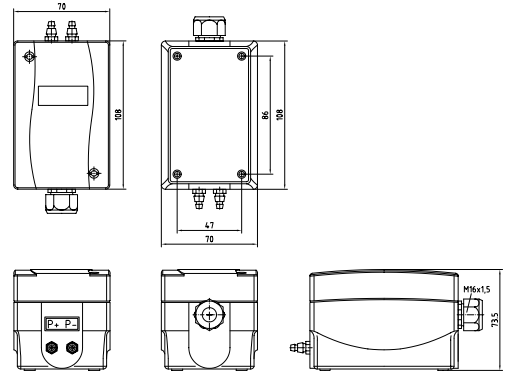
SDF including hose set

Pressure and differential pressure measuring transducers
with display, calibrateable, with active output

Dimensional drawing **SDF-U**



Dimensional drawing **SDF-I**



Conversion table for pressure values:

Units	bar	mbar	Pa	kPa	mWs
1 Pa =	000001 bar	0.01 mbar	1 Pa	0.001 kPa	0.000101971 mWs
1 kPa =	0.01 bar	10 mbar	1000 Pa	1 kPa	0.101971 mWs
1 bar =	1 bar	1000 mbar	100000 Pa	100 kPa	10.1971 mWs
1 mbar =	0.001 bar	1 mbar	100 Pa	0.1 kPa	0.0101971 mWs
1 mWs =	0.0980665 bar	98.0665 mbar	9806.65 Pa	9.80665 kPa	1 mWs

Pressure measuring transducer SDF-U with display, including hose set:

Typ / WG1	Range	Output
SDF-50U	0...50 Pa	0-10 V
SDF-100U	0...100 Pa	0-10 V
SDF-300U	0...300 Pa	0-10 V
SDF-500U	0...500 Pa	0-10 V
SDF-1000U	0...1000 Pa	0-10 V
SDF-2000U	0...2000 Pa	0-10 V
SDF-5000U	0...5000 Pa	0-10 V
SDF-25/+25U	-25...+25 Pa	0-10 V
SDF-50/+50U	-50...+50 Pa	0-10 V
SDF-100/+100U	-100...+100 Pa	0-10 V
SDF-500/+500U	-500...+500 Pa	0-10 V
SDF-1000/+1000U	-1000...+1000 Pa	0-10 V
SDF-2000/+2000U	-2000...+2000 Pa	0-10 V

Other pressure ranges selectable at extra charge, see pricelist.
Output square root extracting optional at extra charge, see pricelist.

Pressure measuring transducer SDF-I with display, including hose set:

Typ / WG1	Range	Output
SDF-50I	0...50 Pa	4...20 mA
SDF-100I	0...100 Pa	4...20 mA
SDF-300I	0...300 Pa	4...20 mA
SDF-500I	0...500 Pa	4...20 mA
SDF-1000I	0...1000 Pa	4...20 mA
SDF-2000I	0...2000 Pa	4...20 mA
SDF-5000I	0...5000 Pa	4...20 mA
SDF-25/+25I	-25...+25 Pa	4...20 mA
SDF-50/+50I	-50...+50 Pa	4...20 mA
SDF-100/+100I	-100...+100 Pa	4...20 mA
SDF-500/+500I	-500...+500 Pa	4...20 mA
SDF-1000/+1000I	-1000...+1000 Pa	4...20 mA
SDF-2000/+2000I	-2000...+2000 Pa	4...20 mA

Other pressure ranges selectable at extra charge, see pricelist.
Output square root extracting optional at extra charge, see pricelist.

S+S REGELTECHNIK

APPLICATION:

The calibrateable pressure sensors SDF are used for measuring above-atmospheric, below-atmospheric or differential pressures in air. A piezo-resistive measuring element guarantees high reliability and accuracy. These pressure sensors are used in clean room, medical and filter technology, in ventilation and air conditioning ducts, in spray booths, in large-scale catering establishments, for monitoring filters, for level measuring, or for triggering frequency converters. Measured media are air (non-precipitating) or other gaseous, non-aggressive, non-combustible media.

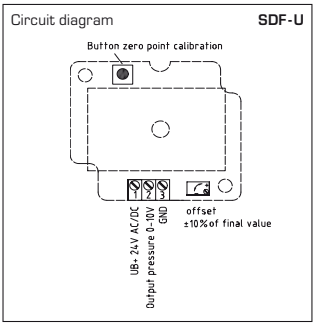
SDF-U

SDF-I

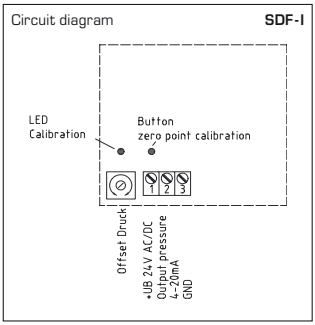
TECHNICAL DATA:

Power supply:	24 V AC/DC for output 0-10 V; 15-30 V DC for output 4...20 mA
Measuring ranges:	see table
Output signal:	0-10 V or 4...20 mA
Electrical connection:	3-wire connection
Media temperature:	0...+50 °C
Pressure connection:	4/6 x 11 mm (hoses Ø = 4/6 mm)
Type of pressure:	differential pressure
Medium:	air, non-aggressive, non-combustible gases
Accuracy:	±3% of final value (at 20°C)
Zero point offset:	max. +2% of final value (for voltage output)
Above-/below-atmospheric pressure:	max. 10 x measuring range
Long-term stability:	± 1 % per year; ranges 25, 50, 100 Pa: 1 Pa
Build-up time:	ca. 0.05 s
Hysteresis:	0.1 % of final value
Media contacting parts:	brass, Ni, Nylon, PU, Si
Temperature drift values:	± 2.5 % of final value/10K
Current consumption:	< 20 mA
Linearity:	± 0.8 % of final value
Enclosure:	plastic, material polyamide, 30% glass-globe-reinforced, with quick-locking screws, colour pure white (similar RAL 9010)
Dimensions:	SDF-U: 72 x 64 x 39.4 mm SDF-I: 108 x 72.5 x 70 mm
Electrical connection:	0.14 - 1.5mm² via terminal screws
Cable union:	M16, including strain relief
Humidity:	< 95% r.H., non-precipitating air
Protection class:	III (according to EN 60730)
Protection type:	IP65 (according to IEC 529)
Standards:	CE conformity, electromagnetic compatibility according to EN 61 326 + A1 + A2, EMC directive 89/336/EWG low-voltage directive 73/23/EWG
Features:	including 4-digit display
ACCESSORIES:	including hose set ASD-06 (included in the scope of delivery)

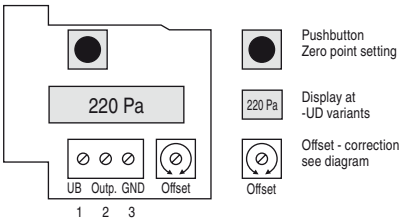
Circuit diagram **SDF-U**



Circuit diagram **SDF-I**



Manual zero point setting output voltage



1. Before zero point setting, the device has to be in operation for at least 60 minutes.
2. It is mandatory to set potentiometer „Offset" to centre position (state as delivered)!
3. Pressure inputs P+ and P- are to be connected by a hose (pressure difference between inputs = 0 Pa).
4. For zero point setting press pushbutton for 10 seconds.
   By pressing the pushbutton a countdown of 10 seconds is started.
   The button must continuously remain depressed during that countdown period.

   On device variant **DF-U**, the LED keeps blinking during the countdown. Successful calibration is signalised by 5 seconds of uninterrupted LED light.

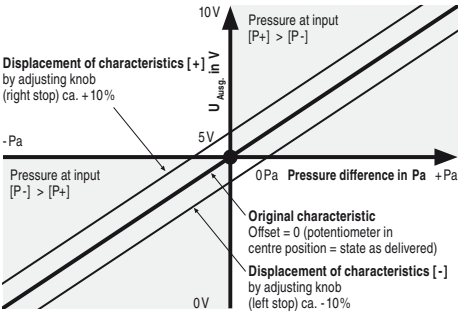
   On device variant **SDF-UD** (with display), the time counter is displayed till zero point stetting. Calibration takes place after the lapse of 10 seconds.

   By releasing the pushbutton during the countdown (counter >0 on SDF-UD respectively blinking LED on DF-U), zero point setting is immediate ly cancelled!

DF+-U / SDF+-U (MB: -xx... + xx Pa)

After successful zero point calibration, the output voltage (in centre position of the offset knob) amounts to 5 V at a pressure difference of 0 Pa. !

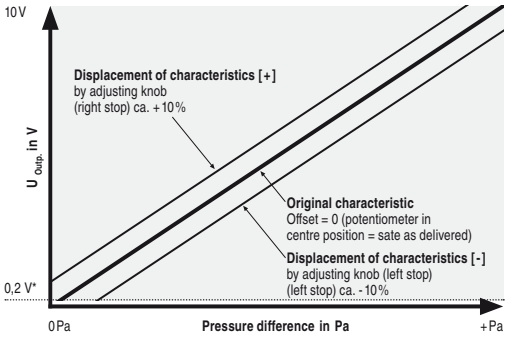
Output voltage 0 ... 10 V
for pressure difference -ΔP... +ΔP



DF-U / SDF-U (MB: 0... + xx Pa)

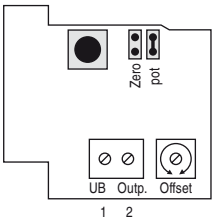
After successful zero point calibration, the output voltage (in centre position of the offset knob) amounts to 0.2 V at a pressure difference of 0 Pa.

Output voltage 0,2 ...10 V
for pressure difference 0 Pa to final value



* 0,2 V =minimum (zero point offset)

Manual zero point setting output current



Pushbutton
Zero point setting

Manual zero point setting per pushbutton enabled when bridged

Offset adjustment via potentiometer enabled when bridged

Offset - correction enabled when jumper pot is bridged (default), see diagram

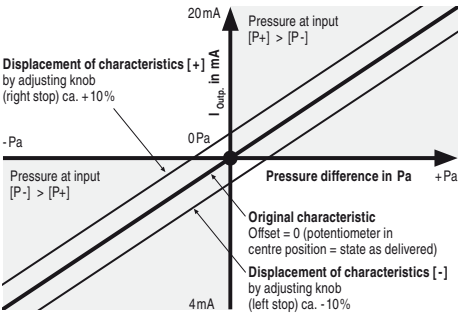
1. Before zero point setting, the device has to be in operation for at least 60 minutes at 0 Pa differential pressure (connect pressure inputs P+ and P- using a hose).
2. It is mandatory to set potentiometer „Offset" to centre position (state as delivered)!
3. Remove jumper from socket „Pot" and plug it on socket „Zero" (activating the pushbutton).
4. For zero point setting press pushbutton for 10 seconds. By pressing the pushbutton a countdown of 10 seconds is started. The button must continuously remain depressed during that countdown period. The LED keeps blinking during the countdown. Successful calibration is signalised by 5 seconds of uninterrupted LED light. By releasing the pushbutton during the countdown (blinking LED), zero point setting is immediately cancelled!
5. Remove jumper from socket „Zero" and plug it back on socket „Pot" (activating the potentiometer for offset adjustment).

Sockets „Pot" and „Zero" must under no circumstances be plugged by jumpers simultaneously!

DF+/-I (MB: -xx... + xx Pa)

After successful zero point calibration, the output current (in centre position of the offset knob) amounts to 12 mA at a pressure difference of 0 Pa.

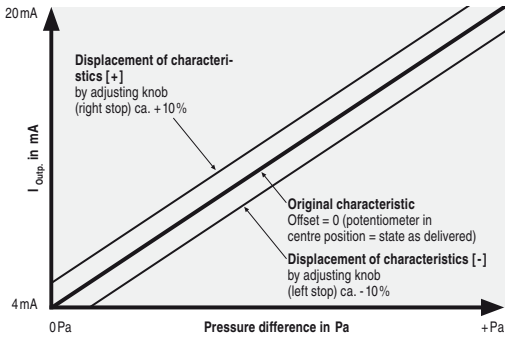
Output current 4 ... 20 mA
pressure difference ΔP = (Druck an P+) - (Druck an P-)



DF-I (MB: 0... xx Pa)

After successful zero point calibration, the output current (in centre position of the offset knob) amounts to 12 mA at a pressure difference of 0 Pa.

Output current 4 ... 20 mA
pressure difference from 0 Pa to final value



General notes

Our "General Terms and Conditions for Business" together with the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry" (ZVEI conditions) including supplementary clause "Extended Retention of Title" apply as the exclusive terms and conditions".

Furthermore, the following points must be observed:

- These instructions shall be read before installation and putting in operation and all directions contained herein shall be followed!
- These devices must only be connected to safety extra-low voltage and under dead-voltage condition. To avoid damages and errors at the device (e.g. by voltage induction), shielded cables shall be used, laying parallel with current-carrying lines is to be avoided, and the EMC directives must be adhered to.
- This device shall only be used for its intended purpose. Respective safety regulations issued by the VDE, the states, their control authorities, the TÜV and the local energy supply company must be observed. The buyer has to ensure adherence to the building and safety regulations and has to avoid all dangers of any kind.
- We do not assume any warranties or liabilities for faults or damages arising or resulting from improper use of this device.
- Consequential damages caused by a fault in this device are excluded from warranty or liability.
- These devices must be installed by authorized qualified personnel only.
- The technical data and connecting conditions shown in the mounting and operating instructions delivered together with the device are exclusively valid. Deviations from the catalogue representation are not explicitly mentioned and are possible in terms of technical progress and continuous improvement of our products.
- In case of any modifications made by the user, all warranty claims are forfeited.
- This device must not be installed close to heat sources (e.g. radiators) or be exposed to their heat flow. Direct sun irradiation or heat irradiation by similar sources (powerful lamps, halogen spotlights) must absolutely be avoided.
- Operating this device close to other devices that do not comply with EMC directives may influence functionality.
- This device must not be used for monitoring applications, which solely serve the purpose of protecting persons against hazards or injury, or as an EMERGENCY STOP switch for systems or machinery, or for any other similar safety-relevant purposes.
- Dimensions of enclosures or enclosure accessories may show slight tolerances on the specifications provided in these instructions.
- Modifications of these records are not permitted.
- In case of a complaint, only complete devices returned in original packing will be accepted.

Notes regarding DF, SDF

This device can be mounted in any position.
The voltage output is short-circuit proof. Applying overvoltage at the voltage output will destroy this device.
Pressure ranges are indicated on the device label. Applying measuring pressures beyond that range will cause mismeasurements and increased deviations or may destroy the device.

- Attention! When leading in cables, make sure, they do not go under the board. This might buckle or damage hose connections!
- The voltage output is short-circuit proof. Applying overvoltage at the voltage output will destroy this device.
- Pressure inputs are "poled" i.e. the above-atmospheric pressure line must be connected at input P+ and the below-atmospheric pressure line must be connected at input P-.
- At an adjusting element, the output signal can be offset by +/- 5 % of the final value of the measuring range. In this way, possible ageing or drift effects can be compensated.
- Adjustment may only be made at the presence of differential pressure (ca. 90 % of final value).
- Attention! The minimum output voltage amounts to ca. 0.2 V. By changing the offset at the adjusting element, factory-calibration is lost!
- If this device is operated beyond the specified range, all warranty claims are forfeited.

1222 / 07 ®