Operating Instructions
Bedienungsanleitung
Manuel d‘utilisation

Pressure transmitter Type 8325 EN

Drucktransmitter Typ 8325 DE

Transmetteur de pression type 8325 FR

Pressure transmitter Type 8325

bürkert
FLUID CONTROL SYSTEMS

MAN 1000358422 EN Version: B Status: RL (released | freigegeben) printed: 08.08.2019

We reserve the right to make technical changes without notice.
Technische Änderungen vorbehalten.
Sous réserve de modification technique.
Operating Instructions 1908/02_EU-ML / Original_EN
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Prior to starting any work, read the Operating Instructions!
Keep for later use!

Vor Beginn aller Arbeiten Bedienungsanleitung lesen!
Zum späteren Gebrauch aufbewahren!

Lire le manuel d‘utilisation avant de commencer toute opération !
A conserver pour une utilisation ultérieure !

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1. General information

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- The transmitter described in the Operating Instructions has been designed and manufactured using state-of-the-art technology.
  All components are subject to stringent quality and environmental criteria during production.
- These Operating Instructions contain important information on handling the instrument. Working safely requires that all safety instructions and work instructions are observed.
- Observe the relevant local accident prevention regulations and general safety regulations for the instrument's range of use.
- The Operating Instructions are part of the product and must be kept in the immediate vicinity of the instrument and readily accessible to skilled personnel at any time.
  Pass the Operating Instructions onto the next operator or owner of the instrument.
- Skilled personnel must have carefully read and understood the Operating Instructions prior to beginning any work.
- The manufacturer's liability is void in the event of any damage caused by using the product contrary to its intended use, non-compliance with these Operating Instructions, assignment of insufficiently qualified skilled personnel or unauthorised modifications to the instrument.
- The general terms and conditions contained in the sales documentation shall apply.
- Subject to technical modifications.
- Further information:
  Contact your local Bürkert sales office.
  The addresses of our international sales offices are available on the internet at: www.burkert.com

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Explanation of symbols

WARNING!
... indicates a potentially dangerous situation that can result in serious injury or death, if not avoided.

CAUTION!
... indicates a potentially dangerous situation that can result in light injuries or damage to the equipment or the environment, if not avoided.

Information
... points out useful tips, recommendations and information for efficient and trouble-free operation.

WARNING!
... indicates a potentially dangerous situation that can result in burns, caused by hot surfaces or liquids, if not avoided.

Abbreviations

2-wire	The two connection lines are used for the voltage supply. The measurement signal also provides the supply current.
3-wire	Two connection lines are used for the power supply. One connection line is used for the measurement signal.
U+	Positive power supply terminal
U–	Negative power supply terminal
S+	Positive output terminal

2. Safety

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WARNING!
Before installation, commissioning and operation, ensure that the appropriate transmitter has been selected in terms of measuring range, design and specific measuring conditions.
Non-observance can result in serious injury and/or damage to the equipment.

WARNING!
- Open the connections only after the system has been depressurised.
- Observe the working conditions in accordance with chapters 4, 5 and 6.
- Always operate the transmitter within the overpressure limit.

WARNING!
Risk of burn injury due to high fluid temperatures
- Do not touch with bare hands the parts of the device that are in contact with the fluid.
- Use safety gloves to handle the device.
- Before opening the pipe, stop the circulation of fluid and drain the pipe.
- Before opening the pipe, make sure the pipe is completely empty.

Further important safety instructions can be found in the individual chapters of these Operating Instructions.

2.1 Intended use
The transmitter is used to convert pressure into an electrical signal indoors and outdoors.

For applications with direct contact with foodstuffs, only use the transmitter 8325-F, flush diaphragm.
Only use the transmitter in applications that lie within its technical performance limits (e.g. max. ambient temperature, material compatibility, ...).

The instrument has been designed and built solely for the intended use described here, and may only be used accordingly.
The technical specifications contained in these Operating Instructions must be observed. Improper handling or operation of the transmitter outside of its technical specifications requires the instrument to be taken out of service immediately and inspected by an authorised Bürkert service engineer.

The manufacturer shall not be liable for claims of any type based on operation contrary to the intended use.

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2.2 Personnel qualification
WARNING!
Risk of injury should qualification be insufficient!
Improper handling can result in considerable injury and damage to equipment.
The activities described in these Operating Instructions may only be carried out by skilled personnel who have the qualifications described below.

Skilled personnel
Skilled personnel are understood to be personnel who, based on their technical training, knowledge of measurement and control technology and on their experience and knowledge of country-specific regulations, current standards and directives, are capable of carrying out the work described and independently recognising potential hazards.

Special operating conditions require further appropriate knowledge, e.g. of aggressive media.

2.3 Special hazards
WARNING!
For hazardous media such as oxygen, acetylene, flammable or toxic gases or liquids, and refrigeration plants, compressors, etc., in addition to all standard regulations, the appropriate existing codes or regulations must also be followed.

WARNING!
Residual media in dismounted transmitters can result in a risk to persons, the environment and equipment. Take sufficient precautionary measures.

Do not use this instrument in safety or emergency stop devices. Incorrect use of the instrument can result in injury. Should a failure occur, aggressive media with extremely high temperature and under high pressure or vacuum may be present at the instrument.

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3. Labelling / safety marks

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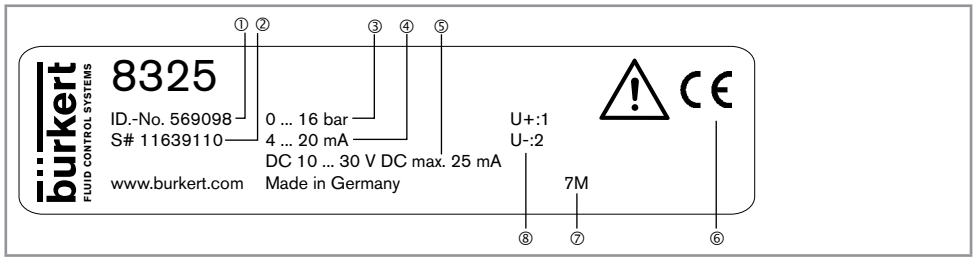
Product label (example)



① P# product number
② S# serial number
③ Measuring range
④ Output signal
⑤ Power supply
⑥ Comply with the relevant European directives
⑦ Coded manufacturing date
⑧ Pin assignment

If the serial number becomes illegible due to mechanical damage or overpainting, traceability will no longer be possible.

Before mounting and commissioning the instrument, ensure you read the Operating Instructions!

4. Specifications of the transmitter 8325-S, ≥ 0,4 bar

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Specifications	
Measuring range	See product label or test report
Vacuum tightness	Yes
Reference conditions	Per IEC 61298-1
■ Atmospheric pressure	15 ... 25 °C (59 ... 77 °F)
■ Atmospheric pressure	860 ... 1,060 mbar (12.5 ... 15.4 psi)
■ Humidity	45 ... 75 % r. h.
■ Power supply	24 V DC, 5 V DC with ratiometric output
■ Mounting position	Calibrated in vertical mounting position with pressure connection facing downwards.
Settling time	≤ 3 ms
Output signal	See product label or test report
Permissible load in Ω	
■ Current output	≤ (power supply - 7.5 V) / 0.023 A
■ With optional settling time of 1 ms	≤ (power supply - 11.5 V) / 0.023 A
■ Voltage output	> maximum output voltage / 1 mA
■ Ratiometric output	> 4.5k
Switch-on time	150 ms
Switch-on drift	5 s (60 s with optional zero point adjustment 0.1 %)
Voltage supply	See product label or test report
Dissipation loss	
■ Current output	828 mW (22 mW/K derating of the dissipation loss with ambient temperatures ≥ 100 °C (212 °F))
■ Voltage output	432 mW
Current supply	External circuits connected to the electrical outputs of the transmitter must be energy-limited electrical circuits in accordance with section 9.4 of UL/EN/IEC 61010-1, or an LPS to UL/EN/IEC 60950-1, or class 2 in accordance with UL1310/UL1585 (NEC or CEC). External circuits must be suitable for operation above 2,000 m should the transmitter be used at this altitude.
■ Current output	Current signal, max. 25 mA
■ Voltage output	Max. 12 mA
Non-linearity (per IEC 61298-2)	See test report
Relationship to the mounting position	For measuring ranges < 1 bar (15 psi), an additional zero offset of up to 0.15 % applies

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Specifications	
Non-repeatability	≤ ±0.1 % of span
Temperature hysteresis	0.1 % of span at > 80 °C (176 °F)
Long-term drift (per IEC 61298-2)	≤ ±0.1 % of span ≤ ±0.2 % of span (with special measuring ranges and measuring ranges < 1 bar (15 psi))
Temperature error	For calibration temperature 15 ... 25 °C (59 ... 77 °F) –20 ... +80 °C: ≤1 % of span –30 ... +100 °C: ≤1.5 % of span For measuring ranges < 1 bar (15 psi), special measuring ranges and instruments with an increased overpressure limit the respective temperature error increases by 0.5 % of span
Derating for cooling elements	
■ Max. permissible ambient temperature	T_{amb} (T_{med} < 125 °C) = 125 °C T_{amb} (T_{med} ≥ 125 °C) = –0.62 x T_{med} + 202 °C
■ Max. permissible medium temperature	T_{med} (T_{amb} < 80 °C) = 200 °C T_{med} (T_{amb} ≥ 80 °C) = –1.61 x T_{amb} + 326 °C T_{amb} = Ambient temperature [°C] T_{med} = Medium temperature [°C]
Storage and transport conditions	
■ Permissible temperature range	–40 ... +70 °C (–40 ... +158 °F)
■ Maximum humidity (per IEC 68-2-78)	67 % r. h. at 40 °C (104 °F) (in accordance with 4K4H per EN 60721-3-4)
Climate class	For indoor and outdoor use. Protect the instrument from direct sunlight.
■ Storage	1K3 (per EN 60721-3-1)
■ Transport	2K3 (per EN 60721-3-2)
■ Operation	4K4H (per EN 60721-3-4, without condensation or icing)
Vibration resistance (per IEC 68-2-6)	20 g, 10 ... 2,000 Hz (40 g, 10 ... 2,000 Hz for circular connector M12 x 1, metallic) For instruments with cooling elements a limited vibration resistance of 10 g, 10 ... 2,000 Hz, applies.
Continuous vibration resistance (per IEC 68-2-6)	10 g
Shock resistance (per IEC 68-2-27)	100 g, 6 ms (500 g, 1 ms for heavy-duty connector)
Service life	100 million load cycles (10 million load cycles for measuring ranges > 600 bar/7,500 psi)
Free-fall test (following IEC 60721-3-2)	
■ Individual packaging	1.5 m (5 ft)
■ Multiple packaging	0.5 m (1.6 ft)
■ PE bag	0.5 m (1.6 ft)

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Specifications	
Electrical protective measures	The electrical protective measures are not valid for ratiometric output signals.
■ Short-circuit resistance	S+ vs. U–
■ Reverse polarity protection	U+ vs. U–
■ Resistance to overvoltage	40 V DC
■ Insulation voltage	750 V DC
Materials of wetted parts	
■ Relative measuring ranges	Measuring ranges ≤ 10 bar (150 psi): 316L Measuring ranges > 10 bar (150 psi): 316L + 13-8 PH
■ Absolute measuring ranges	Measuring ranges ≤ 1,000 bar (10,000 psi): ASTM 630 and 13-8 PH Measuring ranges > 1,000 bar (10,000 psi): 316L + 13-8 PH
Materials of non-wetted parts	
■ Case	316 Ti
■ Zero point adjustment ring	PBT/PET GF30
■ Angular connector DIN 175301-803 A	PBT/PET GF30
■ Angular connector DIN 175301-803 C	PBT/PET GF30
■ Circular connector M12 x 1 (4-pin)	PBT/PET GF30
■ Circular connector M12 x 1 (4-pin, metallic)	316L
■ Field case	316L, 316Ti
■ Heavy-duty connector	316L
■ Cable outlet IP 67	PA66, PBT/PET GF30
■ Cable outlet ½ NPT conduit	316L
■ Cable outlet IP 68	316L
■ Cable outlet IP 68, FEP	316L
■ Cable outlet IP 6K9K	316L
CE conformity	■ Pressure equipment directive ■ RoHS directive ■ EMC directive, EN 61326 emission (group 1, class B) and interference immunity (industrial application)
■ EM field	30 V/m (80 ... 1,000 Mhz)

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Specifications	
Approvals	See product label
Dimensions	Spanner width: 24 mm Diameter: 26.7 mm Length: 53 ... 105 mm, with cooling element additional 73 mm
Weight	Approx. 150 g (0.331 lbs), with cooling element approx. 350 g (0.794 lbs)

Electrical connections

Electrical connection	Ingress protection 2)	Wire cross-section	Cable Ø	Cable material	Permissible temperature
Angular connector DIN EN 175301-803 A					
with mating connector	IP65	max. 1.5 mm²	6 ... 8 mm	-	–30 ... +100 °C (–22 ... +212 °F)
with mating connector (conduit)	IP65	max. 1.5 mm²	-	-	–30 ... +100 °C (–22 ... +212 °F)
with mating connector with moulded cable	IP65	3 x 0.75 mm²	6 mm	PUR	–30 ... +100 °C (–22 ... +212 °F
with mating connector with moulded cable, shielded	IP65	6 x 0.5 mm²	6.8 mm	PUR	–25 ... +85 °C (–4 ... +185 °F)
Angular connector DIN EN 175301-803 C					
with mating connector	IP65	max. 0.75 mm²	4.5 ... 6 mm	-	–30 ... +100 °C (–22 ... +212 °F)
with mating connector with moulded cable	IP65	4 x 0.5 mm²	6.2 mm	PUR	–25 ... +85 °C (–4 ... +185 °F)
Circular connector M12 x 1 (4-pin)					
without mating connector	IP67	-	-	-	–30 ... +100 °C (–22 ... +212 °F)
with mating connector, straight, with moulded cable	IP67	3 x 0.34 mm²	4.3 mm	PUR	–25 ... +80 °C (–4 ... +176 °F)

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Electrical connection	Ingress protection 2)	Wire cross-section	Cable Ø	Cable material	Permissible temperature
with mating connector, straight, with moulded cable, shielded	IP67	3 x 0.34 mm²	4.3 mm	PUR	–25 ... +80 °C (–4 ... +176 °F)
with mating connector, angled, with moulded cable	IP67	3 x 0.34 mm²	5.5 mm	PUR	–25 ... +80 °C (–4 ... +176 °F)

2) Only applies when plugged in using a suitable mating connector that has the appropriate ingress protection

Electrical connection	Ingress protection 2)	Wire cross-section	Cable Ø	Cable material	Permissible temperature
Circular connector M12 x 1 (4-pin, metallic)					
without mating connector	IP67	-	-	-	–40 ... +125 °C (–40 ... +257 °F)
with mating connector, straight, with moulded cable	IP67	3 x 0.34 mm²	4.3 mm	PUR	–25 ... +80 °C (–4 ... +176 °F)
with mating connector, straight, with moulded cable, shielded	IP67	3 x 0.34 mm²	4.3 mm	PUR	–25 ... +80 °C (–4 ... +176 °F)
with mating connector, angled, with moulded cable	IP67	3 x 0.34 mm²	5.5 mm	PUR	–25 ... +80 °C (–4 ... +176 °F)
Field case					
	IP6K9K	-	-	-	–25 ... +100 °C (–4 ... +212 °F)
Cable outlet					
Cable outlet IP 67	IP67	3 x 0.34 mm²	5.5 mm	PUR	–30 ... +100 °C (–22 ... +212 °F)
Cable outlet ½ NPT conduit	IP67	6 x 0.35 mm²	6.1 mm	PUR	–30 ... +100 °C (–22 ... +212 °F)
Cable outlet IP 68	IP68	6 x 0.35 mm²	6.1 mm	PUR	–30 ... +125 °C (–22 ... +257 °F)
Cable outlet IP 68, FEP	IP68	6 x 0.39 mm²	5.8 mm	FEP	–40 ... +125 °C (–40 ... +257 °F)
Cable outlet IP 6K9K	IP6K9K	6 x 0.35 mm²	6.1 mm	PUR	–30 ... +125 °C (–22 ... +257 °F)

4. Specifications of the transmitter 8325-S, ≥ 0,4 bar

Electrical connection	Ingress protection 2)	Wire cross-section	Cable ∅	Cable material	Permissible temperature
Heavy-duty connector					
with mating connector with cable	IP68	6 x 0.14 mm^2	6.5 mm	PUR	–40 ... +125 °C (–40 ... +257 °F)

2) Only applies when plugged in using a suitable mating connector that has the appropriate ingress protection

For further specifications, please refer to the technical datasheet, available at www.burkert.com, or contact your local Bürkert sales office.

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5. Specifications of the transmitter 8325-F, flush diaphragm

5. Specifications of the transmitter 8325-F, flush diaphragm

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5.1 Measuring range
See product label

5.2 Vacuum tightness
Yes

5.3 Output signals

Signal type	Signal
Current (2-wire)	4 ... 20 mA
Current (3-wire)	0 ... 20 mA
Voltage (3-wire)	0 ... 10 V DC 0 ... 5 V DC

Depending on the signal type the following loads apply:

Signal type	Load in Ω
Current (2-wire)	≤ (power supply - 10 V) / 0.02 A
Current (3-wire)	≤ (power supply - 3 V) / 0.02 A
Voltage (3-wire)	> maximum output signal / 1 mA

5.4 Voltage supply
Power supply
The permissible power supply depends on the corresponding output signal.

Output signal	Power supply
4 ... 20 mA (2-wire)	10 ...30 V DC
0 ... 20 mA (3-wire)	10 ...30 V DC
0 ... 10 V DC	14 ... 30 V DC
0 ... 5 V DC	10 ...30 V DC

5.5 Reference conditions (per IEC 61298-1)
Temperature: 15 ... 25 °C (59 ... 77 °F)
Atmospheric pressure: 860 ... 1,060 mbar (12.5 ... 15.4 psi)

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Humidity: 45 ... 75 % r. h.
Power supply: 24 V DC
Mounting position: calibrated in vertical mounting position with process connection facing downwards.

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5.6 Accuracy

Accuracy at room temperature

- Standard: ≤ ±0.5 % of span
- Option: ≤ ±0.25 % of span [1)]

1) Only for measuring ranges ≥ 0.25 bar

Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2).
Calibrated in vertical mounting position with process connection facing downwards.

Non-linearity (per IEC 61298-2)
≤ ±0.2 % of span BFSL

Non-repeatability
≤ ±0.1 % of span

Temperature error in rated temperature range
Nominal temperatur: 0 ... 80 °C

Mean temperature coefficient of zero point
- ≤ 0.2 % of span/10 K
- < 0.4 % of span/10 K [1)]

1) Applies to measuring ranges ≤ 0,25 bar

Mean temperature coefficient of span
- ≤ 0.2 % of span/10 K

Settling time
≤ 2 ms

Long-term drift
≤ ±0.2 % of span/year

Adjustment of zero point and span [1)]
Adjustment is made using potentiometers inside the instrument.
Zero point ± 5 %
Span ± 5 %
1) Adjustment not possible for cable outlet with ingress protection IP68

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5.7 Operating conditions

Ingress protection (per IEC 60529)
The ingress protection depends on the type of electrical connection.

Electrical connection	Ingress protection
Angular connector DIN 175301-803 A	IP 65
Circular connector M12 x 1 (4-pin)	IP 67
Cable outlet	
Standard	IP 67
Option	IP 68 [1)]

1) Adjustability of zero point and span not possible

The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.

Vibration resistance
- Process connections without cooling element
  20 g (IEC 60068-2-6, under resonance)
- Process connections with cooling element
  10 g (IEC 60068-2-6, under resonance)

Shock resistance
- Process connections without cooling element
  1,000 g (IEC 60068-2-27, mechanical)
- Process connections with cooling element
  400 g (IEC 60068-2-27, mechanical)

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Permissible temperature ranges

Process connections without cooling element	
Ambient	–20 ... +80 °C
Storage	–40 ... +100 °C
Medium [1]	
■ Standard	–30 ... +100 °C
■ Option	–30 ... +125 °C

Process connections with cooling element	
Ambient	–20 ... +80 °C
Storage	–40 ... +100 °C
Medium [1] [2]	–20 ... +150 °C

1) For measuring ranges 0 ... 400 and 0 ... 600 bar, the medium temperature is limited to –30 ... +70 °C.
2) In vertical mounting position the measuring point must be insulated in order to avoid influences of heat radiation and convection.

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5.8 Electrical protective measures

Short-circuit resistance
S_+ vs. U_-

Reverse polarity protection
U_+ vs. U_-

Overvoltage protection
36 V DC

Insulation voltage
500 V DC with NEC class 02 voltage supply (low voltage and low current max. 100 VA even under fault conditions).

5.9 Process connections

Process connection	Available measuring ranges
G ½ B flush	0 ... 2.5 to 0 ... 600 bar
G 1 B flush	0 ... 0.1 to 0 ... 1.6 bar
Hygienic G 1 B flush	0 ... 0.1 to 0 ... 25 bar

5.10 Materials

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Wetted parts
- Stainless steel
- For sealing materials see table

Process connection	Standard	Option
without cooling element	NBR	■ FPM/FKM ■ EPDM
with cooling element	FPM/FKM	EPDM
Hygienic	EPDM	-

Non-wetted parts
Internal system fill fluid
- Standard: Synthetic oil
- Option: Food-compatible system fill fluid per FDA 21 CFR 178.3750

CE conformity
- Pressure equipment directive
- RoHS directive
- EMC directive [1], EN 61326 emission (group 1, class B) and interference immunity (industrial application)

1) The existence of strong electromagnetic fields in a frequency range of < 2.7 GHz can result in increased measuring errors up to 1 %. Do not install the instruments in the vicinity of strong electromagnetic sources of interference (e.g. transmitting devices, radio equipment), or use sheath current fi lters where applicable.

For further specifications, please refer to the technical datasheet, available at www.burkert.com, or contact your local Bürkert sales office.

6. Specifications of the transmitter 8325-L, < 0,4 bar

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Specifications		
Measuring range	See product label	
Vacuum tightness	Yes	
Output signal		
Output signal	see product label	
Load	4 ... 20 mA (2-wire)	≤ (power supply - 10 V) / 0.02 A
	20 ... 4 mA (2-wire)	
	0 ... 20 mA (3-wire)	≤ (power supply - 3 V) / 0.02 A
	0 ... 10 V DC (3-wire)	> max. output signal / 1 mA
	0 ... 5 V DC (3-wire)	
	1 ... 5 V DC (3-wire)	
	0.5 ... 4.5 V DC ratiometric (3-wire)	
Voltage supply		
Power supply	see product label The power supply for the transmitter must be made via an energy-limited electrical circuit in accordance with section 9.3 of UL/EN/IEC 61010-1, or an LPS per UL/EN/IEC 60950-1, or class 2 in accordance with UL1310/UL1585 (NEC or CEC). The voltage supply must be suitable for operation above 2,000 m should the transmitter be used at this altitude.	
Accuracy specifications		
Non-linearity (per IEC 61298-2)	≤ ±0.2 % of span BFSL	
Non-repeatability	≤ ±0.1 % of span	
Accuracy at reference conditions	see product label	
Adjustability of zero point and span	±5 %	

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Specifications		
Temperature error at 0 ... 80 °C	Mean temperature coefficient of zero point	Measuring ranges ≤ 0.25 bar: ≤ 0.4 % of span/10 K Measuring ranges > 0.25 bar ≤ 0.2 % of span/10 K
	Mean temperature coefficient of span:	≤ 0.2 % of span/10 K
Long-term stability at reference conditions	≤ ±0.2 % of span/year	
Reference conditions		
Ambient temperature	15 ... 25 °C	
Atmospheric pressure	860 ... 1,060 mbar	
Humidity	45 ... 75 % r. h.	
Power supply	24 V DC	
Mounting position	Calibrated in vertical mounting position with process connection facing downwards.	
Time response		
Settling time	≤ 1 ms ≤ 2 ms for output signal 0.5…4.5 V DC ratiometric and measuring ranges < 400 mbar, 10 psi	
Operating conditions		
Ingress protection	The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.	
	Angular connector DIN 175301-803 A	IP65
	Angular connector DIN 175301-803 with ½ NPT	IP65
	Circular connector M12 x 1 (4-pin)	IP67
	½ NPT conduit male, with cable outlet	IP67
	Cable outlet (standard)	IP67
	Cable outlet (not adjustable)	IP68
	Cable outlet (adjustable)	IP68

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6. Specifications of the transmitter 8325-L, < 0,4 bar

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Specifications		
Shock resistance	1,000 g (IEC 60068-2-27, mechanical)	
Vibration resistance	20 g (per IEC 60068-2-6)	
Permissible temperature ranges	Medium: –30 ... +100 °C (option: –40 ... +125 °C)	
	Ambient: –20 ... +80 °C	
	Storage: –40 ... +100 °C	
Pollution degree	max. 3	
Humidity	≤ 80 % r. h. (non-condensing)	
Electrical protective measures		
Short-circuit resistance	S+ vs. U–	
Reverse polarity protection	U+ vs. U–	
Insulation voltage	500 V DC	
Materials		
Wetted parts	Stainless steel	
Non-wetted parts	Case	Stainless steel
	Internal pressure transmission medium	Synthetic oil Instruments with a measuring range of > 25 bar relative do not contain any pressure transmission medium (dry measuring cell).
	Clamping nut	PA
	Angular connector	PA
	O-rings at the clamping nut	NBR
	Flat gasket	VMQ
CE conformity		
Pressure equipment directive		

7. Design and function

EN

Specifications
RoHS directive
EMC directive, EN 61326 emission (group 1, class B) and interference immunity (industrial application) The existence of strong electromagnetic fields in a frequency range of < 2.7 GHz can result in increased measuring errors up to 1 %. Do not install the instruments in the vicinity of strong electromagnetic sources of interference (e.g. transmitting devices, radio equipment), or use sheath current filters where applicable.

For further specifications, please refer to the technical datasheet, available at www.burkert.com, or contact your local Bürkert sales office.

7. Design and function

7.1 Description

The prevailing pressure is measured at the sensor element through the deformation of a diaphragm. By supplying power, this deformation of the diaphragm is converted into an electrical signal. The output signal from the transmitter is amplified and standardised. The output signal is proportional to the measured pressure.

7.2 Scope of delivery

- Pressure transmitter
- Test report
- Certificates (option)
- Mating connector (option)

Cross-check scope of delivery with delivery note.

8. Transport, packaging and storage

8.1 Transport

Check the transmitter for any damage that may have been caused during transportation.
Obvious damage must be reported immediately.

8.2 Packaging

Do not remove packaging until just before mounting.
Keep the packaging as it will provide optimum protection during transport (e.g. change in installation site, sending for repair).

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8.3 Storage

Permissible conditions at the place of storage:

	Storage temperature	Humidity
Pressure transmitter 8325-S, ≥ 0,4 bar	–40 ... +70 °C	67 % relative humidity (no condensation)
Pressure transmitter 8325-F, flush diaphragm	–40 ... +100 °C	45 ... 75 % relative humidity
Pressure transmitter 8325-L, < 0,4 bar	–40 ... +100 °C	45 ... 75 % relative humidity (no condensation)

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Avoid exposure to the following factors:

- Direct sunlight or proximity to hot objects
- Mechanical vibration, mechanical shock (putting it down hard)
- Soot, vapour, dust and corrosive gases
- Humid or wet environment
- Potentially explosive environments, flammable atmospheres

Store the transmitter in its original packaging in a location that fulfils the conditions listed above.
If the original packaging is not available, pack and store the instrument as described below:
1. Place the protection cap on the process connection
2. Place the instrument, along with shock-absorbent material, in the packaging.

WARNING!
Before storing the instrument (following operation), remove any residual media.
This is of particular importance if the medium is hazardous to health, e.g. caustic, toxic, carcinogenic, radioactive, etc.

9. Commissioning, operation

EN

CAUTION!
Prior to commissioning, the transmitter must be subjected to a visual inspection.
- Leaking fluid is indicative of damage.
- For the transmitter 8325-F, flush diaphragm, check the diaphragm of the process connection for any damage.
- Only use the transmitter if it is in perfect condition with respect to safety.

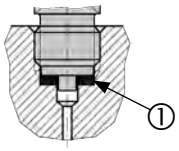
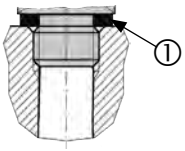
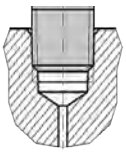
9.1 Mechanical mounting

Only use original accessories. For accessories, please contact your local Bürkert sales office.

9.1.1 Sealing the process connection

WARNING!
Risk of burns!
The cooling element can be hot as a result of previous use. Allow the cooling element to cool beforehand.

The sealing faces at the instrument have to be undamaged and clean.

Parallel threads		**Tapered threads**
 per EN 837	 per DIN 3852-E	 NPT, R and PT
Correct sealing of the process connections with parallel threads at the sealing face ① must be made using suitable flat gaskets, sealing rings or profile sealings.		For sealing process connections with tapered threads, the sealing must be made in the threads using additional sealing material, e.g. PTFE tape (EN 837-2).

For further information on seals, please contact your local Bürkert sales office.

9.1.2 Installing the instrument

WARNING!
Risk of burns!
The cooling element can be hot as a result of previous use. Allow the cooling element to cool beforehand.

EN

- Remove the protection cap not until shortly before installation.
- Ensure that the diaphragm of the process connection is not damaged during installation.
- When screwing the instrument in, the force required to do this must not be applied through the case or the cap ring, but only through the spanner flats provided for this purpose and using a suitable tool.
- When there is a cooling element, the lower hexagon should be used for tightening (see figure “Mounting a cooling element”)
- The correct torque depends on the dimensions of the process connection and the gasket used (form/material).
- When screwing in, do not cross the threads.
- For heat dissipation, the cooling element must not be insulated.
- If the instrument is mounted upside down, it must be ensured that no water can collect on the electrical connection and on the cap ring. Water can block the pressure compensation diaphragm.

For information on tapped holes and welding sockets, please contact your local Bürkert sales office.

Type 8325 without cooling element

Mounting a cooling element

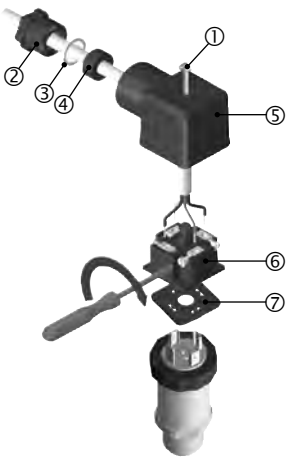
9.1.3 Fitting a DIN 175301-803 angular connector

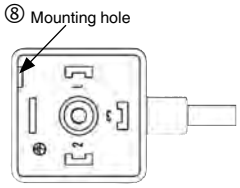
EN

1. Loosen the screw (1).
2. Loosen the cable gland (2).
3. Pull the angled socket (5) + (6) away from the instrument.

CAUTION
Improper mounting
The seal of the angle housing will be damaged.
Do not try to push the terminal block (6) out using the screw hole (1) or the cable gland (2).

4. Via the mounting hole (8), lever the terminal block (6) out of the case (5).
5. Slide the cable with the appropriate cable outer diameter (see chpt. 9.2.2 Connection diagrams) through the cable gland (2), ring (3), sealing (4) and the case (5).
6. Connect the cable ends to the connection terminals on the terminal block (6) in accordance with the pin assignment (see chpt. 9.2.2 Connection diagrams for the pin assignment).
7. Press the terminal block (6) into the case (5).
8. Tighten the cable gland (2) around the cable. Make sure that the cable gland and seal are not damaged and that they are assembled correctly in order to ensure ingress protection.
9. Place the flat, square gasket (7) over the transmitter‘s connection pins.
10. Slide the assembled angled socket (5) + (6) onto the transmitter‘s connection pins.
11. Using the screw (1), screw the angled socket to the transmitter, hand-tight.





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9.2 Electrical mounting

Only use original accessories. For original accessories, please contact your local Bürkert sales office.

EN

WARNING!
The instrument shield does not act as a protective conductor for protection of personnel, rather as a functional ground in order to shield the instrument from electromagnetic fields.

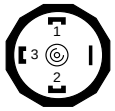
9.2.1 Connection assembly

- For instruments with ratiometric or voltage output, a shielded cable must be used. The cable shield must be grounded, if the cable is longer than 30 m or leaves the building.
- Use a cable with suitable characteristics for the particular operating conditions.
- For cable variants, strain relief must be employed.
- Cable with ventilation tubes must be vented to atmosphere.
- The instrument must be earthed via the process connection!
- Select a cable diameter that matches the cable gland of the plug. Make sure that the cable gland of the mounted plug has a tight fit and that the seals are present and undamaged. Tighten the threaded connection and check that the seal is correctly seated, in order to ensure a tight seal.
- For cable outlets, make sure that no moisture enters at the cable end.
- Pin assignment: see test report and chapter 9.2.2 Connection diagrams.

9.2.2 Connection diagrams

EN

Angular connector DIN 175301-803 A

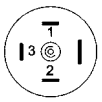


	2-wire	3-wire
U+	1	1
U-	2	2
S+	-	3
Shield (option)	4	4

Heavy-duty connector

	2-wire	3-wire
U+	1	1
U-	2	2
S+	-	3
Shield	Case	Case

Angular connector DIN 175301-803 C

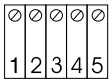


	2-wire	3-wire
U+	1	1
U-	2	2
S+	-	3
Shield (option)	4	4

Circular connector M12 x 1 (4-pin)

	2-wire	3-wire
U+	1	1
U-	3	3
S+	-	4
Shield (option)	Case	Case

Field case



	2-wire	3-wire
U+	1	1
U-	2	2
S+	-	3
Shield	5	5

Wire cross-section max. 1.5 mm^2
Cable diameter 6 ... 8 mm

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EN

Cable outlet for transmitter 8325-S, ≥ 0,4 bar	2-wire	3-wire
U+	brown (BN)	brown (BN)
U-	blue (BU)	blue (BU)
S+	-	black (BK)
Shield [1]	grey (GY)	grey (GY)

1) With cable outlet IP 67 and cable outlet ½ NPT conduit the shield is optional.

Cable outlet for transmitter 8325-L, < 0,4 bar and for transmitter 8325-F, flush diaphragm	2-wire	3-wire
U+	brown (BN)	brown (BN)
U-	green (GN)	green (GN)
S+	-	white (WH)
Shield [1]	grey (GY)	grey (GY)

Mating connector with moulded cable	2-wire	3-wire
U+	brown (BN)	brown (BN)
U-	blue (BU)	blue (BU)
S+	-	black (BK)

Cable outlet (US code)	2-wire	3-wire
U+	red (RD)	red (RD)
U-	black (BK)	black (BK)
S+	-	white (WH)
Shield [1]	grey (GY)	grey (GY)

Wire cross-section 3 x 0.5 mm²
Cable diameter 6.8 mm
Cable lengths 1.5 m, 3 m, 5 m, 10 m, 15 m

U+	Positive power supply terminal
U-	Negative power supply terminal
S+	Analogue output

Other pin assignements on request.

Electrical protective measures
The electrical protective measures are not valid for ratiometric output signals.

- Short-circuit resistance: S+ vs. U-
- Reverse polarity protection: U+ vs. U-
- Resistance to overvoltages: 40 V DC
- Insulation voltage: 750 V DC

9.2.3 Setting up a voltage supply

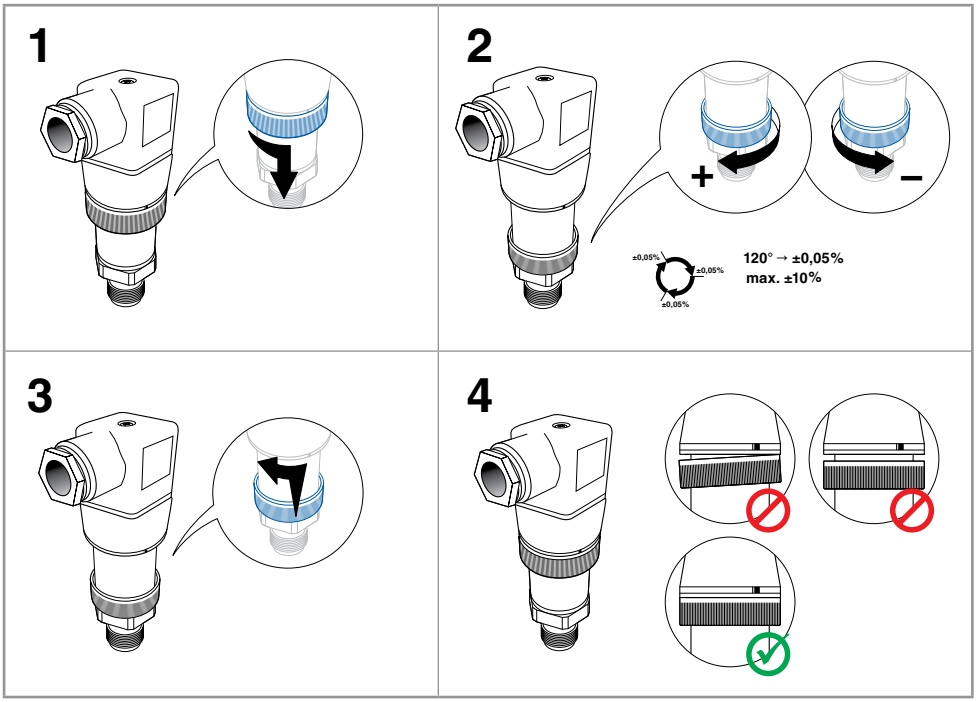
The voltage supply is made via a power supply unit or a control unit which provides the energy limitation.

The power supply for the transmitter must be made via an energy-limited electrical circuit in accordance with section 9.4 of UL/EN/IEC 61010-1, or an LPS to UL/EN/IEC 60950-1, or class 2 in accordance with UL1310/UL1585 (NEC or CEC). The power supply must be suitable for operation above 2,000 m should the transmitter be used at this altitude.

10. Zero point adjustment and span

EN

10.1 Zero point adjustement for the transmitter 8325-S, ≥ 0,4 bar



10.2 Zero point adjustment and span of transmitter 8325-F, flush diaphragm and of transmitter 8325-L, < 0,4 bar

Only adjust the span-setting potentiometer if calibration equipment is available which has at least three times the accuracy of the transmitter.

EN

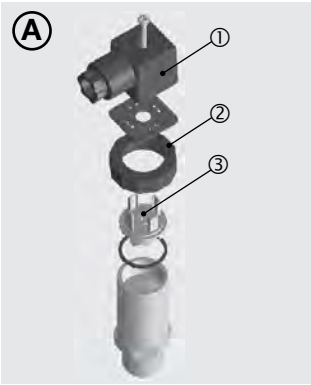
10.3 Preparation (figure A)
To gain access to the potentiometers, open the instrument as follows:
- Disconnect the electrical connection (1) from the instrument.
- Remove the clamping nut (2).
- Carefully pull the instrument connector (3) from the instrument.
- Connect the instrument connector (3) to the power supply and a display unit (e.g. ammeter, voltmeter) according to the connection diagram.

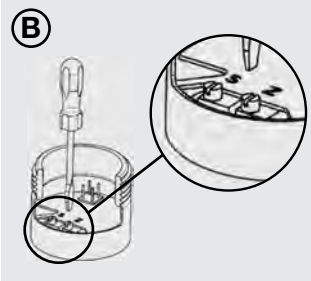
10.4 Adjustment of zero point (figure B)
- Go to the start of the measuring range.
- Using potentiometer "Z", adjust the minimum output signal (e.g. 4 mA)

10.5 Setting the span (figure B)
- Go to the end of the measuring range.
- Using potentiometer "S", adjust the maximum output signal (e.g. 20 mA)
- Check the zero point and if there is any deviation, re-adjust it.
- Repeat the procedure until the zero point and the span are set correctly.

10.6 Finish the adjustment (figure A) (only transmitter 8325-F, flush diaphragm and transmitter 8325-L, < 0,4 bar)
- Disconnect the instrument connector (3) from the power supply and the display unit.
- Carefully push the instrument connector (3) onto the instrument, without damaging the wires or the seals. The seals must be clean and undamaged in order to guarantee the given ingress protection.
- Tighten the clamping nut (2).

After the adjustment, check that the system is functioning correctly.
Recommended recalibration cycle: 1 year





11. Maintenance and cleaning

EN

11.1 Maintenance
This transmitter is maintenance-free.
Repairs must only be carried out by the manufacturer.

11.2 Cleaning

CAUTION!
- Before cleaning, correctly disconnect the transmitter from the pressure supply, switch it off and disconnect it from the voltage supply.
- Do not use any pointed or hard objects for cleaning, as they may damage the diaphragm of the process connection.
- Clean the instrument with a moist cloth.
- Electrical connections must not come into contact with moisture.
- Wash or clean the dismounted instrument before returning it, in order to protect persons and the environment from exposure to residual media.
- Residual media in dismounted instruments can result in a risk to persons, the environment and equipment. Take sufficient precautionary measures.

CAUTION!
Unsuitable cleaning agents
Cleaning with unsuitable cleaning agents may damage the instrument and the product label.
- Do not use any aggressive cleaning agents.
- Do not use any hard or pointed objects.
- Do not use any abrasive cloths or sponges.

Suitable cleaning agents
- Water
- Conventional dishwashing detergent

Cleaning the instrument
1. Depressurise and de-energise the transmitter.
2. Wipe the instrument surface using a soft, damp cloth.

For information on returning the instrument see chapter 13.2 Return.

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12. Faults

EN

CAUTION!
Physical injuries and damage to property and the environment
If faults cannot be eliminated by means of the listed measures, the transmitter must be taken out of operation immediately.

- Ensure that pressure or signal is no longer present and protect against accidental commissioning.
- Contact the manufacturer.
- If a return is needed, please follow the instructions given in chapter 13.2 Return.

WARNING!
Physical injuries and damage to property and the environment caused by hazardous media
Upon contact with hazardous media (e.g. oxygen, acetylene, flammable or toxic substances), harmful media (e.g. corrosive, toxic, carcinogenic, radioactive), and also with refrigeration plants and compressors, there is a danger of physical injuries and damage to property and the environment.

- Wash or clean the dismounted instrument before returning it, in order to protect persons and the environment from exposure to residual media.
- Should a failure occur, aggressive media with extremely high temperature and under high pressure or vacuum may be present at the instrument.
- For these media, in addition to all standard regulations, the appropriate existing codes or regulations must also be followed.
- Wear the requisite protective equipment.

In the event of any faults, first check whether the transmitter is mounted correctly, mechanically and electrically.

EN

Faults	Causes	Measures
Plastic has faded	UV radiation	No measures required Discolouration is harmless
No output signal	Cable break	Check the continuity or check the through drilling, and if necessary exchange the cable
	No/wrong power supply	Correct the power supply
No/wrong output signal	Wiring error	Rectify the wiring
Constant output signal upon change in pressure	Mechanical overload caused by overpressure	Replace instrument; if it fails repeatedly, contact the manufacturer
Signal span too small/drops	Mechanical overload caused by overpressure	Replace instrument; if it fails repeatedly, contact the manufacturer
	Diaphragm damaged, e.g. due to impacts, abrasive/aggressive medium; corrosion at diaphragm or process connection; transmission medium missing	Replace instrument; if it fails repeatedly, contact the manufacturer
	Sealing/sealing face damaged/soiled, sealing does not have a tight fit, threads jammed	Clean the sealing/sealing face, replace sealing if applicable
Signal span varies/inaccurate	EMC interference sources in the environment (e.g. frequency converter)	Shield instrument; cable shield; Remove source of interference
	Operating temperature too high/low	Decrease/increase the temperature and observe the permissible temperatures
	Instrument not grounded	Grounded the instrument
	Strongly varying pressure of the process medium	Damping; consult the manufacturer
Deviating zero point signal	Operating temperature too high/low	Decrease/increase the temperature and observe the permissible temperatures
	Other mounting position	Adjust the zero point
	Overpressure limit exceeded	Reduce the pressure
	Overload safety exceeded	Observe the permissible overload safety

CAUTION!
If faults cannot be eliminated by means of the measures listed above, shut down the transmitter immediately, ensure that pressure and/or signal are no longer present, secure the instrument from being put back into operation inadvertently.
In this case, contact the manufacturer. If a return is needed, please follow the instructions given in chapter 13.2 Return.

EN

13. Dismounting, return and disposal

WARNING!
Residual media in dismounted transmitters can result in a risk to persons, the environment and equipment. Take sufficient precautionary measures.

13.1 Dismounting

WARNING!
Risk of burns!
Let the instrument cool down sufficiently before dismounting!
During dismounting there is a risk of dangerously hot pressure media escaping.

When removing the instrument, the force required to do this must not be applied through the case or the cap ring, but only through the spanner flats provided for this purpose and using a suitable tool (see chapter 9.1.2 Installing the instrument).

When there is a cooling element, the lower hexagon should be used for unscrewing (see chapter 9.1.2 Installing the instrument)

Only disconnect the transmitter once the system has been depressurised!

13.2 Return

WARNING!
Absolutely observe when shipping the transmitter:
All returned transmitters must be free from any kind of hazardous substances (acids, bases, solutions, etc.).

EN

When returning the instrument, use the original packaging or a suitable transport package.

Label the shipment as transport of a highly-sensitive measuring instrument in order to avoid any damage.

For information on returns, please contact your local Bürkert sales office.

13.3 Disposal

Incorrect disposal can put the environment at risk.
Dispose of instrument components and packaging materials in an environmentally compatible way and in accordance with the country-specific waste disposal regulations.

14. Accessories for the transmitter 8325-F, flush diaphragm

	Description	Article no.
	Weld-on socket for standard flush diaphragm, version G ½"	443295
	Weld-on socket for standard flush diaphragm, G 1"	444137
	Weld-on socket for hygienic flush diaphragm, G 1"	443296

15. Declaration of conformity

For the declaration of conformity please contact your local Bürkert sales office.

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