

WIKA Global

Australia	WIKI Australia Pty. Ltd. Tel.: (+61) 2-88 45 52 22 E-Mail: sales@wika.com.au
Brazil	WIKI do Brasil Ind. e Com. Ltda Tel.: (+55) 15-32 66 16 55 E-Mail: marketing@wika.com.br
China	WIKI International Trading (Shanghai) Co., Ltd. Tel.: (+86) 21 53 85 25 72 E-Mail: wikash@online.sh.cn
Germany	WIKI Alexander Wiegand GmbH Co. KG Tel.: (+49) 93 72/13 20 E-Mail: info@wika.de
India	WIKI Instruments India Pvt. Ltd. Tel.: (+91) 20/ 27 05 29 01 E-Mail: sales@wika.co.in
South Africa	WIKI Instruments (Pty.) Ltd. Tel.: (+27) 11/6 21 00 00 E-Mail: sales@wika.co.za
U.S.A.	WIKI Instrument Corporation Tel.: (+1) 770 / 5 13 82 00 E-Mail: info@wika.com

For WIKI's subsidiaries throughout the world please refer to...
Weitere WIKI-Niederlassungen weltweit finden Sie unter...
Vous trouvez l'adresse d'autres filiales de WIKI à l'échelle mondiale sous...

...www.wika.de

1604457.10 GB/D/F 08/2006
WIKI Alexander Wiegand GmbH & Co. KG
Alexander-Wiegand-Straße 30
63911 Klingenberg/Germany
Phone (+49) 93 72/132-295
Fax (+49) 93 72/132-706
E-Mail support-tronic@wika.de
www.wika.de

Operating instructions
Betriebsanleitung
Mode d'emploi

S-10 / S-11

Pressure transmitter /
Druckmessumformer /
Transmetteur de pression



S-10



S-11

WIKI

Part of your business

Contents	Page 3-15	GB
1. Important details for your information		
2. A quick overview for you		
3. Abbreviations, signs and symbols		
4. Function		
5. For your safety		
6. Packaging		
7. Starting, operation		
8. Adjustment of zero point / span		
9. Maintenance, accessories		
10. Trouble shooting		
11. Storage, disposal		

Contenu	Page 28-40	F
1. Informations importantes		
2. Aperçu rapide		
3. Explication des symboles, abréviations		
4. Fonction		
5. Pour votre sécurité		
6. Emballage		
7. Mise en service, exploitation		
8. Réglage du zéro / gain		
9. Entretien, accessoires		
10. Elimination de perturbations		
11. Stockage, mise au rebus		

Inhalt	Seite 16-27	D
1. Wichtiges zu Ihrer Information		
2. Der schnelle Überblick für Sie		
3. Zeichenerklärungen, Abkürzungen		
4. Funktion		
5. Zu Ihrer Sicherheit		
6. Verpackung		
7. Inbetriebnahme, Betrieb		
8. Einstellung Nullpunkt / Spanne		
9. Wartung, Zubehör		
10. Störbeseitigung		
11. Lagerung, Entsorgung		

Current terms and conditions apply.
Details are available on
www.wika.de / www.wika.com

Es gelten unsere aktuellen Verkaufs- und Lieferbedingungen siehe unter
www.wika.de

Toute commande est assujettie à nos conditions de ventes et de fournitures dans leur dernière version en vigueur, voir sous
www.wika.de / www.wika.com

1. Important details for your information

Read these operating instructions before installing and starting the pressure transmitter. Keep the operating instructions in a place that is accessible to all users at any time.

The following installation and operating instructions have been compiled by us with great care but it is not feasible to take all possible applications into consideration. These installation and operation instructions should meet the needs of most pressure measurement applications. If questions remain regarding a specific application, you can obtain further information:

- Via our Internet address www.wika.de / www.wika.com
- The product data sheet is designated as PE 81 01
- Contact WIKA for additional technical support (+49) 9372 / 132-295

With special model number, e.g. S-10000 or S-11000, please note specifications in the delivery note.

WIKA pressure transmitters are carefully designed and manufactured using state-of-the-art technology. Every component undergoes strict quality inspection before assembly and each instrument is fully tested prior to shipment.

Use of the product in accordance with the intended use S-10, S-11

Use the pressure transmitter to transform the pressure into an electric signal.

Knowledge required

Install and start the pressure transmitter only if you are familiar with the relevant regulations and directives of your country and if you have the qualification required. You have to be acquainted with the rules and regulations on measurement and control technology and electric circuits, since this pressure transmitter is „electrical equipment“ as defined by EN 50178. Depending on the operating conditions of your application you have to have the corresponding knowledge, e.g. of aggressive media.

2. A quick overview for you

If you want to get a quick overview, read **Chapters 3, 5, 7 and 11**. There you will get some short safety instructions and important information on your product and its starting.

Read these chapters in any case.

3. Abbreviations, signs and symbols



Warning

Potential danger of life or of severe injuries.



Warning

Potential danger of life or of severe injuries due to catapulting parts.



Caution

Potential danger of burns due to hot surfaces.

2-wire

Two connection lines are intended for the voltage supply. The supply current is the measurement signal.

3-wire

Two connection lines are intended for the voltage supply. One connection line is intended for the measurement signal.

FDA

Food and Drug Administration

CSA

Canadian Standard Association



Notice, important information, malfunction.



The product complies with the applicable European directives.



The product was tested and certified by CSA International. It complies with the applicable Canadian standards on safety. Certificate No.: 1360840

4. Function

S-10: Pressure connection with internal diaphragm (standard version).

S-11: Pressure connection with flush diaphragm or highly viscous or solids entrained media which might clog the pressure port.

Function: The pressure prevailing within the application is transformed into a standardised electrical signal through the deflection of the diaphragm, which acts on the sensor element with the power supply fed to the transmitter. This electric signal changes in proportion to the pressure and can be evaluated correspondingly.

5. For your safety

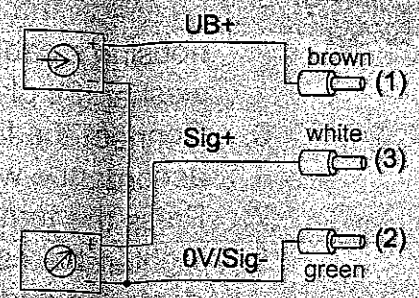
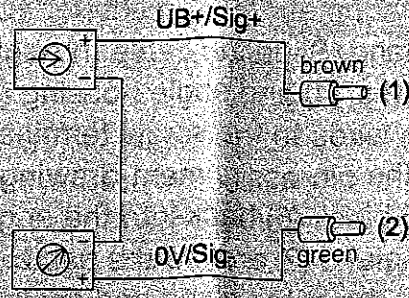


Warning

- Select the appropriate pressure transmitter with regard to scale range, performance and specific measurement conditions prior to installing and starting the instrument.

Flying leads with 1.5 m of vented cable, conductor cross section up to max. 0.5 mm² / AWG 20 with end splices, conductor outer diameter 6.8 mm

IP 67 - Order code: DL
 IP 68, zero/span not adjustable - Order code: EM



Legend:



Power supply

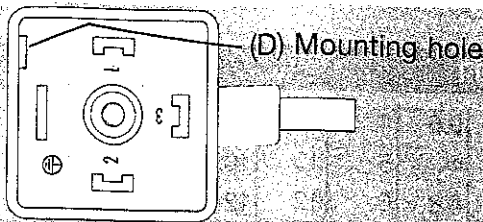


Load (e.g. display)

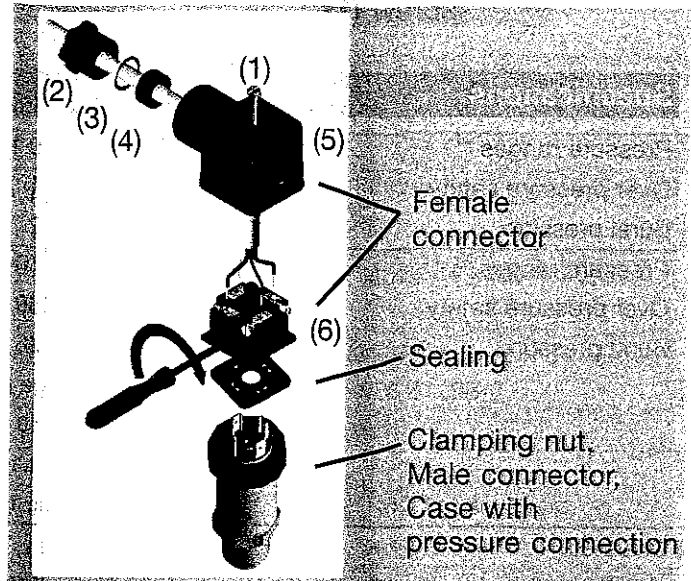
UB+/Sig+ Positive supply / measurement connection

OV/Sig- Negative supply / measurement connection

Assembly of L-connector DIN EN 175301-803



1. Loosen the screw (1).
2. Loosen the cable gland (2).
3. Pull the angle housing (5), with the terminal block (6) inside, away from the instrument.
4. Using the head of a small screwdriver in the mounting hole (D), lever the terminal block (6) out of the angle housing (5). In order not to damage the sealing of the angle housing, do not try to push the terminal block (6) out using the screw hole (1) or the cable gland (2).





5. Ensure that the conductor outer diameter you select is matched to the angle housing's cable gland. Slide the cable through the cable gland nut (2), washer (3), gland seal (4) and angle housing (5).
6. Connect the flying leads to the screw terminals on the terminal block (6) in accordance with the pin-assignment drawing.
7. Press the terminal block (6) back into the angle housing (5).
8. Tighten the cable gland (2) around the cable. Make sure that the sealing isn't damaged and that the cable gland and seals are assembled correctly in order to ensure ingress protection.
9. Place the flat, square gasket over the connection pins on the top of the instrument housing.
10. Slide the terminal block (6) onto the connection pins.
11. Secure the angle housing (5) and terminal block (6) to the instrument with the screw (1).

Specifications

Model S-10 / S-11

Pressure ranges ^{*)}	bar	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10
Over pressure safety	bar	1	1.5	2	2	4	5	10	10	17	35	35
Burst pressure	bar	2	2	2.4	2.4	4.8	6	12	12	20.5	42	42
Pressure ranges ^{*)}	bar	16	25	40	60	100	160	250	400	600	1000 ¹⁾	
Over pressure safety	bar	80	50	80	120	200	320	500	800	1200	1500	
Burst pressure	bar	96	96	400	550	800	1000	1200	1700 ²⁾	2400 ²⁾	3000	

{Vacuum, gauge pressure, compound range, absolute pressure are available}

¹⁾ Only Model S-10

²⁾ For model S-11: the value specified in the table applies only when sealing is realised with the sealing ring underneath the hex. Otherwise max. 1500 bar applies.

Materials		
■ Wetted parts		(other materials see WIKA diaphragm seal program)
➤ Model S-10		Stainless steel
➤ Model S-11		Stainless steel (Hastelloy C4)
		O-ring: NBR ³⁾ {FPM/FKM or EPDM}

Specifications

Model S-10/S-11

■ Case		Stainless steel
Internal transmission fluid ⁴⁾		Synthetic oil {Halocarbon oil for oxygen applications} {Listed by FDA for Food & Beverage}
		³⁾ O-ring made of FPM/FKM {EPDM} for Model S-11 with integrated cooling element.
		⁴⁾ Not for S-10 with pressure ranges > 25 bar
Power supply U _B	U _B in DC V	10 < U _B ≤ 30 (14 ... 30 with signal output 0 ... 10 V)
Signal output and maximum load R _A	R _A in Ohm	4 ... 20 mA, 2-wire: R _A ≤ (U _B - 10 V) / 0.02 A 0 ... 20 mA, 3-wire: R _A ≤ (U _B - 3 V) / 0.02 A {0 ... 5 V, 3-wire} R _A > 5000 {0 ... 10 V, 3-wire} R _A > 10000 {other signal output on request}
Adjustability zero/span	%	± 10 using potentiometers inside the instrument
Response time (10 ... 90 %)	ms	≤ 1 (≤ 10 ms at medium temperatures below -30 °C for pressure ranges up to 25 bar or with flush diaphragm)
Dielectric strength	DC V	500 ⁵⁾
		⁵⁾ Use NEC Class 02 power supply (low voltage and low current max. 100 VA even under fault conditions).
Accuracy	% of span	≤ 0.25 {0.125} ⁶⁾ (BFSL)
	% of span	≤ 0.5 {0.25} ^{6) 7)}
		⁶⁾ Accuracy { } for pressure ranges ≥ 0.25 bar
		⁷⁾ Including non-linearity, hysteresis, non-repeatability, zero point and full scale error (corresponds to error of measurement per IEC 61298-2)
		Adjusted in vertical mounting position with lower pressure connection.
Non-linearity	% of span	≤ 0.2 (BFSL) according to IEC 61298-2
1-year stability	% of span	≤ 0.2 (at reference conditions)
Permissible temperature of		
■ Medium ^{8) *)}		-30 ... +100 °C {-40 ... +125 °C} -22 ... +212 °F {-40 ... +257 °F}
		S-11, cooling element: -20 ... +150 °C S-11, cooling element: -4 ... +302 °F
■ Ambience ⁸⁾		-20 ... +80 °C -4 ... +176 °F
		S-11, cooling element: -20 ... +80 °C S-11, cooling element: -4 ... +176 °F
■ Storage ⁸⁾		-40 ... +100 °C -40 ... +212 °F
		S-11, cooling element: -20 ... +100 °C S-11, cooling element: -4 ... +212 °F

Specifications

Model S-10 / S-11

	8) Also complies with EN 50178, Tab. 7, Operation (C) 4K4H, Storage (D) 1K4, Transport (E) 2K3	
Compensated temp range		0 ... +80 °C 32 ... +176 °F
Temperature coefficients within compensated temp range		
■ Mean TC of zero	% of span	≤ 0.2 / 10 K (< 0.4 for pressure range < 250 mbar)
■ Mean TC of range	% of span	≤ 0.2 / 10 K
CE- conformity		89/336/EEC interference emission and immunity see EN 61 326, interference emission limit class A and B 97/23/EC Pressure equipment directive (Module H)
Shock resistance	g	1000 according to IEC 60068-2-27 (mechanical shock)
Vibration resistance	g	20 according to IEC 60068-2-6 (vibration under resonance)
Wiring protection		Protected against reverse polarity and short circuiting on the instrument side
Mass	kg	Approx. 0.2
	kg	Approx. 0.3 with option accuracy 0.25% of span due to longer case

*) In an oxygen version model S-11 is not available. In an oxygen version model S-10 is only available in gauge pressure ranges ≥ 0.25 bar with media temperatures between -20 ... +60 °C / -4 ... +140 °F and using stainless steel or Elgiloy® wetted parts.

{ } Items in curved brackets are optional extras for additional price.



When designing your plant, take into account that the stated values (e.g. burst pressure, over pressure safety) apply depending on the material, thread and sealing element used.

Functional test



The output signal must be proportional to the pressure. If not, this might point to a damage of the diaphragm. In that case refer to chapter 10 „Troubleshooting“.



Warning

- Open pressure connections only after the system is without pressure!
- Observe the ambient and working conditions outlined in section 7 „Technical data“.
- Please make sure that the pressure transmitter is only used within the overload threshold limit at all times!



Caution

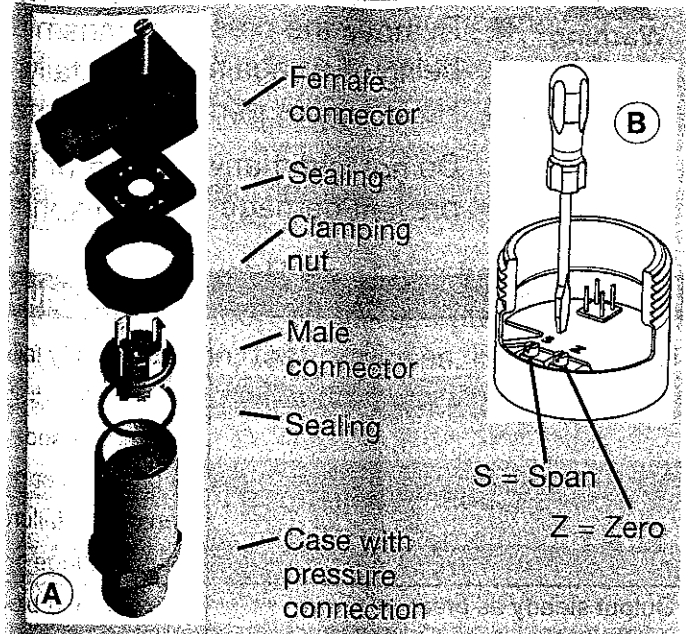
When touching the pressure transmitter, keep in mind that the surfaces of the instrument components might get hot during operation.

8. Adjustment of zero point / span (only for pressure transmitter with clamping nut)



We do not recommend to adjust the span potentiometer. It is used for adjustment ex factory and should not be adjusted by you unless you have adequate calibration equipment at your disposal (at least three times more accurate than the instrument being tested).

- Make sure wires are not cut or pinched during disassembly and reassembly of the connector.
- Remove the female connector. Open the pressure transmitter by detaching the clamping nut (see Fig. (A)). Carefully remove the male connector from the case.
- Adjust the zero point (Z) (see Fig. (B)) by generating the lower limit of the pressure range.
- Adjust the span (S) by generating the higher limit of the pressure range.
- Check the zero point.
- If the zero point is incorrect, repeat procedure as required.
- Reassemble the instrument carefully. Make sure all sealings and o-rings are not damaged and correctly installed to assure the rated moisture ingress protection.



Recommended recalibration cycle: 1 year

For further information (+49) 9372/132-295

9. Maintenance, accessories



- WIKA pressure transmitters require no maintenance.
- Have repairs performed by the manufacturer only.

Accessories: For details about the accessories (e. g. connectors), please refer to WIKA's price list, WIKA's product catalog on CD or or contact our sales department.

10. Trouble shooting



- Open pressure connections only after the system is without pressure!



- Take precautions with regard to remaining media in removed pressure transmitters. Remaining media in the pressure port may be hazardous or toxic!
- Remove the pressure transmitter from service and mark it to prevent it from being used again accidentally, if it becomes damaged or unsafe for operation.
- Have repairs performed by the manufacturer only.



Do not insert any pointed or hard objects into the pressure port for cleaning to prevent damage to the diaphragm of the pressure connection.

Problem	Possible cause	Remedy
No output	Power supply failure	Check power supply
	Open wiring	Check continuity
	Wiring reversed	Correct polarity
	No pressure or port blocked	Check pressure port
	Transmitter failure due to wrong supply voltage or power surge	Replace transmitter
Output steady as pressure changes	Pressure port blocked	Check pressure port
	Transmitter over-pressurized	Replace transmitter
	Transmitter failure due to wrong supply voltage or power surge	Replace Transmitter
Full span output low	Supply voltage too low	Check supply voltage
	Load impedance too high or too low	Adjust load or supply voltage
	Transmitter over-pressurized	Recalibrate Transmitter Replace Transmitter *)

Problem	Possible cause	Remedy
Zero signal too low or too high	Transmitter over-pressurized	Recalibrate Transmitter Replace Transmitter *)
Non-linear output	Transmitter over-pressurized	Replace Transmitter

*) Test the system for proper operation after adjustments are made. An excessive change in the output signal that cannot be corrected by calibration indicates possible transmitter damage. This may cause the output to be non-linear, requiring transmitter replacement.

If the problem persists, contact our sales department.

USA, Canada: If the problem continues, contact WIKA or an authorized agent for assistance. If the pressure transmitter must be returned obtain an RMA (return material authorization) number and shipping instructions from the place of purchase. Be sure to include detailed information about the problem. Pressure transmitters received by WIKA without a valid RMA number will not be accepted.

Process material certificate (Contamination declaration for returned goods)

Purge / clean dismantled instruments before returning them.

Service of instruments can only take place safely when a Product Return Form has been submitted and fully filled-in. This Return Form contains information on **all** materials with which the instrument has come into contact, either through installation, test purposes, or cleaning. You can find the Product Return Form on our internet site (www.wika.de / www.wika.com).

11. Storage, disposal



Warning

When storing or disposing of the pressure transmitter, take precautions with regard to remaining media in removed pressure transmitters. Remaining media in the pressure port may be hazardous or toxic!

Storage



Mount the protection cap when storing the pressure transmitter in order to prevent any damage to the diaphragm (S-11).

Disposal



Dispose of instrument components and packaging materials in accordance with the respective waste treatment and disposal regulations of the region or country to which the instrument is supplied.

WIKA reserves the right to alter these technical specifications.