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Current terms and conditions apply.  
 Details are available on  
[www.wika.de](http://www.wika.de)

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Operating instructions

S-10, S-11

Pressure transmitter



S-10



S-11

**WIKAI**

Part of your business

## 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 (data sheets, instructions, etc.) via our Internet address ([www.wika.de](http://www.wika.de) / [www.wika.com](http://www.wika.com)) or contact WIKA for additional technical support (see section 7 „Starting, Operation“/Further information). The product data sheet is designated as APE S-10, APE S-11.

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 for pressure measurement.

### 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. You have to be acquainted with NEC. 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 10**. There you will get some short safety instructions and important information on your product and its starting. **Read these chapters in any case.** Get some more detailed information on this product in Chapters 4 „Function and accessories“ and 6 „Packaging“. Read Chapter 8 for „Maintenance“. In the case of failures please refer to Chapter 9.

## 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.



Notice, important information, malfunction.

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.

UB+/Sig+

Positive supply / measurement connection

OV/Sig-

Negative supply / measurement connection

FDA

Food and Drug Administration

## 4. Function and accessories

**S-10:**

Standard pressure connection.

**S-11:**

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

**Function:** With the pressure transmitter you measure the pressure of your application, which is trans-formed into an electric signal. This electric signal changes in proportion to the pressure and can be evaluated correspondingly.

**Accessories:** For details about the accessories, please refer to WIKA's price list, WIKA's product catalog on CD or WIKA's web site [www.wika.de](http://www.wika.de). Please refer to our data sheet "Pressure gauge sealing washers AC 09.08" in WIKA's product catalog Pressure and Temperature Measurement or our web site [www.wika.de](http://www.wika.de) for details about sealing washers.

If the following marks are on the product label the following applies ...



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



Power supply



Load (e.g. display)

## 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.
- Observe the relevant national regulations (e.g.: NEC, CEC) and observe the applicable standards and directives for special applications (e.g. with dangerous media such as oxygen, acetylene, flammable gases or liquids and toxic gases or liquids and with refrigeration plants or compressors).  
**If you do not observe the appropriate regulations, serious injuries and/or damage can occur!**

- **Open pressure connections only after the system is without pressure!**
- Please make sure that the pressure transmitter is only used within overload threshold limit at all times.
- Observe the ambient and working conditions outlined in section 7 „Technical data“.
- Ensure that the pressure transmitter is only operated in accordance with the provisions, i.e. as described in the following instructions.
- Do not interfere with or change the pressure transmitter in any other way than described in these operating instructions.
- 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.
- **Take precautions with regard to remaining media in removed pressure transmitter. Remaining media in the pressure port may be hazardous or toxic!**
- Have repairs performed by the manufacturer only.
- Open circuit before removing cover.

Information about material consistency against corrosion and diffusion can be found in our WIKA-Handbook, 'Pressure and Temperature Measurement'.

## 6. Packaging



- Inspect the pressure transmitter for possible damage during transportation. Should there be any obvious damage, inform the transport company and WIKA without delay.
- Keep the packaging, as it offers optimal protection during transportation (e.g. changing installation location, shipment for repair).
- Keep the protection cap of the pressure connection thread and the diaphragm for later storage or transport.

In order to protect the diaphragm, the pressure connection of the instrument S-11 is provided with a special protection cap.



- Remove this protection cap only just before installing the pressure transmitter in order to prevent any damage to the diaphragm or the thread.
- Install carefully to avoid damaging the flush diaphragm and threads.
- Mount the protection cap when removing and transporting the instrument.

## 7. Starting, operation

### Has everything been supplied?



- Check the scope of supply:
- Completely assembled pressure transmitters; with flush version S-11 including pre-assembled sealings and protection cap.



Required tools: wrench (flats 27), screw driver

**Diaphragm test for your safety:** It is necessary that before starting the pressure transmitter you test the diaphragm, as this is a **safety-relevant component**.



### Warning

- Pay attention to any liquid leaking out, for this points to a diaphragm damage.
- Check the diaphragm visually for any damage.
- Use the pressure transmitter only if the diaphragm is undamaged.
- Use the pressure transmitter only if it is in a faultless condition as far as the safety-relevant features are concerned.

## 7. Starting operation

USA

### Installation



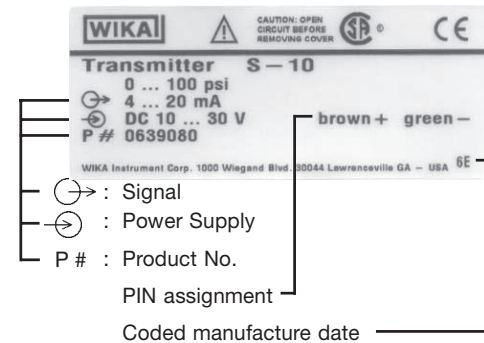
- Remove the protection cap only just before installation and absolutely avoid any damage to the diaphragm during installation as well.
- Ensure that the cable diameter you select fits to the cable gland of the connector. Ensure that the cable gland of the mounted connector is positioned correctly and that the sealings are available and undamaged. Tighten the threaded connection and check the correct position of the sealings in order to ensure the ingress protection.
- When mounting the instrument, ensure that the sealing faces of the instrument and the measuring point are clean and undamaged.
- Screw in or unscrew the instrument only via the flats using a suitable tool and the prescribed torque. Do not use the case as working surface for screwing in or unscrewing the instrument.
- When screwing the transmitter in, ensure that the threads are not jammed.
- Connect the instrument to earth via the pressure connection.



For Model S-10 you have to provide for a sealing element; exceptions are instruments with self-sealing threads (e.g. NPT thread). For Model S-11 the sealing ring is included in delivery.

max. 50 Nm

### Product label (example)



For tapped holes and welding sockets please see **Technical Information IN 00.14** for download at [www.wika.de](http://www.wika.de) -Service

## 7. Starting operation

USA

### Wiring

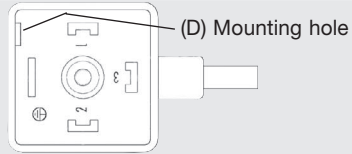
Ingress protection per IEC 60529 (The ingress protection classes specified only apply while the pressure transmitter is connected with female connectors that provide the corresponding ingress protection). Please make sure that the ends of cables with flying leads do not allow any ingress of moisture.

	2-wire	3-wire
L-Connector, DIN EN 175301-803, Form A for conductor cross section up to max. 1.5 mm <sup>2</sup> , conductor outer diameter 6 to 8 mm (ship approval: 10 to 14 mm), IP 65 Order code: A4 and G (ship approval)		
Circular connector M 12x1, IP 67 Order code: M4		
Flying leads with 1.5 m of vented cable, conductor cross section up to max. 0.5 mm <sup>2</sup> / 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		

## 7. Starting, operation

USA

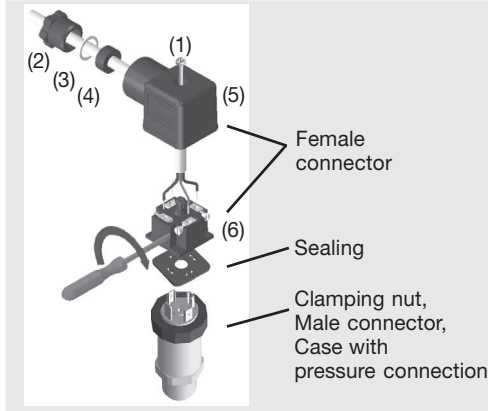
### Assembly of L-connector DIN EN 175301-803



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).



## 7. Starting, operation

USA

### Specifications

#### Model S-10 / S-11

Pressure ranges	psi	50 INWC	100 INWC	5	10	15	25	30	60
Over pressure safety	psi	14.5	29	29	58	72	145	145	240
Burst pressure	psi	29	35	35	69	87	170	170	290
Pressure ranges	psi	100	200	300	500	600	1000	1500	
Over pressure safety	psi	500	1160	1160	1160	1160	1740	2900	
Burst pressure	psi	600	1390	1390	5800	5800	7970	11,600	
Pressure ranges	psi	2000	3000	5000	8000	10000 <sup>1)</sup>	15000 <sup>1)</sup>		
Over pressure safety	psi	4600	7200	11,600	17,400	17,400	21,750		
Burst pressure	psi	14,500	17,400	24,650 <sup>2)</sup>	34,800 <sup>2)</sup>	34,800	43,500		

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

<sup>1)</sup> Only Model S-10.

<sup>2)</sup> 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. 21,000 psi applies.

### Materials

■ Wetted parts	(other materials see WIKA diaphragm seal program)
➤ Model S-10 <sup>*</sup> )	Stainless steel
➤ Model S-11	Stainless steel {Hastelloy C4}
	O-ring: NBR <sup>1)</sup> {FKM/FPM or EPDM}
■ Case	Stainless steel
Internal transmission fluid <sup>2)</sup>	Synthetic oil {Halocarbon oil for oxygen applications}
	{Listed by FDA for Food & Beverage}

<sup>1)</sup> O-ring made of FKM/FPM {EPDM} for Model S-11 with integrated cooling element.

<sup>2)</sup> Not for Model S-10 with pressure ranges > 300 PSI

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 $R_A \leq (U_B - 10 \text{ V}) / 0.02 \text{ A}$ 0 ... 20 mA, 3-wire $R_A \leq (U_B - 3 \text{ V}) / 0.02 \text{ A}$ {0 ... 5 V, 3-wire} $R_A > 5,000$ {0 ... 10 V, 3-wire} $R_A > 10,000$ {other signal outputs available}
Adjustability zero/span	%	± 10 using potentiometers inside the instrument
Response time (10 ... 90 %)	ms	≤ 1 (≤ 10 ms at media temperatures below -22°F (-30°C) for ranges < 300 PSI or with flush diaphragm process connection)

Specifications		Model S-10 / S-11	
Dielectric strength	DC V	500 <sup>3)</sup>	
		<sup>3)</sup> Use NEC Class 02 power supply (low voltage and low current max. 100 VA even under fault conditions)	
Accuracy	% of span	$\leq 0.25$ {0.125} <sup>4)</sup> (BFSL)	
	% of span	$\leq 0.5$ {0.25} <sup>4)</sup> <sup>5)</sup>	
		<sup>5)</sup> Accuracy { } is available for pressure ranges $\geq 100$ INWC	
		<sup>7)</sup> 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	$\leq 0.2$	(BFSL) according to IEC 61298-2
1-year stability	% of span	$\leq 0.2$	(at reference conditions)
Permissible temperature of			
	■ Medium <sup>6) *</sup>	-22 ... +212 °F {-40 ... +257 °F}	-30 ... +100 °C {-40 ... +125 °C}
■ Ambience <sup>6)</sup>		S-11, cooling element: -4 ... +302 °F	S-11, cooling element: -20 ... +150 °C
		-4 ... +176 °F	-20 ... +80 °C
■ Storage <sup>6)</sup>		S-11, cooling element: -4 ... +176 °F	S-11, cooling element: -20 ... +80 °C
		-40 ... +212 °F	-40 ... +100 °C
		S-11, cooling element: -4 ... +212 °F	S-11, cooling element: -20 ... +100 °C
		<sup>6)</sup> Also complies with EN 50178, Tab. 7, Operation (C) 4K4H, Storage (D) 1K4, Transport (E) 2K3	
Compensated temp range		+32 ... +176 °F	0 ... +80 °C
Temperature coefficients (TC) within compensated temp range			
■ Mean TC of zero	% of span	$\leq 0.2 / 10$ K (< 0.4 for pressure range < 100 INWC)	
■ Mean TC of range	% of span	$\leq 0.2 / 10$ K	
CE- conformity		89/336/EEC interference emission and immunity see EN 61 326, interference emission limit class A and B 97/23/EG Pressure equipment directive	
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)	

Specifications		Model S-10 / S-11	
Wiring protection			Protected against reverse polarity and short circuiting on the instrument side
Mass	lb		Approx. 0.4

<sup>\*)</sup> In an oxygen version model S-11 is not available. In an oxygen version model S-10 is only available in gauge pressure ranges  $\geq 100$  INWC with media temperatures between -20 ... +60 °C / -4 ... +140 °F and using stainless steel or Elgiloy<sup>®</sup> 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



- 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 only used within the overload threshold limit at all times.



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

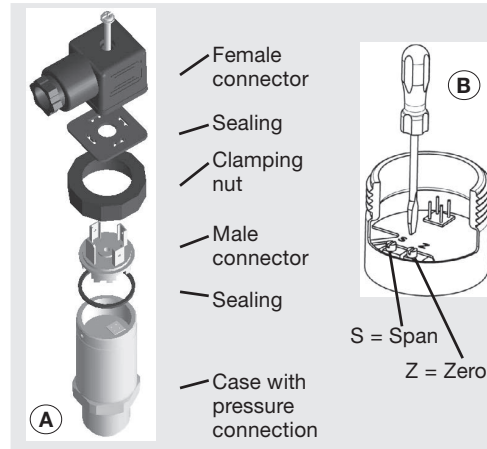


The output signal must be proportional to the pressure. If not, this might point to a damage of the diaphragm. In that case refer to chapter 9 „Troubleshooting“.

**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  (770) 513 8200

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**8. Maintenance, spare parts**

WIKA pressure transmitters require no maintenance!

**Warning**

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

**Warning**

- 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.

**Spare parts:** For spare part details refer to our current stock price list, the CD catalog or contact our sales department.



**9. Trouble shooting**

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 *)
Zero signal too low or too high	Transmitter over-pressurized	Recalibrate Transmitter Replace Transmitter *)
	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](http://www.wika.de) / [www.wika.com](http://www.wika.com)).

**10. Storage, disposal****Warning  
Storage****Disposal**

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!

Mount the protection cap when storing the pressure transmitter in order to prevent any damage to the diaphragm.

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.



# WIKA Global

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