

OBSOLETE

Operating instructions

IS-10, IS-11

Pressure Transmitter for hazardous areas **USA**

Intrinsically Safe



IS-10



IS-11

WIKA Instrument Corporation
1000 Wiegand Boulevard
Lawrenceville, GA 30043
Phone (770) 513 8200
Fax (770) 338 5118
E-Mail info@wika.com
www.wika.com

2454803_04_GB 02/2005



Part of your business

IS-10, IS-11

Pressure transmitter for hazardous areas
Intrinsically Safe



IS-10



IS-11

WIKA Instrument Corporation

2454803.04 GB 02/2005
1000 Wiegand Boulevard
Lawrenceville, GA 30043
Phone (770) 513 8200
Fax (770) 338 5118
E-Mail info@wika.com
www.wika.com



Part of your business

	Page
1. Important details for your information	3
2. A quick overview for you	3
3. Abbreviations, signs and symbols	4
4. Function and accessories	4-5
5. For your safety	5-6
6. Packaging	6
7. Starting, operation	7-11
8. Maintenance, spare parts	12
9. Trouble shooting	13
10. Storage, disposal	14
11. Control drawing Fm, CSA	15
WIKA Global	

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.com/www.wika.de) or contact WIKA for additional technical support (see section 7 „Starting, Operation“/Further information). The product data sheet is designated as APE IS-10.

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 IS-1*:

Use the intrinsically safe pressure transmitter for pressure measurement in hazardous areas.

Certificate FM/CSA approval ratings:

Intrinsically Safe with entity approval for Class I, II and III Division 1, Groups A, B, C, D, E, F, G and Class I, Zone 0, AEx ia IIC
 Dust-ignitionproof for Class II and III, Division 1, Groups E, F, and G
 Non-incendive for Class I Division 2 Groups A, B, C and D
 FM standards according to FMRC 3600, 3610, 3611, 3810 (including supplement #1), ISA-S12.0.01, IEC60529 (including amendment #1)
 CSA Standard C22.2 No. 0-M1991 / 94-M1991 / 142-M1987 / 157-M1992
 UL 50, Eleventh Edition / UL 508, Seventeenth Edition / UL 913, Fifth Edition

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 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.



Power supply



Load (e.g. display)



With a line transformer you realise the mandatory galvanic isolation of the voltage and current supply between hazardous and non-hazardous areas and ensure the safety connection data.

2-wire Two connection lines are intended for the voltage supply.

The supply current is the measurement signal.

UB+/Sig+ Positive supply / measurement connection

OV/Sig- Negative supply / measurement connection

CSA Canadian Standard Association

FM Factory Mutual

4. Function and accessories

IS-10: Standard pressure connection (intrinsically safe).

IS-11: Pressure connection with flush diaphragm (intrinsically safe) for highly viscous or solids entrained media which might clog the pressure port.

For use in hazardous areas a certificate confirming the type and examination in accordance with the national regulations must be available for all components of the electrical equipment.

In **North America** the regulations are worked out and examinations are carried out by FM and other authorities.



In **Canada** the regulations are worked out and examinations are carried out by CSA and other authorities.



Function

With the pressure transmitter you measure the pressure of your application, which is transformed 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. Please refer to our data sheet "Pressure gauge sealing washers AM 09.08" in WIKA's product catalog Pressure and Temperature Measurement or our web site www.wika.de for details about sealing washers.

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!**
- Observe the overpressure safety of the respective pressure range!
- 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 (e. g. body tube, process connection, electrical connection or wiring) or unsafe for operation.

**Warning**

- **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.

Special advice for hazardous environments**Warning**

- Consider the details given in the respective specifications for explosion hazard use of the country concerned (e.g.: NEC, CEC).
If you do not observe these stipulations, serious injuries and/or damage can occur.
- The electrical connection provided on the transmitter should be used as originally supplied and not bypassed or modified (other than cable or wire length where appropriate). Improper installation or modification of the electrical connection will void the intrinsically safe hazardous area approval rating.
- Protect the diaphragm against any contact with abrasive substances and pressure peaks and do not touch it with tools. If you damage the diaphragm, no intrinsic safety can be guaranteed (FM, CSA)!

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).

In order to protect the diaphragm, the pressure connection of the instrument IS-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.
- 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 IS-11 including pre-assembled sealings and protection cap.



Required tools: wrench (flats 27 or 41), 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.

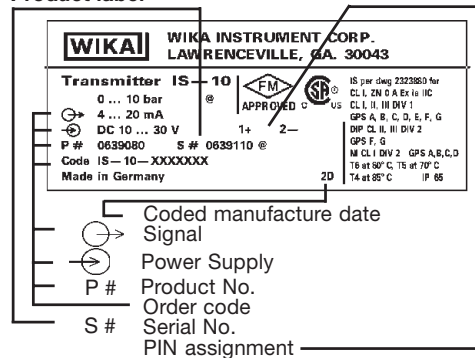
Installation

- 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.



For tapped holes and welding sockets please see **Technical Information IN 00.14** for download at www.wika.de - Service

Product label



Specification

Model IS-10 / IS-11

Supply Voltage and output	DC V	10 ... 30
Output and load limitation	mA	4 ... 20 R _A [Ohm] ≤ U _B [V] - 10 V / 0.02 A
Power consumption		
4 ... 20 mA, 2-wire	mA	maximum 30
Entity parameters		
Maximum input voltage V _{max}	DC V	30
Maximum input current I _{max}	mA	100
Maximum power input P _i	Watt	1
Internal capacitance C _i	nF	22
With optional cable C _i	nF	22 + 0.06 per foot
Inductivity L _i	mH	0.1
With optional cable L _i	mH	0.1 + 0.61 per foot
At ambient temperature		
■ T4		85 °C
■ T5		70 °C
■ T6		60 °C

Specification

Model IS-10 / IS-11

Accuracy	% of span	≤ 0.25 (BFSL)
Repeatability	% of span	≤ 0.05
Hysteresis	% of span	≤ 0.1
1 year stability	% of span	≤ 0.2 (under reference conditions)

Wiring

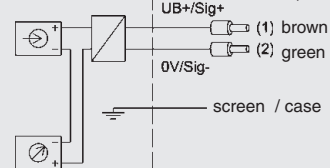
Ingress protection per IEC 60529 (The ingress protection classes specified only apply while the pressure transmitter is connected with contact boxes that provide the corresponding ingress protection).

Please make sure that the ends of cables with flying leads do not allow any ingress of moisture.

If no line transformer, intrinsically power supply necessary.

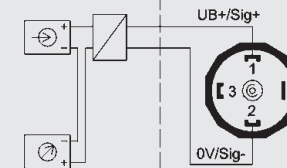
Flying leads, conductor cross section up to max. 0.5 mm²/AWG 20 with end splices, conductor outer diameter 6.8 mm, IP67 / zero/span not adjustable, IP68 / zero/span adjustable, IP68

Non hazardous area Hazardous (classified) area



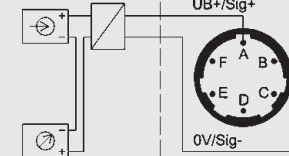
L-Connector, DIN EN 175301-803, Form A, for conductor cross section up to max. 1.5 mm², conductor outer diameter 6 to 8 mm (ship approval: 10 to 14 mm), IP 65

Non hazardous area Hazardous (classified) area



Bayonet-connector, IP 67

Non hazardous area Hazardous (classified) area



Functional test**Warning**

- Open pressure connections only after the system is without pressure!
- Observe the ambient and working conditions outlined in section 7 „Technical data.
- Observe the overpressure safety of the respective pressure range!

**Caution**

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“.

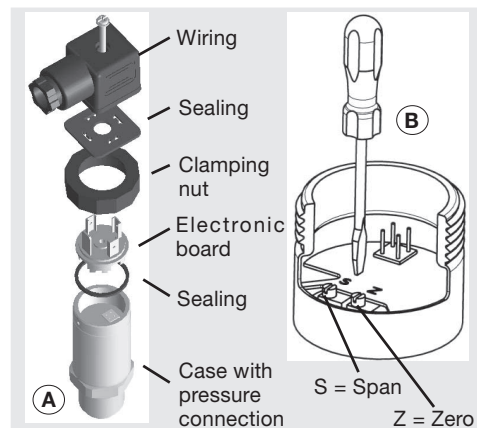
Adjustment of zero point / span

(only for pressure transmitter with clamping nut)

- Open the pressure transmitter by detaching the clamping nut (see Fig.(A))
- Adjust the zero point (**Z**) in pressureless state (see Fig.(B)) by generating the lower limit of the pressure range and adjusting the zero offset.
- Adjust the span (**S**) using a pressure standard with adequate accuracy by generating the higher limit of the pressure range and adjusting the span.
Pressure standard with adequate accuracy means with an accuracy that is at least 3x more accurate than the accuracy indicated for the instrument.
- Check the zero point.
- If the zero point is incorrect, repeat procedure as required.
- Close the pressure transmitter carefully. Make sure that the sealings are not damaged and check their correct position in order to ensure the ingress protection.

Recommended recalibration cycle: 1 year

IS-10 and IS-11 pressure transmitters include user accessible internal zero and span adjustment potentiometers. If calibration is required follow the calibration procedure below. Be sure to follow all hazardous area safety regulations when servicing intrinsically safe instruments.

**Calibration of IS-10 and IS-11 pressure transmitters**

(when supplied with a removable clamping nut)

Remove the electrical connection if present and clamping nut. Carefully pull the connector plate or wire connector assembly away from the transmitter body. Attach a meter and power supply to the connector plate, being sure to observe the correct polarity. For gauge ranges the zero potentiometer can be adjusted to produce a null output when no pressure is applied. Span adjustment requires the use of a reference pressure source. Compound and absolute pressure ranges require a vacuum and pressure source. When calibration is complete, reassemble connector or cable, taking care not to pinch the wires between the case and connector plate or retaining ring.



For further information (770) 513 8200

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

*) For transmitters with non accessible adjustment potentiometers, or instruments that cannot be recalibrated using the zero and span potentiometers, adjusting the controller or display device can usually compensate for small changes or drifts in the output signal. 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.

10. 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.

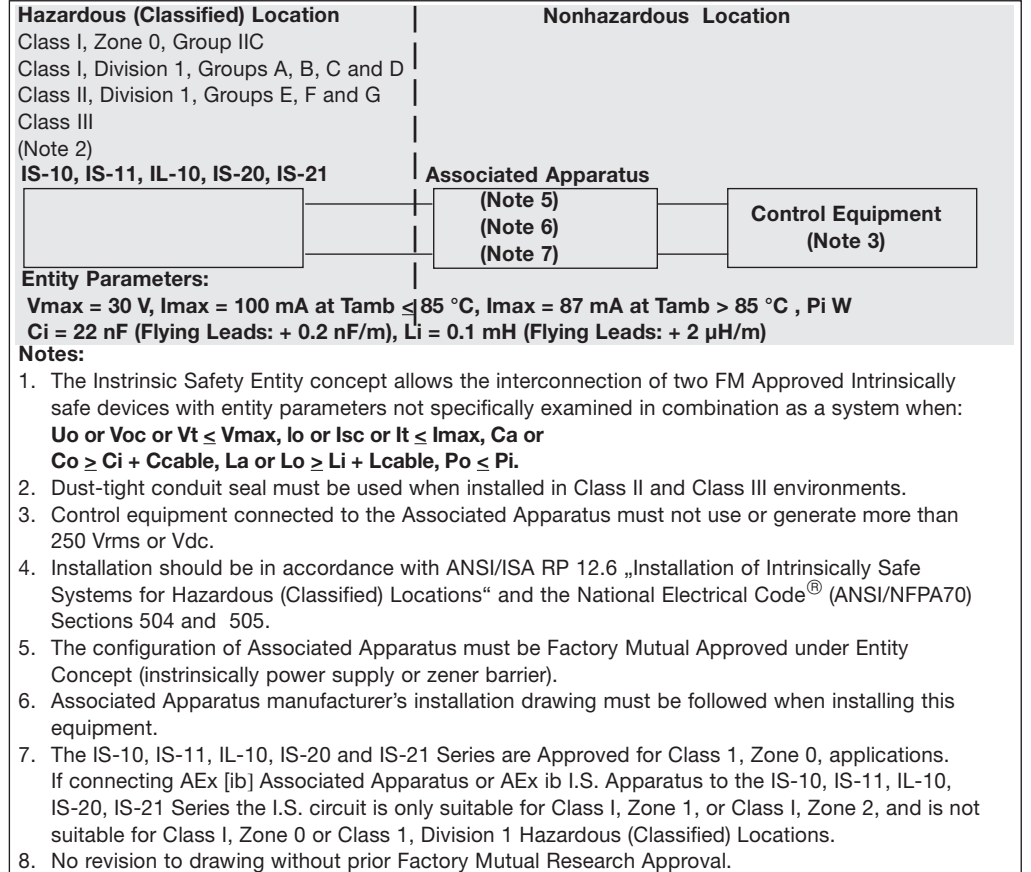
Disposal

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.

11. Control Drawing (FM, CSA)

Control drawing S-No. 2323880.03



WIKA Global

Argentina	WIKА Argentina S.A. Tel.: (+54) 11/47 30 18 00 E-Mail: info@wika.com.ar
Australia	WIKА Australia Pty. Ltd. Tel.: (+61) 2-88 45 52 22 E-Mail: sales@wika.com.au
Austria	WIKА-Messgerätevertrieb Ursula Wiegand GmbH & Co. KG Tel.: (+43) 1/8 69 16 31 E-Mail: info@wika.at
Benelux Netherlands	WIKА Benelux Tel.: (+31) 4 75/53 55 00 E-Mail: info@wika.nl
Brazil	WIKА do Brasil Industria e Comercio Ltda Tel.: (+55) 15-32 66 16 55 E-Mail: vendas@wika.com.br
Canada	WIKА Instruments Ltd. Tel.: (+1) 780/463-7035 E-Mail: info@wika.ca
China	WIKА Alexander Wiegand GmbH Co. KG Shanghai Representative Office Tel.: (+86) 21 53 85 25 72 E-Mail: wikash@online.sh.cn
Finland	WIKА Finland Oy Tel.: (+358) 9/6 82 49 20 E-Mail: wika@wika.fi
France	WIKА Instruments s.a.r.l. Tel.: (+33) 1/34 30 84 84 E-Mail: info@wika.fr
Germany	WIKА Alexander Wiegand GmbH Co. KG Tel.: (+49) 93 72/13 20 E-Mail: info@wika.de
India	WIKА Instruments India Pvt. Ltd. Tel.: (+91) 20/ 27 05 29 01 E-Mail: sales@wika.co.in
Italy	WIKА Italiana S.r.l. Tel.: (+39) 02/9 39 70 01 E-Mail: info@wika.it
Japan	WIKА JAPAN K. K. Tel.: (+81) 3/54 39-66 73 E-Mail: t-shimane@wika.co.jp
Kazakhstan	TOO WIKА Kazakhstan Tel.: (+7) 32 72/33 08 48 E-Mail: wika-kazakhstan@nursat.kz

Korea	WIKА Korea Ltd. Tel.: (+82) 2/8 69 05 05 E-Mail: info@wika.co.kr
Malaysia	WIKА Instrumentation (M) Sdn. Bhd. Tel.: (+603) 56 36/88 58 E-Mail: info@wika.com.my
Poland	Kujawska Fabryka Manometrow KFM S.A. Tel.: (+48) 54 23 13 84 1 E-Mail: gawel@manometry.com.pl
Russia	ZAO „WIKА MERA“ Tel.: (+7) 095 - 786 21 25 E-Mail: info@wika.ru
Serbia and Montenegro	WIKА Merna Tehnika d.o.o. Tel.: (+381) 11 2763 722 E-Mail: info@wika.co.yu
Singapore	WIKА Instrumentation PTE. LTD. Tel.: (+65) 68 44 55 06 info@wika.com.sg
South Africa	WIKА Instruments (Pty.) Ltd. Tel.: (+27) 11/6 21 00 00 E-Mail: sales@wika.co.za
Spain	Instrumentos WIKА S.A. Tel.: (+34) 902 902 577 E-Mail: info@wika.es
Switzerland	Manometer AG Tel.: (+41) 41/9 19 72 72 E-Mail: info@manometer.ch
Taiwan	WIKА Instrumentation Taiwan Ltd. Tel.: (+886) 34 20 60 52 E-Mail: info@wika.com.tw
Ukraine	WIKА Pribor GmbH Tel./Fax.: +38 (0622) 63-14-52 e-mail: info@wika.donetsk.ua
United Arab Emirates	WIKА Middle East FZE Tel.: (+971) 4/883 90 90 E-Mail: wikame@emirates.net.ae
United Kingdom	WIKА Instruments Limited Tel.: (+44) 2 08/7 63 60 00 E-Mail: info@wika.co.uk
U.S.A.	WIKА Instrument Corporation Tel.: (+1) 770 / 5 13 82 00 E-Mail: info@wika.com

www.wika.com