developing solutions

FISCHER
MESS- UND REGELTECHNIK

IEC 61508
SIL

TYPE APPROVED PRODUCT
DNV
DNV.COM/AF

CE
RoHS III
COMPLIANT
UK
CA
EAC

Operating manual

DS11

Differential pressure measuring and switching device

09005104 • BA_EN_DS11 • Rev. ST4-C • 03/23

Masthead

Manufacturer: **FISCHER Mess- und Regeltechnik GmbH**

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Version history

Rev. ST4-A 04/20	Version 1 (first edition)
Rev. ST4-B 11/21	Version 2 (Correction perm. stat. operating pressure; UKCA)
Rev. ST4-C 03/23	Version 3 (Correction switching hysteresis)

Table of contents

1 Safety instructions

1.1 General

This operating manual contains basic instructions for the installation, operation and maintenance of the device that must be followed without fail. It must be read by the installer, the operator and the responsible specialist personnel before installing and commissioning the device.

This operating manual is an integral part of the product and therefore needs to be kept close to the instrument in a place that is accessible at all times to the responsible personnel.

The following sections, in particular instructions about the assembly, commissioning and maintenance, contain important information, non-observance of which could pose a threat to humans, animals, the environment and property.

The instrument described in these operating instructions is designed and manufactured in line with the state of the art and good engineering practice.

1.2 Personnel Qualification

The instrument may only be installed and commissioned by specialized personnel familiar with the installation, commissioning and operation of this product.

Specialized personnel are persons who can assess the work they have been assigned and recognize potential dangers by virtue of their specialized training, their skills and experience and their knowledge of the pertinent standards.

1.3 Risks due to Non-Observance of Safety Instructions

Non-observance of these safety instructions, the intended use of the device or the limit values given in the technical specifications can be hazardous or cause harm to persons, the environment or the plant itself.

The supplier of the equipment will not be liable for damage claims if this should happen.

1.4 Safety Instructions for the Operating Company and the Operator

The safety instructions governing correct operation of the instrument must be observed. The operating company must make them available to the installation, maintenance, inspection and operating personnel.

Dangers arising from electrical components, energy discharged by the medium, escaping medium and incorrect installation of the device must be eliminated. See the information in the applicable national and international regulations.

Please observe the information about certification and approvals in the Technical Data section.

1.5 Unauthorised Modification

Modifications of or other technical alterations to the instrument by the customer are not permitted. This also applies to replacement parts. Only the manufacturer is authorised to make any modifications or changes.

1.6 Inadmissible Modes of Operation

The operational safety of this instrument can only be guaranteed if it is used as intended. The instrument model must be suitable for the medium used in the system. The limit values given in the technical data may not be exceeded.

The manufacturer is not liable for damage resulting from improper or incorrect use.

1.7 Safe working practices for maintenance and installation work

The safety instructions given in this operating manual, any nationally applicable regulations on accident prevention and any of the operating company's internal work, operating and safety guidelines must be observed.

The operating company is responsible for ensuring that all required maintenance, inspection and installation work is carried out by qualified specialized personnel.

1.8 Pictogram explanation

⚠ DANGER

Type and source of danger

This indicates a **direct** dangerous situation that could lead to death or **serious injury** (highest danger level).

1. Avoid danger by observing the valid safety regulations.

⚠ WARNING

Type and source of danger

This indicates a **potentially** dangerous situation that could lead to death or **serious injury** (medium danger level).

1. Avoid danger by observing the valid safety regulations.

⚠ CAUTION

Type and source of danger

This indicates a **potentially** dangerous situation that could lead to slight or serious injury, damage or **environmental pollution** (low danger level).

1. Avoid danger by observing the valid safety regulations.

NOTICE

Note / advice

This indicates useful information of advice for efficient and smooth operation.

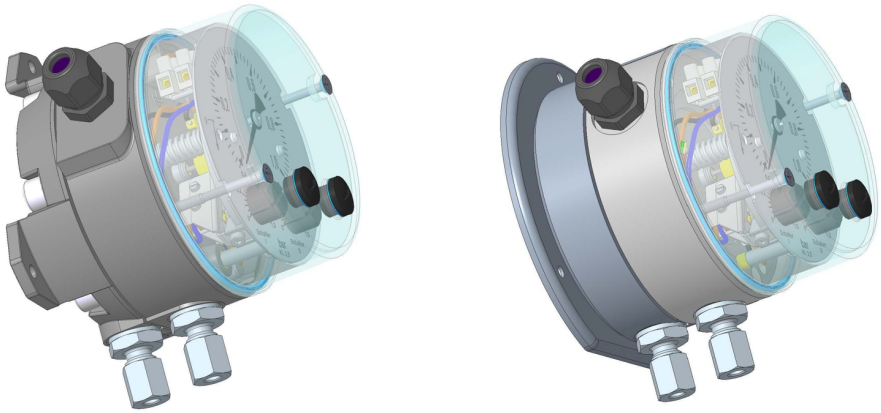
2 Product and functional description

2.1 Delivery scope

- Differential pressure measuring and switching device DS11
- Operating Manual

2.2 Equipment versions

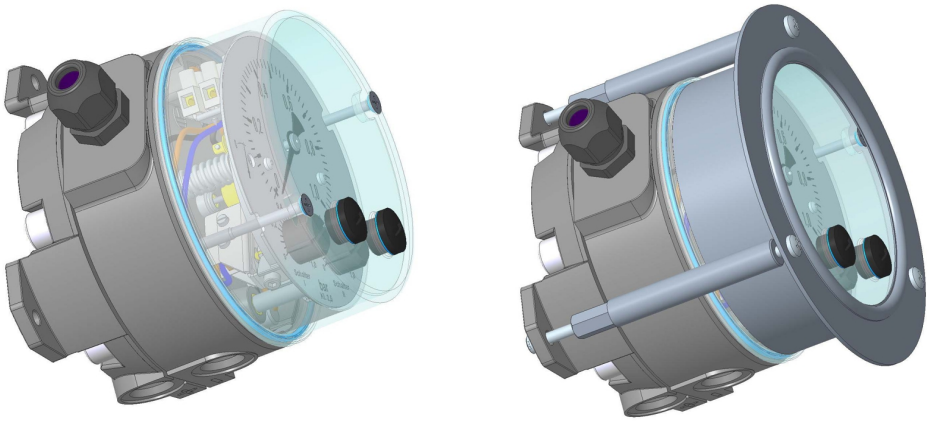
2.2.1 Pressure chamber



Aluminium **Stainless steel**

Fig. 1: Material options for the pressure chamber

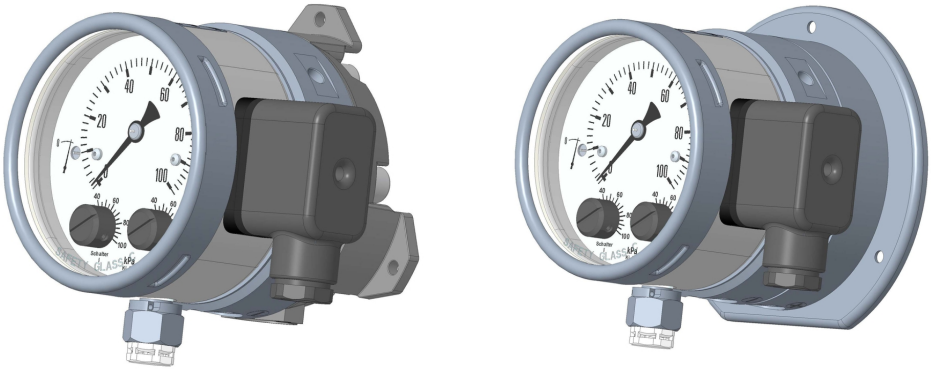
2.2.2 Assembly



Wall structure **Switch panel installation**

Fig. 2: Options for installation

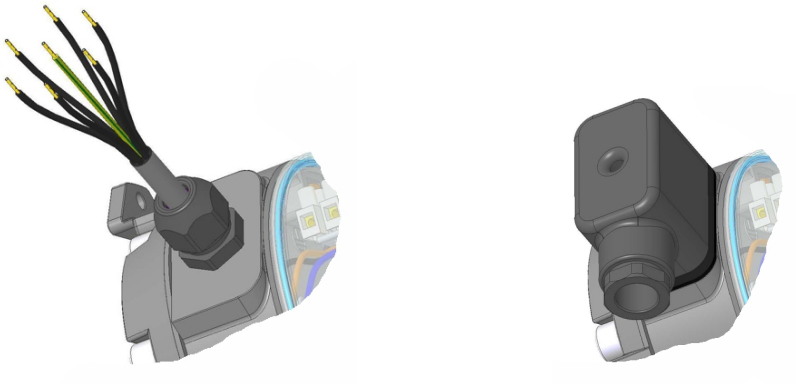
2.2.3 Protection class



Pressure chamber in aluminium **Pressure chamber in stainless steel**

Fig. 3: Protection class IP65

2.2.4 Electrical connection



Number cable **Cable socket/plug connection**

Fig. 4: Options for the electrical connection

2.2.5 Type plate

This type plate serves as an example of the information that is stated. For more information, please see the order code at the end of these instructions.

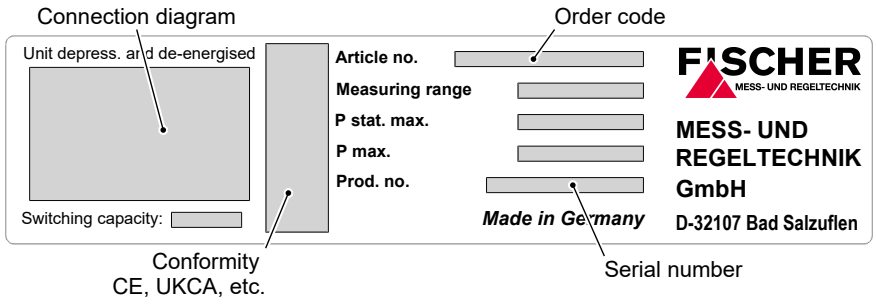


Fig. 5: Type plate

2.3 Intended use

The DS11 is a combined display and switching device for differential pressure, over and under-pressure for gaseous and fluid media. This series is ideally suited for various measuring tasks in rough environments.

Typical applications are measuring differential pressure between the supply and return in heating systems and monitoring filters and pumps.

Please contact the manufacturer before using this unit with dirty or aggressive media because the unit needs to be adapted in terms of the parts that come into contact with the media.

The device can be used as a functional safety components (SIL) as agreed with the manufacturer (see order code).

The device is to be exclusively used for the applications agreed between the manufacturer and the user.

2.4 Function diagram

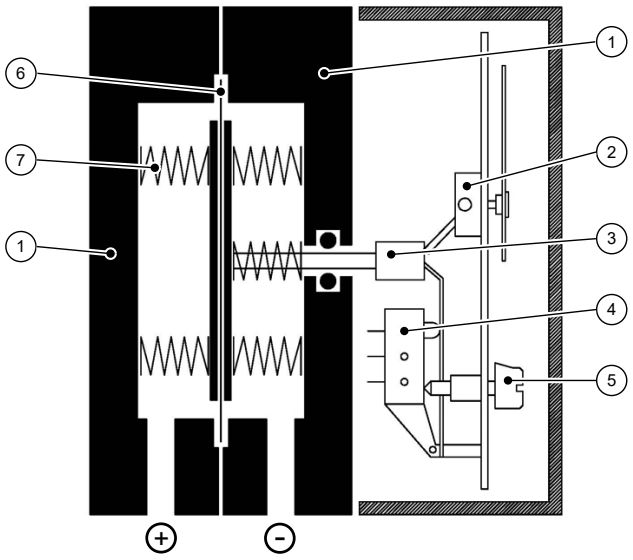


Fig. 6: Function diagram

1	Pressure chamber	**2**	Motion train
3	Tappet	**4**	Micro-switch
5	Switch point setting	**6**	Measuring diaphragm
7	Measuring springs		

2.5 Design and mode of operation

A sturdy non-sensitive diaphragm measuring unit that is suitable for measuring differential pressure, and over and under-pressure is used as a measuring system. The unit uses the same measuring principle for all three measuring applications.

In the rest position, the spring forces on both sides of the membrane are balanced out. Due to the pressure or under-pressure to be measured, a single-sided force is created on the membrane which shifts the membrane system against the measurement range springs up to compensation of the spring forces. In case of overload, the membrane supports against the metallic support surfaces.

A centrally positioned tappet transfers the movement of the membrane system on the motion train and operating elements of the micro-switches.

3 Assembly

3.1 General

The device is designed for wall mounting. Optionally, the device can also be supplied with an installed switch panel set.

NOTICE! At the factory, the device is calibrated for vertical installation and only this installation position is allowed.

To ensure safety during installation and maintenance, we recommend installing a suitable shut-off valve on the system (see accessories). A shut-off valve offers the following advantages:

- The device can be depressurized or decommissioned.
- The device can be disconnected from the power supply within the applicable system for repairs or inspections.
- A function test of the device can be performed on-site.

3.2 Process connection

- By authorized and qualified specialized personnel only.
- The pipes need to be depressurized when the instrument is being connected.
- Appropriate steps must be taken to protect the device from pressure surges.
- Check that the device is suitable for the medium being measured.
- Maximum pressures must be observed (cf. Tech. data)

The pressure connections are marked with (+) and (-) symbols on the device. When the differential pressure is measured, the higher pressure is connected to the (+) side and the lower pressure to the (-) side.

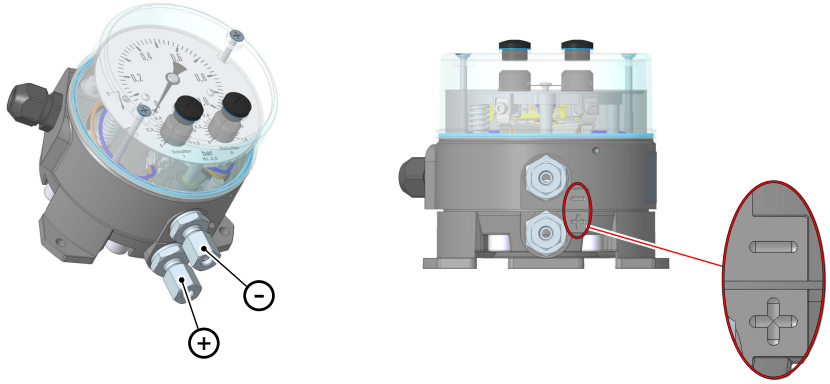


Fig. 7: Process connection

The pressure lines must be kept as short as possible and installed without any tight bends to avoid delays.

The pressure lines must be installed at an inclination so that when fluids are measured no air pockets are created or when measuring gases, no water pockets are created. If the required inclination is not reached, water or air filters must be installed at suitable places.

In the case of fluid measuring media, the pressure lines must be vented because different fluid columns in the lines will distort the measurements.

If water is used as a measuring medium, the unit must be protected against frost.

Pulsating pressure on the system side can lead to wear and functional problems. To safeguard this, we recommend installing absorption elements in the pressure line.

Fluid media

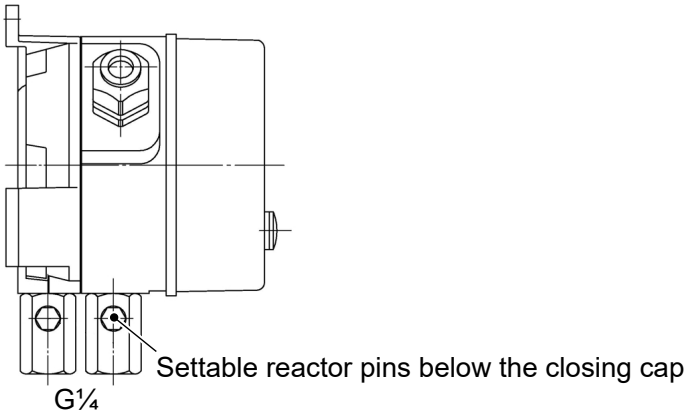


Fig. 8: Controllable damping reactor MZ40

In the operational status, the reactor pins need to be set so that the measurement display follows the pressure changes with a delay.

Gaseous media

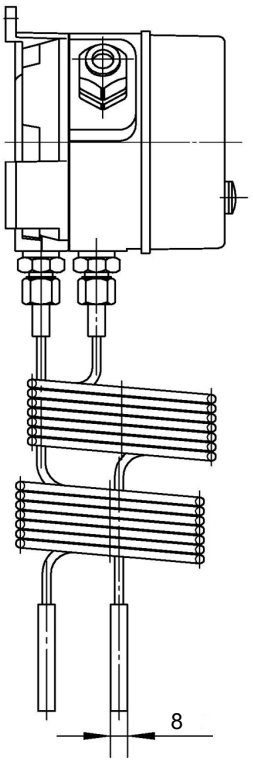


Fig. 9: Capillary throttle coils MZ401

3.3 Electrical connections

- By authorized and qualified specialized personnel only.
- When connecting the unit, the national and international electro-technical regulations must be observed.
- Disconnect the system from the mains, before electrically connecting the device.
- Install the consumer-adapted fuses.
- Do not connect the connector if strained.

The DS11 can be equipped with one or two micro-switches. Each micro-switch has a changeover contact that is wired as follows.

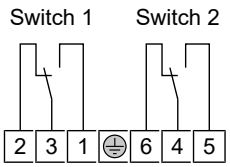


Fig. 10: Electrical connection

3.3.1 Cable socket

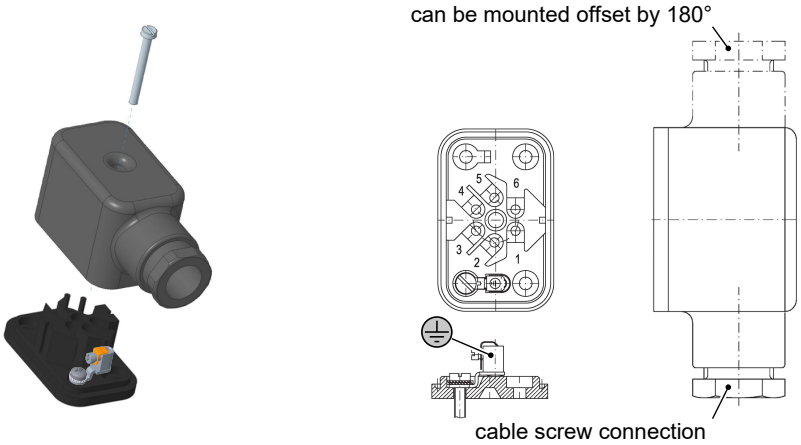


Fig. 11: Cable socket

Terminals 1 to 6	Brass	Screw terminal up to 1.5 mm²
Ground terminal	Nickel-plated brass	Screw terminal up to 2.5 mm²

Cable screw connection	Polyamide 6	M20x1.5
Sealant	EPDM	
Terminal range		7 to 13 mm

3.3.2 Plug connection

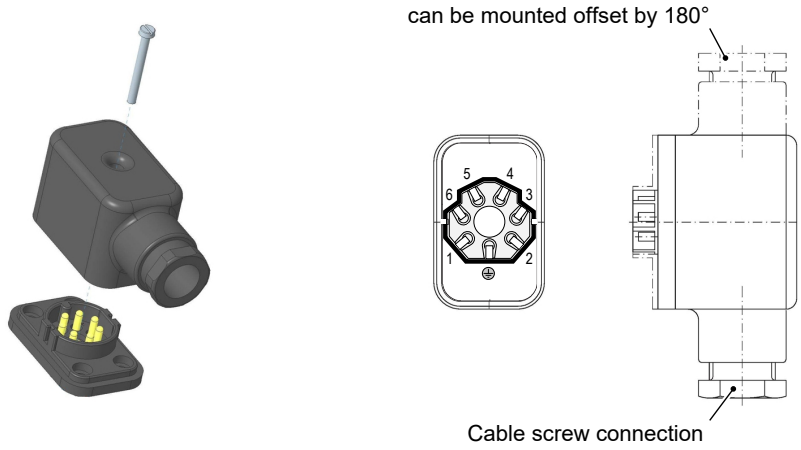


Fig. 12: Cable plug

Terminals 1 to 6	Brass	Screw terminal up to 1.5 mm^2
Ground terminal		

Cable screw connection	Polyamide 6	M20x1.5
Sealant	EPDM	
Terminal range		7 to 13 mm

3.3.3 Numbered cables

For models with numbered cables, the cable numbers correspond with the presented terminal numbers.

4 Start-up

4.1 General

All electrical supply, operating and measuring lines, and the pressure connections must have been correctly installed before commissioning. All supply lines are arranged so that there are no mechanical forces acting on the device.

Check that the pressure connections do not leak before commissioning.

4.2 Control elements

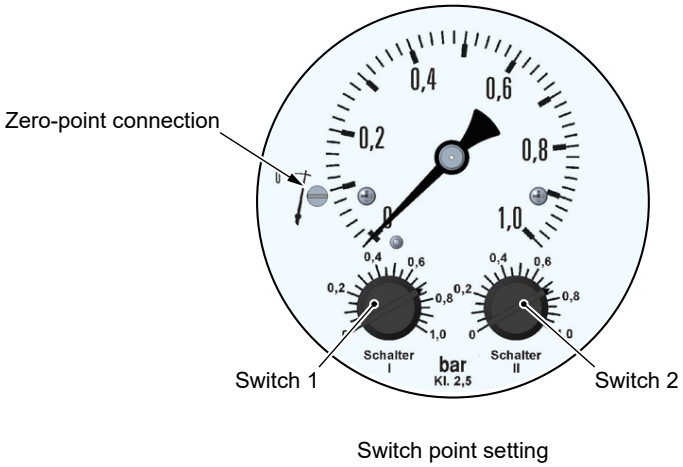
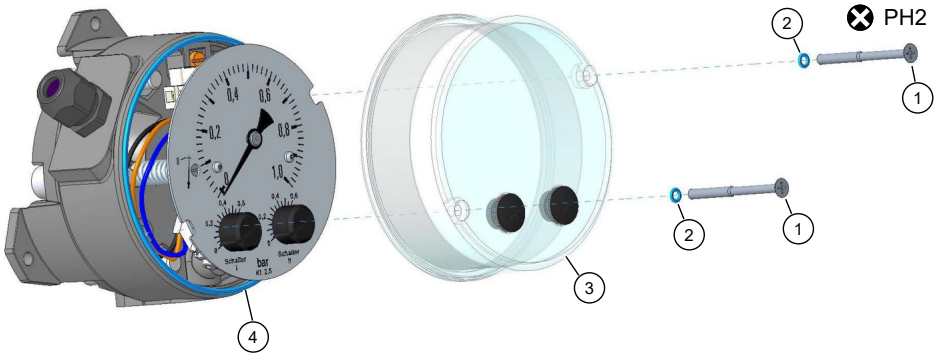


Fig. 13: Control elements

- Depending on the enclosure model, the switch point setting is accessible in different ways.
- The enclosure must be opened to set the zero-point.

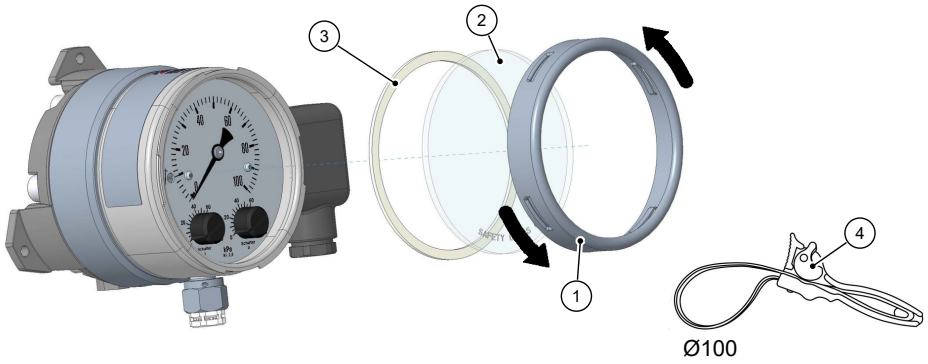
4.3 Opening the enclosure

4.3.1 Enclosure with protection class IP55



1. Remove the attachment screws (1) with a screwdriver. Ensure that the sealing rings (2) do not get lost. The protection class is no longer guaranteed without these sealing rings.
2. Remove the Makrolon in the hood (3) and the seal (4).
3. It is assembled in reverse order. The seal (4) must lie precisely in the groove of the hood before the hood is screwed on.

4.3.2 Enclosure with protection class IP65



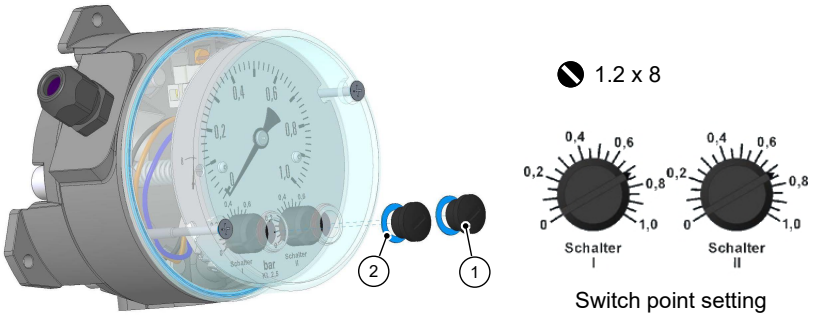
1. Release the bayonet ring (1) by turning to the left. if the bayonet ring cannot be opened by hand, use a pipe wrench (4).
2. Remove the glass pane (2) and the seal (3).
3. It is assembled in reverse order.

The bayonet ring in switch panel installation devices cannot be removed if installed. In this case, the device first needs to be removed before the enclosure can be opened.

4.4 Zero point correction

1. Depressurise the measuring chamber.
2. Open the enclosure
3. Set the measurement value pointer to the zero-point scale (see fig. above [▷ 13]) using the zero point correction screw.
4. Close the casing.

4.5 Switch point setting



Switch point setting

1. Remove the plugs (1) and the seals (2) in the hood and/or open the bayonet ring enclosure.
2. The required switch points can be set on the reference scale guide with a screwdriver. The achievable accuracy is 5 %.
3. Replace the plug and/or the bayonet ring after completing the settings.

4.6 Function test

Remove both plugs in the hood for testing or open the bayonet ring enclosure. If the unit has two micro-switches, the stated test steps must be carried out for both switches. After the test, the switch points need to be reset (see above).

Check when the system is depressurized.

- No measurement is shown and the measurement display point to zero.
- Turn the switch point setting button toward the zero-point until the micro-switch is activated.

Test when the system is operational

- A measurement is shown.
- Turn the switch point setting button toward the measurement until the micro-switch is activated.

5 Servicing

5.1 Maintenance

The instrument is maintenance-free. We recommend the following regular inspection to guarantee reliable operation and a long service life:

- Check the function in combination with downstream components.
- Check the leak-tightness of the pressure connection lines.
- Check the electrical connections.

The exact test cycles need to be adapted to the operating and environmental conditions. In combination with other devices, the operating instructions for the other devices also need to be observed.

5.2 Transport

The measuring device must be protected against impacts. It should be transported in the original packaging or a suitable transport container.

5.3 Service

All defective or faulty devices should be sent directly to our repair department. Please coordinate all shipments with our sales department.

⚠ WARNING

Process media residues

Process media residues in and on dismantled devices can be a hazard to people, animals and the environment. Take adequate preventive measures. If required, the devices must be cleaned thoroughly.

Return the device in the original packaging or a suitable transport container.

5.4 Disposal

Please help to protect the environment by always disposing of the work pieces and packaging materials in compliance with the valid national waste and recycling guidelines or reuse them.

6 Technical data

6.1 General Information

Reference conditions (acc. to IEC 61298-1)		
Temperature	+15 … +25 °C	
Relative humidity	45 … 75 %	
Air pressure	86 … 106 kPa	860 … 1060 mbar
Installation position	vertical	

6.2 Input variables

Measuring ranges	Measuring accuracy	Allowed static operating pressure	Overpressure	Underpressure
0 … 250 mbar	± 6.25 mbar	16 bar	25 bar	- 1 bar
0 … 400 mbar	± 10 mbar	16 bar		
0 … 0.6 bar	± 0.015 bar	16 bar		
0 … 1 bar	± 0.025 bar	16 bar		
0 … 1.6 bar	± 0.04 bar	25 bar		
0 … 2.5 bar	± 0.0625 bar	25 bar		
0 … 4 bar	± 0.1 bar	25 bar		
0 … 6 bar	± 0.15 bar	25 bar		
0 … 10 bar	± 0.25 bar	25 bar		
0 … 16 bar	± 0.4 bar	25 bar		
0 … 25 bar	± 0.625 bar	25 bar		
-0.6 … 0 bar	± 0.015 bar	16 bar		
-1 … 0 bar	± 0.025 bar	16 bar		
-1 … +0.6 bar	± 0.04 bar	25 bar		
-1 … +1.5 bar	± 0.0625 bar	25 bar		
-1 … +3 bar	± 0.1 bar	25 bar		
-1 … +5 bar	± 0.15 bar	25 bar		
0 … 30 psi	± 0.75 psi	25 bar		

Rated pressure of the measuring system	25 bar
Test pressure	1.5 times the rated pressure
Zero-point setting	Arranged in the front panel of the scale
Measuring accuracy	± 2.5% of the measuring span

6.3 Output parameters

Switch contacts	1 to 2 micro-switches
Switching function (per contact)	Changeover contact
Switch point setting	Can be set to reference scales from outside
Smallest settable value	5% of the measuring span
Switch hysteresis	approx. 2.5% of the measuring span

Per contact	**AC**	**DC**
Switching voltage	250 V	30 V
Switching current	5 A	0.4 A
Switching output	250 VA	10 W

6.4 Operating conditions

Increase ambient temperature	-10 … +70 °C
Media temperature	-10 … +70 °C
Storage temperature	-15 … +75 °C
Enclosure protection class	IP55 or IP65 acc. to EN 60529 depending on model
NSR	EN 61010-1:2010
RoHS	EN 50581:2012
SIL2	EN 61508:2010 Parts 1-7
DNV-GL	Type testing according to the regulations of the DNV GL Class Guideline CG0339, November 2016

6.5 Construction design

Process connection	Inner thread G¼
	Inner thread ¼-18 NPT
Brass, CrNi steel	Connection shank G½ B DIN EN 837
	Connection shank G¼ B DIN EN 837
	Connecting shanks ¼-18 NPT
Brass, CrNi steel, galvanised steel	Cutting ring connection in brass for 6 mm pipe
	Cutting ring connection in brass for 8 mm pipe
	Cutting ring connection in brass for 10 mm pipe
Electrical connection	Permanently wired numbered cables
	7-pin plug connection
	Cable socket
Installation position	vertical
Dimensions	See dimensional drawings
Weight	Pressure chamber in aluminium 1.2 kg
	Pressure chamber in stainless steel 3.5 kg

6.5.1 Materials

Parts in contact with the medium	
Pressure chamber	Aluminium GkAlSi10(mg); painted black
	Aluminium GkALSi10(mg); HART-COAT© surface protection
	Chromium nickel steel 1.4305
Measuring diaphragm	NBR
	VITON®
	Inconel 718
Seals	NBR
	VITON®
Other inner parts	Rustproof steel 1.4310, 1.4305
Process connection Connection shanks	Brass
	Chromium nickel steel
Process connection Cutting ring screw connection	Brass
	Galvanised steel
	Chromium nickel steel

Parts with no contact with the medium		
Cover hood	IP55	Makrolon
Bayonet ring housing	IP65	Stainless steel 1.4301
Dial face and needle		Aluminium
Setting buttons		AlCuMgPb 3.1645

6.5.2 Dimensional drawings

All dimensions in mm unless otherwise stated

The following are the dimensional diagrams for the different models of the pressure chambers in aluminium. The dimensional diagrams for the pressure chambers in stainless steel are similar. For this reason, there is no illustration.

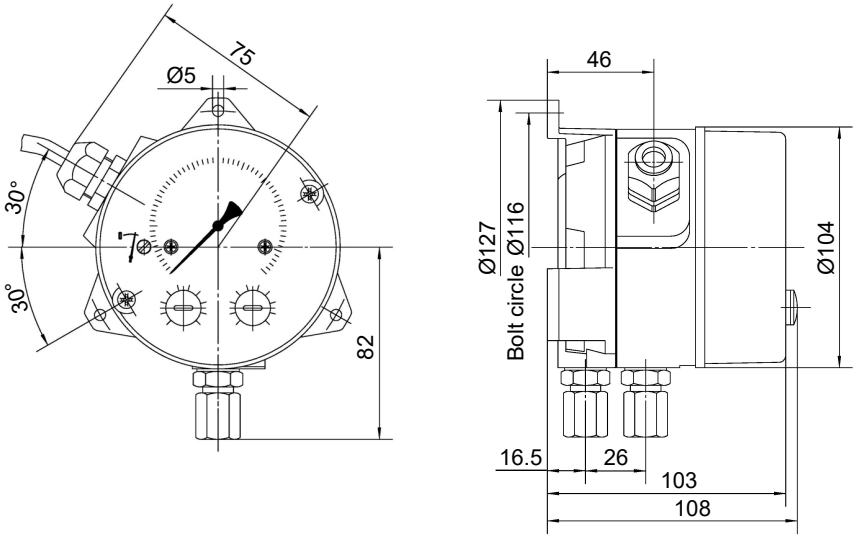


Fig. 14: Standard model (Wall mounting)

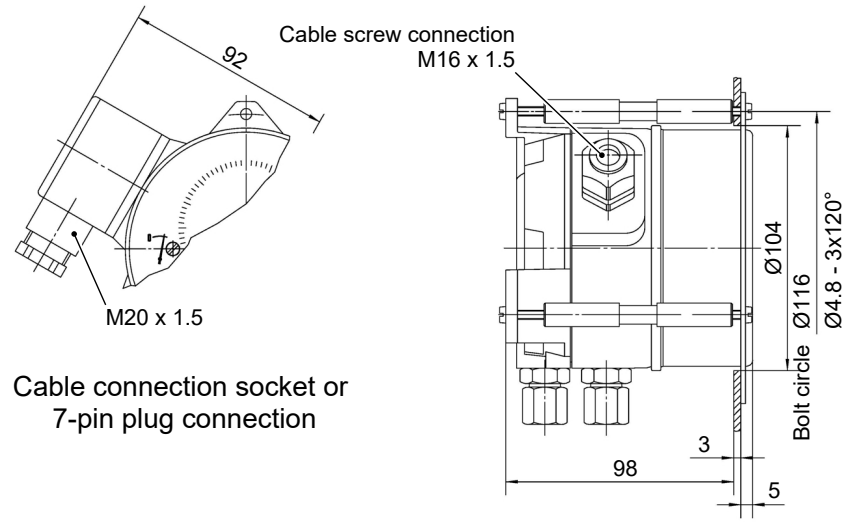


Fig. 15: Electrical connection and switch panel installation

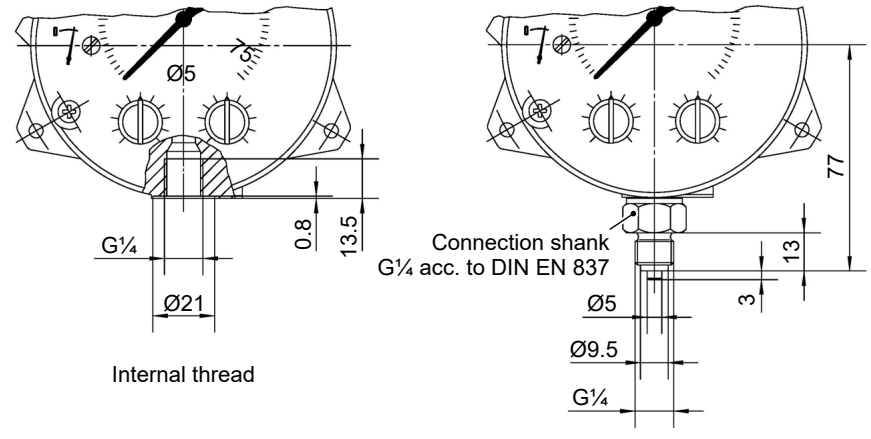
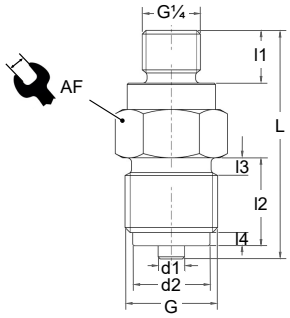
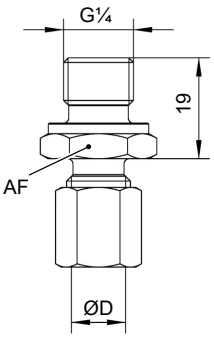


Fig. 16: Process connection

Process connection variants

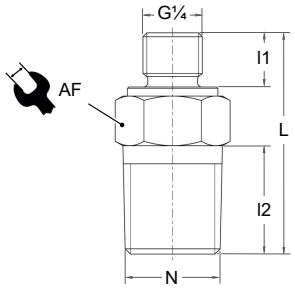


DIN EN 837



Cutting ring

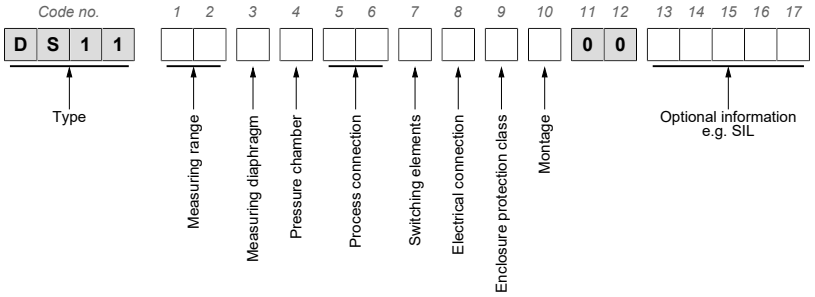
Connecting shanks	d1	d2	l1	l2	l3	l4	A/F
G¼B	5	9.5	13	13	3,3	2	19
G½B	6	17.5	20	12,5	4,5	3	22
Cutting ring screw connection				ØD			A/F
Pipe diameter				6, 8, 10			19



NPT outside

Connecting shanks	N	L	l1	l2	A/F
NPT outside	¼-18 NPT	42	12	18	19

7 Order Codes



		Measuring diaphragm	
[1.2]	**Measuring range**	**NBR / VITON**	**Inconel 718**
82	0 … 250 mbar	x	
83	0 … 400 mbar	x	
01	0 … 0.6 bar	x	
02	0 … 1 bar	x	
03	0 … 1.6 bar	x	
04	0 … 2.5 bar	x	
05	0 … 4 bar	x	
06	0 … 6 bar	x	
07	0 … 10 bar	x	
08	0 … 16 bar	x	
09	0 … 25 bar		x
30	-0.6 … 0 bar	x	
31	-1 … 0 bar	x	
32	-1 … +0.6 bar	x	
33	-1 … +1.5 bar	x	
34	-1 … +3 bar	x	
35	-1 … +5 bar	x	
H5	0 … 30 psi	x	

[3]	**Measuring diaphragm**	**Sealant**	**Comment**
N	NBR	NBR	
V	VITON®	VITON®	
E	Inconel 718	NBR	Only measuring ranges 0 … 25 bar
E	Inconel 718	VITON®	Only measuring ranges 0 … 25 bar

[4]	**Pressure chamber**	**Comment**
A	Aluminium	Only measuring range ≤ 0 ... 16 bar
E	Aluminium HART COAT®	
W	Stainless steel 1.4305	

[5.6]	Process connection	Material
01	Inner thread G¼	
04	Inner thread ¼-18 NPT	
06	Connection shanks with external thread G¼ B	Brass
11	Connection shanks with external thread G¼ B	CrNi steel
14	Connecting port G½ with outer thread ¼-18 NPT	CrNi steel
20	Cutting ring connection in brass for 6 mm pipe	Galvanised steel
21	Cutting ring connection in brass for 8 mm pipe	Galvanised steel
22	Cutting ring connection in brass for 10 mm pipe	Galvanised steel
24	Cutting ring connection in brass for 6 mm pipe	CrNi steel 1.4571
25	Cutting ring connection in brass for 8 mm pipe	CrNi steel 1.4571
26	Cutting ring connection in brass for 10 mm pipe	CrNi steel 1.4571
28	Cutting ring connection in brass for 6 mm pipe	Brass
29	Cutting ring connection in brass for 8 mm pipe	Brass
30	Cutting ring connection in brass for 10 mm pipe	Brass

[7]	Switching Elements
A	1 adjustable micro-switch
B	2 adjustable microswitches

[8]	Electrical connection
1	1 metre numbered cable; permanently wired
2	2.5 metre numbered cable; permanently wired
5	5 metre numbered cable; permanently wired
K	Cable connection socket
W	7-pin plug connection
S	DNV-GL approved version with 3 m connection cable

[9]	Casing protection class	Comment
0	IP55 as per DIN EN 60529	
P	IP65 as per DIN EN 60529	Only with electrical connection K, W, Z

[10]	Assembly
T	Switch panel installation set
W	Wall mounting

[13-17]	Optional information
#####	Code for special models e.g. SIL The code is generated as agreed with our sales team.

Accessories

Please go to our website fischermesstechnik.de for data sheets for the measuring device accessories.

DZ11	Installation set for retrofitting from wall mounting to switch panel installation. Please state the precise device type of the DS11 because there are different switch panel installation sets depending on the model.
DZ23/24	The shut-off valve DZ23 in a three spindle model and DZ24 in a four spindle model can be particularly beneficial when mounting the differential pressure measuring and switch device DS11. The following can be used for example: • is a system is to be depressurized or taken out of operation • for repairs or tests to disconnect differential pressure devices within the affected systems from the mains supply The shutoff devices can therefore also be used for function tests on site. In contrast to DZ23, the DZ24 also has a venting valve to vent the connected pipe system. The shut-off and venting valves are designed for the rated pressure level PN40. The housing can be selected in aluminium, brass or chrome-nickel-steel 1.4301. There are various pressure connections available for process-side screw connections or connection threads.
MZ	Measuring device accessory (throttles, siphons, etc.)

8 Attachments

8.1 SIL Certificate

TÜV NORD

ZERTIFIKAT
CERTIFICATE

Hiermit wird bescheinigt, dass das unten beschriebene Produkt der Firma
This certifies that the product mentioned below from company

Fischer Mess- und Regeltechnik
Bielefelder Straße 37a
32107 Bad Salzuflen
Deutschland

die Anforderungen der folgenden Prüfunterlage(n) erfüllt.
fulfills the requirements of the following test regulations.

Geprüft nach: *Tested in accordance with:*	**EN 61508:2010 Teile/Parts 1-7**
Beschreibung des Produktes: (Details s. Anlage 1) *Description of product:* *(Details see Annex 1)*	**Differenzdruck Mess- und Schaltgerät** / *Differental Presure Switch* **Kontaktmanometer** / *Contact Pressure Gauge*
Typenbezeichnung: *Type Designation:*	**DS11, DS13 und DS21** **MS11**

Dieses Zertifikat bescheinigt das Ergebnis der Prüfung an dem vorgestellten Prüfgegenstand. Eine allgemein gültige Aussage über die Qualität der Produkte aus der laufenden Fertigung kann hieraus nicht abgeleitet werden.
This certifies the result of the examination of the product sample submitted by the manufacturer. A general statement concerning the quality of the products from the series manufacture cannot be derived there from.

Registrier-Nr. / *Registered No.* 44 799 13759902
Prüfbericht Nr. / *Test Report No.* 3526 2583
Aktenzeichen / *File reference* 8003015248

Gültigkeit / Validity
von / *from* 2020-03-18
bis / *until* 2025-03-17

Zertifizierungsstelle der
TÜV NORD CERT GmbH

Essen, 2020-03-18

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.de technology@tuev-nord.de

Bitte beachten Sie auch die umseitigen Hinweise
Please also pay attention to the information stated overleaf

Fig. 17: SIL_4479913759902

TÜV NORD

ANLAGE
ANNEX

Anlage 1, Seite 1 von 1
Annex 1, page 1 of 1

zum Zertifikat Registrier-Nr. / *to Certificate Registration No.* 44 799 13759902

Allgemeine Angaben *General Information*	**Siehe auch Seite 1 des Zertifikats** *See also page 1 of the certificate*
Produktbeschreibung: *Product description:*	**Differenzdruck Mess- und Schaltgerät** / *Differental Presure Switch* **DS11, DS13, DS21** **Kontaktmanometer** / Contact Pressure Gauge MS11
Technische Daten: *Technical data:*	**Sicherheitsparameter** / *Safety Parameter* SFF = 70 % PFH = 3,3 10^{-11} 1/h HFT = 0 Typ-A-Teilkomponente / *Type* **Die Geräte können mit einer geeigneten Testung in SIL2 Anwendungen eingesetzt werden.** *The components can be used with an appropriate testing in SIL2 applications.*

Zertifizierungsstelle der
TÜV NORD CERT GmbH

Essen, 2020-03-18

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.de technology@tuev-nord.de

Fig. 18: SIL_4479913759902

8.2 DNV-GL Certificate

DNV·GL

Certificate No:
TAA00002BW

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pressure Indicator

with type designation(s)
DS11, DS21

Issued to
FISCHER Mess- und Regeltechnik GmbH
Bad Salzuflen, Nordrhein-Westfalen, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Location classes:

Temperature	**B**
Humidity	**B**
Vibration	**A***
EMC	**N/A**
Enclosure	**B (IP54)**

Issued at **Hamburg** on **2019-06-03**

This Certificate is valid until **2024-06-02**.
DNV GL local station: **Magdeburg**

Approval Engineer: **Holger Jansen**

Digitally Signed By: Rinkel, Marco
for **DNV GL**
Location: Hamburg, on behalf of

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Form code: TA 251 Revision: 2016-12 www.dnvgl.com Page 1 of 3

Fig. 19: DNV-GL_TAA00002BW_(1)

Job Id: **262.1-030917-1**
Certificate No: **TAA00002BW**

Product description

Pressure Indicator and Switching Device

Type: DS11, DS21
Pressure indicator: 270° scale, Indicator class: 2.5

Ranges	Max. Static Pressure DS11 [DS21]
0 - 400 mbar	6 [6] bar
0 - 0.6 bar	10 [10] bar
0 - 1 bar	16 [16] bar
0 - 1.6bar; 0 - 2.5bar; 0 – 4bar; 0 – 6bar	25 [16] bar
0 - 10 bar [only DS11]	25 bar

Max. medium temperature:	70° C
Gasket and membrane:	NBR or Viton
Wetted parts:	1.4310, 1.4305
Pressure gauge:	GKAlSi 10(MgCu), with hart coat or 1.4305
Output:	2 c/o - contacts separate adjustable
Rating:	3A, 250 V AC, 250 VA
Electrical connection:	fixed cable, length 3m, type MPRX 0,6/1 (Nexans) or equivalent

Type DS21: identical technical data, gaskets and membrane = viton

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

A* Vibration test: 2 to 17 Hz amplitude = 1.6 mm,
17 to 100 Hz acceleration = 2g

Type Approval documentation

Data sheets: DS11, Rev.B 2014-08
DS21, Rev.B 2014-08
Drawings: DS11 Dwg.-no. 24855, Rev.d; 2019-02-13
DS11 Dwg.-no. 02.011.00.24857.3, Rev.e; 2018-02-06
DS21 Dwg.-no. 26023, Rev.g; 2019-02-15
DS21 Dwg.-no. 02.021.00.26067.3, Rev.h; 2018-02-12
DS11-DS21 Dwg.-no. 02.021.01.34017.3, Rev.a; 2011-02-08
Test reports: TüV 57 011 7, 1982-06-04
Type Approval Assessment Report 2019-05-21

Tests carried out

Applicable tests according to DNV GL Class Guideline CG0339, November 2016.

Marking of product

The products to be marked with:
- Model name
- Manufacturer name
- Serial number

Fig. 20: DNV-GL_TAA00002BW_(2)

Job Id: **262.1-030917-1**
Certificate No: **TAA00002BW**

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE

Fig. 21: DNV-GL_TAA00002BW_(3)

8.3 EU Declaration of Conformity

FISCHER MESS- UND REGELTECHNIK

(Translation) CE

EU Declaration of Conformity

For the product described as follows

Product designation	**Pressure Switch**
Type designation	**DS11**

it is hereby declared that it corresponds with the basic requirements specified in the following designated directives:

2014/35/EU	*Low Voltage Directive*
2011/65/EU	*RoHS Directive*

The products were tested in compliance with the following standards.

Low Voltage Directive (LVD)

DIN EN 61010-1:2011-07 *EN 61010-1:2010*	*Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements*

RoHS Directive (RoHS 2)

DIN EN 50581:2013-02 *EN 50581:2012*	*Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances*

Also they were subjected to the conformity assessment procedure „**Internal production control**“.

Sole responsibility for the issue of this declaration of conformity in relation to fulfilment of the fundamental requirements and the production of the technical documents is with the manufacturer.

Manufacturer

FISCHER Mess- und Regeltechnik GmbH
Bielefelder Str. 37a
32107 Bad Salzuflen, Germany
Tel. +49 (0)5222 974 0

Documentation representative

Mr. Torsten Malischewski
B.Sc.
Development department

The devices bear the following marking:

CE

Bad Salzuflen
29 Januar 2019

G. Gödde
Managing director

09010360 • CE_EN_DS11 • Rev. ST4-A • 01/19

1 / 1

Fig. 22: CE_DE_DS11

8.4 UKCA Declaration of Conformity

FISCHER MESS- UND REGELTECHNIK

(Translation) UK CA

UKCA Declaration of Conformity

For the product described as follows

Product designation	**Differenzdruck Mess- und Schaltgerät**
Type designation	**DS11 ## # # ## # # # # 00 #####**

is hereby declared to comply with the essential requirements, specified in the following UK regulations:

Statutory regulation No.	***Description***
2016 No. 1101	*The Electrical Equipment (Safety) Regulations 2016*
2021 No. 422	*The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (Amendment) Regulations 2021*

The products have been tested according to the following standards.

Low Voltage Directive (LVD):

BS EN 61010-1+A1:2017-03-31	*Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements*

Restriction of Hazardous Substances (RoHS):

BS EN IEC 63000:2018-12-10	*Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances*

The sole responsibility for drawing up this declaration of conformity in relation to the fulfilment of the essential requirements and the preparation of the technical documentation lies with the manufacturer.

Manufacturer

FISCHER Mess- und Regeltechnik GmbH
Bielefelder Str. 37a
32107 Bad Salzuflen, Germany
Tel. +49 (0)5222 974 0

The devices bear the following marking: UK CA

Bad Salzuflen
24 Nov 2021

G. Gödde
Managing director

09010622 • UKCA_EN_DS11 • Rev. ST4-A • 11/21

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Fig. 23: UKCA_EN_DS11

8.5 EAC Declaration

ЕВРАЗИЙСКИЙ ЭКОНОМИЧЕСКИЙ СОЮЗ
ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ

Заявитель Общество с ограниченной ответственностью «МАТИС-М». Место нахождения: 117261, город Москва, улица Вавилова, дом 70, корпус 3, комната правления, Российская Федерация. Адрес места осуществления деятельности: 109029, город Москва, город, Сибирский проезд, дом 2, корпус 12, Российская Федерация, Основной государственный регистрационный номер: 1037739575125, телефон: +7 495 725-23-09, адрес электронной почты: info@matis-m.ru

в лице Генерального директора Шарова Александра Анатольевича

заявляет, что Дифференциальный манометр с переключателем, тип DS21, DS11
Продукция изготовлена в соответствии с Директивой 2014/30/EU

Изготовитель "FISCHER Mess- und Regeltechnik GmbH"
Место нахождения: Bielefelder StraBe 37a, D-32107 Bad Salzuflen, Германия. Филиал завода-изготовителя: "FISCHER Mess- und Regeltechnik GmbH", Bielefelder StraBe 37a, D-32107 Bad Salzuflen, Германия.
Код ТН ВЭД ЕАЭС 9026 20 400 0, серийный выпуск

Соответствует требованиям Технического регламента таможенного союза ТР ТС 020/2011 "Электромагнитная совместимость технических средств"

Декларация о соответствии приията на основаиии протокола № 01724-219-1-17/БМ от 31.01.2017 года. Испытательной лаборатории Общества с ограниченной ответственностью «БизнесМаркет», аттестат аккредитации регистрационный № РОСС RU.0001.21АВ90 Схема декларирования: 3д

Дополнительная информация ГОСТ 30804.3.2-2013, ГОСТ 30804.3.3-2013. Условия хранения продукции в соответствии с ГОСТ 15150-69. Срок хранения (службы, годности) указан в прилагаемой к продукции товаросопроводительной и/или эксплуатационной документации.

Декларация о соответствии действительна с даты регистрации по 31.01.2022 включительно

М.П. Шаров Александр Анатольевич
(подпись) (Ф. И. О. заявителя)

Регистрацииный иомер декларации о соответствии: ЕАЭС № RU Д-DE.АЛ16.В.65130

Дата регистрации деклараций о соответствии: 01.02.2017

Fig. 24: EAC_RU_D-DE-AB71-B-0956

Notes

Notes

Notes

FISCHER Mess- und Regeltechnik GmbH
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D-32107 Bad Salzuflen

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