





Operating manual

DE25

Digital differential pressure transmitter for gaseous media





Masthead

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Subject to technical amendments.



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Rev. ST4-C 07/22	Version 3 (UKCA compliance)

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1 Safety guidelines

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



A 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.



MARNING

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.



A 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.

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2 Product and functional description

2.1 Delivery scope

- Differential pressure transmitter DE25 ## # 042 # K00 # W
- · Operating Instructions

2.2 Intended use

The DE25 is a differential pressure transmitter for measuring over-pressure, under-pressure and differential pressure in neutral, non-aggressive gaseous media.

2.3 Equipment versions

The appearance of the various models differs in terms of the electrical connection type.

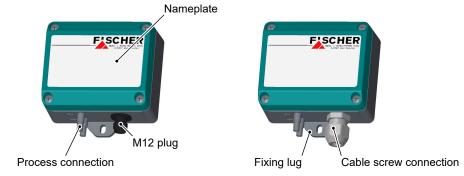


Fig. 1: Equipment versions

2.3.1 Nameplate

This type plate serves as an example of the information that is stated. The data shown is purely fictive, but does correspond to the actual conditions. For more information, please see the order code at the end of these instructions.

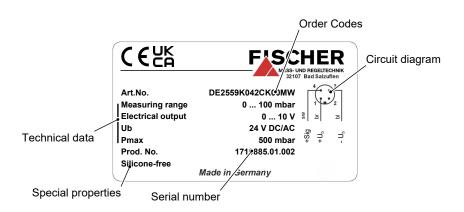


Fig. 2: Nameplate

2.4 Function diagram

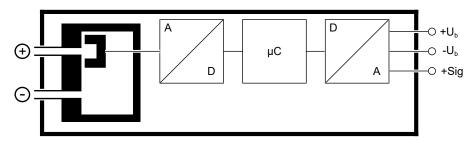


Fig. 3: Function diagram

2.5 Design and mode of operation

The basis of this transmitter is a piezo-resistive sensor element. The pressure that is to be measured acts directly onto a silicon diaphragm equipped with piezo-resistive resistors. The active pressure generates changes in resistance that are evaluated by the device's electronics and transformed into an analogue signal. The output signal is usually available as a current or voltage signal.

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3 Assembly and Starting Operation

3.1 Generalities

The device is designed for installation onto flat assembly plates or walls. The casing has integrated assembly straps for this purpose. Ex-works, the device is set for vertical installation. The pressure connections must point downwards.

The protection type IP 65 is only guaranteed, if a suitable power supply cable is used (see accessories [> 17]).

If the device is intended for outdoor use, we recommend permanently protecting the device against UV radiation and using a suitable enclosure or at least the erection of a sufficiently dimensioned canopy as a protection measure against constant rain or snow.

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 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.

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

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.

The process connections are marked with (+) and (-) symbols on the device. The pressure lines must be mounted according to these symbols.



Fig. 4: Process connection

1. Differential pressure measurement

- + Higher pressure
- O lower pressure

2. Pressure measurement

- (+) Pressure
- open

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.

3-conductor circuit

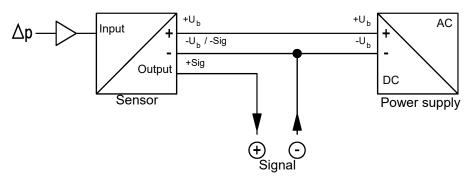


Fig. 5: 3-conductor circuit

3.3.1 Version with M12 plug

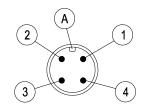


Fig. 6: M12 connector 4-pin

Pin S	Signal name		Cable colour
1 S	Supply (+)	+U _b	brown
2 n	1.C.		white
3 S	Supply (-) / output signal (-)	-U _b /-Sig	blue
4 C	Output signal (+)	+Sig	black
A C	Coding		

3.3.2 Model with cable screw connection

In case of the model with cable screw connection, the casing lid needs to be opened first.

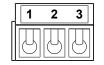


Fig. 7: Connection terminal

Pin	Signal name	
1	Output signal (+)	+Sig
2	Supply (-) / output signal (-)	-U _b /-Sig
3	Supply (+)	+U _b

3.4 Commissioning

A prerequisite for commissioning is correct installation of all electrical supply lines and the pressure lines. All connections are arranged so that there are no mechanical forces acting on the device.



A CAUTION

Leakage test

The pressurized lines need to be checked for leaks before commissioning.

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3.4.1 Zero-point adjustment

The differential pressure transmitters of series DE25 are set in the factory before delivery so that adjustment at the assembly site is usually unnecessary.

If the zero-point does need to be adjusted, this can be undertaken using the zero-point button. A prerequisite for this is a depressurized system. If this is not possible, the pressure lines must be released.

Proceed as follows:

- · Switch off the auxiliary energy.
- · Open the casing by releasing the four screws in the lid.
- · Connect a current or voltage measuring unit to the output.
- · Switch on the auxiliary energy.
- If the measured output signal deviates from the zero-point, keep the zero-point button pressed until the measuring unit shows the correct zero value in the output after approx. 5 seconds.
- · Switch off the auxiliary energy.
- · Remove the measuring device.
- · Remount the lid of the casing.
- · Switch on the auxiliary energy.

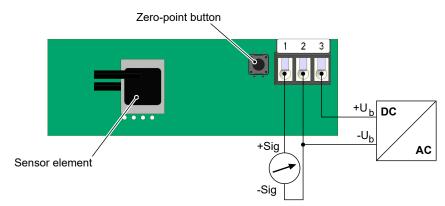


Fig. 8: Zero-point adjustment

4 Maintenance

4.1 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.

4.2 Transport

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

4.3 Service

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



MARNING

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.

4.4 Accessories

- · M12 Connection lines of different lengths
- · Connection set for intake and outlet channels

For the order numbers, please see the order code [17].

4.5 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.

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5 Technical Data

5.1 Generalities

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	User-defined						

5.2 Input variables

Measuring variable

Differential pressure, positive and negative over-pressure

Measuring ranges

Management	04-4	D
Measuring range	Stat. operating pressure max.	Bursting pressure
mbar	mbar	mbar
0 2.5	50	150
0 4	50	150
0 6	50	150
0 10	100	300
0 16	100	300
0 25	250	750
0 40	250	750
0 60	500	1500
0 100	500	1500
-2.5 +2.5	50	150
-4 +4	50	150
-6 + 6	50	150
-10 +10	100	300
-16 +16	100	300
-25 +25	250	750
-40 +40	250	750
-60 +60	500	1500

5.3 Output sizes

	Electricity	Voltage
Output signal	0 20 mA 4 20 mA	0 10 V
Admissible apparent ohmic resistance	$R_{L} \le ((U_b-10V)*50\Omega)+300\Omega$	$U_b < 15 \text{ V} \rightarrow R_L \ge 100 \text{ k}\Omega$ $U_b \le 15 \text{ V} \rightarrow R_L \ge 2 \text{ k}\Omega$

5.4 Measurement accuracy

Measuri	ing range	2.5	4	6	10	16	25	40	60	100
Charact	Characteristic curve deviation +)									
Max.	%FS				2	2.5 (1.0))			
Туре	%FS				1	.5 (0.5	5)			
TK spar	1 ^{x)}									
Max.	%FS	1.0	1.0	1.0	0.3	0.3	0.3	0.3	0.3	0.3
Туре	%FS	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Tk zero-point x)										
Max.	%FS / 10K	1.0	1.0	1.0	0.4	0.4	0.4	0.4	0.4	0.4
Туре	%FS / 10K	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Measurin	g range	± 2.5	± 4	± 6	± 10	± 16	± 25	± 40	± 60
Characte	ristic curve d	eviatio	n ⁺⁾						
Max.	%FS				2	.5 (1.0))		
Туре	%FS				1	.5 (0.5	5)		
TK span '	x)								
Max.	%FS / 10K	1.0	0.5	0.3	0.3	0.3	0.3	0.3	0.3
Туре	%FS / 10K	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Tk zero-point x)									
Max.	%FS / 10K	1.0	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Туре	%FS / 10K	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

⁺⁾ Characteristic curve deviation (non-linearity and hysteresis) at 25°C and rated voltage.

A smaller deviation can be realised in certain measuring ranges (values in brackets). Please contact our sales department in this case.

5.5 Auxiliary energy

	Current output	Voltage output
Rated Voltage	24 V AC/DC	24 V AC/DC
Admissible operating voltage	12 32 V AC/DC	12 32 V AC/DC
Limits	ca. 23 mA	approx. 13 V

5.6 Application conditions

Increase ambient temperature	-10 +50 °C
Media temperature	-10 +50 °C
Storage temperature	-20 +70 °C
Enclosure protection class	IP65 as per EN 60529
EMC	EN 61326-1:2013 EN 61326-2-3:2013
RoHS	EN IEC 63000:2018

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x) with respect to the measuring range (FS).

5.7 Construction design

5.7.1 Process connection

5.7.2 Electrical connection

M12 plug connection	4-pin, male, Coding A
M12 connection cable (see accessories)	4 x 0.34 mm ² sheath PUR Ø 5.2 mm
,	Bending radius (fixed) 5 x Ø Bending radius (mobile) 10 x Ø

Cable screw connection	M16 x 1.5	
	min. terminal range	4.5 mm
	max. terminal range	10.0
Connection terminal	Single-wire (rigid)	0.2 2.5 mm ²
	Fine wire (flexible)	0.2 1.5 mm ²
	Fine-wire (flexible) with ferrules	0.2 1.5 mm ²

5.7.3 Materials

Housing	Polyamide PA 6.6
M12 plug	Polyamide PA 6, brass, gold
Cable screw connection	Polyamide PA 6
Materials in contact with media	Silicon, polyester glass-fibre reinforced, polyamide PA 6.6, 1.4310, Tygon®, aluminium, NBR

5.7.4 Assembly

Integrated wall mounting straps

5.7.5 Dimensional drawings

All dimensions in mm unless otherwise stated

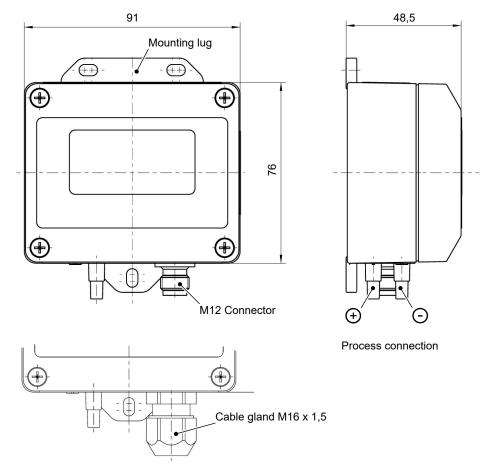


Fig. 9: Front view

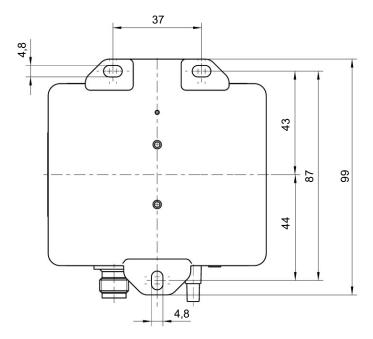
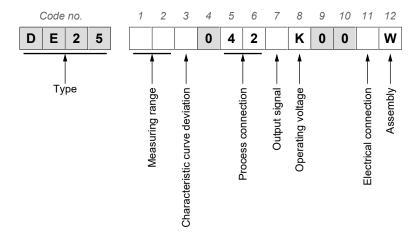


Fig. 10: Rear view

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6 Order Codes



Measuring range

[1.2]	Measuring range	Static operating pressure
98	0 2.5 mbar	50 mbar
52	0 4 mbar	50 mbar
53	0 6 mbar	50 mbar
54	0 10 mbar	100 mbar
55	0 16 mbar	100 mbar
56	0 25 mbar	250 mbar
57	0 40 mbar	250 mbar
58	0 60 mbar	500 mbar
59	0 100 mbar	500 mbar
A6	-2.5 +2.5 mbar	50 mbar
A7	-4 +4 mbar	50 mbar
A8	-6 +6 mbar	50 mbar
A9	-10 +10 mbar	100 mbar
B1	-16 +16 mbar	100 mbar
B2	-25 +25 mbar	250 mbar
C5	-40 +40 mbar	250 mbar
В3	-60 +60 mbar	500 mbar

Characteristic curve deviation (relative pressure)

[3]	
K	Characteristic curve deviation 2.5%
M	Characteristic curve deviation 1.0%

Process connection:

[5.6]	(Code no.)
42	Plug nipple for 6/4 mm or 8 /6 mm hose

Output signal:

[7]	(Code no.)
Α	0 20 mA
Р	4 20 mA
С	0 10 V

Operating voltage:

[8]	(Code no.)
K	24 V DC

Electrical connection

[11]	(Code no.)
M	M12 plug connection
E	Cable screw connection

Assembly:

[12]	(Code no.)
W	Wall-mounting

6.1 Accessories

Order no.	Planned measures	No. of Poles	Length
06401993	Connection cable with M12 connector	4-pin	2 m
06401994	Connection cable with M12 connector	4-pin	5 m
06401563	Connection cable with M12 connector	4-pin	7 m
06401572	Connection cable with M12 connector	4-pin	10 m

Connection set

Order no.	Planned measures	hose	Length
04005129	Plastic connection set	2 x 6/4 mm	1 m
04005148	Plastic connection set	2 x 6/4 mm	2.5 m
04005163	Plastic connection set	2 x 6/4 mm	5 m
04005216	Plastic connection set	2 x 6/4 mm	10 m
04005217	Plastic connection set	2 x 8/6 mm	1 m
04005218	Plastic connection set	2 x 8/6 mm	5 m

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7 Annex



(Translation) (E



EU Declaration of Conformity

For the product described as follows

Product designation

Digital differential pressure transmitter

Type designation

DE25

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

EMC Directive

2011/65/EU

RoHS Directive

(EU) 2015/863

Delegated Directive amending Annex II to Directive 2011/65/EU

The products were tested in compliance with the following standards.

Electromagnetic compatibility (EMC)

DIN EN 61326-1:2013-07

Electrical equipment for measurement, control and laboratory use - EMC requirements - Part

EN 61326-1:2013 DIN EN 61326-2-3:2013-07

1: General requirements Electrical equipment for measurement, control and laboratory use - EMC requirements - Part

EN 61326-2-3:2013

2-3: Particular requirements - Test configuration, operational conditions and performance

criteria for transducers with integrated or remote signal conditioning

RoHS Directive (RoHS3)

DIN EN IEC 63000:2019-05 EN IEC 63000:2018

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

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Documentation representative

Torsten Malischewski

General Manager R&D

The devices bear the following marking:

CE

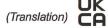
Bad Salzuflen 22 July 2022

G. Gödde Managing director

09010240 • CE_EN_DE25 • Rev. ST4-A • 07/22

Fig. 11: CE_EN_DE25





UKCA Declaration of Conformity

For the product described as follows

Product designation

Digital differential pressure transmitter

Type designation

DE25

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

Statutory regulation No.

2016 No. 1091

The Electromagnetic Compatibility Regulations 2016

2021 No. 422

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic

Equipment (Amendment) Regulations 2021

2022 No. 1647

The Hazardous Substances and Packaging (Legislative Functions and Amendment) (EU

Exit) Regulations 2020

The products have been tested according to the following standards.

Electromagnetic compatibility (EMC):

BS EN 61326-1:2013-02-28

Electrical equipment for measurement, control and laboratory use. EMC requirements. Gen-

eral requirements

BS EN 61326-2-3:2013-02-28

Electrical equipment for measurement, control and laboratory use. EMC requirements. Particular requirements. Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning.

Restriction of Hazardous Substances (RoHS):

BS EN IEC 63000:2018-12-10

Technical documentation for the assessment of electrical and electronic products with re-

spect 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

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The devices bear the following marking:

Bad Salzuflen

22 July 2022

G. Gödde

Managing director

09010716 • UKCA_EN_DE25 • Rev. ST4-A • 07/22

1/1



ЕВРАЗИЙСКИЙ ЭКОНОМИЧЕСКИЙ СОЮЗ ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ





Заявитель Общество с ограниченной ответственностью "МАТИС-М"

Место нахождения: Россия, Москва, 117261, улица Вавилова, дом 70, строение 3, Комната Правления, адрес места осуществления деятельности: Россия, Москва, 109029, Сибирский проезд, дом 2, строение 9, офис 58, основной государственный регистрационный номер: 1037739575125, номер телефона: +74957252304, адрес электронной почты: info@matis-m.ru

в лице Генерального директора Шарова Александра Анатольевича

заявляет, что Датчики дифференциального давления серии DE

изготовитель "FISCHER Mess- und Regeltechnik GmbH". Место нахождения и адрес места осуществления деятельности по изготовлению продукции: Bielefelder Straße 37a, D-32107 Bad Salzuflen, GLN отсутствует, координаты ГЛОНАСС: 52.056894, 8.725524, Германия.

Продукция изготовлена в соответствии с Директивой 2014/35/EU.

Код ТН ВЭД ЕАЭС 9026202000. Серийный выпуск

соответствует требованиям

Технического регламента Таможенного союза "О безопасности низковольтного оборудования" (ТР ТС 004/2011), Технического регламента Таможенного союза "Электромагнитная совместимость технических средств" (ТР ТС 020/2011)

Декларация о соответствии принята на основании

Протоколов испытаний № 0105-ИЛ23/2022, 0105-ИЛ23/2022 от 31.01.2022 года, выданных Испытательной лабораторией Общества с ограниченной ответственностью «ПромМашЭксперт», аттестат аккредитации РОСС RU.32001.04ИБФ1.ИЛ23, сроком действия до 02.02.2022 года. Схема декларирования 1д

Дополнительная информация

Условия и сроки хранения стандартные при нормальных значениях климатических факторов внешней среды, срок службы (годности) указан в эксплуатационной документации. Договор на выполнение функций иностранного изготовителя № 2016-09-29/01 от 29.09.2016.

Декларация о соответствии действительна с даты регистрации по 31.01.2027 включительно OTBETCTBE

Шаров Александр Анатольевич

(Ф.И.О. заявителя)

Регистрационный номер дев зарации остратентия: ЕАЭС N RU Д-DE.PA01.B.52516/22

Дата регистрации декларации о соответствии: 01.02.2022

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