



Ex II 3G Ex nA IIC T4
-20 °C ≤ Ta ≤ +60 °C



RoHS II
COMPLIANT

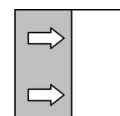


Operation manual

ME50 ... R

Programmable pressure transducer / pressure switch
for explosive areas

Gas explosion protection zone 2, gases and vapours



Masthead

Manufacturer:**FISCHER Mess- und Regeltechnik GmbH**Bielefelderstr. 37a
D-32107 Bad SalzuflenTelefon: +49 5222 974 0
Telefax: +49 5222 7170eMail: info@fischermesstechnik.de
web: www.fischermesstechnik.de**Technical editorial team:**Documentation representative: S. Richter
Technical editor: R.Kleemann

All rights, also those to the translation, reserved. No part of these instructions may be reproduced or processed, duplicated or distributed using electronic systems or any other form (print, photocopy, microfilm or another process) without the written consent of the company FISCHER Mess- und Regeltechnik GmbH, Bad Salzuflen.

Reproduction for internal use is expressly allowed.

Brand names and procedures are used for information purposes only and do not take the respective patent situation into account. Great care was taken when compiling the texts and illustrations; nevertheless, errors cannot be ruled out. The company FISCHER Mess- und Regeltechnik GmbH will not accept any legal responsibility or liability for this.

Subject to technical amendments.



Version history

Rev. ST4-A 08/16	Version 1 (first edition)
Rev. ST4-B 09/17	Version 2 (corrections)

Table of Contents

1	Safety guidelines	4
1.1	General	4
1.2	Personnel Qualification	4
1.3	Risks due to Non-Observance of Safety Instructions	4
1.4	Safety Instructions for the Operating Company and the Operator	4
1.5	Unauthorised Modification	5
1.6	Inadmissible Modes of Operation	5
1.7	Safe working practices for maintenance and installation work	5
1.8	Pictogram explanation	5
2	Product and functional description	7
2.1	Delivery scope	7
2.2	Performance characteristics	7
2.3	Use as intended	7
2.4	Function diagram	8
2.5	Design and mode of operation	8
2.6	Product overview	9
2.7	Type plate	9
3	Installation and assembly	10
3.1	Generalities	10
3.2	Process connection	10
3.3	Electrical connections	10
4	Commissioning	14
4.1	General	14
4.2	Control Elements	14
4.3	Parameters	15
4.4	Parameter list	16
5	Technical Data	20
5.1	Generalities	20
5.2	Input variables	20
5.3	Output parameters	21
5.4	Measurement accuracy	21
5.5	Auxiliary energy	21
5.6	Application conditions	22
5.7	Construction design	22
5.8	Parameters	25
6	Order Codes	26
6.1	Accessories	27
7	Attachments	28
7.1	EU Declaration of Conformity	28

1 Safety guidelines

1.1 General



WARNING

This operating manual contains instructions fundamental to the installation, operation and maintenance of the device that must be observed unconditionally. It must be read by the assembler, operator and the specialized personnel in charge of the instrument before it is installed and put into operation.

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.



WARNING

For explosion-proof models the specialized personnel must have received special training or instruction or be authorized to work with explosion-proof instruments in explosion hazard areas.

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.

The instrument must be decommissioned and secured against inadvertent re-operation if a situation arises in which it must be assumed that safe operation is no longer possible. Reasons for this assumption could be:

- evident damage to the instrument
- failure of the electrical circuits
- longer storage outside the approved temperature range.
- considerable strain due to transport

Repairs may be carried out by the manufacturer only.

A professional single conformity inspection as per DIN EN 61010, section 1, must be carried out before the instrument can be re-commissioned. This inspection must be performed at the manufacturer's location. Correct transport and storage of the instrument are required.

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).

- a) 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).

- a) 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).

- a) 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

- Programmable pressure transducer / switch ME50
- User Manual

2.2 Performance characteristics

Important features

- Digital measured value display
- Highly precise
- Low hysteresis
- Can be configured
- Turn down 1:5
- Optional switch output
- Robust device model
- Large vibration resistance

Typical applications

- Pressure monitoring
- Content measurement

Application areas

- Procedural engineering
- Process technology
- Environmental technology
- Regenerative energies (biogas, etc.)

2.3 Use as intended

The ME50 is suitable for measuring relative pressure and under-pressure in fluid or gas-like, neutral, non-aggressive media.

If there is dirty or aggressive media in the system, or if this is to be expected, the device must be modified in terms of those parts that come into contact with the media. The device is to be exclusively used for the applications agreed between the manufacturer and the user.

Explosion hazard area classification

The pressure transducer is suitable as 'Electrical equipment for use in potentially explosive areas', Zone 2 - (Gases and vapours).

Designation as per guideline 2014/34/EU (ATEX):

 II 3G Ex nA IIC T4

$-20\text{ °C} \leq T_a \leq +60\text{ °C}$

2.4 Function diagram

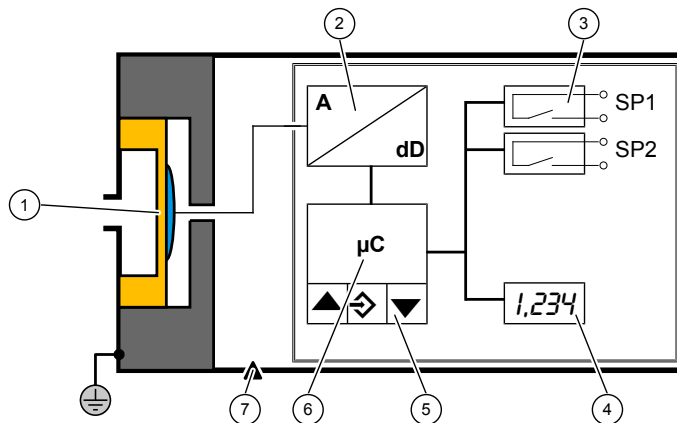


Illustration 1: Function diagram

1	Sensor	2	Signal converter
3	Switching outputs (only 3 conductors)	4	Measured value display
5	Keyboard	6	Micro-controller
7	Pressure compensation		

2.5 Design and mode of operation

Depending on the measuring range, the ME50 is produced with a ceramic or a piezo-resistive measuring cell. Two switch outputs are also possible in the version with a 3-conductor connection.

Ceramic measuring cell

In the ceramic measuring cell, the pressure acts directly on the ceramic membrane which in turn deforms. The membrane is constructed electrically like a plate capacitor whose capacity change is proportional to the effective pressure. The electronics that are controlled by a micro-controller implement this change in capacitance into an standard electrical signal.

Piezo-resistive measuring cell

In the piezo-resistive measuring cell, the pressure is applied to a silicon membrane into which the deformation-dependent resistances have been diffused. The material resistance changes proportionally to the effective pressure. The electronics that are controlled by a micro-controller implement this change in resistance into an standard electrical signal.

2.6 Product overview

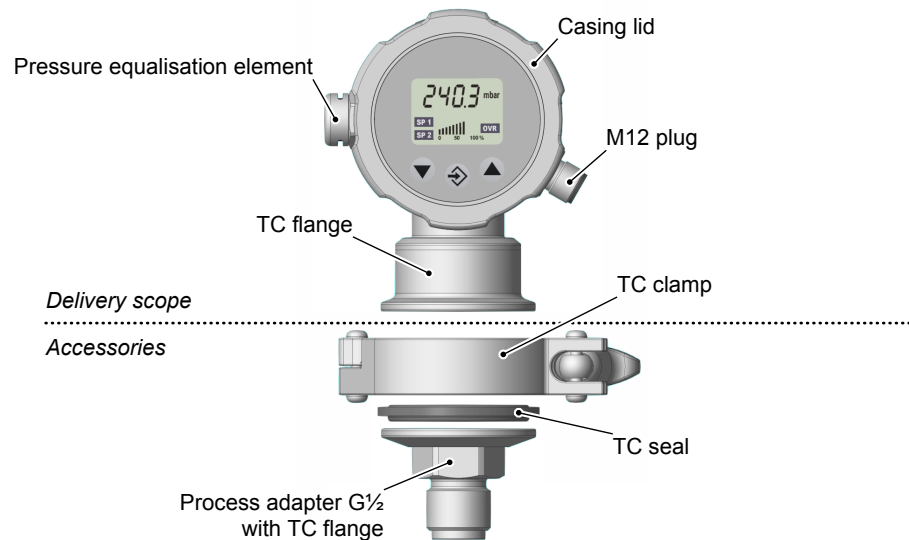


Illustration 2: Product overview

2.7 Type plate

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.

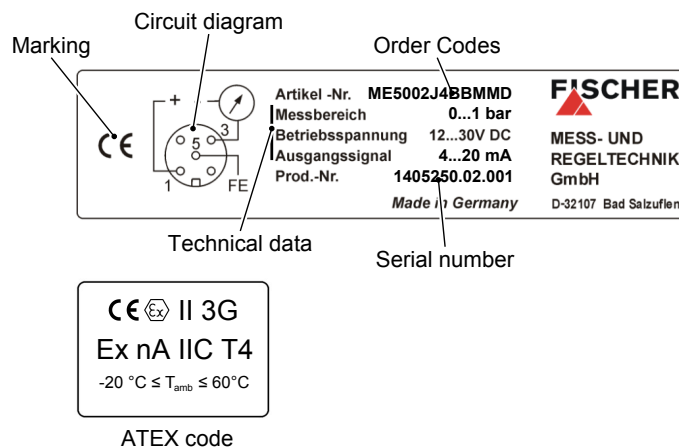


Illustration 3: Nameplate

3 Installation and assembly

3.1 Generalities

The unit is designed for vertical installation (process connection facing down) and compared. No other installation positions are planned.

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 process connection of the ME50 is realised with a terminal clamp (Tri Clamp) acc. to DIN 32676.

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.

The pressure lines need to be vented for fluid measuring media.

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

If the pressure sensing lines are already pressurised at the time of commissioning, zero-point control and adjustment cannot be performed. In such cases, the device should be only connected to the mains without the pressure sensing lines.

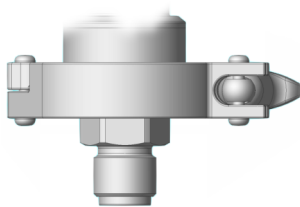


Illustration 4: Tri Clamp connection

3.3 Electrical connections



WARNING

Operation in areas at risk of explosion

If operated in explosive areas, the electrical data of the unit and the valid local regulations and guidelines for the installation and operation of electrical systems in explosive areas must be observed (e.g. DIN EN 60079-14)

The electrical connection may only be realised by authorised and qualified specialists that have undergone additional training or briefings or have a permit to work on explosion-protected units in potentially explosive systems.

Risks emanating from electrical current or voltage should be prevented by means of suitable action.

- 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.
- Do not connect the connector if strained.
- A CE-conform mains adapter with a slow 200 mA fuse only may be used in the power supply circuit.

The nominal supply voltage and the permissible range can be found in the technical data.

The admissible load / resistance is stated in the technical data.

Depending on the version (see order code), the device is connected in a 2-conductor (2L) or 3 conductor (3L) circuit.

3.3.1 Ground connection



Illustration 5: Ground connection

The outer ground connection must always be connected to the protective potential equalisation or a similar local potential equalisation.

The ground terminal is suitable for connecting fine-wire conductors up to 4 mm² or single-wire conductors up to 6 mm².

3.3.2 2-conductor version

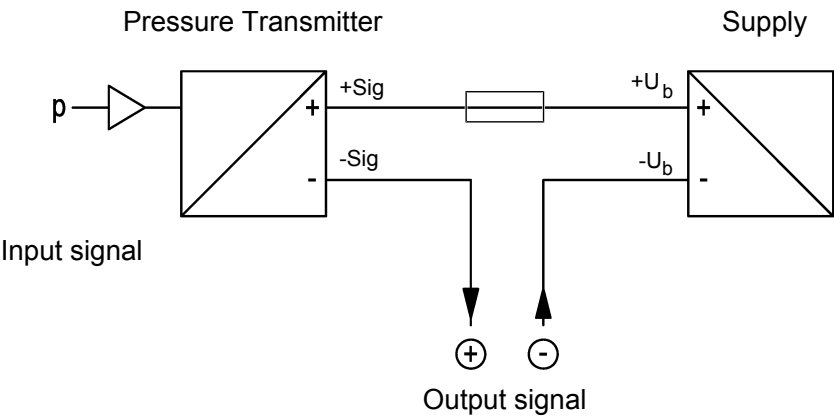


Illustration 6: 2L Circuitry

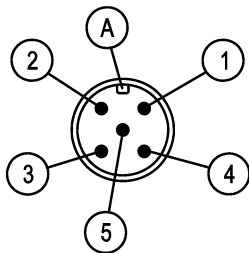


Illustration 7: M12 connector 5-pin

PIN	Signal name			Cable colour
1	Supply/output	+U _b	+Sig1	brown
2	unused		nc	white
3	Supply/output	-U _b	+Sig2	blue
4	unused		nc	black
5	Functional earth			green/yellow
A	Coding A			

Table 1: Supply and output signal

3.3.3 3-conductor version

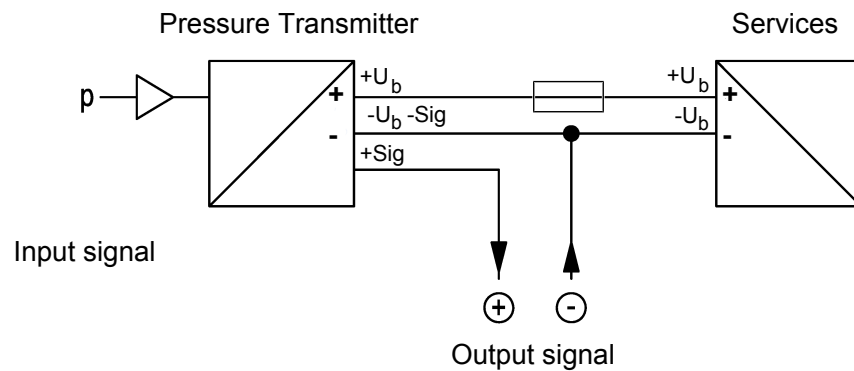


Illustration 8: 3L Circuitry

Without switch output

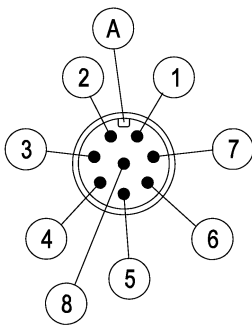


Illustration 9: M12 connector 8-pin

With switch output

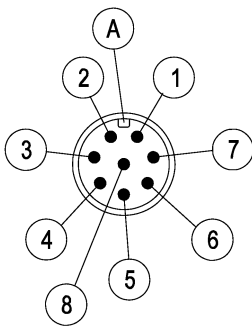


Illustration 10: M12 connector 8-pin

PIN	Signal name		Cable colour
1	Outlet	+Sig	white
2	Services	+U _b	brown
3	unused	nc	green
4	unused	nc	yellow
5	unused	nc	grey
6	unused	nc	pink
7	Services	-U _b	blue
8	Functional earth	FE	rot
A	Coding A		

Table 2: Supply, and output signal

There are three options available for the semiconductor switch contacts K1 and K2.

1. Potential-free
2. PNP-switching In this version, the connections K1(b) and K2(b) are connected with +U_b ex-works. The switch output is called PNP1 or PNP2.
3. NPN-switching In this version, the connections K1(b) and K2(b) are connected with -U_b ex-works. The switch output is called NPN1 or NPN2.

Please note that the type of switch contact can be programmed and can work both as an NC or NO contact. For reasons of simplicity, they are shown as NC contacts in this connection description.

Potential-free contacts




Pin	Signal name		Cable colour
1	Outlet	+Sig	white
2	Supply	+U _b	brown
3	Switching output 1		K1 (a) green
4	Switching output 1		K1 (b) yellow
5	Switching output 2		K2 (b) grey
6	Switching output 2		K2 (a) pink
7	Supply	-U _b	blue
8	Functional earth		FE red
A	Coding A		

Table 3: Supply, output signal and switch contacts

PNP-switching



Pin	Signal name		Cable colour
1	Outlet	+Sig	white
2	Supply	+U _b	brown
3	Switching output 1		PNP1 green
4	unused		nc yellow
5	unused		nc grey
6	Switching output 2	PNP2	pink
7	Supply	-U _b	blue
8	Functional earth		FE red
A	Coding A		

Table 4: Supply, output signal and PNP switch contacts

NPN-switching

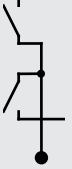

Pin	Signal name		Cable colour
1	Outlet	+Sig	white
2	Supply	+U _b	brown
3	Switching output 1		NPN1 green
4	unused		nc yellow
5	unused		nc grey
6	Switching output 2	NPN2	pink
7	Supply	-U _b	blue
8	Functional earth		FE red
A	Coding A		

Table 5: Supply, output signal and NPN switch contacts

4 Commissioning

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

4.2.1 Advertisement

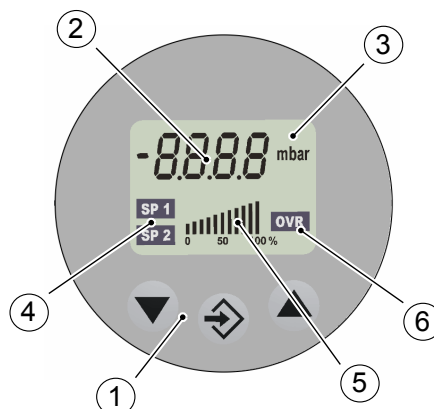


Illustration 11: Measured value display

1	Keyboard	2	Measured Value Display
3	Unit	4	Switch points
5	Bar chart	6	Overflow

The 3½ digit LCD display represents the current pressure value in normal mode. The unit is shown to the right of the measured value and is set ex-works. The unit cannot be altered on site.

4.2.2 Keyboard

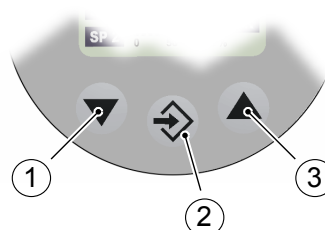


Illustration 12: Keyboard

1	Arrow key down	Menu: downwards	Value: reduce
3	OK key	Menu: open	Value: save
5	Arrow key up	Menu: upwards	Value: increase

It is configured via a 3-key membrane keyboard. The keyboard can only be reached after the housing lid has been removed. This can usually be unscrewed manually. If this is not possible, please use a belt wrench to prevent damage

4.3 Parameters

After it has been switched on, the unit carries out a display test and shows the implemented firmware version for approx. 2s. Then the pressure transmitter switches to the operating mode.

Press the OK key \Rightarrow to enter the configuration mode.

During configuration, the parameter name or the parameter value is shown instead of the measured value. The unit continues to work during configuration and shows pressure changes in the bar chart display. Changes can be followed directly without changing the operating mode.



NOTICE

Time out

If no key is pressed for a longer period (approx. 1 minute), the units switches automatically into work mode.

Set parameters

Proceed as follows to set a parameter:





1. Press the enter OK key to switch to the configuration mode.
2. Use the arrow keys $\blacktriangledown \blacktriangle$ to navigate through the parameter list until you reach the required parameter.
3. Press the enter OK key to call up the parameter. The parameter value is shown.
4. Use the arrow keys $\blacktriangledown \blacktriangle$ to set the required parameter value.
5. Press the enter OK key to save the value. The parameter name is now shown on the display.
6. Use the arrow keys $\blacktriangledown \blacktriangle$ to navigate through the parameter list until you reach the required parameter.
7. Press the enter OK key \Rightarrow to leave to the parameter menu. The pressure transmitter switches to the operating mode.

4.4 Parameter list

The following describes all parameters in the shown list. Please note that some parameters are not available depending on the unit version. For instance, the parameters for the switch points are hidden, if the unit does not have any switch points.

Parameter Escape *ESC*

This parameter is the input and output of the parameter list. It is stated at the start and also at the end of the list.

- If the OK button  is pressed in work mode, the unit switches to the configuration mode. The *ESC* parameter appears on the display.
- To leave the configuration mode, use the arrow keys   to set the *ESC* parameter and press the OK button . The unit switches into work mode.

Parameter measuring range *nr ... nl*

The measuring range within the basic measuring range can be spread (see type plate) using the parameters measuring range start *nr* and measuring range end *nl*. The spread (Turn down) is maximum 1:5.

$$\text{Turn down} = \frac{\text{Settable measuring span}}{\text{Basic measuring range}}$$

The characteristic curve can also be inverted with these parameters.

- *nr < nl* : rising characteristic curve
- *nl < nr* : falling characteristic curve

Please note that the minimum settable measuring span cannot be undercut. Both parameters can be set over the entire basic measuring range. The output signal is automatically scaled to the set measuring range.

Parameter switch points

If the unit has a switch output, the following parameters appear in the list:

Switch point 1: *SP1A SP1E SP1F SP1d*

Switch point 2: *SP2A SP2E SP2F SP2d*

As the parameters for both switch points function in the same way, the parameters for switch point 1 (SP1) are explained below.

(i) Parameter activation and deactivation point *SP1A SP1E*

These parameters are used to define the activation and deactivation point. Both parameters can be set individually over the entire basic measuring range.

- *SP1E > SP1A*

If the measured value exceeds the activation point *SP1E*, the contact switches. It is only switched off again, if the measured value undercuts the activation point *SP1A*. (Hysteresis function).

- *SP1E < SP1A*

If the measured value exceeds the activation point *SP1E*, the contact switches. If the measured value undercuts an equally large deactivation point *SP1A*, the contact drops.

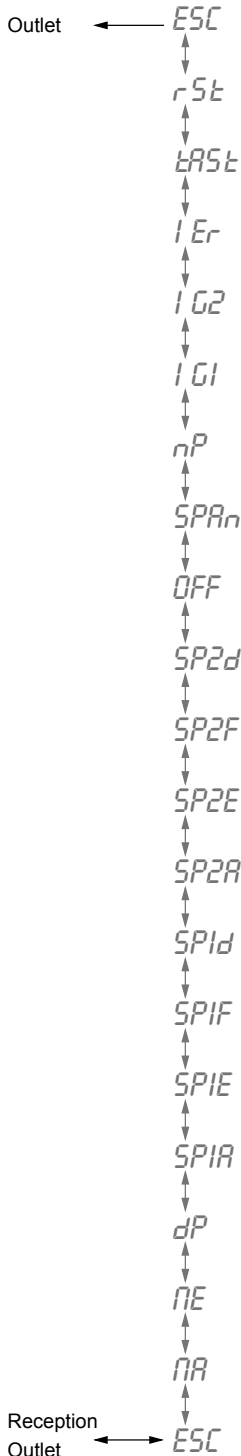


Illustration 13: Parameter list

- **$SPiE < SPiR$**

The contact switches if the measured value lies within the range between the activation point $SPiE$ and the deactivation point $SPiR$. If the measured value lies outside this area, the contact drops.

As switched contact is shown in the display as **SP1** or **SP2**.

(ii) Parameter function $SPiF$

The type of contact is defined with this parameter.

$SPiF = 0$

The contact works as an open contact (NO).

$SPiF = 1$

The contact works as an make contact (NC).



⚠ CAUTION

Power failure

Please note that the contact is always open if no current flows, regardless of the programmed contact type.

(iii) Parameter damping $SPId$

This parameter allows the reaction of the switch output to be delayed by $0^\circ \dots 200$ s. This delay applies equally for switching on and off.

Parameter offset correction OFF

This parameter is used to correct an offset, if the measured value at the zero-point deviates from zero. The display shows the current measured value that you can change by up to $\pm 10\%$ of the basic measuring range.

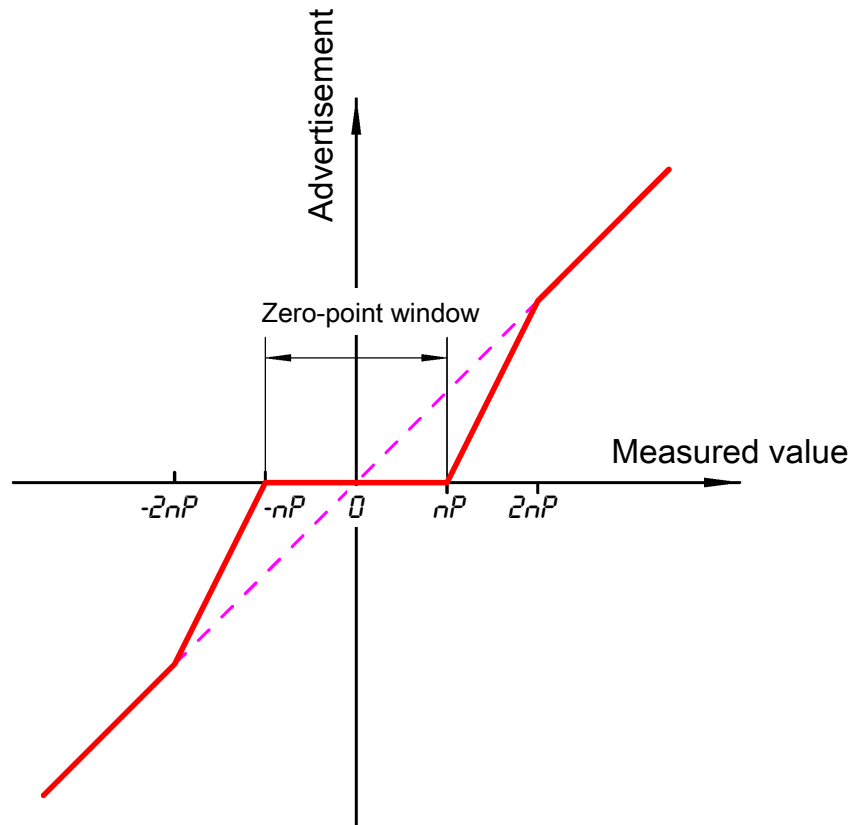
Parameter span correction $SPAn$

This parameter is used to correct an offset of the span, if the measured value at the end or the measuring range deviates from the end value. The display shows the current measured value that you can change by up to $\pm 10\%$ of the basic measuring range.

Parameter zero-point window nP

In many cases, unsteady readings are not a problem during normal operating mode, but this is not true for the idle state, i.e. if a measured value of zero is expected. The zero-point window parameter is designed for precisely this case.

Its value defines a range of measurement values around zero, for which the measuring value is set to zero. The display only stops showing zero when the measurement leaves the set window. When reaching double the value, the measured value and the reading match again. This avoids jumps in the display.



Parameter lower current limit [I_{G1}](#)

This parameter defines the lower current limit of the output signal in a value range of 3.5 ... 22.5 mA. The limit is activated with the value 0.

Parameter upper current limit [I_{G2}](#)

This parameter defines the upper current limit of the output signal in a value range of 3.5 ... 22.5 mA. The limit is activated with the value 0.

Parameter error signal [I_{Er}](#)

This parameter defines the output signal in a value range of 3.5 ... 22.5 mA that should be issued when there is an internal error in the device.

Parameter key lock [k_{ASL}](#)

The key lock can be activated with this parameter. If no button is pressed within the given time, the keyboard is locked. Unlock the keyboard by interrupting the power supply.

- $k_{ASL} = 0$
The key lock is deactivated
- $k_{ASL} = 1 \dots 100 \text{ s}$
The key lock is activated after the end of a given time.

Parameter reset *rst*

If the parameter is set to the value 1, all parameters are reset to the default settings.

**NOTICE****User settings**

If the system is reset to the default settings, all user settings are deleted permanently.

- a) In the 2-conductor versions, it is possible to export and save the parameter settings using the Transmitter PC Interface.
- b) This option is not available for the 3-conductor versions.

5 Technical Data

5.1 Generalities

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

5.2 Input variables

Ceramic measuring cell

Measuring range	Smallest measuring span	Over-pressure safety
[mbar]	[mbar]	[bar]
-20 ... +20	10	4
-40 ... +40	20	
-100 ... +100	40	
0 ... 60	12	4
0 ... 100	20	
0 ... 200	40	

Piezo-resistive measuring cell

Measuring range	Smallest measuring span	Over-pressure safety
[mbar]	[mbar]	[bar]
0 ... 400	80	1
0 ... 600	120	3
[bar]	[bar]	[bar]
0 ... 1	0.2	3
0 ... 1.6	0.32	7.5
0 ... 2.5	0.5	7.5
0 ... 4	0.8	15
0 ... 6	1.2	15
0 ... 10	2	30
0 ... 16	3.2	90
-0.6 ... 0	0.12	3.0
-1 ... 0	0.2	3.0
-1 ... +0.6	0.32	3.0
-1 ... +1.5	0.5	7.5
-1 ... +3	0.8	15
-1 ... +5	1.2	15
-1 ... +9	2.0	30
-1 ... +15	3.2	90

The measuring cell can be set within the pre-defined measuring range, which is also stated on the type plate, using the parameters ENf and NL . The smallest settable measuring span is listed for every measuring range and is a minimum of 1:5 in relation to the basic measuring range.

5.3 Output parameters

Depending on the connection type, the versions of the ME50 vary in terms of the number and type of available outputs (see order code):

2-wire connection

No switch output is possible in the 2-conductor connection version.

Analogue output	0 ... 20 mA
Apparent ohmic resistance	$R_L \leq (U_b - 6 \text{ V})/0.02 \text{ A}$
Current limitation	ca. 26 mA

3-wire connection

Analogue output	0 ... 20 mA	4 ... 20 mA	
Apparent ohmic resistance	$R_L \leq (U_b - 6 \text{ V})/0.02 \text{ A}$	$R_L \leq ((U_b - 10 \text{ V}) * 50 \Omega) + 300 \Omega$	
Current limitation	ca. 26 mA		
Switch output	2 Photo MOS relays	not short circuit-proof thermally protected	
	U_{max}	I_{max}	R_{ON}
potential-free (AC/DC)	30V	200 mA	< 1 Ω
PNP/NPN-switching (DC)	U _b		

5.4 Measurement accuracy

Accuracy	$\pm 0.2\%$ of the measuring range (FS)
----------	---

Including non-linearity, hysteresis, non-repetition, zero-point and end value deviation. Calibrated in a vertical installation position with the process connection facing downwards.

Temperature drift	$\pm 0.01\%$ FS/K
Zero-point measuring range	Temperature error band via the compensated temperature range
Compensated measurement range	-10 °C ... +70 °C
Long-term stability	< $\pm 0.1\%$ FS/year

5.5 Auxiliary energy



WARNING

Supply circuit

A CE-conform mains adapter with a slow 200 mA fuse only may be used in the power supply circuit.

Rated Voltage	24 V DC
Admissible operating voltage	12 ... 30 V DC
Absorbed power	< 1 W

5.6 Application conditions

Ambient temperature range	without display	-20 °C ... +60 °C
	with display	-20 °C ... +60 °C
Storage temperature range		-10 °C ... +70 °C
Medium temperature range (in operation)		-10 °C ... +85 °C
ATEX		EN 60079-0:2012 + A11:2013 EN 60079-15:2010
EMC		EN 61326-1:2013 EN 61326-2-3:2013
RoHS		EN 50581:2012
Type of protection:		IP 65 acc. to EN 60529

Materials of the parts that come into contact with the surroundings

Casing		CrNi Steel 1.4404, 1.4571
Process adapter TC Clamp	light/solid	CrNi Steel 1.4404
	High pressure	CrNi Steel 1.4308
TC clamp		CrNi steel 1.4301
Front pane		Safety composite glass
M12 plug		Ms nickel-plated, PA, FKM, Ms

Materials of the parts that come into contact with the measuring medium

Process adapter TC Clamp	light/solid	CrNi Steel 1.4404
	High pressure	CrNi Steel 1.4308
TC seal		FKM (Viton®)
Sensor membrane	Ceramics	Aluminium oxide ceramic Al ₂ O ₃ (99.9 %)
	Piezo-resistive	CrNi 1.4435

5.7 Construction design.

All dimensions in mm unless otherwise stated

5.7.1 Dimensional picture

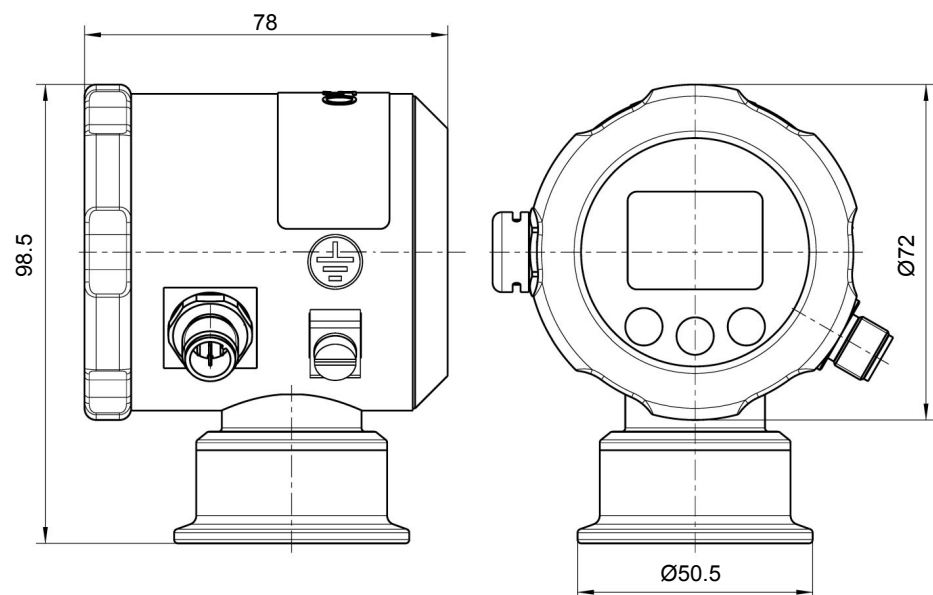


Illustration 14: Dimension drawing

5.7.2 Process connection

The process connection uses a Tri-Clamp connection acc. to DIN 32676. A G $\frac{1}{2}$ inch process adapter with a TC flange can be delivered for this connection.

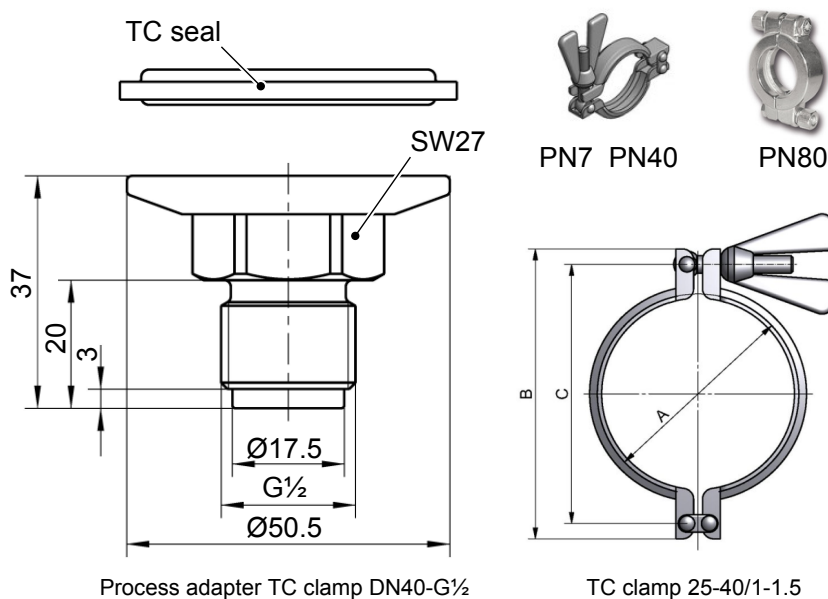


Illustration 15: Dimension drawing process parameters

Planned measures	Operating pressure	A	B	C
TC clamp DN40 light	PN7	53.0	84.5	69.0
TC clamp DN40 solid	PN40	53.0	90.0	57.0
TC clamp DN40 high pressure	PN80	53.5	102	---

Table 6: TC clamp

5.7.3 Electrical connection

2-conductor version

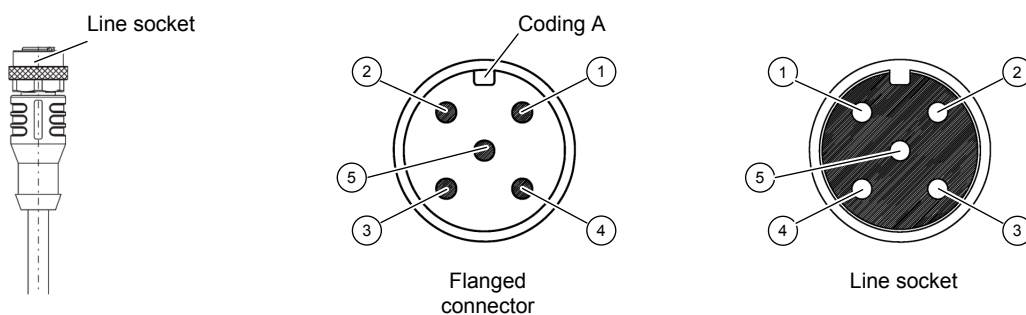


Illustration 16: M12 plug DIN EN 61076-2-101

Pin	Signal name		Cable colour
1	Supply/output	+U _b +Sig1	brown
2	unused	nc	white
3	Supply/output	-U _b +Sig2	blue
4	unused	nc	Black
5	Functional earth		green/yellow
A	Coding A		

Table 7: Supply and output signal

3-conductor version

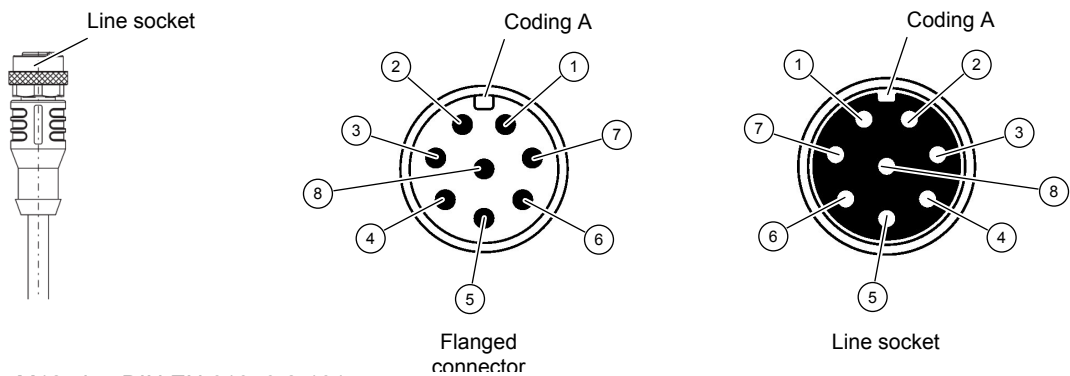


Illustration 17: M12 plug DIN EN 61076-2-101

Without switch output


Pin	Signal name		Cable colour
1	Outlet	+Sig	white
2	Supply	+U _b	brown
3	unused	nc	green
4	unused	nc	yellow
5	unused	nc	grey
6	unused	nc	pink
7	Supply	-U _b	blue
8	Functional earth	 FE	red
A Coding A			

Table 8: Supply, and output signal

With switch output

There are three options available for the semiconductor switch contacts K1 and K2.

Potential-free contacts




Pin	Signal name		Cable colour
1	Outlet	+Sig	white
2	Supply	+U _b	brown
3	Switching output 1		K1 (a) green
4	Switching output 1		K1 (b) yellow
5	Switching output 2		K2 (b) grey
6	Switching output 2		K2 (a) pink
7	Supply	-U _b	blue
8	Functional earth	 FE	red
A Coding A			

Table 9: Supply, output signal and switch contacts

PNP-switching

Pin	Signal name		Cable colour
1	Outlet		+Sig white
2	Supply		+U _b brown
3	Switching output 1		PNP1 green
4	unused		nc yellow
5	unused		nc grey
6	Switching output 2		PNP2 pink
7	Supply		-U _b blue
8	Functional earth		FE red
A	Coding A		

Table 10: Supply, output signal and PNP switch contacts

NPN-switching

Pin	Signal name		Cable colour
1	Outlet		+Sig white
2	Supply		+U _b brown
3	Switching output 1		NPN1 green
4	unused		nc yellow
5	unused		nc grey
6	Switching output 2		NPN2 pink
7	Supply		-U _b blue
8	Functional earth		FE red
A	Coding A		

Table 11: Supply, output signal and NPN switch contacts

5.8 Parameters

The device can be configured on site using the membrane keyboard. The housing must be opened for this.

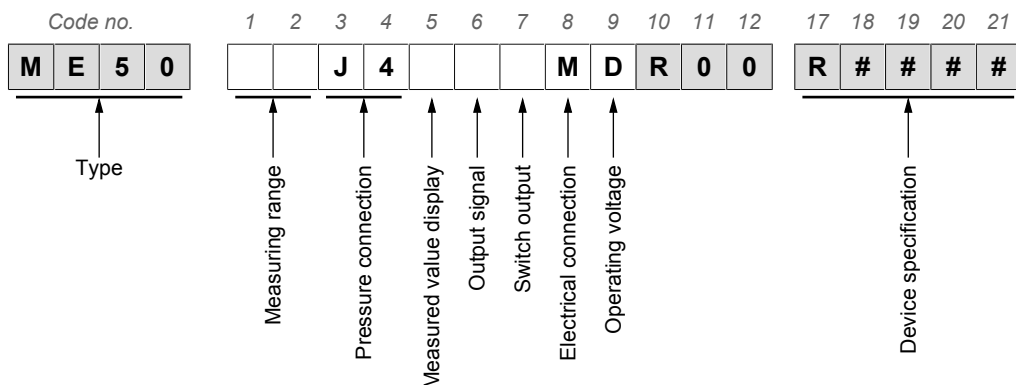
Characteristic curve inversion	Increasing; decreasing
Attenuation	0 ... 200 s
adjustable signal limits	
• upper current limit	3.5 ... 22.5 mA
• lower current limit	3.5 ... 22.5 mA
• Error signal	3.5 ... 22.5 mA
Turn down	1:5

Table 12: Parameters

**WARNING****Remote configuration**

Configuration with the Transmitter PC Interface from a PC is possible for 2-conductor units. The 'remote configuration' is not allowed in Zone 2.

6 Order Codes



[1,2] Measuring range		Measuring cell
C7	-20 ... +20 mbar	Ceramic measuring cell
C5	-40 ... +40 mbar	
B4	-100 ... +100 mbar	
58	0 ... 60 mbar	
59	0 ... 100 mbar	
44	0 ... 200 mbar	
83	0 ... 400 mbar	Piezo-resistive measuring cell
C1	0 ... 600 mbar	
02	0 ... 1 bar	
03	0 ... 1,6 bar	
04	0 ... 2,5 bar	
05	0 ... 4 bar	
06	0 ... 6 bar	
07	0 ... 10 bar	
08	0 ... 16 bar	
30	-0,6 ... 0 bar	
31	-1 ... 0 bar	
32	-1 ... 0,6 bar	
33	-1 ... 1,5 bar	
34	-1 ... 3 bar	
35	-1 ... 5 bar	
36	-1 ... 9 bar	
37	-1 ... 15 bar	
[3,4] Discharge port		
J4	Tri Clamp flange connection DN40 DIN 32676 / ISO 2852	
[5] Measured value display		
A	without display	
B	3 ½ digit LC-display	

[6] Output signal		Electrical connection	
B	4 ... 20 mA	2-wire circuit	
A	0 ... 20 mA	3-wire circuit	
P	4 ... 20 mA		
[7] Switch output		Electrical connection	
M	without switch output		
N	2 potential-free semiconductor switches	AC/DC	only 3-wire circuit
8	2 semiconductor switches PNP-switching	DC	
9	2 semiconductor switches NPN-switching	DC	
[8] Electrical connection			
M	M12 plug connection		
[9] Operating voltage			
D	24 V DC		

Device specification

[17] Ex-Classification	
R	Ⓔ II 3G Ex nA IIC T4
[18-21] Order No.	
####	

6.1 Accessories

Order no.	Planned measures		
06411173	Process adapter TC clamp DN40-G½ outer (incl. seal)		
04001208	TC clamp light PN7 DN25-40/1-1.5		
04001209	TC clamp solid PN40 DN25-40/1-1.5		
04001210	TC clamp high pressure PN80 DN25-40/1-1.5		
09001844	Connection cable with M12 coupling	8-pin	2 m
06401995	Connection cable with M12 coupling	5-pin	2 m
EU13 F200	Transmitter PC interface for 2-conductor transmitter incl. PC software		

7 Attachments

7.1 EU Declaration of Conformity



EU Declaration of Conformity

(Translation)

For the product described as follows

Product designation **Programmable
Pressure Transducer / Pressure Switch**

Type designation **ME50 ... R####**

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

2014/30/EU	EMC Directive
2014/34/EU	ATEX Directive
2011/65/EU	RoHS Directive

The products were tested in compliance with the following standards.

EN 61326-1:2013	Electromagnetic compatibility (EMC) Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
EN 61326-2-3:2013	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-3: Particular requirements - Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning
EN 60079-0:2012 + A11:2013	Explosive atmospheres (ATEX) Explosive atmospheres - Part 0: Equipment - General requirements
EN 60079-15:2010	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
EN 50581:2012	RoHS 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“.

The object of the declaration described above is in conformity with Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

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 Salzufflen, Germany
Tel. +49 5222 974 0

Documentation representative Mr. Stefan Richter
Dipl. Ing.
General Manager R & D

The devices bear the following marking:   II 3G Ex nA IIC T4

**Bad Salzufflen,
2017-09-15**

S. Richter
General Manager R & D

09010259 CE EN ME50 R Rev.A 09/17



Seite 1 von 1

Illustration 18: CE_EN_ME50_R