FISCHER MESS- UND REGELTECHNIK

Data Sheet and Operating Manual

DE45 | **Digital differential pressure switch / transmitter**

DE45##00###K#6L#S####

Dust explosion protection Zone 22 dry dusts

Table of contents

CE Ex II 3D
Ex tc IIIB T125° Dc
-10°C ≤ Tamb ≤ 60°C

1 Safety Instructions

1.1 General

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 device before it is installed and put into operation.

This operating manual is part of the product and must be kept close by where it is easily accessible to the responsible specialized personnel.

The subsequent sections, in particular the instructions on assembly, commissioning and maintenance, contain important safety instructions, the non-observance of which can endanger persons, animals, the environment and physical objects.

1.2 Personnel Qualification

The device 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 relevant standards.

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 system itself.

The manufacturer 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 on correct operation of the device 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. For more in-

09005071 DB_BA_EN_DE45_S Rev.C 03/19

formation, please see the applicable national and international regulations.

In Germany these are the DIN EN, UVV regulations, specific industrial guidelines such as DVGW, Ex, GL, etc., the VDE- regulations and the regulations of the local energy supply companies.

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
- extended storage in temperatures over 70°C
- 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.

The subsequent sections, in particular the instructions on assembly, commissioning and maintenance, contain important safety instructions, non-observance of which can endanger persons, animals, the environment and physical objects.

1.5 Unauthorised Modification

Modifications of or other technical alterations to the device by the customer are not permitted. This also applies to replacement parts. Any modifications / alterations required must be carried out by Fischer Mess- und Regeltechnik GmbH only.

1.6 Inadmissible Modes of Operation

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

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

WARNING!
… indicates a potentially dangerous situation, non-observance of which could endanger persons, animals, the environment or objects.

INFORMATION!
… highlights important information for efficient and smooth operation.

TIP!
… indicates recommendations that are not specifically necessary in certain situations but which could be useful.

2 Application Purpose

Display and switching device for differential pressure of gaseous media. The device is to be exclusively used for the applications agreed between the manufacturer and user.

Explosion hazard area classification

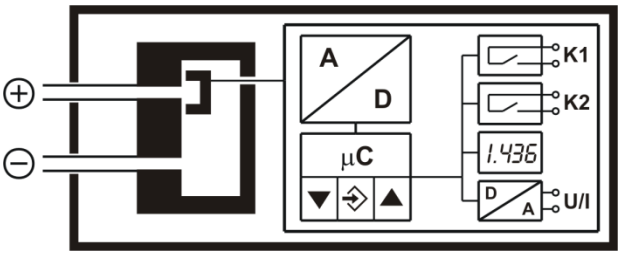
The differential pressure switches / transmitters DE45 are suitable for use as 'Electrical equipment for use in areas with combustible dust', zone 22 - dry dust.

Designation as per guideline 2014/34/EU

CE Ex II 3D
Ex tc IIIB T125° Dc
-10°C ≤ Tamb ≤ 60°C

3 Description of the Product and Functional Description

3.1 Function Diagram



3.2 Design and mode of operation

The device is based on a piezo-resistive sensor element that is suitable for measuring overpressure, underpressure and differential pressure. The pressures to be compared directly act on a silicon diaphragm equipped with piezo-resistive resistors. When the pressure is equal, the measuring diaphragm is in its idle state. In case of pressure difference, the force acting on the measuring membrane causes it to be moved towards the side of the

lower pressure. This movement of the diaphragm induces a change of resistance, which is evaluated by the device's electronics and transformed into signals on the display, switch contacts and an output signal.

4 Installation and Assembly

The device is designed for installation onto flat assembly plates. The device features four assembly bores on its back, which can be used for dia. 3.5 mm tapping screws for screw connection to the assembly plate.

Optionally, the device can be supplied with a wall mounting plate (see order code).

At the factory, the device is calibrated for vertical installation, but the installation position is arbitrary. For installation positions deviating from the vertical, the zero-point signal can be corrected by the integrated zero-point adjuster (see 5.2.2).

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

4.1 Process connection

- By authorized and qualified specialized personnel only.
- The pipes need to be depressurized when the device is being connected.
- Appropriate steps must be taken to protect the device from pressure surges.
- Check the suitability of the device for the media to be measured.
- Maximum pressures must be observed.
- The pressure sensing lines must be installed on an incline so that no condensation pools can form.
- The pressure sensing lines need to be kept as short as possible and installed without sharp bends to avoid interfering delay times.

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

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.

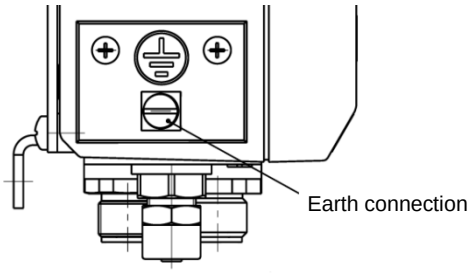
4.2 Electrical Connection, Explosion Protection Instructions

By authorized and qualified specialized personnel only.

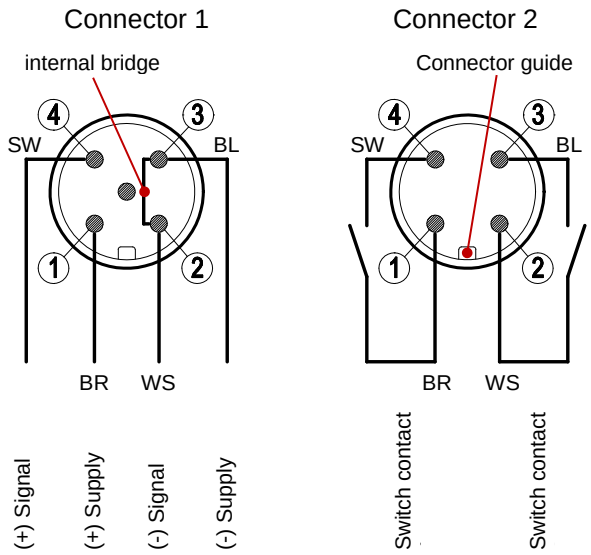
Disconnect the system from the mains before connecting the device.

- Do not take out the connecting plug while energized
- To guarantee safe operation of the instrument, the supply circuit must satisfy the requirements for zone 2, category 3, and the locally applicable regulations and guidelines for the installation and operation of electrical systems in explosion hazard areas (e.g. EN 60079-14, EN 50014).
- The supply voltage (24 V DC) may not exceed 32 V DC. The supply circuit must be protected by a 200mAT fuse.
- Refer to the technical data for the recommended power supply.
- The instrument may only be configured with the EU03.F300 configuring adaptor outside of the explosion hazard areas (i.e. outside zone 2).

Earth the unit.



4.3 Connection diagram



Supply voltage / signal output:

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

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

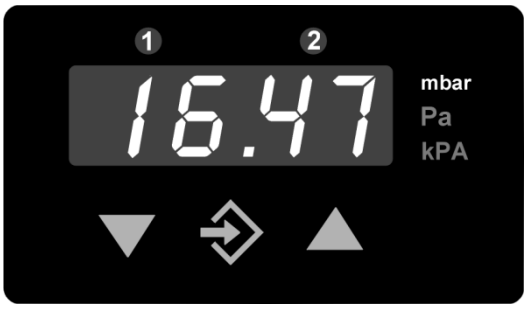
The connection "Signal ground“ is connected internally to the supply ground. It only serves as the ground connection for the output signal. This means that the output signal is free of interference levels on the power supply lines.

5 Commissioning

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.

5.1 Display



The 3.5 digit LCD display represents the current differential pressure in normal mode. The selected measuring unit is illuminated on the right of the display. (Note: The units shown on the screen may deviate from the actual version). Above the display the two light diodes ❶ ❷ indicate the status of the switching outputs (LED shines = switch is closed).

When setting the parameters, the display either shows the respective menu item or the associated parameter value. The device continues to function whilst the parameters are being set; apart from two exceptions, the changes come into effect instantly.

The exceptions here are a change of switching times - here the previously valid time must have run down and a change to the support point table (see 5.2.7). All output signals and switching statuses are frozen here until the changes are completed.

5.2 Configuration

For commissioning there is a multitude of setting options for the optimum adaptation of the device to the measuring point and task at hand. This section covers these options step by step.

Depending on the current device model (no transmitter signal / voltage output / current output) other menu items are not available. For example, all characteristic curve functions are faded out in the menu if the device does not have a signal output.

All the device settings can be made easily on the PC using the PC adapter. Here, the parameters are directly visible and accessible. Also, the entire configuration can be loaded, saved and documented as a printout. For more information about this program, please refer to the documentation enclosed with the PC adapter.

Please note that this parameter setting mode can only be carried out in ex-free zone, i.e. outside zone 22.

5.2.1 Selecting the pressure unit

Connect the device to the power supply and ensure that it is not under any pressure (if necessary, disconnect any pressure lines).

First select the pressure measuring unit. The unit that is currently valid is illuminated to the right of the number displays. Press the middle key ⏎ to make the setting and then search for the parameter *Ein* using the right-hand key ▲. Press ⏎ again and then change the displayed value using ▲ or ▼. Once the value has been selected, save it with ⏎ and *Ein* will appear again in the display.

Then leave the setting mode. Press ▼ until *ESC* appears and the ⏎. The current measured pressure is shown again. The correct pressure unit is now illuminated to the right of this.

The display can only show up to ±1999. Therefore in some cases it may not be possible to select all stated pressure units

5.2.2 Zero point control and adjustment

If the device does precisely indicate zero at this point of time, parameter *oFI* enables you to adjust the measuring value exactly to zero. To do so you, you have to set the measuring value indicated below *oFI* to zero.

After zero-point adjustment, the pressure sensing lines can be reconnected.

5.2.3 Damping and zero-point stabilising

If there are unsteady pressure readings at this point of time or during operation, you can use parameters *dAn* and *nP* to stabilise the reading (and the output signal).

The effect of parameter *dAn* (on the reading, output signal and switching points, but not on the measuring cell!) can be compared to that of a capillary throttle. You can set the response time to pressure jumps ranging from 0.0 to 100.0 seconds. But with maximum damping, it will take more than 2 minutes for the reading to also reach zero after a pressure jump from nominal pressure (100 %) to zero!

In many cases the unsteady readings are not a problem in normal mode, but can be a problem in idle mode, i.e. if one expects a zero (differential) pressure. In such situations, parameter nP can be applied. Its value defines a range of measurement values (same as with the offset) around zero, for which the measuring value is set to zero. Therefore, if a value of 0.08 mbar (8 Pa) is entered for NP, all pressures from -0.08 mbar (-8 Pa) to +0.08 mbar (+8 Pa) become zero. Only if the pressure exceeds these limits, the reading will not indicate zero any more. When reaching double the value 0.16 mbar (16 Pa), the measuring pressure and reading match again.

5.2.4 Setting the output signal

The transmitter output signal initially depends on the sensed pressure. However, you have the option of adjusting the output signal to a large extent to suit your requirements. The basic measuring range (indicated on the type label) and the type of output signal (voltage / current) are not variable.

Parameters nA (start of measuring range) and nE (End of measuring range) initially define the two pressures between which the output signal will change at all. Both values are adjustable across the entire basic measuring range (e.g. 400 Pa). The set values always refer to pressure (in the relevant measuring unit) and are converted when the measuring unit is changed. However, the signal values (current or voltage) for nA and nE are invariable (type label, e.g. 0…10 V or 4…20 mA).

If nA is smaller than nE, this is called an increasing characteristic curve; the output signal increases due to the increasing pressure. If nE is smaller than nA, this is a decreasing characteristic curve and the output signal decreases due to decreasing pressure.

The difference between values nA and nE shall at least be 25 % of the basic measuring range (in our example this is 100 Pa). The software does not provide for greater spreads (you cannot exit the menu if wrong values were entered for the range).

5.2.5 Output signal limits (Namur)

Regardless of the pressure, the three parameters oGl, oG2 and oEr define the limit values for currents or voltages that may not be undercut or exceeded. The limit values take precedence over the range defined by nA ... nE!

These parameters primarily serve to suppress error messages in downstream systems caused by brief overstepping of measuring ranges. oGl is only relevant for devices with an output signal 4..20 mA because here a value below 3.8 mA is often assessed as an error value. oG2 can be used for all outputs (voltage and current) to limit the maximum value to e.g. 10.2 V.

The value defined via the parameter oEr is issued if the device detects an internal error and can no longer work correctly. However, not all possible errors and defects can be detected by the device.

If you set oGl = oG2 = 0, the output signal will no longer be checked for limits.

If you set oGl to the maximum value (11 V or 21 mA), you can use oG2 to set the output signal from zero to the maximum value regardless of the pressure. It is not necessary to quit the menu item, the output will be adjusted directly. You then operated the device as a signaller and can easily check further signal processing.

5.2.6 Transfer function / characteristic curve

In some applications, measuring pressure is an indirect unit for the actual measuring variable. Flow measurements via a panel or determining the filling level by means of hydrostatic pressure measurements are two typical examples of this. In these cases, you might want to change the output signal of the transmitter to a non-linear characteristic curve so that the following analysis receives a signal that is linear-proportional to the actual measuring variable (e.g. volume in m³ or volume flow cm³/s etc.)

The parameter F allows you to select between the following variants:

- 0: linear characteristic curve (standard)
- 1: square rooted characteristic curve
- 2: flat cylindrical tank
- 3..30: Support point table with 3 to 30 pairs of values

The tables of type F = 0 to F = 2 are not visible. Internal values are used here to calculate the table. These values are invariable.

The following applies for all tables: at nA 0% of the output signal (i.e. 0 V, 0 mA or 4 mA) is issued and at nE 100% of the output signal (10 V or 20 mA) is issued. At F = 3..30 you can only influence the 1..28 interim values. You have access to the star and end value via the parameters nA and nE. Therefore, when these values are changed, the table is also deleted and F = 0 is set!

Whenever you change the value from F, the program creates a new table. All previous values in the table are removed and replaced with new linear entries.

5.2.7 Characteristic curve (F = 3..30)

If the value of F is greater than or equal to 3, there is a submenu Lin. here you can access all table values apart from the table start (nA) and end (nE). This submenu has its own entry and exit point that is shown with End. The table is only saved if you return

to the main menu at this point, i.e. if you change to the parameter Lin again via the key ◈. If the table is not structured correctly, an error message Err will appear here and you cannot quit the submenu.

The table comprises 1...30 pairs of values. One value (i01 to i30 or u01 to u30) defines the height of the output signal, the associated value P01 to P30 defines the pressure at which the output signal should be issued.

Entering or changing values in the table via the membrane keypad is tiresome and prone to errors. This is only intended as an emergency solution in case access to the PC adapter is not possible.

The table is correct if the following applies for all signal values: The value is larger than the previous value. Either larger (rising characteristic curve) or smaller (falling characteristic curve) apply to the pressure values accordingly. No transition from rising to falling characteristic curves or vice versa is allowed.

5.2.8 Switch points

The two switch outputs ❶❷ are configured by four parameters respectively.

The function of the switching output 1 is determined by the parameters r1A, r1E, r1d and r1F.

The function of the switching output 2 is determined by the parameters r2A, r2E, r2d and r2F.

r1A defines the switch-off point, r1E defines the switch-on point from switch output 1. The values are set in the currently valid measuring unit (shown on the right). Together, the two parameters r1A and r1E determine the switch function of switch output 1:

If r1A is smaller than r1E, the output switches on, if the measured value exceeds r1E. It is only switched off again if the measured value r1A is undercut (hysteresis function).

If r1A = r1E, the output switches on if the measured value exceeds r1E and off, if the measured value undercuts r1A.

If r1A is larger than r1E, the output switches on, if r1E < measured value < r1A applies (window function).

Both parameters can be set independently over the entire range. If the measuring unit is switched over, the switching points are converted accordingly. Rounding errors may cause deviations in the last position.

r1d allows the reaction of the switch output 1 to be delayed by between 0.0 and 100.0 s. This value applies equally for switching on and off.

r1F reverses the function of the switch output. If the value = 1, the switch output works as an NO contact, if the value = 2, the switch output works as a NC contact.

5.2.9 Password

The last menu item -P- is used to enter a password. A value between 001 and 999 can be selected for the password. The value 000 cancels the password function.

If a password has been issued, the text PAS appears after ESC and ◈, and you need to enter the correct value using ◈ and ▲,▼. You will only arrive at all other menu items after doing this. In the event of an error, the display will jump back to the start of the menu ESC.

5.2.10 Display options

The parameter d0 enables the reading to settle if the measuring value fluctuates heavily. This filter function is similar to the dAM function, but only impacts on the reading not on the output signal.

In addition, the display can be shut down partially (d0 = -1, only the switch point LEDS are controlled) or in full (d0 = -2).

5.2.11 Reset to default

The function rES allows all settings to be reset to default values. The default values can only be defined per PC interface.

5.2.12 Free unit

Parameters nAF, nEF and dPF.

If the device is designed for a "free" third unit (membrane symbol: 🡻), the display can be scaled infinitely.

The measuring range defined by the values nA and nE is converted to nAF and nEF. The table function (F) is also taken into account. The value of dPF determines the position of a decimal point.

5.3 Parameter overview

After switching on the device, it will briefly indicate the software version number and before entering the normal operating mode. By using the middle ◆ key on the membrane keypad you can access the parameter menu. The reading now shows the text ESC. By using the right ▲ key, you can choose the parameters from the following list one by one:

Note:
Depending in the device model, individual parameters may not be available if the device does not have this feature.

PAS Enter password (only comes up if password is active), value range 001..999

dAM Damping (jump response time T90), value range 0.0..100.0s

dO Display damping
Value range 0..100. plus
-1 = no digital value and
-2 = display completely switched off.

r1A Switch-off point of switching output 1

r1E Switch-on point of switching output 1

r1d Switch delay from switch output 1
Value range 0.0 s to 100.0 s. This value applies equally for switching on and off.

r1F Switch function of switch output 1
If the value = 1, the switch output works as an NO contact, if the value = 2, the switch output works as a NC contact.

r2A Switch-off point of switching output 2

r2E Switch-on point of switching output 2

r2d Switch delay from switch output 2
Value range 0.0 s to 100.0 s. This value applies equally for switching on and off.

r2F Switch function of switch output 2
If the value = 1, the switch output works as an NO contact, if the value = 2, the switch output works as a NC contact.

Ein Measuring range unit
The selection is backlit on the right next to the display. Not all basic measuring ranges allow free switching. The respective unit size can only be selected if the basic measuring range of the device can be shown sensibly.

nA Start of measuring range
Set the measuring value that results in a minimum output signal (depending on the version, this is 0 V, 0 mA or 4 mA).

nE End of measuring range
Set the measuring value that results in a maximum output signal (depending on the version, this is 10 V or 20 mA).

dPF Decimal point position
for free unit.

nAF Start of measuring range
display value for free unit.

nEF End of measuring range
display value for free unit.

nP NP Zero-point stabilising
The range is 1/3 of the basic measuring range. The value acts symmetrically around real zero.

oFI Offset correction for measuring input 1
range +/- 1/3 of the basic measuring range.

F Characteristic line function
0 = linear,
1 = rooted,
2 =flat cyl. tank
3...30 = table

Lin Menu indent table processing

oG1 Limit value for minimum output signal

oG2 Limit value for maximum output signal

oEr Error signal
Output signal in error case

rES Reset for all reset settings to default values (presetting of defaults only via PC).

-P- Password entry
All values from 001 to 999 are allowed as a password. Value 000 does not hold password protection.

If the password is forgotten, it can only be reset by the manufacturer or overwritten via the PC adapter.

6 Maintenance

The instrument is maintenance-free.

We recommend checking the instrument at regular intervals to ensure reliable operation and a long service life.

- Check the reading.
- Check the switching function in combination with downstream components.
- Check the leak-tightness of the pressure connection lines.
- Check the electrical connection (cable clamp connections).

The precise test cycles need to be adapted to the operating and ambient conditions. If various instrument components interact, the operating instructions of all the other instruments also need to be observed.

7 Transport

The measuring device must be protected against impacts. It may only be transported in packaging specifically intended for transport.

8 Service

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

Processed 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.

9 Accessories

- Set of cables with M12 connectors (please enquire)
- PC adapter with type EU03F300 software

10 Disposal

For the sake of the environment ....

Please help to protect our environment and dispose of or recycle used instruments as stipulated by the applicable regulations.

11 Technical data

			+ ranges (0 …)										± ranges							
Measuring Range		mbar	4	6	10	16	25	40	60	100	160	250	2.5	4	6	10	16	25	40	60
		Pa	400	600	1000	1600							250	400	600	100	1600			
		kPa	0.4	0.6	1.0	1.6	2.5	4.0	6.0	10.0	16.0	25.0	0.25	0.4	0.6	1.0	1.6	2.5	4.0	6.0
Static operating pressure	max.	mbar	50		100		250		500		1500		50			100		250		500
Bursting pressure		mbar	150		300		750		1500		3000		150			300		750		1500
Characteristic curve deviation	max.	%FS	1.0										1.0							
	typ.	%FS	0.5										0.5							
Tk span°°)	max.	%FS/10K	1.0		0.3						0.4		1.0	0.5	0.3					
	typ.	%FS/10K	0.3										0.3							
Tk zero-point °°)	max.	%FS/10K	1.0		0.4								1.0	0.5	0.4					
	typ.	%FS/10K	0.2										0.2							

°: Characteristic curve deviation (non-linearity and hysteresis) at 25°C, basic measuring range (linear characteristic curve, not spread)
°°: with reference to the basic measuring range (not spread), Compensation range 4..60°C.

General points

Adm. ambient temperature	**-10 °C ≤ T_{amb} ≤ 60 °C**
Adm. media temperature	**-10 °C … 60 °C**
Adm. storage temperature	-20 °C … 70 °C
Enclosure protection class	IP65 acc. to DIN EN 60529

Electrical data

Power supply	**A CE-compliant power supply unit with a 200mAT fuse only may be used as a power supply.**
Rated Voltage	24 V AC/DC
Adm. operating voltage U_b	12 … 32 V AC/DC
Electrical connection type	Three-conductor
Analogue output signal	0 … 20 mA, 4 … 20 mA, 0 … 10 V
Admissible apparent ohmic resistance	for current output: R_L ≤ (U_b -4 V)/0.02 A für U_b ≤ 26V, otherwise R_L ≤ 1100Ω For voltage output: R_L ≥ 2kΩ for U_b ≥ 15V, R_L ≥ 10kΩ for U_b = 12…15V
Characteristic curve	programmable linear, square rooted, table
Power consumption	approx. 2 W / VA
Display	3.5 character LED

Ports

Process connection	2 x aluminium hose screw connection for 6/4 or 8/6 mm hose 2 x round plug connector
electr. connection	Connector 1: 5 pin M12 (male) for supply and analogue output signal Connector 2:4 pin M12 for (male) switch contacts

Materials

Housing	Polyamide PA 6.6
Media-contacting material	Silicon, PVC, aluminium, brass

Assembly

Bore-holes on the reverse side for attachment of the assembly panels
panel mounting set
Wall mounting by means of assembly plate

Designation guideline 2014/34/EU	**CE II 3D Ex tc IIIB T125° Dc**

11.1 Programming

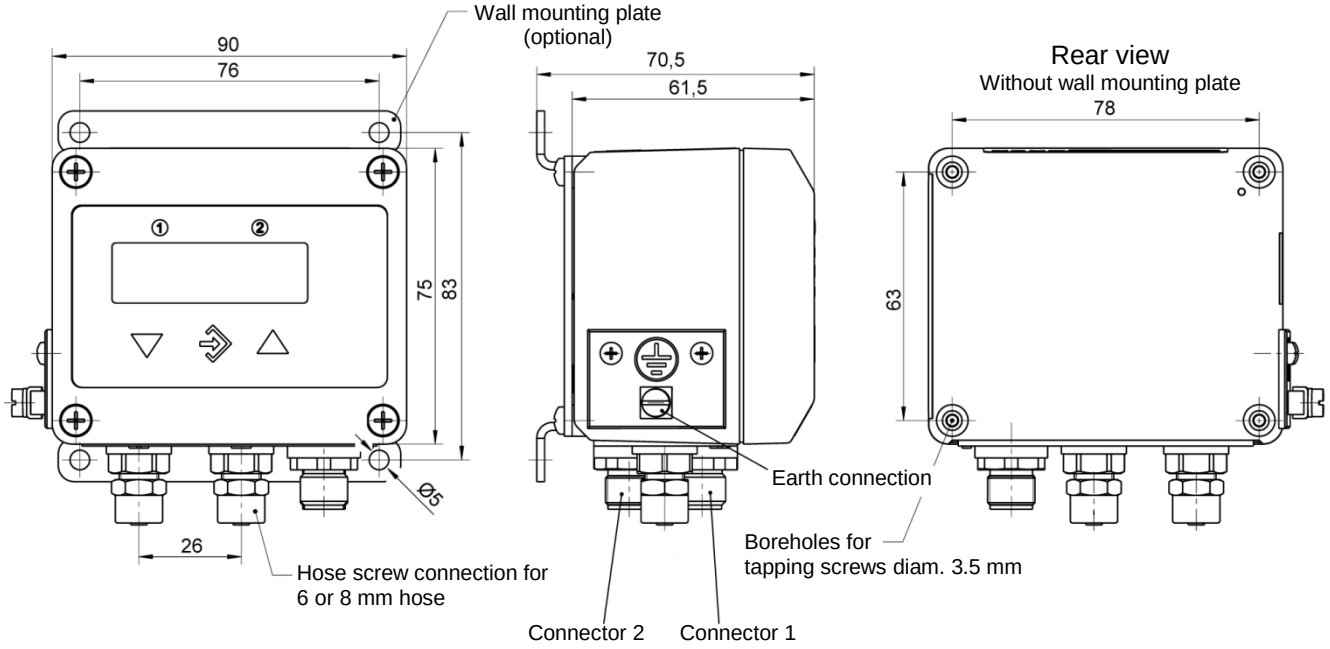
Programmed via the membrane keyboard with menu navigation; locked with a password.

Settings

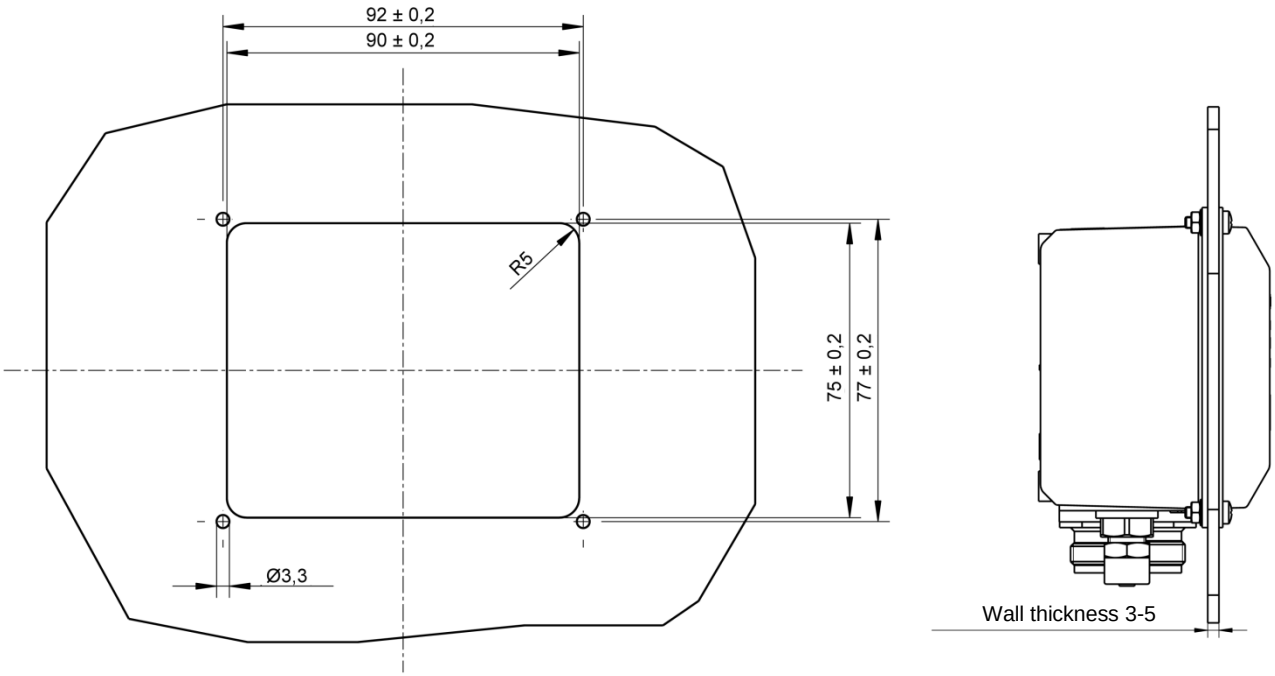
Attenuation	0.0 … 100.0 s (jump response time 10 / 90 %) for signal output; separately also for display
Switch output 1 / 2	Switch-off point, switch-on point, response time (0 ... 100 s); function (NO contact /NC contact)
Measuring range unit	m / Pa / "free unit"È, starting value, end value and decimal point for "free unit"
Zero-point stabilising	0 ... 1/3 of the basic measuring range (1)
Output signal	User-definable within the basic measuring range (2)
Zero point correction	± 1/3 of the basic measuring range (3)
Implementation of characteristic curve	linear, square rooted, flat cyl. tank, 3...30 support points
Password	001 ... 999 (000 = no password protection)

Comments:
(1) Measured values (around zero) are set to zero, e.g. to suppress leak flow rate.
(2): Maximum effective spread 4:1. Only the output signal is influenced.
This in turn enables a decreasing characteristic curve, if the start of the measuring range > end of the measuring range.
(3): Zero point correction for compensation of various installation positions.

12 Dimensional drawings



12.1 Panel mounting set



13 Order Codes

Digital differential pressure switch / transmitter, with 3 ½-digit LED display

Type DE45

		0	0				K		6	L		S####

Measuring Range

0	…	4	mbar	>	5 2
0	…	6	mbar	>	5 3
0	…	10	mbar	>	5 4
0	…	16	mbar	>	5 5
0	…	25	mbar	>	5 6
0	…	40	mbar	>	5 7
0	…	60	mbar	>	5 8
0	…	100	mbar	>	5 9
0	…	160	mbar	>	6 0
0	…	250	mbar	>	8 2
-2.5	…	+2.5	mbar	>	A 6
-4	…	+4	mbar	>	A 7
-6	…	+6	mbar	>	A 8
-10	…	+10	mbar	>	A 9
-16	…	+16	mbar	>	B 1
-25	…	+25	mbar	>	B 2
-40	…	+40	mbar	>	C 5
-60	…	+60	mbar	>	B 3
-100	…	+100	mbar	>	B 4
0	…	400	Pa	>	D 7
0	…	500	Pa	>	J 7
0	…	600	Pa	>	D 8
0	…	1000	Pa	>	D 9
0	…	1600	Pa	>	E 1
-250	…	+250	Pa	>	L 6
0	…	1	kPa	>	N 1
0	…	1,6	kPa	>	N 2
0	…	2,5	kPa	>	N 3
0	…	4	kPa	>	N 4
0	…	6	kPa	>	N 5
0	…	10	kPa	>	E 5
0	…	16	kPa	>	E 6
0	…	25	kPa	>	E 7
-1	…	+1	kPa	>	L 8
-1,6	…	+1,6	kPa	>	L 9
-2,5	…	+2,5	kPa	>	M 6
-4	…	+4	kPa	>	M 7
-6	…	+6	kPa	>	M 8

Pressure connection

Aluminium screw connection for 6 / 4 mm hose	4 0
Aluminium screw connection for 8 / 6 mm hose	4 1

Electrical output signal

without analogue electrical output signal	> 0
0 – 20 mA 3-wire (STANDARD)	> A
0 – 10 V DC 3-wire (STANDARD)	> C
4 – 20 mA 3-wire (STANDARD)	> P
4 - 20 mA 3-wire, reduced, **only for measuring unit Nm³/h, m³/h, l/min**	> F
0 - 10V 3-wire, reduced, **only for measuring unit Nm³/h, m³/h, l/min**	> G

Operating voltage

24 V DC/AC (12 - 32 V DC/AC)	> K

Measuring unit

Standard pressure units	> 0
Nm³/h	> A
m³/h	> B
0 - 100%	> C
mmWS	> D
mmWC	> E
l/min	> F

Measured value display / contact elements

3 1/2-digit LED – 2 semiconductor switches	> 6

Electrical connection

M12 connector socket Ms-nickel-plated	> L

Assembly option

Standard (attachment boreholes on rear side)	> 0
Panel mounting set	> T
Wall mounting	> W

Customer-specific no.

Identification for use in Zone 22 - Risk from dry dust: CE Ex II 3D Ex tc IIIB T125°C Dc	> **S####**

13.1 Accessories

Purchase order number	Designation	No. of Poles	Usage	Length
06401993	Connection cable with M12 connector	4-pole	for switching outputs	2 m
06401994	Connection cable with M12 connector	4-pole	for switching outputs	5 m
06401995	Connection cable with M12 connector	5-pole	for supply / signal	2 m
06401996	Connection cable with M12 connector	5-pole	for supply / signal	5 m
EU03.F300	Adapter for parameterization via PC software			

14 Manufacturer's Declarations and Certificates

FISCHER
MESS- UND REGELTECHNIK

CE

EU Declaration of Conformity

(Translation)

For the product described as follows

Product designation **Digital Differential Pressure Switch / Transmitter**

Type designation

DE45 ## 00 ### K0 # M # R#### **Zone 2**
DE45 ## 00 ### K # 6L # S#### **Zone 22**

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.

Electromagnetic compatibility (EMC)

EN 61326-1:2013	*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*

Explosive atmospheres (ATEX)

EN 60079-0:2012 + A11:2013	*Explosive atmospheres - Part 0: Equipment - General requirements*
EN 60079-15:2010	*Explosive atmospheres - Part 15: Equipment protection by type of protection "n"*
EN 60079-31:2014	*Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"*

RoHS

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**".

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 Salzuflen, Germany
Tel. +49 5222 974 0

Documentation representative
Mr. Torsten Malischewski
Dipl. Ing.
Development department

The devices bear the following marking:
CE Ex II 3G Ex nA IIC T4 Gc **Zone 2**
CE Ex II 3D Ex tc IIIB T125°C Dc **Zone 22**

Bad Salzuflen, 18 March 2019
G Gödde
Managing director

09010202 CE_EN_DE45_ATEX Rev.C 03/19

Seite **1** von **1**