FISCHER
MESS- UND REGELTECHNIK

Operating manual

EA14M | **Pressure indicator**

with colour-changing LCD

Table of Contents

1 Safety guidelines

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 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.

1.1 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 pertinent standards.

1.2 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.

1.3 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.

In Germany these are the DIN EN, UVV regulations, specific industrial guidelines such as DVGW, Ex, GL, etc., the VDE-

09005881 BA_EN_EA14M_LCD Rev.B 12/22
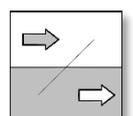
regulations and the regulations of the local energy supply companies.

1.4 Unauthorised Modification

Modifications of or other technical alterations to the instrument 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.

1.5 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.

1.6 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.

1.7 Explanation of symbols

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

The EA14A can be used as a transmitter and display unit for measuring pressure. The device analyses a signal (current or voltage) that originates from an external transmitter.

3 Product and functional description

3.1 Function diagram
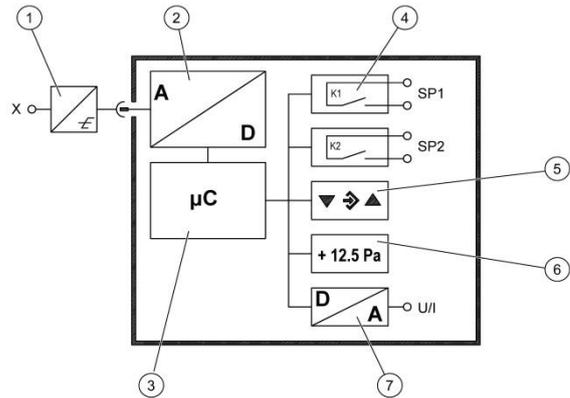
1	Transmitter with input signal	2	Signal conversion
3	Micro-controller	4	Switch output
5	Keyboard	6	Display
7	Analogue output		

3.2 Design and mode of operation

This device is based on an electronic analysis switch that analyses the measuring signal of an external transmitter. The main task is to display and analyse the measured signal. Optionally, an output signal can be provided that is proportional to the input signal.

The external transmitter is connected to the analysis circuit using a flexible cable with plug connectors which also acts as the power supply. Only the supplied transmitters may be connected.

4 Installation and assembly

The device is designed for installation onto flat assembly plates. For screw connection to the assembly plate, the device features four assembly bores on its back, which can be used for Ø 3.5 mm tapping screws. Optionally, the device can be delivered with a wall-mounting plate.

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

If the device is intended for outdoor use, we recommend permanently protecting the membrane keypad 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.
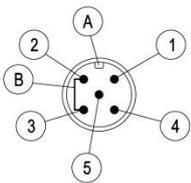
4.1 Process connection

Please note the installation instructions and safety information relating to the external transmitter.
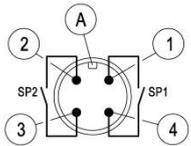
4.2 Electrical connections

- By authorized and qualified specialized personnel only.

- When connecting the device, the relevant national and international electro-technical rules must be observed.

- Disconnect the system from the mains, before electrically connecting the device.

- Switch the consumer-adapted fuses.

- The following signals apply to the signals:

$+ U_b$	Power supply to the unit
$- U_b$	Power supply to the unit
+ Out	Analogue output
- Out	Analogue output
FE	Functional earth (low-external voltage earth)
SP1	Switching output 1
SP2	Switching output 2
$+ U_T$	Supply ext. Transmitter (output)
$- U_T$	Supply ext. Transmitter (output)
$+ Sig_T$	Analogue input fir external transmitter signal
$- Sig_T$	Analogue input fir external transmitter signal
n.c.	not connected

4.2.1 Supply and output signal connection

Connector 1	Pin	Signal name		Cable colour
	1	$+U_b$		brown
	2	- Out		white
	3	$- U_b$		blue
	4	+ Out		black
	5	FE	⏚	green/yellow
	A	Coding		
	B	Internal bridge Pin 2/3		

Pin 2 and Pin 4 on units without an output signal have no function (n.c.).

4.2.2 Connection of the switching outputs

Connector 2	Pin	Signal name	Cable colour
	1	SP1	brown
	2	SP2	white
	3	SP2	blue
	4	SP1	black
	A	Coding	

4.2.3 Connection of the external transmitter

The external transmitter is connected with a 2 or 3-line connection depending on the model.

2L connection standardised plug
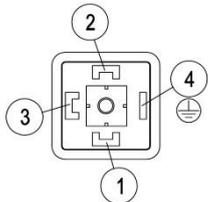
Connector 3	Pin	Signal name		Cable colour
	1	$+ U_T$	$+ Sig_T$	brown
	2	$- U_T$	$- Sig_T$	blue
	3	n.c.		black
	4	FE	⏚	green/yellow

3L connection standardised plug
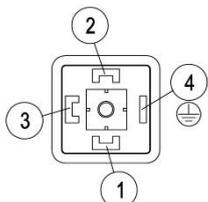
Connector 3	Pin	Signal name		Cable colour
	1		$+ Sig_T$	brown
	2	$- U_T$	$- Sig_T$	blue
	3	$+ U_T$		black
	4	FE	⏚	green/yellow

2L connection M12 Built-in socket
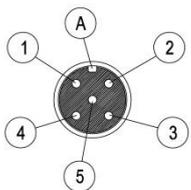
Connector 3	Pin	Signal name		Cable colour
	1	$+ U_T$	$+ Sig_T$	brown
	2	n.c.		white
	3	$- U_T$	$- Sig_T$	blue
	4	n.c.		black
	5	FE	⏚	green/yellow
	A	Coding		

3L connection M12 Built-in socket
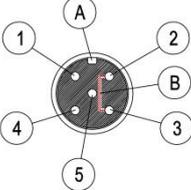
Connector 3	Pin	Signal name		Cable colour
	1	$+ U_T$		brown
	2		$- Sig_T$	white
	3	$- U_T$		blue
	4		$+ Sig_T$	black
	5	FE	⏚	green/yellow
	A	Coding		
	B	Internal bridge Pin 2/3		

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.

5.1 Configuration

During commissioning there are a number of setting options that allow the device to be adapted to the measuring point and measuring task. To facilitate the input, the individual parameters are placed into groups in so-called menu levels.

Depending on the device model[1] some menu items are not available. For instance, no switch points can be set on a device without contacts.

Tipp All the device settings can be made easily on the PC using the transmitter PC interface. Here, the parameters are directly visible and acce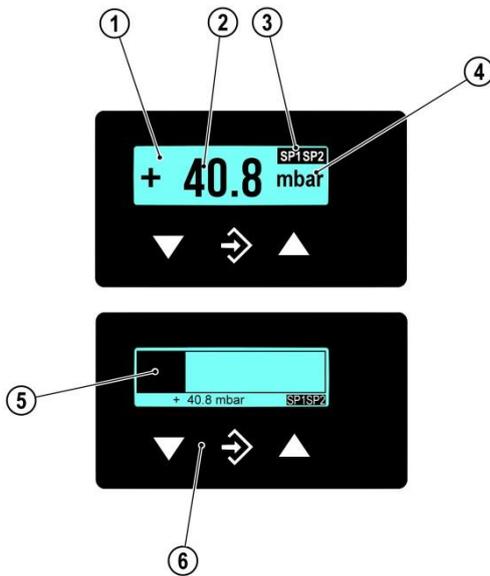ssible. Also, it is possible to load and save the entire configuration; it can also be printed out for checking (see accessories).

5.2 Control Elements

5.2.1 LC display

1 LC display with back lighting
2 Measurement display 4…6 digits
3 Status display of the switch points
4 Unit
5 Bar chart display
6 Keyboard

In normal mode, the current measured value is shown on a 4-digit LC display. To show very large values, it is possible to switch to a 5 or 6-digit

presentation (see Parameter **MB decimal place** in section 5.3.5).).

The unit is shown on the right of the display. If the device is equipped with contacts, a closed contact is always symbolised by an inverted text "SP1" or "SP2".

Various colours can be selected for the back lighting. Depending on the measured value, the colour of the back lighting can be automatically changed. This can be used e.g. to depict good/poor differences. The back lighting can also be deactivated.

The measured value can also be shown in a bar chart. The measured value is also shown in smaller pictures as a number.

During the programming, the menu items and the associated parameters are shown on the display. The device continues to function whilst the parameters are being set; apart from one exception, the changes come into effect instantly. The exception here is a change of switching times - here the previously valid time must have run down.

5.2.2 Keyboard
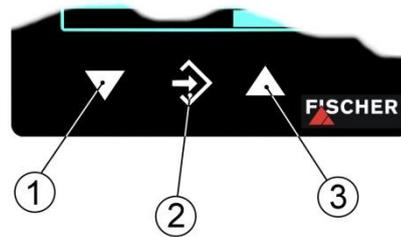
1 Menu downwards, reduce value
2 Call up menu, save value
3 Menu upwards, increase value

The individual menu items and parameters can be displayed using the buttons ▲ and ▼. The respective menu item is selected or the parameters for making changes are called up via the button ◈.

If a parameter can be changed, the display flashes. The change is made via the buttons ▲ and ▼. The value is saved with the button ◈.

To leave a menu level or the entire menu, select "Quit" and press ◈.

> ⓘ **Example: Setting the switch points**
>
> In normal mode, press the button û to enter the menu. **Menu Level Switch points** appears in the display; to change the switch points press the ◈ button again and the parameter **Switch point 1 on** is shown.
>
> The device jumps to the input:

---

[1] with regard to the transmitter signal, voltage output, current output, etc.

- The parameter is stated in the first line.

- The value that is to be changed is shown in the second line, the display flashes.

- The input limits are displayed in the 3rd line (if there is one).

The required value is set with the buttons ▲ and ▼ and then confirmed with ⬦.

5.3   Menu

Description   *Parameter name*

Menu Level Switch points

Switch point 1:

Switch point 1 On ....**SP1 On**
Switch point 1 Off ....**SP1 Off**
Switch point 1 Delay................ ....**SP1 Delay**
Switch point 1 Function ....**SP1 Function**

Switch point 2:

Switch point 2 On ....**SP2 On**
Switch point 2 Off ....**SP2 Off**
Switch point 2 Delay................ ....**SP2 Delay**
Switch point 2 Function ....**SP2 Function**

Menu Level Input

Damping................................... ....**Damping**
Offset correction......................... ....**Offset correction**
Zero-point window.................. ....**Zero-point window**

Menu Level Measuring

Measuring range start ....**Meas. range Start**
Measuring range end ....**Meas. range. End**
Measuring range unit............... ....**Unit**
Measuring range limit ....**Limit**

Menu Level Output

min. output ....**min. Output**
max. output ....**max. Output**
Error signal............................... ....**Error signal**

Menu Level Function

The menu will change depending on the entered value, linear, square rooted or table:

(a) Value = linear:

Function:.............................. ....**linear**

(b) Value = square rooted

Function: ....**Square rooted**
Measuring range decimal places.....**Decimal places MB**
Start of measuring range.... ....**MB-start**
End of measuring range..... ....**MB-end**
Measuring range unit ....**Unit MB**

(c) Value= Table

Function: ....**Table**
Measuring range decimal places.....**Decimal places MB**
Start of measuring range.... ....**MB-start**
End of measuring range..... ....**MB-end**
Measuring range unit ....**Unit MB**
Number of pair(s) ....**Number of pairs**

Depending on the input followed by :
Pair 1   ....**Value pair 1**
Pair 2   ....**Value pair 2**
Pair 3   ....**Value pair 3**
       •
       •
       •
Pair n   ....**Value pair n**

Menu Level Display

Colour....................................... ....**Colour**

(a) The menu changes for the value Auto1:

Red-green switchover........ ....**Red-green switcho.**
Green-red switchover ....**Green-red switcho**.
Hysteresis............................. ....**Hysteresis**
Delay   ....**Delay**
Colour   ....**Colour**

(a) The menu changes for the value Auto2:

Red-yellow switchover........ ....**Red-yellow switcho.**
Yellow-green switchover..... ....**Yellow-green switcho**.
Green-yellow switchover..... ....**Green-yellow switcho**.
Yellow-red switchover........ ....**Yellow-red switcho**.
Hysteresis............................. ....**Hysteresis**
Delay   ....**Delay**
Colour   ....**Colour**

Lighting time ....**Lighting**
Contrast...................................... ....**Contrast**
Bar chart..................................... ....**Bar chart**

Menu Level System

Language switchover................ ....**Language**
Device information ....**Software Info**
Device information ....**Config Info**
Operating time/switch cycles..... ....**Statistics**
Access control ....**Password**
Data backup ....**Load config.**
Data backup ....**Save config.**

5.3.1   Menu Level Switch points

The two switching outputs are configured by four parameters respectively.

For the switch point 1 these are

SP1 On
SP1 Off
SP1 Delay
SP1 Function

Accordingly for switch point 2:

SP2 On
SP2 Off
SP2 Delay
SP2 Function

SP1 On defines the activation point, **SP1 Off** the deactivation point of switch output 1. The values are shown in the valid unit and set accordingly. The values are shown in the valid unit and set accordingly.

Together, the two parameters determine the switch function of switch output 1:

If **SP1 Off** < **SP1 ON**, the output switches on, if the measured value exceeds **SP1 ON**. It is only switched off again if the measured value **SP1 Off** is undercut (hysteresis function).

If **SP1 On** = **SP1 Off**, the output switches on if the measured value exceeds **SP1 On** and off if the measured value undercuts **SP1 Off**.

If **SP1 Off** > **SP1 ON**, the output switches on, if **SP1 On** < Measured value < **SP1 Off** applies (window function).

Both parameters can be set independently over the entire range.

SP1 Delay allows the reaction of the switch output 1 to be delayed by between 0 and 1800 s. This value applies equally for switching on and off.

SP1 Function changes the function of the switch output. It is possible here to define whether the contact should work as an open contact (NO) or a break contact (NC).

5.3.2   Menu Level Input

Damping
Offset correction
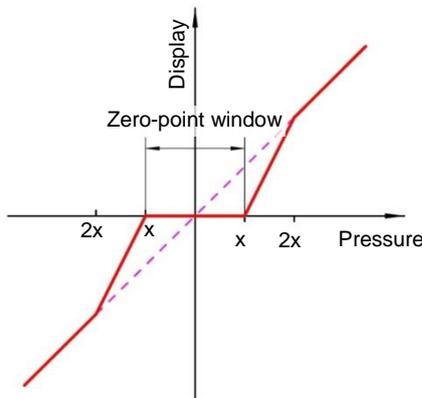**Zero-point window**

If there are unsteady pressure readings during operation, you can use the parameters **Damping** and **Zero-point window** to stabilise the reading (and the output signal).

The effect of parameter **Damping** (on the reading, output signal and switching points, if available, but not on the measuring cell!) corresponds to that of a capillary throttle. You can set the response time to pressure jumps in the range 0.0 to 100 s. 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, 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 pressure is expected.

The parameter **Zero-point window** is designed to solve this. Its value defines a range around zero at which the measured value is set to zero (see fig.).

The display only stops showing zero when the pressure leaves the set window. When twice the window value is reached, the measuring pressure and the display correspond again. This avoids jumps in the display.

It makes sense to set the **Offset** (zero-point displacement) if, without pressure (remove measuring line), the display shows a value that is not zero. Be-

fore the offset correction, the zero-point window should be set to zero.

Select the **Offset correction** parameter and correct the reading using the buttons ▲ and ▼ until zero is shown.

When setting the offset, the current measured value is displayed. The zero-point window is not active during the offset setting.

5.3.3   Menu Level Measuring

Measuring range Start
Measuring range End
Unit
Limits

The transmitter output signal primarily depends on the sensed pressure. However, you have the option of adjusting the output signal to a large extent to suit your requirements.

Note: However the basic measuring range (indicated on the type label) and the type of output signal (voltage / current) are not variable.

The parameters **Start of measuring range** and **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. The set values also refer to the pressure (in the respective unit). However, the signal values (current / voltage) for **Start of measuring range** and **End of measuring** range are fixed.

If **Start of measuring range** is smaller than **End of measuring range**, this is called an increasing characteristic curve; the output signal increases due to the increasing pressure.

If **End of measuring range** is smaller than **Start of measuring range**, this is a decreasing characteristic curve and the output signal decreases due to decreasing pressure.

The difference between the values **Start of measuring range** and **End of measuring range** must be at least 25 % of the basic measuring range.

You can select a unit other than the unit of the basic measuring range with the parameter **Unit**. The user should remember however that not every unit is suitable. The conversion is automatic.

The parameter **Limit** allows the display to be limited to the range between **Start of measuring range** and **End of measuring range**.

This makes sense when content is measured to avoid "negative contents". If **Limit** is set to "no", those measured values that are greater or smaller than the end values are shown.

5.3.4   Menu Level Output

min. output
max. output
error signal

The parameters *min. output*, *max. output* and *error signal* define the limits of the output signal that may not be undercut or exceeded regardless of the pressure. The limit values take priority over the range defined by the *Start of measuring range* and *End of measuring range*!

These parameters primarily serve to prevent error messages in downstream systems caused by brief overstepping of measuring ranges.

The parameter *Min. output* is usually only used for devices with an output signal 4…20 mA because frequently values of below 3.8 mA are evaluated as error signals. The *Max. output* value can be used for the voltage and current to limit the maximum value.

The value defined via the parameter *Error signal* is issued if the device detects an internal error and can no longer work correctly. It should be noted here that not all potential errors and faults can be detected by the device itself.

5.3.5   Menu Level Function

Decimal places MB
MB-start
MB-end
Unit MB

Number of pairs
Value pair 1
Value pair 2
Value pair 3
...
Value pair 30

The reading and the output signal can be modified in the Function menu to meet the special requirements.

There are the following functions:

LINEAR: Linear implementation of the input on the display and the output. The range defined in the menu "Measuring" serves as the measuring range. If the function LINEAR is active, the other menu items are cancelled.

SQUARE ROOTED: Here, the input signal is square rooted before being sent to the display and the output. This is necessary e.g. for flow measurements with differential pressure. A free unit can be defined for the display. To do this, the start and end of the display range and the number of decimal points are defined. It is also possible to define the unit with 4 characters.

TABLE: This function allows the input in the display and output to be freely adjusted via a table which has up to 30 support points. Pairs of values comprising the measured value and display value are issued for the support points.

Caution: When switching from TABLE to another function, the table is initialised again and the existing values are lost.

The display range is defined with the parameters *Measuring range decimal points, Start of measuring range* and *End of measuring range*. The user can select the configuration freely.

Using the parameter *decimal place MB*, it is possible to select between a 5 or 6-digit presentation. The resolution is not increased. Only an extra zero (in the case of 6 digits, two zeros) are added.

This serves the correct display of larger values. The measuring range must be positive for the 6 digit presentation.

The *Unit MB* gives the user the option of using a completely independent unit. Letters, numbers or special characters can be used. The unit can be max. 4 characters long.

If the function *TABLE* is selected, then it is also necessary to state the *Number of pairs*. It is defined here how many pairs of values (support points) are used in the table. At least 3, maximum 30 support points are allowed.

Caution: If the number of value pairs is changed, the table is initialised again and the existing values are deleted.

The individual value pairs can be seen and changed with *Value pair 1* to (maximum) *Value pair 30.*

```
Value pair     1
+0.0 mbar      +0.0 %              Limits
+0.0  ... +100.0 mbar
```

A value pair comprises a measured value (left side) and a display value (right side). The measured value must lie within the measuring range and the display value must lie within the defined "free unit". The respective limits are shown during input. The table must contain increasing values.

5.3.6 Menu Level Display

Colour
Lighting
Contrast
Bar chart

Menu change for colour = Auto1:

Red-green switcho.
Green-red switcho.
Hysteresis
Delay
Colour
Lighting
Contrast
Bar chart

Menu change for colour = Auto2:

Red-yellow switcho.
Yellow-green
switcho.
Green-yellow
switcho.
Yellow-red switcho.
 Hysteresis
Delay
Colour
Lighting
Contrast
Bar chart

The parameters for influencing the display are summarised in this menu.

The most important parameter is *Colour*. A fixed background colour (red, green, yellow, blue, pink, and turquoise, white) can be selected here. There are also two auto-functions with colour switching available.
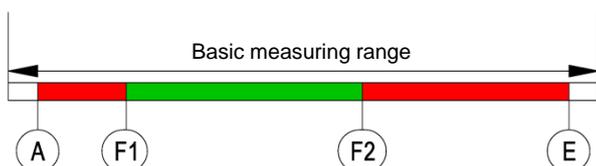
> *Auto1: red-green*,
> *Auto2: red-yellow-green.*

Alternatively, the background illumination can be permanently deactivated.

In the mode with the automatic colour switchover, it is possible to enter the required switch thresholds "red-yellow switchover", "yellow-green switchover", green-yellow switchover, "yellow-red switchover" or "red-green switchover" and "green-red switchover".

The switching thresholds can be moved within the measuring range. The series of switch points cannot be altered.

Auto-function red-green (Auto1)

	Parameter name	Description
A	MB-start	Measuring range start
F1	Red-green switcho.	Colour-change red to green
F2	Green-red switcho.	Colour-change green to red
E	MB-end	Measuring range end

Auto-function red-yellow-green (Auto2)
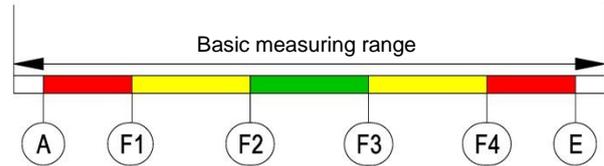
	Parameter name	Description
A	MB-start	Measuring range start
F1	Red-yellow switcho.	Colour-change red to yellow
F2	Yellow-green switcho.	Colour-change yellow to green
F3	Green-yellow switcho.	Colour-change green to yellow
F4	Yellow-red switcho.	Colour-change yellow to red
E	MB-end	Measuring range end

> **Note:** If a range cannot be used, the associated switch thresholds can be set to the same value.

Example:

The parameter Colour is set to Auto2. Only the green, yellow and red ranges are required here. To fade out the lower ranges red and yellow, the switch thresholds "red-yellow switching" and "yellow-green switching" are set to the start of the measuring range.

The parameter *Hysteresis* can be used to prevent fast and unwanted colour changes. The hysteresis is set in the range 0.1... 10%.

> **Note:** In the case of large hysteresis values, steps must be taken to ensure that the ranges of the individual colours do not overlap. Otherwise it is possible that the colour change may not function in the desired way.

The parameter *Delay* offers a further option to prevent unwanted colour changes.

The colour change here can be delayed between 0…1800 s.

If permanent lighting is not required, the parameter *Lighting* can be used to define when the lighting should be switched off after the last time a button is pressed. In addition to permanent lighting, automatic shut-down after 10…600 s is also possible. The set time is only valid if the parameter *Background colour* is not set to "off".

Amongst other things, the legibility of the display depends on the temperature and the reading angle. To ensure optimised legibility, this can be adjusted using the parameter *Contrast*. When the contrast is changed, it is possible that the display appears empty or almost completely black. In this case, the contrast must be turned up or down.

The parameter *Bar chart* is used to switch the display as follows. Either the measured value is displayed with large digits or the display uses small digits and an additional bar chart to show the measured value more quickly.

5.3.7   Menu Level System

Language
Software info
Config info
Statistics
Password
Load config.
Config. Save

The user menu can be switched to German, English, French, Spanish or Italian using the parameter *Language*.

The menu items *Software - Info* and *Config - Info* provide information about the device. This information helps to answer questions about the device quickly.

The device type, controller ID and the firmware version is shown in the software info.

The basic measuring range, the defined output signal and existing contacts are stated in the Config Info.

The *Statistics* provide information about the operating time and the relay switching cycles from the time of delivery. The operating time is shown in days (d) and hours (h)

In the menu item *Password* the menu can be protected with a password to prevent unauthorised changes. The password is a figure from 1 to 999. The input 0 means that no password is active.

The password needs to be set if the user presses the button in normal mode to enter the menu. If a wrong password is entered, the system automatically jumps back to normal mode again. If no password is active, the display immediately jumps to the menu.

Caution: The user is not able to delete a forgotten password!

The user can load a saved configuration via the menu item *Load config.* This means that a functional set of parameters can be loaded after trying out various settings.

Note: If the user has not yet saved a configuration, the default values (status on delivery) are loaded. In this case, any measuring range spreads or switch points are reset and the device needs to be newly configured.

The menu item *Save config.* serves to save the existing parameters in a protected memory area. This is helpful if the settings of a functional device needs to be optimised. *Save config.* and *Load config.* can be used to quickly restore the initial status again.

6   Maintenance

The instrument is maintenance-free.

We recommend the following regular inspection to guarantee reliable operation and a long service life:

- Check the reading.

- 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. If various instrument components interact, the operating instructions of all the other instruments also need to be observed.

7   Transportation

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

8   Service

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

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.

9   Accessories

- Set of cables with M12 connectors (please enquire)

10 Waste 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

Input signal		0…20 mA	4...20 mA	0...10 V
Max. characteristic curve deviation	%FS		0.1	
Typ. characteristic curve deviation	%FS		< 0.05	
Tk span max.°°	%FS/10K		< 0.1	
Tk span typ.°°	%FS/10K		< 0.025	
Tk zero point max.°°	%FS/10K		< 0.1	
Tk zero point typ.°°	%FS/10K		< 0.025	

The stated values refer to the analysis unit and do not take into account the property of the connected filling level transmitter!

°: Characteristic curve deviation (non-linearity and hysteresis) at 25°C, and rated voltage, in reference to basic measuring range (linear characteristic curve, not spread)

°°: with reference to the basic measuring range (linear characteristic curve, not spread),

General points

Admissible ambient temperature	-10 ... 70°C
Admissible media temperature	see data sheet of the connected sensor
Admissible storage temperature	-20 ... 70°C
Enclosure protection class	IP 65 acc. to DIN EN 60529

Electrical data

Rated Voltage	24 VDC / VAC
Allowed operating voltage U_b	12...32 VDC / VAC
Electrical connection type	Three-conductor
Output signal	0...20 mA, 4...20 mA, 0...10 VDC
Admissible apparent ohmic resistance	for current output $R_L \leq (U_b - 4\ V) / 0.02\ A$ ($U_b \leq 26V$), otherwise $R_L \leq 1100\ \Omega$ for voltage output $R_L \geq 2\ K\Omega$ ($U_b \geq 15\ V$), $R_L \geq 10\ K\Omega$ ($U_b = 12 \dots 15V$)

Switch contacts

	2 potential-free relay contacts
Progr. switching function	Open contact (NO) / break contact (NC)
Switching voltage	max. 32 V DC/AC
Max. switching current	2A
Max. switching output	64 W/VA
Power consumption	approx. 2 W / VA (without external sensors)
Advertisement	LCD graphic display

Ports

electr. connection	2 x fitted connectors M12 coding Connector 1 for supply and analogue output signal (5-pin) Connector 2 for switch contacts (4-pin)
External pressure transmitter	Connector 3 1m cable with standardised plug DIN EN 175 301-803-A (4-pin) or Built-in socket M12 Code A (5-pin)

Materials

Housing	Polyamide PA 6.6
Media-contacting material	see data sheet of the connected sensor

Montage

Assembly of the mounting rails
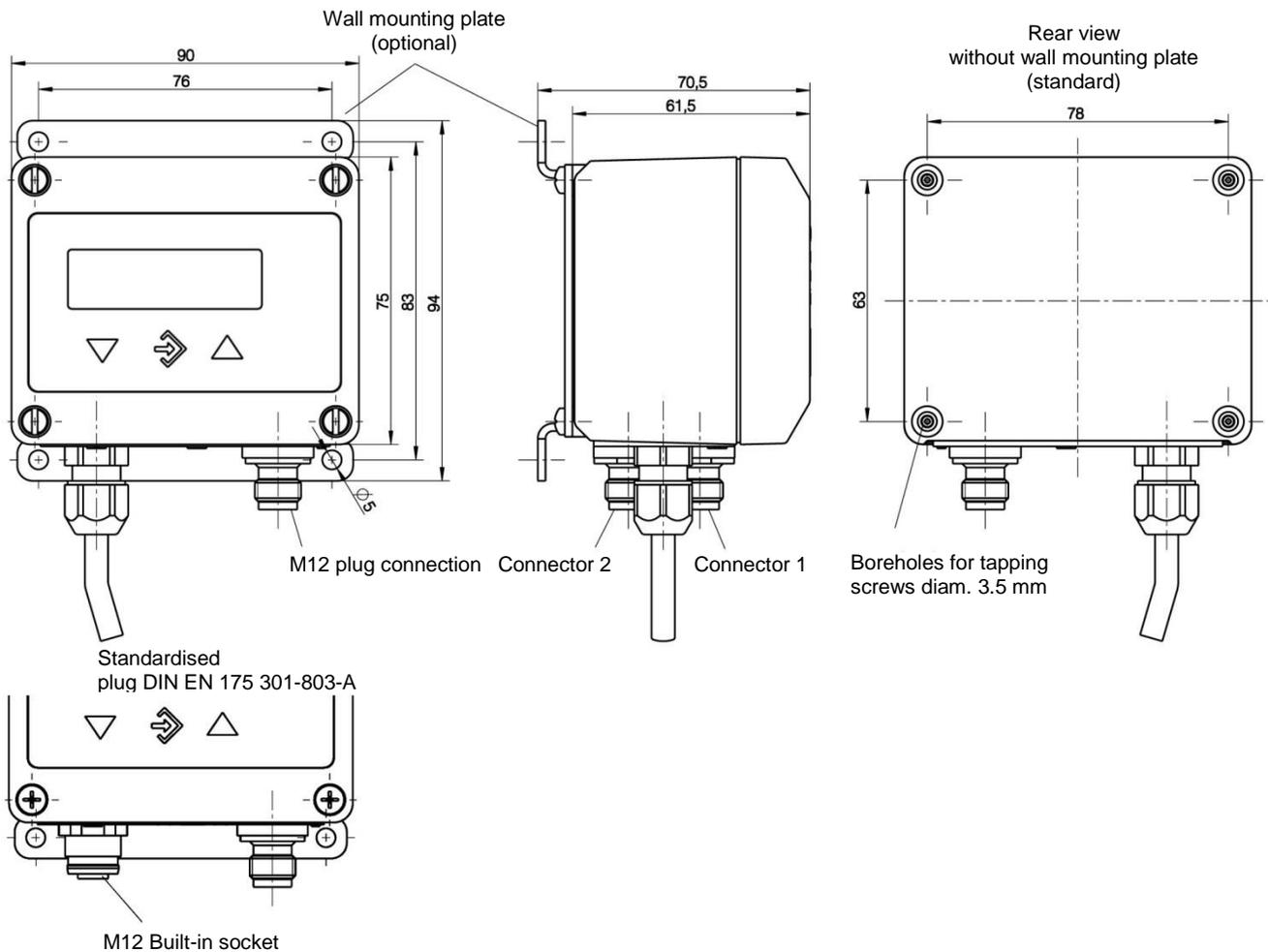Panel mounting set
Wall mounting

11.1 Programming

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

	Settings
Attenuation	0.0 ... 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	mbar / Pa / "free unit", 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, table with 3...30 support points
Password	001 ... 999 (000 = no password protection)

Comments:
(1) Measuring values (around zero) were set to zero. (e.g. to suppress seepage).
(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 (all dimensions in mm unless otherwise specified)

Wall mounting plate (optional)

Rear view without wall mounting plate (standard)

M12 plug connection   Connector 2   Connector 1

Boreholes for tapping screws diam. 3.5 mm

Standardised plug DIN EN 175 301-803-A

M12 Built-in socket

12.1 Assembly of the mounting rails

DIN attachment element for assembly of the mounting rails in compliance with EN 60715

12.2 Panel mount

Wall thickness 3-5 mm
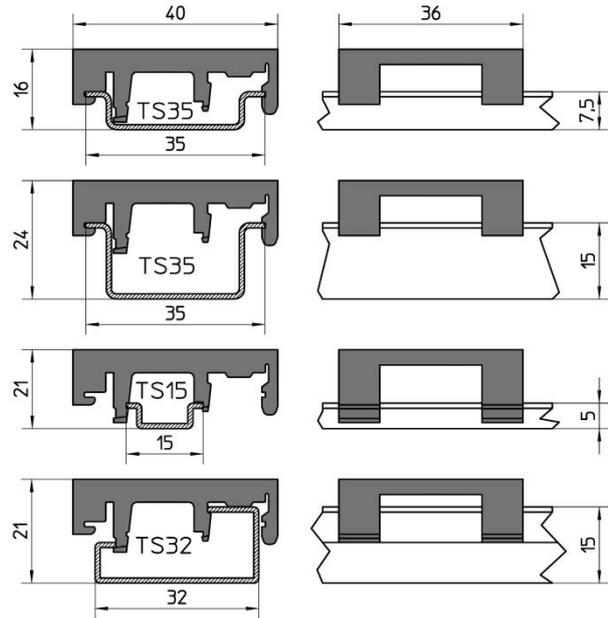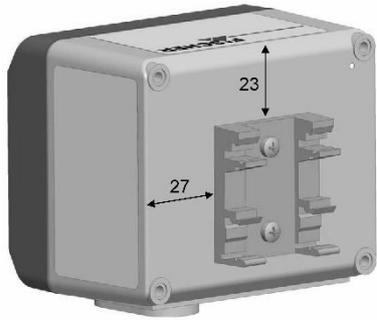
13 Order Codes

Pressure analysis unit with colour change LCD

EA14 | **M** | | | **0** | | | | **K** | **W** | **M** | |

Version
Pressure..> **M**

Measuring range
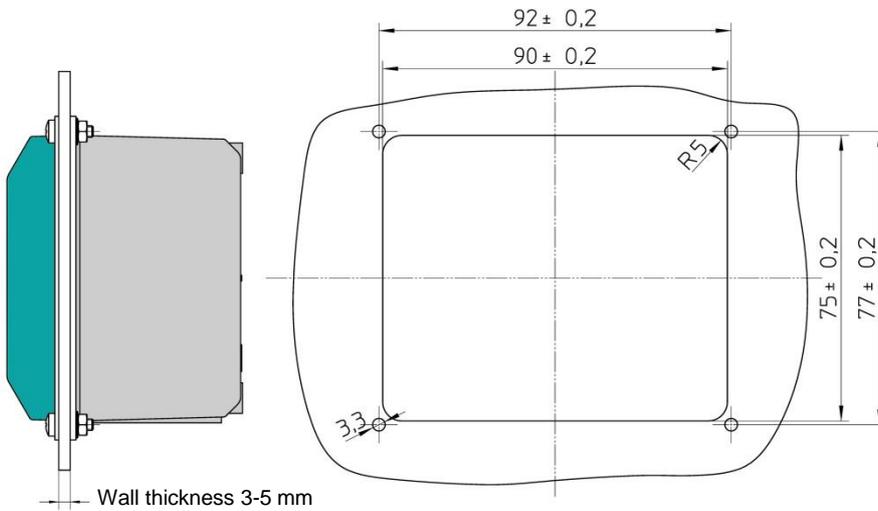|		
0…. 0.6 bar...>	**0**	**1**
0…. 1 bar...>	**0**	**2**
0…. 1.6 bar...>	**0**	**3**
0…. 2.5 bar...>	**0**	**4**
0…. 4 bar...>	**0**	**5**
0…. 6 bar...>	**0**	**6**
0…. 10 bar...>	**0**	**7**
0…. 16 bar...>	**0**	**8**
0…. 25 bar...>	**0**	**9**
0…. 40 bar...>	**1**	**0**
0…. 60 bar...>	**1**	**1**
0…. 100 bar...>	**1**	**2**
0…. 160 bar...>	**1**	**3**
0…. 250 bar...>	**1**	**4**
0…. 400 bar...>	**1**	**5**
-1…. 0 bar...>	**3**	**1**
-1…. 0.6 bar...>	**3**	**2**
-1…. 1.5 bar...>	**3**	**3**
-1…. 3 bar...>	**3**	**4**
-1…. 5 bar...>	**3**	**5**
-1…. 9 bar...>	**3**	**6**
-1…. 15 bar...>	**3**	**7**
0…. -1 bar...>	**3**	**9**

Electrical connection pressure transmitter

M12 plug connection ....> **M**

Plug connector DIN EN 175301-803 A, 1m cable ....> **H**

Electrical input signal
0 - 20 mA 3-LINE..>	**A**
4 - 20 mA 2-LINE..>	**B**
0 - 10 V DC 3-LINE..>	**C**

Electrical output signal
without analogue electrical output signal........................>	**0**
0 - 20 mA 3-LINE..>	**A**
0 - 10 V DC 3-LINE..>	**C**
4 - 20 mA 3-LINE..>	**P**

Operating voltage
24 V DC/AC (12 - 32 V DC/AC) .... **K**

Measuring unit
Selectable pressure units .... **W**

Measured value display / contact elements
4-digit colour change LCD - 2 relay contacts..........................>	**C**
4-digit colour change LCD - 2 semiconductor contacts ....>	**D**

Electrical connection
M12 plug connection ....> **M**

Assembly option
Standard (attachment boreholes on rear side) ....>	**0**
Assembly of the mounting rails ....>	**S**
Panel mounting set..>	**T**
Wall mounting..>	**W**

14 Manufacturer's Declarations and Certificates

EG-Konformitätserklärung	EC Declaration of Conformity
Für das nachfolgend bezeichnete Erzeugnis	For the product described as follows

Druckauswerteeinheit mit Farbwechsel LCD | **Pressure Indicator With Colour Changing LCD**

EA14 M # # 0 # # # KW # M

gemäß gültigem Datenblatt **DB_DE_EA14M_LCD**

wird hiermit erklärt, dass es den grundlegenden Anforderungen entspricht, die in den nachfolgend bezeichneten Richtlinien festgelegt sind:

in accordance with the valid data sheet **DB_EN_EA14M_LCD**

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

EG Richtlinien			**EC Directives**		
2004/108/EG	EMV Richtlinie	EMV	2004/108/EC	EMC Directive	EMC
2011/65/EU	RoHS Richtlinie	RoHS	2011/65/EC	RoHS Directive	RoHS

Die Produkte wurden entsprechend der folgenden Normen geprüft:

The products were tested in compliance with the following standards:

EMV		**EMC**	
DIN EN 61326-1:2013-07	Elektrische Mess-, Steuer-, Regel- und Laborgeräte - EMV-Anforderungen - Teil 1: Allgemeine Anforderungen	EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
DIN EN 61326-2-3:2013-07	Elektrische Mess-, Steuer-, Regel- und Laborgeräte - EMV-Anforderungen - Teil 2-3: Besondere Anforderungen - Prüfanordnung, Betriebsbedingungen und Leistungsmerkmale für Messgrößenumformer mit integrierter oder abgesetzter Signalaufbereitung	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

RoHS		**RoHS**	
DIN EN 50581:2013-02	Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich der Beschränkung gefährlicher Stoffe	EN 50581:2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Der oben beschriebene Gegenstand der Erklärung erfüllt die Vorschriften der Richtlinie 2011/65/EU des Europäischen Parlaments und des Rates vom 8. Juni 2011 zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten.

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

Die Geräte werden gekennzeichnet mit:

The devices bear the following marking:

CE

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung in Bezug auf die Erfüllung der grundlegenden Anforderungen und die Anfertigung der technischen Unterlagen trägt der Hersteller:

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:

Fischer Mess- und Regeltechnik GmbH
Bielefelderstr. 37a
32107 Bad Salzuflen, Germany
Tel. +49 5222 974 0

Bad Salzuflen, 02.02.15
(Ort, Datum / Place, date)

G. Gödde
(Geschäftsführer / Managing director)

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Harmonisierungsrechtsvorschriften, beinhaltet jedoch keine Zusicherung von Eigenschaften.

This declaration certifies compliance with the specified harmonisation law regulations, but does not include assurance of specific properties.

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