FISCHER MESS- UND REGELTECHNIK

Instruction Manual

EA14F || Level Indicator

Table of Contents

1. Safety Instructions

1.1. General

This manual contains detailed information about the product, and instructions for its installation, operation and maintenance. Operators and other technical personnel responsible for the equipment must read this thoroughly before attempting to install or operate this equipment. A copy of this manual must always be kept accessible at the place of work for reference by concerned personnel.

Chapter 1 (sections 1.2 through 1.7) contains general as well as specific safety instructions. Chapters 2 through 10, covering topics ranging from intended purpose of the equipment to its final disposal, also include important points relating to safety. Overlooking or ignoring any of these safety points can endanger humans and animals, and possibly cause damage to other equipment.

1.2. Personnel Qualification

Personnel responsible for installation, operation, maintenance and inspection of this product must have the qualifications, training and experience necessary to carry out such work on this type of equipment.

1.3. Risks of Disregarding Safety Instructions

Disregarding safety instructions, use of this product for purposes for which it is not intended, and/or operation of this product outside the limits specified for any of its technical parameters, can result in harm to persons, the environment, or the plant on which it is installed. Fischer Mess- und Regeltechnik GmbH will not be responsible for consequences in such circumstances.

1.4. Safety Instructions for Operators

Safety instructions for the proper use of this product must be followed. This information must be available at all times to by personnel responsible for installation, operation, maintenance and inspection of this product. Adequate steps must be taken to prevent the occurrence of hazardous conditions that can be caused by electric energy and the convertible energy of the process media.

Such conditions can, for example, be the result of improper electrical or process connections. Detailed information is available in relevant published norms (DIN EN, UVW in Germany; and equivalents in other countries), industrial standards such as DVWG, Ex-, GL-, VDE guidelines, as well as regulations of the local authorities (e.g., EVUs in Germany).

1.5. Modifications Forbidden

Modification or other technical alteration of the product is not permissible. This also applies to the use of unauthorized spare parts for repair / maintenance of the product. Any modifications to this product, if and as necessary, should be done only by Fischer Mess- und Regeltechnik GmbH.

1.6. Operational Restrictions

The operational reliability of the product is guaranteed only when used for intended purposes. The product must be selected and configured for use specifically with defined process media. The limiting values of operating parameters, as given in the product specification sheet, must never be crossed.

1.7. Safety Considerations during Installation and Maintenance

The safety instructions given in this manual, existing national regulations relating to accident prevention, and the internal safety rules and procedures of the user organization regarding safety during installation, operation and servicing must all be followed meticulously.

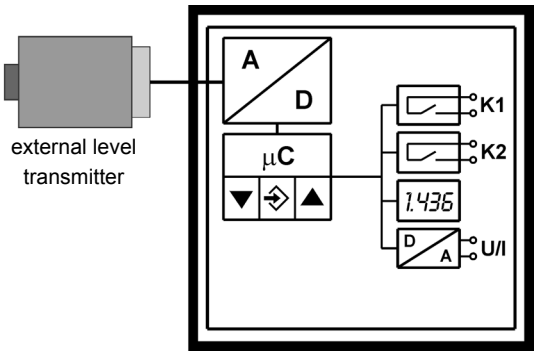
It is the responsibility of the users to ensure that only suitably qualified and experienced technical personnel are used for installation, operation and servicing of this equipment.

2. Intended Applications

The product includes the functions of sensing, signal conversion, display, signal transmission, and limit detection of pressure / differential pressure of gases. The product must be used only for applications and under conditions specified by the manufacturer. In case of uncertainties, the user should consult Fischer Mess- und Regeltechnik GmbH before installing and using the product.

3. Product Description and Functions

3.1. Block Schematic Diagram



3.2. Principles of Operation

The base of the device consists of an electronic module which interprets the measurement signal of an external level transmitter. Its major task is to display and interpret the measured filling level. The interpretation allows to set up two independent switch points and to supply an output signal according to the filling level (optional).

The level transmitter is connected through a flexible cable and a plugin connector and supplied by the electronic module. Only the level transmitter supplied with this measurement system should be connected to the electronic module.

The measurement signal (current or voltage) of the transmitter matches the electronic module factory set and accordingly indicated on the product identification plate.

4. Installation

The electronic module is mounted on a flat plate or panel, for which it has 4 holes at the rear for self-tapping screws (∅ 3.5 mm).

A wall-mounting rear adaptor plate is available as an option (see section 13. Ordering Code).

IP65 protection for the housing is guaranteed only if suitable connecting cable is used.

If the instrument is intended for outdoor application, we highly recommend using an adequate protective housing (or at least a big enough shelter) as protection against UV-radiation on the membrane keyboard and against exposure of the instrument to rain or snow.

4.1. Process Connections

- Please follow the installation guidelines and security advices belonging to the external level transmitter.

4.2. Electrical Connections

- Only qualified technicians authorized for this type of work should undertake installation.
- Electrical connections must comply with relevant international, national and local regulations and norms relating to electrical and instrumentation installations.
- Switch off electrical power to the plant before attempting electrical installation work of any kind.
- Make electrical connections to the instrument through a suitable energy-limiting safety device (isolation or zener barrier).

5. Commissioning

- Power supply and signal cabling to the instrument must be correctly selected to meet operational requirements, and installed in a way that does not cause physical stress to the instrument.

5.1. Separately Connected Level Transmitter

The level transmitter connector on the electronic module is identified by a mark.

5.2. Display

The 3½ digit LED display normally indicates the current or directly the output signal (current is displayed in mA and voltage in V).The back-lighted symbols to the right of the 3½ digit LED display indicate the chosen measuring unit. (Note: the units shown in the illustrations of this document can be different from those of the actual instrument). The two LED lamps ❶ ❷ above the 3½ digit LED display respectively indicate the status of the two limit relays / solid state switches (LED on = relay contacts closed / solid-state switch on). While the instrument is in set-up mode, the 3½ digit LED display either indicates the selected menu option or a set-up parameter value. The instrument continues its pressure monitoring functions even while it is in set-up mode, except under either of two circumstances. One is when the limit switching delay time is changed: the existing delay must time out first. The other circumstance is when the look-up table (for conversion of measured values) is re-programmed. In these circumstances, the output signal value and the limit relay/switch states are frozen until the changes are finalized.

5.3. Set-up

The instrument has comprehensive set-up options by means of which it can be optimized for any specific measuring or control application. This section of the document provides information and instructions about each of the set-up parameters.

Depending on the instrument configuration ordered (e.g.: no transmitter signal output / voltage signal output / current signal output) some of the menu options may not available.

All instrument settings can be conveniently done from a PC connected to the instrument through a serial interface adaptor. All set-up parameters can be viewed and changed on the PC screen. Also, the entire instrument set-up configuration can be loaded, stored on the PC's hard disk drive (or on a CD-ROM), and printed out for plant / process documentation. Further information about the PC software for this is given elsewhere in this manual.

5.3.1. Selecting the Unit of Level Measurement

There are three different units available. The main task of unit mA/V (top) is to collect data for zero point and transconductance (initial and final value) and to display the input signal (current/voltage). The required data (value of current or value of voltage if the filling level is known) for generating the characteristic can be collected with this unit.

The display unit % (middle) and the free unit (down arrow, bottom) indicate the filling level in % or another value (e.g. m³). Some parameters need to be fed in advance for this unit to work properly (initial measuring range, look-up table and the end of the measuring range).

Make the neccessary electrical connections. The current valid unit of measurement is indicated by one of the back-lighted symbols to the right of the digital display. To change the unit of measurement, first press ⇨ and use the right button (up arrow) to look for parameter **Ein**. Again press ⇨ and change the indicated value by using ▲and ▼. After selecting the value store it by pressing ⇨ and the display will indicate **Ein**.

First of all choose unit mA|V.

To exit the set-up mode, press ▼until **ESC** appears, and then press ⇨. The current measured value is indicated again, (current or voltage). On the right the unit mA/V should be backlit.

5.3.2. Zero Point Checking and Adjustment

Ensure that the level indicator now displays a neutral signal (depending on the measuring range 0 or 4 mA or 0 V). The electric neutral signal is now scaled - not the least possible filling level. If you are unsure about the signal being zero please switch the parameter oFI to 0. In normal mode the possible error is negligible.

If the instrument does not indicate precisely zero, note this non-zero value. Using the parameter oFI you can trim this offset to exacly zero. This value must be entered and stored as a negative offset value, and vice versa.

If the instrument was in use before zero setting is done, values of set-up parameters oFI and nP would have been previously programmed. In this case, set both values to zero, then read the actual zero offset, and use this value for oFI for zero point correction.

Note: The registered value is a pure number: no decimal point is indicated.

5.3.3. Damping and Zero Stabilisation

If the media exhibits excessive level fluctuations, the displayed readings and the transmitter output signal can be stabilized using dAN and nP set-up parameters.

The response time to signal changes can be reduced by parameter dAN . The response time for rapid signal changes can be set in a range of 0.0s to 100s. When the damping is set to maximum, the display reads zero for more than 2 minutes until a jump of 100% (e.g. 10 V) above zero is indicated.

In many cases fluctuating level readings do not cause a problem, except when the plant / equipment is at zero-level condition. The set-up parameter nP is meant to take of this. Its value defines the number range about zero, whithin which the measured value is forced to zero. If a value of 8 is set for nP any level measurement in the range -0.08 V (or -0.08 mA) to +0.08 V (or +0,08 mA) displayed as zero. Only when the actual level is outside the range will the display indicate a non-zero value. The actual and displayed pressures will agree starting from double the value of the nP setting (in the given example 0.16 V or 0.16 mA).

In order to use this parameter with the minimum filling level the used level transmitter needs to pass the electric neutral signal when minimum filling level is reached.

5.3.4. Selecting the Measuring Range of the Filling Level and the Output Signal

The measuring range of the filling level and the output signal of the transmitter naturally depend on the measured input signal. However, this signal can be adapted to meet users' application requirements precisely. The basic measuring range (as marked on the product identification plate) and the type of output signal (voltage or current) always remain unchanged for a particular instrument unit.

The set-up parameters nA (measuring range starting point) and nE (measuring range end point) specify both of the input signals which are assigned to 0 and 100% filling level. The adjusted values always correspond to the electric signals.

The generated output signals (current or voltage) for nA and nE are fixed (type plate e.g. 0…10 V or 4…20 mA). At 0% (input signal = mA) the display shows 0 V or 0/4 mA. At 100% 10 V respectively 20 mA is displayed.

If nA is lower than nE, the signal is said to have a positive slope: i.e., the output signal increases as the filling level increases. If nE is lower than nA, the output signal has a negative slope: i.e., the output signal decreases as the filling level increases.

The difference between the values of nA and nE must be at least 25% of the specified measuring range of instrument (e.g. 2.5 V or 5 mA). The software does not permit higher spans (the instrument will not allow storing of, and exit from, an invalid span).

Note:
If you change nA and/or nE the look-up table (see 5.3.7. and 5.3.8.) that existed up to that instant is deleted!

5.3.5. Free Configurable Indicating Device Setting

Three details are required to scale the free indicating device. Parameters nAF and nEF are corresponding to nA and nE.

The stored value of nAF is displayed if the input signal passes the stored value of nA.

The stored value of nEF is displayed if the input signal passes the stored value of nE.

Parameter dPF sets the number of decimal places for parameters nAF and nEF.

You can change the values of nAF and nEF at any time. The values stored in the look-up table are converted automatically.

If you set dPF = 1, nAF = 0 and nEF = 100 the display of the free unit corresponds to the indication of the %-display however it provides a decimal place. If you interchange the values of nAF and nEF an "extraction-indication" is obtained - the indicated value increases corresponding to the sinking filling level.

Note: Previous software revisions have different terms for these parameters: nA equates nAF, nE equates nEF and dP equates dPF.

5.3.6. Output Signal Limiting (Namur)

The three parameters oC1, oC2 and oEr specify the limits of the signal output current or voltage that are not to be exceeded, irrespective of the actual level. These limit values have higher priority than the nA ... nE level span settings!

These settings serve mainly to prevent control systems from interpreting brief level excursions outside the measuring range as error / fault events. Usage of oC1 is reasonable only for units with output signal 4…20 mA because sometimes a value beneath 3.8 mA is interpreted as an error signal. oC2 can be used for all output signals (voltage and current). It sets the upper signal limit (e.g., a voltage signal output can be limited to 10.2 V).

An instrument fault condition can be transmitted as an output signal value set as parameter oEr. However, it should be understood that not all instrument fault and error conditions can be detected and signaled by its self-diagnostic functions.

In many applications the external level transmitter only provides the filling level of a medium in a tank and no signal proportional to the volume. In these cases it would be eligible to change the output signal of the EA14F by a non-linear characteristic that the succeeding interpretation gets a linear signal corresponding to the actual measurement (e.g. volume in m³ or %).

The set-up parameter F allows the user to select the appropriate signal conversion function from those available:

- F=0: Linear characteristic (default)
- F=1: Square root extraction
- F=2: Horizontal cylindrical tank
- F=3..30: Look-up table with 3 to 30 pairs of values

The tables generated by functions F = 0, F = 1 and F = 2 are not visible. For these functions, internal values are used for table computation. These values are not changeable.

It's essential for all tables that in case of nA 0% of the output signal (0 V, 0 mA or 4 mA) is indicated and in case of nE 100% of the output signal (10 V or 20 mA) is indicated. They affect only the 1...28 intermediate values of the look-up table function F = 3....30. The parameters nA and nE relate to the start and end values of the look-up table. Therefore a change in any of these parameter values causes the conversion function to be reset to F = 0.

Whenever the value of F is changed (i.e., a new conversion function is selected), the instrument internally generates a new look-up table. All previous table values are deleted and replaced by new linear progression values.

5.3.7. Look-up Table Programming (F = 3..30)

If the value of set-up parameter F is selected equal or greater than 3, a sub-menu Lin is invoked. Through this sub-menu all the required look-up table values can be entered, except the first and last pairs of table values (respectively corresponding to nA and nE). This sub-menu has its own entry and exit points, the latter is displayed as End. The table is stored only when you exit to the sub-menu prompt Lin, by pressing ⇨. If the table is not correctly entered the display read Err, indicating an error condition. If this happens, it is not possible to exit this sub-menu mode until the error is corrected.

The table entries consist of 1 to 28 pairs of values. One value (E02 through E29) sets the amplitude of the input signal and the belonging value i02 through i29 sets the substance corresponding to the input signal.

Entering or changing table values through the instrument's membrane keyboard is a tedious and error-prone method. It should only be used as a stop-gap method when a PC and/or the PC Interface Module is not available.

The table is accepted as correct if, for all output signal values, each value is larger than its preceding value. It applies accordingly to the values of the input signal that they need to be either higher (ascending characteristic) or lower (descending characteristic) than the preceding value. Transitions from ascending to descending characteristic or vice versa are not allowed.

5.3.8. Limit Setting

The two limit switching outputs ❶ ❷ are each configured by four set-up parameters.

Switching output 1 is configured by parameters r1A, r1E, r1d and r1F.

Switching output 2 is configured by parameters r2A, r2E, r2d and r2F.

r1A sets turn-off point, r1E sets turn-on point of switching output 1. The values for these are set in the cur-

rently valid unit of measurement (indicated by the lighted symbol to the right of the digital display).

The two parameters rIA and rIE together determine the logic of switching output 1:

If rIA is smaller than rIE, the output turns on when the measured value exceeds rIE. It turns off again only when the measured value falls below rIA (hysteresis function).

If rIA and rIE have the same value, the switching output turns on when the measured value exceeds rIE and turns off again when the measured value falls below rIA.

If rIA is larger than rIE, the switching output turns on when the measured value falls between rIE : i.e. when rIE < measured value < rIA (window limit function).

Both parameters can be independently adjusted over the full measuring range. If the unit of measurement is changed, the switching points are changed accordingly. In this event, rounding error can cause a deviation in the least significant (right-most) digit.

The value of the set-up parameter rId determines the delay time for switching output 1, after the measured value reaches the switching point. The delay value can be selected in the range 0.0 to 100.0 secs. This value applies equally to turn on and turn off. The set-up parameter rIF determines the action of the switching output. If rIF = 1, the switching output acts as normally open (NO) contacts. If rIF = 2, it acts as normally closed (NC) contacts.
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5.3.9.Password

The last set-up parameter -P- allows a password to be entered. A password value of 001 to 999 can be selected. A value of “000“ disables the password function. If a password was set, after ESC is displayed and ⏎ is pressed, the digital display indicates PAS . The password is then entered, by pressing ⏎ and then ▲, ▼. Only then will the set-up menu options be accessible. If an incorrect password is entered, the display jumps back to beginning of the menu (i.e., ESC).

New Functions! (as of April 2008)

5.3.10. dO – Display options

This parameter allows smoothing the displayed values in cases where they are frequently deviating. The filter function is similar to the dAM function, but acts only upon the display, having no impact on the output signal. Additionally the display can be turned off partially (dO = -1, only the setpoint LEDs are driven) or completely (dO = -2).

5.3.11. rES – Reset to default values

This function will reset all parameters to default when activated. Default values can be defined only by using the PC interface.

5.4. Overview of Set-up Parameters

When the instrument is turned on, it briefly displays the software version number, and then switches automatically to normal operating mode. Pressing ⇨ causes the set-up menu to be called up, indicated by ESC on the digital display. After that, by pressing ▲repeatedly, each of the set-up parameters is called up in sequence:

Note: Depending on the version of the instrument that was ordered, some of the individual parameters might not be available.

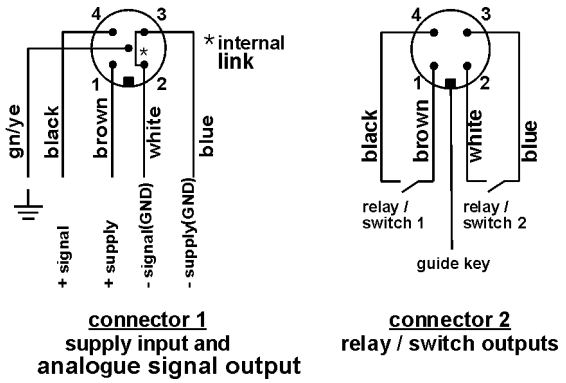
- PAS Password input (appears only if password value is set). Values: 001 to 999.
- dAM Damping (time constant). Range of values = 0.0 to 100.0 secs.
- dO Damping (display only), range of values 0..100. Additional: -1 = no digital value and -2 = display turned off completely.
- r1A Switching output 1: turn-off point.
- r1E Switching output 1: turn-on point.
- r1d Switching output 1: delay. Range of values = 0.0 to 100.0 sec. This values applies equally for turn-on and turn-off delays.
- r1F Switching output 1 action. If r1F = 1, acts as NO contacts. If r1F = 2, acts as NC contacts.
- r2A Switching output 2: turn-off point.
- r2E Switching output 2: turn-on point.
- r2d Switching output 2: delay. Range of values = 0.0 to 100.0 sec. This values applies equally for turn-on and turn-off delays.
- r2F Switching output 2 action. If r1F = 1, acts as NO contacts. If r1F = 2, acts as NC contacts.
- Ein Unit of measurement. The selection is indicated by the lighted symbol to the right of the digital display. A particular unit can be selected only if it can be meaningfully represented within the basic measuring range of the instrument.
- nA Measuring range start point. The value of the measured variable corresponding with the minimum value of the output signal (0 V, 0 mA or 4 mA, depending on the instrument version).
- nE Measuring range end point. The value of the measured variable corresponding with the maximum value of the output signal (10 V or 20 mA, depending on the instrument version).
- dPF Position of decimal place for free unit.
- nAF Measuring range start point (displayed value) for free unit.
- nEF Measuring range end point (displayed value) for free unit.
- nP Zero stabilization. Range = 0 to 100 counts. The value spans symmetrically around the actual zero point.
- oFI Zero offset correction, input 1. Range = -100 to +100 counts.
- F Signal conversion function. (0 = linear,
  1 = square root,
  2 = horizontal cylindrical tank,
  3..30 = look-up table)
- Lin Look-up table entry (sub-menu)
- oG1 Output signal limiting, minimum
- oG2 Output signal limiting, maximum
- oEr Fault signaling (output signal value on detection of instrument fault).
- rES Reset all values to default. (Default values can be defined only by using the PC interface.)
- -P- Password setting. Permissible password values = 001 to 999. "000" disables password protection.

If the password is lost, the instrument can be unlocked only through a serial interfaced PC, or the instrument has to be sent to the manufacturer for this purpose.

If oG1 and oG2 are both set to "0", the output signal will not be subjected to limiting.

If oG1 is set at the maximum value (11 V or 21 mA), the output signal can be adjusted using oG2 to any arbitrary value between zero and maximum value, *irrespective of the level transmitter signal*. This feature enables the instrument to be used as a simulated signal source to test signal lines and other instruments or systems.

5.5. Electrical Connections, Switching Outputs



connector 1
supply input and analogue signal output

connector 2
relay / switch outputs

Switching outputs:
Switching output 1 is configured by parameters r1A, r1E, r1d, and r1F.

Switching output 2 is configured by parameters r2A, r2E, r2d, and r2F.

Power supply voltage and output signal load:
Nominal supply voltage and the operating supply voltage range and the maximum output signal loads are indicated under 11 Specifications.

The signal ground line is internally connected to the instrument ground, and serves only as an alternative ground connection for the output signal. This usually increases the noise margin.

Signal input (level transmitter connection)
The assignment of the input socket corresponds to connector 1 (see above). The measured signal needs to fit to pin 4. Signal ground can be connected to pin 2 if available. Voltage supply is provided through pins 1 and 3 and it is protected against short circuit. For supply voltage level and maximum current please consult technical data (see chapter 11. Specifications).

6. Maintenance

The instrument is inherently maintenance-free.

However, to ensure reliable operation and maximize the operating life of the instrument, it is recommended that the instrument, its external electrical and process connections, and external connected devices be regularly inspected, e.g.:

- Check the display.
- Check the switching function in connection with external devices.
- Check the integrity of all electrical connections of the instruments.

Inspection and test schedules depend on operating and site conditions. The operating manuals of other equipment to which the instrument is connected must be read thoroughly to ensure that all of them work correctly when connected together.

7. Transport

The product must be protected against shock and vibration during transport. It must therefore be properly packed, preferably in the original factory packaging, whenever it is to be transported.

8. Service

Any defective devices or devices with missing parts should be retourned to Fischer Mess- und Regeltechnik GmbH. For quick service contact our service department.

Remaining medium in and on dismantled measuring instruments may cause danger to persons, environment and equipment. Take reasonable precautions! Clean the instrument thoroughly if necessary.

9. Accessories

- Wall mounting adaptor plate (s. Ordering Code)
- M12 connectors with pre-wired cable lengths
- PC serial interface adaptor with software: model EU03.F300

10. Disposal

Protect your environment!
Use the product in accordance with relevant regulations. Please be aware of environmental consequences of disposal at the end of the product's life, and take care accordingly.

11. Specifications

General

Measuring range	ma | V	0/4...20 mA | 0...10 V
Straight line error (max.)°	%FS	0.1
Straight line error (typ.)°	%FS	< 0.05
Tc span (max.)°°	%FS 10K	<0.1
Tc span (typ.)°°	%FS 10K	< 0.025
Tc zero point (max.)°°	%FS 10K	<0.1
Tc zero point (typ.)°°	%FS 10K	<0.025

Shown values characterize the electronic module only, values of the attached level transmitter are not included (see data sheet level transmitter).

°: Straight line error = nonlinearity + hysteresis; at 25°C; pressure within specified range (characteristic linear, not spreaded)

°°: Pressure within specified range (characteristic linear, not spreaded)

Operating temp. (ambient)	-10 ... 70°C
Operating temp. (media)	See data sheet level transmitter
Storage temperature	-20 ... 70°C
Protection class (housing)	IP 65 per DIN EN 60529
	Electrical
Nominal supply voltage	24 V DC / AC
Operating supply voltage	12 ... 32 V DC / AC
Output signal	0 ... 20 mA, 4 ... 20 mA, or 0 ... 10 V DC (3-wire)
Output signal load	For current output $R_L \leq (U_B - 4\ V) / 0{,}02\ A$ ($U_B \leq 26V$), else $R_L \leq 1100\ \Omega$ For voltage output $R_L \geq 2\ K\Omega$ ($U_B \geq 15\ V$), $R_L \geq 10\ K\Omega$ ($U_B = 12 \ldots 15V$)
Power consumption	Approx. 2 W / VA (without external level transmitter)
Switching contacts	2 sets of programmable voltage free relay contacts: N/O or N/C $U_{max} = 32$ V DC / AC; $I_{max} = 2$ A; $P_{max} = 64$ W / VA Optional, instead of relay outputs: 2 programmable voltage free MOSFET switch outputs; NO/NC, $U = 3 \ldots 32$ V DC/AC, $I_{max} = 0{,}25$ A, $P_{max} = 8$ W/VA, $R_{ON} \leq 4\ \Omega$
Display	3½ digit LED
	Connections
External transmitter supply Max. current	Supply of EA14F, fused via PTC (approx. 8 Ω) ≤ 250 mA for the external level transmitter (limited by PTC)
Electrical connections	Two round-shell multi-pin connector sockets (M12, male) Connector 1: 5-pin: power input and analogue signal output Connector 2: 4-pin: relay contacts / solid-state switch outputs
External level transmitter	Two round-shell multi-pin connector sockets (M12, female) or square-shell 4-pin connector (female), acc. to DIN EN 175 301-803-A, 1m cable
	Materials, Mounting
Materials, housing	Polyamide PA6,6
Materials, media contact	See data sheet level transmitter
Mounting	Mounting holes at rear for panel mounting Wall mountable using adaptor plate

11.1. Programming

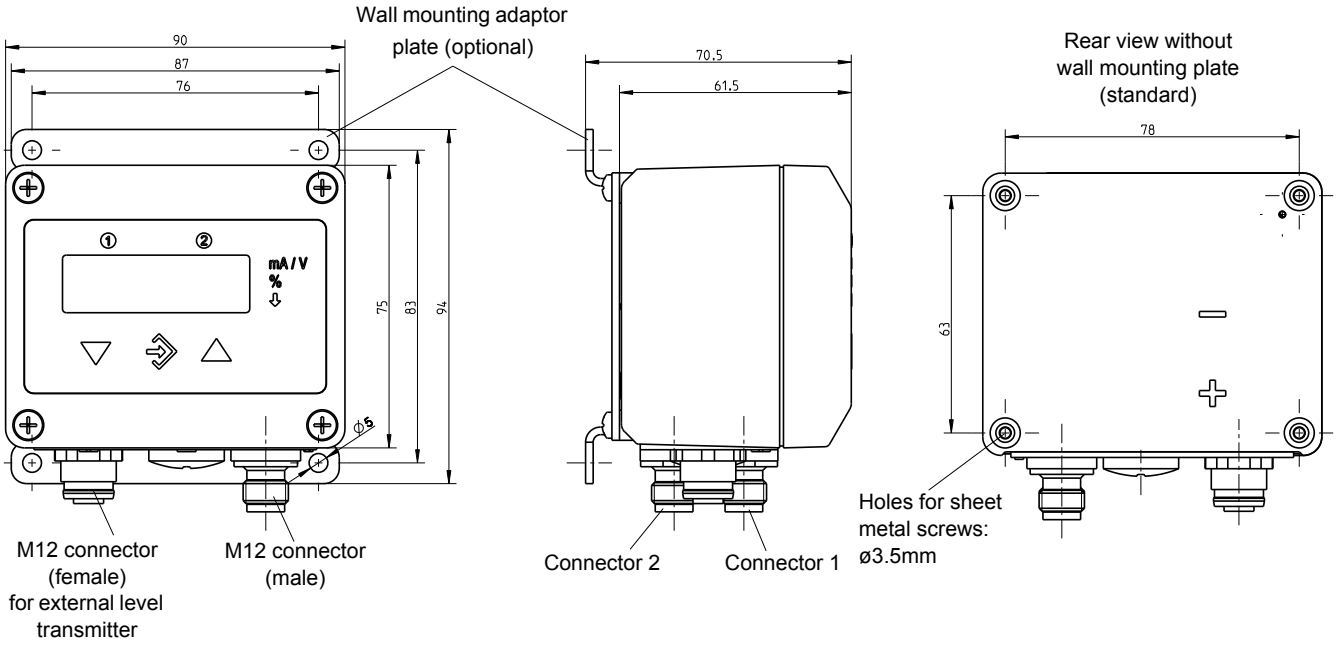
Via membrane key-switches or by using PC-programming interface (accessory).

Programming mode can be password protected.

	Settings
Input filtering	0.0...100.0s (10/90% step response time) for signal output, display seperated
Relay / switch 1/2	Activation point, de-activation point, response time delay (0...100 secs), logic (N/O or N/C)
Measurement unit selection	mA|V, %, free unit of scale
Free unit of scale	Minimum and maximum value, position of decimal point
Output signal start/end value	Can be set at any point of measuring range (2)
Zero suppression	0...100 counts (1)
Zero pressure calibration	±100 counts (3)
Output characteristic	Linear, square rooted, horizontal cylindr. tank, table (3...30 entries)
Password range	001 … 999 (000 = password protection disabled)

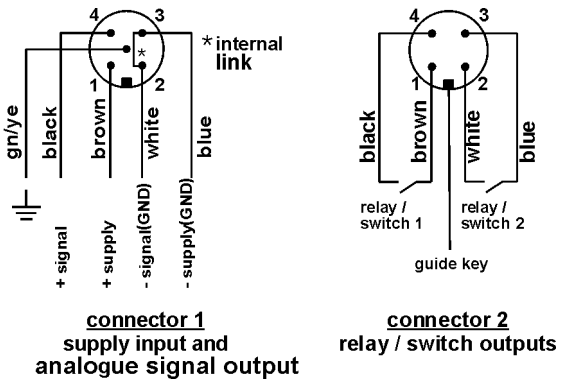
(1) Measured value deviations up to 100 counts, symmetric about zero, are set to zero. Used for zero drift suppression.
(2) Maximum effective turn-down ratio = 4:1. Only the output signal is affected. Transfer function is inverted if start value > end value.
(3) Zero calibration setting may change with mounting orientation.

12. Dimensions (all units in mm unless stated otherwise)



12.1. Electrical Connections

The pinning of connector 1 is also used for the M12 connector for the external level transmitter.



13. Ordering Code

Level Indicator	EA14	F	0	0	0				K	0		M	

Level ..... F

Electrical connection level transmitter
M12 round-shell multi-pin connector ..... M

Signal input
0 - 20 mA, 3-wire (STANDARD) ..... A
4 - 20 mA, 2-wire ..... B
0 - 10 V DC, 3-wire (STANDARD) C

Signal output
No signal output 0
0 - 20 mA, 3-wire (STANDARD) ..... A
0 - 10 V DC, 3-wire (STANDARD) C
4 - 20 mA, 3-wire (STANDARD) ..... P

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

Display and limit switching outputs
3½ digit LED display, 2 sets of voltage-free relay contacts 3
3½ digit LED display, 2 sets of solid-state switch outputs 6

Electrical connections
M12 round-shell multi-pin connectors ..... M

Mounting
Rear fastening holes (standard) 0
Wall mounting ..... W

Accessories

Ordering code	Designation	Pins	Application	Length
06401993	cable with M12 connector	4-pin	for relay / switch	2 m
06401994	cable with M12 connector	4-pin	for relay / switch	5 m
06401995	cable with M12 connector	5-pin	for supply / signal	2 m
06401996	cable with M12 connector	5-pin	for supply / signal	5 m
04005144	wall mounting adapter set			
EU03.F300	PC-programming interface with SW			

14. CE-Certificate

FISCHER
MESS- UND REGELTECHNIK

TÜV CERT
DIN EN ISO 9001 : 2000
08 100 981999

EG-Konformitätserklärung

Wir erklären in alleiniger Verantwortung, dass nachstehend genannte Produkte

EC Declaration of Conformity

We declare under our sole responsibility that the products mentioned below

Füllstandsauswerteeinheit / Level Indicator

EA14F ##########

gemäß gültigem Datenblatt übereinstimmen mit der

specified by the actual data sheet complies with the

EG-Richtlinie

2004/108/EG (EMV)

EC Directive

2004/108/EC (EMC)

Die Produkte wurden entsprechend der folgenden Normen geprüft (Störfestigkeit für Industriebereich, Störaussendung für Wohnbereich):

DIN EN 61326-1:2004-05
DIN EN 61010-1:2002-08

The instruments have been tested in compliance with the norms (Immunity for industrial environments, emission for residential environments):

DIN EN 61326-1:2004-05
DIN EN 61010-1:2002-08

Die Geräte werden gekennzeichnet mit:

The gauges are marked with:

CE

Bad Salzuflen, 30.04.08
(Ort, Datum / place, date)

(rechtsverb. Unterschrift / authorized signature)

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Amtsgericht Lemgo HRB 226
Geschäftsführer/ Manag. Dir.:
Günter B. Gödde