



**HR-1651
HR-1681**

- analyser units for continuous measuring systems
- 2-wire safety design with pulse length modulated current pulses (PLM)
- Ex-version approved for use up to Ex-zone 0
- Ex-version approved for use as part of an overspill prevention system (VbF/WHG)

Function:

The analyser units provide the necessary operating voltage of approx. 8 V DC for supplying the converters of a continuous level measuring system. The converter detects the continuously changing electrical values of the fill level (C, R or p) and converts these into pulse length modulated current pulses (PLM). The current pulses are transmitted to the analyser unit via a 2-wire connection. The voltage and temperature stabilised circuits of the unit produces corresponding direct current and voltage outputs from the PLM signals. Input and output circuits are galvanically isolated from each other. This allows the further connection of non-Ex protected devices without the need for an extra isolation amplifier. The integrated self-monitoring circuit checks the connections including the presence of the converter (see Safety functions).

Safety functions:

Order No.:

HR-16510 . standard

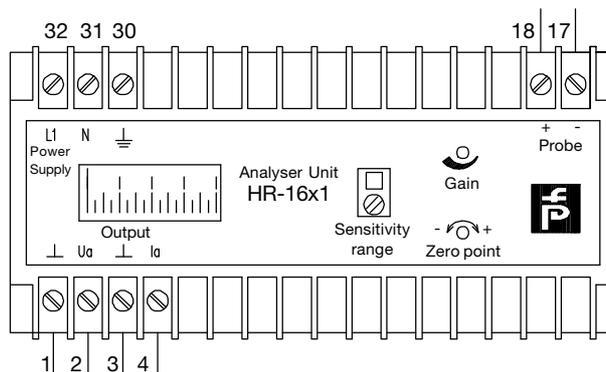
HR-16810 . Ex-protected

Outputs:

analogue values for 0 ... 100% variation

0- 5 V	
0- 20 mA	3
0- 5 V	
4- 20 mA	4
0- 1 V	
0- 20 mA	5
0- 1 V	
4- 20 mA	6

Operating and display elements/terminal assignment:



Changing fill levels influence the frequency of the current pulses in the 2-wire connection between the converter (measuring probe) and the analyser unit. The safety switching in the analyser unit checks for current pulses in this circuit and monitors the connection (for short circuits, wire breakage, defective insulation), as well as it checks for the presence and functioning of the converter. Each fault causes the display to indicate > 100% ("overspill") and produces a maximum output signal, so that the filling can be stopped and an alarm triggered.

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<p>Settings / compensation</p>	<p>(See also the instructions for compensation of analyser units and limit value detectors, Data Sheet No. 1650, please inquire). On the front panel are an instrument display, the sensitivity range selector (1 ... 9), and two adjustment potentiometers (gain, zero point).</p> <p>1. Selecting the sensitivity range (1 ... 9): The proper sensitivity range can only be found after a test measurement. For magnet-operated immersion probes, the correct value is: setting 5 with lengths up to 3 m setting 4 with lengths greater than 3 m With capacitive measuring electrodes, the setting is dependent on, among other things, the conductivity and the dielectric constant_r of the medium and can lie between 2 and 8.</p> <p>2. Zero compensation: With the measuring sensor installed in the empty container or with medium filled to the desired zero point level, the zero point is set by: • setting the "Gain" potentiometer to its maximum position • adjusting the "Zero point" potentiometer until the instrument display reads 0%.</p> <p>3. 100% signal compensation: With the container filled to the desired level for a 100% reading: • adjust the "Gain" potentiometer until the display indicates 100%.</p>			
<p>Technical Data</p>	<p>HR-1651</p>	<p>HR-1681</p>		
<p>Approvals/certificates</p>	<p>01 / PTB / Ex-80 / 2173</p>			
<p>Supply Nominal voltage Power consumption</p>	<p>AC 230 V (48 ... 62 Hz) DC 24 V (±25%) and other values on request approx. 7 VA</p>			
<p>Input / measuring circuit (PLM) Ignition protection class max. quiescent voltage max. short-circuit current max. external capacitance max. external inductance</p>	<p>from converter, measuring probe</p> <table border="1"> <tr> <td data-bbox="614 1131 1061 1272"> <p>DC 9.6 V 85 mA - -</p> </td> <td data-bbox="1061 1131 1514 1272"> <p>[Ex ia] IIC Zone 0 DC 9.6 V 85 mA 370 µF 1 mH</p> </td> </tr> </table>		<p>DC 9.6 V 85 mA - -</p>	<p>[Ex ia] IIC Zone 0 DC 9.6 V 85 mA 370 µF 1 mH</p>
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<p>Output / analogue max. voltage range max. current range Function display</p>	<p>0 ... DC 5 V / load ≥ 1 kOhm 0 ... 20 mA / load ≤ 250 Ohm (≤ 1 kOhm on request) monitoring instrument 0% ... 100%</p>			
<p>Environmental conditions Ambient temperatures</p>	<p>253 K ... 333 K (-20°C ... + 60°C)</p>			
<p>Mechanical Housing Material Fixing Type of protection</p>	<p>W / H / D - 150 / 73 / 112 mm terminal plate: polycarbonate, lower part: ABS 2x screws M4 and M5 or standard mounting rail according to DIN EN 50 022 housing: IP 50, terminals: IP 10</p>			

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