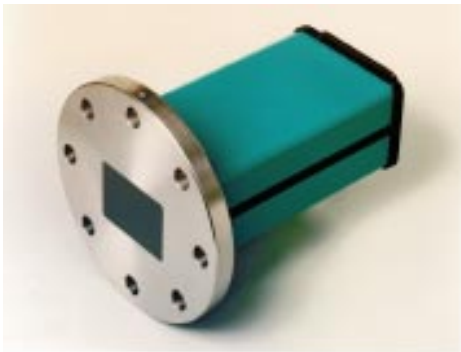
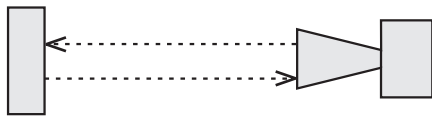


## Microwave Distance Sensor



MWD-□□\*M-F21-□\*\*-2KIR2

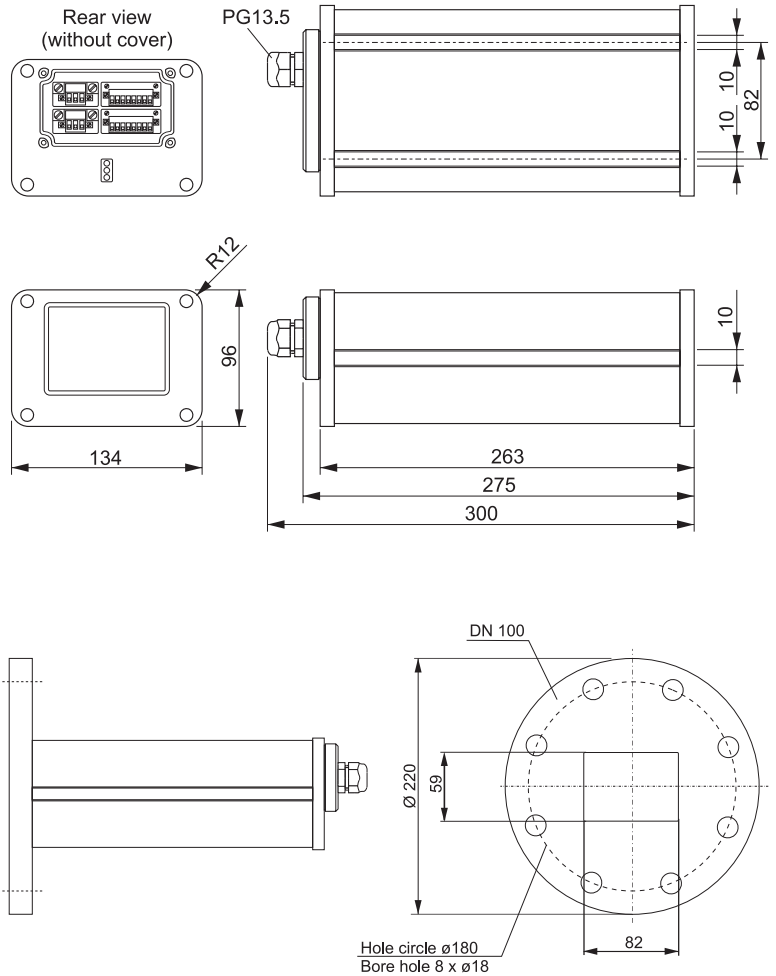


### Characteristics

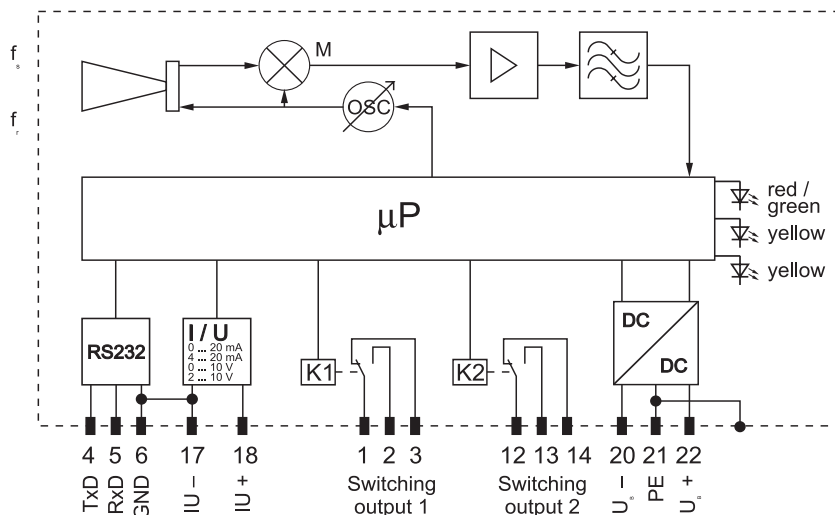
- anti-collision monitoring
- continuous level control measurement of solid and liquid media
- measurement range to 60 m
- permissible in accordance with BAPT211TV3/2099
- type of protection IP 67
- serial interface RS 232 for measurement value transmission and sensor configuration
- 2 relay switching outputs, 1 analogue output (load-dependent current or voltage output)
- zone 11 explosion protection-anti-collision monitoring

F000306E 06/99 01

\*Measurement range  
\*\*Housing variant



### Terminal assignment



## Technical Data

<b>Microwave distance sensor</b>	<b>MWD□□M-F21-□-2KIUR2</b>
<b>Measurement range</b>	2 ... 30 m 4 ... 60 m
<b>Housing variant / mounting</b>	MWD30M-F21-□-2KIUR2 MWD60M-F21-□-2KIUR2
standard aluminium housing	MWD□□M-F21-2KIUR2
version for level control	MWD□□M-F21-DN100-2KIUR2
with mounting flange DN100, 1.4571 (V4A)	
<b>Technical Data</b>	
<b>Approvals / Certifications</b>	tested according to BAPT 211 TV 3/2099 (April 93) BAPT type-examination certificate G132257J approved for Zone 11 according to DIN VDE 0165
<b>Ex-Approval</b>	
<b>Measurement</b>	
Measurement range	2.00 ... 30.00 m (MWD30M-□) 4.00 ... 60.00 m (MWD60M-□)
Measurement frequency	≥ 12 Hz measurement method 'FAST' (MWD30M-□) ≥ 11 Hz measurement method 'FAST' (MWD60M-□) ≥ 4 Hz measurement method 'ACCURATE'
Error of measurement	≤ 2 % of end val. measurement method 'FAST' ≤ 0.35 % of end val. measurement method 'ACCURATE', Abstand > 4 m
Standard target	metal 0.5 m x 0.5 m, 90° ± 0.1° (MWD30M-□) metal 1.0 m x 1.0 m, 90° ± 0.1° (MWD60M-□)
Temperature drift	≤ 2.5 % over the entire temperature range
<b>Accept. angle of the scan beam</b>	approx. ± 5° horizontal, at -3 dB approx. ± 8° vertical, at -3 dB
<b>Transmission frequency</b>	24.00 ... 24.25 GHz
<b>Transmission power</b>	≤ 500 mW (EIRP)
<b>Power supply</b>	
Nominal voltage $U_B$	DC 20 ... 30 V (PELV / SELV)
Ripple	± 10 %ss, $U_B = 33$ V
Bias current $I_B$	≤ 600 mA
<b>Relay switching outputs</b>	
permanent contact load	2 A, 60 VAC, $\cos\phi = 0.7$ (PELV / SELV)
switching frequency	≥ 6 Hz measurement method 'FAST' (MWD30M-□) ≥ 5 Hz measurement method 'FAST' (MWD60M-□) ≥ 2 Hz measurement method 'ACCURATE'
switching hysteresis	0.00 ... 10.00 m, adjustable
<b>Analogue output</b>	to be operated load-dependent as current or voltage output
current output	load $R_L \leq 500 \Omega$ configurable: 0 / 4 ... 20 mA (4 ... 20 mA with 3.0 mA fault current)
voltage output	load $R_L \geq 10 k\Omega$ configurable: 0 / 2 ... 10 V (2 ... 10 V with 1.5 V fault voltage)
<b>RS 232 interface</b>	output of measured values, sensor configuration 9600 bit/s, 8 data bits, 1 stop bit, no parity
<b>Display</b>	
LED "Run/Error"	GREEN continuous: sensor ready for operation, signal quality ≥ 70 % GREEN flashing: sensor ready for operation, signal quality < 70 % (excess gain) RED flashing: sensor not ready for operation, interfering object at close range
LED "Relay 1", LED "Relay 2"	RED continuous: sensor defective, hardware error OFF: no object in the switching ranges YELLOW continuous: object in the switching ranges
<b>Weight</b>	approx. 2.8 kg (MWD□□M-F21-2KIUR2)
<b>Environmental conditions</b>	
operating temperature range	-25 °C ... +70 °C (248 K ... 343 K)
storage temperature range	-40 °C ... +85 °C (233 K ... 358 K)
Protection class, DIN 40 050	IP 67
shock test	$b \leq 30$ g, $T \leq 11$ ms
vibration test	$f \leq 55$ Hz, $a \leq 0,35$ mm
<b>Standards conformity</b>	
coordination of insulation	according to DIN EN 50 178
electrical isolation	according to DIN EN 50 178
Electromagnetic compatibility	according to DIN EN 50 081-1, DIN EN 50 081-2, DIN EN 50 082-1, DIN EN 50 082-2

## Function

The sensor functions on the principle of FMCW radar. The sensor continuously transmits triangular, frequency-modulated directional microwave radiation and receives the reflected radiation. Through the mixing of the transmitted and received signals, a signal delay occurs and, as distance is proportional to frequency, this delay is evaluated.

The microwave distance measurement with the the microwave distance sensors is not or is only slightly influenced by temperature, air pressure, air movement, mist, rain or snow.

## Accessories

### Three-way reflector MW-TRIP

Order No. 42480

### Protective cover, MW-SH

Order No. 37267

### Mounting bracket

Order No. 38628

### Parameterization Software,

**MWD-Edit** incl. RS232 interface cable

Order No. 46987

F00306E 06/99 01