

# MICROPULS 56

Radar Level Sensor

4...20mA / HART two wire



## Technical Specifications

Measuring range	up to 30 meter
Accuracy	± 3mm
Process connection	Threaded G 1 ½ or flanged
Process pressure	-1 ... 40 bar
Process Temperature	-40...150°C, optional 250°C
Operating frequency	26 Ghz
Measuring angle	4°/5°6°/8°/12°/18°(Acc. to antenna size)
Power supply	14...36V DC / optional 220V AC
Protection class	IP67

## Application Areas

MICROPULS 56 is an ideal sensor for measurement of liquids especially under difficult conditions. The electronic amplifier is configured for particularly difficult measurement conditions. By this means, MICROPULS 56 is one of the most effective sensor in measuring up to 30m especially of aggressive substances such as acid and caustic and of all kind of chemical mixtures and similar liquids under the most arduous, steamy and humid conditions.

## Measuring Principal

Powerful radar waves with short pulses are sent through the antenna system to the product surface. These pulses are reflected by the product surface and received again by the antenna system. The level is measured depending on the period between the time of sending and sensing of the pulses.

## Advantages

- Simple mounting
- Non-contact measuring principle
- High sensitivity
- Maintenance-free structure
- Independent of steam, pressure, temperature and gas

## Housing and Materials

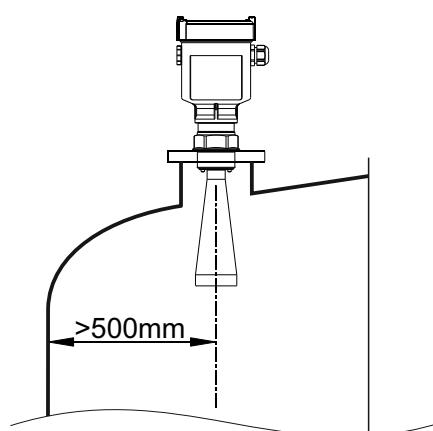
Sensor bodies are manufactured in accordance with the demands of the customer from single or double chamber plastic, aluminium or stainless steel material. The plastic housing meets the requirements of protection class IP66 and the aluminium and stainless steel housing the protection class IP67. All wet surfaces of the sensor is made from stainless steel, PP and PTFE material. All sealing gaskets can be manufactured as viton and silicon

## Electronic Options

Sensor electronics are available according to customer demands and process requirements as two-wire or four-wire 4...20mA/HART. They're gel filled and protected against moisture and vibration.

## Certificates

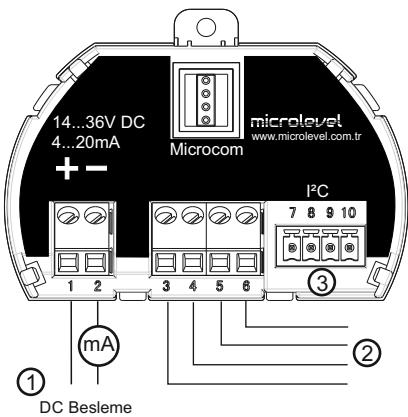
MICROPULS 56 has an ATEX approval for use in hazardous areas. The instrument also has CE approvals for EMC Directive 2004/108/EC EN61326-1: 2006 EN61326-2-2: 2006 and Low voltage Directive 2006/95/EC EN 61010-1: 2010.



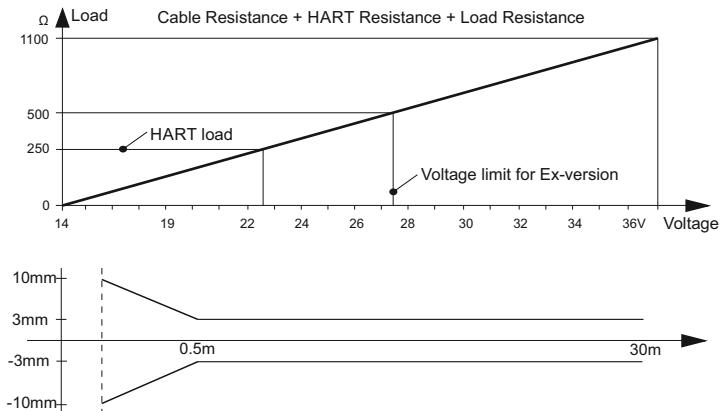
## Electrical Connection

The sensor has a system known as two-wire which is operateable with 14..36V DC and which has an 4...20mA output on the same line. The (+) end of the power supply is directly connected to the sensor end 1 and PLC, DCS, indicator and control devices are serially connected to the (-) line 2.

- 1-Supply / analog output
- 2-Exterior indicator output
- 3-Interface connection socket

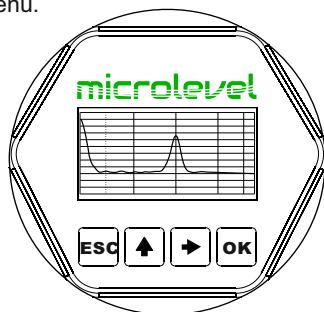


## Energy Supply Table / Accuracy Diagram



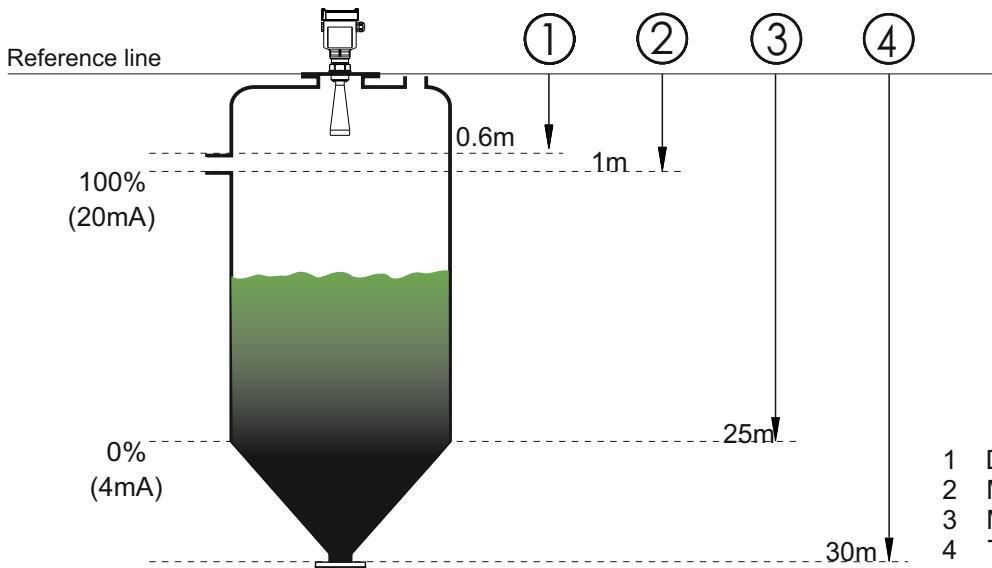
## Adjustment with MICROCOM

The basic settings of the sensor can be easily done via the display and adjustment module MICROCOM with different menu language. The measuring range, the product type and the min. and max. values can be easily set. The space to the surface, fullness from ground to top, volumetric values and scaled data and values can be monitored on the display. Many parameters such as signal strength, error codes, simulation can be set under the diagnostic menu and settings such as suppression of faulty echos, type of current output, distance correction setting, reset, enter the PIN etc. can be adjusted under the service menu.



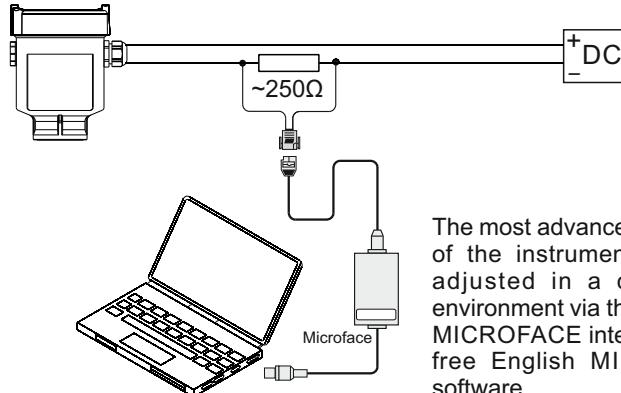
Microcom Adjustment Module

- allows you to enter into the programming mode and to confirm the programming option and the parameter changes.
- allows you to select the programming options and the parameter values to be entered, to read off the parameter contents and to go to the next page.
- allows you to change the parameter values.
- allows you to revert from the programming mode to the upper menu.

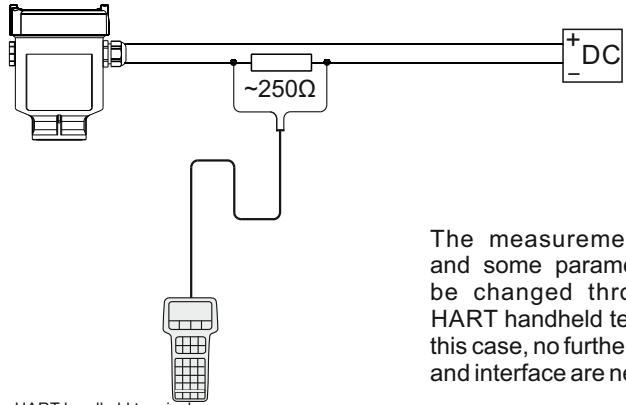


- 1 Dead zone (Menu 1.9)
- 2 Max. set point (Menu 1.2)
- 3 Min. set point (Menu 1.1)
- 4 Total blank height (Menu 1.8)

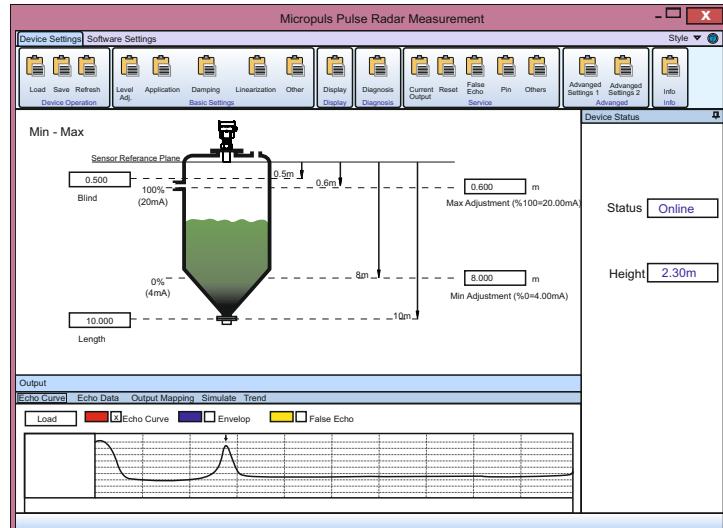
## Connection and Adjustment via PC



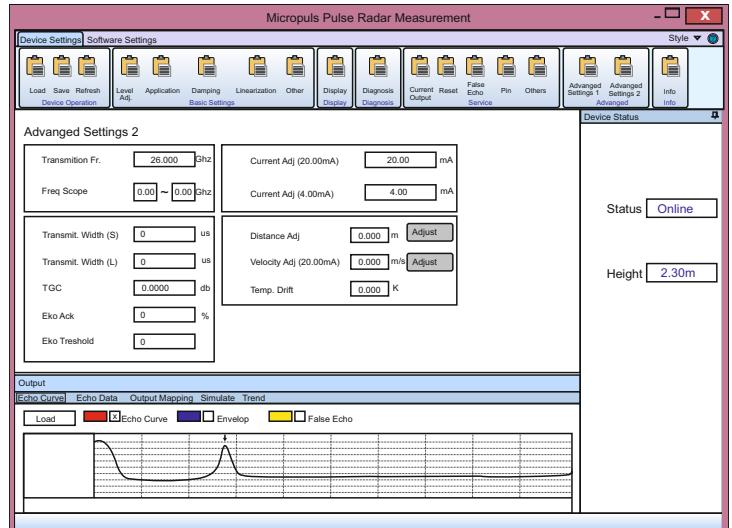
## Adjustment with HART Handheld Terminal



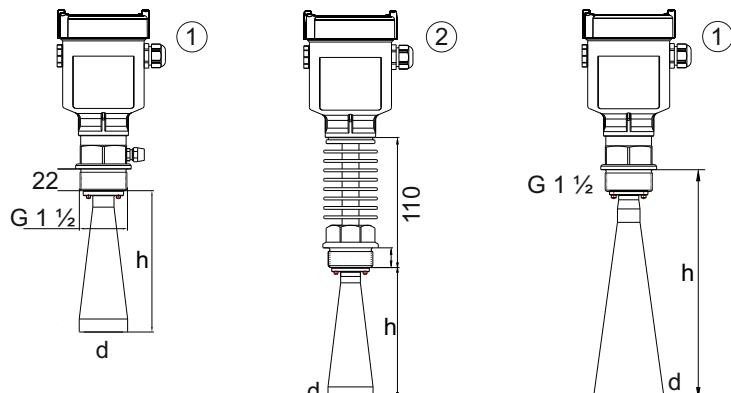
## Adjustment with Software



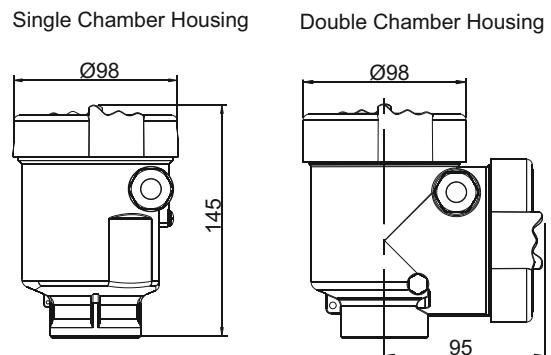
## Advanced Parameter Setting



## Technical Dimensions



## Technical Dimensions (Housing)



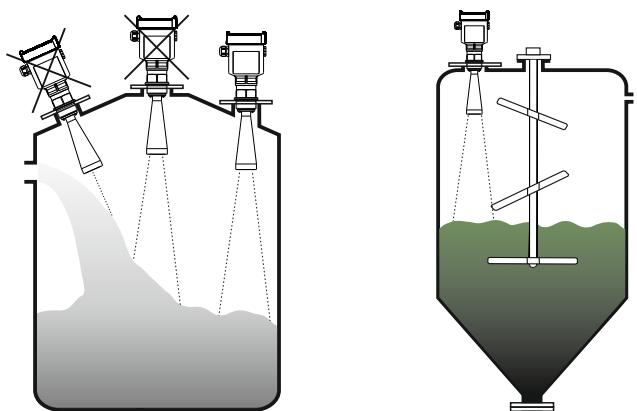
## Antenna Informations

- 1-Standard temperature / threaded / rinsing connection / horn
- 2-Hi temperature / threaded / horn
- 3-Standard temperature / threaded / horn

## Size / Length of antenna / signal angle

- d: 48mm h: 140mm 18°
- d: 78mm h: 227mm 12°
- d: 98mm h: 288mm 8°
- d: 98mm (lengthen) h: 474mm 6°
- d: 123mm h: 620mm 6°

## Various Applications / Considerations



## Selection Table

### Model: MICROPULS 56 (30m)

#### **Explosion Proof Approval**

P - Standard (Without Approval).  
G - ATEX II 1G Ex ia IIC T6...T3 Ga.  
D - ATEX II 1D Ex ia IIIC T76°C...T146°C Da.

#### **Types of Antenna / Material**

B - Horn Antenna Ø 48mm / Stainless Steel 316L.....  
C - Horn Antenna Ø 78mm / Stainless Steel 316L.....  
H - Horn Antenna Ø 98mm / Stainless Steel 316L.....  
I - Horn Antenna Ø 98mm (Lengthen) / Stainless Steel 316L.....  
J - Horn Antenna Ø 123mm / Stainless Steel 316L.....  
K - Horn Antenna Ø 98mm / PP / PTFE Dust Shield.....  
L - Horn Antenna Ø 98mm / (Lengthen) / PP / PTFE Dust Shield.....  
M - Horn Antenna Ø 98mm / Stainless Steel 316L / PTFE Dust Shield.....  
N - Horn Antenna Ø 98mm / (Lengthen) / Stainless Steel 316L / PTFE Dust Shield.....  
P - Horn Antenna Ø 123mm / Stainless Steel 316L / PTFE Dust Shield.....  
Q - Parabolic Antenna Ø 198mm / Stainless Steel 316L .....

R - Parabolic Antenna Ø 246mm / Stainless Steel 316L .....

X - Special Antenna.....

#### **Process Connection / Material**

GDX - Thread G1 1/2A / Stainless Steel 316L.....  
NDX - Thread 1 1/2 NPT / Stainless Steel 316L.....  
FCX - Flange DN50 PN16 / Stainless Steel 316L.....  
FDX - Flange DN80 PN16 / Stainless Steel 316L.....  
FEX - Flange DN100 PN16 / Stainless Steel 316L.....  
FEP - Flange DN100 / POM (Delrin 100°C).....  
FE4 - Flange DN100 PN16 / Stainless Steel 304L.....  
FFX - Flange DN125 PN16 / Stainless Steel 316L.....  
FGX - Flange DN150 PN16 / Stainless Steel 316L.....  
FHX - Flange DN200 PN10 / Stainless Steel 316L.....  
FIX - Flange DN250 PN10 / Stainless Steel 316L.....  
HCX - Gimbal Flange DN50 / Stainless Steel 316L.....  
HDX - Gimbal Flange DN80 / Stainless Steel 316L.....  
HEX - Gimbal Flange DN100 / Stainless Steel 316L.....  
HED - Gimbal Flange DN100 / POM (Delrin 100°C).....  
HE4 - Gimbal Flange DN100 / Stainless Steel 304L.....  
HFX - Gimbal Flange DN125 / Stainless Steel 316L.....  
HGX - Gimbal Flange DN150 / Stainless Steel 316L.....  
HHX - Gimbal Flange DN200 / Stainless Steel 316L.....  
HIX - Gimbal Flange DN250 / Stainless Steel 316L.....  
ZXX - Special Connection.....

#### **Temperature**

1 - -40...100°C.....  
2 - -40...150°C.....  
3 - -40...250°C (Cooling adapter).....

#### **Electronic**

B - 4...20mA / HART Two wire 14...36VDC.....  
C - 4...20mA / HART Four wire 14...36VDC.....  
D - 4...20mA / HART Four wire 198...242VAC.....

#### **Housing / Protection**

A - Aluminium / IP67.....  
B - Plastic / IP66.....  
D - Aluminium Two Chamber / IP67.....  
G - Stainless Steel 316L / IP67.....

#### **Cable Entry**

M - M20x1.5.....  
N - 1/2 NPT.....

#### **Display / Programming**

A - Yes.....  
X - No.....

#### **Additional Options**

L - Antenna extention length 500mm (per 100mm 10.00€).....  
P - Air cover (suitable for DN150 or bigger flange connection only).....  
R - Rinsing connection.....  
X - No option.....

#### **Notes:**

-ATEX instruments can be used with only "B" Electronic and "A" "G" Housing  
-Four wire is only used with "D" Housing

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