“Smart” Radar Explosion Proof
2 Wire Measurement Sensors”

FEATURES
2 Wire Operation
Self Adjusting Tracking Radar
Output 4-20 mA / 20-4 mA
For communications with calibration,
diagnostics & data logging software
Communication with “HART 7”

APPLICATIONS
Water / Wastewater
Chemicals with vapors

MECHANICAL
Conduit Entry : 1/2” NPT
Enclosure : Aluminum /S.S.- 94V0
Ingress Protection : TYPE 4/4X ,
NEMA 4 (IP65)

ENVIRONMENTAL
Approvals : FMc for Can. & US Explosion Proof
Class I, Div.1, Groups B, C, D:
Dust-Ignition Proof Enclosure for
Class II/III Div. 1,Groups E, F, G
Approvals : FCC Part 15 - Low
Power Communication Device
Temperature : -40 to 140°F (-40 to 60°C)
Installation Category : Class II
Catalogue # - On the Web return to Home Page & refer to
Catalogue Number Structure for ordering information. In
Product Documentation refer to page 5.

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Radar Range Code</th>
<th>RANGE in Liquids</th>
<th>RESOLUTION</th>
<th>MOUNTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>017</td>
<td>* - 17 ft.</td>
<td>0.08” 2.0 mm</td>
<td>2.0”,1 1/2” NPT **</td>
</tr>
<tr>
<td></td>
<td>* - 5 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>033</td>
<td>* - 33 ft.</td>
<td>0.15” 3.9 mm</td>
<td>2.0”,1 1/2” NPT **</td>
</tr>
<tr>
<td></td>
<td>* - 10 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>050</td>
<td>* - 50 ft.</td>
<td>0.22” 5.7 mm</td>
<td>2.0”,1 1/2” NPT **</td>
</tr>
<tr>
<td></td>
<td>* - 15 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>* - 100 ft.</td>
<td>0.44” 11 mm</td>
<td>2.0”,1 1/2” NPT **</td>
</tr>
<tr>
<td></td>
<td>* - 30 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>140</td>
<td>* - 140 ft.</td>
<td>0.62” 15.7 mm</td>
<td>2.0”,1 1/2” NPT **</td>
</tr>
<tr>
<td></td>
<td>* - 42 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>240</td>
<td>* - 240 ft.</td>
<td>1.06” 26 mm</td>
<td>2.0”,1 1/2” NPT **</td>
</tr>
<tr>
<td></td>
<td>* - 73 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note - * Minimum Range starts at the lower tip of the antenna for high dielectric material (water). For low dielectric materials allow longer Minimum Range.
Note - ** Only 2” and 3” NPT Mtg. Connection Available on High Temperature Radar.

OPTIONAL
Antenna Extension : 6” or 8” Lengths
- Use only with Teflon Antenna!
- Refer to catalogue number Page for ordering info.

High Temperature Unit :
- 2” / 1 1/2” NPT Process Connection
- Teflon De-coupler threads on with
2” NPT Process Connection.

Antenna Extension

PROCESS
Material Dielectric : Er >2
Pressure : 5 bar Max. 15-75 psi
Temperature : - Std. Sensor
PP Rod : - 40 to 140°F (-40 to 60°C)
High Temp. Optional Sensor
PTFE Rod : - 40 to 350°F (-40 to 177°C)
Teflon Temperature De-coupler Required

OPERATIONAL
Operation : Pulse Radar
Accuracy : +/- 0.1% of max. range in lab using
4-20mA current output
+/-0.25% of max. range (typically in field)
Frequency : 6.3 GHz
Loss of Echo Hold : 1 min., 22mA or 2mA output
Transmitter Power : 50 uW average
Calibration : via optional communications port.
(required)
Diagnostics: (Echo Profile) via communications port
Antenna : Dielectric rod PP or Optional PTFE

ELECTRICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Power DC</th>
<th>16 to 30 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABM200</td>
<td>R load max. = (Vs - 14 ) / 25 mA</td>
</tr>
<tr>
<td>Output</td>
<td>4-20 mA Output 6.1 uA resolution</td>
</tr>
</tbody>
</table>

10A866 R0
2 Wire Radar Ex. Sensors
User Instruction Manual

Fig. #1 - “2 Wire Sensor” Wiring Connection

**Typical Installation**

1) Radar unit must be installed into metal fitting with the antenna pointing downward.

**Power Input**
16–30 Vdc

**Conduit Entry**
1/2” NPT

**Process Mtg.**
1 1/2”,2”NPT

**Radar 2 Wire**
4–20 mA

**V max.** = 30 Vdc
**V min.** = 16 Vdc

**Recommended Wiring**
- 2 Wire shielded 24 AWG, 300 V

For Radar programmable using communication is recommended
1) Load “ABM_HART_GatewayPC” into your PC.
(Select SETUP.EXE from CD and follow instructions on the screen.)
2) Click on START and under PROGRAMS select ABM_HART_GatewayPC.
3) Follow instruction in help file.

**Calibration — 4 -20 or 20 - 4 mA Output**

- FULL — Calibrate 20 mA or 4 mA (Set Near Target)
  1. Calibration mode LED color is blinking Green.
     (for Radar Low Dielectric Materials has to be off)
  2. Push button and hold until LED turns Yellow (20 mA)
     or push button and hold until LED turns Red (4 mA)
  3. Release button, observe LED flashes to acknowledge the calibration.

- EMPTY — Calibrate 4 mA or 20 mA (Set Far Target)
  1. Calibration mode LED color is blinking Green
     (for Radar Low Dielectric Materials has to be off)
  2. Push button and hold until LED turns Red (4 mA)
     or push button and hold until LED turns Yellow (20 mA)
  3. Release button, observe LED flashes to acknowledge the calibration.

**For Radar to turn the Low Dielectric Materials operation mode ON and OFF**
(this mode is recommended for materials with dielectric constant lower than 4 and also to eliminate multiple reflections in tank.)

1) To turn the Low Dielectric Materials ON. Push button and hold until LED goes OFF after the sequence of Yellow, Red and turns Off. The Low Dielectric Material operation is On when the LED’S Green light gives two short blinks.
2) To turn the Low Dielectric Materials OFF. Push button and hold until LED goes OFF after the sequence of Yellow, Red and Turns OFF. The Low Dielectric Material operation is OFF when LED is blinking Green.

3) Use “Hart” communication software.
2 Wire Explosion Proof Radar Level Measurement Sensors
Outline Dimensional Dtl.

Nameplate Recess
Cover Tool Access Hole
Thread on Wiring access
Cover (Aluminum or S.S.)
1/2" npt Conduit Entry
FCC Nameplate
Mounting Thread
2"/ 1 1/2" NPT
Antenna Teflon

2 Wire Radar Explosion Proof Outline Dimensions
Notes - 1) Material - S.S. 316, .21 Gauge Sheet
2) Flange Size required to pass Horn thru ANSI 8" - 150 lb