

New Product

Self Adjusting "Smart" 26 GHz Radar for Solid Materials



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FEATURES

Self Adjusting Tracking Radar for Solid Materials
 Programmable (recommended) and
 Simple push-button calibration
 Swivel Mtg. Aimer (recommended)
 Output 4-20 mA / 20-4mA
 (Isolated on 4 Wire Model's only)
 Optional RS232 OR RS485
 For communications with calibration,
 diagnostics & data logging software
 PLC Compatible (Modbus RTU)
 Three or four Wire Operation

APPLICATIONS

Solids with Dust
 Powders

MECHANICAL

Conduit Entry : 1/2" NPT x 2
 Enclosure : Aluminum Or S.S. - 94V0
 Ingress Protection : NEMA 4 (IP65) Type 4/4X
 : Special Order NEMA 6 (IP68)

ENVIRONMENTAL

Temperature : - 40 to 140°F (- 40 to 60°C)
 Installation Category : Class II

PROCESS

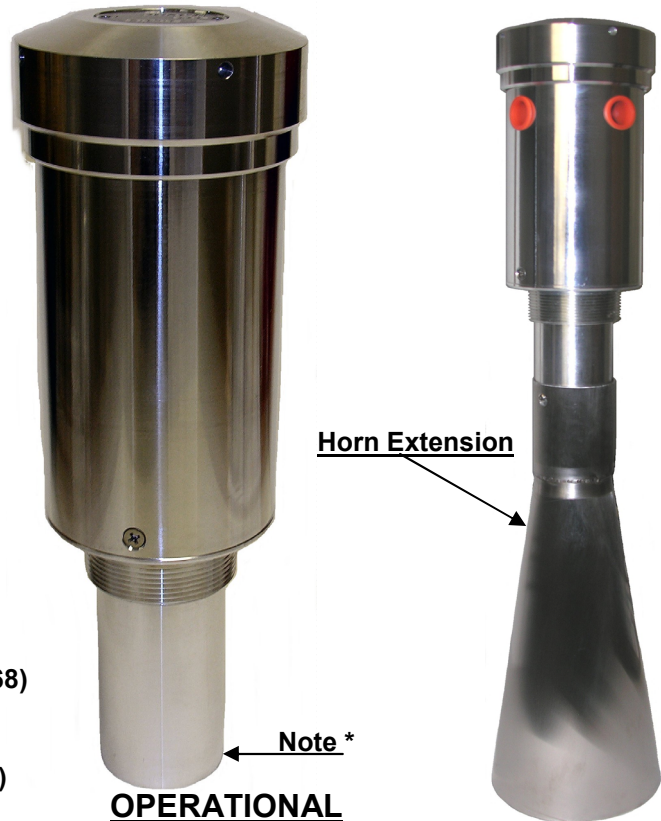
Temperature Std. : - 40 to 140°F (- 40 to 60°C)
 c/w Teflon De-coupler: - 40 to 350°F (- 40 to 177°C)
 Material Dielectric : Er >2
 Max. Pressure : 5 bar
 For very dusty applications divide max. range by two.

Catalogue # - On the Web return to Home
 Page & Refer to Catalogue Number Structure for Ordering
 information. In Product Documentation refer to Page 4.

TECHNICAL SPECIFICATIONS

Radar Range Code	RANGE In Solids	RESOLUTION	MOUNTING
050	* - 50 ft. * - 15 m	0.22" 5.7 mm	2.0" NPT
100	* - 100 ft. * - 30 m	0.44" 11 mm	2.0" NPT
140	* - 140 ft. * - 42 m	0.64" 16 mm	2.0" NPT
240	* - 240 ft. * - 73 m	1.06" 26 mm	2.0" NPT

Note - * Minimum Distance 36" from the bottom of the thread base.



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 : 26 GHz
 Loss of Echo: Hold 1 to 3 min.,
 22mA or 2 mA. output
 Transmitter Power : 50 uW average
 Calibration : Via communications port (required)
 Diagnostics : (Echo Profile) via communications port
 Antenna : Point Antenna PTFE with Horn for
 solid materials. A horn extension is
 required for very low dielectric and
 dusty powder materials.

Power ABM400 AC	115 VAC 60 Hz or 230 VAC 50 Hz (+/-20%), 1.7 VA
ABM300 DC	12 to 30 VDC, 0.07 A max @ 24 Vdc R load = (Vs — 6) / 24 mA
Output	4-20 mA Output 6.1 uA resolution 750 Ohms (Isolated on 4 Wire only) Optional RS232 or RS485 communications port.

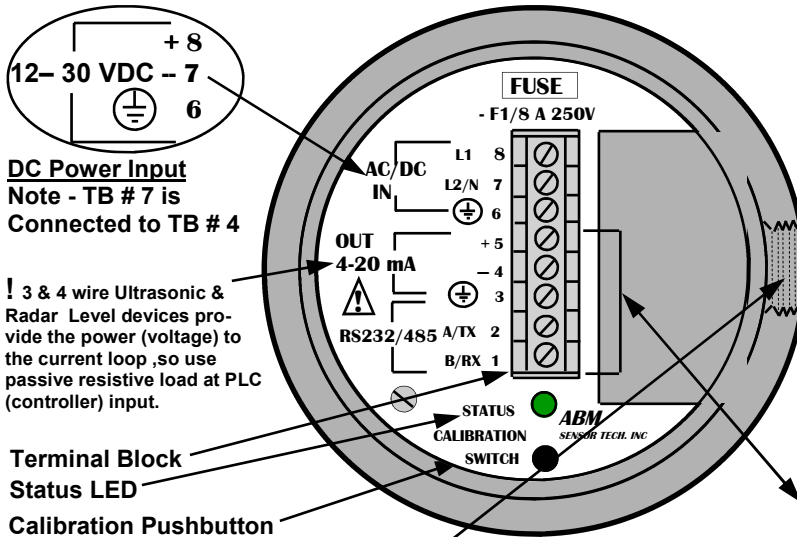
3 & 4 Wire Ultrasonic and Radar Sensors User Instruction Manual



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Inter-Connection Diagram

Top View of Sensor (Access Cover Removed)

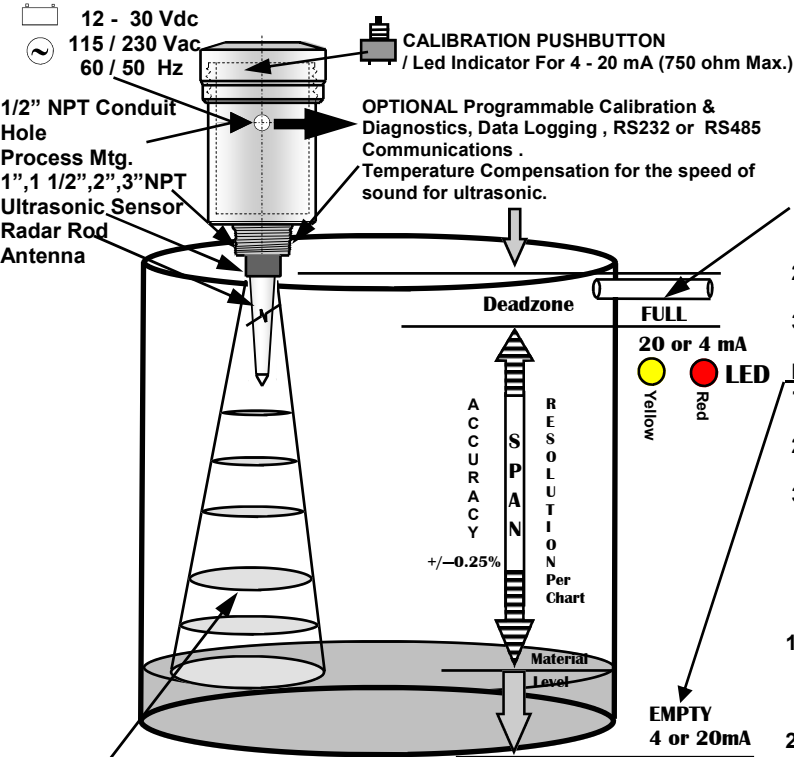


! 3 & 4 wire Ultrasonic & Radar Level devices provide the power (voltage) to the current loop, so use passive resistive load at PLC (controller) input.

NOTE — Use only 1/2" NPT Conduit

Typical Installation

- 1) Direct mounting ultrasonic sensor - Simply thread sensor directly into metal or plastic nozzle.
- 2) Radar unit must be installed into metal fitting with the antenna pointing downward.
- 3) Do not mount in the center of a domed tank.



Operation - An ultrasonic/electromagnetic pulse is transmitted from the ABM sensor . The pulse travels to the surface being monitored and is reflected off this surface back to the sensor . The time of flight is divided by 2 , corrected with temp. and converted to an output signal directly proportional to the material level .

FCC INFORMATION TO RADAR USERS

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING-Changes or Modifications not expressly approved by ABM Sensor Technology Inc. could void the user's authority to operate the equipment.

Wiring Information

- Ground shield at one end only.
- All terminal block wiring must be rated for 250V.
- Power input wiring must be protected by a 15A double pole circuit breaker .
- Terminal is for use only with equipment which has no live parts which are accessible .
- Terminal is for use with equipment which maintains basic insulation from hazardous voltage under normal and single fault conditions .
- Connection used at the remote end of external circuit .

Recommended Wiring

For AC Sensor —

Power 3 Wire unshielded 22 AWG , 300 V
 Current Output 1 Pair shielded 24 AWG , 300 V
 Communication 1 Pair shielded 24 AWG , 300 V

For DC Sensor—

Power & Current output 3 Wire shielded 24 AWG , 300 V

Calibration — 4 -20 or 20 - 4 mA Output

For Radar programmable through communication is recommended.

FULL — Calibrate 20 mA or 4mA (Set Near Target)

1. Calibration mode LED color is 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 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.)

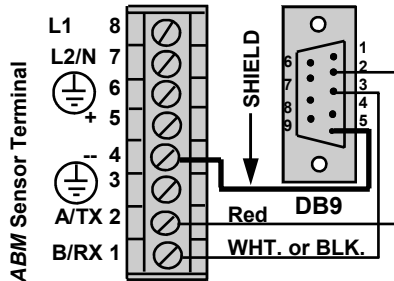
- 1) To turn the Low Dielectric Materials ON. Push button and hold until LED goes OFF after the sequence of Yellow ,Red and turns Off. The Low Dielectric Material operation is On when the LED'S Green light blinks constantly.
- 2) To turn the Low Dielectric Materials OFF. Push button and hold until LED goes OFF after the sequence of Yellow , Red and Turns OFF. The Low Dielectric Material operation is OFF when LED is continuously Green.
- 3) Use communication software.

3&4 Wire Ultrasonic and Radar Sensors Communication Interconnection Dtl.



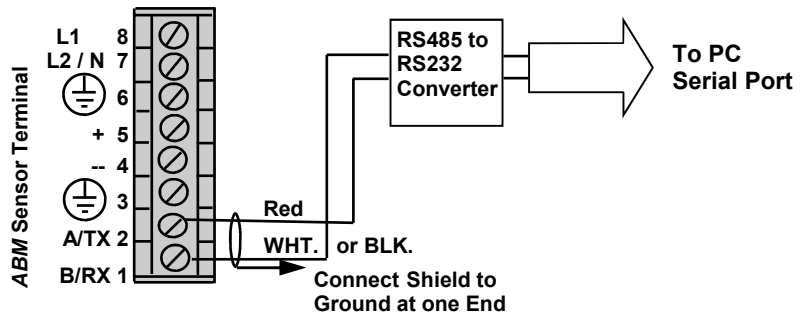
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Fig. # 1 RS232 Connection



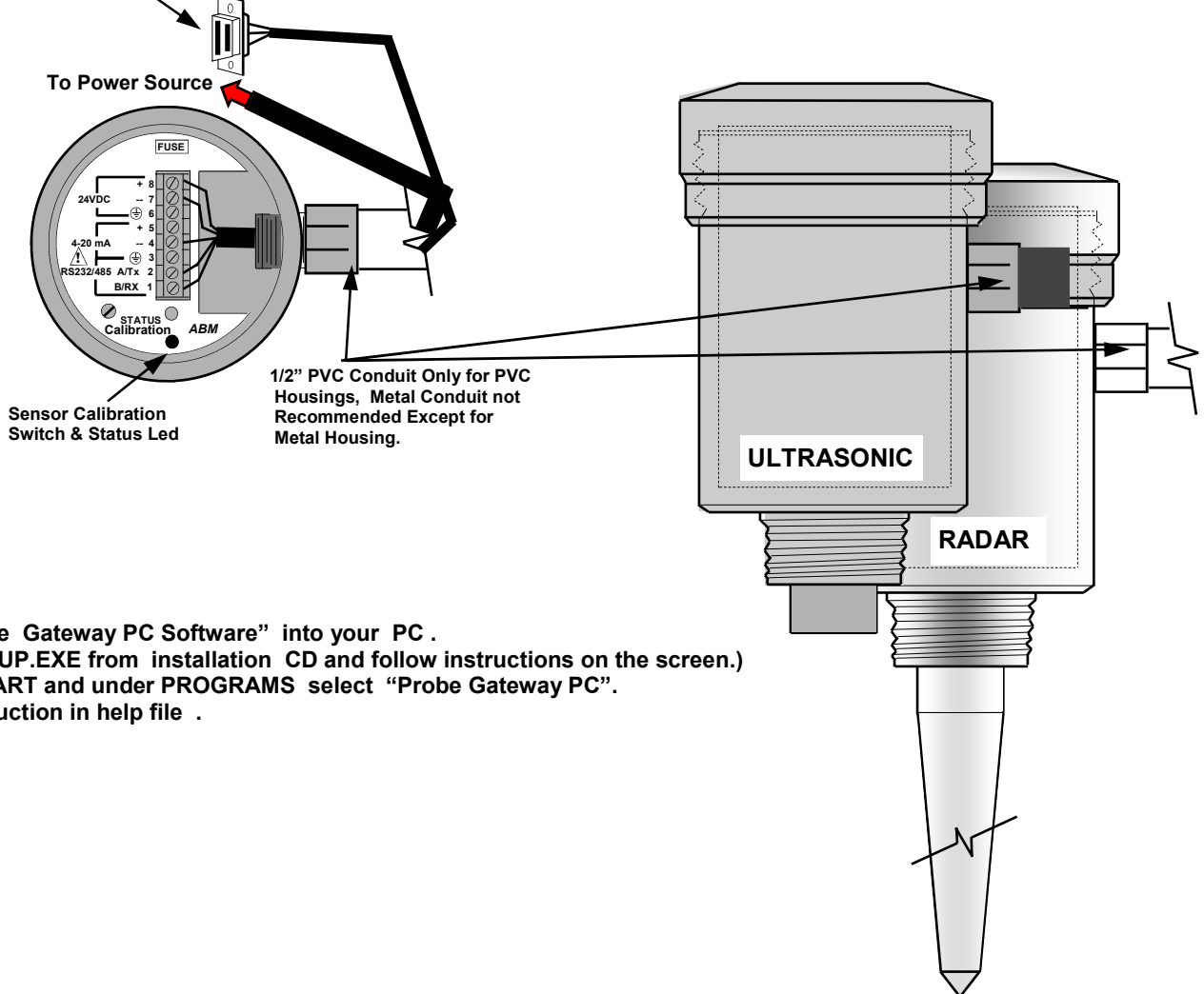
Note - Connect the shield to ABM Sensor Terminal #4.

Fig. # 2 RS485 Connection



Note - Connect the shield to ABM Sensor Terminal #3.

Connect to Serial Port of PC, use Extension Cable length as required, Refer to Fig.# 1 or # 2 For Wiring Dtl.

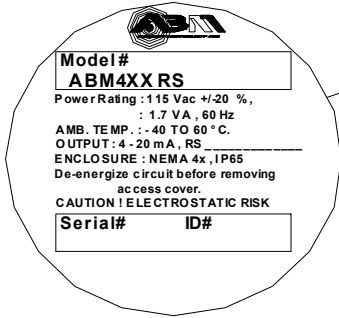


- 1) Load "Probe Gateway PC Software" into your PC.
(Select SETUP.EXE from installation CD and follow instructions on the screen.)
- 2) Click on START and under PROGRAMS select "Probe Gateway PC".
- 3) Follow instruction in help file .

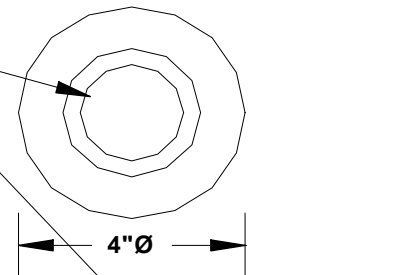
Self Adjusting "Smart" 26 GHz Radar Outline Dimensional Dtl.



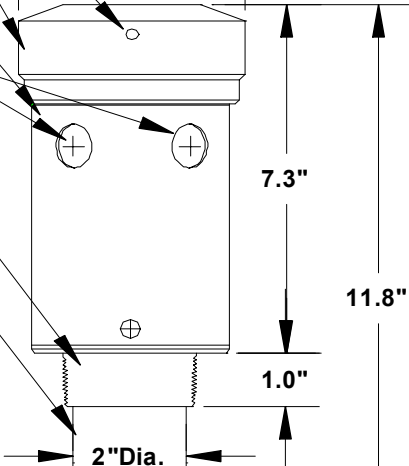
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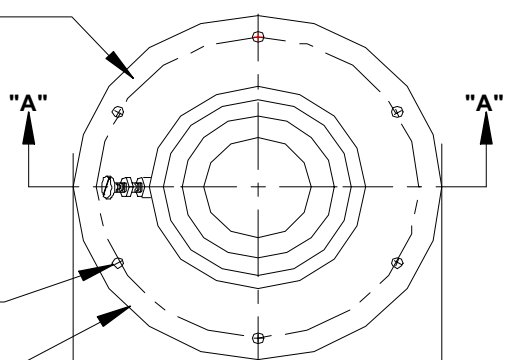
Nameplate Recess
 Cover Tool Access Hole
 Thread on Wiring Access Cover (Aluminum or S.S.)
 Electronics Enclosure Aluminum or S.S. 3.5" Ø O.D.
 1/2" NPT Conduit Entry



Optional Swivel Aimer Mount Here
 Intergral Horn
 Optional Horn Extension



Upper & Lower Support Plates - Painted Mild Steel



6 Holes 0.25" Ø on 7.0" Mtg. Circle

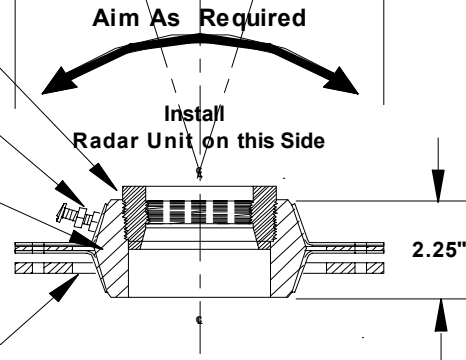
8" Ø

3"-2" NPT Adaptor For Sensor Mounting

1/4"-20 Swivel Nut & Lockscrew

Nylon Swivel Ball

1/4" Thk. Rubber Mounting Gasket supplied



Section 'A'-'A' Ball Swivel Flange Mount
 Maximum Angle 16° Off Perpendicular

ABM300/4XX-50R & 100R

3 & 4 Wire Radar Level Sensor Outline Detail