

Self Adjusting "Smart" Radar Level Measurement Sensors



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FEATURES

Self Adjusting Tracking Radar
 Programmable (recommended) and
 Simple push-button calibration
 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
 PL Compatible (Modbus RTU)
 Three or four Wire Operation

APPLICATIONS

Food and Beverages
 Water / Wastewater
 Chemicals with vapors

MECHANICAL

Conduit Entry : 1/2" NPT x 2
 Enclosure : Aluminum Or Stainless Steel - 94V0
 Ingress Protection : NEMA 4 (IP65) Type 4/4X

ENVIRONMENTAL

Temperature : - 40 to 140°F (- 40 to 60°C)
 Installation Category : Class II
 Approvals : FCC Part 15 - Low Power
 Communication Device

PROCESS

Temperature :PP Rod - 40 to 190°F (- 40 to 90°C)
 PTFE Rod - 40 to 350°F (- 40 to 177°C)
 Material Dielectric : Er >2
 Max. Pressure : 5 bar (without Teflon Decoupler)

Refer to Catalogue Number Page for
 Ordering information (example # below)

ABMXXX-XXXYYCX-XXYYY-XEX

Power $\xrightarrow{\quad}$ $\xrightarrow{\quad}$ Range Code (see below)

TECHNICAL SPECIFICATIONS

Radar Range Code	RANGE In Liquids	RESOLUTION	MOUNTING
050	* - 50 ft. * - 15 m	0.22" 5.7 mm	2.0", 1 1/2" NPT **
100	* - 100 ft. * - 30 m	0.44" 11 mm	2.0", 1 1/2" NPT **

Note - * Minimum Distance starts at the lower tip of the antenna .
 Note - ** Only 2" NPT Mounting available for High Temperature Radar.

OPTIONAL

Antenna Extension : 6" or 8" Lengths.
 - Use only with Teflon Rod Antenna !
 Refer to catalogue numbering Page for
 ordering info.
 High Temperature Unit :
 - Teflon De-coupler threads on to
 1 1/2" NPT Mtg. Adaptor with a
 2" NPT mtg. Process Connection.



Antenna Extension



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 : 5.8 GHz or 6.3 GHz.
 Loss of Echo : Hold 1 min., 22mA or 2 mA. output
 Transmitter Power : 50 uW average
 Calibration : Via communications port
 (required)
 Diagnostics : (Echo Profile) via communications port
 Antenna : Dielectric rod PP, & Optional PTFE
 Horn 316 S.S. for very low dielectric
 constant materials and short blanking

ELECTRICAL SPECIFICATIONS

Power	AC	115 VAC 60 Hz or 230 VAC 50 Hz (+/-20%) , 1.7 VA
ABM400	AC	
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.

USER INSTRUCTION MANUAL

For ABM300/4XX (DC/AC) SENSORS

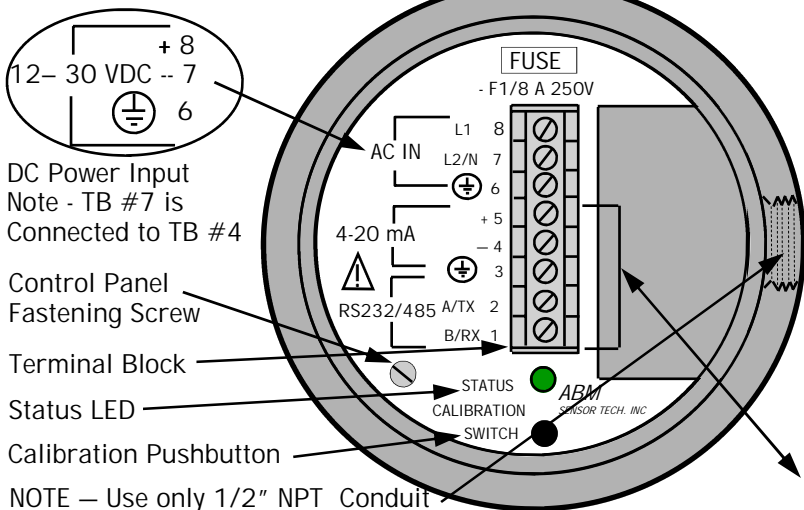
STD. , SANITARY AND RADAR



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Inter-Connection Diagram

Top View of Sensor (Access Cover Removed)



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

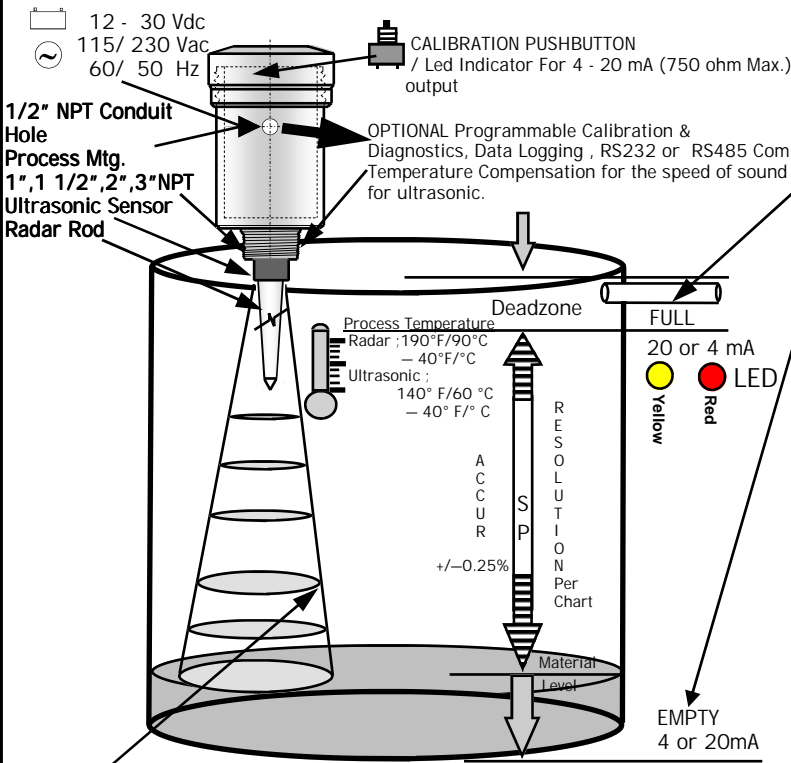
- Ground shield at one end only.
- All terminal block wiring must be rated for 250V.
- Power input wiring must be protected by a 15A double pole circuit breaker .
- Terminal is for use only with equipment which has no live parts which are accessible .
- Terminal is for use with equipment which maintains 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
 - Communication 1 Pair shielded 24 AWG , 300 V

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. BUT DO NOT MOUNT IN THE CENTER OF A DOMED TANK.



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.

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 and converted to an output signal directly proportional to the material level .

INSTRUCTION MANUAL 10A267

For ABM 300/4XX (DC/AC) Sensors With Communication For a Single Or Network Level Sensors



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Fig. # 1 RS232 Connection

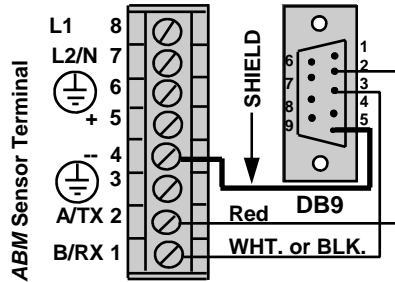
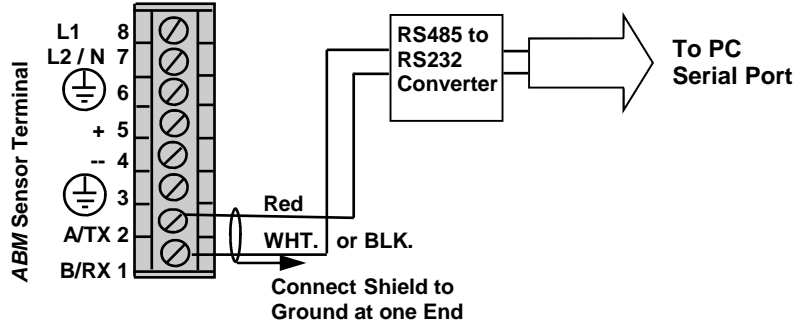
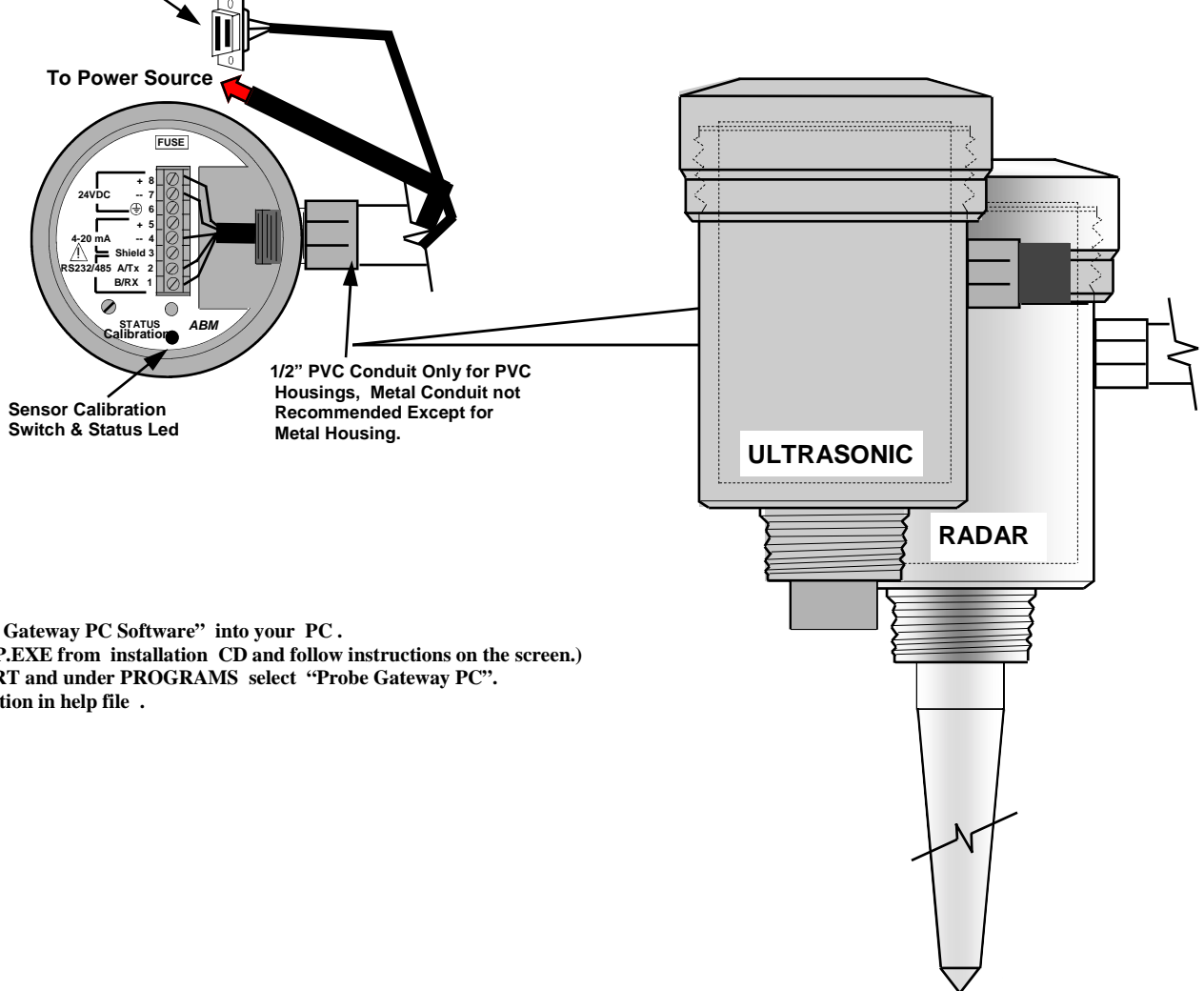


Fig. # 2 RS485 Connection



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

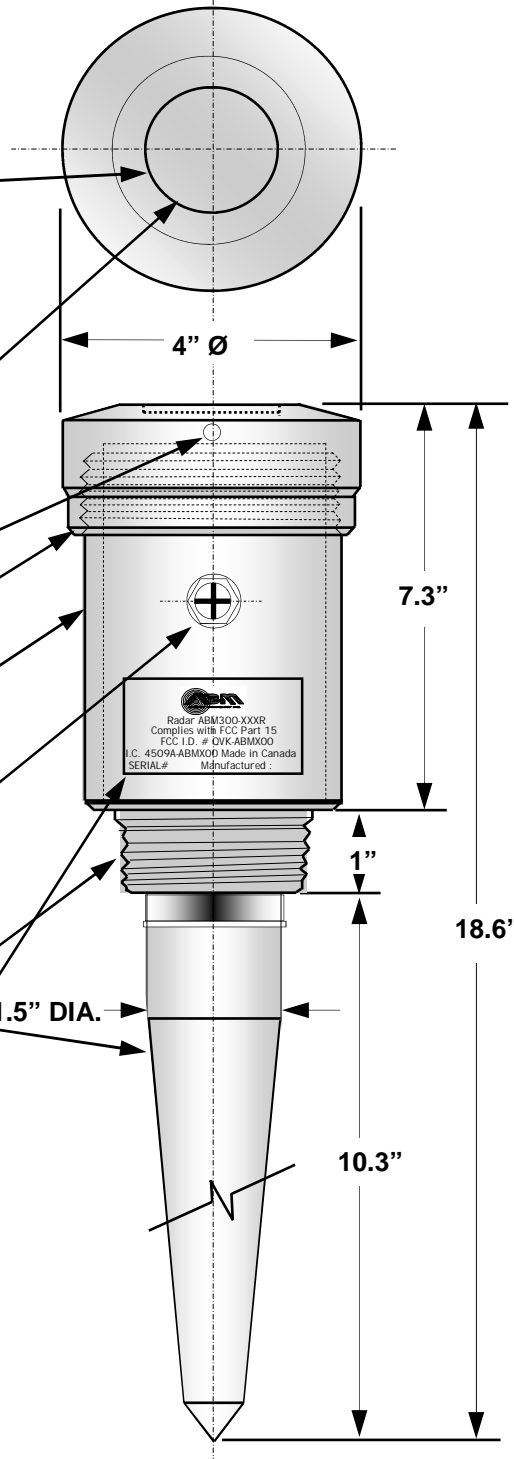
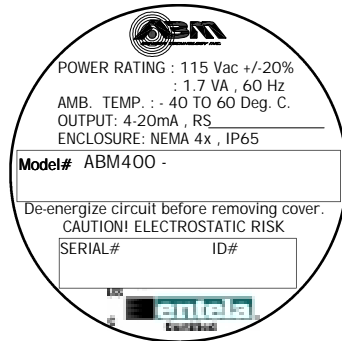


- 1) Load "Probe Gateway PC Software" into your PC .
 (Select SETUP.EXE from installation CD and follow instructions on the screen.)
- 2) Click on START and under PROGRAMS select "Probe Gateway PC".
- 3) Follow instruction in help file .

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Nameplate Recess

Cover Tool Access Hole

Thread on wiring access
Cover (Aluminum or S.S.)

Electronic Enclosure
Aluminum or S.S.
3.5" Ø O.D.

1/2" NPT Conduit Entry

Mounting Thread 2" or 1 1/2" NPT
(Aluminum or S.S.)
Antenna Polypropylene (Std.)
Teflon (optional)

Radar ABM300-XXXX
 Complies with FCC Part 15
 FCC I.D. # QVK-ABMXXX
 I.C. 4509A-ABMXXX Made in Canada
 SERIAL# _____ Manufactured : _____
 "This device complies with Part 15 of the FCC Rules.
 Operation is subject to the following two conditions:
 (1) this device may not cause harmful interference and
 (2) this device must accept any interference received,
 including interference that may cause undesired operation "

ABM300/4XX- 050R & 100R

FCC APPROVAL NAMEPLATE

ABM 300/4XX Radar Level Sensor Outline Detail