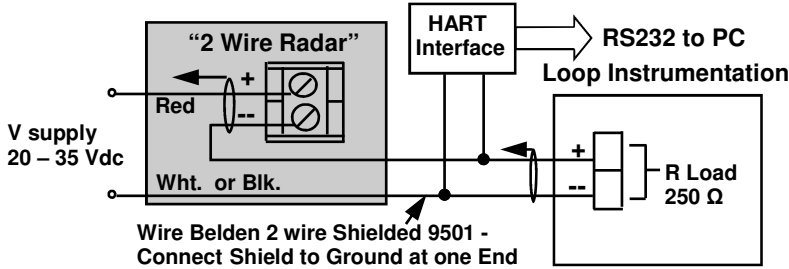




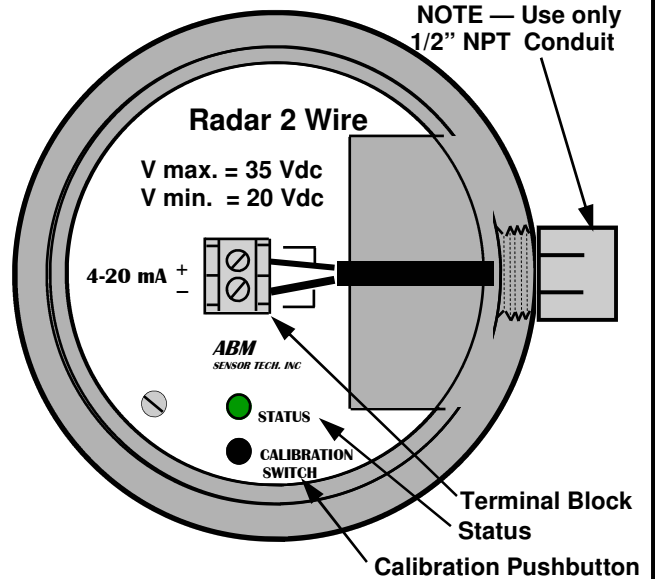
# 2 Wire Radar Sensors User Instruction Manual



**Fig. # 1 - "2 Wire Sensor" Wiring Connection**



**Top View of Sensor (Access Cover Removed)**



**Wiring Information**

- Ground shield at one end only.
- All terminal block wiring must be rated for 250V.
- 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**

- 2 Wire shielded 24 AWG , 300 V

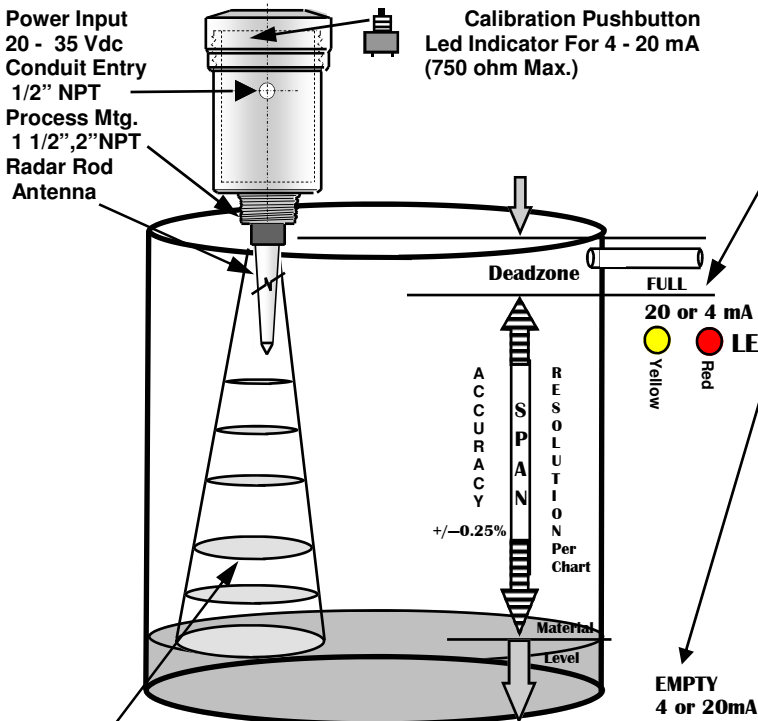
**FCC INFORMATION TO RADAR USERS**

**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.

**Typical Installation**

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



Operation - 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 .

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

**FULL — Calibrate 20 mA or 4mA (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 at Yellow or Red and observe LED flashes to acknowledge the calibration.

**EMPTY— Calibrate 4 mA or 20 mA (Set Far Target)**

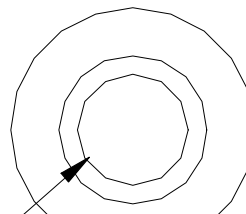
1. Calibration mode LED color is blinking Green (for Radar Low Dielectric Materials has to be off)
2. Push button and hold until LED turns Red (4 mA) or push button and hold until LED turns Yellow (20 mA)
3. Release button at Yellow or Red and observe LED flashes to acknowledge the calibration.

**For Radar to turn the Low Dielectric Materials operation mode**

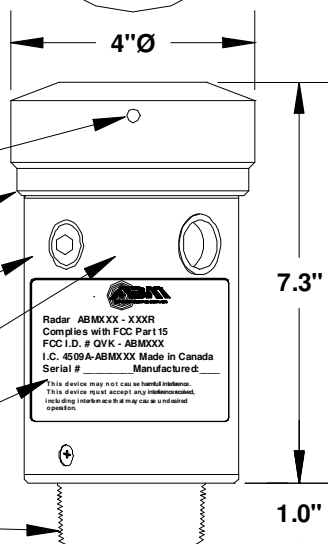
**ON and OFF** (this mode is recommended for materials with dielectric constant lower than 4 and also to eliminate multiple reflections in tank.)

- 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) Or use "Hart 7" communication software (Fig. #1).

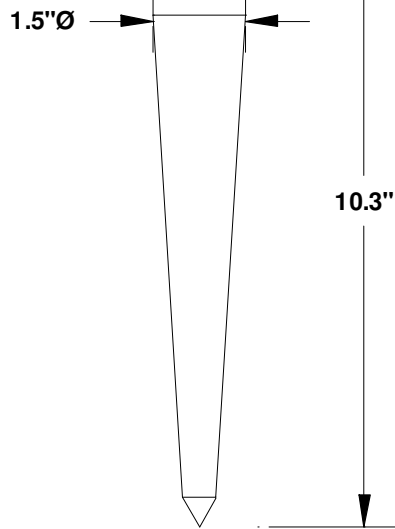
# 2 Wire Radar Level Measurement Sensors Outline Dtl.



- 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
- FCC Approval Nameplate
- Mounting Thread 1 1/2" or 2" NPT



- Antenna Polypropylene (Std.) Teflon (Optional)



**2 Wire Radar Level Sensor Outline Detail**

# Catalogue Numbering Structure

## - Standard "Smart" Radar Sensors



### CATALOGUE NUMBER STRUCTURE

1) 2) 3) 4) 5) 6) 7) 8) 9)

ABMXXX - XXXR5CX - XYYYY - IP68 - XEX - NA - XXXX

- 1) Supply Voltage
- 2) Radar Range
- 3) Radar Frequency
- 4) Communications
- 5) Body Material
- 6) Antenna Material
- Ingress Protection IP68 or leave blank for IP65
- 7) Radar Optional Extensions
- 8) Radar Explosion Proof (next page)
- 9) Swivel Aiming Mount / Flange Mounting

**ABM Code**      **Eg. ABM400-050RLC2-ALAPP**

1) Supply Voltage: AC 115V - 400      ABM 115volt radar 50 foot range with 232 communications  
 AC 230V - 430      and Aluminum body standard polypropylene antenna  
 DC 12-30V - 300  
 Loop Powered DC 16-30V - 200

2) Range:

Radar Range	ABM Code
* - 17 Ft	
* - 5 m	017
* - 33 Ft	
* - 10 m	033
* - 50 Ft.	
* - 15 m	050
* - 100 Ft.	
* - 30 m	100
* - 140 Ft.	
* - 42 m	140
* - 240 Ft.	
* - 73 m	240

Note - \* 5.8 & 6.3 GHz - Minimum Distance Starts at the Lower Tip of Antenna.  
 \* 26 GHz - Minimum Distance Starts at 36" from the bottom of the mounting thread base.

3) Radar Frequency : **ABM Code**  
 6.3 GHz - R6  
 5.8 GHz - R5  
 26 GHz - R2  
 Mini radar 26 GHz - M2

4) Communications : **ABM Code**  
 RS485 - 4  
 RS232 - 2  
 HART 7 - H

5) Body Material : **ABM Code**  
 Radar Std. Aluminum - - AL  
 Radar Anodized Al. - - AN  
 Radar Optional 316 S.S.- - SS

6) Antenna Material Radar : **ABM Code**

Standard	- Antenna Polypropylene	- APP
Optional	- Antenna Teflon	- ATE
	- High Temp. Teflon	- HTE (c/w De-coupler) Includes Teflon antenna and 1 1/2" - 2" NPT Teflon De-coupler.
Sanitary Mtg.-	2" Tri clamp	- S20 PTFE Teflon Material
Horn	- 2" Dia. Horn	- HR2 (26GHz Only)
Flood Monitor Horn	- 4" Dia. Horn	- HR4 (used for 6 GHz & 26 GHz flood monitoring)
Horn	- 5" Dia. Horn	- HR5 (used for 26 GHz as extension for HR2)
Horn	- 6" Dia. Horn	- HR6 (used for 6 GHz radar)
Horn	- 6" Dia. High Temp.	- HT6 (used for 6 GHz radar ,see note below )
Horn	- 2" Dia. ,5"Dia. High Temp.	- HT2,HT5 (used for 26 GHz ,see note below )

Note - High temperature radar units with horns use 2" to 3" NPT Teflon De-coupler.  
 - TD2 1.5" to 2" Teflon De-coupler  
 - TD3 2" to 3" Teflon De-coupler

Mounting Adaptors

**ABM Code**

7) Radar Optional: Antenna Built in Extension 1.5" - ATL  
 Antenna Extension Teflon 6" - AE6  
 Antenna Extension Teflon 8" - AE8  
 Radar Interface Detector - RID

—use with Teflon antennas only

8) Explosion Proof : Radar Explosion Proof Class 1 Div. 1 ABM300 - XXXYYCX - XYYYY - AEX - EXP per next page.

9) Swivel Aiming Mount : 8" O.D. ,7.0" Bolt Circle 6 @ 1/4" Dia. Holes C/W 3" Sensor Mtg. Hole - AIM3  
 Flange Mount : 9" O.D. ,7.5" Bolt Circle 6 @ 3/4" Dia. Holes C/W 6" Sensor Mtg. Hole - FLA6  
 9" O.D. ,7.5" Bolt Circle 6 @ 3/4" Dia. Holes C/W 3" Sensor Mtg. Hole - FLA3  
 13.5" O.D.,11.75" Bolt Circle 8 @ 0.8" Dia. Holes - FLA8

10) For special custom orders please call directly Tel. (705) 740-2010

CATALOGUE NO. Rev. 21