



Remote Radar Level Sensor R-RM

3-wire (Continuous Power) | 4-20 mA | Cellular Modem

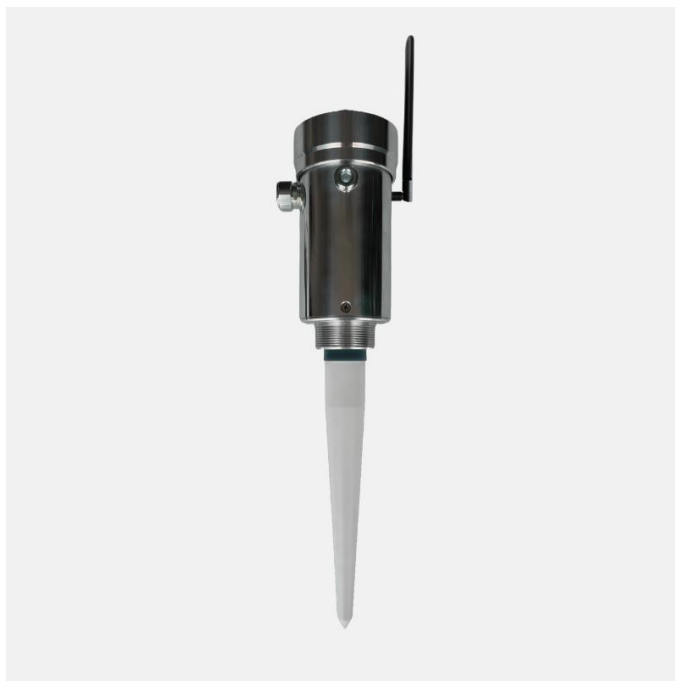
Overview

The R-RM non-contact radar level sensor is the ideal solution for remote level measurement with high reliability and no maintenance requirements. The continuous power sensor has a built-in cellular modem for remote applications.

Operation

An electromagnetic pulse is transmitted from the sensor. The pulse travels to the surface being monitored and is reflected off the 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.

The sensor has feedback with the environment and automatically adjusts the transmit power, length of pulse and receiver sensitivity to match the current conditions. The same amplitude of echo is received regardless of distance. With self-adjusting technology, false echoes are pushed under the noise level and eliminated.



Benefits

- Built-in cellular modem for remote level monitoring via the Sensor Access website
- Remote active control for continuous sensor improvements by experienced ABM engineers - solve any problems
- Maintenance-free due to build-up resistant Teflon antenna and non-contact operation
- Accurate and reliable measurements with self-adjusting technology – one echo only. False echoes from ladders, partitions, cross-beams, pipes, or material build-up are eliminated
- Plug-and-play installation with web interface calibration

Features

- Measuring range up to 340 ft (103.6 m)
- Non-contact continuous measurements
- 3-wire operation with 4-20 mA / 20-4 mA output
- Automatic connection to sensor servers
- Sensor Access website for measurement history, calibration and diagnostics
- 24/7 remote active control & support from ABM
- Side mount or magnetic mount antenna options
- Ingress protection class IP68 (NEMA 6)

Applications

Liquid and solid level measurement for:

- Water Tower Monitoring
- Wastewater Sewer / Manhole Monitoring
- Environmental Flood Monitoring

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Technical Specifications

Range Code	Maximum Range	Resolution
017	* - 17 ft (5.2 m)	0.08" (2.0 mm)
033	* - 33 ft (10.1 m)	0.15" (3.9 mm)
050	* - 50 ft (15.2 m)	0.22" (5.7 mm)
100	* - 100 ft (30.5 m)	0.44" (11 mm)
140	* - 140 ft (42.7 m)	0.62" (15.7 mm)
240	* - 240 ft (73.2 m)	1.06" (26 mm)
340	* - 340 ft (103.6 m)	1.5" (38.1 mm)

* Minimum range starts at the lower tip of the antenna for high dielectric material (water). For low dielectric materials allow longer minimum range.

Operational

Accuracy	+/- 0.10 % of maximum range (in lab using 4-20 mA current output) +/- 0.25 % of maximum range (typical in field)
Frequency	5.8 GHz, 6.3 GHz or 6.3 / 26 GHz (dual frequency)
Data Transmission Frequency	2 minutes to 24 hours (configurable)
Response Time	2 - 3 echoes / second standard (6 echoes / second standard with less damping) 10 - 30 echoes / second fast protocol (if required)
Loss of Echo	0 minute no loss of echo. 1 minute to 3 minutes loss of echo time
Current	Default 22 mA , or 3.5 mA
Transmit Radar Power	50 uW average
Calibration	Programmable via Sensor Access website
Diagnostics	Echo Profile via Sensor Access website

Environmental

Ambient Temperature	-40 to 60°C (-40 to 140°F)
Process Pressure	≤ 5 Bar (72.5 psi)
Process Temperature	-40 to 80°C (-40 to 176°F)
Material Dielectric	Er >2
Installation Category	Class II

Electrical

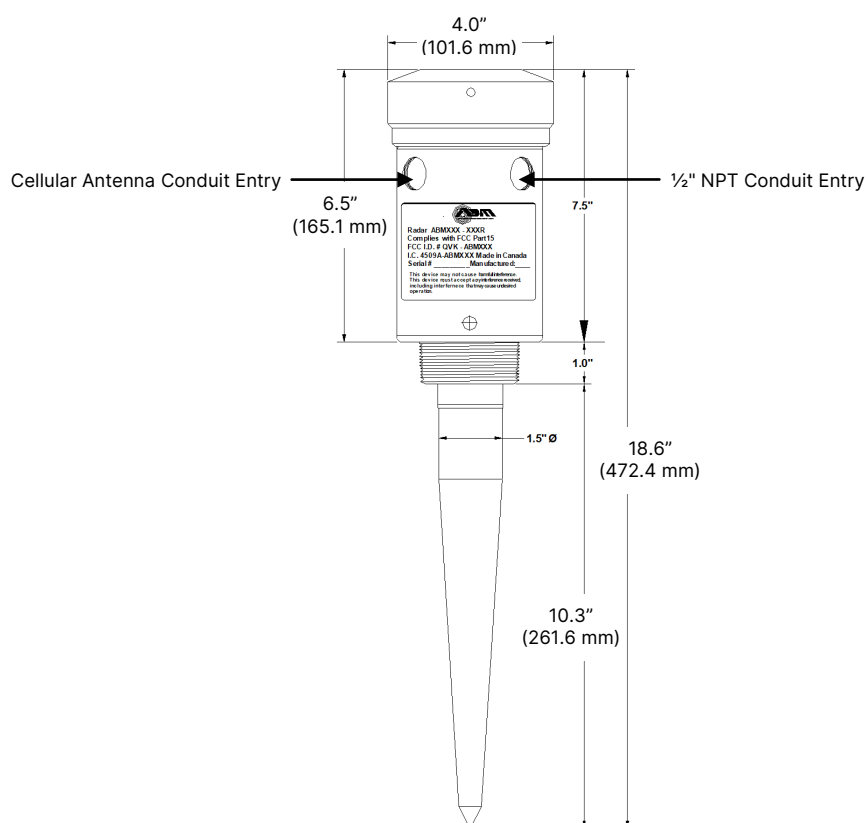
Power	12 to 30 VDC , 0.07 A max @ 24 VDC R load = (Vs - 6) / 24 mA
Output	Cellular data transmission to servers 4-20 mA output 6.1 uA resolution

Mechanical

Conduit Entry	½" NPT Hole
Enclosure Material	Aluminum-94V0 standard. SS316L optional
Antenna	Teflon rod standard (smooth finish resists build-up). SS316L horn optional
Ingress Protection	NEMA 6 (IP68)

Approvals	
FCC	FCC Part 15 - Low Power Communication Device
FM (USA)	FM3810 (2005): Electrical Electronic Test, Measuring and Process Control Equipment
	ANSI/NEMA 250 (1991): Enclosures for Electrical Equipment
FM (CAN)	CSA C22.2 No. 1010.1 (2004) Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use. Part 1: General Requirements
	CSA C22.2 No. 94 (2011) Special Purpose Enclosures
Optional: Hazardous FM / CSA (USA / CAN)	Explosion Proof For Class I, Div.1, Groups B, C, D
	Dust-Ignition Proof Enclosure for Class II / III Div. 1, Groups E, F, G

Dimensions and Mounting



Antenna	Mounting Thread NPT
Teflon Rod	1.5" (38.1 mm) / 2.0" (50.8 mm) / 3.0" (76.2 mm)
Horn	3.0" (76.2 mm)

Mounting Accessories

Description	Part #
6" Antenna Extension for Extendable 10" Teflon Rod [ATE]	AE6
8" Antenna Extension for Extendable 10" Teflon Rod [ATE]	AE8

Model Numbering

View the R-RM model number table below or configure a product online at:

www.abmsensor.com/product-configurator/.

ABM	XXX	XXX	XX	XX	XX	XXX
Supply Voltage	-					
12-30 VDC Power (3-Wire)	300					
Maximum Range		-				
17 ft (5.2 m)		017				
33 ft (10.1 m)		033				
50 ft (15.2 m)		050				
100 ft (30.5 m)		100				
140 ft (42.7 m)		140				
240 ft (73.2 m)		240				
340 ft (103.6 m)		340				
Operating Frequency			-			
5.8 GHz			R5			
6.3 GHz			R6			
6.3 / 26 GHz			R6R2			
Communication				-		
Cellular Modem				CM		
Enclosure Material					-	
Aluminum					AL	
SS316L					SS	
Antenna						-
10" Teflon Rod (extendable)						ATE
12" Teflon Rod (non-extendable)						ATL
6" Horn						HR6

Contact

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Technical data subject to change without notice.