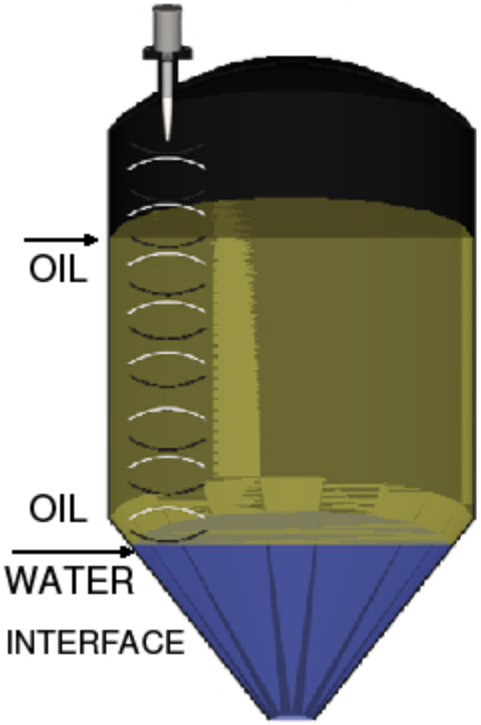
Radar Interface Detector (RID) Operating Principle

Order from: C A Briggs Company; 622 Mary Street; Suite 101 - Warminster, PA 18974
Phone: 267-673-8117 - Fax: 267-673-8118; E-Mail: Sales@cabriggs.com - www.cabriggs.com

OIL, WATER INTERFACE DETECTOR



The operating principle of oil-water radar detector

1) When the radar is turned ON and oil is free of water, the radar gets a reflection from the OIL-WATER interface that gives current output proportional to the OIL-WATER interface level.
2) Echo from the OIL-WATER interface is masked and the radar is forced to go to higher power to detect echo from top of OIL. The output current is proportional to OIL level.
3) Special parameter in software changes alternation time between top of OIL and OIL-WATER interface.
4) In case of water in oil the radar does not penetrate oil and shows the current output proportional to top of oil.
5) When heat is applied and separation happens the radar starts showing two current values; one from top of OIL and another one from OIL-WATER interface.

New Product

Radar Interface Detector (RID) Spec. Sheet

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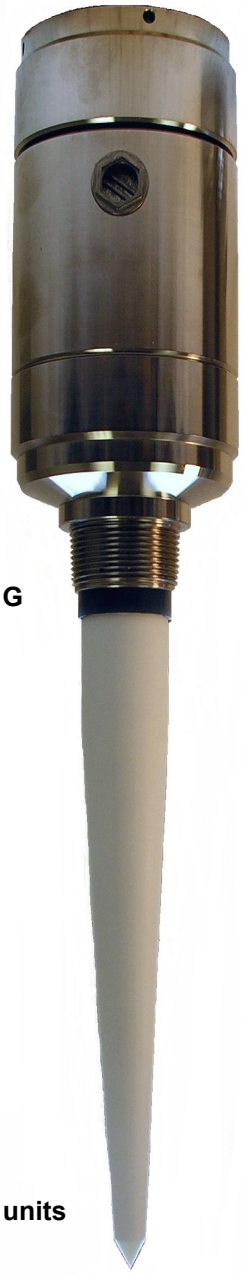
FEATURES -

Self Adjusting Tracking Radar
Output 4-20 mA / 20- 4mA
Recommended RS232 or RS485
For communications with calibration, diagnostics & data logging software
PLC compatible (Modbus RTU)
Three Wire Operation



APPLICATIONS

Petrochemical Oil Water Interface

MECHANICAL

Conduit Entry : 1/2" NPT
Mounting Thread : 1 1/2" NPT, 2" NPT
Enclosure : Aluminum or S.S. - 94 VO
Ingress Protection : NEMA 4 (IP65) Type 4/4X
: Special Order NEMA 6 (IP68)

ENVIRONMENTAL

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

PROCESS

Temperature:
Std. P.P. Rod Antenna : - 40 to 140°F (- 40 to 60°C)
High Temperature:
De-coupler & PTFE Rod : - 40 to 400°F (- 40 to 204°C)
Material Dielectric constant to measure interface : 2 < Er < 5
Min. Thickness of Dielectric layer to measure interface : 5 inch's (127 mm)
Max. Pressure : 5 bar (without De-coupler)

OPERATIONAL

Accuracy : +/- 0.1 % of max. range in ideal conditions
: +/- 0.25% of max. range typically in field
Resolution : +/- .079" (2 mm)
Frequency : 6.3 GHz.
Transmit Power : 50 uW average
Calibration : Via RS232 or RS485 using communication software provided with units
Diagnostics : (Echo Profile) via communications port

Catalogue # : ABM300-_ _ _R_C_ - ALAPP - RID - IP68 - EXP

Ingress Protection IP68 or leave blank for IP65
Communications : RS232 or RS485
ABM Code - (2) (4)
Frequency 5.8 GHz ,6.3 GHz
ABM Code (R5) (R6)
Range 33Ft./50Ft./100Ft./240Ft.
ABM Code (033) (050) (100) (240)

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OIL-WATER NON-CONTACT INTERFACE DETECTOR INSTRUCTION

To detect oil - water interface using radar a special firmware has to be used.

1. In Tools do 4mA and 20mA calibration.

2. Click on Applications and choose Oil Application.

3. The screen displays : Oil Thickness, first value is the timer, second is the thickness in Inches, plus you get Oil Dielectric Constant display.

4. Click on Tools and choose Oil Dielectric Constant, enter value for dielectric constant of oil (clean oil is about 2, crude one about 3 or 4)

5. Click on Send to Probe, wait for the confirmation and Exit this feature.

6. Click Stop Data Link and close Gateway PC completely .

7. Open Gateway PC again and repeat point 2.

8.In Tools click on Oil App Tuning, choose about 20sec.

9. You will get two current values on the screen , one from the oil top surface and another one from oil-water interface, the hardware current from the radar will display the same two values. The current output will alternate between top of oil and oil-water interface every 20sec (this time is set up by OIL App Tuning).

For simulation in the lab, please use 3" diameter pipe x 6FT long, pour 1" to 2" of water in the bottom, about 3ft of oil on top of water. Leave about 3ft of empty pipe.