



Shown with X1 Process Fitting
Imperial Conduit Entry

SURPASSING SENSITIVITY FOR THE TOUGHEST APPLICATIONS

The VRF[®] II Series uses radio frequency to detect the presence or absence of material in a vessel. It compensates for the load of the probe and vessel environment to automatically determine the optimal operating frequency for the greatest sensitivity and stability.

FEATURES AND BENEFITS

- **Universal Input Power** provides flexibility in location of the unit
- The VRF II can automatically calibrate itself when the probe senses a large decrease in the impedance with **EZ-CAL[®] II**
- **Adjustable Time Delay** allows the user to determine time between sensing material and the alarm state. Advanced units can permit delays when it detects the presence and absence of material or a combination.
- **Sensitivity Settings** can be selected to fit specific applications and material requirements.
- Probes have been designed with **Pro-Guard[®]** that has the ability to ignore the effects of coatings that can adhere to the probe
- Move electronics up to 100 ft (30 m) away with the **Remote Option**
- **Standard** and **Advanced** offering enables the user to choose the option that best suits the application
- Frame designed to enable connection flexibility
 - Imperial or Metric **conduit entry options**
 - **Process Fitting** can be made to fit any connection

STANDARD VS. ADVANCED UNITS

STANDARD	ADVANCED
4 Sensitivity Settings (min 1.5 pF)	7 Sensitivity Settings (min 0.5 pF)
Time Delay up to 6 seconds	Time Delay up to 150 seconds
Push Button Calibration	Push Button Calibration
Universal Power	Test and Calibration with FOB
	Universal Power
	Indicator Lights
	Auxiliary Relay

VRF II Series - Full Tree

VRFII -

- Z

Probe Type

- 0 = Standard Ryton®
- 1 = Standard Kynar® Coated (Note 4)
- 2 = Food Grade Polysulfone (Note 3)
- 3 = Ceramic (Note 8)
- 4 = Stub Polysulfone (Note 3)
- 5 = Heavy Duty Ryton®
- 6 = Heavy Duty Kynar® Coated (Note 4)
- 7A = Dome Flush - $\frac{3}{8}$ " Thickness (Note 5)
- 7B = Dome Flush - $\frac{1}{2}$ " Thickness (Note 5)
- 7C = Dome Flush - $\frac{5}{8}$ " Thickness (Note 5)
- 7D = Dome Flush - $\frac{3}{4}$ " Thickness (Note 5)
- 8 = Flush - $\frac{7}{16}$ " Thickness (Note 5)
- 9 = Heavy Duty Food Grade Polysulfone (Note 3)
- A = Armored Food Grade (Note 3)
- F = Fly ash Probe
- J = Jumbo (Note 9)
- M = Mini Ceramic (Note 10)
- T = Teflon® Jacketed Standard
- U = Teflon® Jacketed Heavy Duty

Process Fitting

- X1 = Aluminum Frame Neck, NPT $1\frac{1}{4}$ " (Note 1, 4)
- X2 = 304 Stainless Steel Frame Neck, NPT $1\frac{1}{4}$ " (Note 4, 20)
- P1 = Aluminum Flush Mount (Note 5)
- A2 = 316 Stainless Steel NPT $\frac{3}{4}$ " (Note 4, 6)
- B2 = 316 Stainless Steel NPT 1"
- C2 = 316 Stainless Steel NPT $1\frac{1}{4}$ "
- D2 = 316 Stainless Steel NPT $1\frac{1}{2}$ "
- E2 = 316 Stainless Steel BSP Tapered R $1\frac{1}{4}$ "
- F2 = 316 Stainless Steel BSP Tapered R $1\frac{1}{2}$ "
- H2 = 316 Stainless Steel BSP Straight G 1" (Note 7)
- J2 = 316 Stainless Steel BSP Straight G $1\frac{1}{4}$ " (Note 7)
- K2 = 316 Stainless Steel BSP Straight G $1\frac{1}{2}$ " (Note 7)
- M2 = 316 Stainless Steel Sanitary Tri-Clamp $1\frac{1}{2}$ " (Note 14)
- N2 = 316 Stainless Steel Sanitary Tri-Clamp 2" (Note 14)
- A3 = Alloy C276 NPT $\frac{3}{4}$ " (Note 6)
- B3 = Alloy C276 NPT 1"
- C3 = Alloy C276 NPT $1\frac{1}{4}$ "
- D3 = Alloy C276 NPT $1\frac{1}{2}$ "
- E3 = Alloy C276 BSP Tapered R $1\frac{1}{4}$ "
- F3 = Alloy C276 BSP Tapered R $1\frac{1}{2}$ "
- H3 = Alloy C276 BSP Straight G 1" (Note 7)
- J3 = Alloy C276 BSP Straight G $1\frac{1}{4}$ " (Note 7)
- K3 = Alloy C276 BSP Straight G $1\frac{1}{2}$ " (Note 7)
- A4 = Teflon coated 316 stainless Steel NPT $\frac{3}{4}$ " (Note 4, 6)
- B4 = Teflon coated 316 stainless Steel NPT 1"
- C4 = Teflon coated 316 stainless Steel NPT $1\frac{1}{4}$ "
- D4 = Teflon coated 316 stainless Steel NPT $1\frac{1}{2}$ "
- E4 = Teflon coated 316 stainless Steel BSP Tapered R $1\frac{1}{4}$ "
- F4 = Teflon coated 316 stainless Steel BSP Tapered R $1\frac{1}{2}$ "
- H4 = Teflon coated 316 stainless Steel BSP Straight G 1" (Note 7)
- J4 = Teflon coated 316 stainless Steel BSP Straight G $1\frac{1}{4}$ " (Note 7)
- K4 = Teflon coated 316 stainless Steel BSP Straight G $1\frac{1}{2}$ " (Note 7)

Housing Finish

- A = Powder Coated Aluminum
- B = 304 Stainless Steel (Note 1, 2, 3, 20)
- C = Epoxy Painted Aluminum
- D = Nickel Plated Aluminum

Z

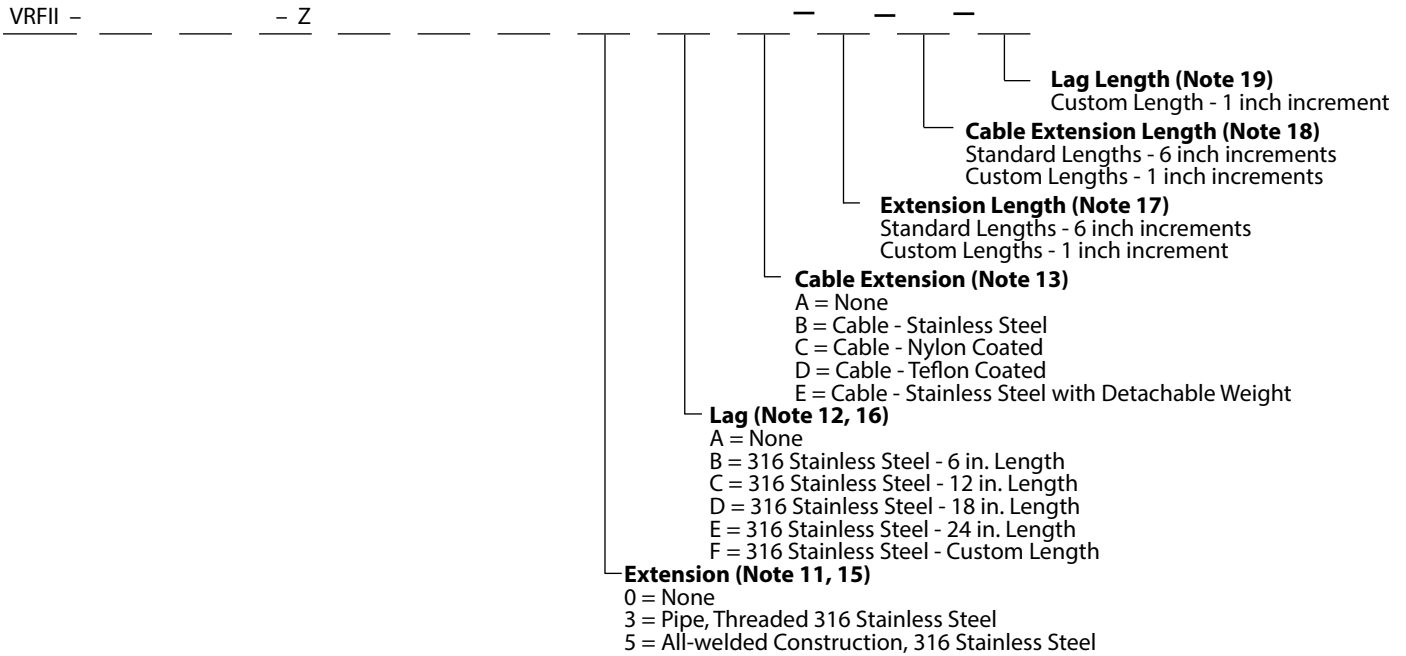
Base Unit

- G = $\frac{3}{4}$ " NPT Conduit Entry with Ordinary Location Approval
- GM = M20 x 1.5" Conduit Entry with Ordinary Location Approval
- X = $\frac{3}{4}$ " NPT Conduit Entry with Hazardous Location Approval (Note 1)
- XM = M20 x 1.5" Conduit Entry with Hazardous Location Approval (Note 1)
- XT = $\frac{3}{4}$ " NPT Conduit Entry with Hazardous Location Approval - Extended Temperature Range (Note 21)
- XMT = M20 x 1.5" Conduit Entry with Hazardous Location Approval - Extended Temperature Range (Note 21)

Electronics

- A = Advanced
- R = Remote Probe Only (Remote electronics need to be ordered separately)
- S = Standard

VRFII Units (See all notes on following page)



NOTES:

1. Hazardous location approval not available with stainless steel Housing Finish or the X1 Process Fitting; frame dimensions for stainless steel are not standard, contact factory for drawings.
2. Function test FOB not available with stainless steel Housing Finish.
3. EPDM food grade gasket standard.
4. Process Fittings X1 and X2 include 3/4" NPT 316 stainless steel bin connector.
Kynar Probes with X1 or X2 Process Fittings will include 3/4" NPT Teflon coated stainless steel bin connector.
5. Process Fitting must be P1 with Probe Types 7A, 7B, 7C, 7D and 8.
6. Units that do not include extension or lag will include Process Fitting X1 or X2.
7. A flat gasket is included for Process Fittings with straight threads.
8. Ceramic probe is remote only, includes built-in lag of 9 in. (22.9 cm), Lag must be 'None', and it can only be used with Process Fittings C2 through F2, J2 or K2. All material is comprised of 304 stainless steel.
9. Jumbo probe only available with X1 or X2 Process Fitting, not available with Hazardous Location approval.
10. Mini-ceramic probe includes A2 Process Fitting
11. Extension not available with Process Fittings X1, X2, A2, B2, M2, N2 or P1 Process Fitting cannot be Alloy C276 or Teflon coated.
Probe Type cannot be 7A, 7B, 7C, 7D, 8 or J
12. Lag not available with Process Fitting X1 or X2. Process Fitting cannot be Alloy C276 or Teflon coated.
13. Cable extension only available with Probe Types 0, 2, 4, or 5.
14. Process Fittings M2 and N2 can only be used with Probe Types 2, 4, 9 or A.
15. Extensions cannot be used with Probe Types 3, 7A, 7B, 7C, 7D, 8 or J.
16. Lags cannot be used with Probe Types 3 or J.
17. Maximum extension length is 180 in. (4.6 m), minimum length 3 in. (7.6 cm); leave blank if not used.
18. Maximum cable length is 540 in. (13.7 m), minimum length 12 in. (30.5 cm); leave blank if not used.
19. Maximum lag length is 24 in. (61 cm), minimum length 3 in. (7.6 cm); leave blank if not used.
20. Stainless Steel Housing Finish can only be ordered with Process Fittings X2, M2 or N2.
21. Extended ambient temperature range is -40° to 158° F (-40° to 70° C).

* Drawings available at www.bindicator.com

SPECIFICATIONS

FUNCTIONAL	
Power Requirements Universal	(± 10%), 120 - 240 VAC 50/60 Hz or 24 - 48 VDC
Power Consumption - STANDARD	10 W AC; 3 W DC
Power Consumption - ADVANCED	11 W AC; 4 W DC
Fuse	Fast Blow, 1A 300 V (Not User Serviceable)
Ambient Temperature	Ordinary Location: -40° to 158° F (-40° to 70° C) Hazardous Location: -4° to 140° F (-20° to 60° C) Hazardous Location, Extended: -40° to 140° F (-40° to 60° C)
Process Temperature	-20° to 302° F (-29° to 150° C) Standard Up to 500° F (Up to 260° C) with Extension 3 and Lag
Probe Temperature Range	-40° to 993° F (-40° to 534° C) depending on probe
Outputs	
Main Relay	8 A DPDT @ 240 VAC or 30 VDC (resistive)
Auxiliary Relay - ADVANCED Only	0.46 A SPDT @ 150 VAC or 1 A @ 30 VDC
PERFORMANCE	
Pressure Rating	150 psi (10.5 kg/cm ²) with 3/4" NPT; 50 psi (3.5 kg/cm ²) with 1 1/4" NPT
Time Delay - STANDARD	Field Adjustable; 0.2 - 6 seconds
Time Delay - ADVANCED	Field Adjustable; 0 - 150 seconds
Fail Safe	Field Selectable; high/low level
Sensitivity - STANDARD	Field Adjustable; minimum 1.5 pf
Sensitivity - ADVANCED	Field Adjustable; minimum 0.5 pf
Maximum Particle Size	9/16" (14.3 mm)
PHYSICAL	
Enclosure Material	Polyester or epoxy coated aluminum or 304 SS
Dual Conduit Entry	3/4" NPT or M20 x 1.5
Mounting Plate Material	Mild Steel, 304 SS
Extended Pipe Material	Galvanized or 316 SS
Shipping Weight	Integral, non-extended 10 lb (4.5 kg)

AGENCY APPROVALS

UL (US and Canada)

- Ordinary Location, Type 4X; IP66
- Hazardous Locations, Type 4X
 - Explosion Proof, Class I, Div 1, Groups C, D
 - Dust Ignition Proof, Class II, Div 1, Groups E, F, G
 - Intrinsically Safe



ATEX/IEC/IECex (Pending)

- Dust and Gas Categories; IP66



CE

- Electromagnetic Compatibility Directive
- Low Voltage Directive



3A SANITARY



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MEASUREMENT

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