Capacitance Level Transmitter

for Liquids

measuring • monitoring • analyzing

NRF

- Rigid or Cable Suspended Designs
- Compact Microprocessor Based Designs
- High Accuracy
- NPT Threaded or Tri-Clamp® Connections
- Heavy Duty Industrial Design

Order from: C A Briggs Company
622 Mary Street; Suite 101; Warminster, PA 18974
Phone: 267-673-8117 - Fax: 267-673-8118
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KOBOLD Instruments, Inc.
1801 Parkway View Drive
Pittsburgh, PA 15205

05/05-16-2019

Description

The KOBOLD NRF-1 capacitance level transmitter is designed to measure water-based liquids or oils in metal tanks. The probe measures level by measuring the change in capacitance as level changes in the tank. The micro-processor-based electronics convert this change into a highly accurate 4-20 mA signal. The compact design makes installation and setup simple. PFA-clad probes are standard to offer compatibility with aggressive media. Common applications include: waste treatment plants, refineries, food and beverage industries, fire protection systems, chemical holding tanks, and many others.

Technical Details

Accuracy:	± 1% of Span (Constant Liquid Dielectric)
Repeatability:	± 0.1% of Span
Max. Measuring Length:	20 feet
Wetted Materials	
Fitting:	316 SS or PTFE
Probe:	PFA-Clad or 316 SS (Only for Non-conductive Liquids)
Temperature Range	
Process:	-100...350 °F
Ambient:	-58...140 °F
Electrical Specifications	
Input Power:	12–36 V_{DC}, Polarity Protected
Output:	4–20 mA, 2-wire
Enclosure Ratings	
Polyamide:	NEMA 4 / IP 65
Stainless Steel:	NEMA 4X / IP 66
Epoxy Coat. Aluminum:	NEMA 4X / IP 66
Max. Pressure	
316 SS Fitting:	500 PSIG @ 70 °F 250 PSIG @ 300 °F 100 PSIG @ 350 °F
PTFE Fitting:	150 PSIG @ 70 °F 0 PSIG @ 300 °F
Tri-Clamp®:	Per Clamp Rating

- Designed for Water-Based Liquids or Oils in Metal Tanks
- Heavy Duty Industrial Design
- NPT or Tri-Clamp® Fittings
- Stainless Steel Probe for Non-Conductive Liquids
- PFA-Clad Stainless Steel Probe for Conductive Liquids
- Accuracy of ± 1% of Span in Metal Tanks
- Simple Installation and Setup
- Advanced Signal Conditioning Circuitry Minimizes Effects of Coating Media

Order Details (Example: **NRF-1 121 L = 60"**)

Model	Housing	Fitting	Probe	Probe Length
NRF-1.. = Level Probe	**..1..** = Polyamide **..2..** = 316 SS **..3[1]..** = Aluminum	**..1..** = 3/4" NPT, SS **..2..** = 3/4" NPT, PTFE **..3..** = 1-1/2" Tri-Clamp® **..4..** = 2" Tri-Clamp®	**..1** = Rigid Probe, PFA-Clad **..2[2]** = Rigid Probe, Un-Clad 316 SS	**L** = Specify Probe Length (in Inches)

[1] Not available with Tri-Clamp® fittings [2] Only for non-conductive liquids

Description

The KOBOLD NRF-1C is designed to measure liquids in tall tanks. The probe measures level by measuring the changes in capacitance as the level changes in the tank. The microprocessor-based electronics convert this into a linear, highly accurate 4-20 mA signal. The compact design makes installation and setup a simple task. The advanced signal conditioning circuitry greatly minimizes the adverse effects of coating media. Single cable models are available for metallic tanks and dual cable versions are available for non-metallic tanks. Common application areas include: waste treatment plants, refineries, food and beverage industries, fire protection tanks, water storage tanks, and chemical holding tanks.

Technical Details

Accuracy:	± 1% of Span (Constant Liquid Dielectric)
Repeatability:	± 0.1% of Span
Max. Measuring Length:	200 feet
Wetted Materials	
Fitting:	1-1/2" NPT, 316 SS or CPVC
Cable:	PFA-Clad or 316 SS (SS Cable not for use with Conductive Liquids)
Temperature Range	
Process:	-100...350 °F (SS) -58...185 °F (CPVC)
Ambient:	-40...140 °F
Electrical Specifications	
Input Power:	12–36 V_{DC}
Output:	4–20 mA, 2-wire
Enclosure Ratings	
Polyamide:	NEMA 4 / IP 65
SS/Aluminum:	NEMA 4X / IP 66
Max. Pressure	
316 SS Fitting:	100 PSIG @ 70 °F 50 PSIG @ 300 °F 14 PSIG @ 350 °F
CPVC Fitting:	50 PSIG @ 70 °F 0 PSIG @ 185 °F

- Suspended Cable Design for Tall Tanks
- Heavy-Duty Industrial Build
- Cable Lengths up to 200 feet
- Single Cable Versions for Metal Tanks
- Dual Cable Versions for Non-Metallic Tanks
- Max. Temperature: 350 °F
- Accuracy of ± 1% of Span

Order Details (Example: **NRF-1C 1521 L = 1200"**)

Model	Housing	Fitting	Cable	Cable Material	Cable Length
NRF-1C.. = Cable Level Probe	**..1..** = Polyamide **..2..** = 316 SS **..3..** = Aluminum	**..5..** = 1-1/2" NPT, SS **..6..** = 1-1/2" NPT, CPVC	**..2..** = Single Cable **..4..** = Dual Cable	**..1** = PFA-Clad Cable **..2*** = 316 SS Cable	**L** = Specify Probe Length (in nches)

* 316 stainless steel cable cannot be used with conductive media

Description

The KOBOLD NRF-1D is designed to measure liquids in non-metallic tanks. The probe measures level by measuring the changes in capacitance as the level changes in the tank. The microprocessor-based electronics convert this into a linear, highly accurate 4-20 mA signal. The compact design makes installation and setup a simple task. The advanced signal conditioning circuitry greatly minimizes the adverse effects of coating media. Two probe types are available. The first type is a fully PFA-clad dual rigid probe model that is designed for acids and highly aggressive media in plastic tanks. The second type is a concentric 316 stainless steel probe with a PFA-clad inner probe that is suited for oil and water-based liquids that are compatible with 316 stainless steel.

Technical Details

Accuracy:	± 1% of Span
	(Constant Liquid Dielectric)
Repeatability:	± 0.1% of Span
Max. Measuring Length:	12 feet
Wetted Materials	
Fitting:	316 SS or CPVC
Probe	
Dual:	PFA
Concentric:	PFA, 316 SS
Temperature Range	
Process:	-100...350 °F (SS)
	-58...185 °F (CPVC)
Ambient:	-40...140 °F
Electrical Specifications	
Input Power:	12–36 V_{DC}
Output:	4–20 mA, 2-wire
Enclosure Ratings	
Polyamide:	NEMA 4 / IP 65
Stainless Steel:	NEMA 4X / IP 66
Max. Pressure	
316 SS Fitting:	100 PSIG @ 70 °F
	50 PSIG @ 300 °F
	14 PSIG @ 350 °F
CPVC Fitting:	50 PSIG @ 70 °F
	0 PSIG @ 300 °F

- Dual Probe Design for Use with Acids in Non-Metallic Tanks
- Concentric Probe Design for Oils or Water-Based Liquids in Non-Metallic Tanks
- NPT Fittings in Stainless Steel or PVC
- PFA-Clad Stainless Steel Probes up to 12' Long
- Max. Pressure: 100 PSIG
- Max. Temperature: 350 °F
- Accuracy of ± 1% of Span

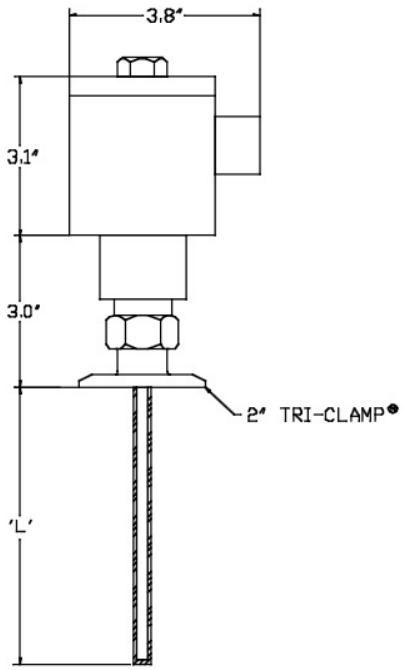
Order Details (Example: **NRF-1D 253 L = 60"**)

Model	Housing	Fitting	Probe	Probe Length
NRF-1D.. = Level Probe	**..1..** = Polyamide **..2..** = 316 SS	**..5..** = 1-1/2" NPT, SS **..6*..** = 1-1/2" NPT, CPVC	**..3** = Dual Probe, PFA-Clad **..5** = Concentric Probe, PFA and 316 SS	**L** = Specify Probe Length in Inches)

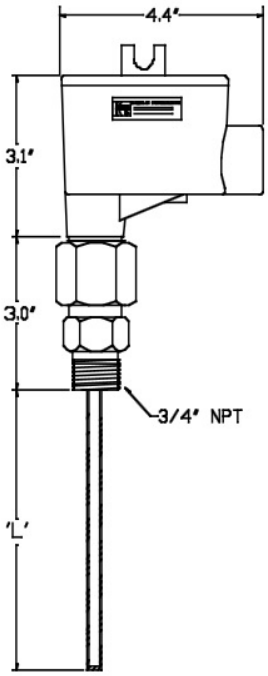
* Probe Type 3 (Dual Probe) Only with CPVC fitting

Dimensions

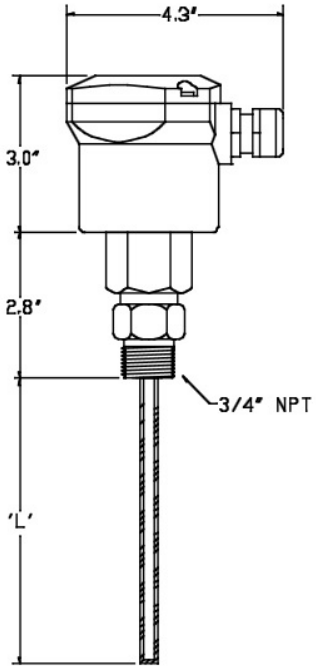
NRF-1



Tri-Clamp®, SS Housing

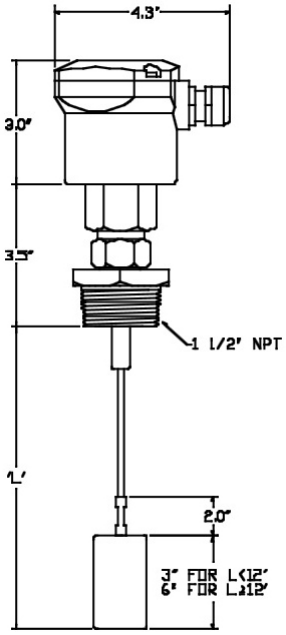


Aluminum Housing



Polyamide Housing

NRF-1C



NRF-1D