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PRODUCT SPECIFICATIONS

Thermo Scientific KRILPRO

Neutron backscatter foam level/interface device

Powered by an extremely small source,the Thermo Scientific™ KRILPRO fills the need for an ALARA-compliant, yet highly precise, level/interface detection system. Rugged and reliable, it features neutron backscatter technology and is engineered to endure harsh environments to help optimize delayed coking operations and improve profitability.

Features

- Measurement through thickwalled vessels of any diameter
- Extremely small source size is ALARA-compliant
- Non-contacting measurement unaffected by temperature, pressure, viscosity, corrosives or abrasives
- Continuous self-diagnostics provide instant check of system integrity
- Requires minimal maintenance and ensures no unnecessary downtime
- Precision of less than 0.5% of span

Rugged & non-intrusive

Backed by 35 years of engineering expertise, the Thermo Scientific™ KRILPRO meets the demand for a rugged, reliable, noncontacting level/interface system. With an ALARA-compliant reduced source size (100 mCi/3.7 GBq AmBe 241) and a drift-free sensor, this highly precise, next generation gauge signifi cantly enhances delayed coking operations. It uses an advanced detection technique that indicates vapors, foams, liquids and solids to provide rapid indication of process changes. With the KRILPRO level/interface device, operators confidently maximize coke drum capacity while heightening process effi ciency.

Increased accuracy & stability

A neutron source mounted in the sensor housing directs fast (high energy) neutrons through the steel vessel walls into the vessel interior. If hydrogen bearing material is present, the fast neutrons are converted into slow (low energy) neutrons which are scattered back to the neutron sensor in direct proportion to hydrogen density. The detector's interface electronics receive and condition the sensor signal and communicate to the transmitter, providing a visual indication and an isolated 4-20 mA output that represents the level of interface within the vessel. This communi-cation between the sensor and transmitter provides increased accuracy and stability.

Thermo Scientific™ KRILPRO

Easy-to-install & service

Like all Thermo Scientific™ nuclear gauges, the KRILPRO device is easy-to-install and service. The sensor mounts on one side of the coke drum and no component exceeds 45 pounds, making installation simple and cost-effective. The streamlined design also allows for rapid diagnostics and servicing of the unit.

Coker control hybrid solution

Refiners use the KRILPRO level/interface device in combination with the Thermo Scientific™ LevelPRO and Thermo Scientific™ DensityPRO to create a comprehensive coker monitoring system from the fractionation tower feed line to the coke drum.

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Thermo Scientific™ KRILPRO

General specifications	
Moisture gauge head	Three components, none weighing more than 20.4 kg (45 lbs); total weight 44.5 kg (98 lbs)
Response time constant	128 sec default, adjustable to 1024 sec
Radiation Source	100 mCi AmBe (3.7 GBq)
Source decay effects	Negligible. 432-year half-life
Surface radiation	Less than 25 µ SV/hr at 5 cm from KRILPRO surface; Less than 2.5 µ SV/hr at 100 cm from KRILPRO surface
Sealed source and device registry	Meets General License Device requirements (US)
Operating temperature	-40°C to + 80°C (-40°F to + 176°F) CSA; -20°C to + 70°C (-4°F to + 158°F) ATEX
Power requirements	±15 VDC for the detector; 110 to 240 VAC or 24 VDC for the 1400A 'M' transmitter
Materials of construction	Detector and source head are 316 stainless steel, 1400A 'M' transmitter is NEMA 4X
Precision	Level up to ±0.47%; Hydrogen density within ±0.00085 g/cm^3 hydrogen
Approvals	CSA (C, US) approved for use in Class I Div 1, Groups B, C, D; Class I Div 2, Groups A, B, C, D; Class II Div 1, Groups E, F, G; Class III; Temp Code: T6; Encl. type 4X; Ta: -40°C to +80°C (-40°F to +176°F) ATEX approved for use in II 2 G IIC T3-T6; (T6: Tamb -20°C to +40°C); (T4: Tamb -20°C to +55°C); (T3: Tamb -20°C to +70°C)
Transmitter specifications	
System Architecture	Multiprocessor based electronics, surface-mounted technology, all user data doubly stored in non-volatile memory (no battery backup required)
Approvals	FMRC approved for use in Class I, Div. 2, Groups A, B, C, D; Class II, Div. 2, Groups F, G; Class III, Div. 2; NEMA 4X; CSA approved as above plus Class II, Div. 2, Group E; ENCL. TYPE 4X CE Mark, Low Voltage Directive, and EMC Directive: Compliant
Display	Four-line backlit display; easy to use setup menus; displays up to eight readouts simultaneously
Current outputs	4 to 20 mA isolated self-powered or loop-powered into 800 ohms, fi eld scalable; One (1) current output standard Up to three current outputs available, each representing independent span channels
Serial outputs	RS 485 half duplex; RS 232 full duplex
Contact closure outputs	Up to 6 - 115 VAC/28 VDC SPDT @ 10 amps (230 VAC SPDT @ 8 A)
Inputs	4 to 20 mA linear; Dry contact closure
Programming options	Menu-driven direct keypad entry
Mounting	Transmitter can be mounted up to 2500 ft (762 m) from the detector

To maintain optimal product performance, you need immediate access to experts worldwide, as well as priority status when your air quality equipment needs repair or replacement. We offer comprehensive, flexible support solutions for all phases of the product life cycle. Through predictable, fixed-cost pricing, our services help protect the return on investment and total cost of ownership of your Thermo Scientific products.

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