

The highly reliable Thermo Scientific PNF point level measurement system mounts externally on tanks, bins, hoppers, pipes and other vessels to sense the level of liquids, slurries and solids. The Geiger-Mueller tube detector has a long history of trouble-free service and enables this non-contacting, non-invasive system to operate virtually maintenance-free.

## Thermo Scientific PNF Point Level Measurement System



### Features & Benefits

- Non-contacting, non-invasive high or low level indication
- Unaffected by process variables such as pressure, temperature, viscosity or density
- Digital technology ensures precise measurement
- Source up to 10 times smaller than analog-based systems
- Highly reliable and rugged
- Easy to install and use

### Reliable

The Thermo Scientific PNF point level measurement system combines a nuclear source and rugged detector/electronics to provide reliable, cost-effective on-off circuit control. Operating on the principle of gamma ray attenuation, the source emits a narrow beam that passes through the vessel walls to the detector. If process material is in the beam path, the energy is attenuated and not all of it reaches the detector. The amount of energy at the detector is "counted" by the electronics. As the count rate falls below (for high level) or goes above (for low level) a predetermined reference, an alarm signals to indicate level changes for greater process control.

### Precise

The PNF digitally measures level across a variable distance. The source housing confines the energy to a small beam with the source

size and housing type determined by application requirements. With no varying voltages or current levels to amplify, low signal rates are not a problem. Each individual pulse from the detector is used to make either high or low level decisions with an allowance of up to 50 percent for measuring the change in energy transmission. The response time can be set in the field from 0.5 seconds to several minutes with a longer response time generally used to prevent short-term process variation uncertainties.

### Safe

Locking the source shutter in the OFF position for installation and shutdown is recommended. Two options further ensure safe operation. The remote manual actuator enables operation of the source shutter from a distance and the shutter indicator switch can be used to remotely indicate the source shutter position.

## Thermo Scientific PNF

### Performance Specifications

Precision	±6 mm (±0.25 in); Exact value depends upon requirements of specific application
Size of Vessel	Installs on vessels that measure from 2 in (51 mm) to 300 ft (91.4 m) in diameter Maximum diameter depends upon thickness of the wall vessel
Sampling Time	0.13-204 seconds, depending on application
Response Time	Appr. 1.5x sampling time
Radiation Field Required	0.05 mR/hr or greater, depending on sampling time
Radiation Change	25% minimum radiation change required for operation
Ambient Temperature Field	Standard: -40°C to +94°C (-40°F to +200°F); Optional water-cooled housing available for high temperature applications
Surface Radiation	Dependent on the application, source selection and physical installation
Power	115 VAC ±10% @ 10 VA, 50 to 60 Hz; Optional 230 VAC @ 10 VA
Power Supply Effect	No effect on operation over specified power supply ranges

### Gamma Ray Source

Source Type	Cs-137 or Co-60, both stainless steel, doubly encapsulated
Source Size	Cs137: 10-10,000 mCi; Co-60: 1000-5,000 mCi; Source size dependent on application
Source Housing	Carbon steel, lead filled, polyurethane painted; Stainless steel; Water-cooled option available; Two position shutter, locks in Off (closed) position

### Functional Specifications: Transmitter/Detector

Detector Type	Halogen-quenched Geiger-Mueller tube
Programming	Factory calibrated
Operating Temperature Range	Process: unlimited; Detector: -40°C to +93°C (-40°F to +200°F) ambient
Storage Temperature Limits	-30°C to +65°C (-22°F to +149°F)
Current Outputs	Hermetically sealed at 115 VAC @ 5 amps or 230 VAC @ 5 amps
Contact Closure Outputs	110 to 220 VAC / 28 VDC ±10% SPDT @ 5 A; Hermetically sealed relays
Circuitry	Digital; Fully integrated
Failsafe	Choice of either high level or low level failsafe operation

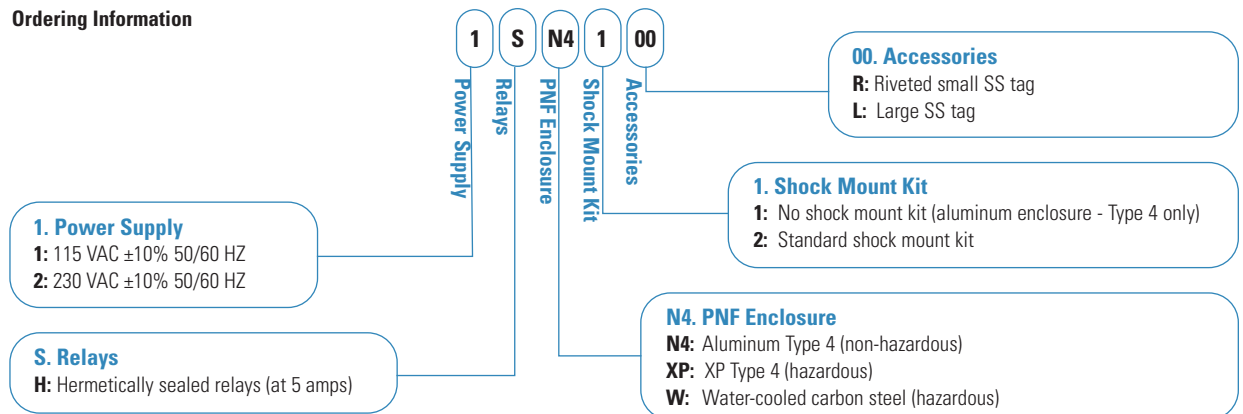
### Physical Specifications

Electrical Connections	One 3/4-inch NPT fitting
Interface Cable	Any wire capable of 5 amp @ 115/230 VAC
Mounting Hardware	Detector: NEMA4 and XP housings available; Anti-shock mount available
Housing	Detector: Carbon steel, polyurethane painted; Optional 316 stainless steel; Optional water-cooled detector for high temperature applications; Optional detector housing: aluminum construction
Size	Optional aluminum detector housing: 283 mm x 152 mm x 152 mm (11-1/8 in x 6 in x 6 in) L x H x D
Weight, Detector/Electronics	Optional aluminum detector housing: 2 kg (4.5 lb)

### Certifications

Canadian Standards Association (CSA/US)	Carbon or stainless steel detector: Class I, Div. 1, Groups B, C & D; Class II, Div. 1, Groups E, F & G; Class III, Div. 1, ENCL Type 4
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### Ordering Information



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