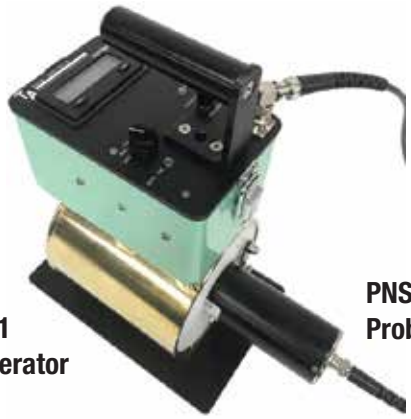
DIGITAL NEUTRON PUG

Model: Pug-7N-D System

PUG-7N-D System



PUG-7D Electronics

PNS-20 Probe

MO-1 Moderator

Features

- The PNS-20 External Probe Detects Slow (Thermal) Neutrons
- The PNS-20 Probe in the Moderator Detects Fast (Thermal) Neutrons
- Digital; Single Range; Five Decades
- Gamma Rejection to 1R/h
- **Optional:** Serial Port
- Alarm User Settable - Audio / Visual
- PNS-20 Neutron Probe (Standard)
- Optional: PNS-20H Neutron Probe (High Neutron Flux)
- **Optional:** Neutron Probes – PN-17, PNS-19
- External Connector for GM or Scintillator Detector
- Easy to Carry - Less Than 9 Pounds
- Battery Operated - **Optional:** AC Power
- **IP64; CE Mark**

Application

Neutron count rate monitoring in and about nuclear reactors, accelerators, neutron sources, neutron generators, customs inspection, etc.

Description: Probes

The **PUG-7N-D** is a complete fast-slow neutron monitor system. It includes the **PUG-7D**, five-decade survey meter with attached detection system: the **MO-1** Moderator, and the PNS-20 Probe.

The **PUG-7N-D** System, or "Neutron PUG" detects fast or slow neutrons by means of a thermal neutron scintillation detector and a moderator. When the detector **(PNS-20)** or **(PNS-20H)** is external to the moderator, thermal neutrons are detected and measured by means of counts produced in the scintillator as read on the meter of the **PUG-7D** instrument.

The **PNS-20** probe has enhanced sensitivity for detection of slow Neutrons. The **PNS-20H** detects slow Neutrons for a high Neutron flux.

When the **PNS-20** probes are in the moderator they detect fast Neutrons. When the **PNS-20** probes are external, they detect slow Neutrons.

Moderator:

The polyethylene moderator is surrounded by a cadmium shield. The cadmium shield absorbs thermal neutrons and allows fast neutrons to enter the moderator. The moderator "thermalizes" the entering neutrons thus allowing them to affect the scintillator.
When the thermal neutron detector is within the moderator, thermal neutrons are excluded by the cadmium layers and the detector measures only fast neutrons which have entered the moderator and been "thermalized".
Direct measurement of thermal neutrons is available due to the removable detector inside the moderator housing.

CBRN Real - Time Air & Water Specialists

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DIVISIONS OF US NUCLEAR CORP
OTCQB-UCLE

Digital Neutron Pug

Model: PUG-7N-D System

Sensitivity

Range is 1 to 10,000 cps. Detection system includes PNS-20 plus moderator with polyethylene inner sleeve and cadmium outer shield.

Specifications

- **Class**:	**Portable - Survey Meter** used with moderator and probe.
- **Principle of Operation:**	Boron-10 in ZnS (Ag) scintillator matrix (Neutron, Alpha reaction) and photomultiplier tube, polyethylene moderator.
- **Energy:**	Epithermal to fast (Probe in moderator) Thermal (Probe removed from moderator)
- **Electronics:**	One Hand Operation; Built-In Speaker; Rugged; Lightweight
- **Alarm:**	User Settable Audio / Visual
- **Power:**	(6) AA batteries. Approximate life: 100 hours. **Optional: AC (230 V)**
- **Sensitivity Ranges:**	1 to 10,000 cps (600,000) Corresponds with 0-8; 80; 800; 8,000 thermal neutrons/cm^2/sec. (Nominal)
- **Gamma Rejection:**	PNS-19 and PNS-20 Insensitive to Gamma in field up to 10R/hr. PN-17 Insensitive to all Gamma
- **Detector PNS-20:**	**Slow Neutron Scintillation Probe** Thermal neutrons are detected by means of the boron n-alpha reaction. Probe delivers approximately 60 cpm per neutron/cm2/second and requires a 900 volt supply. The probe is 8" long x 2" in diameter. It is completely insensitive to Gammas in fields below 10R/hr.
- **Detector PNS-19:**	**Fast Neutron Scintillation Probe** insensitive to gamma radiation in fields below 100 R/hr. The n-p reaction is used to measure energy deposited by neutrons. A shaped light pipe and moderator about the ZnS.Ag phosphor gives a consistent Rem to count ratio for incident neutrons 15 MeV and above, within ± 30%.
- **Probe Size:**	**(PNS-20 and PNS-20H)** 2" dia. x 8" L
- **Probe Size:**	**(PNS-19)** 2" dia. x 8" L
- **Probe Size:**	**(PN-17)** 2" dia. x 8" L
	Other Probes: Any Alpha, Beta or Gamma probes of the P and PS series can be used with this electronics by unplugging and plugging in their BNC connector and cable.

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- **Moderator Size:** **(MO-1)** Approximately 5" diameter x 6" L
- **Total Weight:** 8-3/4 pounds
- **Shipping Weight:** 15 pounds
- **Overall Dimensions:** 10.25" L x 10" H x 6" W, including handle
- **Cables:** **Optional:** User specified

TA MODEL:	ELECTRONICS	For Use With:	Type:	Application:
PUG-7N-D	PUG-7D	MO-1	Moderator	Detects Slow & Fast Neutrons
	PUG-7D	PNS-19	Neutron Scintillator	Detects Fast Neutrons
	PUG-7D	PNS-20	Neutron Scintillator	Detects Slow Neutrons STANDARD
	PUG-7D	PNS-20H	Neutron Scintillator	Detects Slow Neutrons HIGH RANGE
	PUG-7D	PN-17	Neutron Proportional BF^3 Optional H^3	Detects Slow to Fast Neutrons

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