

ULTRA.

Neutron flux detectors power range

Reliable detectors
designed for a long
operating life



Maintaining the safety of nuclear facilities and
maximising the lifetime value they deliver

Neutron flux detectors power range

Key features

- Startup to full power coverage
- Operating temperature 550°C
- 10 years operation
- Seismically tested
- Market leading mineral insulated cable
- On-load testing and support

Overview

Ultra Energy designs and manufactures a wide range of Neutron Flux Detectors (NFDs) for reactor safety systems, including those designed for equivalent 'fit form function' replacement of existing NFDs connected directly to your protection systems.

Our highly experienced design and technical specialists are based in our centre of manufacturing excellence for NFDs located within our principle site in the United Kingdom. This centre also provides single-site gamma and neutron generator testing, significantly reducing time to test, manufacture and deliver. Our design and manufacture capability are proven in the most difficult of environments, with our detectors having been operational in reactor cores for decades.

Whether it's supplying standard products or working together on updating a design to meet your needs, Ultra's collaborative approach to programmes and delivery will ensure you receive the systems you need, when you need them.

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Specifications

Type	Boron or uranium coated
Thermal neutron flux	2.5×10^2 nv to 2.5×10^{10} nv (DC and Campbell), 5×10^1 to 5×10^5 nv (Pulse)
Neutron sensitivity	1×10^{-14} to 3.5×10^{-14} A/nv (DC), 0.01 to 0.1 cps/nv (Pulse), 1.5×10^{-28} to 3.0×10^{-27} A ² /Hz/nv (Campbell)
Operating gamma flux	Up to 5×10^5 R/hr
Operating voltage DC	300 - 600V
Linearity	+/- 1% of flux
Response time	50ms (after 20% change in thermal neutron flux)
Material	Heat resistant austenitic stainless steel, titanium, nickel alloys, copper, alumina insulators
Cable	Up to 60 feet triaxial alumina or magnesia mineral insulated
Diameter	1 to 3 inches
Length	Typically 6 to 60 inches
External pressure	Up to 1000psi
Operation temp.	550° Celsius
Cable termination	Bulkhead penetrators with TNC/HN type connectors
Lifetime	10^{19} nvt



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About Ultra Energy

Organisations working with nuclear technologies have a responsibility to safeguard people, the environment and infrastructure. We provide solutions that give our customers complete, long-term protection and control of safety critical systems, while helping them increase the net value derived from nuclear facilities over their total lifespan.

Part of Ultra Group, Ultra Energy has worked with nuclear customers for over 60 years. We're embedded in strategic national infrastructure and helping organisations develop future nuclear applications. We support continuous operation of nuclear sites with protection and control solutions that monitor and manage factors such as radiation, neutrons, temperature and pressure within safety critical systems.

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