

LPRM

NA300

Local power range monitor

Fission Chambers for extreme environmental conditions (temperature, pressure, radiation) with a Neutron Flux Signal for each detector

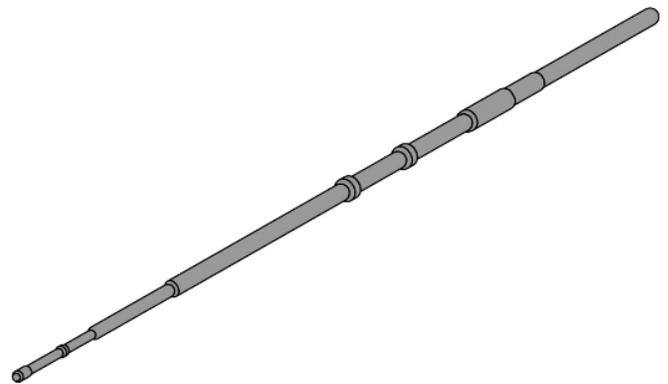
Reuter-Stokes has more than 45 years' experience designing and manufacturing our LPRM detectors. We were the first to introduce miniature in-core fission chambers and the breeder LPRM concept.

With more than 5,000 LPRM installations in 50 boiling water reactors (BWRs), our operating experience is unsurpassed in all phases of BWR LPRM technology including design, manufacture, in-reactor performance and performance surveillance.

Description

The detector elements are incorporated into the fixed in-core, top loaded Power Range Detector assembly to provide a signal which is used to monitor the reactor core during power range operation. All components are compatible with all OEM systems.

The output is part of the average power range monitor (APRM) system which guards against abnormal transients.



NA 300 LPRM assembly

In-Core Fission Chambers

For local and average power range monitoring, miniature fission chambers are used in the current mode. They are designed to withstand the extreme in-core environmental conditions.

Depending on the type and use of the fission chambers suitable connectors are mounted on the integral mineral insulated cable of the detector. These connector pairs are environmentally qualified and provide a quick latch feature that does not require additional sealing to withstand the under-vessel conditions, both normal and post LOCA (loss of coolant accident).

Typical characteristics of the detectors

- Maximum operating temperature: 315°C (600°F)
- Normal operating Voltage: 100 Vdc
- BWR Thermal Neutron Flux: 2.8×10^{14} nv
- Sensor neutron sensitivity: 1.2×10^{-17} A/nv
- Diameter of the integrated mineral cable: .125 In

Reference standards

- ASME Code Section III Class 1 – for all reactor pressure boundary components
- IEEE 323 Class 1E
- IEEE 383 – 1974
- IEEE 344 – 1987

Accessories

- Calibration sensors and hardware
- Environmentally qualified mating connectors
- Under vessel cable – both mineral insulated and flexible organic
- Installation tooling and equipment

