

VM 250-AG/AGN

Vehicle Contamination Monitor



Description:

The VM-250 System normally consists of two, self contained, weather resistant pillars placed on either side of the roadway to be protected. Each pillar contains two plastic scintillator detectors, an occupancy detector, and an amplifier/controller. The master pillar also has a battery and power supply/battery charger.

The VM-250AGN adds neutron detection capability to the basic VM-250. Both models are equipped with RS-232 communications capability.

The VM-375 system is essentially a VM-250 with a third pillar positioned horizontally between the two upright pillars. The third pillar can be mounted above or below the other pillars. The VM-375 provides greater sensitivity than the VM-250. Please contact LAURUS Systems to discuss configuration and requirements for VM-375 systems.

Application:

These monitors are designed to automatically scan vehicular traffic without the need for frequent calibration. They are intended for applications where the relatively low energy emissions from ^{235}U and ^{239}Pu are the main concern.

They are currently in use in installations such as uranium enrichment plants, weapons manufacturing and storage plants, nuclear laboratories, and nuclear waste disposal and storage sites where protection of SNM is essential. The units can be insulated, heated and/or cooled for use in more harsh environments.

SPECIFICATIONS

SENSITIVITY:

Gamma:

Will detect 1,000g of ²³⁵U (HEU) or 10g of ²³⁹Pu, 50% probability of detection, 95% confidence in a 20 µR/hr background at a passage speed of 5 mph (8km/h).

Neutron:

Will detect less than 200g of ²³⁹Pu in a shielded container that reduces the gamma flux to 1% of the unshielded gamma flux. Refer to Los Alamos publication number [LA-13247-MS*](#), April 1997, "An Update for the Applications Guide to Vehicle SNM Monitors".

DETECTORS:

VM-250AG:

Two, 30"h x 6"w x 1.5"d (76 x 15 x 4cm) organic plastic scintillator detectors per pillar; provides approximately 1,080 in³ (17.7 liters) of detector volume per system. The scintillator detectors are shielded on four sides with 0.375" (10mm) of lead.

VM-250AGN:

Two, 30"h x 6"w x 1.5"d (76 x 15 x 4cm) organic plastic scintillator detectors per pillar and four 2" diameter x 36" (5 x 91cm) ³He tubes per pillar; provides approximately 1,080 in³ (17.7 liters) of detector volume per system. The scintillator detectors are shielded on four sides with 0.375" (10mm) of lead.

FALSE ALARM RATE:

Typically less than 1 in 1,000 passages

ALARM INDICATION:

Alarms are indicated by a red strobe light mounted on the master pillar. High and low faults along with other fault conditions are indicated by an amber light. Neutron alarm is indicated by a blue strobe light. Audio alarm is triggered for gamma or neutron alarm conditions.

DISPLAY:

Alphanumeric LCD, 4 lines x 16 characters

COMMUNICATIONS:

Both models are equipped with RS-232 and Ethernet communications capability.

DATA STORAGE:

Flash memory (256 KB) is used to store average hourly background data and alarm data. Under normal conditions the memory should be adequate to store data for at least 3 months of operation.

POWER REQUIREMENTS:

90 - 250 Vac, 47 - 63 Hz, less than 100 VA

BATTERY LIFE:

Greater than 12 hours of normal operation

DIMENSIONS:

VM-250AG:

120"h x 10"w x 10"d (305 x 25 x 25cm) per pillar

VM-250AGN:

120"h x 26"w x 8"d (305 x 66 x 20cm) per pillar

WEIGHT:

VM-250AG:

~300 lb (136kg) per pillar

VM-250AGN:

~600 lb (272kg) per pillar

ENVIRONMENTAL:

-30° to 122°F (-34° to 50°C) Designed for outdoor use in most climates. For extreme conditions, optional heating/cooling is available.

OPTIONAL COMPONENTS:

Heaters and Insulation, [AM-270](#)

The Los Alamos publication number [LA-13247-MS](#), April 1997, "An Update for the Applications Guide to Vehicle SNM Monitors" is available to DOE and DOE contractors from the Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831, (423) 576-8401. It is available to the public from the National Technical Information Service, US Department of Commerce, 5285 Port Royal Road, Springfield, VA 22616.

