

TSA VM250 Vehicle Radiation Monitor



The TSA VM250 automatically screens vehicular traffic without the need for frequent calibration. High sensitivity allows the VM250 to be used at such as uranium enrichment plants, weapons manufacturing and storage plants, nuclear laboratories, and nuclear waste disposal and storage sites where detection of Special Nuclear Materials (SNM) is essential. The VM250 is designed for use in harsh environmental conditions.

Advanced Design Features

The TSA VM250 vehicle portal monitor has excellent sensitivity and reliability. The VM250 consists of two self-contained, weather resistant pillars placed on either side of the roadway to be monitored. The pillars are usually bolted to a concrete footing, with the interconnecting conduits installed under the roadway. Each pillar contains two plastic scintillator detectors, an occupancy detector and an amplifier. The master pillar also has a battery, power supply, battery charger, and a system controller.

Programmable Detection Parameters

Selectable settings for sensitivity, energy discrimination, and fault levels may be entered by the administrator.

Easy-to-Operate

When the system is powered up, it takes twenty seconds to acquire an initial background. The background is continually updated until the system is occupied. When the infra-red detectors sense occupancy, the system starts comparing the current count to the most recent background data. Alarm comparisons are made every 200ms. If the count exceeds the alarm level, both audible and visual alarms will be triggered. The system monitors itself and indicates low and high background conditions.

Flexible Detection Options

The TSA VM250 is available with a third overhead pillar for higher sensitivity. The VM250 is available in three configurations; Gamma, Neutron or a combination of Gamma and Neutron detection. Gamma provides detection of ionizing radiation and Neutron provides detection of Special Nuclear Materials (SNM) while the combined Gamma and Neutron provides the most powerful detection capabilities for radioactive isotopes even in shielded materials.

Interface Options

With the optional Remote Alarm Panel operators can view alarms up to 300m from the monitor. The TSA VM250 is compatible with TSA RAVEN™ communications software designed to both capture and view data and video images relating to a radiological detection incident.

Standard Features

- Programmable Detection Parameters
- Audio and Visual Indicators
- Relay Outputs for User Interface
- Universal Power Supply
- Ethernet Connectivity
- Battery Backup
- Controller Mounting Options
- NEMA 4 Rated Enclosure
- IP66 Rated Enclosure
- TSA RAVEN™ Compatible



TSA RAVEN™ (Radiation Alarm and Video Event Notification) communications software is used remotely to assist response personnel in the field to pinpoint radioactive sources. RAVEN can monitor multiple detectors and aid in managing individual detector activity.

Markets

- Aviation
- Critical Infrastructure
- Customs and Border Control
- Defense
- Ports

TSA VM250

Specifications

Sensitivity	Gamma: Will detect 1,000g of ²³⁵ U (HEU) or 10g of ²³⁹ Pu, 50% probability of detection, 95% confidence in 20 uR/hr background at a passage speed of 5 mph (8km/h) Neutron*: Will detect less than 200g of plutonium in a shielded container that reduces the gamma flux to 1% of the unshielded gamma flux.
Detectors	Gamma: Two, 30 h x 6 w x 1.5 d in. (76 x 15 x 3.8 cm) organic plastic scintillator detectors per pillar; provides approximately 1.080 in ³ (17.6 liters) of detector volume per pillar Gamma and Neutron: Two, 30 h x 6 w x 1.5 d in. (76 x 15 x 3.8 cm) organic plastic scintillator detectors per pillar and four 2 in. diameter x 36 in. (5 x 91cm) He ³ tubes per pillar; provides approximately 2,160 in ³ (35.2 liters ³) of detector volume per pillar
Alarm Level	SPRT for neutron, N* sigma for gamma entered from the numeric keypad
False Alarm Rates	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.
Display	Alphanumeric LCD, 4 lines x 16 characters
Communications	RS-232 Serial Port and Ethernet communications capability
Data Storage	256k bytes of flash memory 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 operations.
Power Requirements	90 - 250 Vac, 47 - 63 Hz, less than 100 VA
Battery Life	Greater than 24 hours of normal operation.
Dimensions	Gamma: 120 h x 10 w x 10 d in. (244 or 305 x 25 x 25 cm) per pillar Gamma and Neutron: 120 h x 26 w x 8 d in. (244 or 305 x 66 x 20 cm) per pillar
Typical Pillar Spacing	177 in. (4.5 m)
Weight	Gamma: 300 lb (136kg) per pillar Gamma and Neutron: =600 lb (273kg) per pillar
Environmental	-30° TO 122° F (-34° to 50° C)
Standards	CE

*ASTM Standard C 1169 is available for purchase from The American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428 (610) 832-9585

Options

- Gamma Detection - For the detection of ionizing radiation.
- Neutron Detection - Typically used to detect Special Nuclear Materials (SNM).
- Gamma and Neutron Detection - For full spectrum detection capabilities.
- Remote Alarm Panel
- TSA RAVEN™ Communications Software
- Additional Lead Shielding
- Pedestal

