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 senses 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

Markets
- Aviation
- Critical Infrastructure
- Customs and Border Control
- Defense
- Ports
# TSA VM250

## Specifications

**Sensitivity**
- **Gamma:** Will detect 1,000g of $^{235}\text{U}$ (HEU) or 10g of $^{239}\text{Pu}$, 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 Standards**
- -30° TO 122° F (-34° to 50° C).

*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**

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