



AT100L vehicle radiation monitoring system is developed to detect the radioactive level of large vehicles when they are driven through. When the radioactive level of the vehicle exceeds the alarm threshold, the system emits an audible and visual alarm signal to prevent the spread of radioactive substances and their pollutants.

It is mainly installed in the important entrances and exits such as airports, docks, train stations, steel production enterprises, entry and exit security checkpoints, nuclear power plant control areas, and nuclear waste treatment plants. It is used to monitor whether vehicles, trains, containers, etc. carry radioactive substances.

Adopted multi probe, dual photomultiplier tube coupling technology, and large-area plastic scintillator, it has high sensitivity, wide detection range, short response time, automatic radiation alarm, automatic data storage, automatic capture of vehicle photos, and remote data management.

Highlight

- Measure the speed of the passing vehicle and alarm when exceeding a pre-set speed limit.
- Automatic radiation background learning, and alarm when exceeding threshold
- Vehicle plate recognition camera and software to capture and recognize the vehicle number plate
- Data interface reserved, to share data with related party for remote data management
- Modular design, easy to disassemble and assemble, easy to expand, customize and maintain, strong anti-interference ability, able to work in harsh natural environments
- Neutron interface reserved

Specifications

- To detect: x and γ
- Energy range: 20Kev-50Mev, optimal 25Kev-3Mev
- Detectors: 4x25L plastic scintillator detectors, total 100L
Dimensions: 130*30*400cm
- Detection height: 0.1-4.5m
- Detection width: 6m, optimal 5m
- Vehicle speed: standard 8km/h, maximum: 20km/h
- Dynamic detection: can detect 6×10^5 Bq of ^{137}Cs bare source
- Response time: $\leq 1\text{s}$
- False alarm rate: $\leq 1/1000$
- Detection lower limit: $< 100\text{nSv/h}$
- Alarm mode: Sound and light alarm, alarm threshold adjustable
- Protection level: IP65. Equipment installed outdoors is waterproof and sun-proof
- Communication: Ethernet with RJ45
- Options: UPS, desk, additional computer, etc.

- Temperature: -30°C to 55°C
- Humidity: 0%~99%, non-condensing

Packing in wooden case

- Packing size 1# 217*97*133cm; 2# 217*97*133cm; 3# 100*80*90cm
- Gross weight 800kg

Hardware features

- **Gamma detectors:** 4 large-area plastic scintillator detectors, with a single plastic scintillator volume of 25L and a total volume of **100L**
 - Gamma detector has self-checking function
 - Each detector has five-sided **8mm lead shielding** (better than the standard 5mm)
 - Each detector with 1 **Hamamatsu** low-noise photomultiplier tube
- **Main control unit:** including computer and communication components, to control system operation, display system working status, control alarm and indication etc.
 - CPU: Intel I3-1115G4
 - Memory: 8G DDR4
 - Hard disk: 256GSSD solid state drive
 - System: Windows 10
 - Display: 23.8 inches, with WIFI module
- **Channel occupancy sensors:** To detect whether the vehicle has entered the measurement area and monitor the vehicle's driving speed.
- **Onsite sound and light alarm system:** Sound intensity: 90-100dB
 - **Yellow**: No vehicle is passing.
 - **Green**: A vehicle is passing and radiation is within the limit
 - **Red**: A vehicle is passing and radiation exceeds the limit
- **Vehicle number plate capture system:** with a vehicle plate recognition camera and software to capture and recognize the vehicle number plate

Softwares

- English application software and user manual.
- Real-time display of data curve and threshold curve.
- Display data from multiple detectors stacked together, as well as individual detector data.
- Real-time display of the current passing vehicle plate number and passing speed, alarm when exceeding a pre-set speed limit.
- Each detection record by a passed vehicle is saved automatically, including: the number of the vehicle passing through, the time of entering and leaving the detection channel, the speed at which vehicles pass through, if an alarm was triggered, the original detection data, and the alarm threshold parameter setting for the detection.
- If the passing vehicle generates an alarm, the following additional records will be added on the basic detection record: alarm type, alarm level, the location of the radioactive source in the carriage.
- Provide a user editing window to input inspection conclusions for each vehicle.

- Historical record statistical analysis, to perform record queries, statistics, chart analysis, etc. based on different conditions (such as detection alarm etc.).
- Data can be copied using USB flash drive

Compliance

The system meets the requirements of IAEA and national standard GB/T24246-2009 "Radioactive Material and Special Nuclear Material Monitoring System" for vehicle radioactivity monitoring system.

References

