

PET-01 PET AIR MONITOR



KEY FEATURES

- An air monitor optimized for the detection of typical radionuclides produced in cyclotrons for PET centres
- Detector with a collimator to reduce the response to natural background
- Local display and control which can be part of a host monitoring system

DESCRIPTION

The PET-01 monitor is intended for the monitoring of gaseous effluents in facilities that produce and process positron emitting radionuclides. Typical users include PET centres and cyclotron facilities.

The monitor is especially suitable for the detection of F-18 and radionuclides of biogenic elements of C-11, N-13, O-15, but it is also capable of detecting other positron emitting radionuclides (e.g. Sr/Rb-82 and Ge/Ga-68).

The PET-01 monitors may be used as part of host monitoring systems or may serve as autonomous monitors with local display of data.

The PET-01 monitor is composed of the following main parts:

- GD-53 Gamma Detector with a NaI(Tl) scintillator,
- lead collimator with a standard thickness of 3 cm,
- RPU-06 processing unit containing the DIM-09 multi-channel analyser.

The PET-01 monitor should be located in an environmentally controlled area. To ensure the required measurement accuracy, stable ambient temperatures of the detector needs to be maintained (typically 25 °C). Where required, forced ventilation or air conditioning is used to maintain stable ambient temperatures.

The detector with a collimator is positioned close to the air ventilation duct through which air containing radioactive gases is being released. The collimator is designed to optimally define the detector's field of view while minimizing background contribution.

The RPU-06 Radiation Processing Unit provides power to the system, processes the detector output using a multi-channel analyser, displays measurement results, archives the measured values, and shows both the values and the status of the device. It provides visual and acoustic signals when preset alarm levels are exceeded.

The annihilation of a positron in a collision with an electron, during which a pair of photons with an energy of 511 keV is emitted, is used to measure positron-emitting radionuclides.

Using the data from an optional flow meter or a fixed flow rate value, it is possible to calculate the total released activity.

Results can be displayed either locally in the place of measurement on the RPU-06 radiation processing unit or remotely on another display unit. The monitor can also be connected to a host monitoring system where the values obtained may be further processed and archived.

PET-01

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OPTIONAL FEATURES

N/A	UPS (optionally with heating/cooling)
N/A	External flow meter
N/A	Calibration fixture + Cs-137 radiation source
N/A	Module for communication with external flow meter (RS-485/AI)
N/A	Current loops for communication with the supervisory system

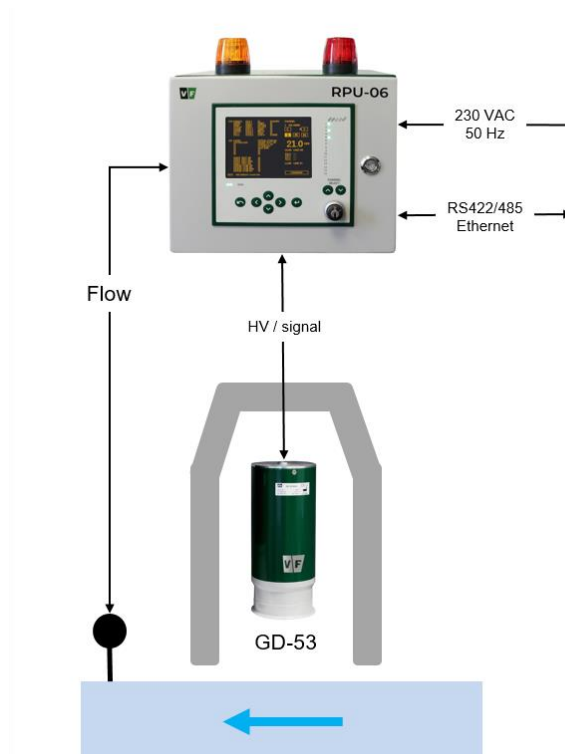
RELATED PRODUCTS

GD-53	Gamma Detector
RPU-06	Radiation Processing Unit
PET-02	PET Air Monitor
RMS	Radiation Monitoring System

SPECIFICATION

Detector GD-53	scintillation NaI(Tl)
Detector dimensions	Ø76 x 25 mm
Measuring range *	4E+03 až 2E+08 Bq/m ³
Energy range	150 keV to 1,5 MeV
Referential nuclide	F-18
Radionuclide for the operational check	Cs-137
Display and Control	local or host system
Ambient temperature	+5 ÷ 45 °C
Ambient relative humidity	max. 95%, non-condensing
Power supply	230 V AC

* This applies to the GD-53 detector and metal pipes with a diameter of 60 cm and a wall thickness of 5 mm. The range may vary for other pipes.



Example connection of the PET-01 air monitor

