



VF NUCLEAR



NUCLEAR
POWER PLANTS



WASTE
MANAGEMENT



RESEARCH
CENTRES



INDUSTRY
& MANUFACTURING

CPM-316

CONTINUOUS PARTICULATE MONITOR



MAIN ADVANTAGES

- Very low detection limits
- The use of moving filter tape allows continuous measurement from 3 months to more than 1 year without the filter replacement (depending on the movement mode)
- Continuous or periodical movement of the filter tape
- Real time and delayed measurement
- Background compensation in real time
- Radon/Thoron compensation
- Adjustable alarm levels for alpha and beta channels
- Low maintenance requirements
- Compliant with IEC 60761, IEC 61172 and IEC 61578
- Various communications interfaces

PURPOSE

The CPM-316 monitor is designed to continuously measure concentration of alpha and beta particulates in the air. The air can be sampled directly from working environments, ventilation systems or the environment.

The main components of the monitor are as follows:

- Continuous Particulate Detector CPD-16
- Display Unit RPU-12
- Vacuum Pump
- GFM-12 Gas Flow Meter

The **CPD-16 Continuous Particulate Detector** performs measurement of the activity of alpha and beta particulates in the sampled air.

The air sample enters into the hermetically sealed box of the CPD-16 through the inlet fitting. The air flow then passes through the filter tape and through the outlet fitting.

The filter tape collects the aerosol particles. Two silicon detectors measure the response to the aerosols collected

on the tape. These are located side by side and close to the filter tape to ensure maximum detection efficiency. The main detector measures the actual response to the aerosols trapped on the filter at the place of sampling. The second detector performs delayed measurement on the filter when the short-lived natural radionuclides have decayed and is used to compensate for radon daughter products.

Both detectors are also equipped with a background detector used for dynamic background compensation.

A LED check source is used to verify the correct functioning of the detector.

The device is equipped with a pressure gauge, to monitor the pressure loss on the tape, which signifies clogging or rupture of the tape.

The **RPU-12 Radiation Processing Unit** provides power for the system, displays the results of activity measurements, archives measured values and displays the status and other measured parameters of the monitor. It also visually and audibly indicates when the pre-set alarm levels have been exceeded.

The display shows alpha / beta, actual / delayed, radon compensated / uncompensated activity in separate channels.

A powerful vacuum pump ensures the required air flow through the measurement path. It is controlled by the RPU-12. Optionally, a version without the integrated pump can be supplied. In this case, a remote pump is required to ensure sample flow through the monitor.

The CPM-316 monitor can be connected to the host system via the Ethernet and/or RS-485 interfaces.

Using the display and keyboard, you can check the values and statuses of the monitor and, after authorization of the operator, you can enter basic control commands.

VF-Setup service software is used to set all parameters and perform full diagnostics. The service laptop is connected via the service connector.

CPM-316

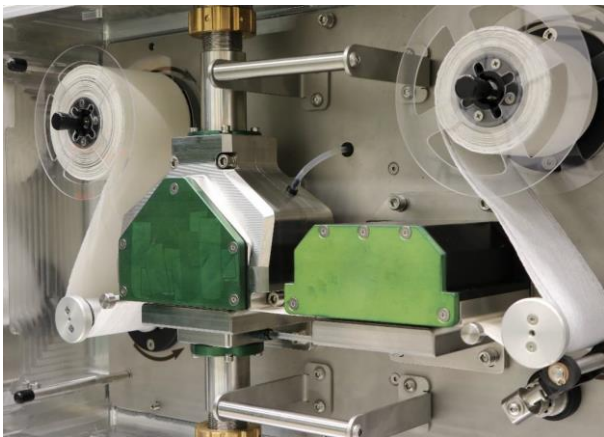
CONTINUOUS PARTICULATE MONITOR

SPECIFICATION

Detectors	2 × Si - PIN
Measuring range (T=time constant)	
Real time measurement	
alpha (²⁴¹ Am, T=10 min)	5E2 to 1E6 Bq/m ³
alpha (²⁴¹ Am, T=12 hr)	3E-2 to 1,3E4 Bq/m ³
beta (³⁶ Cl, T=10 min)	5E2 to 1E6 Bq/m ³
beta (³⁶ Cl, T=12 hr)	1,3E-1 to 1,4E4 Bq/m ³
Delayed measurement	
alpha (²⁴¹ Am, T=10 min)	5E2 to 1E6 Bq/m ³
alpha (²⁴¹ Am, T=12 hr)	8E-3 to 1,2E4 Bq/m ³
beta (³⁶ Cl, T=10 min)	5E2 to 1E6 Bq/m ³
beta (³⁶ Cl, T=12 hr)	3E-2 to 1,2E4 Bq/m ³
Filter tape	25 m × 70 mm
Nominal air flow (adjustable)	10-20 m ³ /hr
Communication interface	Ethernet, RS-485, relay outputs
Service interface	UART
Power supply	230 VAC
Dimensions (W × H × D)	(1220 × 1695 × 700) mm
Approximate weight	240 kg
Operational temperatures	from -10° to 60 °C

RELATED PRODUCTS

CPD-16	Continuous Particulate Detector
RPU-12	Radiation Processing Unit



The main and the delayed detector in the CPD-16

OPTIONAL FEATURES

- Intake and exhaust connections freely from the place / hose attached with a clip / pipe with a nut M30×1.5
- Ports for air grab sampling
- Wireless communication with the host system
- Displaying of the total activity on the filter
- Displaying of the total activity discharged from the ventilation stack
- Gamma detector for the measurement of the area gamma dose rate
- 115 VAC power supply
- UPS for backup power supply (without the pump)
- Galvanically isolated analog inputs and outputs 0/4-20 mA, digital outputs, RS-232, isolated connections to qualified and non-qualified host systems
- Qualification according to IEC 61226 and IEC/IEEE 60780-323, seismically resistant skid according to IEC/IEEE 60980-344

OPTIONAL ACCESORIES

- 50-A-0017274 Aerosol filter tape LFS-2-70, (70 mm, 70 g/m²), 25 m long
- Calibration jigs (solid state source with a holder)



RPU-12 Radiation Processing Unit



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Specification subject to change without prior written notice.

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