

NGD-03, NGD-04 Noble Gas Detector



The NGD-03 and NGD-04 Noble Gas Detectors are intended for continuous measurements of noble gas beta volume activity in the air mass of ventilation stack discharges, in pipelines and technological systems as well as in the environment.

Purpose

The NGD-03 and NGD-04 Noble Gas Detectors are intended for continuous measurements of noble gas beta volume activity in the air mass of ventilation stack discharges, in pipelines and technological systems as well as in the environment.

Description

The Noble Gas Detector assembly consists of the following parts:

- Measuring chamber
- Detection part with basic signal processing unit
- Processing unit
- Optional lead shielding

The air mass enters into the detection part via the input part from above and after that into the measuring chamber. Then, it leaves the output part and goes back into technology.

Two identical detection blocks (one basic and one compensation) are placed on both sides of the measuring chamber.

Each detection block has one detection channel (high or low range). Channel incorporates semiconductor detector (NGD-04) or scintillation detector with PMT (NGD-03).



Lead shield

Main Advantages

- On-line gamma background compensation
- Compact unit
- Variety of interfaces, easy integration into existing monitoring systems
- Optional lead shielding

Common Specification

Measuring chamber volume	1.75 l (0.062 ft ³)
Nominal flow rate	20 l/min (0.71 cfm)
Gas pressure	±20 kPa (±150 mmHg)
Pressure drop	Max. 1 kPa (7.5 mmHg)
Gas temperature	5 ~ 35 °C (41 ~ 95 °F)
Gas relative humidity	20 ~ 80% non-cond.
Input/output screw union dimensions	DN 20
Outputs	RS-232, RS-485, Ethernet
Operation temperatures	5 ~ 40 °C (41 ~ 104 °F)
Operation humidity	10 ~ 80% non-cond.
Power supply	24 VDC, 24W max. (9 ~ 36 VDC)
Dimensions (W x H x D)	252 x 433 x 376 mm (10 x 17 x 14.8 in)
Weight without shield	app. 17 kg (37.5 lb)

Description

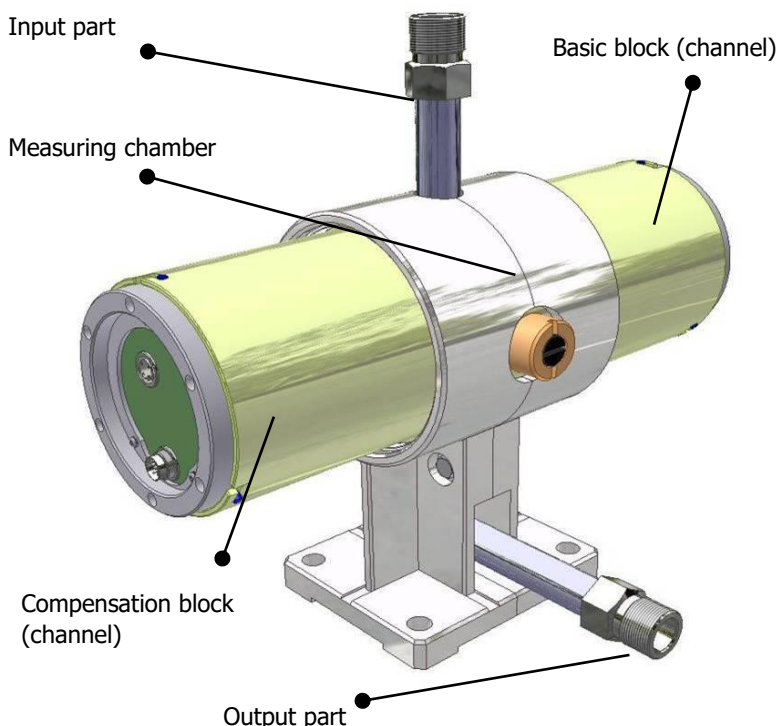
The two detection blocks differs from each other only by beta shield material which is positioned in front of one detection block used for the online compensation of gamma background.

Signals from the detectors are processed in the MB-01 Processing Unit which is also used as power supply.

The LEDs which generate the operation test signal are used in both channels. These LED check sources can be remotely activated.

Pressure and temperature measurements including STP (standard temperature and pressure) conversion kit can be delivered where type approved detector is requested.

NGD-03, NGD-04 / main parts and functions



Standards and Certification

- **Type approval certificate**, TCM 441/10 - 4801, issued by Czech Metrological Institute, according to:
- **ČSN IEC 60761-1** – Equipment for continuous monitoring of radioactivity in gaseous effluents - Part 1: General requirements
- **ČSN IEC 60761-3** – Equipment for continuous monitoring of radioactivity in gaseous effluents - Part 3: Specific requirements for radioactive noble gas monitors



Model Specification

Detector

- NGD-03 Pair of scintillation detectors
- NGD-04 Pair of CdTe detectors

Measuring range

- NGD-03 1E4 ~ 2E9 Bq/m³
(3E-7 ~ 5E-2 µCi/cc)
- NGD-04 2E8 ~ 5E13 Bq/m³
(5E-3 ~ 1E3 µCi/cc)

Energy range

- NGD-03 90 keV ~ 3 MeV
- NGD-04 40 keV ~ 3 MeV

Models and Accessories

Type	Description
K0993	Basic option NGD-03 without additional lead shield
K0994	Basic option NGD-03S with additional lead shield
K0995	Basic option NGD-04 without additional lead shield
K0996	Basic option NGD-04S with additional lead shield
Optional Accessories	
N/A	¹³⁷ Cs reference source
N/A	Pressure and temperature measurements including STP (standard temperature and pressure) conversion
Related Products	
K0215	VOPV-12 High Volume Air Sampler
N/A	Air mass filtration system (aerosols and iodine compounds)

www.vf.eu

Contact address

Czech Republic
VF, a.s., nám. Míru 50
CZ 679 21 Černá Hora
tel. +420 516 428 611
fax +420 516 428 610
info@vf.eu

Slovak Republic
VF, s.r.o., M. R. Štefánika 9
SK 010 02 Žilina
tel. +421 415 072 411
fax +421 415 072 410
info@vf.eu

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