NUVIATECH INSTRUMENTS

ALMO
Alarm Monitor – stationary dose rate monitoring system with external detectors

The ALMO alarm monitors are designed to measure dose rate levels in laboratories and production facilities. The systems consist of a head unit with LC display and electronics, combined with one or more probes and external alarm units. Depending on the version, it is possible to connect 1, 3 or 6 detectors to the ALMO units. The dose rates of the multi-channel systems (ALMO-3 and ALMO-6) are displayed individually for each channel. The stand-alone ALMO can be connected to a PC-system for central monitoring and data recording.

Benefits

· Microcontroller-based measurement electronics
· Dose rate measurements displayed in n/μ/mSv/h with autoranging function
· User configurable alarm thresholds per probe
· Easy-to-operate measurement system
· Ergonomic housing, for desktop or wall mounting
· Various visual/acoustic alarm units can be connected
· Software for continuous dose rate measurement, including data storage
· Also available with integrated battery backup

Key Figures

Background - 10 Sv/h
➡ measurement range

1/3/6
➡ probes attachable

12
➡ different detectors available

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Supporting your energy

Fields of application

· Workplace and facility monitoring, e.g. in hot cells and laboratories

· System monitoring, e.g. in isotope production

· Ward and/or patient monitoring in nuclear medicine/radiotherapy, e.g. in radioiodine therapy or afterloading

· Monitoring and selection in sorting boxes for radioactive waste

· Exhaust air monitoring

· Monitoring of test facilities for non destructive testing

· Warehouse monitoring, e.g. collection sites for radioactive waste

Afterloading

The ALMO-1 is used by different manufacturers of afterloading systems for brachytherapy. In this case, the main task of the alarm monitor is to indicate if the therapy source is open or closed. For that purpose the ALMO-1 is usually combined with GM-probe type 18550. Generally the version with integrated battery backup is used in order to keep the system running in case of a power failure.

An external alarm with 3 lights (red/yellow/green) and an acoustic alarm show the operational status of the system, both visually and acoustically: green = closed source, yellow = error, red = open source, red + acoustic alarm = open source and open door. In addition to the visual alarm, some manufacturers use a second warning light or a matrix sign with alarm signal for the area outside the therapy room (e.g. corridor or control room). These units are controlled in a similar way via ALMO.

An electronic interlock - if present - can also be operated via ALMO.
This function is often used as safety feature, particularly in hot cells.

Built-in version

Especially for the manufacturers of hot cells and isotope production facilities, we have developed a built-in version for our ALMO alarm monitors. Instead of the standard housing for desktop or wall mounting, the ALMO has a stainless steel housing with mounting points. The housing is integrated in the hot cell cover or in the door of a switch cabinet.

The screen with buttons and LEDs fits into the cutout to be flush with the surface. This solution has significant advantages particularly with regard to the permanently increasing clean room conditions, because the contamination risks and the extensive cleaning process for housing parts and cabling are avoided. There is a reduced contamination risk and complex cleaning is not required.

Supporting your energy

Standard models

ALMO-1

Electronics	Microcontroller-based measurement electronics, one-channel system (1 detector connectable)
Display	LCD with LED illumination during continuous operation
Keyboard	foil keyboard
Housing	200 x 150 x 75 mm (L x B x H) applicable as wall housing or desktop housing
Weight	Approx. 700 g
Power supply	100-240 V ~, 47-63 Hz
Consumption	15 W
Alarm	Optical and acoustic, optionally external alarm unit, quit function
Temperature	0° C up to +50° C, 0 - 95% relative humidity (no condensation)
Interfaces	2 relay outputs (24 V, 500 mA or potential-free, max. 24 V, 1 A) e.g. for LED-lamp with 3 levels, siren, interlock, RS 232 / 422 / 485 or USB-interface (selectable via menu)

ALMO-3

Similar to ALMO-1, but with the following differences:

Electronics	Microcontroller-based measurement electronics, multi-channel system (up to 3 detectors connectable)
Housing	280 x 300 x 120 mm (L x P x H) applicable as wall housing or desktop housing
Weight	Approx. 2,2 kg
Consumption	60 W
Interfaces	2 relay outputs per channel (24 V, 500 mA or potential free, max. 24 V, 1 A) e.g. for lamp with 3 levels, siren, interlock, 2 serial interfaces (selectable via menu) A: selectable RS 232 / 422 / 485 or USB B: selectable RS 232 / 422 / 485 In addition: Ethernet port

ALMO-6

Similar to ALMO-3, but with the following differences:

Electronics	Microcontroller-based measurement electronics, multi-channel system (up to 6 detectors connectable)

Compatible detectors

ALMO-3 and ALMO-6-systems can be combined with the following detector types:

type	energy range	measurement range	dimensions (length, Ø , weight)
GM-detector 18545 CE	40 keV – 1.3 MeV	150 nSv/h – 200 µSv/h	L: 345 mm, Ø 25/40 mm, 380 g
GM-detector 18550 CE	40 keV – 1.3 MeV	10 µSv/h – 20 mSv/h	L: 110 mm, Ø 40 mm, 150 g
GM-detector 18509 CE	55 keV – 1.3 MeV	50 µSv/h – 1 Sv/h	L: 110 mm, Ø 40 mm, 150 g
GM-detector 18529 CE	70 keV – 3 MeV	500 µSv/h – 10 Sv/h	L: 110 mm, Ø 40 mm, 150 g
GM-detector 70031A	40 keV – 1.3 MeV	0.3 µSv/h – 2 mSv/h	L: 350 mm, Ø 26/34 mm, 360g
GM-detector 70013A	40 keV – 1.3 MeV	0.5 µSv/h – 10 mSv/h	L: 249 mm, Ø 34/25 mm, 240g
GM-detector 70019A	45 keV – 1.3 MeV	1 µSv/h – 100 mSv/h	L: 122 mm, Ø 22 mm, 85g
GM-detector 70014A	55 keV – 1.3 MeV	10 µSv/h – 1 Sv/h	L: 100 mm, Ø 18 mm, 46g
NaI-scintillation detector 25B38	25 keV – 1.3 MeV	Background – 200 µSv/h	L: 38 mm (active), Ø 25 mm, 200 g
NaI-scintillation detector 38B51	25 keV – 1.3 MeV	cps only	L: 51 mm (active), Ø 38 mm, 200 g
NaI-scintillation detector 76B76	25 keV – 1.3 MeV	cps only	L: 76 mm (active), Ø 76 mm, 200 g

Options and accessories

External alarm units

Visual and acoustic alarm units are available for connection to all ALMO systems. Available with 1, 2 or 3 lights and with or without buzzer and flashing light. They can be ordered for wall mounting as well as for desktop installation.

Additional external displays

Depending on the facility layout it may be necessary to duplicate the display for one or more detectors at a location away from the main unit. The duplicate display offers a high comfort with task-specific parameter setting.

Software

The optional software can display the measurements graphically and store data. The dose rate measurement can be displayed in a graph or as a function of time. During the measurement, the real-time data and lamp symbols (green/yellow/red) can be displayed for a fast assessment of the radiological conditions.