

Model 52-1, 52-5 & 52-6 Series Portable Portal Monitors

Features

- Portable
- 61 cm (24 in.) or 81 cm (32 in.) Wide Opening
- Plastic Scintillator Detectors
- Built-In Person Counter
- Background Updating and Subtraction
- Sets Up In Minutes
- Easy to Operate
- Wheeled Transport Case Included
- Meets FEMA-REP-21
- Includes Sleeve for Weather Protection

Introduction

The Model 52-1, 52-5, and 52-6 Series Portable Portal Monitors are used for beta-gamma contamination monitoring on personnel and meet the FEMA standard for Emergency Response Portal Monitoring (FEMA-REP-21). They are designed to be disassembled for ease of transportation and storage, and can be set up in five minutes or less without any tools.

Each instrument's non-volatile parameters are preset at the factory to detect a 1.0 μCi ^{137}Cs source in a 10 $\mu\text{R/hr}$ background field. Microprocessor-based electronics provide ease of setup and reliability. Status LEDs indicate count-cycle status and audible signals accompany the LEDs for additional indication. Detector counts, background, and all parameters may be viewed on the instrument display. All setup is accomplished by way of pushbuttons located below the display.

These portal monitors can be operated in a walk-through mode with a quick scan occurring while a person is positioned within the portal. In this mode, checking is performed every 200 milliseconds while the portal is occupied, and 600 milliseconds before and 600 milliseconds after the portal is occupied. The portal monitor can also monitor in a stop-and-count mode, allowing for a more sensitive scan. In stop-and-count mode, the fixed count time may be set from 1 to 20 seconds.

These instruments have automatic background update and dynamic alarm setting capabilities. On startup, the instrument will take a background count and calculate alarm levels for each detector. Self-diagnostic routines check the background count and warn if the background becomes either too high or too low.

Alarms are calculated with a user-adjustable sigma parameter and the current background count. During setup, the user can also specify individual alarms only, sum alarm only, or



both individual and sum alarm. The sum alarm groups upper detectors and lower detectors.

Included with each instrument are a wheeled transport case and a clear polypropylene sleeve to protect against wet weather conditions.

These instruments are able to operate from 85 to 250 Vac, 50/60 Hz without a voltage selector switch. They may also be powered from the supplied vehicle cigarette lighter adapter, or three or six "D" cell batteries.

Water-Resistant Versions

Ludlum also offers some water-resistant versions: Models 52-1W (PN 48-4300), 52-1-1W (PN 48-3516) and 52-6-1W (PN 48-4312). Note that these water-resistant versions can only be used for gamma contamination monitoring.

Vehicle Monitoring

The Model 52-1, 52-5, and 52-6 Series can also be used as vehicle monitors using the optional vehicle conversion kit (PN 4215-374 for standard models, PN 4215-1099 for water-resistant models). The kit includes two stands to support the side detectors and a 6.1 m (20 ft.) cable.

Configurations

MODEL	PART NUMBER	DETECTORS	OUTSIDE DIMENSIONS (H x W x L)	INSIDE DIMENSIONS (H x W)	TOTAL DETECTOR VOLUME	WEIGHT
52-1	48-3172	4 side	211 x 81.3 x 45 cm (83 x 32 x 17.5 in.)	206 x 61 cm (81 x 24 in.)	11 L (672 in ³)	Approx. 32 kg (70 lb), 45 kg (100 lb) in case
52-1W	48-4300	4 side, water-resistant				
52-1-1	48-3258	4 side	211 x 102 x 45 cm (83 x 40 x 17.5 in.)	206 x 81 cm (81 x 32 in.)		
52-1-1W	48-3516	4 side, water-resistant				
52-5	48-3393	4 side, 1 bottom	213 x 81.3 x 49 cm (84 x 32 x 19.3 in.)	206 x 61 cm (81 x 24 in.)	12.8 L (780 in ³)	Approx. 36 kg (80 lb), 50 kg (110 lb) in case
52-5-1	48-3571	4 side, 1 bottom	213 x 102 x 49 cm (84 x 40 x 19.3 in.)	206 x 81 cm (81 x 32 in.)		
52-6	48-3611	4 side, 1 bottom, 1 top	217 x 81.3 x 49 cm (85.3 x 32 x 19.3 in.)	206 x 61 cm (81 x 24 in.)	14.6 L (888 in ³)	Approx. 41 kg (90 lb), 54 kg (120 lb) in case
52-6-1	48-3603	4 side, 1 bottom, 1 top	217 x 102 x 49 cm (85.3 x 40 x 19.3 in.)	206 x 81 cm (81 x 32 in.)		
52-6-1W	48-4312	4 side, 1 bottom, 1 top, water-resistant				

Specifications

SENSITIVITY: In walk-through mode, the instrument will detect a 1.0 μCi (37.5 kBq) ^{137}Cs source in a 10 $\mu\text{R/hr}$ (0.1 $\mu\text{Sv/h}$) background field with a portal width of 91.4 cm (36 in.) or less. When used with the optional vehicle conversion kit, sensitivity will depend on portal width.

ENERGY RESPONSE: 30 keV to 3 MeV

DETECTOR HIGH VOLTAGE: 700 to 1200 V

DETECTOR THRESHOLD: -4 mV

DISPLAY: 2-line x 20-character LCD shows background rates from all detectors and sigma values above background, backlit when operated from AC power; daylight-visible LEDs show instrument status and radiation alarm location

STATUS INDICATORS:

- ENTER/CHECKING: green LED, indicates system is ready for use; flashing LED indicates count is in progress
- INCOMPLETE/UPDATING: amber LED, indicates user has vacated the portal before counting was completed or that an update is in progress
- RADIATION ALARM: red LED and user-adjustable audible signal (greater than 60 dB at 61 cm [24 in.])
- INSTRUMENT FAILURE: red LED, indicates a high or low background
- LOW BATTERY: red LED, indicates batteries need to be replaced

COUNT TIME: adjustable from 0 to 20 seconds (0 second setting for walk-through mode)

INFRARED SENSOR: senses portal occupancy

OUTPUT: RS-232 and relay output connectors located on the bottom of the electronics chassis

AUDIO: alarm with an adjustable baffle indicates portal entry and incomplete count, continuous beeping indicates radiation alarm and instrument failure. Audio can be disabled in setup mode.

PARAMETERS: all parameters are stored in non-volatile memory

TEMPERATURE RANGE: -20 to 50 °C (-4 to 122 °F)

POWER OPTIONS:

- 85 to 250 Vac, 50/60 Hz using included power supply (12 Vdc wall adapter)
- 12 Vdc cigarette lighter adapter cable (included)
- Three or six "D" cell batteries. Battery life is typically 28 hours for three fresh batteries or 69 hours for six fresh batteries.

CONSTRUCTION: aluminum housing with beige powder-coat

ENVIRONMENTAL:

- Standard Versions: IP 40
- "W" Versions & Standard Versions covered with included polypropylene sleeve: IP 53

TRANSPORT/STORAGE CASE: High-density plastic with wheels and padded handles, 122 x 61 x 30.5 cm (48 x 24 x 12 in.) (H x W x D)



Model 52-1 with
Vehicle Conversion Kit