LUDLUM MEASUREMENTS, INC.

Model 9DP
Pressurized Ion Chamber

Part Number: 48-3742

Features

- Range: Background to 50 mSv/h (5 R/hr)
- Shows Exposure Rate & Either Integrated Exposure or Peak Exposure Rate
- Sunlight Readable Color Display
- Auto-Zeroing & -Ranging
- Rechargeable Batteries
- Audio & Visual Alarms
- Data Logging
- USB Connectivity
- Free Firmware Updates Through Website

Introduction

The Model 9DP is a digital, hand-held pressurized ion chamber that provides highly sensitive exposure measurements of gamma and x-ray radiation at energies above 25 keV and beta radiation at energies above 1 MeV. Measurements and instrument status are displayed on a large, 232K-color, backlit LCD screen. The screen displays the current exposure rate as well as simultaneously displaying either the integrated exposure rate or the peak exposure rate in Sv, R, Gy, or rem units.

The instrument is operated using the four push-buttons below the screen (ON/OFF, FUNCTION, AUDIO, ACK/RESET). In addition to the visual display, click audio proportional to the current exposure rate audibly indicates the exposure rate level. Two alarm levels can be set to alert the user whenever the pre-programmed level has been exceeded. Alarms are indicated on the display and by an audio tone. The instrument can also be configured for data logging. Logged data can either be stored in CSV format and written to a standard USB drive inserted in the instrument's USB port, or written directly to a Microsoft Excel spreadsheet by connecting the instrument to a computer running Ludlum's Model 9DP Logging Spreadsheet Software (see options below).

The Model 9DP parameter settings can be edited by connecting the instrument to a basic USB keyboard. Instrument setup and calibration can also be configured using the Ludlum Dimension Interface Kit, which includes the Dimension Configuration Manager Software and the required USB cable (see options below).

NOTE: This instrument is considered HAZMAT and requires HAZMAT training to ship. Please see the instrument manual for details.

Options

- Dimension Interface Kit (PN: 4293-763)
- Logging Spreadsheet Software Package (PN: 4293-998)
- Headphone Jack (PN: 4293-891)
- Alkaline Battery Pack (non-rechargeable) (PN: 4543-028)
- Check Source, 10 µCi ^{137}Cs (PN: 01-5231)
- Transport & Storage Case (PN: 2311063)
- Shoulder Strap (PN: 4536-632)
- USB Keyboard (PN: 2312289)

Control Buttons

Headphone Jack Option

Portable USB Drive (included)

Alkaline Battery Pack Option

Transport & Storage Case Option

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Specifications

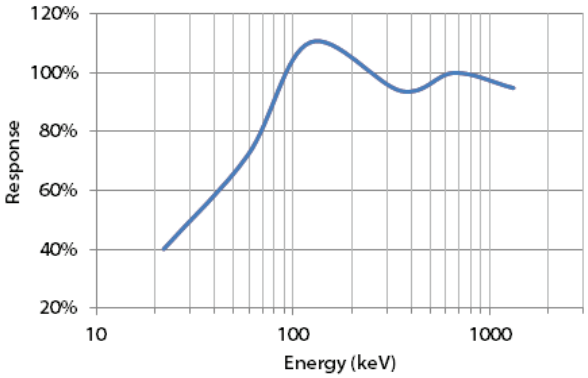
RADIATION DETECTED: gamma & X-rays above 25 keV; beta above 1 MeV
ENERGY RESPONSE: ±25% from 60 keV to 1.25 MeV (see graph below)
DISPLAY RANGES: (auto-ranging)

- Sv/h units*: 0–5 µSv/h, 0–50 µSv/h, 0–500 µSv/h, 0–5 mSv/h, 0–50 mSv/h
- R/hr units: 0–500 µR/hr, 0–5 mR/hr, 0–50 mR/hr, 0–500 mR /hr, 0–5 R/hr
- Gy/h units: 0–5 µGy/h, 0–50 µGy/h, 0–500 µGy/h, 0–5 mGy/h, 0–50 mGy/h
- rem/h units: 0–500 µrem/h, 0–5 mrem/h, 0–50 mrem/h, 0–500 mrem/h, 0–5 rem/h

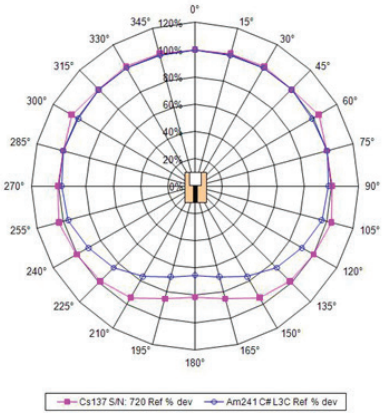
* Users wanting to take measurements in Sv/h units should see the Ludlum Model 9DP* which is specifically designed to measure ambient equivalent dose.

MEASUREMENT READOUTS: simultaneous display of rate and either the integrated value or highest (peak) rate
MINIMUM DISPLAY: 0.01 µSv/h (0.1 µR/hr, 0.01 µGy/h, 0.1 µrem/h)
DRIFT: less than 0.3 µSv/h (0.03 mR/hr, 0.3 µGy/h, 0.03 mrem/h)
CHAMBER VOLUME: 230 cc (14 in^3) volume pressurized to 9 atm (117 psig ± 5 psig)
CHAMBER DENSITY: chamber wall density is 601.7 mg/cm^2, can wall density is 332.5 mg/cm^2. Total density of chamber + can is 934.2 mg/cm^2
ACCURACY: ± 10%
RESPONSE TIME: ranges from 5 seconds in lowest range to under 2 seconds in highest range when measuring from 10% to 90% of final value
DISPLAY: LCD with 8.9 cm (3.5 in.) diagonal, 240 H x 320 W pixels, TFT active matrix, 232K colors, 220 cd/m^2, automatic sensor-controlled backlighting
USER CONTROLS: 4 push buttons: ON/OFF; FUNCTION (for peak rate/integrate modes); AUDIO (on/off, volume); and ACK/RESET (for alarm acknowledgement, meter reset, and clearing integrated exposure or peak rate)
AUTOMATIC FUNCTIONS: auto-ranging, auto-zeroing, auto LCD backlighting
ALARMS: Two levels of radiation alarms available, each is user programmable throughout entire readout range.
DATA LOGGING: Data is stored to detachable USB drive in CSV format for easy retrieval by PC spreadsheet/database programs. Data points include date and time, rate, integrated reading, and instrument status. Logging time intervals are set by PC interface program or USB keyboard.
AUDIO OUTPUTS: built-in unimorph speaker, > 60 dB at 0.6 m (2 ft), optional audio jack available for connection to external headset
USB INTERFACE: single USB 2.0 port. May be connected directly to a USB keyboard (with no additional USB ports, and no integrated mouse or trackpad or audio controls) to facilitate password-protected parameter changes. Accepts USB memory storage device for storing logged data. Optional Dimension Interface Kit (PN 4293-763) facilitates connection to a PC for parameter editing and calibration.
WARM UP TIME: < 1 minute when the instrument is in temperature equilibrium with the surrounding environment
TEMPERATURE RANGE: -20 to 40 °C (-4 to 104 °F)
HUMIDITY: 0–95%, non-condensing
GEOTROPISM: less than 1%
POWER: eight rechargeable AA NiMH batteries, supplied with wall charger for direct connection to instrument
BATTERY LIFE: approximately 12 to 30 hours between charges depending on backlighting and USB usage
CONSTRUCTION: durable molded plastic with internal metal support
SIZE (H x W x L): 21.9 x 11.6 x 24.5 cm (8.6 x 4.6 x 9.6 in.)
WEIGHT: 1.5 kg (3.3 lb), including batteries

Model 9DP Exposure Energy Response Relative to Cs-137



Angular Dependence



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