

LUDLUM MEASUREMENTS, INC.

Model 375-31H Area Monitor with Neutron Detector

Features

- Perfect for Temporary Jobsites
- Easy Setup and Use
- Versatile Controller with Highly Visible Display
- User-Programmable Alarms
- Network and Relay Options
- 48-Hour Battery Backup
- CE Certified



*Views of left side panel and
bottom panel of instrument.*

Introduction

The Model 375 is a versatile, compact, and easy-to-use digital electronic controller designed for monitoring radiation in areas. Its simple design accommodates many different detectors to suit a wide variety of applications, and it is equipped with a local readout and alarms. These versatile units may also be connected to an optional auxiliary indicator/annunciator to alert personnel at remote locations. The user-friendly, digital design enhances setup and operation. The Model 375 units may also be networked to a central PC-based station where data are logged and alarms posted.

This affordable and very flexible system has found its way into many applications resulting in a full complement of detectors, accessories, and options that include remote indicator alarms, printers, relay outputs, weather-proof enclosures, Ethernet networking software, industrial cameras, and more.

Sites requiring centralization of their data can link multiple 375 systems together via Ethernet and view them using

a common web browser with the purchase of Ludlum's Webpage & Service Software. This program collects all data in real time, logs data, and annunciates any alarms. The system can also send intelligent email alerts to responsible personnel and capture a picture of whatever triggered an alarm if optional Ethernet cameras are employed.

The detector is fitted with a bracket to attach to the Model 375. It consists of a cadmium-loaded polyethylene sphere surrounding a ^3He detector. A study has demonstrated that the 9-inch cadmium-loaded sphere has a response similar to that of a 10-inch diameter rem-responding sphere.

The neutron detector is designed to detect thermal and fast neutrons (0.025 eV to approximately 12 MeV). Neutrons are detected indirectly through nuclear reactions, which result in energetically charged particles. Gamma rejection is very good, resulting in less than 10 cpm in a 10 R/hr field.

Specifications

Part Number: 48-4370

INDICATED USE: area monitoring, neutron detection

DETECTOR: 2 atm ³He tube, LND 25185 or equivalent

DETECTOR MODERATOR: 22.9 cm (9 in.) diameter cadmium-loaded polyethylene sphere

MEASUREMENT RANGE: 0 to 100 mSv/h (0 to 10 rem/hr)

ENERGY RESPONSE: thermal to 12 MeV; approximately follows the radiation protection guide curve for neutron dose

SENSITIVITY (²⁴¹AmBe): 10,000 cpm per mSv/h (100 cpm per mrem/hr)

GAMMA REJECTION (¹³⁷Cs): 10 cpm or less, up to 0.1 Sv/h (10 R/hr)

OPERATING VOLTAGE: 1200 V (typical)

INPUT SENSITIVITY: -2 mV

DISPLAY: 4-digit LED display with 2 cm (0.8 in.) character height

DISPLAY RANGE: 000.0 to 9999 (Series One: 00.00 to 9999)

DISPLAY UNITS: μSv/h, mSv/h, mrem/hr, or rem/hr

LINEARITY: readings within 10% of true value

RESPONSE: typically 3 seconds from 10% to 90% of final reading

INDICATORS:

- STATUS: green light, instrument functioning properly
- LOW ALARM: yellow light and slow beep (1 per second), can be set at any point from 0.0–9999
- HIGH ALARM: red light and fast beep (4 per second), can be set at any point from 0.0–9999
- DET FAIL: red light and audible tone; for conditions of detector overload, no count from detector, or instrument failure
- LOW BAT: yellow light, indicates less than 2 hours of battery power remaining
- OVERLOAD: display reading of “-OL-” and audible FAIL alarm indicate detector saturation
- OVER-RANGE: display reading of “----” and activated low and high alarms indicate that the radiation field being measured has exceeded the counting range of the instrument (or when dead time correction accounts for more than 75% of the displayed reading)

REMOTE DISPLAY (optional): allows for connection of Ludlum Model 271 or 272 remote units

RELAYS: fail-safe form C relays included

CONNECTOR: series “C” (others available)

ETHERNET (optional): 10 Base-T connection for use with Ludlum software

CALIBRATION CONTROLS: accessible from the front of instrument (protective cover provided)

HIGH VOLTAGE: user-adjustable from 450 to 2500 volts

DEAD TIME: user-adjustable to compensate for dead time of the detector and electronics (can be read on the display)

AUDIO: Intensity can vary from approximately 68 dB to 100 dB through operation of the external rotary baffle and the internal voltage connection. Frequency is approximately 3 kHz

RS-232 OUTPUT: a 2-second dump for computer data logging

POWER: 9 Vdc wall-mount adapter handles any mains voltage in the world, supplied with four sets of prongs for almost any style wall receptacle

BATTERY LIFE: typically 48 hours in non-alarm condition; 12 hours in alarm condition

BATTERY CHARGER: battery is continuously trickle charged when the instrument is connected to line power and turned on

CONSTRUCTION: aluminum housing with ivory powder-coat finish for area monitor, drawn-and-cast aluminum with ivory powder-coat finish for the brackets, and polyethylene for the sphere

TEMPERATURE RANGE: -15 to 50 °C (5 to 122 °F); may be certified for operation from -40 to 65 °C (-40 to 150 °F)

SIZE: 45.7 x 25.4 x 27.9 cm (18 x 10 x 11 in.) (H x W x L)

WEIGHT: 9.5 kg (21 lb)

Options

Various options are available for Model 375 monitoring systems, including:

- Enclosures
- Remote displays
- Alarm annunciators (horns and strobes)
- Signal outputs
- Networking options
- Software

A complete list of available options is on our website.