LUDLUM MEASUREMENTS, INC.

Model 3014
Dual-Detector Digital Survey Meter/SCA

Features

- Internal Gamma Detector for Survey/Accumulated Dose
- Can Be Used with a Variety of External Detectors
- General Purpose Survey Meter
- Rate, Max, Integrated Dose, and Count Modes
- Alpha, Beta, or Alpha+Beta Capable
- Single Channel Analyzer (SCA) Capable
- Large Backlit LCD for Ease of Reading
- 4-Button Intuitive Interface for Easy Operation
- 1-Button Handle Interface for Data Logging
- Digital Calibration, Data Logging, Auto-Ranging, USB
- Bluetooth, True RS-232, and Headphone Options
- Alternative to the Ludlum Model 14C, Model 2221

Introduction

The Model 3014 is a durable, lightweight instrument with both an internal gamma GM or scintillation detector and a connection for an external detector. It features a large, easy-to-read LCD screen and audible alarms and is controlled using a simple five-button interface. The unit body is made of high-impact plastic and splash-resistant construction allows the instrument to be used outdoors.

Four modes of operation are available – RATE, MAX, COUNT, and DOSE – which can be selected by pressing the MODE button. Measurements can be collected in two sets of units (primary and secondary) for RATE and MAX modes. The user can switch between the two sets of units by pressing the UNITS button. Pressing the DETECTOR button toggles the display between the internal and external detector readings. When enabled with the optional Lumic Data Logger Kit (PN: 4498-1019), data can be logged in any of the operational modes using the LOG button on the handle. Up to 1000 data points can be stored internally. The SCA ability allows a scintillator or proportional detector to be set up with an upper window, giving it higher sensitivity to a specific isotope or region. This instrument can be used with external alpha-beta detectors to display alpha, beta, or alpha + beta counts.

Instrument setup can be done either through the front-panel controls or via the Lumic Calibration Kit (PN: 4519-865). The Model 3014 is shipped ready to use with batteries and a calibration certificate.

Configurations

Model	Internal Detector / Range	Part Number
3014	Energy compensated GM Background to 50 mSv/h (5 R/hr)	48-4365
3014/1	CsI scintillator Background to 500 µSv/h (50 mR/hr)	48-4365-1
3014/3	Energy compensated GM Background to 250 mSv/h (25 R/hr)	48-4365-3
3014/4	Energy compensated GM Background to 500 mSv/h (50 R/hr)	48-4365-4
3014/6	Energy compensated GM Background to 5 Sv/h (500 R/hr)	48-4365-6

Specifications

INTERNAL DETECTORS: energy compensated GM or scintillation detector, see table on front for options
COMPATIBLE EXTERNAL DETECTORS: GM, scintillation, proportional, or neutron detectors
HIGH VOLTAGE: 300 to 2400 Vdc
LINEARITY: readings within 10% of true value
MODES: four operational modes including rate, max, integrated dose, and count
DISPLAY: 3-digit auto-ranging LCD with large 20 mm (0.8 in.) digits. Units: (k)(M)c, (k)cps, (k)(M)cpm, (k)(M)d, (k)(M)Bq, (k)(M)Bq/cm^2, (k)(M)dpm, (μ)(m)(k)(M)R, (μ)(m)(k)R/h, (μ)(m)(k)(M)Sv, (μ)(m)Sv/h, (μ)(m)(k)(M)Rem, (μ)(m)(k)Rem/h.
   Indicators: bar graph, radiation type (alpha (α), beta (β), gamma (γ), neutron (n)), mode (MAX, INTG), three alarm levels (ALARM 1, 2, 3), fault messages (FAULT, OVERLOAD, LOSS OF COUNT, OVERRANGE), USB, wireless, audio, and low-battery.
DISPLAY RANGE:
   • 00.0 cps to 999 kcps
   • 00.0 cpm to 99.9 Mcpm
   • 00.0 Bq to 999 MBq
   • 00.0 Bq/cm^2 to 999 MBq/cm^2
   • 00.0 dpm to 999 Mdpm
   • 0.00 μR to 999 MR
   • 0.00 μR/h to 9.99 kR/h
   • 0.00 μSv to 999 MSv
   • 0.00 μSv/h to 999 Sv/h
   • 0.00 μRem to 999 MRem
   • 0.00 μRem/h to 9.99 kRem/h
   • 0 c to 999 Mc (counts)
   • 0 d to 999 Md (disintegrations)
   Minimum and maximum display can be set to limit display to calibrated range.
BACKLIGHT: built-in ambient light sensor automatically activates LED backlight unless internal dipswitch is set to continuous-on
USER CONTROLS:
   • ON/AUD: Extra-long press to turn ON; Short press to adjust audio level; Extra-long press to turn OFF
   • UNITS: Short press changes the units between count rate, dose/exposure, or disintegration
   • DETECTOR: Short press to change between the external and internal detector
   • MODE: Short perss alternates between modes: RATE (displays count rate), MAX (captures peak rate), COUNT (user-selectable preset count time from 0 to 31.68 years), and DOSE (current accumulated dose)
   • LOG: Short press to log current display (requires Lumic Data Logger Kit) or initiate count in COUNT mode, an extra-long press to change count in COUNT mode
DATA LOGGING: Can store up to 1000 data points internally. Requires Lumic Data Logger Kit (PN: 4498-1019)
RESPONSE TIME: user-selectable from 1 to 60 seconds, auto SLOW, auto FAST, fixed SLOW (22s), fixed FAST (4s)
ALARMS: three count rate, exposure/dose, scaler, and accumulated dose alarm set-points adjustable over the display range
SELF-DIAGNOSTICS: detects and reports internal instrument issues, indicated by graphic FAULT display and audio warning
OVERLOAD PROTECTION: high count rate saturation protection prevents false display of lower count rates. OVERLOAD will appear on the display and an audio warning will be triggered.
LOSS OF COUNT PROTECTION: after a user defined time, typically 60 seconds, of no pulses from detector, the unit will flash a zero reading, an audio alarm will be triggered, and LOSS OF COUNTS will appear on the display
OVERRANGE: if reading should exceed the predefined detector range, the unit will flash a maximum reading, an audio warning will be triggered, and OVERRANGE will appear on the display
AUDIO: "click" audio greater than 65 dB at 0.6 m (2 ft), alarm audio greater than 72 dB at 0.6 m (2 ft), approximately 4.5 kHz
CALIBRATION PROTECTION: internal dipswitch to disable front-panel calibration parameter changes
POWER: four "AA" batteries
BATTERY LIFE: approximately 175 hours of operation, 16-hour low battery warning
CONSTRUCTION: high-impact polycarbonate with rubber seals and separate battery compartment
TEMPERATURE RANGE: -20 to 50 °C (-5 to 122 °F), may be certified for operation from -40 to 65 °C (-40 to 150 °F)
ENVIRONMENTAL RATING: NEMA rating of 3x or IP rating of 53
SIZE (H x W x L): less than 16.5 x 11.4 x 21.6 cm (6.5 x 4.5 x 8.5 in.)
WEIGHT: 0.9 kg (2.0 lb) (excluding detectors or clips)

Options

   • Lumic Calibration Kit (PN: 4519-865)
   • Lumic Data Logger Kit (PN: 4498-1019)
   • Bluetooth® Option (PN: 4519-564)
   • Headphone Jack (PN: 4498-555)
   • RS-232 Serial Port (PN: 4519-594)
   • TTL Serial Port (PN: 4519-595)