

LUDLUM MEASUREMENTS, INC.

Model 3003 Series Multi-Detector Ratemeter/SCA

Features

- 4 Selectable & Configurable Detector Settings
- Single Channel Analyzer (SCA)
- Alpha, Beta, or Alpha+Beta Measurements
- 3003i: Internal Detector Option for Dose Measurements
- Rate, Max, Integrated Dose, and Count Modes
- 4-Button Meter Interface for Easy Operation
- 3-Button Handle Interface for One Handed Control
- Digital Calibration, Datalogging, Auto-Ranging, USB
- Bluetooth, True RS-232, and Headphone Options
- Lightweight and Ruggedly Built
- Large Backlit LCD for Ease of Reading
- Alternative to the Ludlum Model 18 and 2221



Introduction

The Model 3003 is a durable, lightweight instrument designed for alpha, beta, gamma, or neutron radiation survey. It can support up to four external detectors, each with its own set of calibration and user parameters. The Model 3003i is a version that includes an internal GM or scintillation detector. The instrument features a large, easy-to-read LCD screen and audible alarms and is controlled using a simple seven-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, MAX, and DOSE modes, unless alpha-beta detection is selected. The user can switch between the two sets of units by pressing the UNITS button. The DETECTOR button is used to switch between the active detector settings, indicated by the colored LEDs above the control buttons. When enabled with the optional Lumatic Data Logger Kit (PN: 4498-

4019), 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 Lumatic Calibration Kit (PN: 4519-865). The Model 3003 is shipped ready to use with batteries and a calibration certificate.

Handle Buttons



Meter Buttons



Configurations

Model	Internal Detector / Range	Part Number
3003	NA	48-4289
3003i	Energy compensated GM Background to 50 mSv/h (5 R/hr)	48-4326
3003i/1	CsI scintillator Background to 500 µSv/h (50 mR/hr)	48-4378
3003i/3	Energy compensated GM Background to 250 mSv/h (25 R/hr)	48-4411
3003i/4	Energy compensated GM Background to 500 mSv/h (50 R/hr)	48-4326-4
3003i/6	Energy compensated GM Background to 1 Sv/h (100 R/hr)	48-4326-6

Specifications

COMPATIBLE DETECTORS: Up to four external GM, scintillation, proportional, or neutron detectors

INTERNAL DETECTOR (3003i Series only): energy compensated GM or scintillation detector, see table on front for options

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/cm², (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, 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/cm² to 999 MBq/cm²
- 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)

NOTE: Operational display ranges are dependent on the detector and dead time configuration. The minimum and maximum display can be set to limit the display to the 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 plus 3 seconds to turn OFF
- UNITS: Short press changes the units between count rate, dose/exposure, or activity
- DETECTOR: Short press to change active detector to the next enabled detector. On 3003i, extra-long press to switch between internal and external detector
- MODE: Short press 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)
- ACK/RST: Short press to acknowledge alarms, extra-long press to reset current mode
- LOG: Short press to log current display (requires Lumic Data Logger Kit) or initiate count in COUNT mode, extra-long press to change count in COUNT mode
- PRG: Short press in first 4 seconds of power-up will grant access to setup menu

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 exceeds the predefined detector range, the instrument 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, 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): 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)