

# Model RT-D300

## Electronic Personal Dosimeter

### Features

The RT-D300 | Electronic Personal Dosimeter is a next-generation all-digital electronic personal dosimeter that combines four functions in one:

- Dose Equivalent Rate Meter
- Accumulated Dose Meter
- Active Self-Reading Dose Meter
- Active Self-Alarming Dose Meter

### Applications

The RT-D300 detects strong radiation fields, and are best suited for use in irradiation processing, industrial CT, industrial X-ray inspection, radioactive therapy, accelerator centers, nuclide production, nuclear power plants



This pager-like, direct-reading EPD accurately detects and measures radiation exposure for workers and responders in potentially hazardous environments.

The RT-D300 | Electronic Personal Dosimeter uses a YSO scintillation detector combined with a state-of-the-art silicon photomultiplier (YSO+SiPM) and multi-voltage threshold (MVT) algorithm to detect a wide range of radiation doses.

Proportional, real-time detection and measurement provide meaningful readouts that focus on the awareness and safety of the user during critical times. The fast response and wide dose rate range maximize the safety of your team. Intuitive menu-driven navigation allows users to adjust settings in the field.

A blue acrylic tamper-proof label prevents users from opening the instrument, thus ensuring operational integrity for compliance and liability concerns.

The RT-D300 | Electronic Personal Dosimeter is designed to process routine personnel dosimetry on which occupational dose of records are based.

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### 1 | Features

#### Digital Data Acquisition

- All Digital solid-state detection

#### High Performance Detection Design

- High-performance YSO crystal
- Miniaturized SiPM
- High-speed chip enables fast response and the smallest dead time in industry
- Patented MVT digital signal processing technology provides excellent performance and stability
- Background radiation interference virtually eliminated

#### Rapid Response

- Full-range reading and alarm response in less than 8 seconds
- Higher sensitivity allows for earlier detection
- Audible output quickly alerts responders of rapidly changing radiation levels
- Real-time, active self-reading

#### Quality Control System

- Auto-calibration
- Virtual elimination of false alarms
- Ability to discriminate between background radiation and man-made source
- Programmable chips enable firmware updates and system upgrades
- Ultra-low power consumption
- High system stability and reliability
- Accurate and reliable data
- Precise quantitative analysis

### 2 | Benefits

- As an active self-reading device, both dose rate and accumulated dose are measured in real time, enabling users to always be aware of current exposure
  - Ergonomic upward-facing large backlit LCD display offers users readability in dark or bright environments
  - Pocket-sized portability with convenient belt clip
  - Three types of alarms alert users in a multitude of ways: vibrating, audible and visual
  - Alarm level is either preset or user programmable through entire measurement range
  - Intuitive menu-driven navigation allows user to adjust settings in the field
  - Easy one-handed operation with just two buttons, allowing total control with a thumb
  - Proportional, real-time detection and measurement provides meaningful readouts which focus on the awareness and safety of the user during critical times
  - Patented MVT sampling method resulting in no signal loss and high signal-to-noise ratio
  - Low-power CMOS digital electronics combined with digital silicon photomultiplier (SiPM) chip
  - Dose and dose rate alarms provide additional awareness of high radiation levels
  - Blue acrylic tamper-proof label prevents users from opening the instrument, thus ensuring operational integrity for compliance and liability concerns
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### Specifications

Feature	Parameter
<b>Radiological</b>	
<i>Detector</i>	YSO(Ce) scintillator + SiPM
<i>Type of Radiation Detected</i>	Gamma; X-ray
<i>Energy Range</i>	30 keV–1.5 MeV
<i>Dose Rate Range</i>	50 $\mu$ rem/h–500 mrem/h (0.50 $\mu$ Sv/h–5 mSv/h)
<i>Integrated Dose Range</i>	1 $\mu$ rem–10,000 rem (0.01 $\mu$ Sv–100 Sv)
<i>Sensitivity</i>	90 cps/mrem/h (9 cps/ $\mu$ Sv/h) ( $\propto$ Cs-137)
<i>Energy Response</i>	$\leq \pm 40\%$ ( $\propto$ Cs-137)
<i>Dose Rate Linearity</i>	$\leq 10\%$ up to 500 mrem/h (5 mSv/h)
<i>Accuracy</i>	$\pm 10\%$ ( $\propto$ Cs-137)
<i>Alarm Threshold</i>	User-set values for dose rate: 100 $\mu$ rem/h–500 mrem/h (1 $\mu$ Sv/h–5 mSv/h)
<i>Alert Options</i>	Audible (80 dB at 12 in / 30 cm) Visual (LED and display) Vibrating
<i>Alarm Response Time</i>	< 8 seconds
<i>Overload Display</i>	Activation when > 100 mrem/h (1 mSv/h) Overload indication up to 1,000 rem/h (10 Sv/h)
<b>Electrical and Mechanical</b>	
<i>Communications</i>	MicroUSB and RadSuite-Dose (Mac/PC software)
<i>Ergonomics</i>	Upward facing, tilted screen
<i>Power Supply</i>	Rechargeable lithium-ion battery
<i>Battery Life</i>	Typically 200 hours in background field
<i>Display</i>	Backlit LCD
<i>Dimensions</i>	2.7 x 1.8 x 0.7 in / 69 x 46 x 17 mm
<i>Weight</i>	2.1 oz / 60 g
<i>Initialization Time</i>	< 2 seconds
<b>Environmental</b>	
<i>Operating Temperature</i>	-4 °F to 122 °F / -20 °C to 50 °C
<i>Storage/Transport Temperature</i>	-4 °F to 158 °F / -20 °C to 70 °C
<i>Relative Humidity</i>	$\leq 90\%$ RH (non-condensing)
<i>IP Rating</i>	IP65
<i>EMI/EMC</i>	Exceeds IEC 61526 requirements
<i>FCC ID</i>	2AC7P-110