



## Dosimeters and Radiation Detectors

Englo develops, designs and manufactures a wide range of digital dosimeters and radiation detectors that can be used to detect alpha ( $\alpha$ ) and beta ( $\beta$ ) particles, gamma ( $\gamma$ ) rays and X-rays and radon (Rn).

Even though  $\gamma$  rays can be most prevalent in the contaminated environment, as they have tremendous penetrating power and would require several inches of dense material (like lead) to shield them,  $\alpha$  and  $\beta$  particles can be equally, or even more, harmful to the human body, especially when inhaled or taken in with food and water. Therefore, depending on the situation and source of the radioactivity, the capability to measure all three types of radiation is important and lifesaving.

Englo radiation detectors can also detect radon (Rn). Rn is gaseous under normal conditions and can easily be inhaled. It is often the single largest contributor to an individual's background radiation dose.

Englo's dosimeters and radiation detectors can be used in professional applications for survey and monitoring, including construction, mining, military, oil and gas exploration, nuclear sites and hospital radiology departments, and they are also ideal for personal use to determine whether there are hazardous materials in cellars, walls, or anywhere in the surrounding environment.

Englo's products are easy to use and are they are highly radiation sensitive. Depending on the product, different types of radiation can be monitored and detected. Clip-on and handheld devices, or systems that can be mounted to doorframes, indoor/outdoor walls or vehicles are available.

The versatility of the product portfolio makes them suitable for different customer requirements. For instance, Englo's products were widely used in Japan after the 2011 Fukushima nuclear disaster, but they can also be used by civilians or professionals to determine levels of radioactivity in user's everyday or work environment.

### Handheld Dosimeters

Englo's handheld personal dosimeters include a clip to fasten the device to the user's clothing and allow the measurement to be taken over a longer period of time, for instance for a duration of the time spent in a potentially hazardous environment.

The dose equivalent (dose) and dose equivalent rate (dose rate) with corresponding time and date are displayed on the device's LCD display. A silent and/or audible alarm alerts the user if the radiation dose

or rate exceeds the programmable threshold level. An additional alarm indicates if the device battery is running low.

The measurement data is stored in the device memory and can later be transferred to a computer via Bluetooth interface.

**NOVA-3b: Personal Gamma, X-Ray Radiation Dosimeter and Radiation Detector**

- Handheld or clip-on
- Lightweight
- Monitors and detects  $\gamma$  or X-Ray dose equivalent and dose equivalent rate
- Audible alarm with adjustable radiation dose and level threshold
- Stores data separately for individual users
- Data displayed as easy to read graphs
- Bluetooth interface

Product	Weight (g)	Type of Radiation	Max Dose ( $\mu\text{Sv}$ )	Dose Accuracy ( $\mu\text{Sv}$ )	Max Dose Rate ( $\mu\text{Sv/h}$ )	Dose Rate Accuracy ( $\mu\text{Sv/h}$ )	Size (mm)
<b>NOVA-3b</b>	105	$\gamma$	9,999,999	1	99,999.9	0.1	195 x 58 x 18

**Handheld Radiation Detectors**

Englo’s handheld radiation detectors are lightweight and easy to use. They are good companions when visiting areas with possible threat of radiation. The devices are very sensitive and can detect even small sources of radiation.

Visual and audible alarms alert the user immediately if the radiation dose rate exceeds the programmable threshold level. Each detected event is accompanied by a beep sound; a full alarm is sound for higher radiation levels. An LCD display is programmed to display the dose equivalent rate or number of radiation pulses in CPM.

The handheld radiation detectors have a precision mode for longer and more accurate measurement per location.

For some devices the collected data is stored in the device memory and can later be transferred to a computer via USB interface.

Both personal and professional devices are available.

**RADON-3: Handheld Alpha, Beta, Gamma, X-Ray Radiation Detector**

- Highly accurate
- Lightweight
- Measures and detects  $\alpha$ ,  $\beta$ ,  $\gamma$  and X-ray radiation
- LCD displays alarms and dose equivalent rate ( $\mu\text{Sv/h}$ ) or pulse frequency (CPM)
- Audible beeps for radiation detection events with full alarm for  $>10 \mu\text{Sv/h}$  dose equivalent rate
- Precision measurement mode
- Setup and control by a single button

**RADON-4: Handheld Alpha, Beta, Gamma, X-Ray Radiation and Radon Detector**

- Highly accurate
- Lightweight
- Measures and detects  $\alpha$ ,  $\beta$ ,  $\gamma$  and X-Ray radiation and Rn
- LCD displays alarms and equivalent dose rate ( $\mu\text{Sv/h}$ ) or number of pulse frequency (CPM)
- Audible beeps for radiation detection events with full alarm for  $>10 \mu\text{Sv/h}$  dose equivalent rate
- Precision measurement mode
- Setup and control by a single button

**PAKRI-E and PAKRI-EM: Professional Handheld Alpha, Beta, Gamma, X-Ray Radiation and Radon Detector**

- Highly accurate
- Very fast radiation detection time
- Measures and detects  $\alpha$ ,  $\beta$ ,  $\gamma$  and X-Ray radiation and Rn
- Large active area helps determine source of  $\alpha$  and  $\beta$  radiation
- LCD displays alarms and equivalent dose rate ( $\mu\text{Sv/h}$ ) or pulse frequency (CPM)
- Audible beeps for radiation detection events with full alarm for  $>10 \mu\text{Sv/h}$  dose equivalent rate
- Precision measurement mode
- Data can be stored (PAKRI-EM only)
- USB interface (PAKRI-EM)

Product	Weight (g)	Type of Radiation	Max Dose Rate ( $\mu\text{Sv/h}$ )	Dose Rate Resolution ( $\mu\text{Sv/h}$ )	Size (mm)
<b>RADON-3</b>	122	$\alpha$ , $\beta$ , $\gamma$ , X-ray	999	0.01	96 x 60 x 26
<b>RADON-4</b>	122	$\alpha$ , $\beta$ , $\gamma$ , Rn, X-ray	999	0.01	96 x 60 x 26
<b>PAKRI-E PAKRI-EM</b>	1,060	$\alpha$ , $\beta$ , $\gamma$ , Rn, X-ray	99.99	0.01	240 x 128 x 80

**Stationary Radiation Detectors and Systems**

Englo’s stationary radiation detectors and radiation detection systems can be mounted to doorframes, indoor/outdoor walls or vehicles.

These products are ideal in institutions to prevent individuals from bringing radioactive elements in or out of buildings, in hospital radiation therapy units to ensure that patients don’t leave the area until it’s safe to do so, in vehicles transporting hazardous materials, and in other applications.

The radiation detection systems come with radiation detectors that can be fastened to the doors, walls or used inside a vehicle, and a control module that is placed near the security operator. For door-mounted units the system includes panels that are placed on either side of the doorframe and houses the radiation detectors. If the detection system is installed on multiple doors, the control unit displays the exact door or entrance where the radiation event was detected. The alarm light stays on until it's cleared by the operator.

The radiation detectors and systems have relay outputs that can be used to trigger an immediate action after radiation is detected, such as turn on a ventilation system in a room or raise a general alarm.

**RADON-2: Wall or Vehicle Mounted Alpha, Beta, Gamma, X-Ray Radiation Detector**

- Wall or vehicle mountable unit
- Measure and detect  $\alpha$ ,  $\beta$ ,  $\gamma$  and X-ray radiation
- Audible beeps for radiation detection events with full alarm for equivalent dose rate  $>10 \mu\text{Sv/h}$
- 3 different color LEDs for different radiation levels

**RADMONITOR: Door Mounted Gamma, X-Ray Radiation Detector System**

- Door mounted system with separate control unit
- Highly accurate
- Measure and detect  $\gamma$  and X-ray radiation
- Audible beeps for radiation detection events with full alarm for  $>10 \mu\text{Sv/h}$  dose equivalent rate
- LED alarm indicator
- Detects individual door with radiation event
- Can detect area of radiation (i.e. general radiating location on a person)

Product	Weight (kg)	Type of Radiation	Sensitivity (CPS/ $\mu\text{Sv/h}$ ) Co 60	Size (mm)
<b>RADON-2</b>	0.2	$\alpha$ , $\beta$ , $\gamma$ , X-ray	6	80 x 80 x 50
<b>RADMONITOR</b>	4.4	$\gamma$ , X-ray	46	1600 x 45 x 80 (detector panel)



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