



ThermoScientific TruDose BG Quick Help

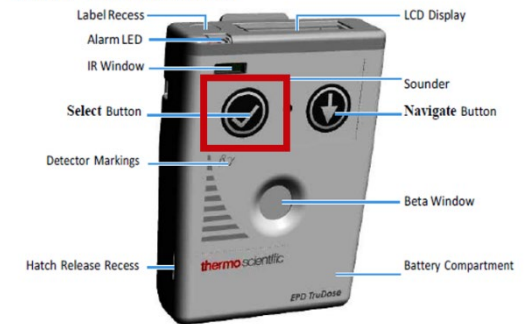
Overview

The Office of Radiation Safety (ORS) has a small supply of ThermoScientific TruDose BG units to loan out to radiation users to provide them with dose information in support of reducing their dose to levels as low as reasonably achievable. These electronic personal dosimeters (EPD)s can be used to provide you with real time information on your dose and dose rate when working with radioactive materials or radiation producing devices. **It is important to note that this is not a replacement for your normal passive dosimeter from Landauer.** Your passive dosimeter shall always be worn when working with radioactive material. The EPD is a tool that can be set with prudent alarms for total dose and dose rate to provide immediate feedback from which changes to administrative or engineering controls can be made.

To turn on EPD – Slowly press checkmark/select button 3 times

To turn off EPD – Slowly press checkmark/select button 6 times

Figure 1. Front View of the EPD



Default Data

The TruDose BG will display the following data which can be accessed by pressing the navigate/down arrow button.

- Total dose Hp(10) - ###.### mrem
- Dose rate Hp(10) - ###.### mrem/h
- Total dose Hp(0.07) - ###.### mrem
- Dose rate Hp (0.07) - ###.### mrem/h
- Margin to Dose Alarm

Hp(10) is the deep dose equivalent or the equivalent dose at 10mm below a specified body part. Hp(0.07) is the shallow dose equivalent which is often called the skin dose and is the equivalent dose at 0.07mm below the surface of the skin.

Warnings and Alarms

These EPD can be set to alert the wearer based on custom Warnings and Alarms. These can be set by the ORS upon issuing the device or modified by the wearer within the device menus. The TruDose BG are capable of annunciation through haptics, visual flash, and audible alarm. The wearer should work with the ORS to set warnings and alarms which are informative, protective, but not bothersome to the point of being ignored.

Chirp

To provide indication prior to reaching an alarm setpoint these EPDs can be set up with an optional audible chirp. The chirp is used to continuously notify the wearer of the magnitude of the radiation field present proportional to the Hp10 dose rate. As an example, setting the chirp rate to 16.6 $\mu\text{rem}/\text{chirp}$ would result in about 10 chirps per minute in a 10 mrem/hr field.

Radiological Specs

The table below shows some of the specs for the EPDs. Note that the ORS only has the “BG” units on hand, so only those specs are applicable.

Feature	Hp10	Hp07
Radiation	X, γ rays, (-G, -BG, -NG): 16 keV to 10 MeV	X, γ rays, (-G, -BG): 20 keV to 10 MeV
	Neutron (-NG) thermic to 20MeV	β rays, (-BG): 200 keV to 1.5 MeV (Averaged Beta Energy)
Dose Range	1 μSv to $\geq 10\text{ Sv}$ G, BG, NG γ 100 μSv to $\geq 10\text{ Sv}$ NG, n	50 μSv to $\geq 10\text{ Sv}$ - G X, γ rays 50 μSv to $\geq 10\text{ Sv}$ - BG β rays 500 μSv to $\geq 10\text{ Sv}$ - BG X, γ rays
Dose Overrange	$\geq 10\text{ Sv}$	$\geq 10\text{ Sv}$
Dose Rate Range	1 $\mu\text{Sv}/\text{h}$ to $\geq 10\text{ Sv}/\text{h}$ G, BG 1 $\mu\text{Sv}/\text{h}$ bis $\geq 2\text{ Sv}/\text{h}$ - NG, γ 0.5 mSv/h bis $\geq 10\text{ Sv}/\text{h}$ - NG, n	10 $\mu\text{Sv}/\text{h}$ to $\geq 10\text{ Sv}/\text{h}$ -G X, γ 1 mSv/h to $\geq 10\text{ Sv}/\text{h}$ -BG X, γ , β
Dose Rate Range for Dose	0.05 $\mu\text{Sv}/\text{h}$ to $\geq 10\text{ Sv}/\text{h}$ G, BG 0.05 $\mu\text{Sv}/\text{h}$ to $\geq 2\text{ Sv}/\text{h}$ NG γ 1 $\mu\text{Sv}/\text{h}$ to $\geq 10\text{ Sv}/\text{h}$ - NG, n	1 $\mu\text{Sv}/\text{h}$ to $\geq 10\text{ Sv}/\text{h}$ G, BG X γ , β

Other Specs

Below are other limitations of the units of which a wearer should be aware.

- Temp Range: -4°F to 122°F (may degrade display)
- Shock: 1.5 meters to concrete (it has abuse warnings)
- Humidity: 20% to 90%
- IP-65 rated
- Weight: 106g
- Typical Battery Life: 50 days
continuous (uses normal AA batteries and can be user replaced)



Further Information

These are powerful and useful devices. Among other features they can also measure pulses and be used for telemetry. The ORS can provide the entire 131-page User Handbook which goes into far more detail. Please contact the ORS at RadiationSafety@wisc.edu or (608) 262-3600.

Please see the ORS website for more information: <https://ehs.wisc.edu/labs-research/radiation-safety>