

Teletector 6112M

Telescoping Dose Rate Meter



The Teletector 6112M is a portable battery operated dose rate meter to measure photon radiation (gamma and X-radiation), and to detect beta radiation. Two GM counter tubes serve as detectors. The stainless steel telescope can extend up to four meters and its tip carries the two tubes. The tubes are placed along the axis one behind the other; a groove marks the center of each tube. The low End tube detects beta radiation and together with the high end tube the Teletector covers a dose range from 10 $\mu\text{R/h}$ to 1000 R/h (0.1 $\mu\text{Sv/h}$ to 10 Sv/h), where it automatically switches between the two tubes.

The Teletector 6112M simultaneously measures dose rate, dose, dose rate mean value, standard deviation of mean value, and dose rate maximum value. A fully graphic liquid crystal display shows all the information. Four keys allow the user to select functions from a menu, where the display always describes the current function of all keys. Three preprogrammed languages are available (English, French and German). Along with the current function, the display always shows some important parameters in a status line: battery condition, detector in use (low or high range), date, time and whether alarm thresholds have been exceeded.

The loudspeaker allows single pulse detection. In case of contamination, the speaker may easily be replaced without having to open the instrument.

A non-volatile memory stores all settings when switching the Teletector off or when replacing the batteries. The real time clock keeps date and time.

The Teletector 6112M has three operation modes the user can select:

- **6612M mode** - This mode offers the widest scope of functions.
- **6150AD mode** - This mode makes operation very similar to operating an AUTOMESS 6150AD5/6 survey rate meter. Only the 6150AD5/6 functions will be available.
- **Fire brigade mode** - In this mode the Teletector only indicates dose rate. The dose rate alarm threshold is fixed at 2.5 mR/hr (25 $\mu\text{Sv/h}$).

Features:

- Microprocessor controlled dose rate meter with telescope to measure gamma radiation and to detect beta radiation.
- Illuminated fully graphic LCD for analog and digital display of the measured value.
- Measuring quantity: Photon Dose Equivalent Rate Hx
- Safety by distance: telescope extendible up to 4 m total
- Wide dose rate range from 10 $\mu\text{R/h}$ to 1000 R/h (0.1 $\mu\text{Sv/h}$ to 10 Sv/h)
- Display units: Roentgen (R), Sievert (Sv) or Gray (Gy)
- Automatic range switching, time constants adjustable
- Simultaneous measurement of dose rate, dose, dose rate mean value
- Programmable dose rate and dose alarm threshold.
- Storage of up to 450 measurements including location, dose rate, time, duration and standard deviation of measurement.
- Serial transfer of current measurement and stored measurements to a PC. Easy processing of these data with standard Windows Software.
- Low power consumption (approx. 100 operating hours with 4 alkaline C cells).

SPECIFICATIONS

Low range detector (energy compensated)	beta gamma end window tube ZP1400 or equivalent, effective length 40 mm, sensitivity approx. 5800 pulses per μSv
High range detector (energy compensated)	gamma tube ZP1300 or equivalent, effective length 8 mm, sensitivity approx. 100 pulses per μSv
Detector selection	automatically with hysteresis: > 10 mSv/h: goes to high range < 7 mSv/h: returns to low range manual selection of detector for radiological check provided
Measuring quantity	6112M: Js (R), Hx (Sv), Ka (Gy) 6112M/H: H*(10) (Sv)
Dose rate range	analogue: ZP1400: 0.1 $\mu\text{Sv/h}$ to 10 mSv/h, ZP1300: 7 mSv/h to 10 Sv/h, digital: 0.01 $\mu\text{Sv/h}$ to 10 Sv/h
Instrumental background	< 20 nSv/h (low range tube)
Linearity of dose rate measurement	$\pm 8\%$ (calibration with Cs-137)
Dose range	10 nSv to 10 Sv (beyond 10 Sv up to 100 Sv flashing)
Energy range and angular range for photon radiation	6112M: 65 keV to 1.3 MeV (response within $\pm 30\%$ referred to Cs-137) $\pm 45^\circ$ (response within $\pm 20\%$ referred to response in preferential direction of 0° at the same energy) 6112M/H: 45 keV to 1.3 MeV and $\pm 45^\circ$ (at any energy and direction within these ranges, response is within $\pm 40\%$ referred to response at Cs-137 at 0°)
Detection of beta radiation	through end window tube ZP1400 behind the face of the tube housing (see photo on the front page). The protective cap must be removed. The beta rejection factor of the protective cap is in the order of 100.
Beta window	tube window: 2 - 3 mg/cm ² , protective foil: 6 mg/cm ² , sensitive area: approx. 60 mm ²
Relative response to beta dose rate H'(0.07, 0°)	without protective cap: Pm-147 (E ~ 60 keV): 3.5%, Kr-85 (E ~ 240 keV): 4.4%, Sr-90/Y-90 (E ~ 800 keV): 22%
Display	fully graphic LCD (128 x 128 pixels) transfective, LED back-light
Range selection	automatically
Dose rate warning	acoustically and visually
Overload	dose rates above the full range (10 Sv/h) are indicated as over-range up to dose rates of 100 Sv/h; after overload the Teletector is still functioning
Detection of single pulses	acoustically, speaker may be replaced for decontamination
Speaker loudness level	> 90 dB(A) in a 30 cm distance
Climatic conditions	temperature range: -20°C to +60°C humidity range: 0 to 95% within the specified temperature range; change of response $\pm 6\%$
Storage temperature	-40°C to +85°C
Atmospheric pressure	nominal range: 60 to 130 kPa (600 to 1300 mbar)
Geotropism	none (no change of response as a result of gravitational effects)
Teletector housing	aluminium die-cast
Telescope	stainless steel
Protection class	IP 67 according to DIN 40050 <i>if telescope completely retracted and protective cap applied</i>
Supply voltage range and power supply	4.0 to 7.0 Volt four C cells (LR14, AM2)
Battery life	approximately 100 hours with alkaline batteries (without illumination and speaker)
Dimensions	length: 970 mm (telescope retracted), 4170 mm (telescope extended), width 130 mm, max. height approx. 90 mm
Weight	2.7 kg (without batteries), 3.0 kg (including batteries)
CE compatible according to	EN 50 082-2:1995, EN 55 011:1998, ENV 50 140:1993, EN 61 000-4-2:1995

