Model 3500
Manual TLD Reader

The Model 3500 TLD reader provides a cost-effective method for measurement of absorbed radiation dose by use of TLD chips, rods, microcubes, or powders. The instrument includes a sample change drawer for inserting and removing the TLD elements, a thermoelectrically cooled photomultiplier tube with associated data acquisition circuits for reading the light emitted by the TLD element, and a linear, programmable element heating system. A separate computer with application software performs all other functions, including user interface, acquisition, and storage and retrieval of TLD data. The computer may be any Pentium unit operating on Windows ® 98 or later version.

The 3500 is intended for use in medical physics and other laboratory applications where TLD chips, rods, cubes or powder are employed, and required throughput is not high enough to justify an automated reader.

Maximum functionality is achieved at minimum cost by including only the TLD related functions such as sample changer, heating system, thermally cooled photomultiplier tube assembly and supporting data acquisition system, light source, nitrogen connector, start/stop button, and power on/off switch. A separate computer performs all other functions. This enables the user to minimize the initial investment in a TLD reader.

A user-provided IBM PC-compatible computer using Windows® operating system provides main and setup menus, read calibration, dosimeter calibration, batch and dosimeter ID, high voltage adjustment, regions of interest, heating profile, glow curve generation and display, current integral and dose, date and time, background subtract and limits, maintenance menu, high and low dose setting and alarms, reference test light and dark current limits, reader QA procedures, provision for manual element ID entry, provision for manual comment entry, and file maintenance records.

Computer minimum requirements

Pentium® IBM PC-compatible computer, 166 MHz, 32 MB RAM, 40 MB HDD space, CDROM Drive, SVGA color monitor, Windows® 98, 2000, XP, or NT 4.x, serial RS-232 port for TLD reader, parallel port for printer

Features:

▶ User friendly operation and maintenance
▶ Heating temperature capability up to 600°C
▶ Adjustable pre-read and post-read annealing cycles
▶ Dynamic range of seven decades
▶ Thermoelectric PMT cooling
▶ Automatic background subtract

Specifications

Heating method:	contact, linear with temperature accuracy better than ±1° C
Heating profile:	adjustable by menu via password protection. Up to 10 profiles stored & accessible for viewing without password. Pre-read anneal time 0 to 999s, temperature to 400°C. Linear ramp 1°C to 50°C per second, up to 400°C. Post-read anneal time 0 to 999s, temperature up to 400°C.
Cycle time:	Minimum 20s with normal timetemperature profile, menu adjustable from 20 to 300s
Units:	user selectable, nC, gU, µR, mRad, µGy, mRem, µSv
Dynamic range:	seven decades
Linearity:	<1% deviation
Stability:	Better than 1 µGy
Time/temperature profile reproducibility:	±1° C
HV short term stability:	±0.005%
Reference light stability:	<0.5% variation, short term
Dark current:	<50 µGy, 137Cs equivalent
Communication ports:	RS-232 serial port
Power:	100 - 120 or 220 - 240 VAC, 50/60 Hz
Dimensions:	32 cm w x 29 cm d x 29 cm h (12.5 x 11.5 x 121.5 in)
Weight:	25 kg (55 lbs)