Product Specifications

This versatile start-up or add-on system is ideal for small or medium capacity applications in radiation protection, medical, research and high range dosimetry.

Harshaw 4500

Dual TLD Reader and Workstation

All PC functions are external to the reader

Minimum initial reader investment

External PC can be used for other applications

Capacity to improve system performance as PC upgrades become available

The Harshaw 4500 Manual TLD Reader provides versatile readout of TLD dosimeters. It incorporates both hot gas and planchet heating to read TLD cards, chipstrates, ringlets and unmounted dosimeters. Dual photomultiplier tubes and associated electronics enable it to read cards in two positions simultaneously. A start button and four indicator lights control and monitor the operation. The Model 4500 connects via a serial interface to an external PC, as illustrated, which provides control over the setup, time-temperature profiles (TTPs), analysis and data recording. Additional applications packages are available.

Performance Highlights

- Reads 2-, 3-, or 4-element cards and extremity carrier cards using hot gas heating
- Reads single TLD chips, rods or powders using contact planchet heating
- Card elements are read in pairs. The pairs of a 4-element card are sequenced automatically
- Interfaces with WinREMS and software options such as Dose Algorithms, Glow Curve Analyzer, Chain-of-Custody and Health Physics Records System
- Easy to integrate into existing TLD systems with minimum additional training
- System hardware and software expansions can be transparent to the user, and maximize the utility of purchased items

System Specifications

Applications Software Supported

- WinREMS networks numerous Harshaw TLD readers with a common database
- Dose Algorithms meet or exceed DOELAP and NVLAP accreditation requirements for whole body, extremity and environmental applications
- Glow Curve Analyzer determines quality of Glow Curve
- Glow Curve Deconvolution segregates glow curves into their individual glow peaks
- Health Physics Record System updates and maintains dose data and wearer's files for HP Records, tracks dosimeter inventory, generates reports

Whole Body Dosimeters

TLD elements made from LiF:Mg,Ti or LiF:Mg,Cu,P material are assembled into shielded filter-holders to comprise 2-, 3- or 4-element dosimeters. Deep dose, skin dose, mean photon energy and dose to lens-of-eye or neutron discrimination can be computed using Harshaw TLD dose algorithms.

Extremity Dosimeters

- The EXT-RAD System features 1- or 2-element bar coded chipstrate dosimeters sealed into pouches and worn as cold sterilized, reusable finger rings. Bar coded EXT-RAD carrier cards are used for readout.
- The DXT-RAD System features disk dosimeters with compact, circular bar codes. The carrier card accepts up to 4 disks. Thick window dosimeters are worn in sealed, disposable finger rings which may be cold or hot sterilized. Thin window styles may be cold sterilized.

Standard Software with WinREMS

The reader is supplied complete with menu-driven software for implementation in the external PC. This includes:

- Main and setup menus
- Automatic calibration procedures for the reader, calibration dosimeters and field dosimeters
- Adjustable time-temperature profiles (TTPs)
- Read dosimeters function
- Use of neutral density filter to extend dose operating range
- Glow curve generation and display
- Current integral and dose
- Dosimeter identity via keyboard or external bar code reader
- Date and time on each record
- Up to four regions of interest
- High and low dose alarm settings
- Tests for light response and dark current limits
- Reader quality assurance procedures
- Maintenance menu
- Compliance with latest ISO standards
- Provision for manual comment entry and log file

Technical Specifications

(Dose-related figures apply to TLD-100 (LiF:Mg,Ti) material)

Manual operations: Load dosimeter, select group file, define setup, define acquisition parameters, enter dosimeter identity, start readout

System operations: Apply TTP, associate light output with dosimeter identity, store result, index to second element - pair

Processing times: For chipstrates or 2-element cards, <35 s For DXT-RAD or 4-element cards, <1 min

Dynamic range: Seven decades

Linearity: <1% deviation, above 2¥ dark current

Test Light Stability: <0.5% short term variation based on 1 standard deviation of 10 consecutive measurements.

High Voltage: <0.005% short term variation

Card identification: Keyboard entry or external bar code scanner

Radiation types and energies: Photons > 1 keV, neutrons, thermal energy to 100 MeV, betas > 70 keV

Operating Temp: 0 °C to 40 °C (32 to 104 °F)

Storage Temp: -10 °C to +60 °C (14 °F to 140 °F)

Humidity: After 24 hr exposure to 95% RH, within specs. after 6-hr recovery

Light intensity: Withstands 1000 lux with cover fitted

Dimensions: 370 H x 460 W x 500 D mm (14.75" H x 18.25" W x 20.5" D)

Weight: 35 kg (77.5 lb)

Stability: <1 µGy standard deviation for 10 reads of background

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