



## TheraPro Daily Output & Symmetry Monitor

The TheraPro is designed for daily output/symmetry/flatness/energy checks of radiation therapy treatment machines. High quality, ease-of-use and versatility are the prime objectives in the TheraPro design.

A Windows®-based control panel digitally controls the instrument. The TheraPro guides the user through setup, measurement and data management. The user proceeds through measurement sequences easily by using either the touchscreen interface or by clicking the mouse. The TheraPro stores a virtually-unlimited number of calibrations and measurements. Years of measurements can be stored on multiple machines using the internal 32 MB flash memory. Stored beam information includes date, time machine name, energy, chamber readings, flatness and symmetry. Data files can be transferred via the supplied 64 MB CompactFlash™ card and USB card reader to standard spreadsheet or word processor applications.

When compared to similar devices, the TheraPro is unique because it is expandable. With the optional Diode Dosimetry Software, diode input module and diode detectors, the TheraPro can be economically upgraded to perform as a five-channel diode dosimeter, with the same data collection and storage power as mentioned above. As such, the TheraPro does not sit idle after the daily beam output checks are done.

### Features

- ▶ Consistency, flatness, symmetry and energy monitoring
- ▶ Five ion chamber array with sixth chamber for energy constancy
- ▶ Automatically corrects for temperature and pressure
- ▶ No electronics near beam
- ▶ Controller runs on Windows®
- ▶ Touchscreen display (with optional mouse and keyboard included)
- ▶ 32 MB internal flash memory
- ▶ Includes 64 MB CompactFlash™ card and USB CompactFlash card reader for exporting data
- ▶ Flexible data transfer to any Windows application for charting, reporting, etc.
- ▶ Expandable to a five-channel diode dose monitor

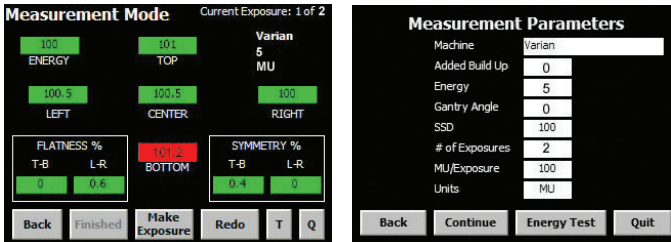
### Specifications

Repeatability .....	Within 0.5% of reading
Detectors .....	Six ion chambers, one on central axis, four chambers spaced at ±8 cm off central axis on X-Y axes, one energy check chamber
Chamber size .....	~ 0.6 cc, 1.2 cm diameter
Buildup .....	0.60 g/cm <sup>2</sup> (0.481 acrylic + 0.084 polystyrene + 0.035 Mylar®)
Range .....	~ 500 cGy (6 MV photons)
Rate limitation .....	1000 cGy/min
Deviation limit .....	User selected low and high alarm
Data link .....	15 m cable transmits data from the Data Acquisition Module to the controller
Data storage .....	32 MB internal flash memory. 64 MB CompactFlash™ and USB CompactFlash™ card reader for exporting data included.
Temp. accuracy .....	± 1° C
Pressure accuracy .....	± 1.5 mmHg
Power .....	100–240 AC, 50–60 Hz, 2 A fuse
Dimensions/Weight:	
Chamber Array .....	23.1 x 28.5 x 3.0 cm (9.1 x 11.2 x 1.2 in) 1.7 kg (3.75 lbs)
Data Acquisition Module .....	25.4 x 13.5 x 9.5 cm (10.0 x 5.3 x 3.7 in) 1.4 kg (3.1 lbs)
Controller .....	20.8 x 20.7 x 14.8 cm (8.2 x 8.2 x 5.8 in) 1.8 kg (4.0 lbs)

## TheraPro Components:

### Therapro Sample Data

Date: 2004/08/16 Time: 15:13 Machine: Test Energy: 2



#### Chamber Readings

Top: 101.2  
Left: 101.6  
Center: 101.2  
Right: 101.3  
Bottom: 101.0  
Energy: 101.3

#### Flatness

Top-Bottom: 0.1  
Left-Right: 0.2

#### Symmetry

Top-Bottom: 0.2  
Left-Right: 0.3

### Chamber Array

The chamber array contains six ion chambers that are automatically corrected for temperature and pressure. One chamber is located in the center of the 20 cm x 20 cm field and four chambers are each located 8 cm off the central axis on the X and Y axes. The signals are sent through a custom-made, molded-jacket, shielded multi-coax cable to the Data Acquisition Module located inside the treatment room. The sixth ion chamber, in a separate location, provides energy constancy information.

### Data Acquisition Module

The data acquisition module contains a six-channel electrometer that sends data to the controller located outside the treatment room via inexpensive, readily available 15 m cable. Longer cable lengths are available on request.

### Controller

The controller provides control and data storage for the TheraPro. This controller runs the TheraPro software under Windows® using either touchscreen or keyboard & mouse for operation. Data can be exported to standard spreadsheet and word processing programs for more extensive plotting, charting, and reporting of data.

### Diode Dosimetry Software (optional)

The TheraPro can be used as a one-to-five channel dose verification monitor by using optional software and simply replacing the ion chamber array with a diode input module that accepts up to five diode detectors of either polarity.

### Diode Detectors (optional)

Detectors are available for a wide range of photon and electron energies. These state-of-the-art diode detectors deliver high sensitivity and stability through the use of integral filters and buildup shields. Sophisticated mountings, noble metal doping materials and a unique design minimize temperature effects and geometry-related variations in response.

### Ordering Information

9510 TheraPro Beam Monitor Configuration includes: Chamber Array, Data Acquisition Module, Controller, 64 MB CompactFlash™ card, USB CompactFlash™ card reader, Mouse, Keyboard, Acrylic Buildup Plates, Gantry Mounting Bracket and interconnecting cables

#### OPTIONS

9510DS Dose Verification Software and Diode Input Module  
EquiDose®II Diode Detectors, listed separately

#### SPARE PARTS

9510CA3 3 m Cable, Chamber Array to Data Acquisition Module  
9510CB15 15 m Cable, Data Acquisition Module to Controller  
9510BP Buildup Plates, Acrylic, 20 x 20 x 1 cm, Set of two