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AFRICA | ASIA | EUROPE | LATIN AMERICA | MIDDLE EAST | NORTH AMERICA

# Electrometers

## CNMC Model 206

The CNMC Model 206 electrometer maintains the simplicity and ease of use of classic electrometers. Designed using state-of-the-art electronics, the Model 206 easily performs a wide variety of measurements with an accuracy and precision that equals or exceeds that of many higher priced dosimeter electrometers. The Model 206 will provide years of trouble free use:

- External feedback module interface
- 1,000 hour operation on “D” cell battery
- Less than 5 fA leakage
- 4 1/2 digit custom LCD
- Analog electrometer output
- Auto ranging over 3 decades
- Instant on — no stabilization period
- Internal electronic bias,  $\pm 300/\pm 150V$



## CNMC Model K602

Modified Keithley 602 Electrometer

- Most reliable instrument in the industry
- Replace analog display with 4 1/2 digit LCD
- Rechargeable 12V battery with wall-mount UL listed charger
- Reversible  $\pm 150/300V$  electronic bias supply
- Bias can be read on the LCD
- Connector dust/moisture cap with retaining chain
- Color coding of switch positions for ease of use
- Coulomb scale calibration to  $\pm 0.1\%$
- Complete QA checkout at CNMC



# Electrometers

## CNMC Model 10

- Most economical dosimeter/electrometer available
- Accurate and reproducible measurements
- Suitable for diagnostic radiology and radiation therapy applications
- Internal static bias supply, full and half voltage
- 9V battery operation, externally accessible
- Compact and lightweight



## CNMC Model E2000 Dual Channel Electrometer

- High accuracy, good resolution
- Measures dose and dose rate simultaneously
- Unlimited ion chamber parameter library
- Air density correction
- AC or Battery Operation

## Beam Sentry 2 — Daily Output Constancy Monitor

The Beam Sentry 2 provides a convenient and economical means of performing daily radiation output constancy checks of radiation therapy treatment machines.

- Sealed ion chamber
- Reversible detector
- Remote operation using a standard triax extension cable
- Powered by a single 9V battery
- Electronic bias — full and half voltage



# Ion Chambers

## PTW Farmer™ ION CHAMBER

- Classic 0.6 cc Farmer type chamber
- Waterproof
- Fully guarded
- Excellent long term stability
- Ideal for TG-51 measurements



## Beam Plotting ION CHAMBER

- Designed for photon and electron beam scanning
- Waterproof
- Fully guarded
- Rigid stem for positioning when scanning
- 0.125 cc and 0.3 cc vented



PTW Farmer is a registered trademark of PTW-New York and PTW-Freiburg.



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# Ion Chambers

## Roos™ PLANE-PARALLEL ION CHAMBER

- Reference chamber for electron dosimetry
- Waterproof
- Fully guarded
- Wide guard ring design for negligible polarity and perturbation effects
- Characterized for TG-51



## Advanced Markus™ PLANE-PARALLEL ION CHAMBER

- Developed for electron dosimetry
- Waterproof
- Fully guarded
- Wide guard ring design for negligible polarity and perturbation effects
- Characterized for TG-51



Roos and Markus are registered trademarks of PTW-New York and PTW-Freiburg.



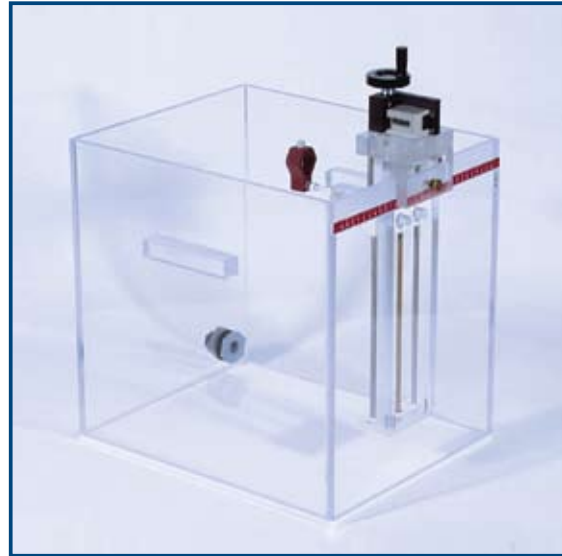
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# Calibration Water Phantoms

## CNMC WP-3040 and WP-3840 WATER PHANTOMS

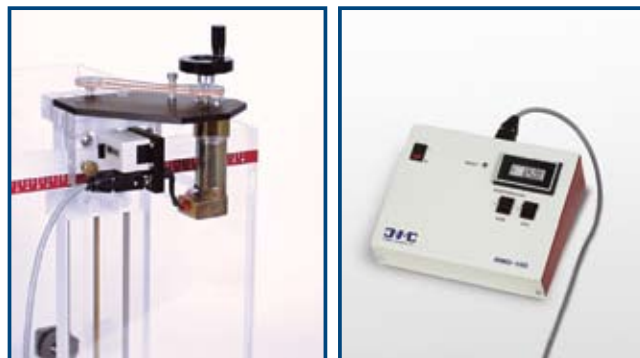
The CNMC WP-3040 and WP-3840 are calibration-grade water phantoms with a convenient-to-use manual ion chamber depth positioning system. The water tanks are constructed of 3/8 inch acrylic, have side mounted handles for easy transport, and have a drain with a ball valve.

- Precision tank construction
- Compatible with TG-51 protocol
- Depth precision is 0.1 mm
- Optional remote motor drive
- Side mounted handles for easy transport



## CNMC Model RMD-100-5 REMOTE MOTOR DRIVE

- Controls the position of the detector in the WP-3040 and WP-3840 from the console of the treatment machine
- Positioning accuracy  $\pm 0.5$  mm
- Easy bolt-on installation



Left: Motor drive assembled to the depth drive  
Right: Remote control/display module



# Daily QA Monitor

## CNMC TheraPro — DAILY OUTPUT AND SYMMETRY MONITOR

TheraPro is designed to quickly and easily perform daily output checks on your treatment machine. High quality, ease of use and versatility are the prime objectives in the TheraPro design:

- Quickly checks beam:
  - Beam consistency
  - Flatness
  - Symmetry
  - Energy monitoring
- Five ion chamber array with sixth chamber for energy consistency
- Automatically corrects for temperature and pressure
- Electronics are not near the beam
- Controller runs on WINDOWS®
- Touch screen display with optional mouse and keyboard
- 32 MB internal flash memory
- Includes 64 MB card and USB card reader for exporting data
- Flexible data transfer to any WINDOWS® application for charting, reporting, etc.
- Expandable to five-channel diode dose monitor



# Calibration, Repair and Modification Services

## CNMC ADCL Calibration Services

When you schedule your system for calibration through CNMC, we will thoroughly inspect your dosimeter, ion chamber and extension cable, and report on conditions requiring attention. This service is provided to you at no additional charge.

CNMC will then schedule your equipment to be calibrated at an AAPM ADCL:

- K&S Associates, Inc.
- University of Texas MD Anderson Cancer Center
- University of Wisconsin

## Dosimeter Modifications

CNMC can modify and significantly improve the following dosimeters:

- Keithley 614 and 602
- Capintec 192
- Victoreen 500

## Dosimeter Repair

CNMC can generally repair and significantly improve your dosimeter/electrometer regardless of the manufacturer. Repairs at half the cost and half the turn-around time are common at CNMC.

## Ion Chamber Repair

Same day repairs are possible at CNMC — typical chamber repairs include:

- Thimble replacement (non-waterproof types)
- Connector repair or replacement
- Correcting leakage condition
- Resheating waterproof ion chambers

## Dosimeter Repair

CNMC manufactures custom lengths of low-noise triaxial or coaxial cables with your choice of connectors. CNMC will repair or modify your extension cable. Repairs and modifications include:

- Connector repair or replacement
- Conversion of any style connector: BNC, TNC, PTW-M, MDH, etc.
- Installation in a cable reel



# CNMC Physics Accessories

## Ion Chamber Extension Cables



- Low noise — less than 5 fA leakage
- Triaxial or coaxial cables
- Custom lengths
- Custom connectors

## Cable Reels



A great convenience when winding and storing ion chamber extension cables

## Barometers



Left: DB 7059 Digital Barometer  
Right: AB 1310 Aneroid Barometer

## Thermometers



DT-3478 and DT-4339 Digital Thermometers



T1, T2, T3, T4 and T5  
Mercury Glass Thermometers



# CNMC Physics Accessories

## CONNECTOR ADAPTERS



### **3BM-3TFM TNC to Triax BNC**

Converts a triax BNC electrometer input to TNC. Used to connect an NE TNC terminated ion chamber to a CNMC, Victoreen or Keithley electrometer. Male BNC, female TNC with a threading ring.



### **3BF-3TMF Triax BNC to TNC**

Converts a TNC electrometer input to a triax BNC. Used to connect a triax BNC terminated ion chamber to a Capintec, NE, or Wellhofer electrometer. Female BNC, male TNC with threaded ring.



### **3BFFC Triax BNC, female/female**

Converts triax BNC male to triax BNC female. Both ends are identical, female insert with two lugs.



### **3BM-2BF Triax BNC to Coax BNC**

Converts a triax BNC electrometer input to a coax BNC. Allows connection of a coax-terminated diode detector to a CNMC, Victoreen or Keithley electrometer. The electrometer bias should be disabled to avoid electrical shock hazard. Male triax, female coax.



### **3BMMC Triax BNC, male/male**

Converts female BNC connector on a 30-202 Memorial chamber or early Capintec PR-06C to a triax male for use with a triax BNC extension cable. Both ends are identical, having male insert with a two-slot body.



### **3BFFC-P Triax BNC, female/female**

Converts triax BNC male to triax BNC female. It can be mounted to a wall panel as a feed-through in conduit cable installations. Both ends are identical; female insert with two lugs.



### **3BM-3TFF TNC to Triax BNC**

Converts a Capintec or old-style Wellhofer TNC terminated ion chamber to a triax BNC male for use with a triax BNC extension cable. Male BNC, female TNC with threaded body. (Not available in a single piece adapter.)



### **2BFFC-P Coax BNC, female/female**

Converts coax BNC female, for panel mount feed-through applications. Both ends are identical.

**2BFFC** Converts coax BNC male to coax BNC female, for in-line application. Both ends are identical.



# CNMC Physics Accessories

## ACRYLIC AND POLYSTYRENE PHANTOM MATERIALS

Acrylic and polystyrene phantoms are typically 25 x 25 cm plates of various fractional thicknesses. Plates are stacked for measurements at various depths. A plate with a chamber cavity drilled at 1 cm from the surface is available for various chambers:

- Output calibrations
- Energy checks
- Electron beam calibration
- Film dosimetry
- Plates made from other water-equivalent material are also available



## Ion Chamber Waterproofing Kits

A variety of kits have been developed by CNMC to waterproof a Farmer-type ion chamber for use in a water phantom. Our unique design has a distinct advantage over rubber or latex sheathes by eliminating the possibility of talcum powder contamination:

- Economical — replace only the inexpensive tubing
- Easy insertion and removal of chamber
- Assured atmospheric communication
- Compatible with TG-51 protocol

