

Physics Workstation PC-Based Modular Electrometer

The CNMC Physics Workstation represents an evolutionary step in medical physics instrumentation. This modular system can combine several commonly-used instruments into one compact package.

The basic system consists of a single- or dual-channel electrometer module and a base module. The precision, dosimetry-grade electrometer offers exceptional performance as a general-purpose medical physics electrometer. The base module provides the computer interface and supplies power to all instrument modules. With the Physics Workstation, you add instruments simply by stacking modules and installing software.

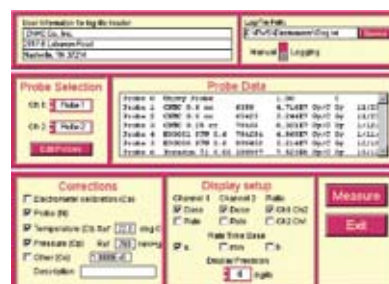
Modules are currently available for single- and dual-channel electrometry, temperature/pressure sensing and brachytherapy. Additional modules for diode dosimetry and accelerator QA will be available in the near future.

All Physics Workstation modules are software controlled. Data is collected, displayed, processed and stored according to user preferences. The Physics Workstation eliminates the need to write down or even download data, since data is always stored automatically on the computer's hard disk for easy recall. All data logging files are in a standard ASCII text format for effortless importing by any word processing or spreadsheet application.



Features:

- ▶ Single- or dual-channel precision electrometer
- ▶ Auto reset feature, timed or preset time
- ▶ Temp./pressure measurement and correction
- ▶ LDR and HDR brachytherapy
- ▶ PC control & display (Windows®)
- ▶ Logs data automatically
- ▶ Flexible data transfer to any Windows® application for charting, reporting, etc.



PWS Technical Information

Electrometer module specifications

Input connectors:	triax BNC on rear panel
Chamber voltage:	-300 to +300 V in 150 V increments, accurate to $\leq 1\%$
Zero drift:	1 fA (typical)
Leakage:	≤ 10 fA for all values of accumulated charge
Nonlinearity:	0.1% (typical, 0 to ± 100 nC)
Update interval:	Hardware: 50 ms
Display:	0.5 s (typical)
Warm-up period:	15 minutes (typical)
Factory calibration:	set to 1.000 "C"/C within $\pm 1\%$
ADCL calibration:	special software functions allow AAPM accredited calibration labs to adjust calibration factors from their nominal factory settings
Operating temperature:	10 to 40° C
Storage temperature:	-10 to 50° C
Power:	+5 VDC at 3 A, +/-12 VDC at 0.5 A and +24 VDC at 2 A supplied by PWS base module through bus connector
Dimensions:	15.4 cm W x 4.2 cm H x 19.0 cm D (6.1 in x 1.7 in x 7.5 in)
Weight:	0.8 kg (1.8 lbs)
Charge measurement	
Method:	Input charge is integrated by a capacitor-feedback electrometer with rapid automatic reset. A maximum charge between resets of 340 pC is sampled by a 12-bit ADC. Charge counts integrated by the capacitor are summed to a 32-bit accumulator at each reset. The amount of charge per count is calibrated at the factory and can be adjusted by special software functions.
Resolution:	0.0002 nC (typical) (0.002 pC for HDR)
Repeatability:	± 0.3 pC (typical)
Range:	0.0002 E-9C to 1.0000 E123C
Elapsed time counter:	0 to 10,000 minutes in 1 s increments, accurate to 0.5 s
Timed integration:	from 1 s to 10,000 minutes, accurate to 50 ms
Current measurement	
Method:	The amount of charge integrated during each software update interval is divided by the duration of the update interval.
Resolution:	0.0001 nA (typical, 5 s average)
Repeatability:	± 0.0001 nA (typical, 5 s average)
Range:	± 40 nA (± 400 nA for HDR)

Note: All technical specifications subject to change without notice.

All Physics Workstation systems include AC transformer, bus connectors, serial cable and software.

*Temperature/pressure module includes temperature probe with a 50 ft cable.

Base module specifications

Serial communication:	RS-232, 9-pin D connector, 9600 baud
Electronic connections:	proprietary power/data bus linked by specially designed bus connectors
Mechanical connections:	modules are designed to lock together when bus connectors are attached
Power requirements:	AC transformer (UL listed)
Input:	120 VAC, 60 Hz, 21 W
Output:	18 VAC at 900 mA (other input voltages available)
Power outputs:	base module supplies +5V DC at 2 A, ± 12 VDC at 0.5 A, and +24 VDC at 2 A to a maximum of four (4) PWS modules through power/data bus connectors
Line protection:	power supply outputs and AC transformer protected by a 2 A circuit breaker
Operating temperature:	10 to 40° C
Storage temperature:	-10 to 50° C
Dimensions:	15.4 cm W x 5.5 cm H x 19.0 cm D (6.1 in x 2.2 in x 7.5 in)
Weight:	1.0 kg (2.3 lbs)

Base module specifications

Recommended:	Pentium® 166 MHz or better processor, 32 MB or greater RAM, 800 x 600 color display, 2 GB hard disk, 1.44 MB floppy drive, serial port, PS/2 mouse, enhanced keyboard, Windows® 95/98/2000/Me/NT/XP
Minimum:	Pentium® 100 MHz, 16 MB RAM, 800 x 600 color display, 20 MB free hard disk space, 1.44 MB floppy drive, 16550 UART serial port, PS/2 mouse, enhanced keyboard, Windows® 95

Ordering information

6510	1-channel electrometer system
6515-TP	1-channel electrometer system with temperature/pressure module*
6520	2-channel electrometer system
6520-TP	2-channel electrometer system with temperature/pressure module*
6515	Brachytherapy system
6515-TP	Brachytherapy system with temperature pressure module*



Best®

healthcare for everyone

865 Easthagan Drive, Nashville, Tennessee 37217 USA

phone 615 391 3076 800 635 2662 fax 615 885 0285 www.cnmcco.com

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