



## Model 206 Dosimetry Electrometer

The CNMC Model 206 dosimetry electrometer maintains the simplicity of classic electrometer styling while utilizing contemporary design and state-of-the-art electronics. The Model 206 is simple to operate. All controls are located on the front panel. The nomenclature is clear and concise. The value is displayed in easy-to-read 0.7 inch digits. A tilt bail is provided for optional viewing angles. The Model 206 has a broad range of operation and can accommodate any size ion chamber. The versatility of the Model 206 stems from its innovative modular design. The amplifier feedback element is contained in an external module. This module is removable and can be exchanged with any number of modules. Each module changes the measurement features of the electrometer. In this way, a single electrometer can be configured to satisfy a wide range of applications. By pairing an ion chamber with a specific module, full calibration of all chambers on a single electrometer can be achieved.

The Model 206 is designed for long term reliability. Leakage currents as low as 1 fA are achieved by the selection of special components and the implementation of proprietary production techniques. All feedback elements are extensively evaluated to insure long-term stability. Standard "D" cell batteries provide both 1000 hours of continuous operation and around-the-clock power to the electrometer circuit. The instrument chassis and case employ the simplicity of classic electrometer styling, yet are rugged enough to protect the delicate system within. This combination of simplicity and versatility makes the Model 206 one of the most economical electrometers on the market today.

### Features:

- ▶ External feedback module interface
- ▶ 1,000-hour operation on "D" cell batteries
- ▶ Bias select switch  $\pm 300$  V,  $\pm 150$  V, external, off
- ▶ Less than 5 fA leakage current
- ▶ Electrometer feedback module
- ▶ 4-1/2 digit custom LCD
- ▶ Internal electronic bias ( $\pm 300$  V /  $\pm 150$  V)
- ▶ A/D voltage reference – band gap diode
- ▶ Analog electrometer output
- ▶ Auto-ranging over 3 decades
- ▶ Instant on – no stabilization period

### Removable feedback module:

- ▶ User selectable feedback element:
  - provides probe calibration
  - sets measurement range
  - selects appropriate display units
- ▶ Triax BNC or TNC input connector
- ▶ Calibration adjustment



### Specifications

- Display: ..... 0.7 in, 4-1/2 digit custom LCD, with floating decimal point, display hold and low battery indications
- Display update: ..... 1s
- Accuracy: .....  $\pm 0.2\%$  of full scale
- Repeatability: .....  $\pm 0.03\%$  of full scale
- Linearity: .....  $\pm 0.05\%$  of full scale
- Stability: ..... long term (1 yr)  $\pm 0.1\%$  of full scale
- Units: ..... nC, pC, nA, pA (function of feedback module)
- Input leakage current: ... less than 3 fA
- Preamp output: ..... 2 V; banana jack (back panel) 10 k $\Omega$
- Front panel controls:
  - Power switch: ..... on/off/bias
  - Bias selector: ..... off/-150 V/-300 V/+300 V/+150 V/ ext.
  - Zero adjust: ..... 10 turn pot,  $\pm 5$  mV
  - Display hold: ..... momentary contact
  - Increase sensitivity: ... one decade/contact
  - Reset: ..... momentary and twist-to-lock (<1s discharge)
- Internal bias: ..... electronic,  $\pm 300$  V and  $\pm 150$  V
- External bias: ..... via banana jacks on back panel
- Ranges: ..... unit powers up in high range with manual increase in sensitivity (decrease of sensitivity is automatic)
- Electrometer range: ..... with appropriate module selection, the 206 is capable of the following:
  - Current: ..... 0.001 pA to 1999.9  $\mu$ A
  - Charge: ..... 0.0001 pC to 19999 nC
  - Standard range: ..... 200 nC module, 0.0001 to 199.99 nC
  - Exposure/dose: ..... determined by multiplying the above by the chamber calibration factor
- Module storage: ..... rear panel compartment holds up to three accessory feedback modules
- Power: ..... six "D" cell batteries, 1000 hours of continuous operation (access panel on bottom)
- Dimensions: ..... 21.3 cm high, 13.2 cm wide, 20.1 cm deep (8.4 in x 5.2 in x 7.9 in)
- Weight: ..... 4.5 kg (10 lb)

### Removable feedback modules

A standard 200 nC feedback module with a triaxial BNC connector, optimized for beam calibrations with a 0.6 cc Farmer-type ionization chamber, is supplied with each Model 206 electrometer. It allows the Model 206 to provide readings of 0.01 - 199.99 nC in high, 0.001 - 19.999 nC in medium, and 0.0001 - 1.9999 nC in low range, making it usable with chamber volumes 100 times smaller than 0.6 cc for comparable exposures. The standard module may be substituted with another module at no additional cost, or additional extra-cost feedback modules may be added to suit multiple applications. The following table lists optional feedback modules. Triaxial BNC input connector is standard. TNC is available on request.

Model	Units	Ranges (minimum to maximum)		
		High (nominal)	Medium	Low
206-108	nC	1 - 20,000	0.1 - 1,999.9	0.01 - 199.99
206-109	nC	0.1 - 2,000	0.01 - 199.99	0.001 - 19.999
206-110	nC	0.01 - 200	0.001 - 19.999	.0001 - 1.9999
206-111	pC	1 - 20,000	0.1 - 1,999.9	0.01 - 199.99
206-112	pC	0.1 - 2,000	0.01 - 199.99	0.001 - 19.999
206-113	pC	0.01 - 200	0.001 - 19.999	.0001 - 1.9999
206-127	nA	0.1 - 2,000	0.01 - 199.99	0.001 - 19.999
206-126	nA	0.01 - 200	0.001 - 19.999	.0001 - 1.9999
206-121	pA	0.1 - 2,000	0.01 - 199.99	0.001 - 19.999
206-120	pA	0.01 - 200	0.001 - 19.999	.0001 - 1.9999