



## VERSATILE, ACCURATE

Reference grade instrument for use in a wide range of radiation therapy applications, including external beam, low dose, high dose, intravascular brachytherapy, diagnostic x-ray, and mammographic x-ray.

# MAX 4000 ELECTROMETER

### ● AUTOMATIC THRESHOLD DETECTION

Already one of the easiest and most widely used electrometers, threshold detecting trigger mode makes the MAX 4000 even more versatile. The MAX 4000 automatically detects the start and stop of radiation exposure by measuring the current crossing predetermined limit thresholds. This allows you to take sequential measurements without the need to manually reset the electrometer.

### ● LOW NOISE AND STABLE REPEATABILITY

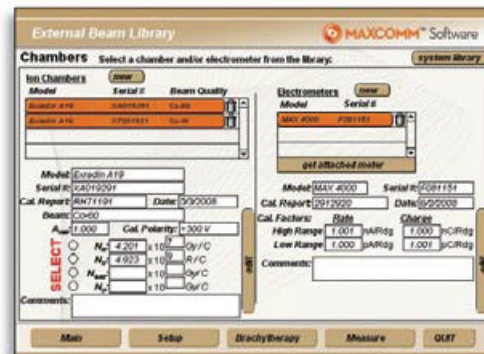
A powerful digital microprocessor provides 0.1% repeatability and exceptionally low leakage of less than 1 fA. The built-in digital filter nearly eliminates the effects of noise, resulting in stable and exact measurements.

### ● POWERFUL DATA MANAGEMENT

Connect the MAX 4000 to a PC and use the included MAX COMM™ Software for fast, comprehensive control of dose and dose rate measurements, chamber libraries, remote operations, data logging, and many other advanced features.

### ● **NEW!** WIDE RANGE, SUPERIOR SENSITIVITY

0.001 pA to 500.00 nA rate range  
0.01 pC to 999,999 nC charge range



External Beam Measurements (top) and External Beam Library sample screen captures from MAX COMM Software

## Features

### Powerful Measurement Capabilities

- Triggered collection with automatic start, stop and reset of charge collection based on specific threshold detection levels for flexibility needed in clinical and research applications
- Timed collection from 0-600 seconds and continuous mode provide additional charge collection options
- Built-in digital filter virtually eliminates the effect of noise, resulting in stable and exact measurements

### Simple, Intuitive Interface

- **NEW!** Large, easy to read backlit LCD display is visible from a distance and in low light
- Simultaneous display of amp, coulomb, and collection time minimizes the need to switch screens
- User activated, automatic zeroing function

### MAX COMM Software

- **NEW!** Automatic acquisition of a series of timed charge collections
- **NEW!** Continuous collection of rate measurement points over a user defined interval with a choice of two frequencies — Useful for basic beam profiling
- Chamber library allows a chamber or system factor to be applied, facilitating calculation & read out of integrated dose and dose rate in Gy, Sv, R, Gy/min, Sv/hr, R/min, or Gym<sup>2</sup>/hr
- Apply temperature and pressure correction to measurements
- Export data in a Microsoft® Excel compatible format

### Measure with Confidence

- Designed to exceed AAPM, ADCL and reference grade instrument specifications
- Designed to meet or exceed requirements of IEC 60731 for reference grade instruments

## Applications

- **NEW!** Extended bias settings of  $\pm$  0-450 VDC for TG-51 and 1/3 ratio IAEA TRS-398 measurements
- External Beam IMRT – The MAX 4000 provides quick measurements of even the smallest volume ion chambers, such as those used in IMRT or stereotactic radiosurgery.
- LDR or HDR Brachytherapy – Exceptional sensitivity and a wide range make the MAX 4000 the electrometer of choice for brachytherapy measurements. It provides quick measurements of low activity isotopes. A 0.27 mCi iodine seed, measured in the HDR 1000 Plus Well Chamber, gives a typical signal of 1.458 pA. The MAX 4000 also measures 10 Ci and higher iridium sources
- Other Applications – The MAX 4000 is ideally suited for ion chambers typically used for data acquisition in water phantoms and with chambers used for quality assurance tests. The versatile MAX 4000 works exceptionally well with mammographic, conventional radiology, and CT scanning applications

## MAX4000 (REF 90015) SPECIFICATIONS

### THREE MODES

RATE: *Low Range* 0.001 pA – 1000.00 pA, 1 fA resolution  
*High Range* 0.001 nA – 500.00 nA, 1 pA resolution

CHARGE: *Low Range* 0.01 pC – 999,999 nC, 10 fC resolution  
*High Range* 0.01 nC – 999,999 nC, 10 pC resolution

COMBINED: Accumulated charge and current readings are displayed simultaneously

### CHARGE COLLECTIONS

TRIGGER: Automatic start, stop, and reset based on user defined thresholds (*Start*: 0.02 – 9.99 pA; *Stop*: 0.01 – 9.98 pA)

TIMED: User set duration (*Range*: 0 – 600 seconds; *Increment*: 15 seconds; *Resolution*: 1 second)

CONTINUOUS: Unlimited duration with manual stop

RANGE SWITCHING User selectable — High or Low

### REPEATABILITY

SHORT TERM:  $\pm$  0.1%  $\pm$  1 count

LONG TERM:  $\pm$  0.2% (maximum change over two years)

SIGNAL SETTling TIME (typ): *Low Range*: 12 sec.; *High Range*: 3 sec.

LINEARITY  $\pm$  0.06% typical for all rate and charge settings

CONFORMITY  $\text{CE}$  93/42/EEC

ZERO DRIFT < 1 fA @ STP

DISPLAY Backlit LCD, 2 x 20 with 5/16" characters

INPUT BNC two lug, triaxial connector

BIAS VOLTAGE Nominal  $\pm$  300 volt bias

5 USER SETTINGS: – 450, –300, – 150, 0; 150, 300, 450 (VDC)

ACCURACY:  $\pm$  0.3 volt

POWER 100-240 VAC, 0.5 A max, 50/60 Hz input to external power supply, 9 VDC, 1.7 A power supply output to electrometer input, UL/TUL listed power supply; internal battery: 8 hrs per charge

ZEROING Automatic zero function, user activated

OUTPUT Isolated RS-232; bidirectional 19,200 baud rate; 8 data bits; no parity; 1 stop bit; compatible with Argus QC4 or user provided software

DIMENSIONS *Height*: 2.75 in, 7 cm *Width*: 8.24 in, 22.2 cm  
*Length*: 9 in, 23 cm *Weight*: 3.0 lbs, 1.4 kg

Specifications subject to change without notice.

ORDERING  
INFORMATION

MAX 4000 ELECTROMETER REF 90015