



## DAYBREAK NUCLEAR AND MEDICAL SYSTEMS, INC.

50 Denison Drive Guilford CT 06437 USA

Phone +1 203.453.3299 Fax +1 203.458.9395

### MODEL 583 INTELLIGENT ALPHA COUNTER

The 583 low-level alpha scintillation counter is self-contained with PMT, preamp, shaping amplifier, discriminator, and high voltage power supply, plus a microprocessor-controlled data logger and printer. In addition to the total events counter, the 583 counts slow pairs (with an aperture of 20 to 400 msec for determination of U/Th by the method of Turner *et al.*, Brit. J. Radiology, 31, 397 (1958)), and fast pairs in the 0-4 msec range. (Huntley, D.J. and Wintle, A.G., Can. J. of Earth Sci., 18, 419 (1981)) The 583 counts for up to 1500 periods of 1, 2, 4, or 8 ksec duration, and computes average count rate and uranium and thorium concentrations if desired. The charge-sensitive preamp of this counter is highly immune to line and RF noise. Note that the original modular packaging is still available for those with free slots left in their bins.



### SPECIFICATIONS

Amplifier: sensitivity overall 50 mV/pcoul. Unipolar gaussian pulse out ( $\geq 27$ sec).

Integral discriminator: 0.05-5V threshold (10 turn pot)

HV power supply: +600-1600V at 0.5 mA, set by front panel 10 turn pot. ON/OFF switch with interlock switch actuated by PMT housing cover. LED indicator on when HV on.

Counter: 4-digits, one display shows 8 data registers in rotation (annunciator LEDs for ID)

PMT: Electron Tubes (EMI) 9256B 50 mm 10-stage PMT

Printer: thermal, 20 characters/line

Power: 115/230 VAC 50-60 Hz, 10W (external CE-marked power supply)

Physical: 25 cm high, 10.7 cm wide, 27cm deep, weight 2.5 kg.

NOTE: There is no power on/off switch on the 583.

### **FEATURES OF INTELLIGENT DATA LOGGER**

Prints TOTALS, SLOW PAIRS, FAST PAIRS every 1, 2, 4, or 8 ksec, with several print modes

Immune to power failure because of non-volatile data memory and auto-restart at point of failure.

10-year minimum memory retention time (lithium battery back-up).

Stores data from up to 1500 counting periods.

Computes average count rates and errors.

Deletes noisy records (>2 standard deviations out from average) and re-computes.

Computes trend of count rate for indication of radon build up.

Computes uranium and thorium count rates and concentrations with errors.

Calibration mode for counter set up, counts for 100, 200, 400, or 800 seconds and prints TOTAL events.

Serial communications with host computer for down loading data and current status.

### **CONTROLS**

→ (ROLL key): Cycles the 4-digit display through display registers. LEDs indicate which register displayed.

Display shows cumulative counts, or counts within current counting period (all decimal points lit)

COUNT: Begins or resumes a count. LED lit when active.

CAL: Begins a calibration count. LED lit when active.

STOP/RESET: Ends the count and prints results.

PAPER FEED: Feeds printer one line.

PAUSE: Stops count temporarily (printing of intermediate results if pressed a second time).

HV: Enables HV power supply, subject to overrule by interlock on PMT housing.

HV LED is on when HV is on, blinks when HV interlock is open and HV enabled (HV is off)

HV control: 10T pot sets HV in the range +600-1600V.

DISCRIMINATOR: 10 turn pot sets discriminator threshold level. (0-5V)

POWER: +5, +/-12 V DC from desktop power supply

**REAR PANEL**

PARAMETER DIP SWITCH: 8 bits, selecting count and calibration periods, print mode

AMP OUT: BNC

RESET SWITCH: resets microprocessor for initialization.

SERIAL PORT: RS-232, 9600 baud (7 data bits, 2 stop bits, no parity), RJ-45 X 2 bridged, RS-485 optional.

POWER IN: 6-pin circular DIN