



FD223a

Dual Channel Differential Electrometer



- **High input impedance ($10^{15} \Omega$)**
- **Differential (A-B) output**
- **Low noise and wide bandwidth**
- **Electrode resistance test circuitry**
- **Probe test circuitry**
- **Driven guard shield**

The **FD223a** is a dual channel differential, high impedance amplifier/electrometer designed specifically for electrochemical measurements using ion specific (K^+ , Na^+ , $C1^-$, etc.) or pH electrodes.

The instrument is very stable, drift free, and features a built in provision for measuring and adjusting input leakage current. DC levels may be independently adjusted for each probe channel.

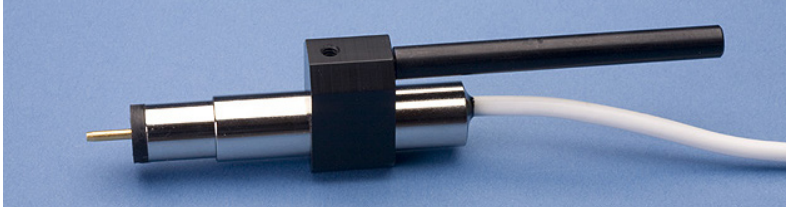
The ability to locate the sensing probes directly at the measurement site overcomes the noise introduced by the

long cables usually needed to bring the measured potential to the instrument. Signal-driven guards at the probe input maintains the specified high resistance and reduces the stray capacitance of the probes.

Careful design, coupled with quality component selection, particularly in the headstage, results in an excellent amplifier with low noise and wide bandwidth. The **FD223a** will faithfully reproduce the measured signal.

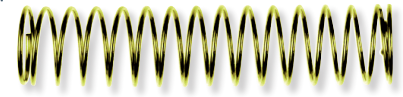
FD223a

Dual Channel Differential Electrometer



To reduce the noise and stray capacity even farther the probe housing includes a signal driven guard. A portion of this inner driven shell is exposed at the probe tip allowing a spring shield to be extended over the electrode holder and microelectrode.

The amplifier features a probe test port that permits testing of the electrode test feature and setting of the probe leakage current, (IG). A standby mode is included and should be used when attaching glass microelectrodes or electrode holders to the probe input. While in the standby mode the voltage at the probe input is clamped near zero volts thus protecting the input.



#2547 Driven Guard Shield

SPECIFICATIONS

INPUT IMPEDANCE	$> 10^{15} \Omega$, shunted by 0.5 pF
INPUT CAPACITANCE	1 pF, nominal
LEAKAGE CURRENT	75 fA max
GAIN	$1.000 \pm 0.1\%$
OUTPUT RESISTANCE	50 Ω
INPUT SWING VOLTAGE	± 10 V
RISE TIME (10 TO 90%)	5 μ s, small signal
NOISE (0.1 HZ TO 10 KHZ)	$< 100 \mu$ V p-p, input shorted
BASELINE STABILITY	± 0.1 mV/day
POSITION CONTROLS RANGE	± 600 mV
PHYSICAL DIMENSIONS	Case: 8.8 x 21.0 x 17.5 cm (H x W x D) Probe: 12.7 x 65 mm (D x L) with 1.8 m cable
POWER	90-265 VAC, 50/60 Hz, 10 VA
PROBE HANDLE	6.5 x 65 mm (D x L)
SHIPPING WEIGHT	2.5 kg
OPERATING CONDITIONS	Equipment is intended to be operated in a controlled laboratory environment. Temperature: 0-40 °C; altitude: sea level to 2000 m; relative humidity: 0-95%.



WORLD PRECISION INSTRUMENTS

USA: International Trade Center, 175 Sarasota Center Boulevard, Sarasota FL 34240-9258 USA
Tel: 941-371-1003 • **Fax:** 941-377-5428 • **E-mail:** wpi@wpiinc.com • **Internet:** www.wpiinc.com

UK: 1 Hunting Gate, Hitchin, Hertfordshire SG4 0TJ England • Tel: 44 (0)1462 424700 • E-mail: wpiuk@wpi-europe.com

Germany: Zossener Str. 55, 10961 Berlin, Germany • Tel: 030-6188845 • Fax: 030-6188670 • E-mail: wpide@wpi-europe.com

China & Hong Kong: Rm 29a, No8 Donfang Rd., Pudong District, Shanghai 200120 PRC • Tel: +86 688 85517 • E-mail: ChinaSales@china.wpiinc.com

Brazil: Conselheiro Nabias, 756 sala2611, Santos-Sao Paulo 11045-002 Brazil • E-mail: info@brazil.wpiinc.com