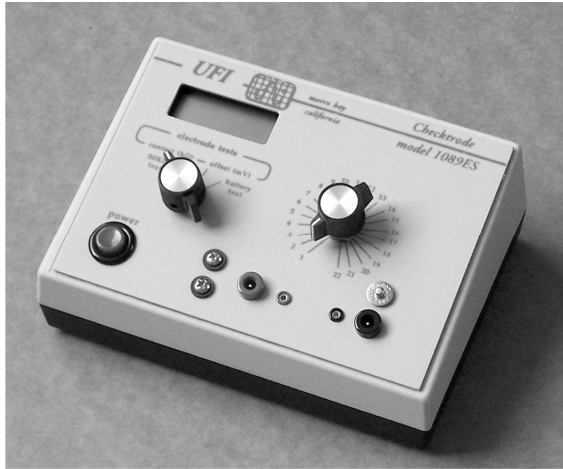


# MODEL 1089ES CHECKTRODE®



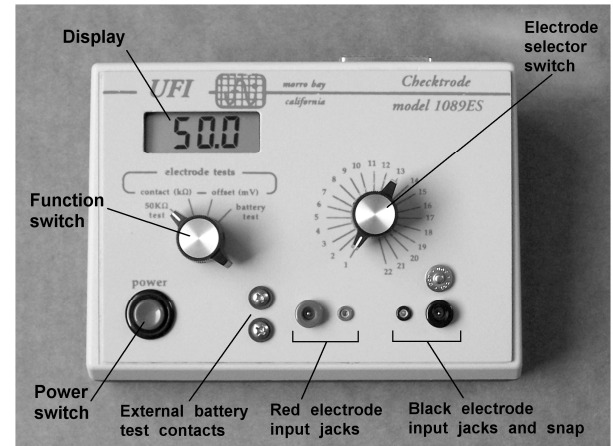
UFI  
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## Introduction

The Model 1089ES Checktrode® may be used for the following purposes:

- To test integrity of electrode/skin contact in physiological and/or bio-electrical data acquisition systems;
- To test integrity of electrode leads in such systems;
- To test functionality of electrodes themselves;
- To test external batteries in physiological monitoring systems.

## Controls and connectors



### Power switch

- Push button to turn on power.
- Model 1089ES remains on for about 3 minutes, then turns off automatically.

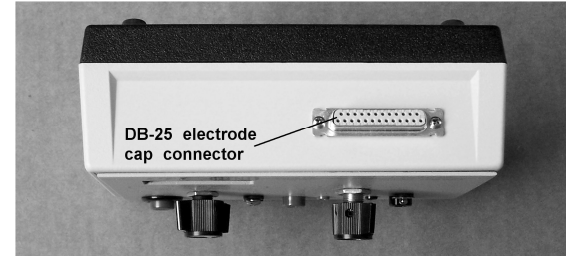
### Function switch

- **50 K $\Omega$  test** position connects precision 50 K $\Omega$  resistor to the Checktrode® inputs. Display reads 49.5 to 50.5 (K $\Omega$ ) when Checktrode® is working properly.
- **contact (K $\Omega$ )** displays contact impedance between electrodes from 0 to 199.9 K $\Omega$ . A "1" indicates impedance exceeds 199.9 K $\Omega$ .
- **offset (mV)** displays potential generated by a pair of electrodes when connected to body. This "offset potential" reflects purity of metals in the electrodes: the lower the reading, the higher the purity. Readings that vary wildly or exceed 10 mV usually indicate severe electrode problems.
- **external battery (V)** reads voltage of a battery connected to external battery test connector on top panel of Checktrode®. A 1 K $\Omega$  load is connected across battery terminals for this reading.

### Top-panel electrode input jacks and snap

- Use red and black jacks to test individual pairs of electrodes
- Use red jack and snap near black jacks to test integrity of one electrode lead.

### Rear-panel electrode connector



- Multi-electrode caps, including Lexicor Model 1020 and Electro-Cap International Model 10-20, plug into this DB-25 female connector.
- Custom wiring available for other model caps.

### Electrode selector switch

- Tests each individual electrode of a multi-electrode cap against the combination of all the other electrodes shorted together. (See Using the Checktrode® section below.)

### External battery test contacts

- Contacts are spaced for a standard 9V ANSI/NEDA Type 1604 cell like that used to power the Model 1089ES. (See Using the Checktrode® section below.)
- Use alligator-clip leads to test other battery types.

## Using the Checktrode®

### To check electrode contact integrity:

- prepare electrode sites – abrade skin and use a conductive gel for good electrical contact;
- attach electrodes to subject;
- connect electrode cap to DB-25 receptacle on rear panel. (Make sure no electrodes are plugged into top-panel jacks.) **or**
- plug two individual electrode leads into the top-panel, one lead into each of the red and black jacks. (Make sure no electrode cap is connected to rear-panel DB-25 receptacle.)
- press power switch until it clicks on, then set function switch to **50 KΩ test**.
- Display reads 49.5 to 50.5 (KΩ) if Checktrode® is working properly; *otherwise replace battery*.
- set function switch to **contact (KΩ)**. Display indicates electrode-skin contact impedance. High impedance indicates inadequate skin preparation – expect noisy recordings due to lead motions.
- To test electrodes connected to cap, slowly move electrode selector switch through all positions. Table below shows which individual electrode is tested; remaining electrodes are shorted together.
- Electro-Cap Model 10-20 does not use switch positions 21 and 22 -- use front-panel jacks to test Electro-Cap ear-clip electrodes. (Be sure to remove connector from rear panel first.)

Switch position	Electrode tested
1	FP1
2	FP2
3	F3
4	F4
5	C3
6	C4
7	P3
8	P4
9	O1
10	O2
11	F7
12	F8
13	T3
14	T4
15	T5
16	T6
17	GND
18	CZ
19	FZ
20	PZ
21 (Lexicor cap only)	LEFT EAR REFERENCE
22 (Lexicor cap only)	RIGHT EAR REFERENCE

### Meaning and indicated action for various readings:

- **5 KΩ or less** – **excellent** skin prep: proceed with recording and expect good results.
- **5 – 10 KΩ** -- **good** skin prep, but expect some noise in the recording.
- **10 – 30 KΩ** -- **fair** skin prep. For best recording quality, remove electrodes and re-prepare skin.
- **Above 30 KΩ** -- **bad** skin prep. Even slight patient motion will cause noise. Electrodes *must* be removed and skin re-prepped.

### To check integrity of an electrode lead:

- connect plug end to *red* electrode input jack;
- press power switch until it clicks on, then set function switch to **contact (K $\Omega$ )**;
- connect other end of lead to snap near black input jack. Display should read 00.0 and not change.
- A reading that changes with lead motion indicates an intermittent open circuit in lead.

### To check offset potential

- prep electrode sites – abrade skin and use conductive gel – then attach electrodes;
- connect electrodes for test to input jacks;
- Turn on power, set function switch to **offset (mV)**.
- Display shows potential in millivolts generated by electrode-body half-cell
- *Replace electrodes* if reading exceeds 10 mV.

### To check voltage of an external battery

- Set function switch to **external battery (V)**;
- press power switch until it clicks on;
- connect battery for test to battery test connector located on Checktrode® right side.
- Display shows battery voltage under light load (1 K $\Omega$ ).

### Warranty and repair

All UFI instruments are warranted against defects in materials and workmanship to the original purchaser for a period of one year from the date of original purchase. This warranty is void if our

inspection shows the equipment has been tampered with; or installed at variance with factory-designated procedures; or has been subjected to negligence, misuse, or accident beyond normal usage; or has had the serial number altered, defaced, or removed.

No third party, including any dealer or agent, is authorized to assume any liability for UFI. Direct questions regarding warranty to:

Customer Service Department, UFI  
545 Main Street, Suite C-2  
Morro Bay, CA 93442  
Email: [ufi@ufiservingscience.com](mailto:ufi@ufiservingscience.com)

When corresponding or communicating with UFI concerning your equipment, please include the model and serial numbers.

UFI instruments and transducers are subject to continuous improvement. We reserve the right to modify any design or specification without notice and without incurring any obligation.

### ALL UFI TRANSDUCERS AND ELECTRODES ARE COVERED BY OUR EXCLUSIVE "LIFELINE® WARRANTY" AS FOLLOWS:

If your UFI transducer, electrode, or electrode tester ceases to operate--regardless whether the cause is accidental, intentional, or whatever---**return it to us**. We will repair it or replace it with a new one for a minimal handling charge, as listed below:

Model 1010, 1020, 1020EC, 1020FC, 1110	\$25.00
Model 1030, 1040, 1070, 1081FT	\$50.00
Model 1081 & 1081SNP	\$11.00
Model 1089 MK II & MK III	\$65.00
Model 1130, 1131, 1132	\$35.00

Prices subject to change

10-08-10