

TSD150 SERIES ACTIVE ELECTRODE



TSD150A — 35 mm spacing **TSD150B** — 20 mm spacing

TSD150 Active Electrodes are available in three configurations; the difference is the spacing between the stainless steel pads of the surface electrode. The surface electrode pads of the TSD150A and TSD150B have a diameter of 11.4 mm.

Note: GROUND MUST BE USED — Unlike most active electrodes, TSD150 series active electrodes have only two stainless steel disks attached to an electrode case. The third disk, commonly centered between the two, is not necessary. In place of this third disk, a separate ground electrode is used. The LEAD110A is typically used as the ground electrode, connected to a CBL201 conversion cable, and in turn connected to the GND A terminal at the rear of the UIM100C. (For MP160 with AMI100D/HLT100C, the LEAD110A is connected to a CBL229 conversion cable, which is then connected to an unoccupied input or output on the AMI100D/HLT100C). If one or more active electrodes are used on a single subject, only one Ground lead (LEAD110A) is required to act as Ground reference for all the active electrodes.

TSD150A/B ACTIVE ELECTRODES –35 MM, 20 MM

TSD150A and TSD150B may be used as a surface electrode or as a fine wire electrode. Conversion of the surface to fine wire electrode is easily accomplished by replacing the stainless steel pads with screw-springs that connect to the internal amplifier.

CONVERSION FROM SURFACE ELECTRODE TO FINE WIRE ELECTRODE SYSTEM

To convert the active electrode from a surface electrode to a fine wire electrode system, the stainless steel pads of the surface electrode must be unscrewed from the active electrode case. To accomplish this task:

- 1) Grasp the stainless steel pads and rotate them counterclockwise until they are disconnected from the case.
- 2) Screw the screw-spring combinations (fine wire electrode attachment) into the holes left by the removal of the stainless steel pads.
- 3) Attach the active electrode case (using tape or an elastic strap) to the limb of the subject, near the insertion site of the fine wire electrodes.
- 4) Gently bend the springs and place one fine wire electrode in the gap formed by bending the spring. Allow the spring to return to its upright position.
- 5) Repeat this procedure for the other fine wire electrode.

Note: If the wire-spring contact does not provide a good EMG signal, it may be necessary to rub the fine wire electrode with an emery cloth to remove the insulation prior to placing the wire in the spring.

To convert the system back to a surface electrode system, simply unscrew the screw-spring combinations, place them in a secure place and re-screw the stainless steel electrode pads into the electrode case.

TSD150 OPERATION

- 1) Attach the active electrode to the subject, with pads to the skin surface; use surgical tape (TAPE1) or an elastic strap. The active electrode requires good skin surface contact, so to obtain the best readings; select an area where skin surface is free of hair and/or lesions and abrade the skin slightly with the ELPAD.
- 2) Plug the active electrode into the desired channel (1-16) of the AMI100D/HLT100C module via a CBL229 conversion cable.

IMPORTANT! Make sure that the chosen channel is **not** already assigned to any other BIOPAC module; up to 16 active electrodes can be used with a single MP System. **If contention exists, the channel data will be corrupted.**

- 3) After connecting the active electrode into the AMI100D/HLT100C module attaching the active electrode to the subject, a Ground electrode will still need to be attached to the subject if no other ground is provided via another biopotential amplifier. The Ground electrode will act as reference for 1 to 16 active electrodes. The LEAD110A, 3-meter, unshielded electrode lead is recommended for this purpose. The LEAD110A will connect directly to any standard snap surface electrode (like the EL503). The surface electrode can be placed at any point on the subject, and performance is optimal when the electrode makes good contact with the skin surface.
 - **For MP160 with AMI100D or HLT100C:** The free end of the LEAD110A is connected to a CBL229 conversion cable and plugged into an unused input or output of the AMI100D/HLT100C.
 - **For MP150 with UIM100C:** The free end of the LEAD110A is connected to a CBL201 conversion cable, which is in turn inserted directly to the GND A terminal on the back of the UIM100C. To insert the LEAD110A/CBL201 into the GND A terminal, use a small screwdriver to back out the terminal locking screw, insert the CBL201 2 mm pin plug into the terminal opening and then tighten down the locking screw.
- 4) At this point, the active electrode is ready for data collection. Set up the active electrode **Scaling** in *AcqKnowledge*, by setting the MAP values to a factor of the default value divided by 330. See the *AcqKnowledge* Software Guide for more information on channel scaling. The recommended sampling rate for the MP System is 2000 Hz on each active electrode channel.

TSD150A/B CALIBRATION

The TSD150 series does not require calibration.

TSD150A/B ACTIVE ELECTRODE SPECIFICATIONS

Recommended Sample Rate:	<i>Best:</i> 2000 Hz, <i>Minimum:</i> 1000 Hz
Gain:	330 (nominal)
Input Impedance:	100 M Ω
CMRR:	95 dB (Nominal)
3 dB Bandwidth:	12 Hz – 500 Hz
Noise Voltage:	2 μ v rms (bandwidth of 12-500 Hz)
Cable:	3 meters, lightweight, shielded
Electrode Spacing	
TSD150A:	Wide — 35 mm
TSD150B:	Narrow — 20 mm
Stainless steel disk diameter:	11.4 mm
Fine Wire Attachment:	Screw springs
Ground Lead:	Requires LEAD110A for proper operation (one per subject)
Dimensions:	17.4 mm wide x 51 mm long x 6.4 mm thick
Weight:	9.5 grams
Interface:	AMI100D, HLT100C, or UIM100C

See also: LEAD110A, TAPE1 / TAPE2