MODEL 2283FT/2283FTi
FETRODE™ AMPLIFIER

UFI
545 Main Street, Suite C-2
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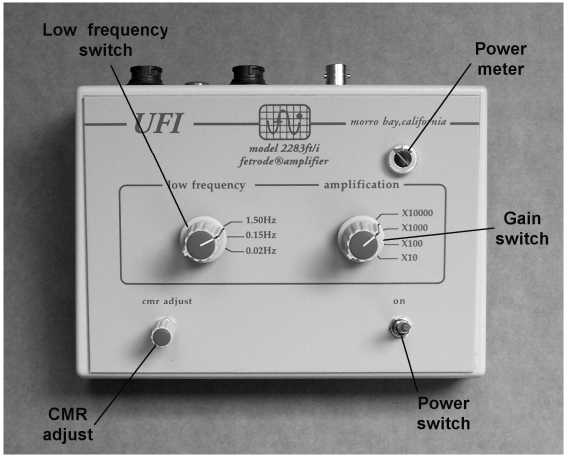
Introduction to Fetrode™ artifact reduction

High impedance at the skin-electrode contact correlates directly with the amplitude of the noise artifacts that can plague bio-electric recordings. Historically, there have been only two ways to reduce such noise: 1) use the very best Ag/AgCl electrodes with a liquid-junction interface; and 2) abrade the skin to reduce the skin/electrode contact impedance. With the prevalence of HIV and hepatitis viruses, breaking the skin barrier is no longer advisable. Fetrodes™ eliminate the requirement to abrade the skin.

The Fetrode™ is a unique, temperature-compensated amplifier with an extremely high input impedance and a very low output impedance. The circuitry is built with state-of-the-art surface mount technology into a miniature enclosure that can be snapped onto any high-quality electrode. This innovation places signal buffering directly on the active electrode site. In so doing, the Fetrode™ virtually eliminates artifacts due to electrostatic potentials and cable noise, even with high electrode contact impedances.

The Model 2283FT is a stand-alone Fetrode™ bioamplifier that meets many physiological research needs. Adjustable gain and frequency response suit it to a wide variety of input signals and downstream instruments. The Model 2283FTi Fetrode™ amplifier is just the same as the Model 2283FT, except that it incorporates subject isolation using an off-the-shelf signal isolator.

Controls and connectors



Power switch

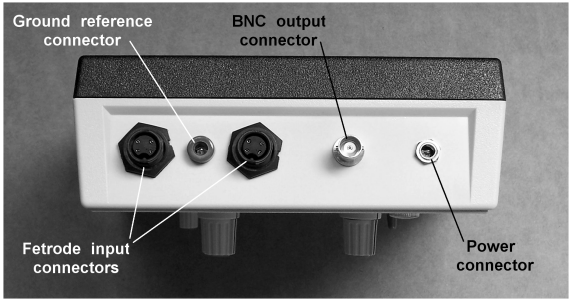
- Connects power supply to Model 2283FT(i); should be left in OFF position when instrument is not in use.

Power meter

- Should read in the green zone when power switch is in ON position.

Power connector (back panel)

- Connect supplied wall-mount transformer power supply to this jack.



Four-pin input connectors (back panel)

- Connect the two supplied Fetrode™ buffer assemblies to these black receptacles, which are located on the left side of the back panel.

Green ground reference connector (back panel)

- Plug the supplied ground reference lead into this 0.080” jack, located between the two four-pin Fetrode™ connectors.

Amplification switch

- Use this four-position rotary switch to select the amplification (gain) factor applied to the Fetrode™ buffer assembly outputs.
- Choices are
    - X10
    - X100
    - X1000
    - X10000

Low frequency switch

- Use this three-position rotary switch to select the low-frequency rolloff applied to the Fetrode™ buffer assembly outputs.
- Choices are
    - 0.02 Hz
    - 0.15 Hz
    - 1.50 Hz

CMR adjust

- Adjust this multi-turn potentiometer to minimize common-mode interference (usually 50/60 Hz power line noise).

Output connector (back panel)

- Connect your recorder or other downstream device to this BNC receptacle.

Electrode considerations

- Use only good quality Ag/AgCl electrodes, such as UFI Model 1081SNP, that include snap fasteners to which the Fetrode™ buffer assemblies can be attached.
- Do *not* use inferior electrodes, for example those with stainless steel inserts.
- Subject's clothing, especially polyester materials, will probably generate electrostatic noise if subject moves. Fetrodes™ may pick up such noise.

- Prevent electrostatic noise by asking your subject to remove clothing or to wear tight-fitting clothing that cannot move enough to generate noise.
- You *must* use ground (reference) electrode. Locate it roughly equidistant from active electrode sites (those equipped with Fetrode™ assemblies).
- Do *not* abrade active electrode sites. You *may* need to abrade the ground electrode site if you are recording low- frequency, low-level signals when a large 50/60 Hz powerline noise source is present.

Using the Model 2283FT(i)

- Select appropriate electrode sites for desired measurements.
- Apply electrodes to subject, then snap two Fetrode™ buffer assemblies to electrodes.
- Snap ground reference lead to electrode and plug other end into green jack on back panel.
- Connect Model 2283FT(i) output jack to your recorder or other downstream device.
- Turn power switch to ON position.
- Rotate amplification switch until signal to recorder is maximum size without clipping.
- Rotate low-frequency switch to roll off (suppress) undesired low frequencies.
- If signal is upside down, just unsnap leads to Fetrodes™ and reverse connections.
- Adjust CMR control for minimum 50/60Hz interference.

Model 2283FT specifications

- Input impedance — 100 megohms
- Fetrode™ input receptacles — 2 Switchcraft TB4M; fit TA4F plugs
- Frequency response — 0.01 - 1200 Hz +/- 3 dB
- Common mode rejection — 70 dB minimum
- Noise — Less than 3 μV peak-to-peak, referred to input
- Output configuration — Single-ended BNC
- Output impedance — Less than 15 Kohms
- Power supply — 110 VAC-to-12 VDC wall-mount transformer
- Case size — 6.8"W x 2.5"H x 4.8"D (17.1 x 6.4 x12.1 cm)
- Weight — 16 ounces (450g)

Model 2283FTi additional specification

- Minimum isolation voltage — 2000 volts

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.

All questions regarding the warranty should be directed to:

Customer Service Department
UFI
545 Main Street, Suite C-2
Morro Bay, CA 93442
Email: mail@ufiservingscience.com

No third party, including any dealer or agent, is authorized to assume any liability for UFI.

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

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