

The model M40 neuromuscular activity transmitter by Applied Neural Research is a high-performance and reliable wireless EMG muscle sensor. Precision design and proprietary algorithms provide fine-level inputs to machine control from voluntary muscle signals (mind control). Easy coupling with mobile apps provides measurement and biofeedback for training, neurological diagnostics, and therapy.



Features

- Ideal performance for reliable Feedback and Control using voluntary muscle signals (mind control).
- Accurate and noise-free coupling to bioelectric activity at neural muscular junctions below the skin surface.
- No reference lead. True 2 lead EMG measurement.
- Proprietary algorithms and precision electronics isolate signature microvolt-level EMG signals.
- Highly selective localization for minor muscle group differentiation and fine-level control.
- Mobile app (free) for user/patient viewing.
- Bluetooth® LE v4.2.
- Complies with FCC Rules part 15.

Applications

- Robotics
- Machine control
- Medical diagnostics
- Biofeedback therapy
- Performance art/cosplay
- Prosthetics
- Bodybuilding
- PT/OT monitor
- Athletic training
- Gaming/VR/AR

SPECIFICATIONS

Electrical

- Battery
 - Type: LiPo
 - Charge time: 3-4 hrs
 - Run time: 16-24 hrs
- EMG (electromyograph)
 - 2 lead measurement (no reference lead).
 - > 10 MΩ Input impedance.
 - Sub-microvolt resolution.
 - 140 dB Signal to noise ratio.
- Embedded Firmware/Software
 - Bluetooth® LE v4.2 protocol stack.
 - Digital Signal Process (DSP) and curve fitting for EMG signal characterization and classification.
- RF
 - Transmission <4 dBm; FCC 47 CFR Part 15 Subpart C.
 - Range: 10 meters

Mechanical

- Dimensions: 2.0 x 0.9 x 0.4 in.
- Weight: 0.28 oz.
- Environmental: Not waterproof.

Bluetooth® Profile

- GAP Role: Peripheral (see ANR Bluetooth® Design Guide)
- GATT Profile summary
 - Service (UUID: 0x1815) Automation IO Service
 - Characteristic (UUID: 0x2A58) Analog - Read/Notify
 - Value: **EMG Level Measurement**
 - Data type: 16-bit unsigned integer
 - Range: 0 - 1000
 - Notify rate: 100mS
 - Characteristic (UUID: 0x2A56) Digital - Read/Write
 - Value: **Device Color ID**
 - Data type: 8-bit unsigned integer
 - Range: 1 - 24

Transmitter Certification

- Bluetooth®
 - This device complies with the Bluetooth® LE v4.2 specifications.
- FCC
 - This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

USERS GUIDE

Instructions for Use

1. Charge M40 until red **Charging light** turns off.
2. Prepare skin (clean, dry, oil free - some body hair is ok).
3. Snap ECG electrodes (2) into M40.
 - M40 package includes a trial pack of electrodes. ECG electrodes can be purchased at anrcorp.com or most medical supply stores. We prefer 3M Red Dot™ brand.
4. Align M40 along surface of target muscle and press electrodes to skin.
 - Electrodes lose some adhesive holding strength when relocated or reused.
5. Keep M40 dry at all times.
6. Press button on M40 to turn it on.
 - **Pairing light**: looks like a typical heartbeat (72 bpm).
 - Auto-shutoff if not connected (5 min).
7. Pair M40 with a Compatible Output Device.
 - **Connected light**: slow beat (2 sec).
 - Display colors are selected by the output device (when paired with the M40)

Compatible Output Devices

- Muscle View mobile app
 - Free download.
 - Displays multiple outputs for monitoring, neurological diagnostics, biofeedback, and therapy applications.
- R24 Receiver
 - Receiver and analog output device by ANR.
 - 4 channels for embedded control applications.
- Bluetooth® Interface
 - Bluetooth® LE v4.2 - device, port, or module.
 - Central GAP role implementation.
- Visit ANRcorp.com for more about compatible output devices.

Display

- **Indicator light**
 - Solid Red: M40 is charging.
 - Flashing at 72 bpm: M40 is in Pairing mode.
 - Flashing at 24 bpm: M40 is Connected.
- **Device ID Colors**
ID number value: first color / second color
 1. Blue / Blue
 2. Blue / Green
 3. Blue / Red
 4. Blue / White
 5. Green / Blue
 6. Green / Green
 7. Green / Red
 8. Green / White
 9. Red / Blue
 10. Red / Green
 11. Red / Red
 12. Red / White
 13. White / Blue
 14. White / Green
 15. White / Red
 16. White / White
 17. Magenta / Blue
 18. Magenta / Green
 19. Magenta / Red
 20. Magenta / White
 21. Yellow / Blue
 22. Yellow / Green
 23. Yellow / Red
 24. Yellow / White