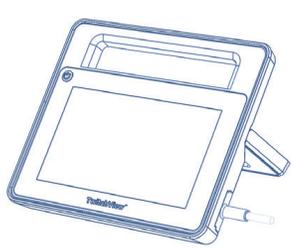
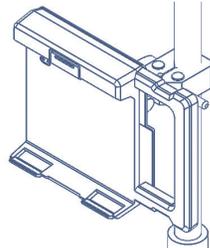


TWITCHVIEW SYSTEM:

TwitchView is an EMG (electromyography) based quantitative monitor for neuromuscular blockade. EMG measurements are independent of physical motion and thus TwitchView can be used when the patient's arms are tucked. Attach the electrode array when all other hemodynamic sensors are placed and begin continuous monitoring after the patient is anesthetized.



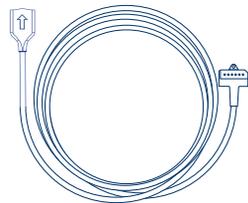
MONITOR



CHARGING STATION



SINGLE-USE ELECTRODE ARRAY



CABLE

PRIMARY MONITORING MODES:

TRAIN-OF-FOUR (TOF): Four stimulation pulses are delivered at 0.5 second intervals. The ratio of the fourth to the first response is expressed as the TOF%. When there are fewer than four responses, only the TOF count is displayed.

POST-TETANIC COUNT (PTC): Recommended during deep block when no TOF is present. First, a TOF measurement is performed to validate the need. If the TOF count is above zero, PTC is abandoned, otherwise a 5-second tetanic stimulation is delivered, followed by a series of single stimuli spaced one-second apart. The maximum PTC is 15 with lower numbers indicating deeper block.

ELECTRODE ARRAY PLACEMENT:

Prepare the patient's hand and wrist with an alcohol wipe.

Place the stimulating electrodes directly over the patient's ulnar nerve. To locate the ulnar nerve, flex the patient's hand back to expose the ulnar groove and place electrode centers directly over the visible/palpable line.

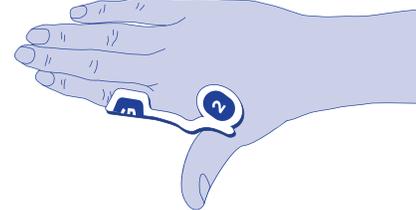
Attach the three EMG electrodes to the patient's hand, wrapping the cutout around the patient's thumb such that electrode 1 or 2 is over the adductor pollicis, and the other electrode is over the first dorsal interosseous. Secure the ground electrode to the patient's index finger.

Press array down firmly to ensure good contact.

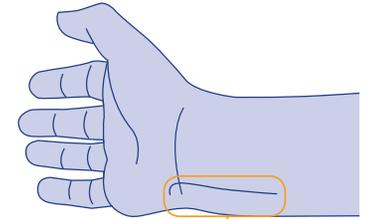
Connect the array to the monitor cable with the arrows up and pointing toward one another.

Place gauze under the cable connection to minimize skin compression. Use a piece of tape to secure the array/cable connection to the patient's arm.

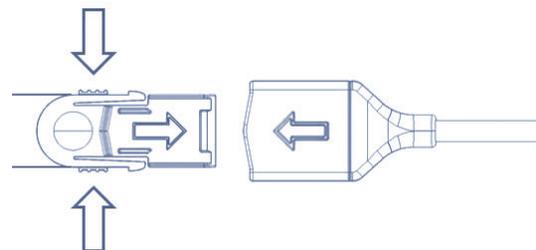
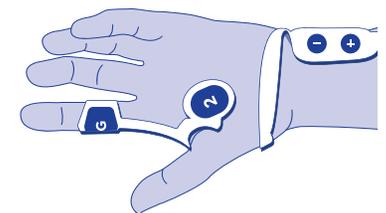
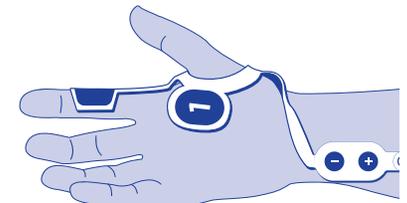
RIGHT HAND



LEFT HAND



ulnar groove



To remove the array from the cable, compress the side grips on the array tab and pull away from the cable.

Note: The Electrode Array should be disposed of after use.

TO BEGIN MONITORING:

Once the patient is anesthetized but before neuromuscular blocking agent (NMBA) is administered, press **Play**  and the monitor will select the optimal EMG recording site, set the supramaximal current, determine the patient's non-paralyzed baseline response, and begin TOF monitoring every 20-seconds.

If the patient is paralyzed prior to TwitchView start-up, a supramaximal current cannot be determined, and the monitor will default to 60 mA.

The repeat time can be changed by selecting the **Stimulation Timer** and increasing or decreasing the interval. Press either **Play** button on the TOF page to resume monitoring.

If the Auto-PTC option is on (via the device settings sub-menu), the system will prompt the user to switch to post tetanic count (PTC) the first time the TOF count drops to zero. PTC is used to monitor deep block. If **Continue** is selected, the system will transition between TOF and PTC according to the patient's level of paralysis.

Frequently Used Functions:

To change the stimulation mode, open the  **Menu**. Select Stimulation Parameters, Stimulus Type and desired mode (TOF, PTC, Single Twitch or Tetanus).

The Current, Repeat Frequency and Pulse Width can be adjusted via the Stimulation Parameters sub-menu.

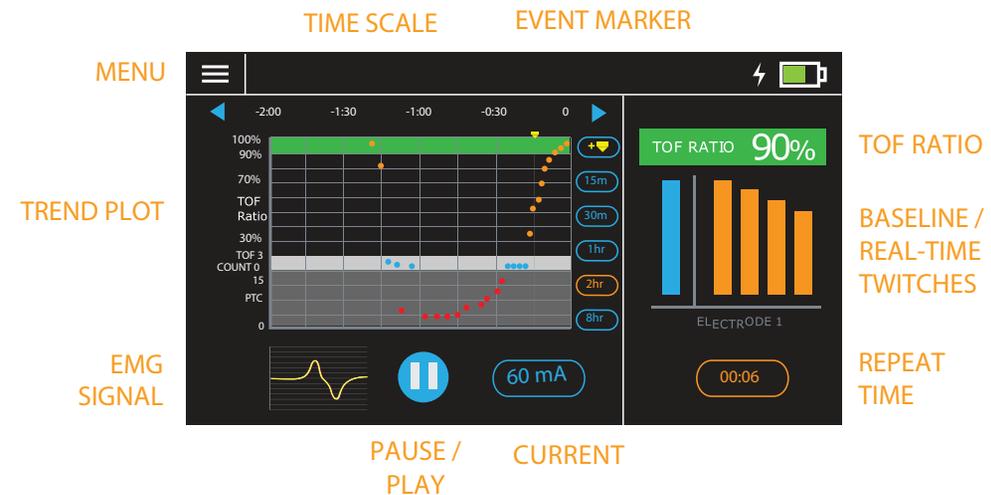
To take a STAT measurement, press **Pause** and then **Play**. The monitor will take an immediate measurement and then restart the **Stimulation Timer**.

To toggle between the EMG signal and trend plot, press the window in the bottom left of the screen.

To start a new session once a case is complete, open the  **Menu** and select **New Session**.

TROUBLESHOOTING / TIPS:

- If the Check Electrode Page appears, address the electrode(s) highlighted red. Ensure array is completely inserted into the cable, press electrode(s) firmly to ensure adherence, and tape in place if necessary. Press refresh on the monitor screen. If red electrode(s) persists, swap the electrode array. If multiple, consecutive electrode arrays fail, consider replacing cable.
- If a measurement is unexpected, compare the TwitchView EMG signal to a manual or visual assessment of the twitches.
- If the patient response to NMBA is atypical, consider drug interactions. For example, anticonvulsants may reduce rocuronium activity while magnesium and local anesthetics may enhance rocuronium activity.
- If a case requires diaphragm paralysis, maintain deep block by utilizing PTC. The diaphragm (and orbicularis oculi) recover faster than peripheral skeletal muscles.
- The absolute twitch height may not recover to baseline, especially if the hand has been repositioned. A TOF ratio of 90% is indicative of recovery.



BEST PRACTICES:

- Prep patient's skin with an alcohol wipe prior to array placement.
- Start TwitchView before NMBA but after anesthetic is administered to obtain a baseline and determine the supramaximal current.
- Once applied and connected, tape down the array/cable connection to ensure the cable does not pull the electrode array away from the skin.
- For bariatric or edematous patients, increase the Pulse Width to 300us to optimize neurotransmission.
- For patient's with a low pre-paralytic EMG amplitude or unexpected high current (>60 mA), ensure the stimulating electrodes are directly over the ulnar nerve.
- Remove tegaderm, tape, ID bracelets or sensors that impeded direct skin contact of the EMG and stimulation electrodes.

TwitchView™ | **blink®**
DEVICE COMPANY

Blink Device Company
1530 Westlake Ave N. # 600
Seattle, WA 98109
U.S.A.
(Tel) 206.708.6043
www.blinkdc.com