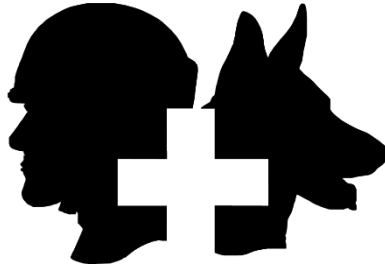# TRAUMA F/X ®

Improving Survivability

TRAUMAFX® REMOTE CONTROL TRANSMITTER

TraumaFX® Remote Control Transmitter User Guide

Rev_Q42019

TRAUMA F/X ®

Improving Survivability

TraumaFX® Remote Control Transmitter

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Chapter

1

Chapter 1: Introduction

About the TraumaFX® Remote Control Transmitter

The TraumaFX® Remote Control (RC) Transmitter is a ruggedized controller used with the all powered TraumaFX® upper and lower units. With its simplistic and durable design, the RC provides end users with instant treatment feedback, and the ability for the trainer to customize user scenarios in accordance with the learning opportunity at hand.

Compatible TraumaFX® Upper and Lower Units

- Multiple Amputation Trauma Trainer (MATT)®
- Packable Hemostatic (HEMO) Trauma Trainer
- HEMO – Gunshot Wound
- Clinical Response Lower (CRL)
- Emergency Medical Trauma Trainer – Tactical Medical Lower (EMITT-TML)
- Emergency Medical Trauma Trainer – Active Shooter Lower (EMITT-ASL)
- AirwayPlus Lifecast – Intubation/Packable (APL-IP)
- AirwayPlus Lifecast – Pulses/Breathing (APL-PB)
- Clinical Response Upper (CRU)
- Clinical Response Upper – Resuscitate (CRU-R)
- Emergency Medical Trauma Trainer – Tactical Medical Upper (EMITT-TMU)

The RC is designed for rugged use in realistic training environments, however is not impermeable to damage. To ensure proper operation, do not subject the RC unit to unnecessarily harsh treatment. Careful preventive maintenance and frequent after-use inspection is essential to ensure the service life of your RC transmitter. Please review *Chapter 5:   After Use Care* which outlines the standard preventive maintenance required under the terms of the TraumaFX® limited warranty.

Item Checklist

The components listed below are required to set up and operate your TraumaFX® Remote Control Transmitter.

Standard Components and Accessories

Accessory Name	Order Number
18v Makita Battery	KGS-TFX-LO-BT-1
Ruggedized Remote Control with Lanyard	KGS-TFX-REM-1

Figure 1

System Overview

Figure 2

Special Notes and Cautions

Read all TraumaFX® instructional manuals before attempting to assemble, install, or operate any TraumaFX® product.

Water Resistance and Cleanup

DO NOT USE PRESSURIZED WATER OR SUBMERGE THE RC UNDER WATER. REMOVE BATTERIES BEFORE CLEAN UP TO AVOID ELECTRIC SHOCK!

The RC is water resistant, but is not waterproof. Carefully wipe the RC with a soft, wet cloth or sponge after each use.

Remote Control

The Remote Control (RC) system has an extended range (see technical specifications) and can be used indoors or outdoors. Note that indoor range is subject to building design and construction

materials. Test system operations whenever setting up in a new location or moving to a different area of a building.

Third Party User Manuals

The RC uses third-party commercially available equipment. Where such equipment is provided, the associated user manuals and any pertinent documentation are provided as well.

Compliance

If the RC is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Chapter

2

Chapter 2: Remote Control (RC) Transmitter Features

This section describes the features of the RC that contribute to the unique training experience that TraumaFX® upper and lower units provide:

- Easy to use, menu-driven software – takes only minutes to learn
- All sensor data recorded on main control screen for quick reference
- Display shows vitals, blood loss, airway status and elapsed time
- Feedback for tourniquet application, wound hemostasis, airway intervention, needle decompression, chest tube placement
- Preset scenarios provided, or quickly create your own
- Rugged exterior for use in all training locations and situations
- ACLS mode for running ACLS/ALS megacodes, with AAR
- Water and weather resistant
- One remote can be used to operate both upper and lower units
- Simple operation – only 5 buttons required to operate
- Built-in joystick to control animatronics and navigate on-screen menus
- Ergonomically molded-in handgrips and wrist strap for comfortable use
- Wireless communication with manikin up to 200M away outdoors and 50m in indoor/urban areas
- Can be operated while wearing gloves
- Operational day or night
- User adjustable brightness
- Simulation starts with single button push – trainer can focus on the event and not the remote
- Operated by a single Makita 18v Li-ion battery – the same type used to power all TraumaFX® units

Cautions and Care
The RC unit is water resistant, but not water proof. Avoid direct water contact with the battery compartment.

Chapter

3

Chapter 3: Getting Started

Read all TraumaFX® manuals before attempting to assemble, install, or operate any TraumaFX® products or accessories.

Notes on General Use and Care

The TraumaFX® Remote Control (RC) Transmitter is designed for rugged use in realistic training environments. Careful preventive maintenance and frequent after-use inspection is essential to ensure the service life. Please review **Chapter 5: After Use Care**, which outlines the after use care required under the terms of the TraumaFX® limited warranty.

Charging the Batteries

RC Transmitter Batteries
Read all instructions provided in the Operating Manual – Makita Battery Charger before using.

Each RC utilizes one (1) 18v Makita Lithium-Ion battery for operation. Additional batteries are available for purchase through TraumaFX by contacting your account representative or customer support.

Only use the batteries and charger(s) provided by TraumaFX; use of different equipment may result in damage to the batteries and/or TraumaFX equipment and will void the limited warranty. Read the instructions for the Makita battery and charger in the *Operating Manual – Makita Battery Charger* provided.

The RC Transmitter battery is a consumable item (with a one (1) year manufacturer's warranty); as with most batteries, Makita batteries have a finite shelf life. After considerable use, a "used" battery's voltage will drop to a point that it will no longer be able to hold a charge.

Recharging RC Transmitter Battery

1. **Plug** the Makita quick charger (Figure 3) into a standard 110V wall outlet.

2. **Slide** the battery onto the quick charger until firmly in place and the indicator light illuminates (each battery takes approximately 30-45 minutes to charge, and depending on the amount of usage, provides a full day of training support).

3. **Remove** the battery when readout indicates charging is complete.

Figure 3

NOTE: A 220V Makita charger is available for International use. This is a special-order item and available for purchase through TraumaFX by contacting customer support or your account representative.

General Use and Care of Batteries

All batteries used in TraumaFX products were specially selected to provide optimal operational performance. However, as with all batteries, they will last longer with proper care and maintenance. To preserve the life of the batteries, the following best practices are recommended:

1. Only use the batteries and charger(s) provided by TraumaFX; use of different equipment may result in damage to the batteries and/or the TraumaFX unit(s).

2. Remove battery from the RC Transmitter at the end of each training session. Batteries should never be stored inside a unit or RC transmitter.

3. Recharge batteries immediately after use by placing them in the Makita battery charger.

4. Fully recharge all batteries before each training exercise. This is indicated by a solid green light on the charger for each battery.

5. Never mix a fully charged battery with a partially charged battery as this will cause the TraumaFX unit to not operate properly.

6. Never mix an old battery with a new battery as this will quickly degrade the new battery.

7. Store batteries indoors, away from extreme temperatures (not above 120°F or below 38°F).

8. Only charge TraumaFX-related batteries using the approved chargers supplied with the TraumaFX system.

Installing and Removing the Battery

Installing and Removing the Remote Control Transmitter Battery

1. **Install** the battery by inserting the battery into the back of the unit (Figure 4) by sliding the battery into the battery slot until it locks into place.

2. **Remove** the battery by pressing the white, push button located on the battery to remove the battery from the remote control transmitter.

Figure 4

Chapter

4

Chapter 4: Operating the TraumaFX®
Remote Control (RC) Transmitter

This chapter describes the operational features of the RC written from the perspective of having paired both an upper and lower unit to the remote control. If an instruction is incompatible with your current set-up (e.g. paired with only an upper or only a lower), please disregard.

Power

Power for the RC transmitter is provided by one (1) 18v (3.0-5.0Ah) Makita Lithium-Ion battery. All batteries are fully rechargeable and come with a charger and manufacturer's instructions and operating manuals.

Sync Check

Prior to beginning a training exercise with any upper or lower unit, performing a quick link check between the RC transmitter and the upper or lower unit is highly recommended. Prior to shipment, each RC transmitter is synced and fully tested with its paired upper or lower unit and should not require any customer adjustment.

To perform a quick sync check, perform the following:

1. **Power on the RC transmitter** by pressing the power switch on the top of the RC transmitter (Figure 5).

2. **Power on the TraumaFX® Upper or Lower Unit** by pressing the power switch (push button). When the power switch is on a bright green LED will light up.

Figure 5

3. **Press the 'Settings'** button on the RC Transmitter (Figure 6) to view the main TraumaFX splash screen.

4. The upper and lower unit numbers will appear in the lower left corner if they are paired with that particular RC transmitter
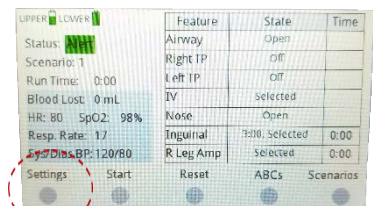

Figure 6

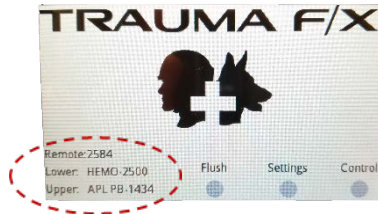(Figure 7). As the image shows, this RC is paired with lower unit HEMO-2500 and upper unit APL-PB-1434.

Figure 7

Pairing/Syncing a TraumaFX® Upper or Lower Unit

Should a TraumaFX® upper or lower unit stop communicating with the Remote Control (RC) Transmitter, please sync the unit by performing the following steps:

1. Power on the Remote

2. Power on the TraumaFX® Upper or Lower Unit

3. Press **Settings** from the Session Control Screen to get to the main splash screen.

4. From the main splash screen, press **Settings**

5. Press **Remote Settings**

6. Press **Scan for Uppers or Scan for Lowers (Note:** Use the buttons available on the remote to scan and pair and the joystick to adjust your selection.)

7. Using the joystick on the remote, navigate up or down to the desired Upper or Lower unit and press **Pair with Selected**

8. Press *Next* to navigate to the Exit Settings Screen

9. Press *Exit* to return the main splash screen

IMPORTANT: MATT units born on or shipped prior to April 2014 will not work with TraumaFX® RC.

Other Remote Control Options

Depending on the active screen display, each control button provides access to various screens that facilitate running scenarios, changing the Airway, Breathing, and Circulation (ABCs) settings, adjusting vitals, and maintenance options (Figure 8).

Figure 8

Main Splash Screen

This *Main Splash Screen* (Figure 9) provides access to the following screens or options:
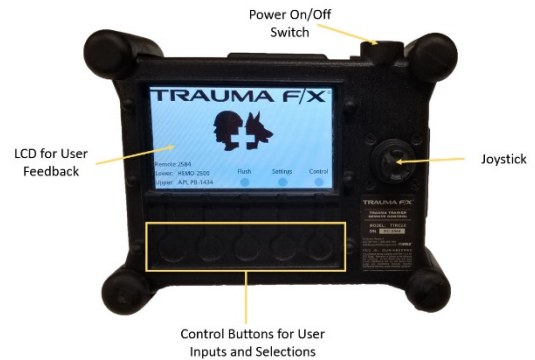
- **Flush**
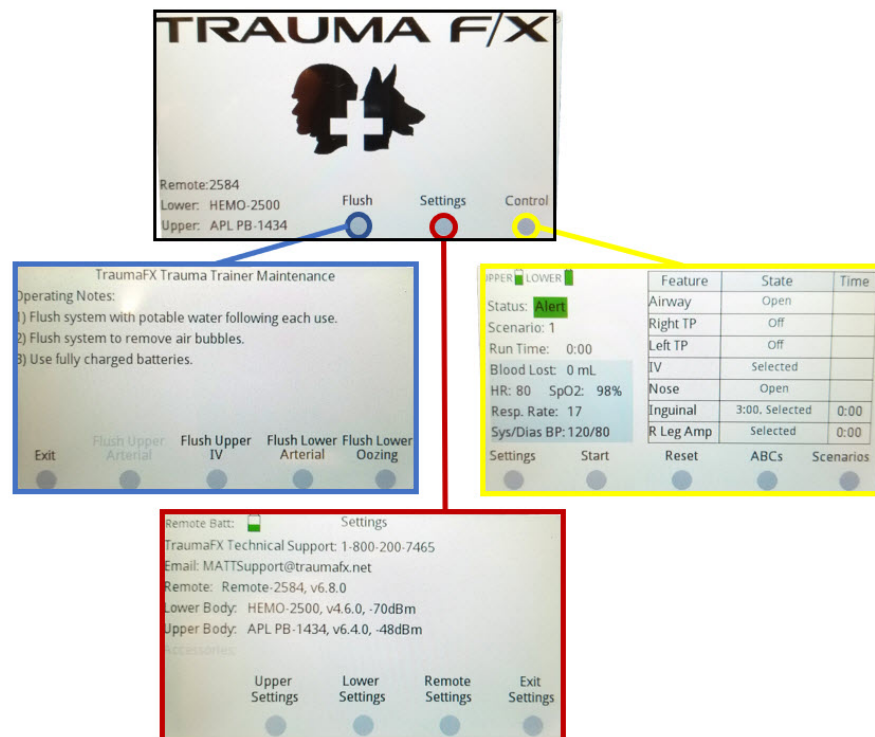- **Settings**
- **Control**

Figure 9

Flush Screen

The *TraumaFX Trauma Trainer Flush Screen* provides access to the following buttons or options (**Error! Reference source not found.**); note, only those pertaining to the units paired will be active.

- **Exit** (return to the Main Splash Screen)
- **Flush Arterial Upper** (applicable only to the APL-IP)
- **Flush Upper IV**
- **Flush Lower Arterial** (applicable to all lower units)
- **Flush Lower Oozing** (Applicable to the HEMO lower unit only*)*

Settings Screen

The *Settings Screen* (Figure 10) provides access to the following screens or options*:*

- **Remote Batt:** (indicator that displays the current RC battery life)
- **Upper Settings**
- **Lower Settings**
- **Remote Settings** (allows users to pair with an upper and/or lower unit)
- **Exit Settings** (returns to the *Main Splash Screen*)

Figure 10

Upper Settings

Teeth Force: Pressing the *Upper Settings* button provides access to the TraumaFX Trauma Trainer force settings screens and other threshold setting options. Users have the option of changing the teeth 'Contact' (associated with the APL-IP, APL-PB and CRU upper units) and/or 'Broken' (associated with APL-IP unit only) threshold from this screen (Figure 11) using the joystick to increase or decrease the numeric value until the desired value is achieved.
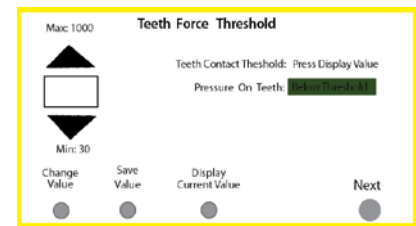

Figure 11

Upper Body Hemostatic Packable Force: The upper settings screen (Figure 12) also provides access to change the settings on the amount of pressure required to occlude bleeding in the hemostatic wound available on the APL-IP. When accessing this screen, use the joystick to increase or decrease the numeric value until the desired value is achieved.
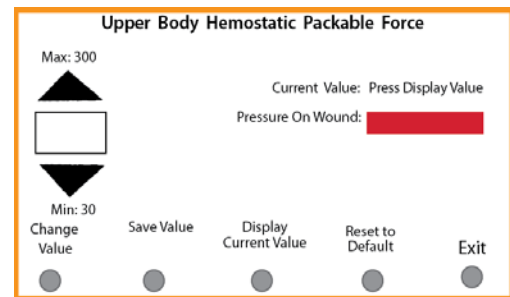

Figure 12

Lower Settings

Lower Body Hemostatic Packable Force: The lower settings screen provides access to the amount of pressure required to occlude the bleeding in the hemostatic wound available on the HEMO, HEMO-G, CRL, EMITT-ASL and EMITT-TML (Figure 13). Lower the slider value to decrease the force required to stop the packable wound. Raise slider value to increase the force required to stop the packable wound.
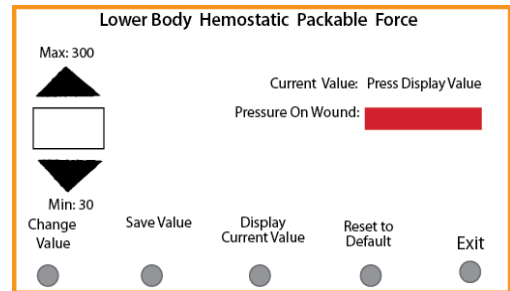

Figure 13

Increasing or Decreasing the Slider Values on the Upper or Lower Settings Screen

1) Increase or decrease the value by pressing **Select Force Value** and moving joystick up or down to the desired value.

2) Save the new values by pressing **Save Slider Value**

Resetting the Upper or Lower settings Slider Values

3) Select **Reset to Default** to reset slider values.

Remote Settings

Access the *Remote Settings Screen* when the remote requires a resync to the unit. The *Remote Settings Screen* provides access to the following screens or options*:*

- **Scan for Uppers**
- **Scan for Lowers**
- **Scan for Accessories**
- **Pair with Selected**
- **Unpair with Selected**
- **Screen Brightness (please note: pressing Next will allow you to access this setting)**

Please refer to section Pairing/Syncing a TraumaFX® Upper or Lower Unit for information on how to pair an upper or lower unit to the RC Transmitter.

Control Screen

The TraumaFX remote is session-based. Pressing **Control** from the *Main Splash Screen* allows users to access the session control screen (Figure 14). This screen provides access to the following screens and options:

- **Settings** (return to the Main Splash Screen)
- **Start/Pause** (Start or Pause the current session)
- **Stop/Reset** (Stop the current session, or Reset the current session states and times for all features)
- **ABCs** (allows users to adjust current session parameters)
- **Scenarios** (allows user to choose between the 20 built in training scenarios)
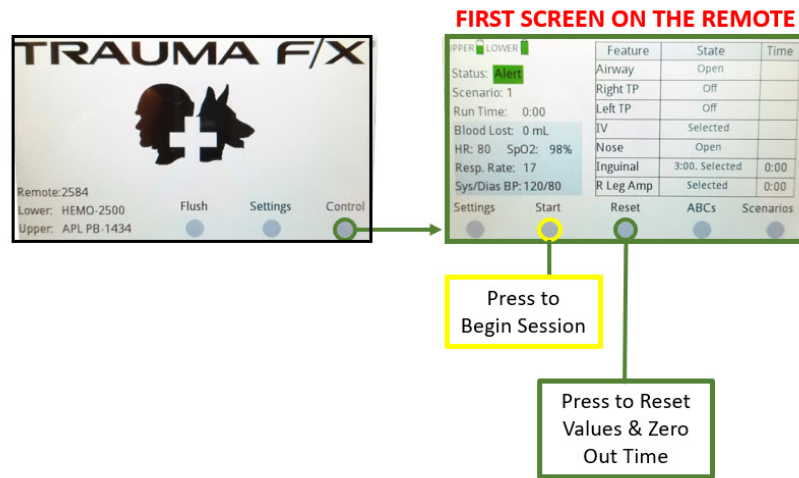
FIRST SCREEN ON THE REMOTE

Press to Begin Session

Press to Reset Values & Zero Out Time

Figure 14

Scenarios

There are currently twenty (20) built-in training scenarios, which can be accessed by pressing the **Scenarios** button on *Session Control Screen*. These scenarios are numbered, along with a list of physiology settings including respiration rate, heart rate, blood pressure, blood loss, ECG setting, wounds turned on or off, IV turned on or off, and state of the eyes

Figure 15

(state of the eyes is for the CRU only). These provide a starting point for a session (Figure 15). The scenarios can be run as they are or can be modified by the user either before or during a session. Changes to the scenario are automatically saved, so that scenario is then customized. Any changes can be undone at any time by pressing the Reset-Default button on the Scenario screen. All parameters can be set to zero by pressing the Reset-Zero button.
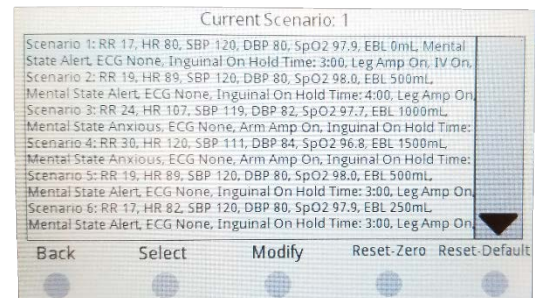
To select a Scenario:

- Access the scenarios by pressing the **Scenarios** button on the *Main Control Screen*
- Highlight your desired scenario using the joystick
- Press Select to choose that scenario

There are two (2) ways to modify a Scenario:

1. On the scenarios screen, highlight your desired scenario and press **Modify**. Navigate the **Airway**, **Breathing**, **Circulation,** and **Vitals** screens to select and save the parameters you wish to use.

2. From the Main Control Screen, access the **Airway**, **Breathing**, **Circulation,** and **Vitals** screens by pressing the ABCs button. Any changes made either before or during an active session will be saved to the selected scenario.

Beginning and Ending a Training Session

1. A scenario is a set of injuries and vital signs. A session is an instance of a scenario. Begin a session by pressing ***Start***.

2. End a session by pressing ***Stop***.

You can pause and resume a session at any point during training (Figure 16).
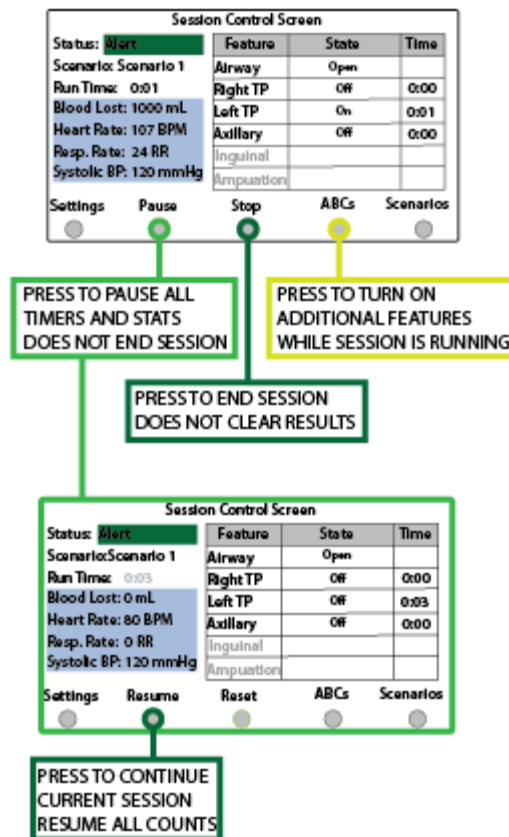

Figure 16

ABCs – Airway, Breathing, and Circulation

Pressing the **ABCs** button from the *Main Control Screen* takes you to the **Airway**, **Breathing**, **Circulation**, and **Vitals** submenu. Each of these submenus gives access to different session and scenario parameters that can be adjusted prior to or during and active session. Any changes are automatically saved to the current Scenario number so changes will not have to be re-entered for every session.

Pressing **Airway** takes you to a submenu that allows you to turn on or off the **Difficult Airway** (swollen larynx) and/or **Nasal (TBI) Blockage,** or to begin operating in BVM mode. These can also be set on a timer by selecting the feature and setting the timer using the remote control's joystick. To start the feature immediately, set the timer to zero. Note, when activating a new feature during an active session you will need to navigate back to the *Main Control Screen* before the feature is activated.

The **Breathing** submenu allows the user to set a **Breathing Stop Time**, and to setup a tension pneumothorax on either the right (**TPR**) or left (**TPL**) side, or both. These can also be set on timers as described above. There is also an option to turn the Sucking Chest Wound on or off; this pertains only to the EMITT-TMU.

The **Circulation** submenu allows access to all bleeding functions. The user can turn on/off the leg amputation(s) (**Leg Amp**), the **Axillary** bleeding (APL-IP only), the **Inguinal** wound (HEMO and CRL), the right gunshot (HEMO-G), left gunshot (EMITT-ASL) and the **IV**. The user can set the required hold time for the axillary and inguinal wounds; the default time is 3 minutes, but this can be shortened to 15 seconds for demonstration purposes or can be set to 1, 2, 4 or 5 minutes.

The **Vitals** submenu gives the user access to the following physiologic parameters:

- Breathing Rate: the rate can be set from 1 to 60. This will override the rate determined by the physiology engine.
- Heart Rate: the rate can be set from 0 to 200. This will override the pulse determined from the physiology engine.
- **Blood Lost (ml)**: The system measures any blood loss during the session; this setting allows the user to start with a preset blood loss to increase the severity of the injury at the onset of the session. The user can select between 0 and 1500ml.
- **Systolic BP**: The user can set the systolic blood pressure, overriding the rate determined by the physiology model.
- **Diastolic BP**: The user can set the diastolic blood pressure, overriding the rate determined by the physiology model.
- **ECG Waveform**: The user can select from several preset ECG waveforms or none.   Viewing the waveforms requires the purchase of the optional

TraumaFX® ECG Simulator. See the ECG Simulator Quick Start Guide for more details on the available waveforms.

- **Pupillary Reflex**: For the CRU upper unit, this button allows the used to set the state of the light-sensing eyes. Normal leaves the eyes in light sensing mode, Dilated will fix them in a dilated state, Fixed will freeze them at a normal dilation, Pinpoint will fix them in constricted state, and TBI will fix the right eye in a dilated state while the left eye remains light reactive.
- **Leg Movement**: Allows the user to switch between **Manual** leg movement (using the joystick to control the legs) and **Automatic**, which will move the legs randomly whenever a session is active and the patient is conscious.
- **Zombie Mode**: Selecting Zombie Mode will allow a session to continue past the point of death. Normally, a session ends when death occurs (by exsanguination, oxygen depletion, etc.); in this mode, the cause of death will show on the remote-control screen but the session will continue to operate.

ACLS/ALS Mode

The Remote Control has two modes: Standard, centered around TC3 injuries and treatments, and ACLS/ALS, focused on teaching ACLS algorithms. Previous sections of this chapter have dealt with operation in Standard mode.

To switch modes, go to the TraumaFX **Splash Screen**. The first available button toggles Standard vs ACLS mode (Figure 17). The mode is saved to memory, meaning the Remote Control will boot-up in the same mode it was in previously.

Figure 17

ACLS Main Screen

The ACLS Main Screen replaces Standard Mode's Session Control screen. This is the first screen on the Remote Control if the Remote is powered on in ACLS mode. The screen provides the following selections (Figure 18):

1. State List: States for the current Megacode. Switch State to iterate through the states.
2. Medicine List: Available medicines for the current state. Scrolling only available on the Medication screen.
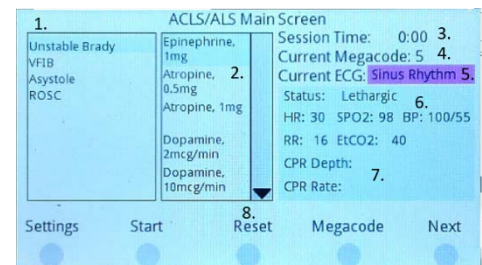

Figure 18

3. Session Time
4. Current Megacode
5. Current ECG waveform
6. Vitals Box: Current vital signs
7. CPR: Only available with upper bodies with CPR capability
8. Buttons: The 6 button sets are described later in the document.
    a. Control
    b. Initial Steps
    c. Waveform Management
    d. Treatment – Pace
    e. Treatment – Shock
    f. Medication

Megacode Screen

The RC Transmitter has 20 preset Megacodes. Each Megacode can be edited. States can be added to or removed from each Megacode, and each Megacode can have up to 10 states and must have at least a starting and ending state.

To select a Megacode, press the *Megacode* button on the **ACLS Main Screen**. This will take you to the **Megacode Screen** (Figure 19). This screen shows:

1. Megacode List: The remote comes with 20 preprogramed Megacodes.
2. *Back* button: Returns to **ACLS Main Screen**.
3. *Select* button: Sets the current Megacode to the highlighted Megacode.

Figure 19

4. *Edit* button: Switches to the **Edit Megacode** screen to change the states and vitals for the highlighted Megacode.
5. *Reset* button: Resets the highlighted Megacode to the default values.
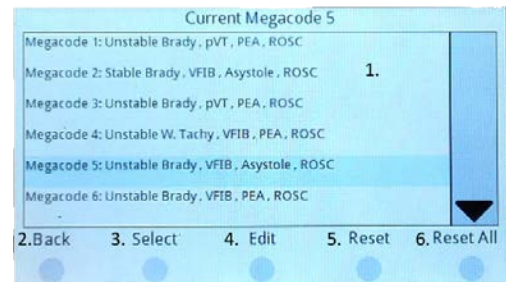6. *Reset All* button: Resets all 20 Megacodes to their default values.

Edit Megacode Screen

To edit a Megacode, press the *Edit* button in the **Megacode Screen**. This will take you to the **Edit Megacode Screen** (Figure 20). From this screen, the user can add new states, remove current states, and change the vitals settings for a particular state.

1. State List: List of current states in the selected Megacode.
2. Vitals Box: Current vitals settings for the highlighted state.

3. New State: A new state to add to the Megacode. Press *Save* to add it to the state list.

4. *Back* button: Returns to the Megacode Screen.

5. *Save* button: Saves the vital changes if the state is already part of the state list. Otherwise it adds the state to the list. A Megacode can have up to 10 states.

Figure 20

6. *Remove* button: Removes the selected state from the list. The first and last states cannot be removed.

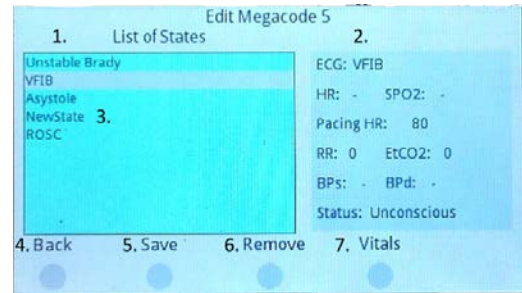7. *Vitals* button: Switches to the Vitals Screen to edit the vital settings for the selected state

Edit Vitals Screen

To edit the vital signs for a selected state, press the *Vitals* button in the Edit **Megacode Screen**. This will take you to the **Edit Vitals** Screen. From here, the user can select and change each vital sign, using the *Next* button on the right and the *Back* button on the left to page through the vitals list. Vital signs that can be changed are:

1. ECG Waveform
2. Pulses Off/On
3. Heart Rate
4. Breathing Rate
5. Systolic Blood Pressure
6. Diastolic Blood Pressure
7. Mental State
8. Oxygen Saturation
9. End-Tidal CO2
10. Pacing Heart Rate

Running an ACLS Session

To RC Transmitter must be paired to a TraumaFX upper body simulator in order to begin an ACLS session. From the ACLS Main Screen, press *Start* to begin a session. Once started, this button changes to *Pause*, and then changes to *Resume* during a pause. To stop and reset the session, press the *Stop* button. Pressing the Megacode button switches to the Megacode Screen, providing a list of the 20 available Megacodes. The ACLS Main Screen is shown in Figure 21. Pressing the Next button changes the button options for the Initial steps.

The Initial Steps list (Figure 22) is:

1. Back button: Returns to the Control button set.
2. Assigned Roles button: Checks "Team Leader Assigned Roles" in the AAR log.

3. Monitor Leads button: Switches to the Monitor Leads screen to choose which waveform/vitals appear on the monitor.
4. IV Started button: Checks "IV started" in the AAR log.
5. Next button: Advances to the Waveform Management button set
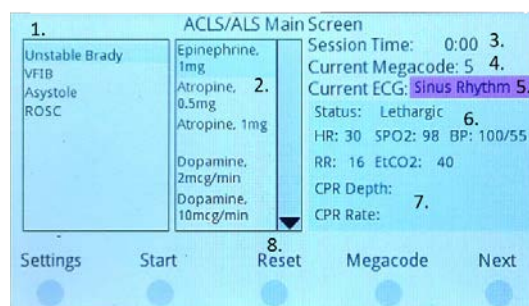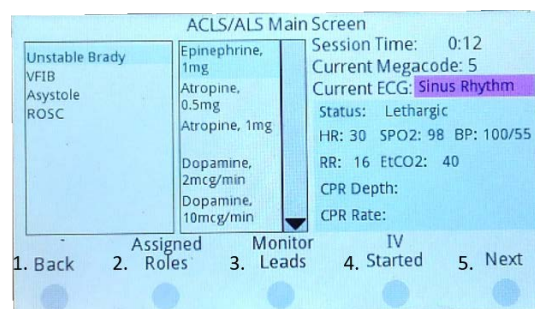

Figure 21

Figure 22

The *Monitor Leads* button leads to the **Monitor Leads Screen**, where the user can select which leads have been connected to the patient and patient monitor using the thumbstick on the RC Transmitter to highlight the lead and selecting *On*. Pressing *All On* or *All Off* will mark all leads to that state without having to individually select them. Pressing the *Lock Leads* button will lock the current settings as they are for all future sessions until they are deliberately changed again. By default, the settings do not carry over from session to session.

Once the leads have been chosen, press *Back* to return to the **ACLS Main Screen**; this will enable the Waveform Management Buttons (Figure 23). The trainer can note whether the pulse was checked, whether the waveform was recognized, and to select potential
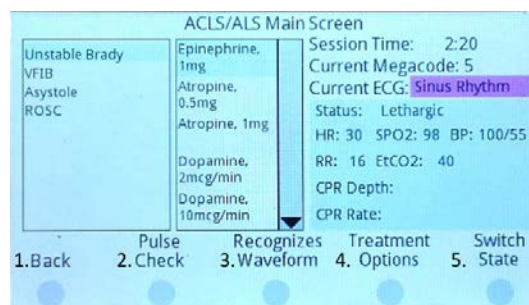

Figure 23

treatment options. Pressing Treatment Options changes the buttons to the Treatment Buttons. Options for treatment are *Medication*, which changes the buttons to the Medication buttons, or either *Pace* or *Shock*, depending on the medical condition. If Pace is selected, an All Clear button will appear, logging whether the student stated "All Clear" prior to administering a shock. The Capture button simulated pacing capture, switching to the capture

waveform and pacing heart rate. If *Shock* is selected, the buttons will change to the shock options. A *Sync* button will appear, adding sync markers to the ECG waveform on the monitor (if applicable to the waveform). This will change to *All Clear* to allow that command to be captured in the data log. Pressing *Shock* will simulate a shock; the shock waveform is then inserted into the ECG waveform on the monitor.

If the *Medications* button is selected, the medication list on the screen is activated and the buttons change to the **Medication Buttons** (Figure 24). The trainer can select the chosen medicine and dose. Pressing *Destabilize* changes a stable Brady/Tachycardia to an unstable Brady/Tachycardia. Breathing stops, and the blood pressure decreases. Press *Select/Deselect* to select or

Figure 24

deselect the highlighted medication. Press *Administer* to log that the medication was given, and press *Apply Effects* to implement the physiological changes due to the medication.
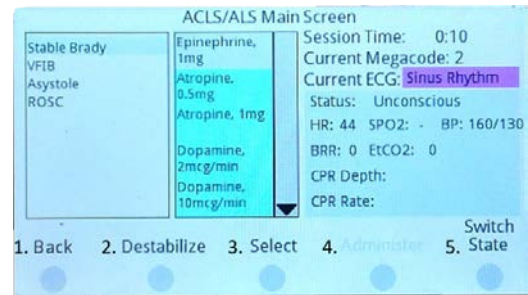
Press Switch State to change to the next state in the list on the left. The screen always switches to the **Waveform Management** button set when the state changes.

CPR
If the connected upper body has CPR capabilities, then the Remote Control will display the CPR statistics when a pulseless state is selected. The current compression depth and rate readings are displayed. If the current reading is within the "good" range, the text will be green; otherwise it will be red. The overall percentage of successful depth and rate readings is also displayed.

Caution: Do not perform CPR compressions on a breathing simulator; this could cause damage to the breathing system.

After Action Reporting (AAR)

The system maintains a log of all entries during the Megacode, and these can be saved to an AAR file upon completion. After the final state is completed, press *Back* from the ACLS Main Screen to reach the ACLS AAR screen (Figure 25). From here, select Save List to save the ACLS checklist to an SD card (if inserted). Press Save Log to save the full log file to the SD card.

Figure 25

Packing

Prior to storing the RC transmitter, always perform the following procedures:

1. **Power down** the RC

2. **Remove** the battery from the RC

3. **Store** the battery and its charger in their proper places in the accompanying upper or lower unit storage case

4. **Place** the RC transmitter in its proper place in the upper or lower unit storage case

Chapter

5

Chapter 5: After Use Care

To keep the RC operating as designed, the following preventive maintenance actions <u>must be completed after each training session</u>.

These easy to perform maintenance actions will help ensure the RC remains in peak operating condition for each training session:

1. **Remove battery** daily after training is complete. Do not store battery in the transmitter as this could cause the batteries to fail.

2. **Fully recharge the battery** after each training exercise. To extend the service life of the batteries, do not run the batteries until they are completely out of charge.

3. **Do not use** a partially charged battery as this will cause the RC to not operate properly.

4. **Only use** approved chargers supplied with the RC, or upper or lower unit to recharge the batteries.

5. **Read the User's Manual** for the Battery Chargers and follow instructions and precautions listed inside the manual.

Chapter

6

Chapter 6: Troubleshooting

Contact TraumaFX Technical Support at: MATTsupport@traumafx.net, or 1-800-200-7465 if trouble-shooting steps do not resolve an issue you are experiencing.

Issue	Actions
Condensation appears on the screen	▪ Store in a cool, dry place and do not subject the RC transmitter to wet conditions.
The RC will not turn on	▪ Check to verify you are using a fully charged battery ▪ Replace the battery, as needed.
RC transmitter is not working	▪ Check to see if the upper or lower unit is turned on. ▪ Is the LCD displaying information (located on the front panel)? ▪ Is the RC Transmitter showing "Paired" with the upper or lower unit ▪ Ensure all batteries in the both the upper or lower unit and RC transmitter are fully charged.

Additional Support
Customer Service and Support

For other troubleshooting issues not identified above, please contact TraumaFX Technical Support at MATTSupport@traumafx.net, or 1-800-200-7465.

Appendix

A

Appendix A – RC Transmitter Technical Specifications

Remote Control Transmitter

Weight: 4 lbs.

Power Supply: One (1) 18 V (3.0-5.0Ah) Li-ion batteries

Effective Range: Outdoor range is 200 meters (line of site); indoor range is 50 meters but is subject to building construction materials that may impede signal.

Power supply: 18v Lithium Ion Battery

Indoor or Outdoor Use

Altitude Rating: Altitude up to 2000 m

Temperature Rating: Temperatures between 32°F and 104°F (0°C to 40°C)

Humidity Rating: Maximum relative humidity 80% for temperatures up to 88°F (31°C) decreasing linearly to 50% relative humidity at 104°F (40°C)

IP Rating: IP40

Transmit power: 63mW (18dBm)

RF Data Rate: 250,000 bps

FCC ID: Contains FCC ID: OUR-XBEEPRO** The enclosed device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (i.) this device may not cause harmful interference and (ii.) this device must accept any interference received, including interference that may cause undesired operation.

FCC Approval: Systems that include XBee/XBee-PRO Modules inherit MaxStream's Certifications. FCC ID: OUR-XBEEPRO

ISM (Industrial, Scientific & Medical): 2.4 GHz frequency band Manufactured under ISO 9001:2000 registered standards XBee/XBee-PRO RF Modules are optimized for use in US, Canada, Australia, Israel, and Europe (contact MaxStream for complete list of approvals).

IMPORTANT: The XBee/XBee-PRO OEM RF Module has been certified by the FCC for use with other products without any further certification (as per FCC section 2.1091). Modifications not expressly approved by MaxStream could void the user's authority to operate the equipment.

Makita DC18RC Battery Charger

Input: A.C. 120 V 50 – 60 HZ
Output: D.C. 7.2 V – 18 V
Weight: 1.0 kg (2.2 lbs)