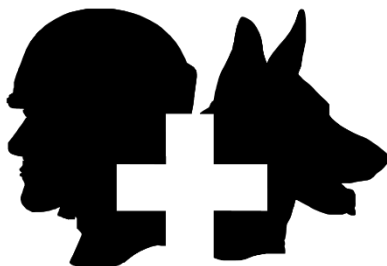


TRAUMA F/X[®]

Improving Survivability



TRAUMAFX[®] MASTER CONTROLLER

TraumaFX[®] Master Controller (MCON) User Guide

Rev_Q2_2020

TRAUMA F/X[®]
Improving Survivability



TraumaFX® Master Controller

TraumaFX Customer Service

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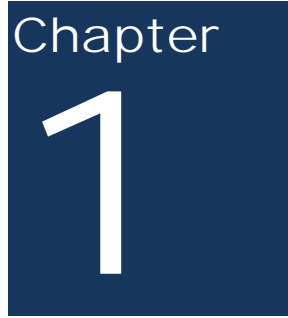
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Chapter 1: Introduction

About the TraumaFX® Master Controller

The TraumaFX® Master Controller (MC) is a ruggedized controller used with the all powered TraumaFX® upper and lower units. With its simplistic and durable design, the MC provides end users with the ability to control multiple systems, 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
- Clinical Response Lower (CRL)
- AirwayPlus Lifecast – Intubation/Packable (APL-IP)
- AirwayPlus Lifecast – Pulses/Breathing (APL-PB)
- Clinical Response Upper (CRU)

The MC is designed for rugged use in realistic training environments, however is not impermeable to damage. To ensure proper operation, do not subject the MC unit to unnecessarily harsh treatment. Careful preventive maintenance and frequent after-use inspection is essential to ensure the service life of your Master Controller. 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® Master Controller.

Standard Components and Accessories

Accessory Name	Order Number
Slimline 18v Makita Battery	KGS-TFX-SBT-1
Master Controller with case	KGS-TFX-MCON-1

Figure 1

System Overview

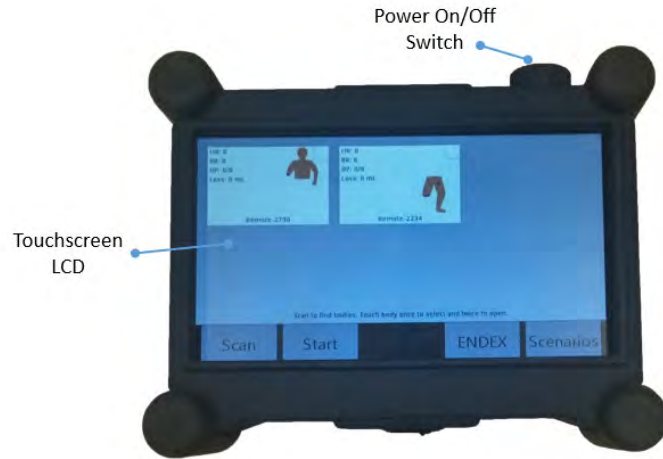


Figure 2

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 MC UNDER WATER. REMOVE BATTERIES BEFORE CLEAN UP TO AVOID ELECTRIC SHOCK!

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



Radio Communication

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

Chapter 2: Master Controller (MC) Features

This section describes the features of the MC that contribute to the unique training experience that TraumaFX® systems provide:

- Connect to and control up to six (6) whole-body systems and accessories
- Can provide master control over any and all connected systems or be used to monitor only.
- Easy to use software with touch-screen interface
- 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
- Water and weather resistant
- Simple operation – tap to select a system, and tap twice to zoom in
- Data displayed in tabular or Combat Casualty Card format
- Ergonomically molded-in handgrips and wrist strap for comfortable use
- Wireless communication with systems up to 200M away outdoors and 50m in indoor/urban areas
- Operational day or night
- User adjustable brightness
- Start a session on one or all connected systems with a single button push
- Operated by a single Makita 18v Li-ion battery

Cautions and Care

The MC 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® Master Controller (MC) 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



MC Batteries

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

Each MC 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 MC 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 MC Battery

1. **Plug** the Makita quick charger (Figure 3) into a standard 110V wall outlet. This charger is provided with all powered TraumaFX® systems.
2. **Slide** the battery onto the quick charger until firmly in place and the indicator light illuminates (each battery takes approximately 15-30 minutes to charge, and depending on the amount of usage, provides up to 4 hours 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 all batteries from the MC at the end of each training session. Batteries should never be stored inside a unit, MC, 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 degrees F or below 38 degrees 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: Operating the TraumaFX® Master Controller (MC)

This chapter describes the operational features of the MC written from the perspective of having paired at least one upper and one lower unit to the MC. 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 Master Controller is provided by one (1) 18v Makita Lithium-Ion battery. All batteries are fully rechargeable and come with a charger and manufacturer's instructions and operating manuals.

TraumaFX System Requirements

In order to use the MC with TraumaFX® upper and lower simulators and accessories, the individual simulators must be powered on and paired with their respective remote control transmitters. For instructions on how to do this, please refer to the User's Guides for the individual simulator and/or TraumaFX® remote control transmitter. The MC can be used with as many as 6 full-body systems and accessories. Anything paired with a single remote control transmitter (upper body, lower body, accessory) will be displayed together on the MC as a single "body".

It is important to remember that the MC can be used to control any or all paired TraumaFX systems, or it can be used as a monitoring device only. All remote control (RC) transmitters remain active for input and can be used to override commands from the MC.

Scanning for TraumaFX® Upper or Lower Units or Accessories

After powering on the MC, you will be taken to the Global Main Screen. Depending on when they are turned on, there are occasionally simulators already listed at start up, or the screen may be blank (Figure 5). As with a phone, you can use two fingers to zoom in and out. To select a particular full-body system, simply touch anywhere in the remote-body box. When selected, the box outline turns blue and an "x" appears in the top right corner. Bodies must be selected for the MC to interact with them. Click the "x" in the upper right corner to deselect a body.

To find available bodies, press the “Scan” button on the screen. Any systems in the area that are powered on and connected to their remote control transmitter will appear on the screen (Figure 6), listed by their remote control serial number.

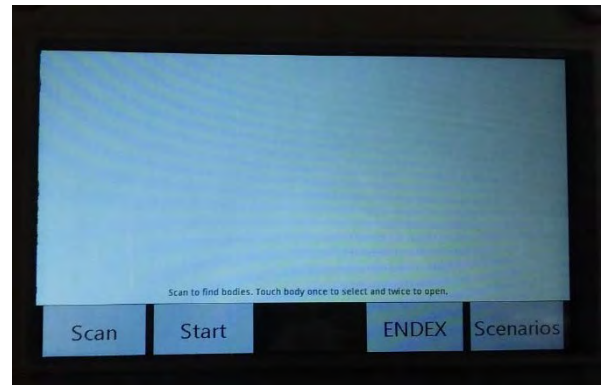


Figure 5

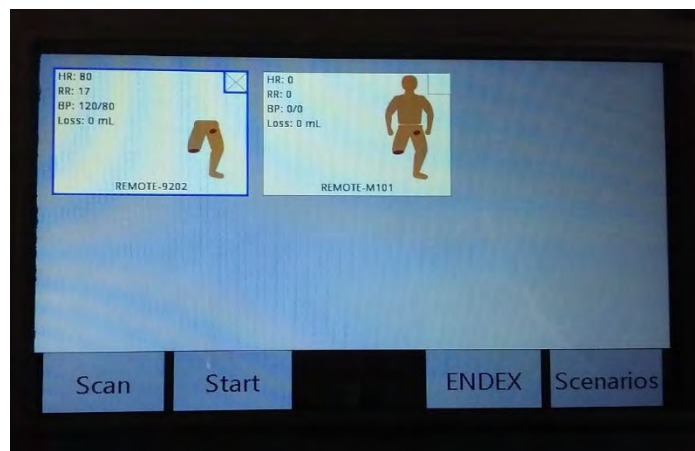


Figure 6

Starting, Pausing and Stopping a Session

Pressing the “Start” button will begin a session on all selected remote control transmitters. If the remote is running a session, a “play” symbol will appear in the bottom left corner (Figure 7). While a session is running, updated vitals will show on the left. The image of the body on the right will be updated with injury

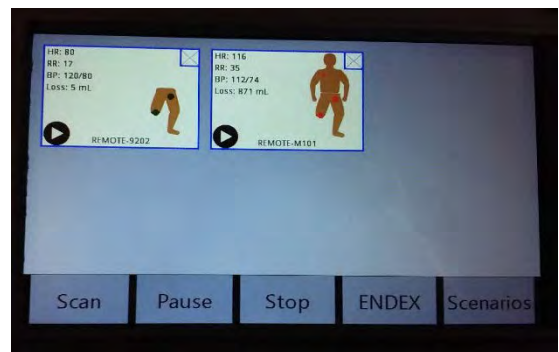


Figure 7

indicators. These indicators will blink red while the injury is untreated and will turn green when successfully treated.

An active session can be paused at any time; the pause option becomes available when a session is running. When paused, a “pause” symbol will appear in the lower

left corner, replacing the “play” symbol (Figure 8). Press “Resume” to continue running the session.

If a session is running, press stop to end the session. If the remote has stopped the session, a stop symbol will appear in the lower left corner (Figure 9).

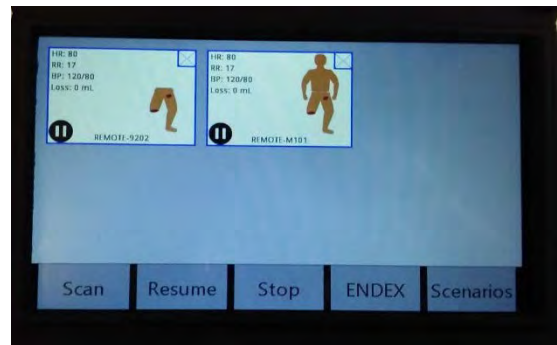


Figure 8

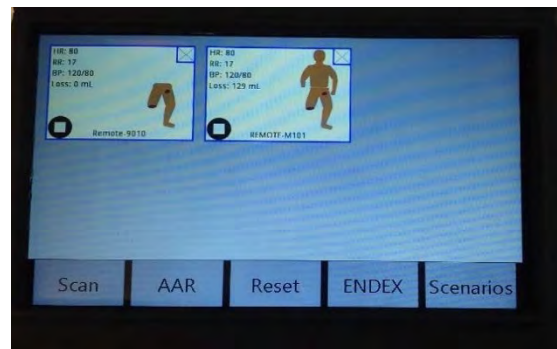


Figure 9

Ending an Exercise

To end an exercise, press the “ENDEX” button. You will be prompted with “Are You Sure?”. Pressing “Yes” will end the exercise and change the MC buttons at the bottom of the screen.

- **AAR:** After a session is completed and stopped, the AAR option appears. This allows the MC to pull the After Action Review files off each remote.
- **Reset:** This resets the session. All the play/pause/stop symbols should disappear if the remote has successfully received the reset command.
- **Scenarios:** This takes you to the *Scenarios* screen.

After Action Reporting (AAR)

Pressing the *AAR* button after the end of an exercise causes the MC to switch to the *AAR File Pull Progress* screen (Figure 10). The AAR process where the MC queries each remote individually for its AAR file will automatically start, using the following process:

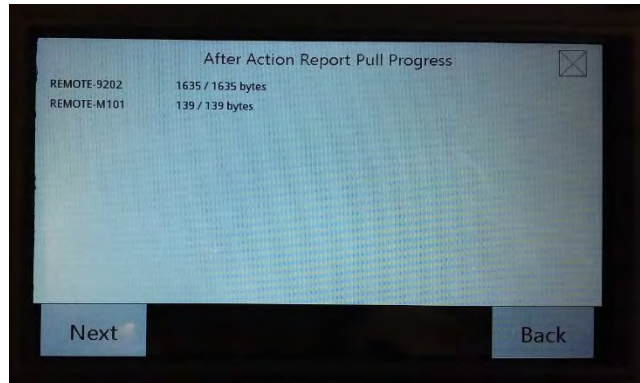


Figure 10

- The progress will read 0 / 0 until the MC receives the file size from the remote control transmitter. Afterwards, the screen updates with the number of bytes pulled.
- **Back or Close:** If you did not mean to enter AAR mode or want to retry in case of an error, pressing *Back* or the close button (“X” within a small square” in the upper right corner) will abort the AAR process and return you to the Global Main screen.
- **Next:** Once the files have all been pulled, the next button appears. This switches to the *After Action Reports List* screen.

The *After Action Reports List* screen has the following button options (Figure 11):

- **Rename:** Switches to a keyboard screen where you can rename the default name to something more useful. All files are saved as comma separated files and the .csv ending will be automatically

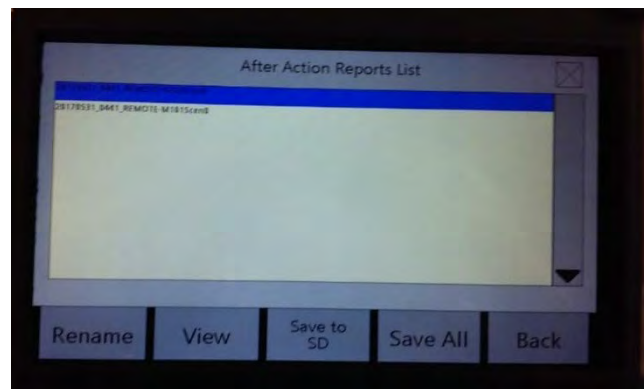


Figure 11

appended when the file is saved to the SD

Card. The default file name is YYYYMMdd_hhmm_RemoteORLaneNameScen#.

- **View:** You can also view the contents of the AAR file before deciding to save.

- **Save to SD:** If an SD card is inserted, the Save to SD option appears. When the file has successfully been saved, it gains a green highlight (Figure 12). Files are saved in the TFXData folder in a new subfolder based on the Date and Time the SD card was inserted

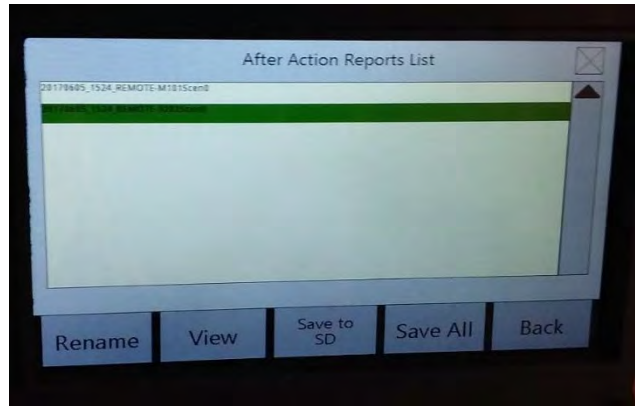


Figure 12

(TFXData\YYYYMMdd_hhmmss). Every AAR file since the MC was powered on will be saved in this subfolder.

- **Save All:** The Save All option allows all the files to be saved to the SD card with one command instead of having to save each file individually.
- **Back or Close:** Returns to the Global Main screen (or the Focused Session Control screen if focused on one remote-body pair).

AAR Error:

If an error occurs during the AAR process, the bytes progress will be replaced with *AAR Error*. You can still proceed to the AAR file list screen to view any AAR files that have been successfully received. To retry getting an AAR file after receiving an error, simply press *Back* and then *AAR* to restart the AAR pull process. Files that were not pulled will show up as “AAR File Get Error” and will not have the Rename, View, or Save to SD options available.

The two known AAR errors that cannot be fixed by retrying are 1) if the MC has lost communication with the remote control transmitter (e.g. the remote was turned off or died, the remote has a serial port problem, etc.) or 2) if the user tries to pull an AAR file from a remote that does not have an AAR file to pull (either a session has not been run yet or the session is still currently running). This can happen if you run and stop a session on one remote-body set, select another remote-body set which is still currently running, and then try to pull the AAR file for both.

Scenarios

There are currently twenty (20) built-in training scenarios, which can be accessed by pressing the **Scenarios** button on *Global Main 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 (state of the eyes is for the CRU only). These provide a starting point for a session (Figure 13). 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 button on the Scenario screen.

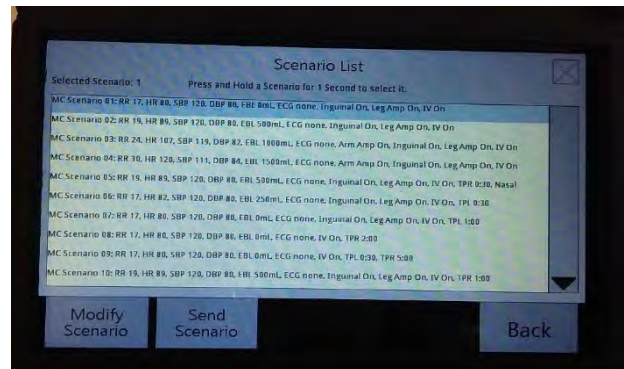


Figure 13

Options on the *Scenario List* screen are:

- **Modify Scenario:** Navigates to the ABCs screen to allow changes to be made to the selected scenario.
- **Send Scenario:** Sends the highlighted scenario to every selected remote.
- **Back or Close:** Returns to the Global Main screen.

Pressing Modify Scenario takes you to the ABCs (Airway, Breathing and Circulation) screen, where all available vitals can be changed (Figure 14). Any changes made to a scenario from the ABCs screen will persist until the MC is powered off. After restarting, any unsaved scenario modifications will be lost and the saved defaults will be loaded. Button options from this screen are:

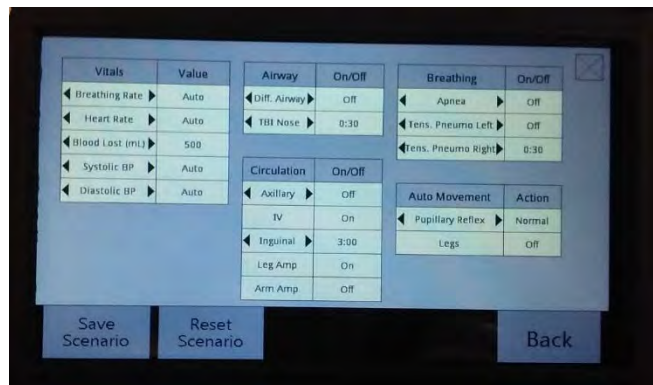


Figure 14

- **Save Scenario:** Saves the changes to flash, overwriting the current default scenario.

- **Reset Scenario:** Reset scenario will reset any changes that have been made while on the ABC screen.
- **Back or Close:** Returns to the Scenario List screen.

Focused Screens

The focused screens allow the MC to get more information about one specific remote-body pair. From the *Global Main Screen*, touching an already selected body will bring up the focused Session Control screen (Figure 15). The Session Control screen allows the MC

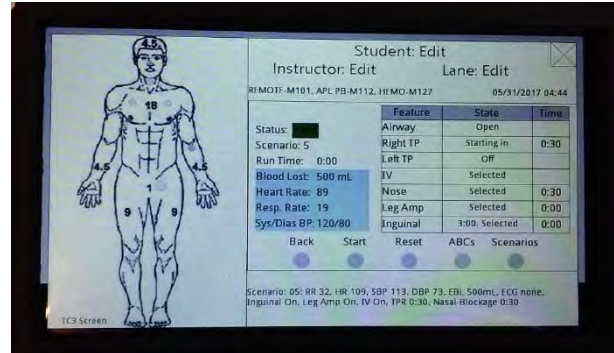


Figure 15

act as a remote replacement. On this screen the user can add a specific lane, instructor, and student name. Pressing the user-specific fields moves you to a keyboard screen where you can enter the desired names. Additionally, the user-supplied lane name replaces the remote name as the remote-body pair identifier on the *Global Main Screen* and on the *AAR File Pull Screen*. Pressing *Back* or the *Close* button on the focused Session Control screen will bring you back to the *Global Main* screen.

TCCC Combat Casualty Card Mode

Touching the TC3 body on the focused Session Control screen brings up the TC3 card screen (Figure 16). This screen fills out the TC3 card as the session runs. Press the X to return to the focused Session Control screen or the home icon to return to the *Global Main Screen*.

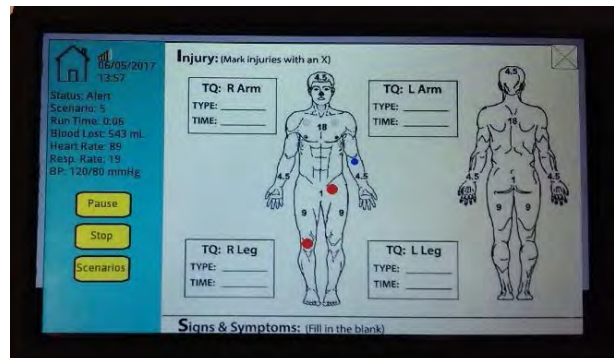


Figure 16

The focused remote's session can be controlled on the TC3 screen by using the session control buttons on the left side of the screen. While the session is running, injury indicators will blink on the TC3 body in the injury section. The tourniquet times and treatment applied

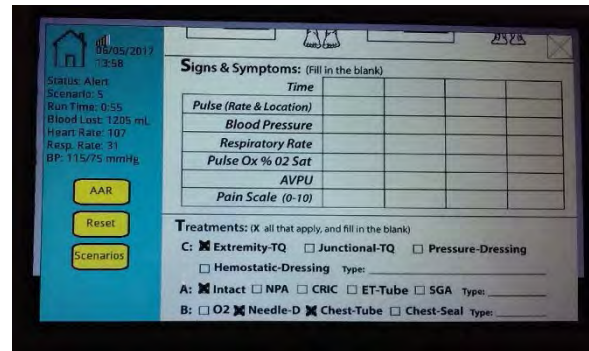


Figure 17

sections automatically get filled out as the session runs. Scroll down the screen to see additional entry items not visible on the start screen (Figure 17). The focused remote's scenario can also be changed by pressing the Scenarios button which brings up the focused *Scenarios* screen.

Setting Date and Time

Pressing the date/time display on the *Session Control* or *TC3 Card* screen will allow you to adjust the time. This is useful if you are saving files to the SD card and want the file's modified date to be accurate. Touch any of the date or time element boxes to change them. Press "Save" set the MC on-board clock to the new date and/or time value. Press "Exit" or the close button to return to the previous screen.

Packing

Prior to storing the MC, always perform the following procedures:

1. **Power down** the MC
2. **Remove** the battery from the MC
3. **Store** the battery and its charger in their proper places in the accompanying upper or lower unit storage case
4. **Place** the MC in its proper place in the unit storage case

Chapter 5: After Use Care



To keep the Master Controller (MC) operating as designed, the following preventive maintenance actions must be completed after each training session.

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

1. **Remove battery** daily after training is complete. Do not store battery in the Master Controller 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 MC to not operate properly.
4. **Only use** approved chargers supplied with your TraumaFX® 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: 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	<ul style="list-style-type: none"> ▪ Store in a cool, dry place and do not subject the MC transmitter to wet conditions.
The MC will not turn on	<ul style="list-style-type: none"> ▪ Check to verify you are using a fully charged battery ▪ Replace the battery, as needed.
MC transmitter is not working	<ul style="list-style-type: none"> ▪ Check to see if an upper or lower unit is turned on and paired to its remote control transmitter. ▪ Is the LCD displaying information (located on the front panel)? ▪ Do any TraumaFX systems appear when Scan is pressed? ▪ Ensure all batteries in the both the upper or lower unit, RC transmitter, and MC 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 – Master Controller Technical Specs

Master Controller

Weight: 4 lbs

Power Supply: One (1) 18 V Li-ion battery

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)

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 (not supplied)

Input: A.C. 120 V 50 – 60 HZ

Output: D.C. 7.2 V – 18 V

Weight: 1.0 kg (2.2 lbs)

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