

# Seeker MCA III

## Mobile Communications Adapter

### Operation Manual



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. See Page 3 for complete details.



**Industry  
Canada**

**Industrie  
Canada**

This equipment has been tested and found to comply with Industry Canada Standards. See Page 4 for complete details.

think ahead.

 **TRILITHIC**

## Putting Innovation Within Reach

Product innovation at Trilithic has always been characterized by one thing: it's practical. It makes life easier for customers. It's the natural result of listening to them. That philosophy has been the driving force behind the company's growth from its beginnings as a two-man engineering team in 1986 to its current position as a global manufacturer with more than 130 employees.

A privately held company, Trilithic broadend its original RF and microwave component product line by acquiring filters manufacturer Cir-Q-Tel and instruments manufacturer Texscan, adding broadband solutions to the product line. The company also expanded operations to Thailand in 2001, to meet increasing demand for its products in the growing markets of Asia.

As new communications applications continue to emerge, part of Trilithic's business has evolved into managing change—helping customers respond quickly to market opportunities with innovative technology and individualized solutions. But the core value of Trilithic's business approach—listening to customers—hasn't changed. Keep that focus intact will help provide better products in the long run and ensure continued growth for decades to come.

Trilithic is comprised of three major divisions:

### **Broadband Instruments**

*The company is best known for innovations in signal level measurement, leakage detection and reverse path maintenance—like the use of Digital Signal Processing (DSP) technology, which lets field technicians upgrade their signal analyzers by simply downloading firmware.*

### **Emergency Alert Systems**

*Trilithic's EAS division is a leading supplier of homeland security government-mandated emergency alert systems for broadband and other communication system providers. As the communications industry continues its rapid evolution, Trilithic has begun offering comprehensive systems and services to address a wide variety of emergency alert system needs, including the design and architectural layout of complex analog and digital EAS networks.*

### **XFTP**

*Trilithic's XFTP division offers a specialty line of field technical products for cable operators and technicians, as well as a line of products for installing electronics in the home of the future. The division brings together an experienced Trilithic team and a new group of exclusive distributors to provide popular products and services at an affordable price, without sacrificing quality or support.*

## FCC Part 15 Compliance



Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

Pursuant to FCC 15.21 of the FCC rules, changes not expressly approved by Trilithic, Inc. might cause harmful interference and void the FCC authorization to operate this product.

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the device and receiver
- Connect the device into an output on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

The Seeker MCA III can only be used with the following Trilithic approved Wi-Fi antennas:

- P/N 2071677004 - 2.4 & 5 GHz antenna

## Industry Canada Compliance



### Industry Canada

This device complies with Industry Canada license-exempt RSS standard(s). Operation of this device 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.

This Class B digital apparatus complies with Canadian ICES-003.

The Seeker MCA III can only be used with the following Trilithic approved Wi-Fi antennas:

- P/N 2071677004 - 2.4 & 5 GHz antenna

## Industrie Canada Conformité



### Industrie Canada

Cet appareil est conforme au Cahier des charges sur les normes radioélectriques d'Industrie Canada concernant les appareils radio exempts de licence. Le fonctionnement de cet appareil est soumis aux deux conditions suivantes : 1) cet appareil ne doit pas produire de brouillage et 2) cet appareil doit accepter tout brouillage, y compris celui pouvant causer un mauvais fonctionnement de l'appareil.

Cet appareil numérique de classe B est conforme à la norme canadienne ICES-003.

Le Seeker MCA III ne peut être utilisé avec le Trilithic approuvé antennes Wi-Fi qui suit:

- P/N 2071677004 - 2.4 et 5 GHz antenne



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# Chapter 1

## General Information

### Helpful Website

The following website contains general information which may be of interest to you:

<http://www.trilithic.com>

Trilithic's website contains product specifications and information, tips, release information, marketing information, frequently asked questions (FAQs), bulletins and other technical information. You can also check this website for product updates.

### Where to Get Technical Support

Trilithic technical support is available Monday through Friday from 8:00AM to 5:00PM EST. Callers in North America can dial 317-895-3600 or 800-344-2412 (toll free). International callers should dial 317-895-3600 or fax questions to 317-895-3613. You can also e-mail technical support at [support@trilithic.com](mailto:support@trilithic.com).

For quicker support response when calling or sending e-mail, please provide the following information:

- Your name and your company name
- The technical point of contact (name, phone number, e-mail)
- The firmware & software version numbers for the Seeker, Seeker D, Seeker MCA III firmware and/or Seeker Setup Software
- The version of Windows you are using (including any Service Packs and patches)
- A detailed description of the problem you are having, including any error or information messages

## How this Manual is Organized

This manual is divided into the following chapters:

- Chapter 1, “General Information” provides Trilithic contact information and describes how this operation manual is structured.
- Chapter 2, “Seeker MCA III Introduction” introduces what the Seeker MCA III is and what it does. This chapter discusses the practical application of the Seeker MCA III. Finally, this chapter will also explain the connections of the Seeker MCA III.
- Chapter 3, “Seeker MCA III Operation” describes how to use the modes of operation of the Seeker MCA III.
- Chapter 4, “Data Upload Options” shows the data upload options for the Seeker MCA III.
- Chapter 5, “Appendix” shows the technical specifications of the Seeker MCA III as well as any error codes that may appear on the display screen of the Seeker MCA III.

## Optional Software

Although the Seeker comes preconfigured and ready to use from the factory, the following software is required for advanced configuration of the Seeker MCA III:

- **Seeker Setup** is used to configure the Seeker MCA III, enabling the operator to assemble files containing network connection & LAW upload settings. Users can efficiently download configurations to one or more Seeker MCA III units.

The following software is required for leakage data analysis using the Seeker MCA III:

- **Leakage Analysis Workshop (LAW)** is software that manages the storage and retrieval of leakage information collected by vehicle mounted Seeker GPS systems. Installed on a server, it receives leakage data uploads via the Internet/LAN or through a customer configured Wi-Fi wireless site. Data stored in LAW server may be displayed on maps or as text, used to generate leakage work orders, or downloaded to other Trilithic or third-party applications.

## Features Not Available During Initial Release

Although the Seeker MCA III includes all necessary hardware for the following features, they are not available during the initial release of the Seeker MCA III. These features will be enabled with a future firmware release:

- **USB** - This port is not used at this time, but will be enabled in the future to allow for manual leakage data uploads and firmware updates.
- **FMI** - This port is not used at this time, but will be enabled in the future to allow the use of GARMIN FMI Enabled Portable Navigation Devices (PND).

## Conventions Used in this Manual

This manual has several standardized conventions for presenting information:

- Connections, menus, menu options, and user-entered text and commands appear in **bold**.
- Section names, web, and e-mail addresses appear in *italics*.



A ***NOTE*** is information that will be of assistance to you related to the current step or procedure.



A ***CAUTION*** alerts you to any condition that could cause a mechanical failure or potential loss of data.



A ***WARNING*** alerts you to any condition that could cause personal injury.

## Precautions



***Do not use the Seeker MCA III in any manner not recommended by the manufacturer***



***The Seeker MCA III can only be used with the Trilithic approved 2.4 & 5 GHz Wi-Fi Antenna (P/N 2071677004) that is supplied with the Seeker MCA III.***



***Use only the Seeker MCA III to Mobile Mount Power and Data Cable supplied with the Seeker MCA III.***



# Seeker MCA III Introduction

This chapter:

- Describes the purpose of the Seeker MCA III
- Lists the equipment supplied with the Seeker MCA III
- Gives a guided tour of the Seeker MCA III

## What is Seeker GPS?

The Seeker GPS system provides a cost-effective way to equip each vehicle in a fleet with GPS-based reporting capabilities. The Seeker GPS system consists of the standard Seeker or Seeker D, a Seeker MCA III, and a GPS receiver. The Seeker MCA III module includes a standard Wi-Fi communications module for the wireless upload of data to the Leakage Analysis Workshop (LAW).

## Equipment Supplied with Your Seeker MCA III

The Seeker MCA III includes the following:

- P/N 2011690000 – Seeker MCA III with Wi-Fi
- P/N 2071585029 – Seeker MCA III to Mobile Mount Power and Data Cable
- P/N 2071677004 – Remote Wi-Fi Antenna
- P/N 2072213010 – CAT5e Ethernet Patch Cable - 10 Foot (Quad-Shielded)
- P/N 0500994002 – Mounting Screws (x2)

## Accessories for Your Seeker MCA III

The following accessories are available for the Seeker MCA III:

- P/N 2071707004 – GPS Receiver for Seeker MCA III
- P/N 2011222000 – Seeker Approved A/B/G/N Wi-Fi Access Point
- P/N 2071585026 – Seeker MCA III Garmin Cable (FMI-15)
- P/N 2071585030 – Seeker MCA III to Wireless Matrix or SageQuest Data Cable
- P/N 2071585006 – Serial Data Cable - 10 Foot
- P/N 2072195002 – Cellular antenna (international penta-band)

## Device Overview

The Seeker MCA III is used to store leakage data collected from the Seeker or Seeker D and to upload the same leakage data directly to a PC or to the LAW server.



***Changes to the devices not expressly approved by Trilithic, Inc. could void the user's authority to operate the equipment.***

### Front View

#### Display Screen

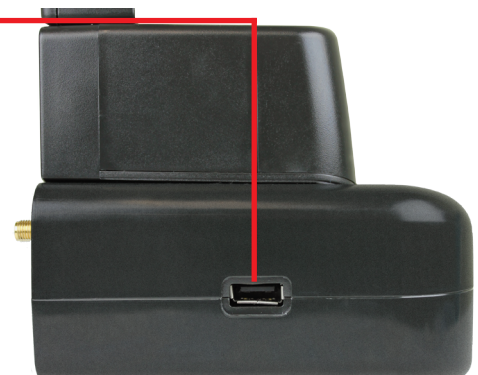
The LCD is used to display the setup and operation status of the MCA III. The information displayed on this screen is for reference only, the settings shown here can be adjusted using Seeker Setup.



### Left Side View

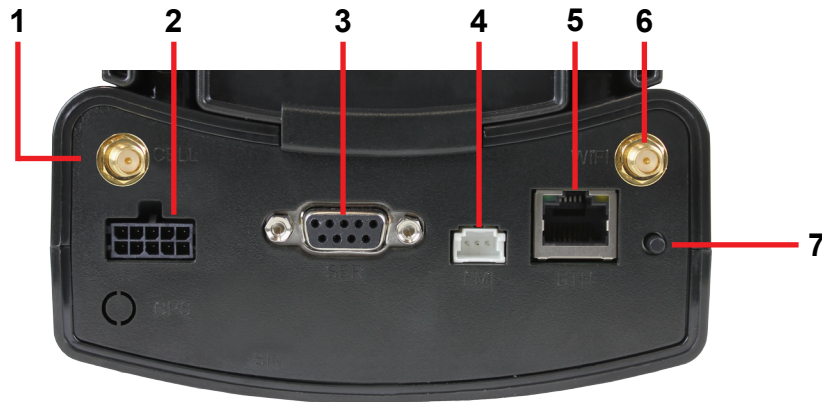
#### USB Connection

The USB connection is used with a USB flash drive for manual leakage data uploads and firmware updates



***The USB Connection is not enabled at this time, but will be enabled by a future firmware release.***

## Rear View



1. Cellular Antenna Connection – This connection is used to connect an optional cellular antenna in order to transmit leakage records to a LAW server.
2. Mobile Mount Serial Data Connection – This connection is used with the MCA III serial cable to connect the Seeker or Seeker D Mobile Mount to the MCA III. Also, power is supplied to the MCA III through this connection from the Mobile Mount.
3. GPS Serial Data Connection – This connection is used to connect to a serial (RS-232) enabled GPS receiver.
4. Fleet Management Interface Connection – This connection is used to interface with your GARMIN FMI enabled Portable Navigation Device (PND).



NOTE

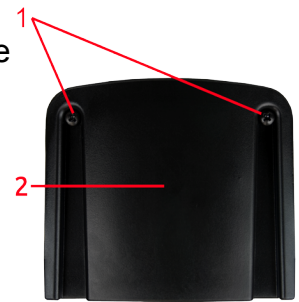
***The FMI Connection is not enabled at this time, but will be enabled by a future firmware release.***

5. Ethernet Connection – This connection is used to connect to a LAN network in order to upload leakage records to a LAW server or program the device with the Seeker Setup application.
6. Wi-Fi Antenna Connection – This connection is used to connect a Wi-Fi antenna in order to transmit leakage records to a LAW server.
7. Select Button – Single click this button to scroll through the device status menus and double click this button to enter a specific status menu.

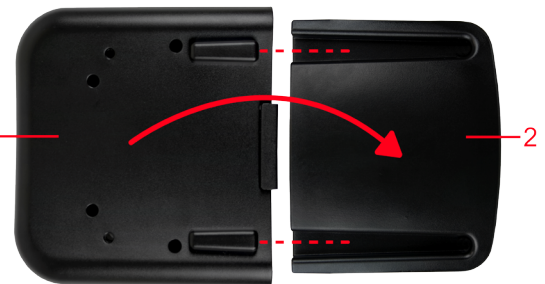
## Assembly of Seeker Mobile Mount & MCA III

The following steps provide detailed instructions on how to install the Seeker MCA III onto the bottom of the Seeker or Seeker D Mobile Mount. Note that the Seeker Mobile mount is shown for display purposes only, this procedure will also work with the Seeker D Mobile Mount in the same way.

1. Remove the two 1/4" Screws (1) from the bottom of the Mobile Mount (2) that are closest to the front mobile mount as shown to the right. Discard these screws, they are no longer needed.



2. Align the ridges on the top of the Seeker MCA III (3) with the slots in the bottom of the mobile mount (2) and then place the bottom of the Seeker MCA III against the bottom of the mobile mount as shown to the right.



3. Slide the Seeker MCA III (3) forward until the Alignment Tab (4) comes into contact with the back side of the mobile mount (2) as shown to the right.



4. Insert and tighten the two 1-1/4" Screws (included) into the mounting holes (5) on the bottom of the Seeker MCA III as shown to the right. To prevent damage to the Seeker MCA III housing, take care not to over tighten the screws.



## Installation of the Seeker MCA III

The following steps provide detailed instructions on how to install the Seeker MCA III in your vehicle.



NOTE

**Before installation, install the Seeker or Seeker D Mobile Mount in the vehicle as shown in the Seeker or Seeker D Operation Manuals.**



NOTE

**Before installation, configure the Seeker or Seeker D and MCA III as shown in the Seeker Setup Software Operation Manual.**

1. Connect the Seeker or Seeker D Mobile Mount to the Seeker MCA III using the serial data cable.



Seeker Mobile Mount and MCA III  
Rear View



Serial Data Cable



Seeker D Mobile Mount and MCA III  
Rear View



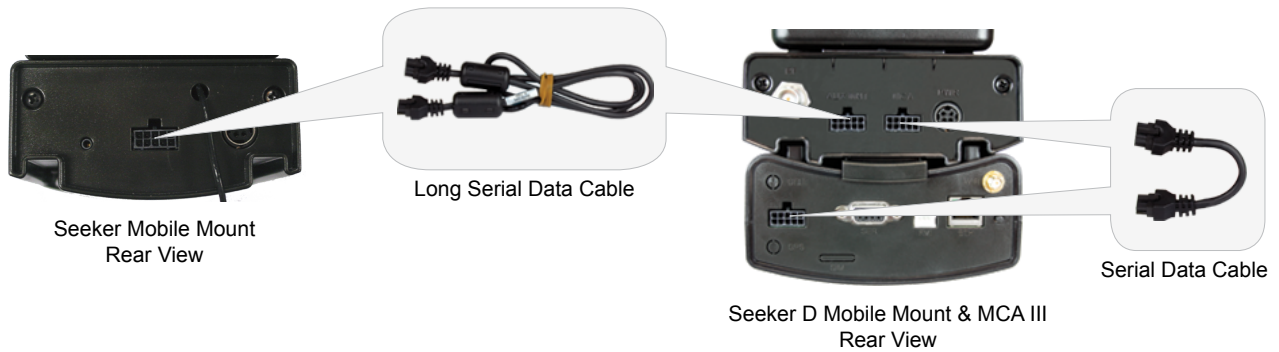
Serial Data Cable



CAUTION

**When using the MCA III with the Seeker D Mobile Mount, be sure to connect the serial data cable to the serial port labeled *MCA* on the back of the Seeker D Mobile Mount.**

## Daisy Chaining Mobile Mounts



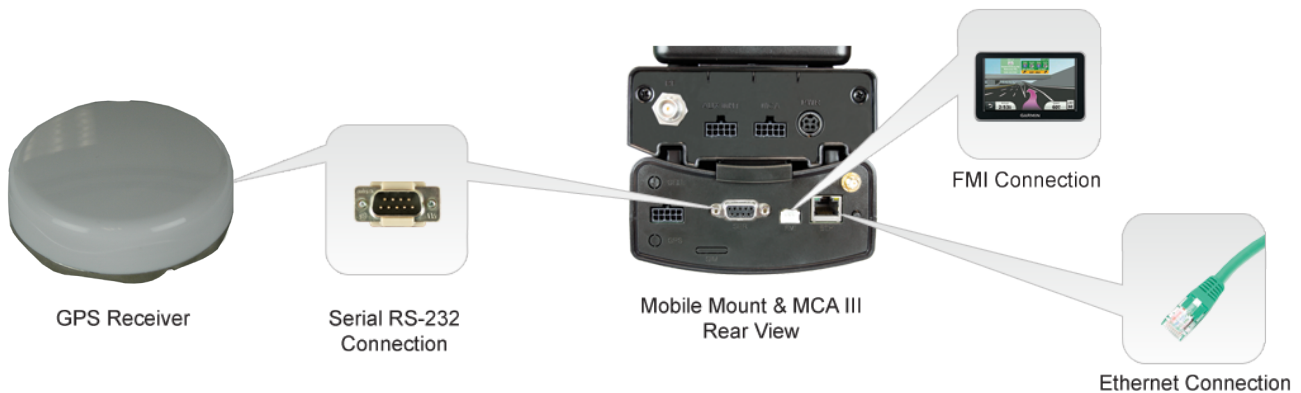
NOTE

***If using two Seeker Family meters in the same vehicle with a single MCA III, the MCA III should be mounted and connected to the Seeker D Mobile Mount. Then, connect the serial port on the back of the Seeker Mobile Mount to the serial port labeled AUX MNT on the back of the Seeker D Mobile Mount using the optional serial data cable (P/N 2071585006).***

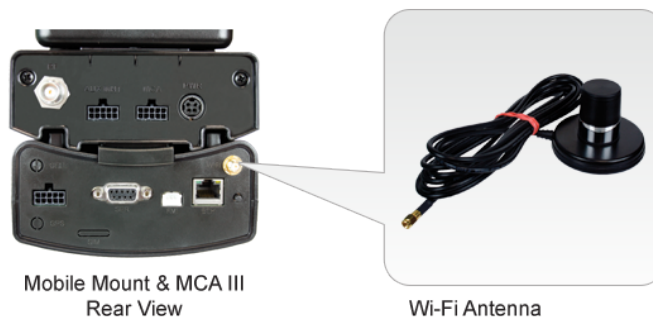


2. Connect the GPS Receiver, Ethernet Cable, and FMI Cable to the Seeker MCA III.

- Connect the GPS Receiver, Ethernet Cable, and FMI Cable directly to the Seeker MCA III.
- The Ethernet & FMI Connections are not required.
- The Ethernet connection can be used for initial configuration and/or automatic upload of leakage records to LAW via the Ethernet connection of a mobile network provider.
- The Fleet Management Interface (FMI) connection is compatible with GARMIN FMI Enabled Portable Navigation Devices (PND).
- Mount the GPS receiver in a location that has a line of sight to the GPS satellites and will enable a reliable GPS location fix.



3. Connect the Wi-Fi antenna to the Seeker MCA III. Mount the antenna in a location that will enable communication with Wi-Fi access points.



## Display Screen Overview

The display screen of the MCA III is used to display the setup and operation status of the unit.

### Startup Screens

Upon initial startup of the Seeker MCA III, the display will show the Initializing screen as shown in the image to the right.



INITIALIZING

If the Wi-Fi module needs updated upon initial startup of the Seeker MCA III, the display will show the WiFi Updating Please Wait... screen as shown in the image to the right.



WIFI UPDATING  
PLEASE WAIT...

Once the Seeker or Seeker D is properly seated in the Mobile Mount and the Seeker MCA III has a fix on an acceptable numbers of GPS satellites, the display will show the System Ready screen as shown in the image to the right.



SEEKER MCA III  
SYSTEM READY

Upon initial startup, if the Seeker or Seeker D are not in or are not properly seated in the Mobile Mount, the display will show the No Seeker Found screen as shown in the image to the right.



SEEKER MCA III  
NO SEEKER FOUND

Upon initial startup, if the MCA III is not connected to a GPS antenna or cannot obtain a fix on an acceptable number of GPS satellites, the display will show the No GPS Fix screen as shown in the image to the right.



SEEKER MCA III  
NO GPS FIX

### Shutdown Screen

Once power to the Seeker MCA III has been turned off and the vehicle shutdown timer has expired, the display will show the Shutting Down screen as shown in the image to the right.



SHUTTING  
DOWN

## Display Screen Navigation

The information displayed on this screen is for reference only, the settings shown here can be adjusted using the Seeker Setup software.

The Seeker MCA III Home Screen shows the device name and system status.

### Using the Select Button

To navigate the display screens, perform the following actions using the Select button on the back of the MCA III:

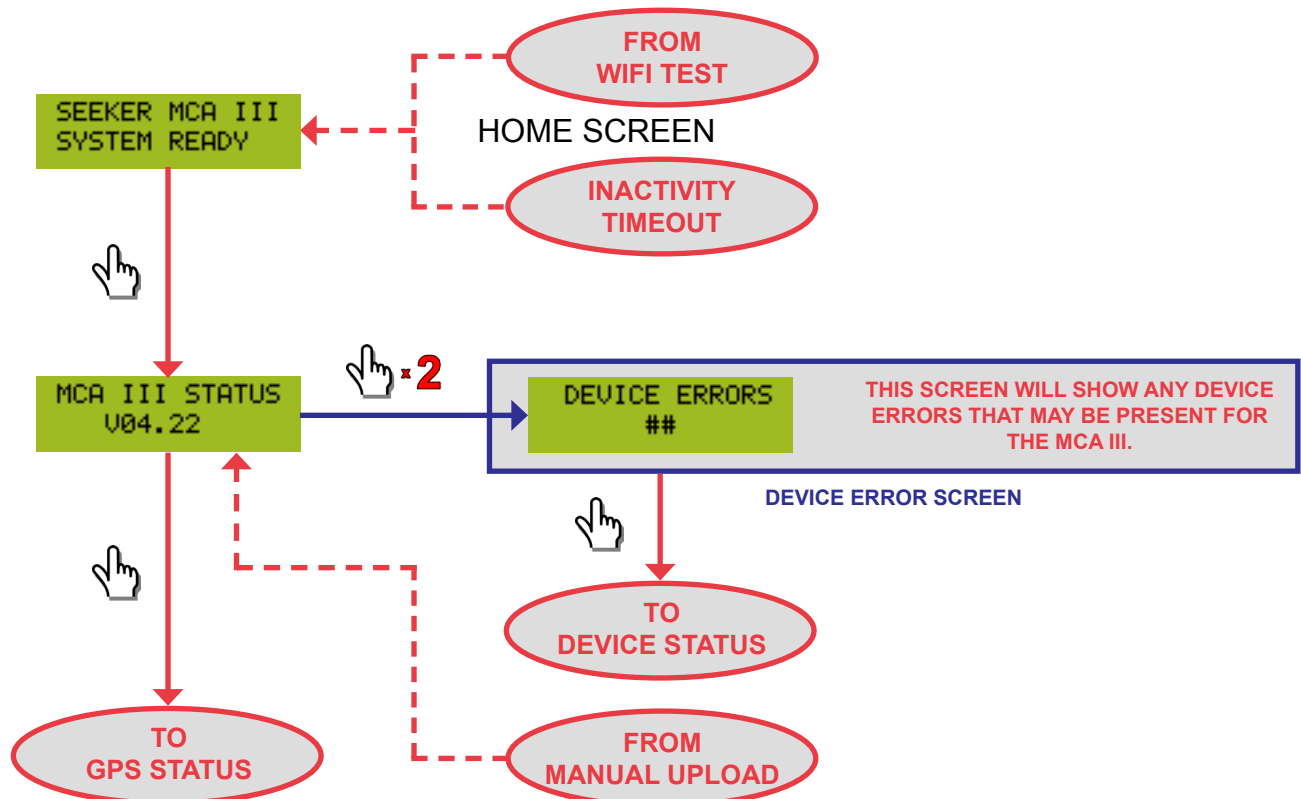


Single click the Select button to scroll through the device status menus, indicated by red lines and the symbol shown to the left or dismiss any popup messages related to device activity and/or errors.



Double click the Select button to enter a specific status menu, indicated by blue lines and the symbol shown to the left.

### Home Screen & MCA Status Screens



FROM  
DEVICE ERRORS



<p>SEEKER D FOUND CONNECT ### SECS</p> <p>SEEKER FOUND CONNECT ### SECS</p> <p>NO SEEKER FOUND CONNECT ### SECS</p>	<p>THIS SCREEN WILL SHOW THE DETECTED DEVICE ALONG WITH THE AMOUNT OF TIME (IF ANY) BEFORE THE MCA III WILL ATTEMPT TO COMMUNICATE WITH THE DETECTED DEVICE FOR THE FIRST TIME.</p> <p>THE MCA III WILL ATTEMPT TO COMMUNICATE WITH THE DETECTED DEVICE AFTER THE TIMER EXPIRES. THE TIMER IS FACTORY SET TO NINE (9) SECONDS FOR THE SEEKER D AND NINETY (90) SECONDS FOR THE SEEKER.</p> <p>ONCE THE MCA III SUCCESSFULLY COMMUNICATES WITH THE DETECTED DEVICE "CA0" WILL BE DISPLAYED ON THE SEEKER OR SEEKER D DISPLAY SCREEN.</p>
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DEVICE STATUS SCREEN



<p>LAST UPLOAD TIME 12/31 23:59 GMT</p> <p>LAST UPLOAD TIME NOT AVAILABLE</p>	<p>THIS SCREEN WILL SHOW THE TIME OF THE LAST UPLOAD IF AVAILABLE.</p> <p>THE LAST UPLOAD TIME IS NO LONGER AVAILABLE AFTER A POWER CYCLE</p>
---	---

LAST UPLOAD TIME SCREEN



<p>MEMORY STATS 100% FREE</p>	<p>THIS SCREEN WILL SHOW THE CURRENT PERCENTAGE OF FREE MEMORY IN THE MCA III.</p> <p>MEMORY CLEANUP DOES NOT OCCUR AFTER EACH UPLOAD</p>
-----------------------------------	---

MEMORY STATISTICS SCREEN



TO UPLOADS  
ENABLED

FROM MEMORY  
STATS



**UPLOADS ENABLED:**  
T E F

THIS SCREEN WILL SHOW THE THREE POSSIBLE TYPES OF UPLOADS THAT CAN BE ENABLED FOR THE MCA III. ANY COMBINATION OF THESE THREE TYPES OF UPLOADS CAN BE ENABLED SIMULTANEOUSLY

IF UPLOADS AREN'T ENABLED, NOTHING WILL BE SHOWN ON THE SECOND LINE OF THE DISPLAY.

"T" WILL BE SHOWN WHEN TIMED REMOTE UPLOADS ARE ENABLED, "E" WILL BE SHOWN WHEN EARLY DETECTION NOTIFICATIONS ARE ENABLED AND "F" WILL BE SHOWN WHEN FLEET MANAGEMENT INTERFACE UPDATES ARE ENABLED.

UPLOADS ENABLED SCREEN



UPLOAD NOW?      x 2      USER REQUEST CONFIRMED

DATA UPLOAD COMPLETED

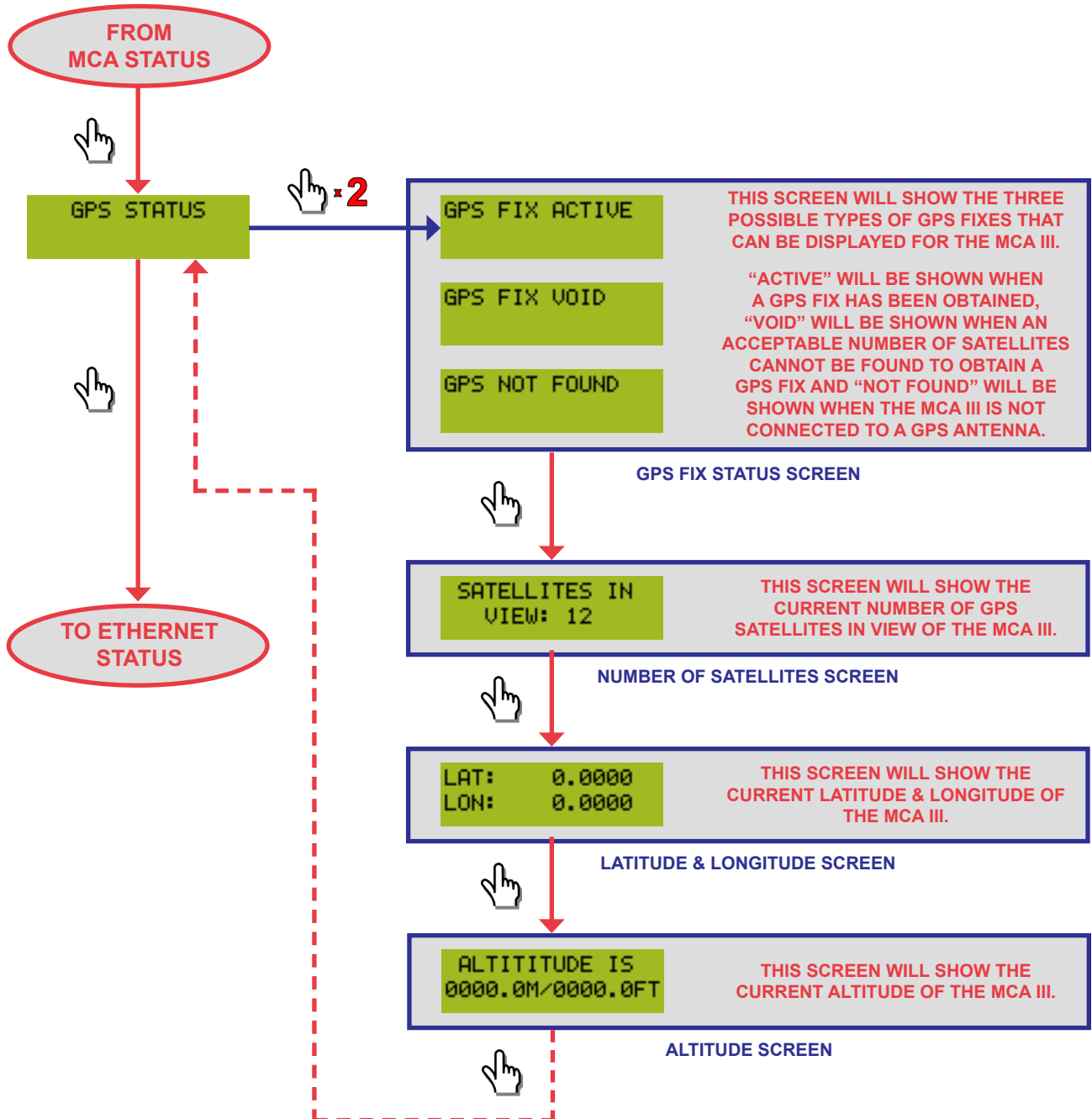
THIS SCREEN IS USED TO MANUALLY PERFORM A REMOTE UPLOAD USING THE CONNECTION ORDER PROGRAMMED INTO THE MCA III USING THE SEEKER SETUP SOFTWARE.

MANUAL UPLOAD SCREEN



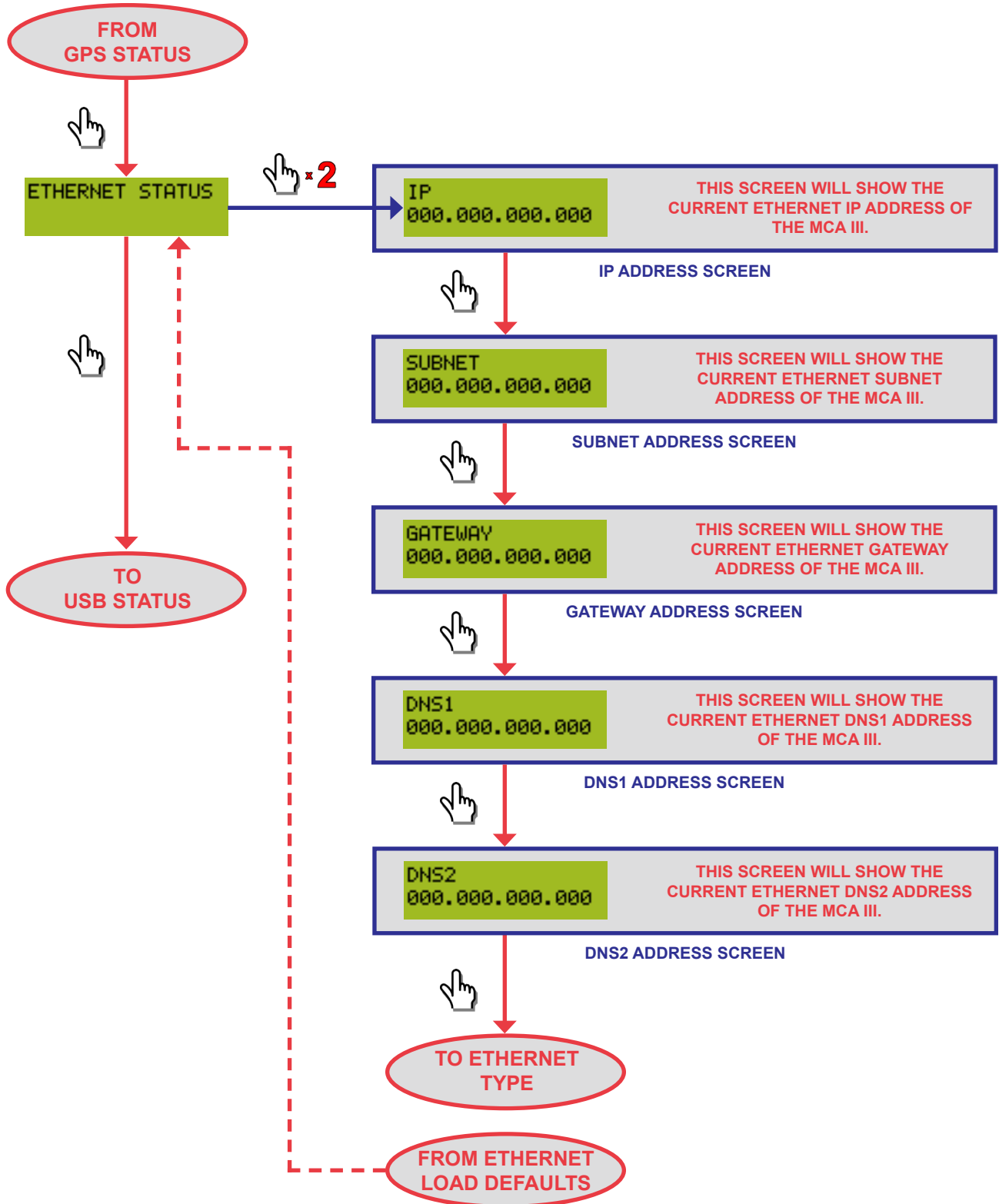
TO  
MCA STATUS

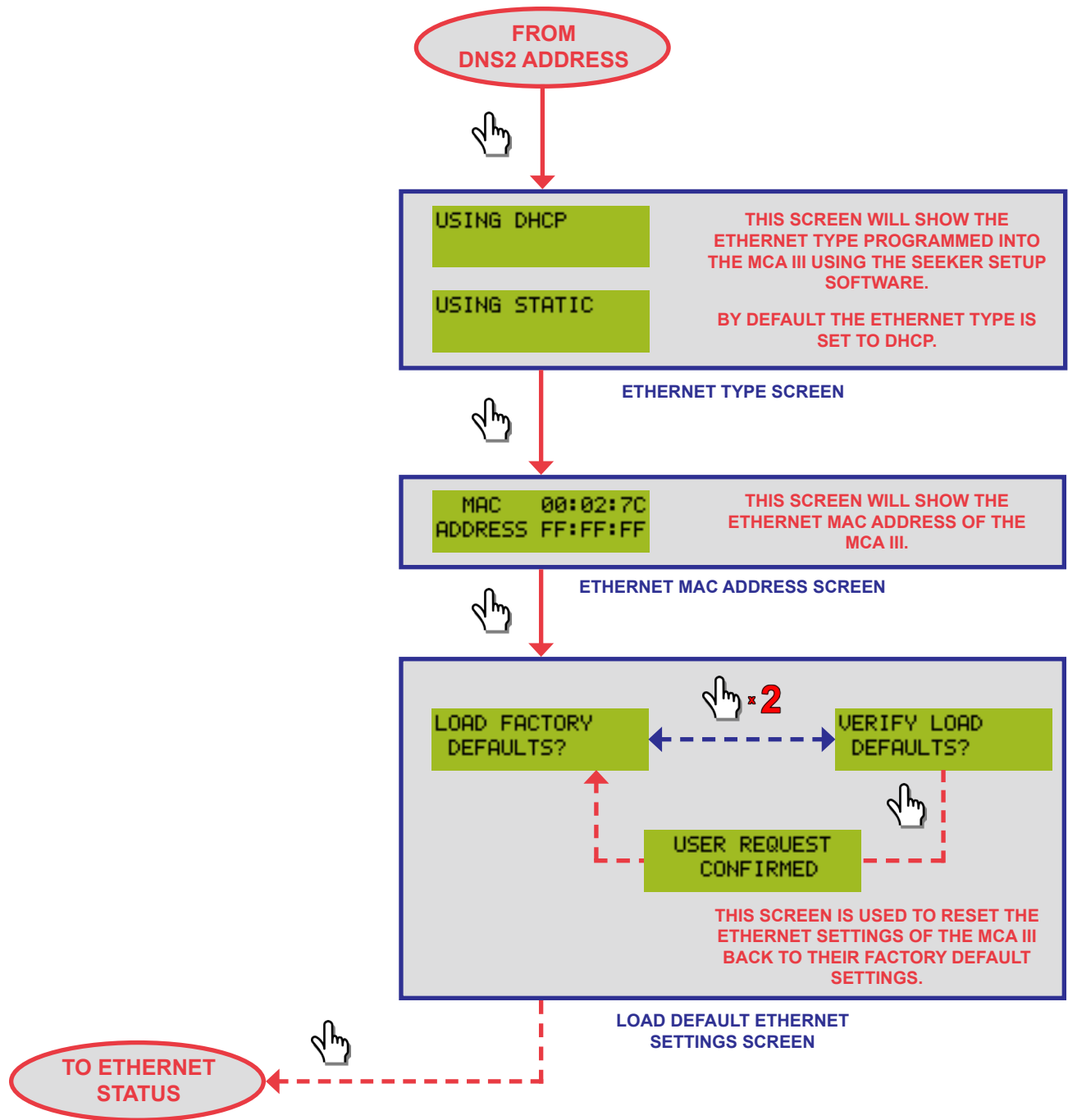
## GPS Status Screen



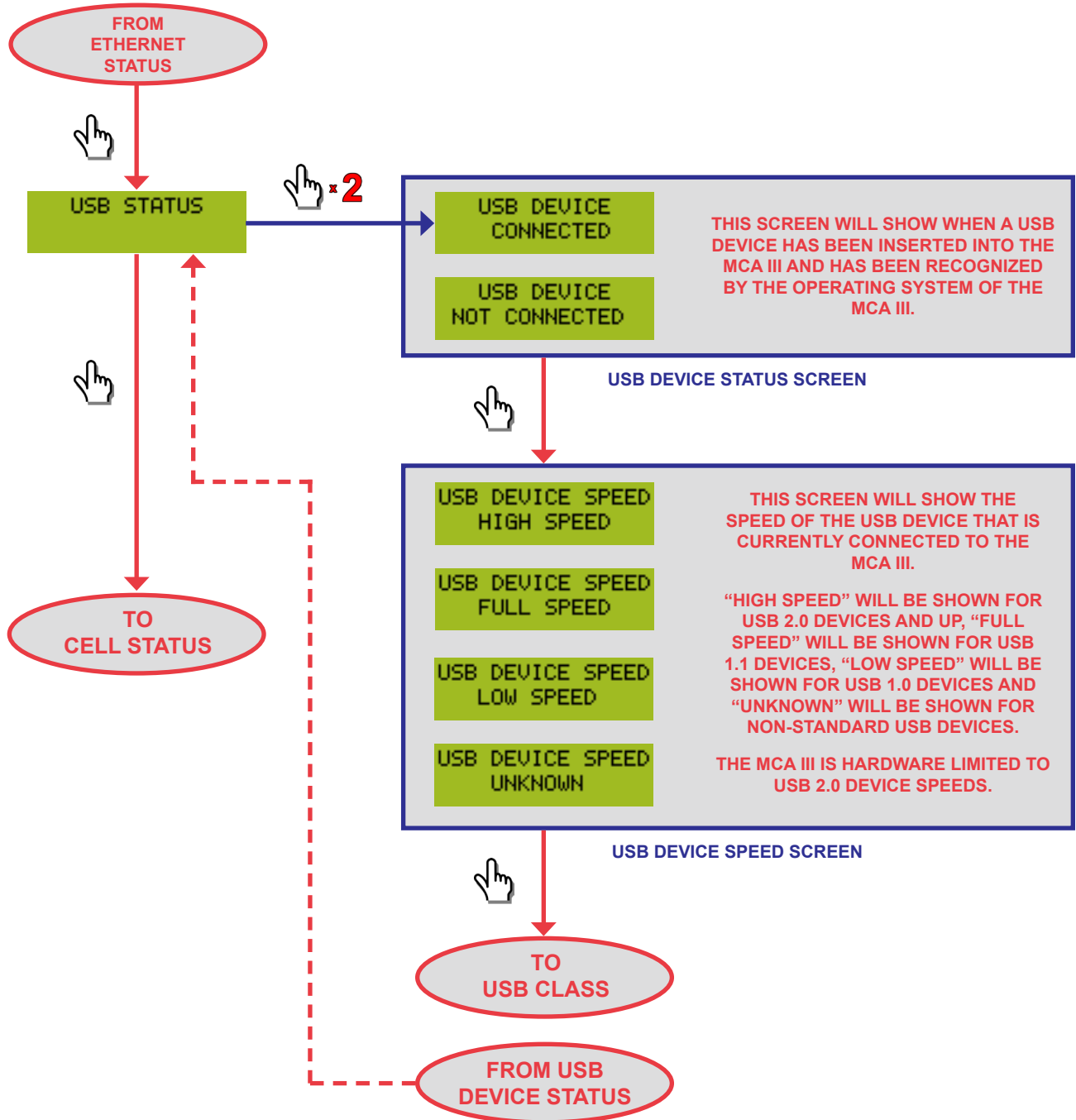


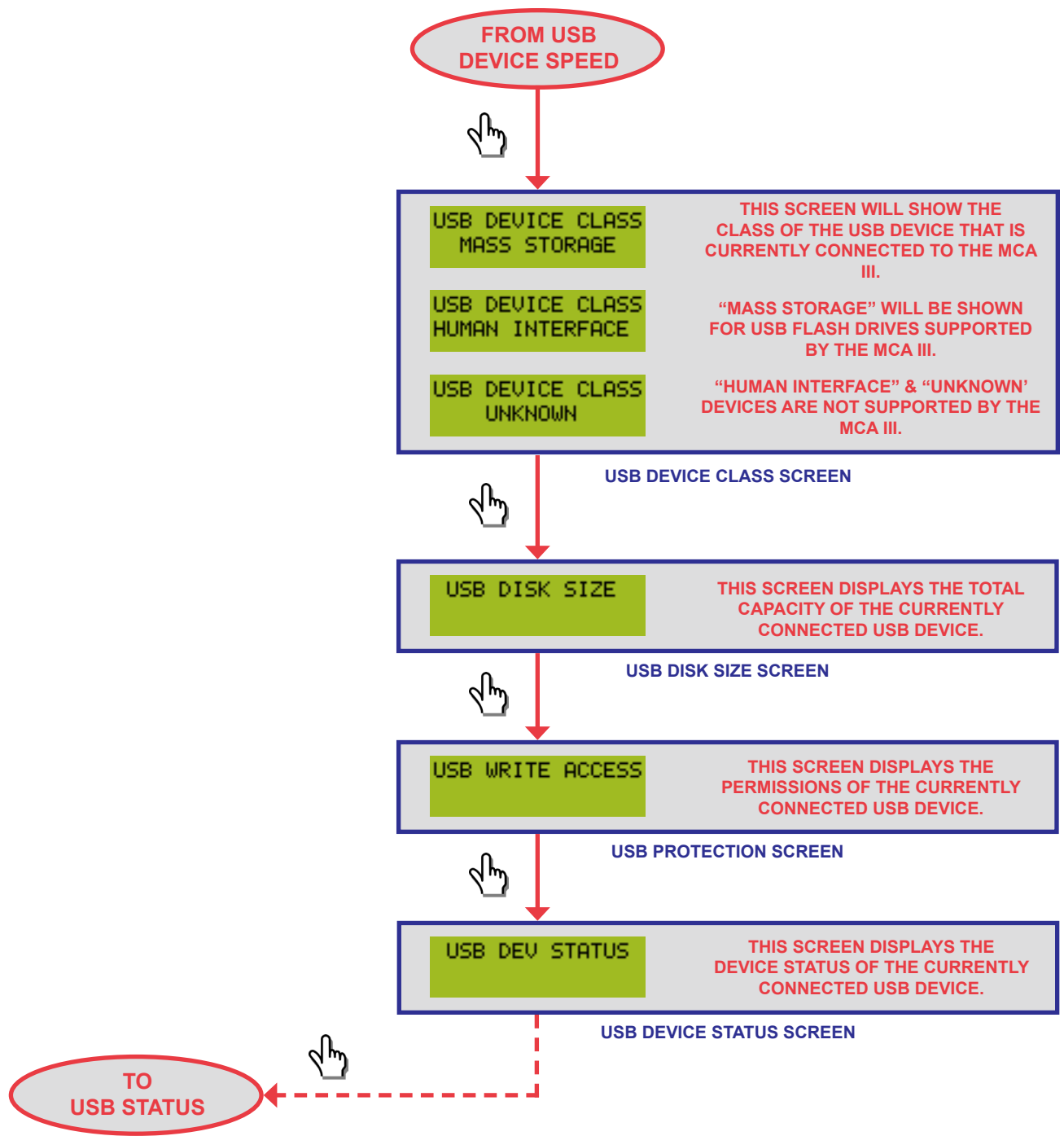
## Ethernet Status Screen



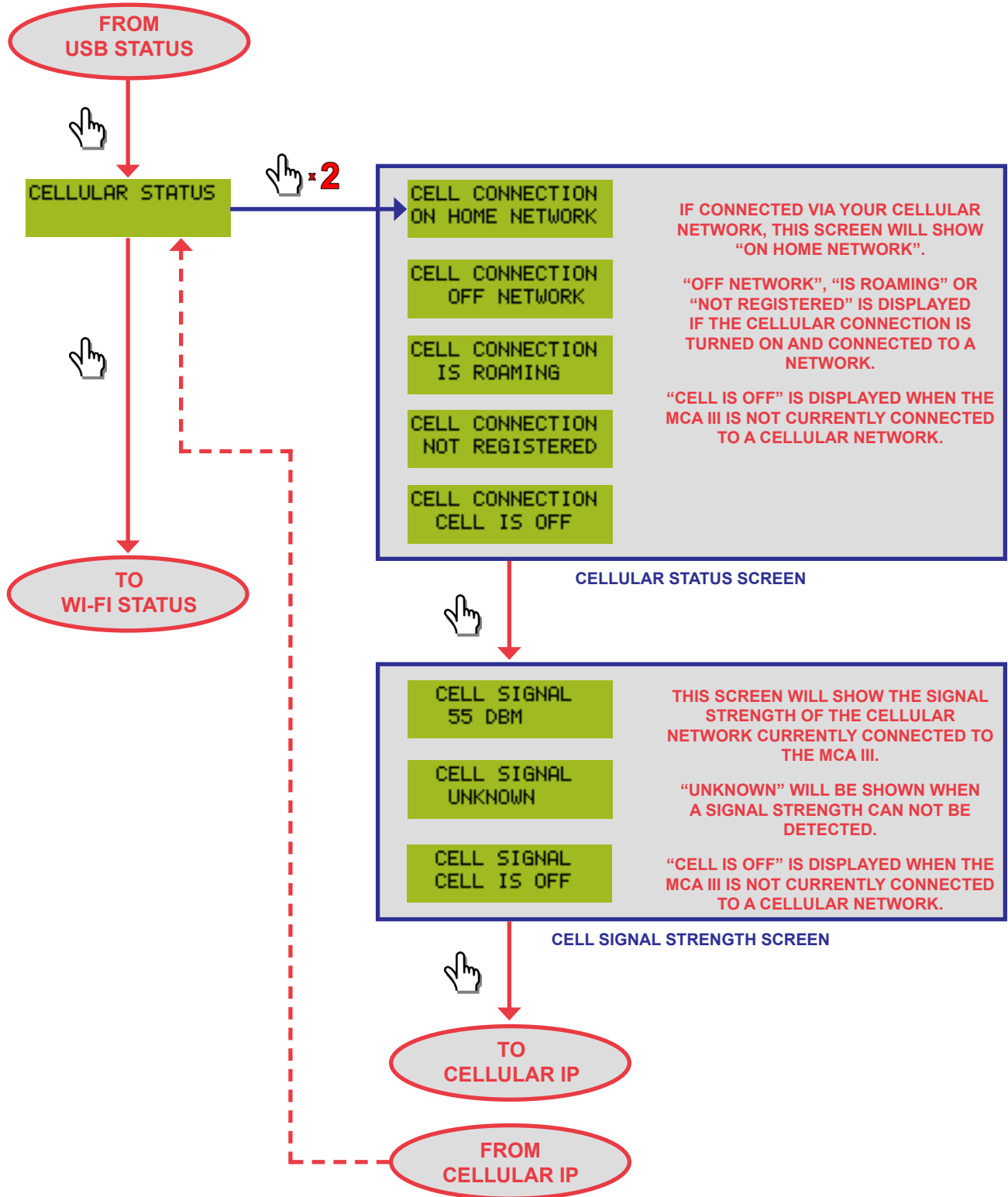


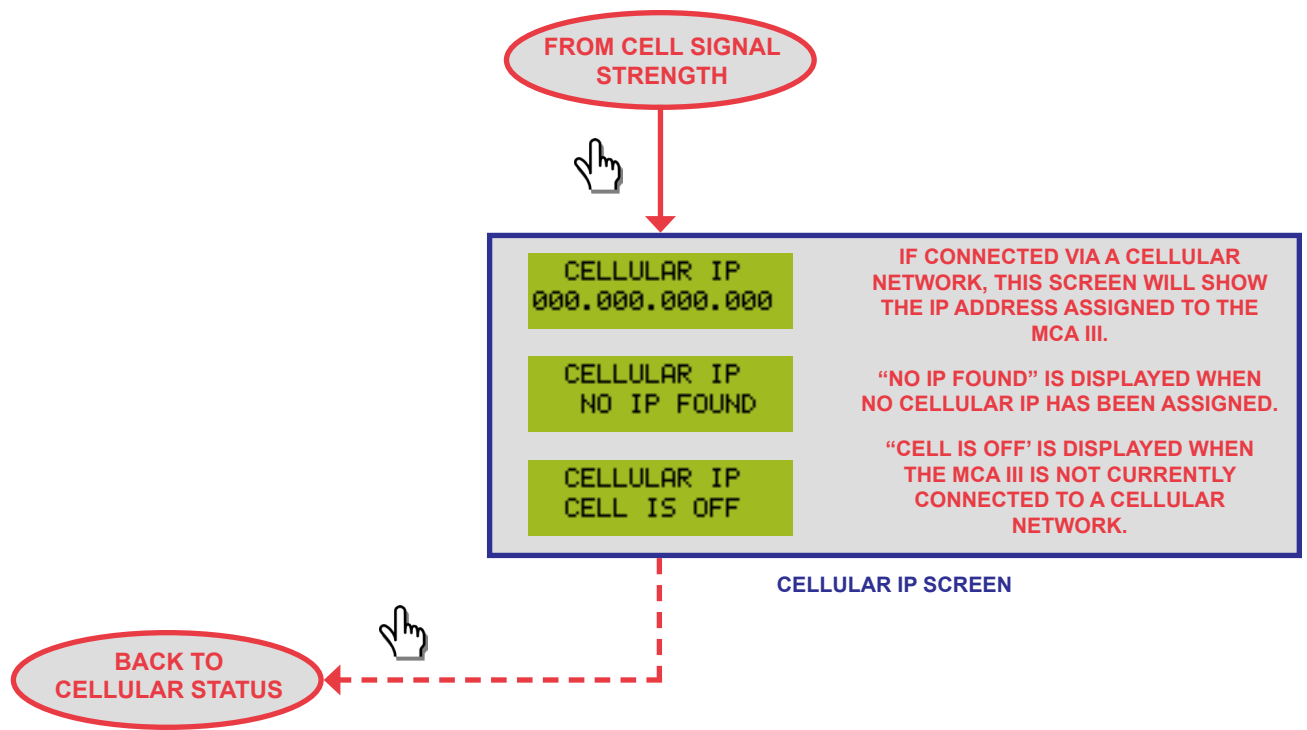
## USB Status Screen






## Cellular Status Screen

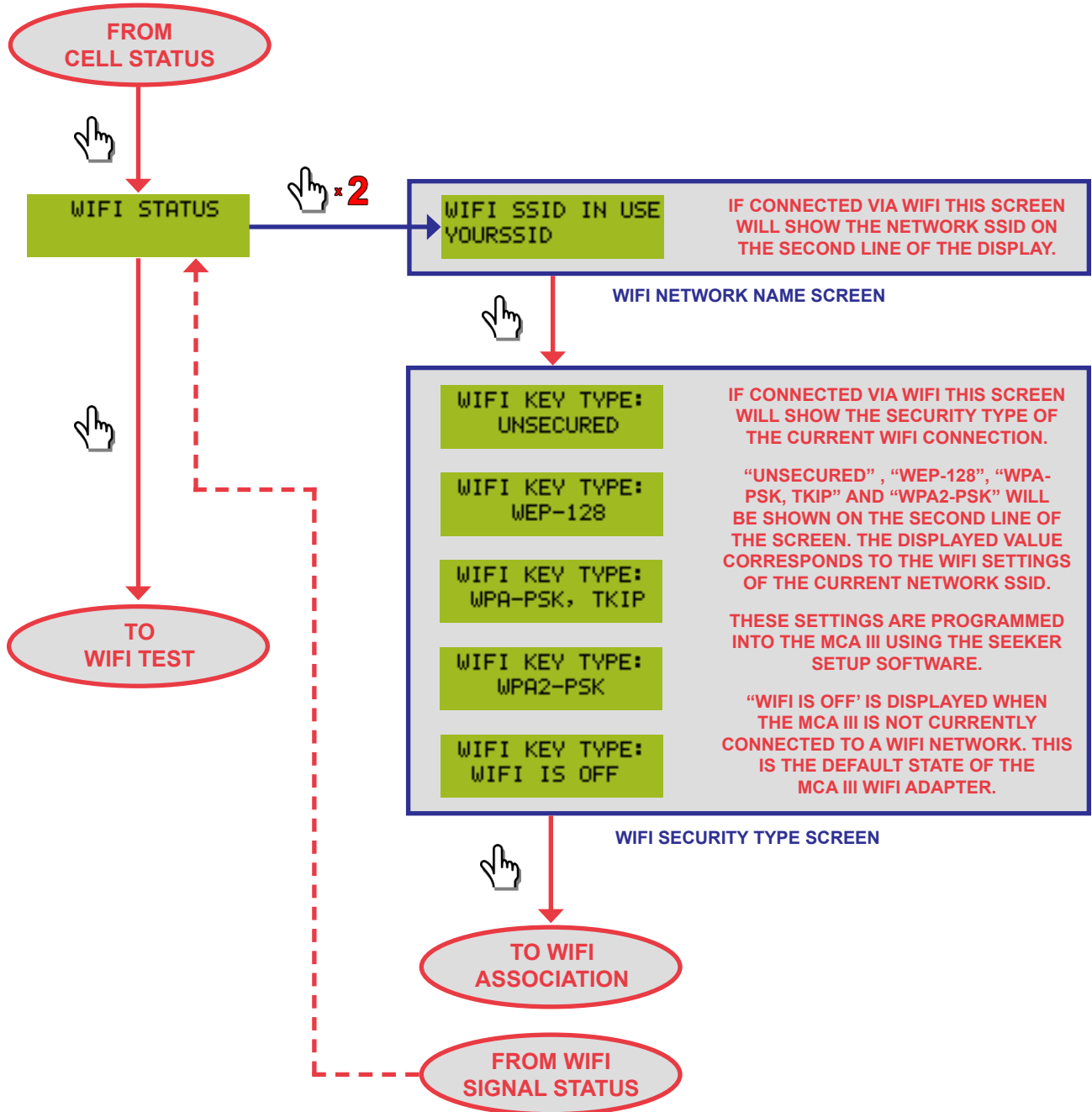


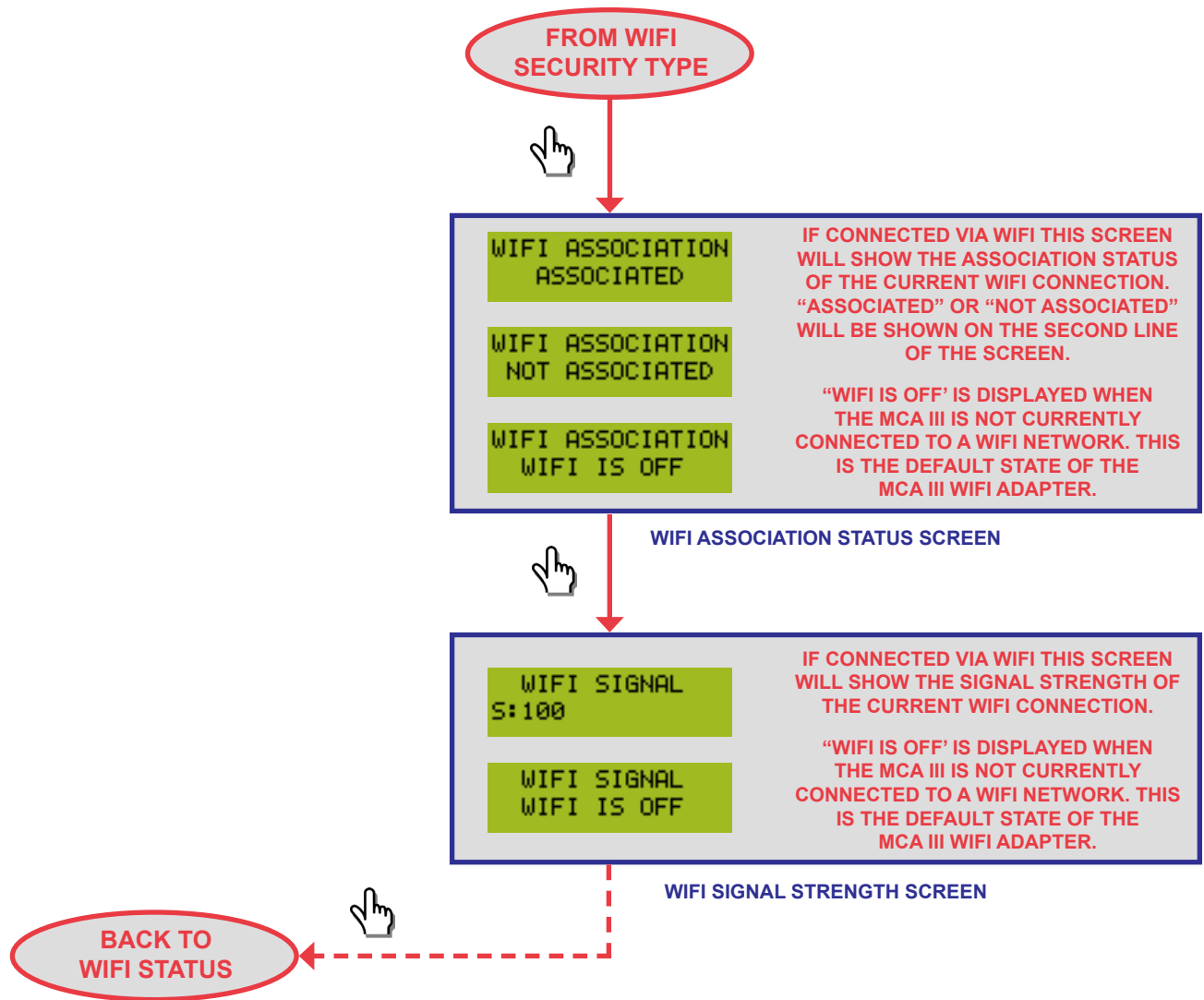


 **NOTE** *If the Seeker MCA III does not include the cellular communications option, the Cellular Status, Cell Connection, Cell Signal, and Cellular IP screens will not be accessible.*

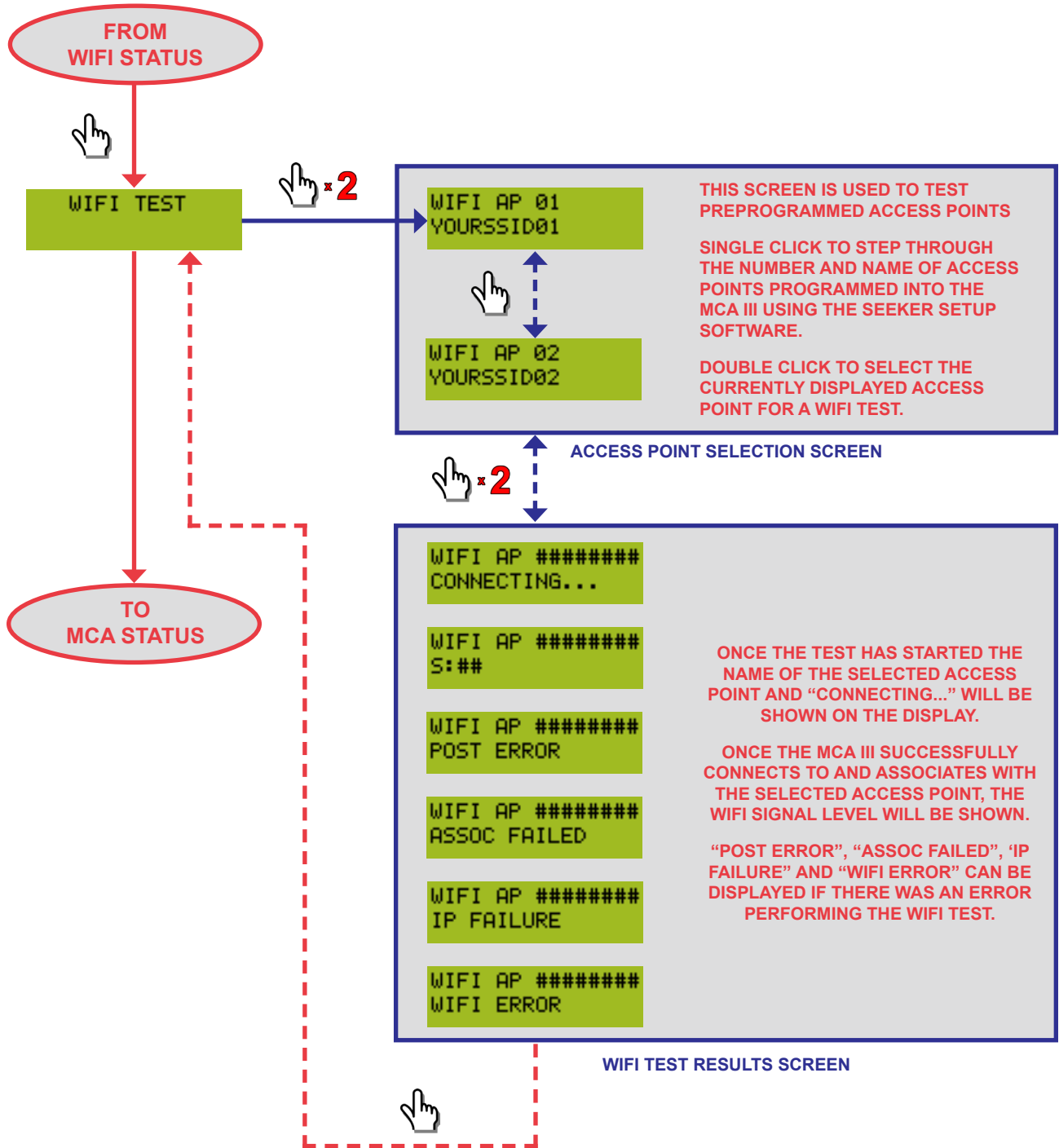


## Wi-Fi Status Screen





## Wi-Fi Test Screen



## Activity & Error Screens

If a new activity and/or error occurs within the device, the system displays a popup message to indicate the type of activity and then returns to the previous screen after 10 seconds. If a new activity or error occurs prior to expiration of the 10 seconds, then the new message will be displayed and the 10 seconds will start again. The only exceptions to this rule are the Wi-Fi and Ethernet Upload In Progress screens which will remain on the screen until the upload is complete, an error occurs, or the Select button is single clicked.

Activity Screen	Description
CELL MODEM ERROR	Displayed when an error occurs trying to communicate with the cellular modem in the Seeker MCA III. If the error persists, contact support as this error may require a firmware update to correct. If the error persists, return the device to the factory for repair.
CELL NET OR IP ERROR	Displayed when an error occurs when the cellular modem was trying to connect to the data providers network and failed to either connect, or get an IP. If the error persists, contact support as this error may require a firmware update to correct. If the error persists, contact your cellular data provider for further support.
CELL SOCKET ERROR	Displayed when an error occurs when the cellular modem was trying to connect to the network socket on the endpoint server. The likely cause is that the network socket is either not configured correctly (use the Seeker Setup software to correct this error), or is being blocked by network firewalls which may require the assistance of IT staff to correct this error.
CELL UPLOAD IN PROGRESS	Displayed when the Seeker MCA III is attempting to upload logged data to the LAW server via the Cellular connection.
DATA UPLOAD COMPLETED	Displayed when the Seeker MCA III successfully completed not only an exchange of data with LAW, but also removed that data from its own memory as well.
EDN UPLOAD IN PROGRESS	Displayed when the Seeker MCA III is attempting to send the LAW server EDN leak information.






Activity Screen	Description
<p style="text-align: center;"><b>ETHERNET SOCKET ERROR</b></p>	<p>Displayed when the device could not connect to the specified endpoint server socket via Ethernet. Verify that the endpoint server is running and that the network socket is not blocked by any firewall.</p>
<p style="text-align: center;"><b>ETHERNET LINK HAS CHANGED</b></p>	<p>Displayed when the Ethernet connection has either been newly connected or disconnected.</p>
<p style="text-align: center;"><b>ETHERNET UPLOAD IN PROGRESS</b></p>	<p>Displayed when the Seeker MCA III is attempting to upload logged data to the LAW server via the Ethernet connection.</p>
<p style="text-align: center;"><b>FMI CONNECTION ERROR OCCURRED</b></p>	<p>Displayed when an error occurs when attempting to contact the Fleet Dispatch Server. This can occur in an area that has weak or no signal available at the time of upload or the connectivity information (IP/DNS and/or port) is incorrect. Move to a location that has a signal or use the Seeker Setup software to correct this error.</p>
<p style="text-align: center;"><b>FMI UPDATE IN PROGRESS</b></p>	<p>Displayed when the Seeker MCA III is attempting to communicate with the Fleet Management Server.</p>
<p style="text-align: center;"><b>GPS CHECKSUM ERROR</b></p>	<p>Displayed when the Seeker MCA III receives corrupted data from the GPS. The likely cause is either a defective GPS module or damaged GPS cable.</p>
<p style="text-align: center;"><b>GPS FIX LOST</b></p>	<p>Displayed when the Seeker MCA III receives at least one message from the GPS indicating that it does not have a valid GPS fix.</p>
<p style="text-align: center;"><b>GPS TIMEOUT OCCURRED</b></p>	<p>Displayed when the Seeker MCA III has not received a GPS message in the last 5 seconds. The likely cause is either a defective GPS module or the GPS module is not connected to the Seeker MCA III.</p>

Activity Screen	Description
<p><b>MEMORY CLEANUP IN PROGRESS</b></p>	<p>Displayed when the Seeker MCA III is attempting to erase a portion of the flash memory. This is typically displayed after a data upload when memory is running low.</p>
<p><b>METER SYNC IN PROGRESS</b></p>	<p>Displayed when the Seeker MCA III is attempting to synchronize with the Seeker Meter.</p>
<p><b>SHUTTING DOWN</b></p>	<p>Displayed when the unit is attempting to turn off to save power (AKA going green). This will occur if the ignition is turned off for the duration of the vehicle timer and/or if the vehicle battery voltage is too low to continue (approximately 10.5 volts) for at least 10 seconds.</p>
<p><b>UPLOAD ERROR OCCURRED</b></p>	<p>Displayed when an error occurred when attempting to upload the data to the LAW server. This can occur in an area that has weak or no signal available at the time of upload or the connectivity information (IP/DNS and/or port) is incorrect. Move to a location that has a signal or use the Seeker Setup software to correct this error.</p>
<p><b>USER REQUEST CONFIRMED</b></p>	<p>Displayed when the user has successfully issued a “double-click” to confirm their request of an operation to be performed.</p>
<p><b>WIFI ASSOCIATION FAILED</b></p>	<p>Displayed when the device was not able to establish an association connection with a wireless access point. Verify that the security settings match on both the Access Point and the MCA III and that the AP is in range.</p>
<p><b>WIFI DNS REQ ERROR</b></p>	<p>Displayed when the endpoint server DNS name could not be resolved over the WiFi connection. Verify that the device can reach the specified DNS server and that the DNS server can resolve the name specified to the MCA III using Seeker Setup. You may need the assistance of IT staff to correct this problem, or switch to using a static IP. This can be the result of a poor or weak cell signal if connecting to a vehicle hotspot.</p>
<p><b>WIFI MODULE POST ERROR</b></p>	<p>Displayed when the internal self test of the WiFi module fails. If the error persists, return the device to the factory for repair.</p>

Activity Screen	Description
<p style="text-align: center;"><b>WIFI NET OR IP ERROR</b></p>	<p>Displayed when the device could not obtain an IP address from the wireless access point. If the MCA is set to DHCP then verify that the access point provides a DHCP server or a route to a network DHCP server. This can be the result of a poor or weak cell signal if connecting to a vehicle hotspot.</p>
<p style="text-align: center;"><b>WIFI SIGNAL LEVEL ERROR</b></p>	<p>Displayed when there is a problem reading the WiFi signal levels. This error is not critical, but may indicate a problem with the device if it persists.</p>
<p style="text-align: center;"><b>WIFI SOCKET ERROR</b></p>	<p>Displayed when the device could not connect to the specified endpoint server socket via WiFi. Verify that the endpoint server is running and that the network socket is not blocked by any firewall. This can be the result of a poor or weak cell signal if connecting to a vehicle hots</p>
<p style="text-align: center;"><b>WIFI UPLOAD IN PROGRESS</b></p>	<p>Displayed when the Seeker MCA III is attempting to upload logged data to the LAW server via the Wi-Fi connection.</p>

## LAW Display Screens

These messages appear when the Leakage Analysis Workshop (LAW) server transmits information to the MCA III.

Activity Screen	Description
	Displayed when LAW does not have an ID associated with this truck.
	Displayed when LAW has associated the truck ID with different hardware.
	Displayed when there is no tech to associate the data with. Generally caused by a meter with an undefined tech ID.
	Displayed when LAW does not have any record of this technician. An account needs to be set up in LAW for the tech.
	Displayed when LAW was not able to save data during upload.



# Seeker MCA III Operation

This chapter:

- Lists recommended software
- Provides information on Seeker GPS operation and display modes

## Configure Settings

You must configure the Mobile Communication Adapter (MCA III) settings using the Seeker Setup software. The MCA III comes from the factory with default settings, but it is likely they will need to be customized. Detailed instructions can be found in the Seeker Setup Software Operation Manual.



NOTE

***For detailed instructions on how to update the MCA III Firmware, see the Seeker Setup Operation Manual.***

## Seeker & Seeker D Display Modes

### Seeker MCA III Communication Successful

After placing the Seeker or Seeker D in the mobile mount and upon successful communication with the Seeker MCA III the screen shown below will be displayed.



**Seeker  
Communication  
Successful**



**Seeker D  
Communication  
Successful**



NOTE

***Ensure that the Seeker or Seeker D is properly seated in the Mobile Mount, otherwise the leakage detector will display an error message and it will not be able to communicate with the Seeker MCA III.***

## GPS Signal Status

When the Seeker or Seeker D is placed in the Mobile Mount after the communications have been established and “CAO” is displayed, the GPS icon is used to display the status of the GPS Signal as follows:

- When the GPS receiver is receiving a satellite signal, the GPS icon will be displayed constantly.
- When the GPS receiver is not receiving a satellite signal, the GPS icon will flash.



Seeker GPS Icon



Seeker D GPS Icon



NOTE

***When the GPS receiver has been off or has not been able to receive a satellite signal, for more than five minutes, the device will beep twice every few seconds until the condition is corrected.***



NOTE

***When the GPS receiver IS NOT receiving a satellite signal, the MCA III will not record leakage data from the Seeker.***

## Data Synchronization with Seeker MCA III

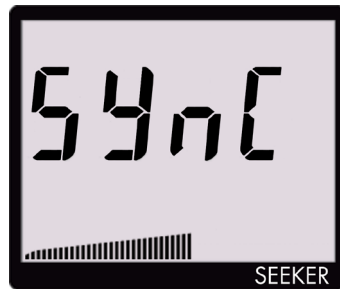
If you do not have a network connection for LAW uploads when using the Seeker or Seeker D with the Seeker MCA III, the data recorded in the Seeker MCA III can be synchronized with the internal memory of the Seeker or Seeker D for later upload through a PC.



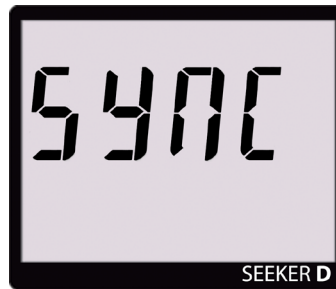
NOTE

***Data synchronization will only work when the Seeker or Seeker D is in the Mobile Mount. The SNAPSHOT button is used to record leakage information recorded by the Seeker or Seeker D when it is not in the Mobile Mount.***


To synchronize the data between the Seeker MCA III and the Seeker or Seeker D, press and hold the **SNAPSHOT** button. While the Seeker MCA III is transferring data to the Seeker or Seeker D, the screen shown in the images below will be displayed.



**Seeker  
Synchronization Progress**



**Seeker D  
Synchronization Progress**

 **CAUTION**

*The bar graph will show the progress of the data synchronization, do not remove the Seeker or Seeker D from the Mobile Mount until the data synchronization is completed, otherwise data corruption may occur.*

When the Seeker MCA III is done transferring data to the Seeker or Seeker D, the screen shown in the images below will be displayed. Press any button to return to the RF Signal Measurement display.



**Seeker  
Synchronization Done**



**Seeker D  
Synchronization Done**

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# Data Upload Options

## Leakage Detector via PC with Internet Connection

The leakage data can be uploaded via an Internet connection. The user removes the Seeker or Seeker D from its Mobile Mount and connects it to a PC or laptop computer. The leakage data is then uploaded to the central server using a website on the internet.

## Wi-Fi Access Point

The leakage data can be uploaded via a wireless connection. Whenever the user's vehicle is within range of an authorized wireless hotspot, the leakage data is uploaded directly to the central server.

## Cellular

The leakage data can be uploaded via a cellular connection. Whenever the user's vehicle is parked for a user-determined duration in a user-determined upload position/zone, the leakage data is uploaded directly to the central server. The data can also be uploaded via cellular connection at a user-configured time interval (1 to 8 hours).

## Fleet Management System Integration

For fleets equipped with GPS-based fleet management systems, the real-time leakage data can be automatically uploaded directly to the central server through the truck's cellular connection via the Wi-Fi or ethernet connection of the MCA III.

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## General Specifications

<b>Standard Communications Interfaces</b>	10/100 RJ45 connection to fleet management systems Wi-Fi (802.11 a/b/g/n) to operator-controlled and configured hot-spot
<b>Early Detection Notification (EDN)</b>	Email notification of threshold exceeding leaks

## Display Messages & Error Codes

### Device Errors

The codes shown below are displayed on the Seeker MCA III display screen as “DEVICE ERRORS” or “MCA III ERROR” to indicate an error with the MCA III.

DEVICE ERRORS  
##

MCA III ERROR  
##

##	Error Description	Solution
3	Factory Calibration is not valid	Return the device to the factory for repair.
4	User Parameters are not valid	Use Seeker Setup to reconfigure the device.
7	Invalid Flash ID detected	Cycle power on the unit, if the error persists return the device to the factory for repair.
8	Flash memory is Full	Use any of the means available to either erase the data, synchronize to the meter, or move the data to a valid LAW connection.
9	Flash memory write failed	If the error persists, return the device to the factory for repair.
10	Wi-Fi SPI interface failed	If the error persists, return the device to the factory for repair.
11	Wi-Fi module boot failure	If the error persists, return the device to the factory for repair.



<b>##</b>	<b>Error Description</b>	<b>Solution</b>
12	Wi-Fi band selection failure	If the error persists, return the device to the factory for repair.
15	Wi-Fi Post Failure	If the error persists, return the device to the factory for repair.
19	Wi-Fi signal level communications failed	If the error persists, contact support as this error may require a firmware update to correct.
23	Flash memory erasure error	If the error persists, return the device to the factory for repair.
27	No data erasure command received from LAW after data upload	If this error persists, contact support to confirm that your LAW server is set up correctly.
28	Ethernet communications attempt caused an upload to be postponed. Information only, uploading was postponed due to a Seeker Setup connection attempt.	If the error persists, return the device to the factory for repair.
29	Wi-Fi Association Failed	Check the Wi-Fi information and ensure that the security keys are correct and reconfigure the device using the correct Wi-Fi settings.
30	Wi-Fi DHCP Request Failed	Verify that the Access Point has a DHCP server enabled or has a route to a network DHCP server.
31	Wi-Fi DNS request failed	Check the IP information and ensure that the DNS servers are correct and reconfigure the device using the correct Wi-Fi settings.

##	Error Description	Solution
32	Wi-Fi connection could not establish a network socket to the desired end point	Check to ensure that your connection settings are correct and reconfigure the device using the correct information.
33	Undefined Wi-Fi Error	Cycle power on the unit, if the error persists return the device to the factory for repair.
34	Ethernet connection could not establish a network socket to the desired end point	Check to ensure that your connection settings are correct and reconfigure the device using the correct information.
36	Ethernet DNS request failed	Check the IP information and ensure that the DNS servers are correct and reconfigure the device using the correct Ethernet settings.
37	Ethernet connection failure	If the error persists, contact support as this error may require a firmware update to correct.
38	Factory options invalid	Cycle power on the unit, if the error persists return the device to the factory for repair.
39	Unit serial number invalid	Cycle power on the unit, if the error persists return the device to the factory for repair.

## Bootloader Messages

The screens shown below are displayed on the Seeker MCA III display screen to indicate an error with the Seeker MCA III bootloader software.

Screen	Description
MCA III BOOTER FLASH ID ERROR	This message is displayed when there is a hardware failure of the flash memory inside the Seeker MCA III, return the unit to the factory for repair.
MCA III BOOTER ERROR NO APP	This message is displayed when the Seeker MCA III has failed to load both the primary and factory backup applications. This message is displayed when the flash memory inside the Seeker MCA III has been corrupted or erased, return the unit to the factory for repair.
LOADING BACKUP..	This message is displayed when the Seeker MCA III is attempting to load the factory backup application. This message may occur after a firmware update has failed to properly update the primary application. Press the Select button on the back of the MCA III to load the factory default application and then retry the firmware update again to clear this message.
ERASING APP...	This message is displayed when the Seeker MCA III is erasing the application during a firmware update.
ERASING APP... ERASE ERROR!	This message is displayed when the Seeker MCA III has failed to erase the application during a firmware update. Retry the firmware update again to clear this message.
LOADING APP...	This message is displayed when the Seeker MCA III is loading the application after a firmware update.
LOADING APP... LOAD ERROR!	This message is displayed when the Seeker MCA III has failed to load the application after a firmware update. Retry the firmware update again to clear this message.

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