USER GUIDE

TRACE®

Trace Interrogator VRT (TI VRT) for Windows CE

DRAFT

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Rev A

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Introduction

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FCC Compliance

The VRT HAND HELD Interrogator (HHI) has been type accepted by the Federal Communications Commission under Part 90. Transmitter licensing is required by the FCC. The VRT HAND HELD Interrogator (HHI) transmitter is currently licensed by the FCC to operate at 451.355 MHz. FCC ID is G8JHHI01.

Changes or modifications to this equipment not expressly approved by AMCO Automated Systems could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the condition that this device does not cause harmful interference.

The TRACE transponder is governed by FCC Part 15 and requires no licensing.

System Requirements

Hardware Requirements

DAP 5240 or 5240X with AMCOAS HHI RF card
Radix FW-500 with AMCOAS HHI RF card

Software Requirements

Windows CE 3.0 or later
Route Manager VRT

Warnings

Do not attempt to modify or edit any of the subsidiary tables or files outside of the TI VRT (CE) / RM VRT environment without prior authorization by AMCO Automated Systems technical service personnel. Unauthorized manipulation of these files may void your software service agreements.

Uploading from Route Manager VRT (RM VRT) will overwrite Route/Account information on the Hand Held. It is the User's responsibility to download any data prior to uploading.

RF EXPOSURE

The antenna used for this transmitter must be installed to provide a separation distance of at least 24 cm from all persons, and must not be co-located or operating in conjunction with any other antenna or transmitter.

TI VRT CE Operation

TI VRT for CE is supported on two different hardware platforms: the DAP 5240 and the Radix FW-500. While most operations are identical some are platform specific. Features for the DAP 5240 are marked *D* and those for Radix are marked *R*.

The screen shots shown in various illustrations may vary slightly from your Handheld's display.

Conventions

All user interactions are via the Handheld's keyboard. TI VRT CE responds to the keystrokes independent of platform. All letters are assumed to be upper case. Function keys F1 – F4 are also used.

<Esc>

- Cancels operations
- Exits screens

<Enter>

- In menus/list boxes selects item
- In editable field submits entry
- With Automove on, submits entry and moves to next Account.
- In Details list box (History & TOU) initiates single interrogation of highlighted item

<Up Arrow>, <Down Arrow>

These keys are used to navigate between accounts within the current Route. When either the first or last account is reached an audible warning will sound and the display will remain on the current account.

<Tab>

□□ key is used to navigate between fields within the current screen (messages, search, etc.).

Message Box <Yes> <NO>

The response to the message box can be:

- Touching the button <Yes> or <No>
- Clicking letter “Y” or “N” on the keyboard
- Moving to the desired button by using left/right arrow keys and pressing Enter when the button is highlighted.

D at the bottom (in Lower right corner) of the data entry screen indicates VRT request details are available. The number after the D indicates the number of requests.

AM-off/on at the bottom (in Lower right corner) of the data entry screen indicates AutoMove is enabled or disabled.

M at the bottom (in Lower right corner) of the data entry screen indicates messages are available.

TIV Screens

Login

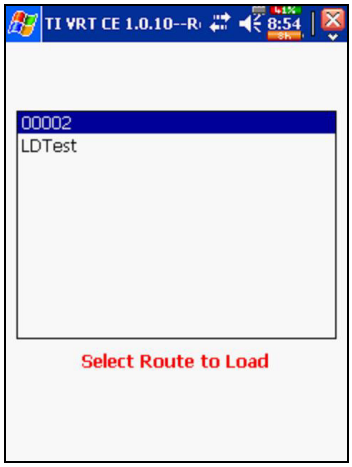
The Login screen is not currently operational.

Main (*D*)

The main screen allows the selection of the following modes:

- Route Selection / Data Entry
- Communication (between RMVRT and device)

Route Selection (*D*)

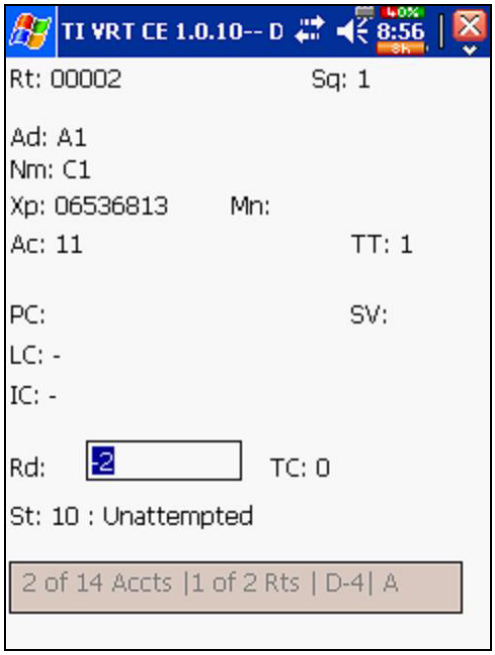


If Route Selection is selected, the list of routes loaded in the device is displayed. To view/update Account information for the chosen route highlight the route and press “Enter”.

Communications (*D*)

The Communications mode is used to exchange data files and other information with Route Manager VRT. This selection, opens the specified communications port, displays the communications screen and initiates polling for incoming messages from RM VRT.

Data Entry



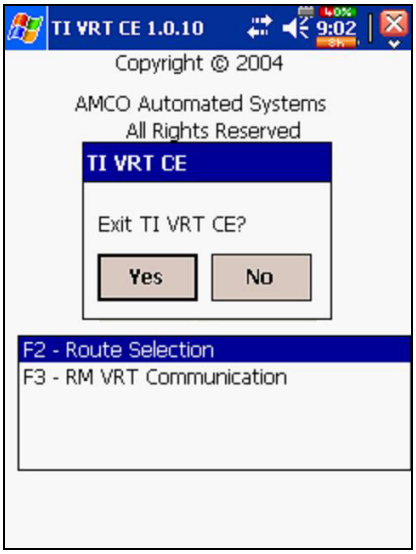
Rt: Route ID
Sq: Sequence Number
Ad: Address
Nm: Customer Name
Xp: Transponder
Mn: Meter Number
Ac: Account Number
TT: Transponder Type
MT: Meter Type
PC: Premise Code
SV: Survey Code
LC: Location Code
IC: Instruction Code
RD: Index Read
TC: Trouble Code
ST: Account Status
→ : Direction of Data Entry

D VRT Details available
AM-off/on AutoMove enabled
M Messages available

Exit TI VRT CE

Pressing the <ESC> in the Main Menu will pop up a confirmation box. Use the <TAB>, <Left Arrow>, or <Right Arrow> keys to select the response.

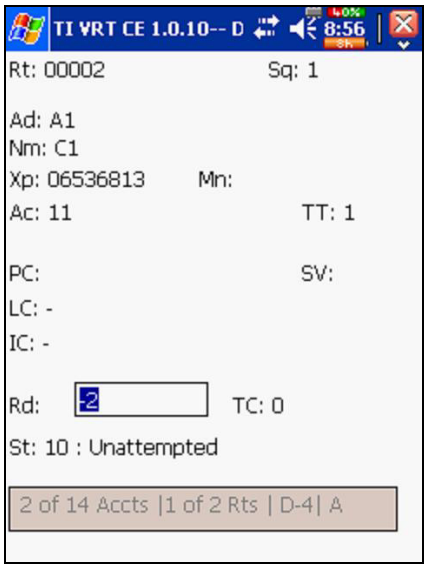
- Press “YES” button or click the “Y” key or click the <Enter> key when the button is highlighted to accept the selection.
- Press <No> button or click the “N” key or click the <Enter> key when the button is highlighted to Cancel.



Account Navigation and Data Entry

Navigation

All user interactions are via the handheld's keyboard or the Touch Screen using a stylus. TI VRT (CE) responds to the keystrokes independent of platform. All letters are assumed to be upper case. Function keys F1 – F4 are also used.



.

<Esc>

- Cancels operations.
- Exits screens.

<Enter>

- In menus/list boxes selects item.
- In editable field submits entry.
- With Automove on, submits entry and moves to next Account.
- In Details list box (History & TOU) initiates single interrogation of highlighted item.

<Up Arrow>, <Down Arrow>

These keys are used to navigate between accounts within the current Route. When either the first or last account is reached an audible warning will sound and the display will remain on the current account.

Jumps

Jumps are moving from the current account in the current route to various other accounts and routes. Pressing the appropriate hot key activates jumps. The X (Cancel Jump) Hot key is used to return to the account displayed just prior to the jump except as noted.

Jump to the Previous Route

Hot Key: **A**

This is a jump to the first account in the previous route.

X has no effect.

If pressed on the first route the bounds beep sounds and the display remains on the current account.

Jump to Beginning of Current Route

Hot Key: **B**

This is a jump to the first account in the current route.

X Jumps to record displayed prior to the jump.

If pressed at the beginning of the route the bounds beep sounds and the display remains on the current account.

Jump to End of Current Route

Hot Key: **E**

This is a jump to the Last account in the Current route.

X Jumps to record displayed prior to the jump.

If pressed at the end of the route the bounds beep sounds.

Jump to Next Unread Interrogation

Hot Key: **I**

This is a jump to the next account in the Current route that has unread interrogation. The unread interrogation can be index read or any VRT request. If there are VRT requests for the account the

letter “D” is displayed on the right side at the bottom of the screen.
To view VRT requests press “D”.
X Jumps to record displayed prior to the jump.
If pressed at the end of the route the bounds beep sounds.

Jump to Specified Sequence Number

Hot Key: **J**
This is a jump to a specified sequence number in the current route. After pressing the J hot key an entry window will pop up. Type the sequence number in the box and press the <ENTER> key twice (Once to accept the number and once to press the OK button).
X Jumps to record displayed prior to the jump.

Jump to Next Unread Account in the Current Route

Hot Key: **U**
This is a jump to a next account with index read –2 and trouble code 0 in the current route.
X Jumps to record displayed prior to the jump.

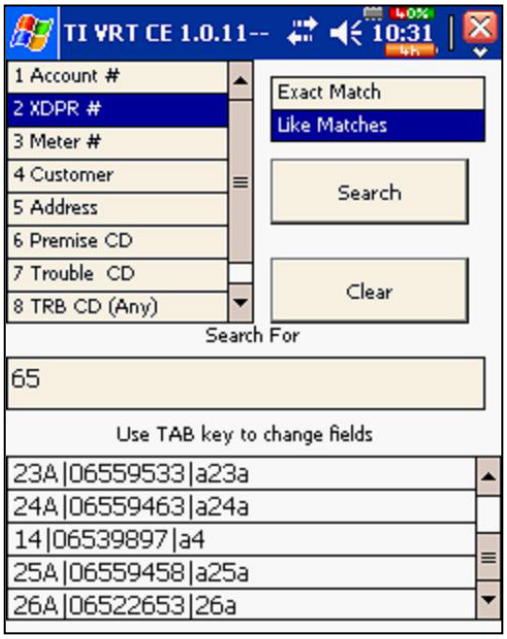
Jump to Next Route

Hot Key: **Z**
This is a jump to next route.
X has no effect.

Searches

Searches allow the user to jump to any specified account in the current Route. Currently the following searches are available:

- Account number
- Transponder number
- Meter number
- Customer Name
- Customer address
- Premise code
- Specific trouble code
- Any trouble code



Hot Key: **H** search menu
To perform a search:

- Press the H key to bring up the search type display
- Select the type of search to perform using the <Up Arrow/Down Arrow> keys
- Use the <□□> key (Tab) to

move between fields on the screen

- Select whether exact match is wanted or the search performed by partially submitted information is preferred (except for search for accounts with trouble code).
- Fill the field with the desired information (except for search for accounts with any trouble code).
- Press Search to begin the defined search.
- The results list present the following information
  - Account Number
  - Address
- a. Select an item from the results list and press the <ENTER> key or click with the stylus to jump to the account. Searches with only 1 account returned will jump directly to that account.
- Pressing the <ESC> key cancels the search.
- Press button <Clear> to clear the search and to start over.

X Jumps to record displayed prior to the jump.

Information Displays

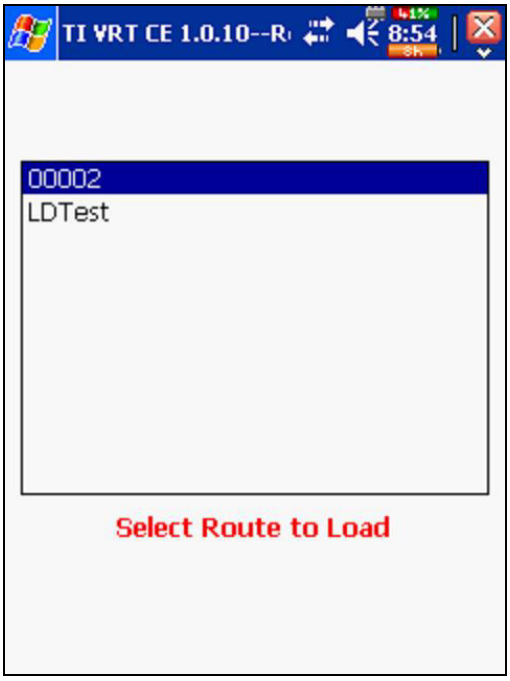
Several informational displays are available to the user from the data entry screen. Most of these take the form of a Pop-Up List Box over the Data Entry screen. As usual the <ESC> key acts as the Cancel button to exit back to Account Data Entry screen.

Help / Available Commands Display

Hot Key: **F1**
X has no effect.
<Up Arrow> and <Down Arrow> keys select the desired hot key from the list.
<ENTER> initiates the command as if the hot key had been pressed.
<ESC> closes the popup.
Picture goes here

Route Selection Display

Hot Key: **F2**
X has no effect
<Up Arrow> and <Down Arrow> keys select the desired Route from the list.
<Enter> jumps to the first account in the selected route.
<ESC> closes the popup.



Route Summary Display

Hot Key: **F3**
X has no effect.
Use <Up Arrow> and <Down Arrow> to move within the screen.
<ESC> closes the popup.
Picture goes here

Configuration Display

Hot Key: **F4**
X has no effect.
Use <Up Arrow> and <Down Arrow> to move within the screen.
Tab moves the cursor from the Meter Reader configuration items to all the configuration items.
<ESC> closes the popup.
Picture goes here

Display VRT Requests Details

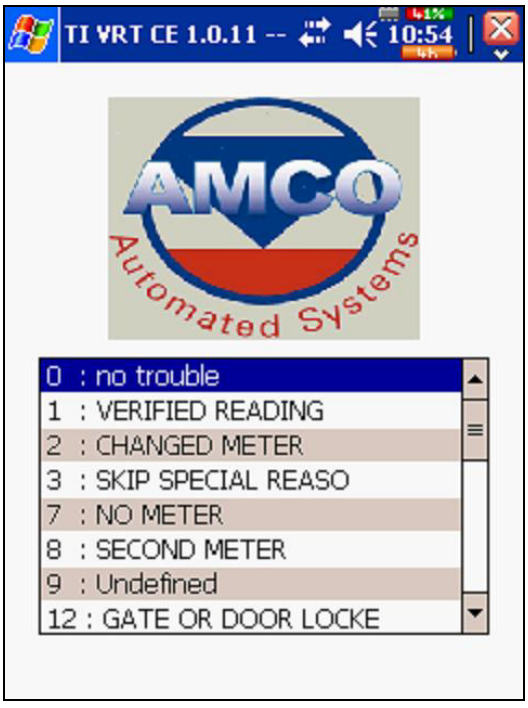
Hot Key: **D** - displays a pop-up list of all requests.

If "D" appears in the lower left corner of the data entry display, the account contains one or more History and/or TOU requests.
<Esc> closes the pop-up.

Trouble Code Display

Hot Key: **T**
<ESC> closes the popup.

Trouble codes are used to indicate problems with obtaining readings.



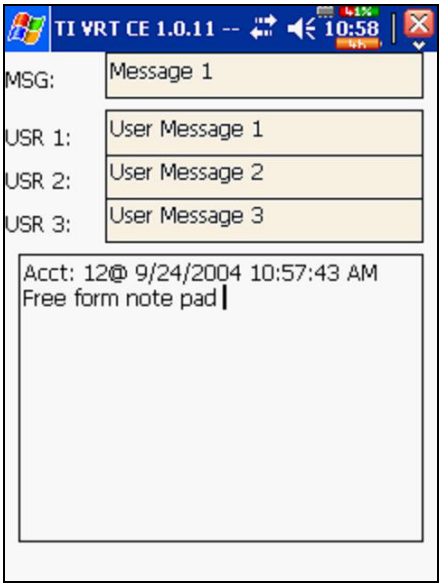
Messages Display

Hot Key: **M**
<ESC> closes the popup.

A 19-character message, 3 user messages of 20 characters each can be entered for each account or edited using this option.

These messages can be sent from RM VRT. If "M" appears in the lower left corner of the data entry display, the account contains one or more messages. If "!!" follow the message then one of the messages contain alarm.

A free form note pad is also available here. A free form note pad is NOT account specific but is common to all accounts and all routes.



It can be configured in RM VRT not to allow to edit messages.

An audible alarm can be set in RM VRT if one of the messages exists; if sound is disable a message box will pop up with the warning.

Error Log Display

Hot Key: **O**
<ESC> closes the popup.
Use <Up Arrow> and <Down Arrow> to move within the screen.
<ESC> closes the popup.

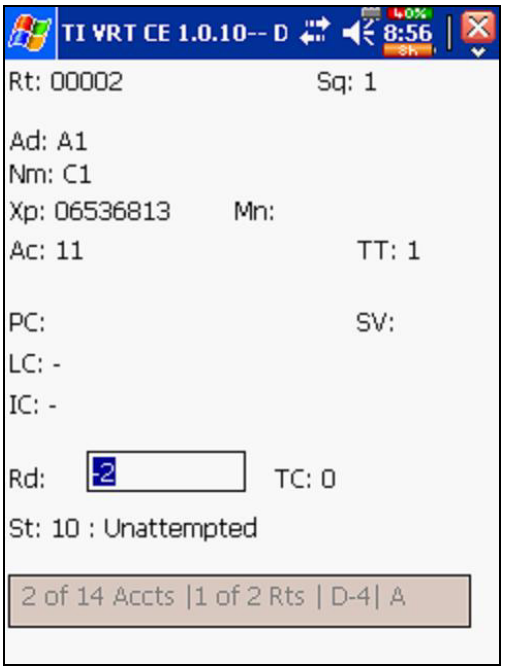
Data Entry operations

Index reads can be entered manually, singly by RF, as part of a multiple parameter read of Index, History and TOU.

History and TOU reads can be performed either singly or as part of a multiple parameter read of Index, History and TOU.

Manual Index Read

Enter digits 0 - 9 and press the <ENTER> key.
The direction of manually reading a meter is shown by the arrow by the reading and is dependant on the meter type.



The number entered will be checked against:

- The number of dials as reported in Route Manager for the account. This option can be turned off/on in RM VRT.
- Upper Limit and Lower Limit for the account as reported in RM VRT. This option can be turned off/on in RM VRT.
- Previous read for the account as reported in RM VRT. A Zero (0) uploaded for the value to check turns this option off.

If the entered index read fails the verification above the message will pop up asking if it needs to be recorded or cancelled.

If the Automove option is ON, the display will show the next account in the route. If the account is the last one in the current route an audible alert will sound.

Clear Index Read

Hot Key: **C**
X has no effect
After pressing the “C” key the reading is cleared and the cursor is positioned in the index read field waiting for the entry to overwrite the previous reading.

Force Unattempted Account

Hot Key: **F**
X has no effect
If the account had manual reading, then after pressing the “F” key the reading and trouble code are cleared, the status of the account is set to unattempted.

Adding a Trouble Code

Hot Key: **T**
X has no effect

Trouble codes are used to indicate problems with obtaining readings. A code can be entered with or without entering a reading.

<Up Arrow> and <Down Arrow> keys select the desired Trouble code from the list.
<ENTER> updates the account with the selected Trouble code.
<ESC> closes the popup.

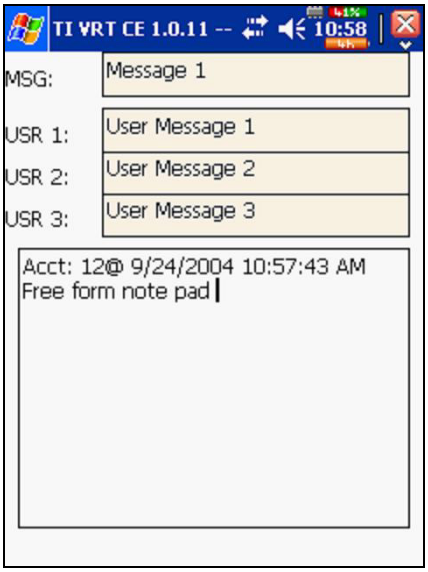
Adding / Editing a Text Message

Hot Key: **M**
X has no effect

A 19-character message, 3 user messages of 20 characters each can be entered for each account or edited using this option. These messages can be sent from RM VRT.

A free form note pad is also available here. Entry into the note pad causes the account number data and time to be added to any already existing text. This option is NOT account specific but is common to all accounts and routes.

<TAB> moves the cursor to the next message for editing.
<ESC> Asks if the changes to messages to be saved. Pressing button <YES> or clicking key <Y> will save the changes and close popup; pressing button <NO> or clicking key <N> quit the popup without saving changes to messages.



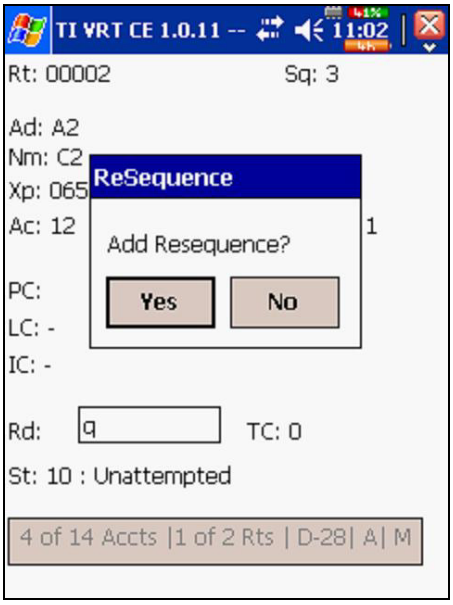
Setting the Re-sequence Flag

Hot Key: **Q**
X has no effect

If account(s) is out of sequence in a route, setting the Re-sequence flag marks the route for re-sequencing by date time stamp during reading the route. The re-sequencing is going to be done in the Billing system after uploading to RM VRT.

The message box will pop-up to verify if re-sequencing is desired. Answer yes or no by:

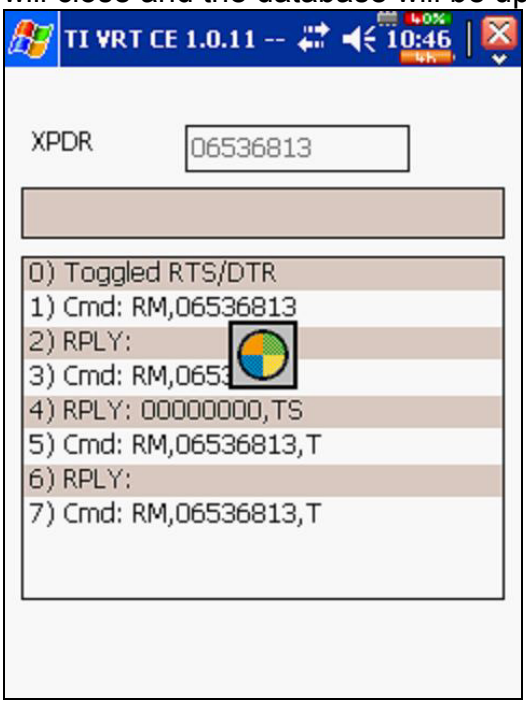
- Touching the button <Yes> or <No>
- Clicking letter “Y” or “N” on the keyboard
- Moving to the desired button by using left/right arrow keys and pressing Enter when the button is highlighted.



Single RF Index Read

Hot Key: **S**
X has no effect

After pressing the “S” key an RF communications window will open and RF interrogation will start. The user will be able to watch commands issued and replies returned from the target transponder. Once the interrogation is completed the communications window will close and the database will be updated.



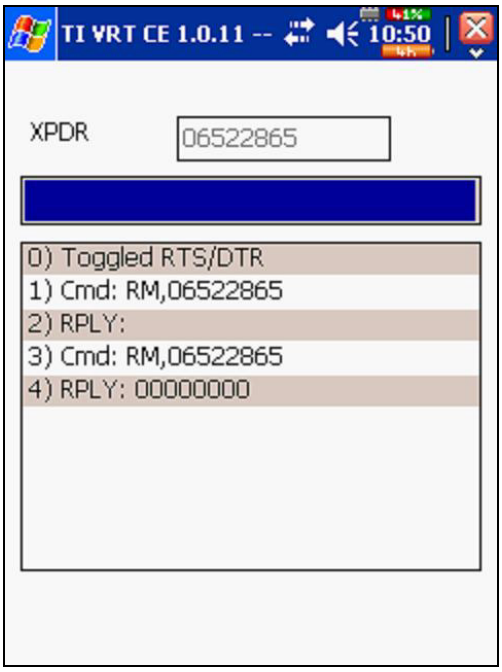
Notes:
A success/fail sound will alert the meter reader about the result of reading if the option “Enable sound “ is ON.

If the Automove option is ON and the reading was successful, the display will show the next account in the route. If the account is the last one in the current route an audible alert will sound.

Multiple Parameter RF Read

Hot Key: **R**
X has no effect

After pressing the “R” key an RF communications window will open and RF interrogation will start for index read and for all the VRT commands in the account. The user will be able to watch commands issued and replies returned from the target transponder. Once all the interrogations are completed the communications window will close and the database will be updated.



Notes:
A success/fail sound will alert the meter reader about the result of reading if the option “Enable sound “ is ON.

If the Automove option is ON and all the reading were successful, the display will show the next account in the route. If the account is the last one in the current route an audible alert will sound.

The progress bar shows the completion status of Multi-parameter reads.

Single History / TOU RF Read

If a “D” appears in the lower left corner of the data entry display, the account contains one or more History and or TOU requests.
Press the “D” key to display a pop-up list of all requests.
Use the Up / Down arrow keys to select the History/TOU request to read.
Press the <ENTER> key to start the interrogation.

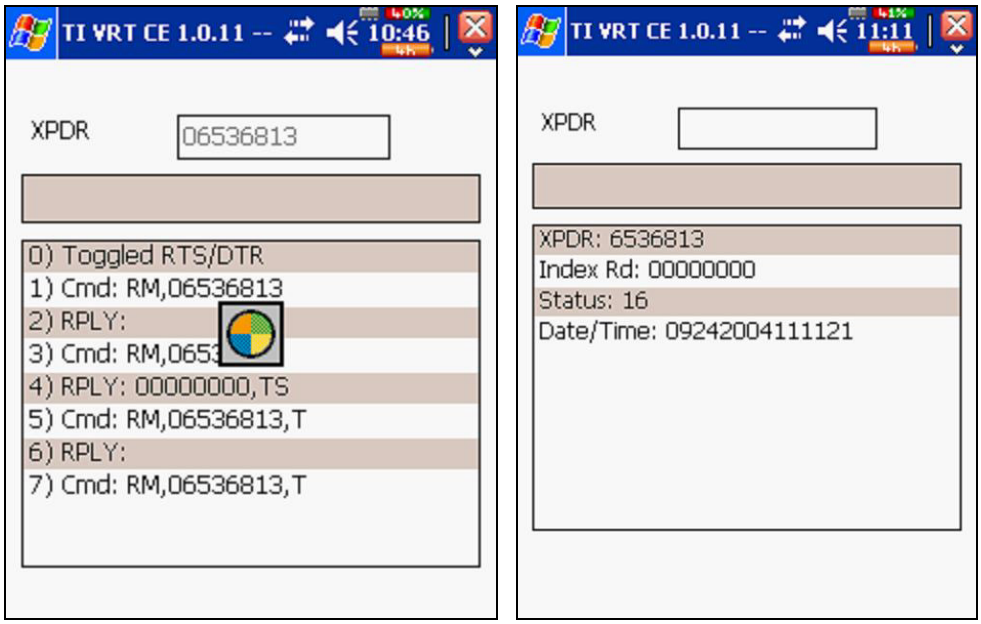
An RF communications window will open and RF interrogation will start. The user will be able to watch commands issued and replies returned from the target transponder. Once the interrogation is completed the communications window will close and the database will be updated. The pop-up list will be updated with the information obtained from the transponder.

If a valid index read does not exist, one will be added to any single History requests.
A new index read will be added to any Single TOU request.
Pressing the <ESC> key will close the Pop-Up display.

General Index RF Read

Hot Key: **G**
X has no effect

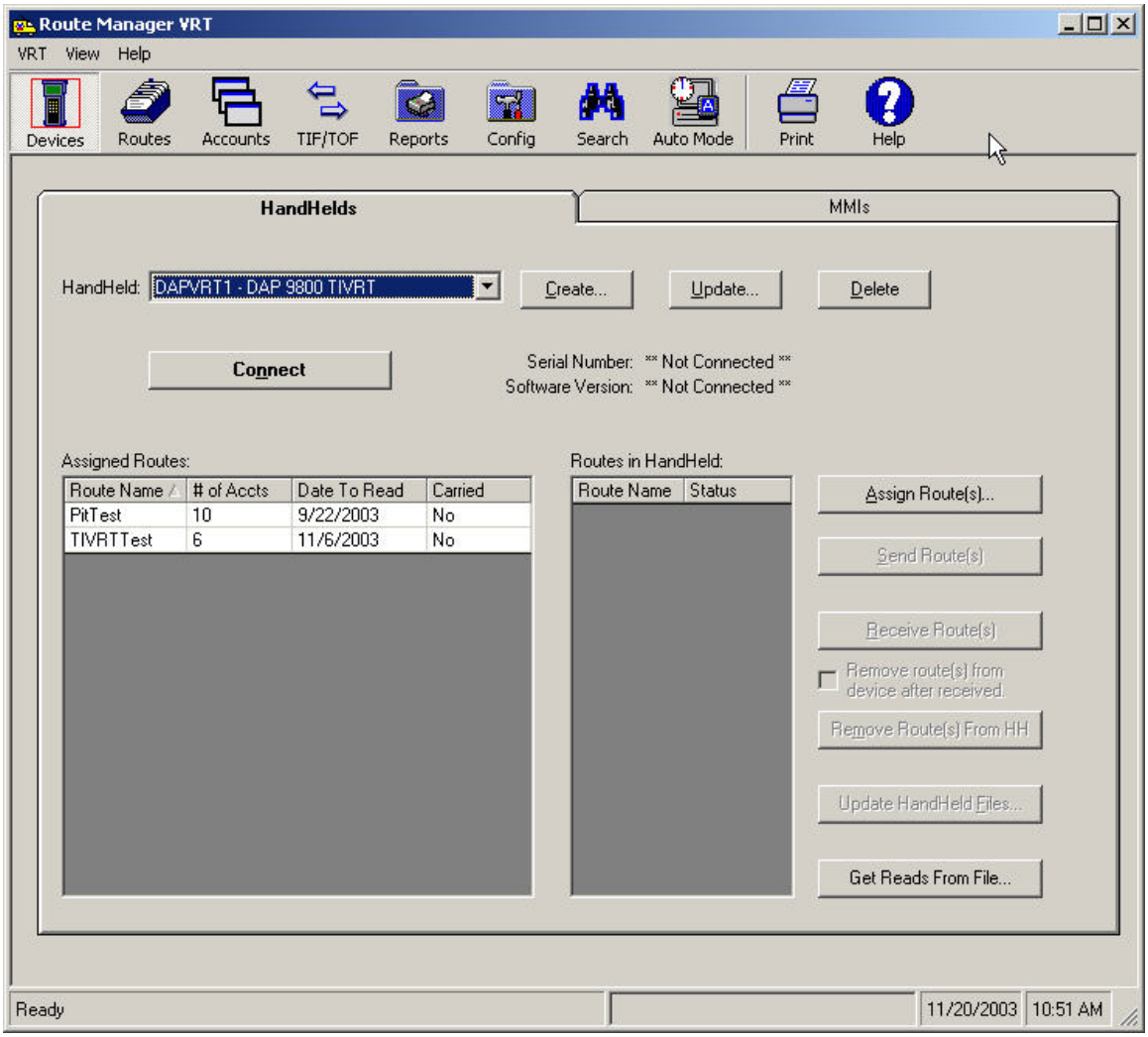
After pressing the “G” key the popup display will open. Enter the desired transponder number and press <ENTER>. An RF communications window will open and RF interrogation will start. The user will be able to watch commands issued and replies returned from the target transponder. When the interrogation is completed, the communications commands will be replaced with read results. Data is NOT added to the database.



TI VRT CE Communication with Route Manager VRT

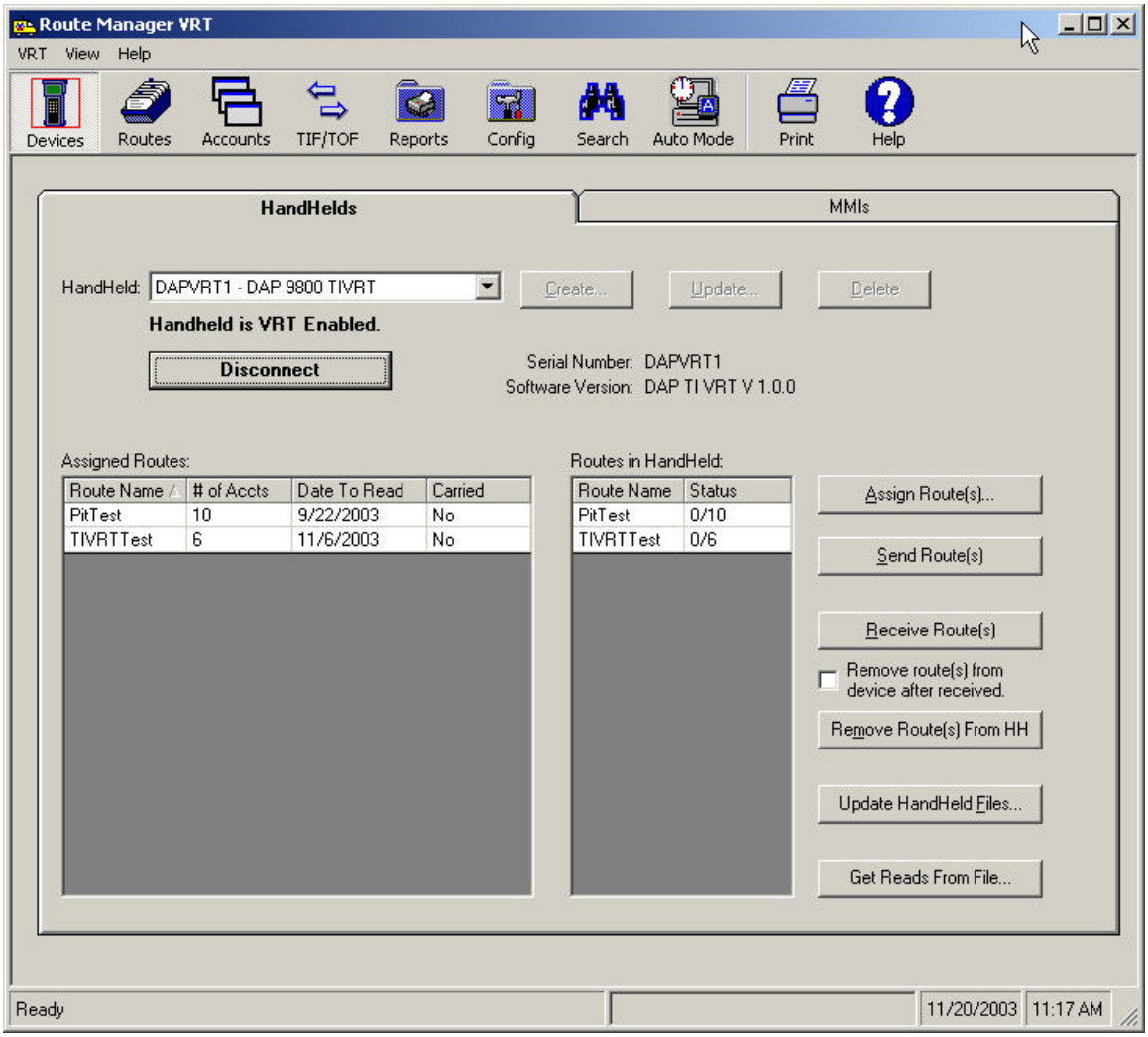
Establishing communications

1. Using the Devices section of Route Manager VRT, select the desired Handheld from the Handheld Selection drop-down list.
2. Ensure that the proper cable (null modem) is connected between the computers COM port(s) and the Handheld device’s cradle.
3. Ensure that the Handheld device is turned on and properly seated in its cradle.
4. Make sure the Handheld is in communications mode. (F3 from the Main Menu)
5. Click the **Connect** button in RM VRT.



Upon Successful connection:

- The **Connect** button will display '**Disconnect'**
- The Serial Number and Handheld Software Version will be displayed directly beneath the **Disconnect** button.
- The Handheld function buttons will be disabled.
- The Handheld Communication buttons will be enabled.
- If Routes exist in the Handheld they would be displayed in the "Routes in Handheld" display grid.



Uploading Routes from RM VRT to TI VRT(CE)

1. Follow the Connection steps outlined earlier.
2. Ensure that the desired Route is assigned to the connected Handheld device.
3. Highlight the desired route(s) in the Assigned Routes display grid.
4. Click the **Send Route** button to send the route to the Handheld Device. After the Route has been sent successfully to the Handheld device, the Routes in Handheld display grid will be updated to display the sent route and the Handheld will be automatically rebooted (See Figure x – Route 123000)

   Note: Uploading Route(s) will overwrite any existing data on the hand held. It is the user's responsibility to make sure all data is downloaded from the hand held PRIOR to uploading new routes

Downloading data From TI VRT(CE) to RM VRT

1. Ensure that the Handheld is connected via the steps outlined earlier.
2. Select the desired Route(s) to receive from the Routes in Handheld display grid.
3. Click the **Receive Route** Button to start the process.
4. Upon successful completion the Route Status will change to 'Transferred' and the Handheld will disconnect from the application.

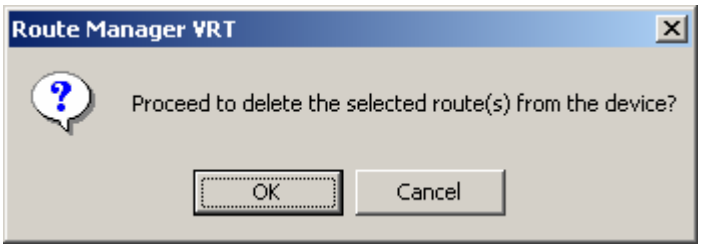
Removing Route From TI VRT (CE)

To Remove Routes From Hand Held after receive:

1. Follow the Steps outlined earlier for Transferring and Connecting to the Handheld device
2. Select the **Remove Route(s) from device after received** check box
3. Click the **Receive Route(s)** button

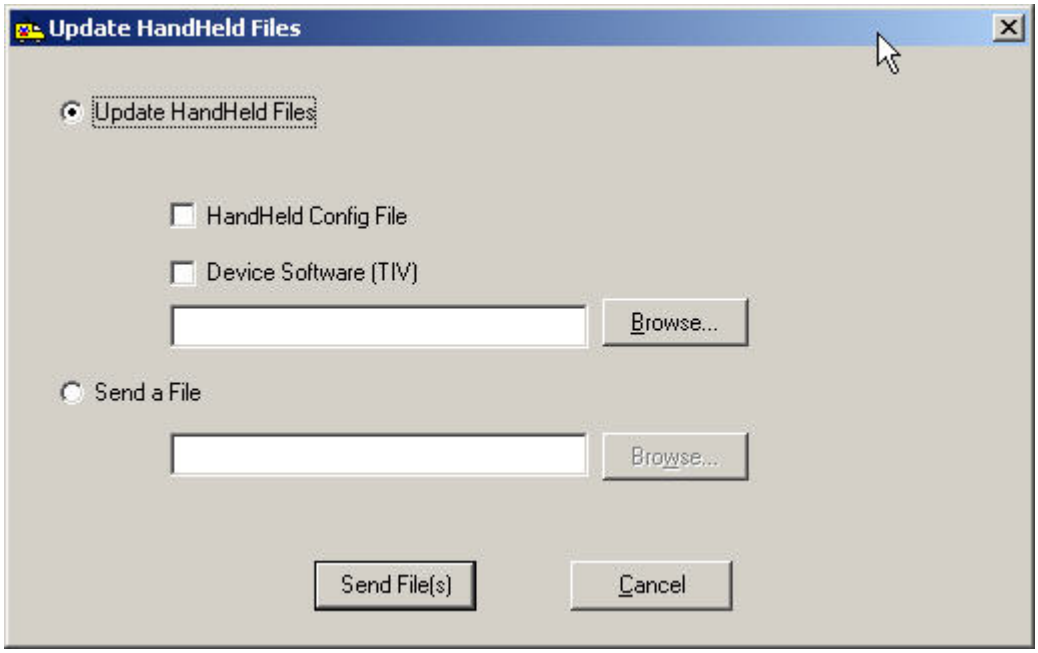
To Remove Routes from HH without receiving the Route from HH:

1. Follow the Steps outlined earlier for Connecting to the Handheld device.
2. Once connected, select the Route to remove from the **Routes in Handheld** display grid.
3. Click the **Remove Route(s) from HH** button.
4. Click OK on the message box.



Updating Handheld files

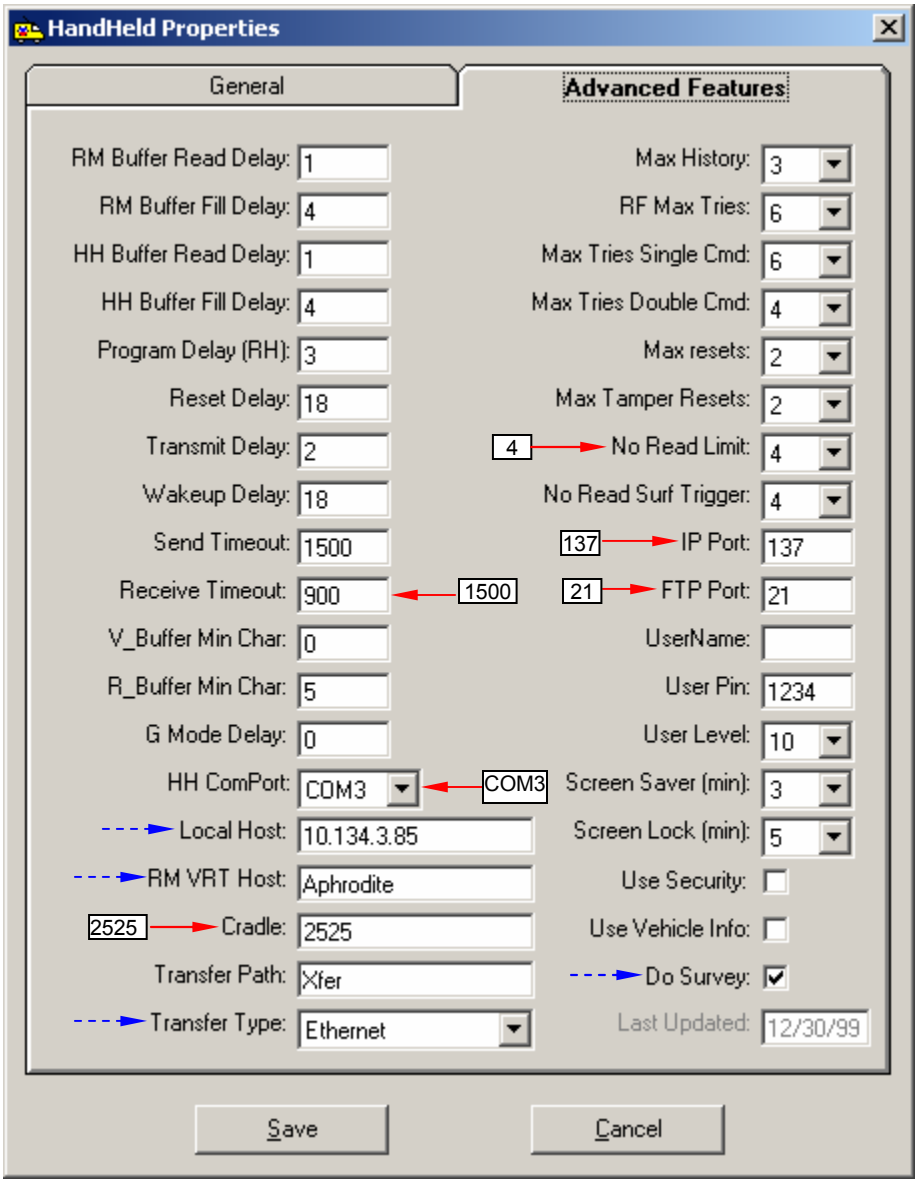
1. Follow the Steps outlined earlier for Connecting to the Hand Held device.
2. Click the **Update Handheld File** button. You are presented with the **Update Handheld Files** form (see picture below)
3. Select one of the two options: Update Handheld Files or Send a File.
   a. **Update Handheld Files** – Select the check boxes for the files you wish to update and then click button "Send File(s)", or
   b. **Send a File** – Input or Browse to the name and location of a file to send to the Handheld and then click button "Send File(s)"


Update HandHeld Files
Update HandHeld Files
HandHeld Config File
Device Software (TIV)
Browse...
Send a File
Browse...
Send File(s)
Cancel

Hot keys

Hot Keys	Action
A	Jump to previous route
B	Jump to **B**eginning of current route
C	**C**lear Reading
D	**D**etail History / TOU for Current Account. Pressing **<Enter>** key initiates RF interrogation for the selected item
E	Jump to **E**nd of current route
F	Set account as unattempted (only for manual read)
G	**G**eneral Interrogation of the entered transponder.
H	Searc**h** menu
I	Jump to next unread **I**nterrogation – Not Implemented in this release
J	**J**ump (by sequence)
K	Unused
L	**L**ock – Not Implemented in this release
M	**M**essage (Comments). Messages can be added or edited if allowed.
N	Unused
O	Error log
P	Unused
Q	Set the Re-Se**q**uence flag for upload
R	**R**F Read Index and all VRT requests for current account
S	**S**ingle index read for current account
T	**T**rouble code. Allows selection of trouble code for current account
U	Jump to next **U**nread account
V	**V**erify (set from configuration table) – Not Implemented in this release
Y	Survey. Allows selection of survey code for current account
Z	Jump to next route
F1	Displays key list with description. When an item is selected the choice is executed (if appropriate).
F2	Route Selection / Load
F3	Current Route Summary or Communication on the main screen
F4	Configuration Settings

Configuration



Local Host: Device's IP address
RM VRT Host: IP address of the computer with RM VRT installed
Transfer Type: Serial or Ethernet depending on the device.
Do Survey: for the device used for survey functions (future release).