



CPLINK

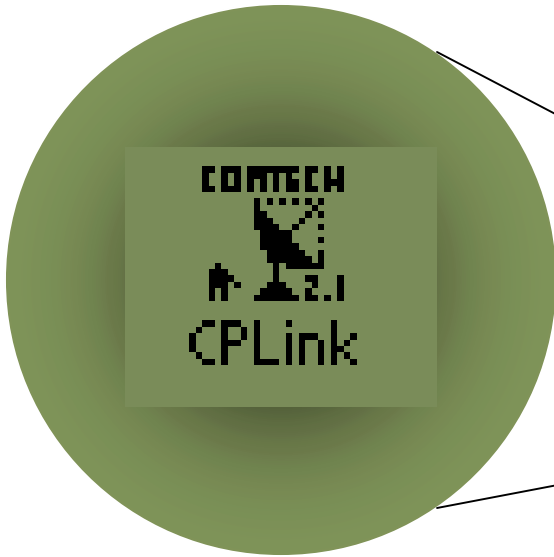
XCVR Palm Link 2
Software Version 2.1
Installation and Operation Manual

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2114 West 7th Street, Tempe, Arizona 85281 USA, 480.333.2200, FAX: 480.333.2161

XCVR Palm Link 2.1

Comtech EF Data Palm Link
(CPLINK)

User's Guide



CPLINK software supports Comtech EF Data monitor and control of all high power CSAT and XSAT transceiver systems.

Shown: Palm™ m500

Software Version 2.1

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Comtech EF Data Corporation
2114 West 7th Street
Tempe, AZ 85281 USA
Tel: 480.333.2200
Fax: 480.333.2161
<http://www.comtechefdata.com>

The Comtech EF Data XCVR CPLINK software is compatible with most of the Palm Operating System handheld devices. Instructions are included for use with the Palm model m500, however, any other compatible Palm™ device may be substituted as required. Refer to your particular Palm™ owner's manual to become familiar with the operation of the Palm™ including the SD memory card if applicable.

What is CPLINK?

CPLINK is a software application program that is Palm™ Operating System compatible. With CPLINK installed and operating on one of the Palm™ handheld devices, the user can monitor and control all functionality of Comtech EF Data CSAT and XSAT high power transceiver systems.

CPLINK stands for Comtech EF Data Palm LINK.

1. Installing the CPLINK Program

- ❑ Install the "Hot Sync" software included with the Palm™ m500 package on a Windows based PC.
- ❑ Using the cable or cradle supplied with the Palm™ m500, connect the m500 to a USB (universal serial port) or a standard serial port of the PC.
- ❑ Using Windows Explorer, locate the CPLINKxx.prc (where xx is the version number) file provided by Comtech EF Data. Double click this file. Note: Double clicking on the .prc file will activate the "Hot Sync" software. Follow the on screen instructions to prepare the file for loading into the Palm™ device on the next "Hot Sync".
- ❑ Push the "Hot Sync" button on the cable / cradle that connects to the Palm™ m500, or select the "Hot Sync" icon on the screen of the m500. This action should initiate the uploading of the CPLINK file to the Palm™. When this is done, the Palm™ is ready to connect to the Redundancy Controller Box (RED Box) or a single XCVR.

2. Connecting the Palm™ Handheld Device

- ❑ Using the two Comtech EF Data cables provided (CEFD part numbers PP/PALM-P10804U, Palm to 9 pin D (female) and CA/WR9902, 9 pin D (male) to RED Box), connect the Palm™ handheld device to the 19 pin M&C connector on the RED Box. Alternately, if a non-redundant (standalone) system is used, connect the provided cables to the XCVR 19 pin M&C connector directly. See note below.
- ❑ Turn power on the Palm™ m500 and press the CPLINK icon to start the CPLINK program. The Main Menu will be displayed.

Note: If using a Palm™ m100 or m105 only one cable (CEFD part number CA/WR9185) is required to connect the Palm to the RED Box or single XCVR. The Palm™ m125, m500 and other models use two interconnecting cables to provide communication from the Palm to the RED Box. See Appendix item 6 for additional details.

3. The Main Menu (Ref: Fig. 3)

- ❑ General Information
 - ▼ Configuration
 - System Type
 - Signal Path
 - LNA
 - Miscellaneous
 - Redundancy Controller
 - ❑ Maintenance Status
 - ❑ Current Fault Status
 - ❑ Stored Events/Alarms
 - ❑ Set Time/Date & CID
-
- ❖ Home (icon)
 - ❖ Menu Bar (icon)



Fig 3

The above Main Menu items are described in detail in the following sections:

4. General Information

Main Menu > General Information (Ref: Fig. 4)

XCVR# ▼

XCVR1 (transceiver #1 select)

XCVR2 (transceiver #2 select)

Sets the "currently selected XCVR".

The "currently selected XCVR" is the XCVR that will be polled for status information in the XCVR General Information menu. The XCVR# is not displayed if the software is set to a standalone (non-redundant) system. (See setting the System Type in the System Type section for more information).

The General Information menu displays the following status parameters of the "currently selected XCVR":

- ✓ **Model No** – displays the currently selected XCVR model number
 - ✓ **Serial number** – displays the currently selected XCVR serial number
 - ✓ **Firmware version** – the currently selected XCVR firmware version
 - ✓ **Circuit Identification Message** (CID) – the currently selected XCVR programmable text message
-
- **(Return)** button – returns the user back to the Main Menu and will NOT program any programmable parameters.
 - **(Get Data)** button – will request data from the currently selected XCVR to refresh the XCVR General Information screen.
 - **(Update)** or **(Send Data)** buttons – (not shown) will program the Palm™ device with any parameters that have changed since the menu was displayed.

In this particular example, the data from XCVR #1 will be displayed.



Fig. 4

5. Configuration

Main Menu > Configuration (Ref: Fig. 5)

▼ Configuration...

There are five (5) configuration modes to choose from:

- **System Type:** Selects between a standalone system (1 transceiver) and a 1:1 redundant system.
- **Signal Path:** Select Signal Path to view and change the Upconverter Frequency, Upconverter Amplifier attenuation (00.00-20.00 dB), Amp ON/OFF, Mute ON/OFF, Downconverter Frequency, Downconverter Frequency, Downconverter Attenuation (00.00-20.00 dB), Mute ON/OFF XCVR parameters.
- **LNA:** Select LNA to view and change Current Source ON/OFF, XCVR Fault Logic ON/OFF, the allowable Current Window, and the percent Current change. Reference the menu item LNA Configuration for additional information.
- **Miscellaneous:** Select Miscellaneous to view or change Cold Start, Auto Fault Recovery (AFR), Local Reference Oscillator Adjustment, External Reference Fault Logic, and Up and Down converter slope adjustments.
- **Redundancy Controller:** Online Unit (XCVR) selector, Operating Mode AUTO/MAN, Waveguide Switch Status OK/FT, Controller Voltages monitoring +5VDC and +12VDC.



Fig. 5

6. System Type

Main Menu > Configuration > System Type (Ref. Fig. 6)

There are two (2) modes of operation when using the CPLINK software.

System Type: ▼

Standalone

1:1

- **Standalone:** This mode is usually selected when used with a single XCVR.
- **One for One (1:1):** The 1:1 mode is selected when two (2) XCVRs are used in a redundant system configuration with a redundant controller box (RED box). This mode can allow the user to control the online / offline XCVR through the RED box. See the Redundancy Controller menu to control or view operating parameters.
- **(Return)** button – Returns the user back to the Main Menu and will NOT program any selection changes.
- **(Update)** button – Programs the Palm™ device with any change since the System Type Configuration was displayed.



Fig. 6

Note: The Main Menu > Configuration > Redundancy Controller can only be selected if the 1:1 parameter is highlighted and the update button is pressed to program redundancy (1:1) mode.

It should be noted that when the 1:1 system is selected, some of the menus may look slightly different than when in standalone mode. The major difference is that the user will have an option to select XCVR #1 (A) or XCVR #2 (B). When selecting XCVR #1, the parameters and controls are displayed for XCVR #1. Alternately, when XCVR #2 is selected, the corresponding parameters and controls are displayed for the (B) XCVR.

Note: XCVR #1 and (A) are used interchangeably. The same holds true for XCVR #2 and (B).

7. Signal Path Configuration

Main Menu > Configuration > Signal Path (Ref. Fig. 7)

- ▼ XCVR1 (transceiver #1 select)
- XCVR2 (transceiver #2 select)

ONLINE/OFFLINE status field: (Status only). Displays the line status of the currently selected XCVR.

TX Stat: (Status Only). This is a summary of the Amp=ON, Mute=OFF and no faults present.

RX Stat: (Status Only). This is a summary of the Mute=OFF and no faults present.

Amp: ▼ (On/Off) The user can change the state of the amplifiers in the currently selected XCVR to ON or OFF.

Mute: ▼ (On/Off) Allows the user to mute the output of the currently selected XCVR when set to ON.



Fig. 7

***Frequency:** Both the transmitter frequency and the receiver frequency are user configurable. The transmit frequency can be selected to any frequency divisible by either 1.0 MHz or 2.5 MHz in the valid TX frequency range. The receive frequency can be selected to any frequency divisible by either 1.0 MHz or 2.5 MHz in the valid RX frequency range.

***Attenuation:** Both the transmit and receive attenuation are user configurable. The TX and RX attenuation can be selected between 00.00 dB and 20.00 dB in 0.25 dB increments.

***Note:** The Up and Down converter Frequency and Attenuation settings can only be changed if the currently selected XCVR is ONLINE.

(Return) button – returns the user back to the Main Menu and will NOT program any programmable parameters.

(Update) button – will program the Palm™ device with any parameters that have changed since the menu was displayed or the last time the (Update) button was pressed.

8. LNA Configuration

Main Menu > Configuration > LNA (Ref. Fig. 8)

XCVR# ▼

XCVR1 (transceiver #1 select)

XCVR2 (transceiver #2 select)

ONLINE/OFFLINE status field:

(Status only). Displays the line status of the currently selected XCVR.

Current Source: ▼ (Enabled/Disabled) The XCVR has the circuitry to source up to 400 mA of current at 12 VDC to power a LNA. The user can turn this current source ON/OFF. Care should be taken when directly connecting the XCVR to lab test equipment: a DC block should be used between the "RF IN" port and the RF test source to protect the test equipment in case the source is accidentally turned on.

Fault Logic: ▼ (On/Off) The XCVR allows the user to select whether or not the summary fault relay is activated if the LNA current moves out of the prescribed window. This allows the user to control whether or not the redundancy controller will switch on a LNA current alarm in the redundant configuration.

Current Window: ▼ (Enabled/Disabled)
The XCVR provides the capability to monitor the LNA current when configured to supply current to the LNA. In addition, an adjustable window detect for the LNA current is provided. After attaching the LNA and turning on the current source, the user can "Calibrate" the current and set a window from +/- 20% to +/-50% to trigger an alarm. The user can disable the "window detect" feature by setting the window value to +/- 99%.

Allowable Change: +/- 20% to +/- 50%. See the documentation in the Current Window above.

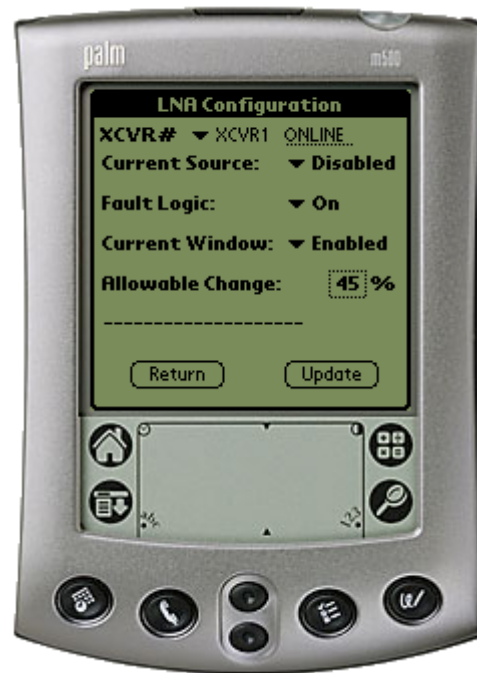


Fig. 8

(Return) button – returns the user back to the Main Menu and will NOT program any programmable parameters.

(Update) button – will program the Palm™ device with any parameters that have changed since the menu was displayed or the last time the (Update) button was pressed.

9. Miscellaneous Configuration

Main Menu > Configuration > Miscellaneous (Ref. Fig. 9)

XCVR# ▼

XCVR1 (transceiver #1 select)
XCVR2 (transceiver #2 select)

ONLINE/OFFLINE status field:

(Status only). Displays the line status of the currently selected XCVR.

***Cold Start:** ▼ (On/Off) The XCVR provides an optional "Cold Start" feature that will insure that the internal 10 MHz reference signal is at a stable temperature prior to allowing the RF and IF outputs to be turned on. A fixed cold start interval of 15 minutes is used. At the end of the 15 minute interval, the RF and IF outputs will automatically be turned ON providing all fault conditions and appropriate settings are met. If a XCVR was powered ON with "Cold Start ON", the operator can override this function by selecting "Cold Start OFF".

***Auto Fault Recovery (AFR):** ▼ (On/Off) This parameter defines how the XCVR responds to momentary fault conditions. If AFR is OFF and a fault condition occurs that causes the RF or IF output to be muted, then that fault condition clears, the XCVR will remain muted. If AFR is ON, and the same situation occurs, the XCVR will automatically be unmuted and return to normal operating mode. To protect against repetitive, momentary faults, if the XCVR experiences 5 occurrences of the same fault, the AFR parameter will automatically be set to OFF.

***Note:** The Cold Start and AFR settings can only be changed if the currently selected XCVR is ONLINE.

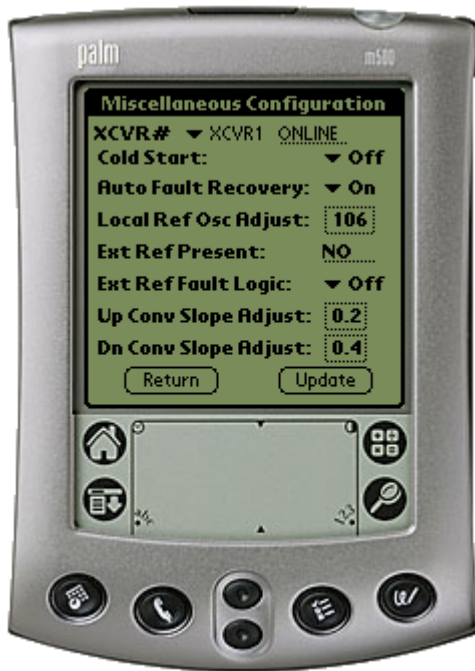


Fig. 9

Local Ref Osc Adjust: A fine adjustment of the internal 10 MHz frequency is provided as a user controllable parameter. This parameter can be varied within the range of 000 to 255.

Ext Ref Present: (Status only). If an external reference is connected to the XCVR, this parameter will display the status of the signal.

Ext Ref Fault Logic: ▼ (On/Off) The XCVR allows the user to select whether or not the summary fault relay is activated if the internal 10 MHz reference loses lock with the external reference attached to the "EXTERNAL REF IN" port J4.

Up/Dn Conv Slope Adjust: The TX and RX channel slopes can be adjusted from 0.0 (factory setting) to 1.0 in 0.1 steps. 1.0 corresponds to approx. 2 dB of positive slope.

10. Redundancy Controller

Main Menu > Configuration > Redundancy Controller (Ref. Fig. 10)

Online Unit: ▼

XCVR1 (transceiver #1 select)
XCVR2 (transceiver #2 select)

Allows the user to observe or select which XCVR in a redundancy configuration is currently online or offline. To change the online unit, the trigger should be pressed to display the two options (XCVR1 or XCVR2). Highlight the desired XCVR to switch online, and press the (Update) button.

Note: The **Online Unit** should not be confused with the "Currently Selected XCVR" selector that is present in several other menus. This is the only menu where the user has the capability to "force" a XCVR to be the ONLINE or OFFLINE XCVR.

Operating Mode: ▼ (Auto/Manual) Allows the user to control the operating mode of the RSU-5060 (RED Box). The operating mode selections are Auto or Manual modes. When in Auto mode, the RED box monitors the state of XCVR1 and XCVR2 (A and B). If the ONLINE unit fails, the RED box will automatically command both the TX and RX transfer switches to change position. Note: If the OFFLINE unit is also faulted, no switchover will occur. Manual mode will not monitor fault status for automatic switchover. To change operating modes, the trigger (▼) should be pressed to display the two options. Highlight the desired mode and press the (Update) button.

TXWG Switch Status: (Status only). Reports the status OK/FT of the TX waveguide switch.

RXWG Switch Status: (Status only). Reports the status OK/FT of the TX waveguide switch.

Controller Voltages: (Status only). Displays the RED box internal power supply voltages.

(Return) button – returns the user back to the Main Menu and will NOT program any programmable parameters.

(Update) button – will program the Palm™ device with any parameters that have changed since the menu was displayed.

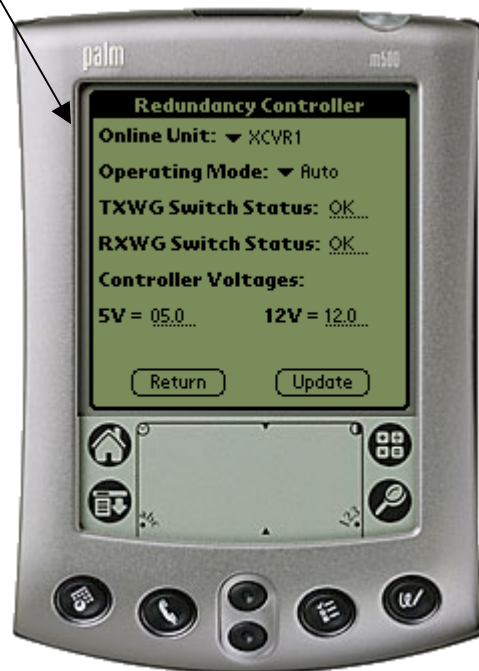


Fig. 10

11. Maintenance Status

Main Menu > Maintenance Status (Ref. Fig. 11)

XCVR# ▼

XCVR1 (transceiver #1 select)

XCVR2 (transceiver #2 select)

XCVR Internal Voltages: The XCVR unit monitors the 6 internal DC voltages: 24,20,12,10,+5 and -5. The voltages are displayed for the currently selected XCVR. These voltages are updated when the Maintenance screen is entered, or if the currently selected XCVR is changed, or if the **(Get Data)** button is pressed.

Tuning (Volts): The XCVR monitors the 4 tuning voltages which are variable depending on frequency. These voltages are updated when the Maintenance screen is entered, or if the currently selected XCVR is changed, or if the **(Get Data)** button is pressed.

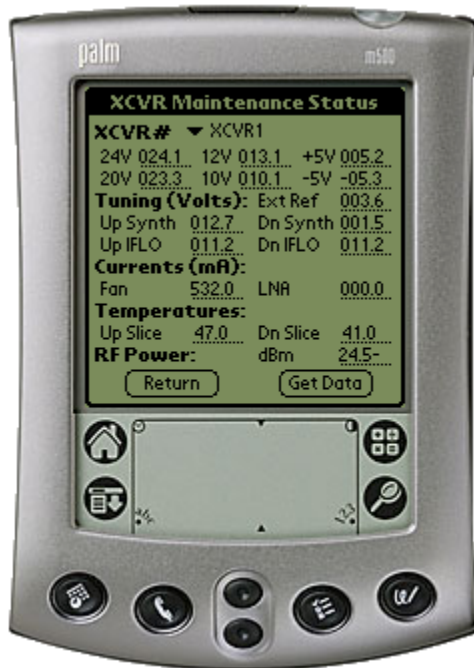


Fig. 11

Currents (mA): The cooling fan and the LNA currents are displayed in milliamps and can be refreshed with the **(Get Data)** button or as in the above 2 sections.

Temperatures: The Up Slice and Down Slice temperatures are displayed in degrees C. These temperatures can be refreshed with the **(Get Data)** button or as in the first 2 sections.

RF Power (dBm): The actual RF output power of the Upconverter is displayed in dBm. This power can be updated by pressing the **(Get Data)** button or as in the first 2 sections.

(Return) button – returns the user back to the Main Menu and will NOT query the currently selected XCVR for data.

(Get Data) button – will query the selected XCVR and refresh the current data screen.

12. Current Fault Status

Main Menu > Current Fault Status (Ref. Fig. 12)

XCVR# ▼

XCVR1 (transceiver #1 select)

XCVR2 (transceiver #2 select)

XCVR Internal Voltages: The XCVR unit monitors the 6 internal DC voltages: 24,20,12,10, +5 and -5 for the currently selected XCVR. The monitor circuitry will display a fault (FT) if any of these voltages are +/- 10% out of range. These voltages are updated when the current fault status screen is entered, or if the currently selected XCVR is changed, or if the **(Get Data)** button is pressed.

Lock Detects: The XCVR monitors the 4 phase lock loops (PLLs) for each XCVR. A fault is displayed for any and each PLL that is not locked. These lock statuses are updated when the **(Get Data)** button is pressed, or as in the above selection.

Currents & Temperatures: The LNA and Fan are monitored for excessive and low currents. A fault is displayed if these currents are out of their prescribed window. If the temperature rises out of specification for the XCVR, a fault will appear in the Heat Sink field. As the heat sink temperature continues to rise, the XCVR will automatically disable the FET amplifiers and display a shutdown fault.

Processor: The Chksum (checksum), IIC Bus, and the battery are monitored for proper operation and will display a faulted condition (FT) when the processor system is not functioning properly.



Fig. 12

(Return) button – returns the user back to the Main Menu and will NOT query the currently selected XCVR for data.

(Get Data) button – will query the selected XCVR and refresh the current data screen.

13. Stored Events & Alarms

Main Menu > Stored Events & Alarms (Ref. Fig. 13)

Total New Events: The number of events that have occurred since last viewing the stored events log.

XCVR indicator field: This field to the immediate right of the Stored Events number displays the currently selected XCVR. This is a status only and the currently selected XCVR cannot be changed in this menu.

Retrieve Next 5 Events: This (OK) button will update the Event display with up to the next 5 events.

Event Window: Where the stored events are displayed and updated.

Clear Event Log: Will erase any events in the event log and provide a clear display as shown in Fig. 12.1.

Reset Event Pointer: This (OK) button will reset the event pointer to the top of the event list to show the start of the event log.



Fig. 13

(Return) button – returns the user back to the Main Menu and will NOT query the currently selected XCVR for data.

(Get Data) button – This will refresh the Event Window with any new event data.

14. Set Time / Date & Circuit ID Msg. (CID)

Main Menu > Stored Events/Alarms (Ref. Fig. 14)

XCVR# ▼

XCVR1 (transceiver #1 select)

XCVR2 (transceiver #2 select)

Date: Displays the date of the currently selected XCVR.

Time: Displays the time of the currently selected XCVR.

(NOW) button: Displays the date and time of the Palm™ device.

Circuit Identification Message: This is the CID message. The CID is displayed for the currently selected XCVR.

(Get Data) button – Retrieves the Date, Time, and CID message from the currently selected XCVR.

(Send Data) button – Sends the indicated Date, Time, and CID message to the currently selected XCVR.

(Return) button – Returns to the Main Menu and will NOT query or program the currently selected XCVR.



Fig. 14

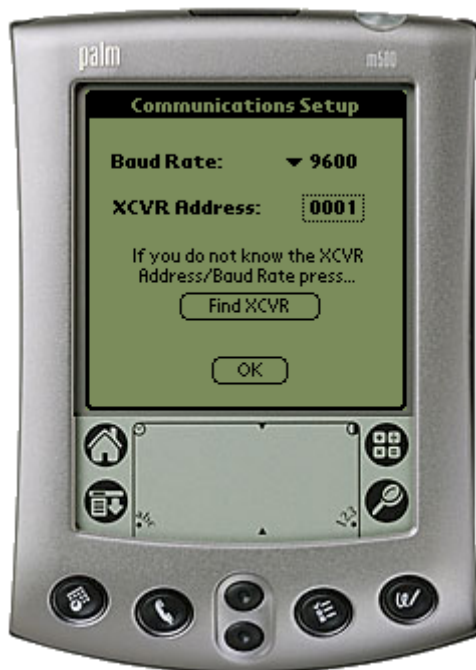
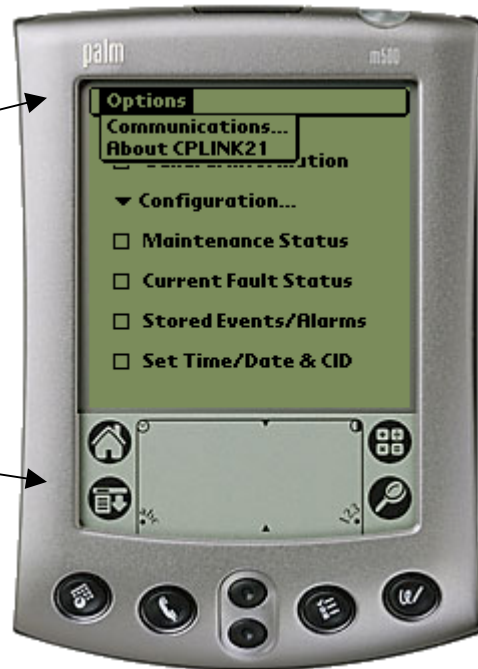
Appendix A

Menu Bar Options

1. Communications Setup:

Menu Bar Icon > Options > Communications

Note: The Menu Bar is accessed on the Palm™ m500 and other models by tapping the pointer on the fixed menu bar icon / button in the bottom left corner (just to the left of the abc-dot area) of the Palm™ device. Some Palm™ devices allow the upper black bar to be tapped to drop down the options menu.



Baud Rate: ▼ The Baud Rate can be manually set to 1200, 2400, 4800, 9600, or 19200.

XCVR Address: The XCVR address can also be set manually from 1-999.

If the Baud Rate and / or XCVR Address is not known, the CPLINK software can locate the connected XCVRs.

(Find XCVR) button – The found XCVR will be set to address #1 and the redundant XCVR (if applicable) will be set to address #2.

(OK) button – The displayed baud rate and address information are programmed into the Palm™.

2. About CPLINK21:

Menu Bar Icon > Options > About CPLink21

About CPLink21 will display the software version number and company information. Visit the Comtech EF Data web site at <http://www.comtechefdata.com> for the latest product updates and customer support information.

(OK) button – Returns the user to the Main Menu.



3. About Expansion cards

Several current models of Palm™ handhelds support SD (secure digital) Memory Expansion Cards. These expansion cards offer the advantage of being able to retain a software program (such as CPLINK) when batteries get low or fail completely.



If the user has a Palm™ with the SD expansion card and loses battery power, it is then a simple matter to replace the AAA batteries (m125), or recharge the unit (m500). The CPLINK program can then be copied back into RAM (Random Access Memory) from the SD card.



The m125 and the m500 support Expansion Cards while the m100 and m105 handhelds do not.

4. Copying a program from the SD expansion card to RAM

It is a simple procedure to copy a program such as CPLINK to or from RAM in the Palm devices that support SD expansion cards.

1. With the Palm™ turned on tap the menu bar icon at the bottom of the digitizer screen.
2. Select "Copy" from the pull down list.
3. At the top of the screen select Copy To: ▼ Handheld.
4. Highlight the program to copy (in this case it is CPLink).
5. Select the **(Copy)** button at the bottom of the screen.
6. If the program exists in RAM on the handheld, you will be asked if you want to replace it. If it doesn't already exist - go to step 8.
7. If yes is selected, the old version will be overwritten with the version from the SD card.
8. Select **(Done)** when the copy has completed.

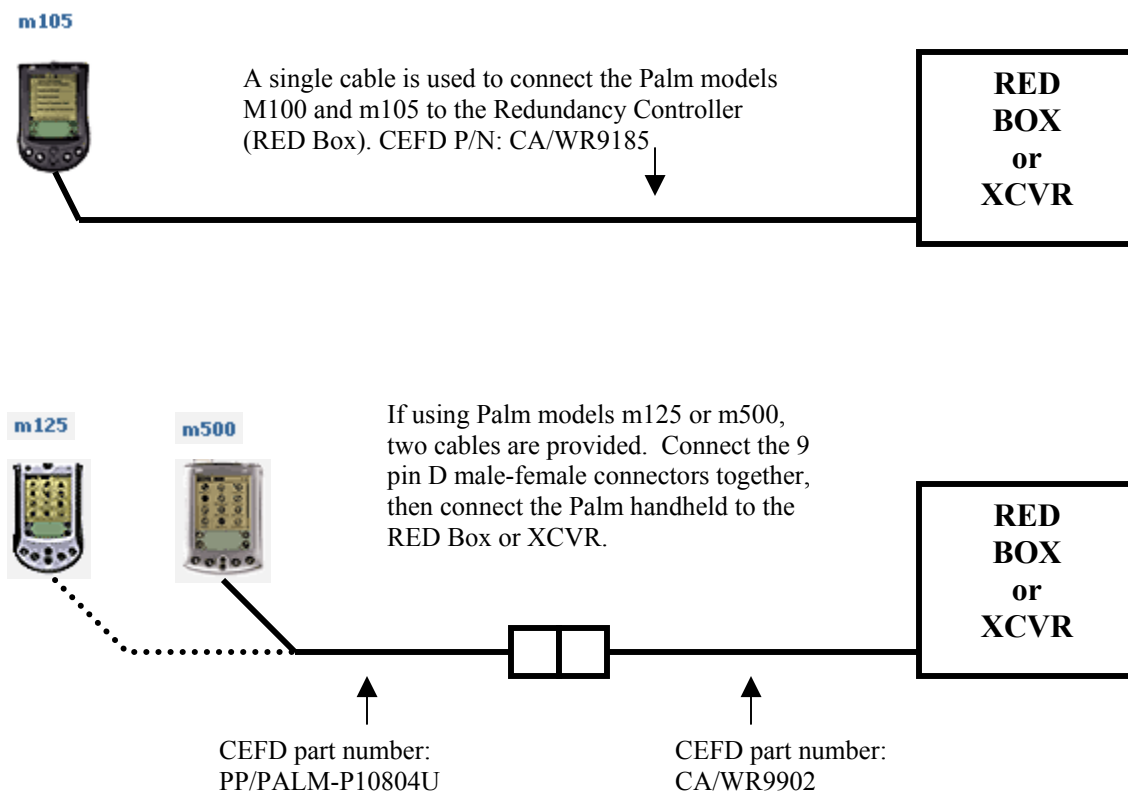


5. Batteries

Since the m100 (no longer in production) and m105 /m125 use AAA batteries, it is prudent to replace the batteries with fresh ones if the Palm™ will be in use for an extended period of time. The m100 and the m105 models do not support expansion cards. If the batteries fail on either of these two Palms, the CPLINK program will be lost and will have to be reloaded from a local PC via HOTSYNC operation.

There are capacitors built into the Palm™ m100 / m105 devices to provide about 1 minute of sustained power while changing the batteries. This should provide enough time to change the batteries without having to reload the CPLINK program.

6. Cable Connections



Notes

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