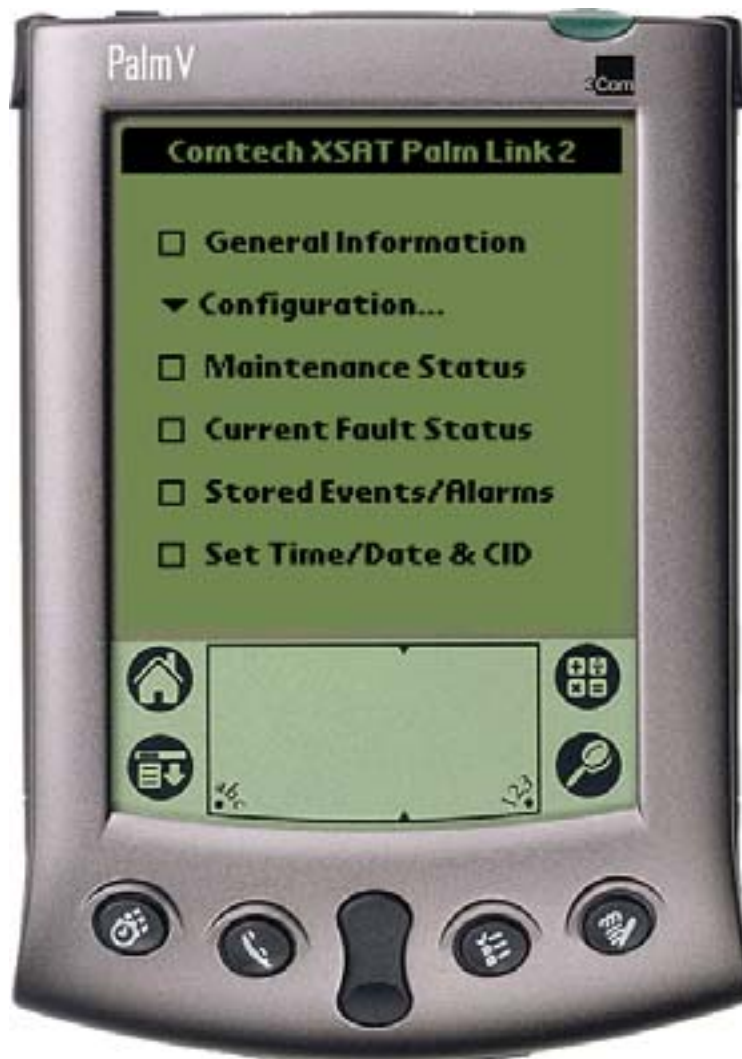# XPLINK

XSAT Palm Link 2
User's Guide

XSAT Palm Link
(CPXLINK)

User's Guide

Software Version 2.0
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Table of Contents

> **Note**:   The Comtech EF Data XSAT CPXLINK software is compatible with most of the Palm OS handheld
> devices. Instructions are included for use with the Palm model m100. Most any other Palm device
> may be substituted as required. This document will show a Palm V for reference only.

Chapter 1. Installing the CPXLINK Program

Install the Hot Sync Software included with the Palm m100 package.

Using Windows Explorer, locate the CPXLINK.prc file either on the floppy disk or the local computer hard drive. <u>Double click on this file.</u>

This double clicking 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".

Connect the Palm handheld device to the RS-232 serial port of the local computer that the "hot sync" software was installed on using the supplied cable.

At this point you are ready to load the CPXLINK software.

Push the "hot sync" button on the cable that connects the Palm device or select the "hot sync" icon on the handheld device. This action should initiate the uploading of the CPXLINK file to the Palm. When this is done, the Palm is ready to connect to the Redundant Controller Box or the individual XSAT.

Chapter 2. Connecting the Palm Handheld

Using the Comtech EF Data modified cable included, connect the Palm handheld device to the 19 pin M&C connector on the Redundant Controller Box.

Turn power on the Palm m100 and press the CPXLINK icon to start the CPXLINK program.

Chapter 3.General Information

<Main Menu><General Information> (Ref. Figure 1)

> **XSAT#:** (XSAT1/XSAT2) Sets the currently selected XSAT. The Currently Selected XSAT is used in several menus (in 1:1 mode only) that allows the user to **view** or **change** *most* parameters of the Currently Selected XSAT.
>
> **Note: This selection is not to be confused with the Online XSAT selection in the Redundancy controller section.**

The **General Information** menu is a status menu only. The Model Number, Serial Number, Firmware Version and the Circuit ID Message will be displayed for the Currently Selected XSAT as shown.

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

As in most of the following menu items, the (RETURN) select soft button will return the user back to the main menu and NOT program any programmable parameters (if applicable).

The (GET DATA) select soft button will request data from the Currently Selected XSAT and will refresh the XSAT General Information screen.

The (UPDATE) and (SEND DATA) soft buttons (not shown) will program the Palm device with any parameters that have changed since the menu was last displayed.

Figure 1

Chapter 4.Configuration

<Main menu><Configuration> (Ref. Figure 2)

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

System Type: Selects between a Standalone System and a 1:1 Redundant System.

Signal Path: Select Signal Path to view and change Upconverter Frequency, Upconverter Amplifier attenuation, Mute ON/OFF, Downconverter Frequency, Downconverter attenuation, and Mute ON/OFF XSAT parameters.
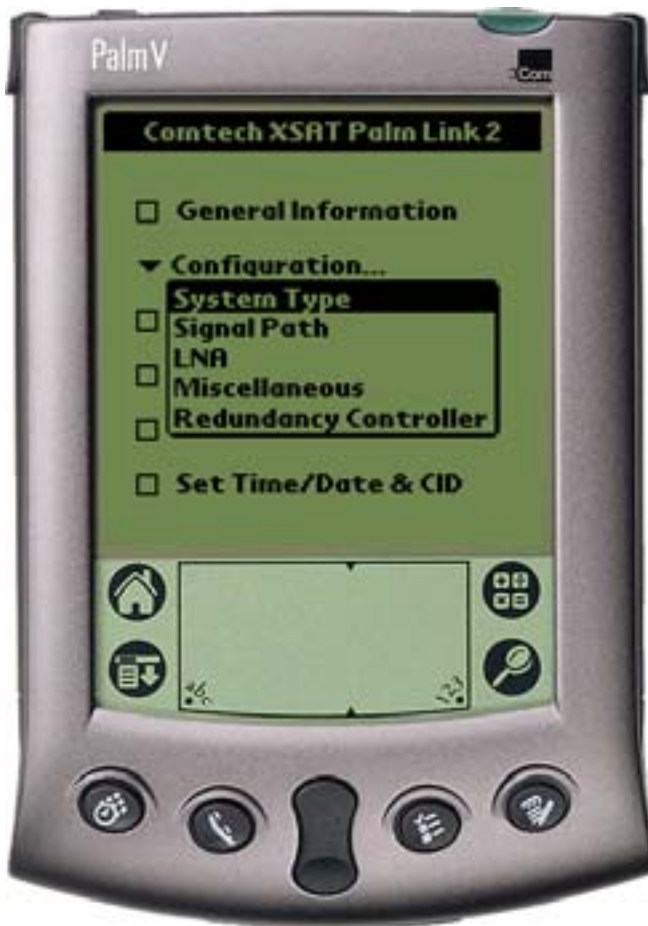
LNA: Select LNA to view and change Current Source (ON/OFF), XSAT Fault Logic (ON/OFF), the allowable Current Window, and the percent Current change. Reference the menu item 7 (**LNA Configuration**) for additional information.

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 (XSAT) selector, Operating Mode AUTO/MAN, RF/IF switch status OK/FT, Controller Voltages (monitoring 5VDC and 12VDC.

Figure 2

Chapter 5.System Type

<Main menu><Configuration><System Type> (Ref. Figure 3)

There are two (2) major modes of operation when using the CPXLINK Software:

Standalone: This mode is usually selected when used with a single XSAT.

One for One (1:1): The 1:1 mode is selected when two (2) XSAT's are used in a redundant system with a redundant controller box (RED box). This mode can allow the user to control the online/offline XSAT through the RED box. See the <Configuration><Redundancy Controller> menu to control or view status parameters.

> **Note:** The Redundancy Controller option in the <Main Menu><Configuration> can only be selected if the 1:1 parameter is highlighted and the (UPDATE) button is pressed to program redundancy (1:1) mode.
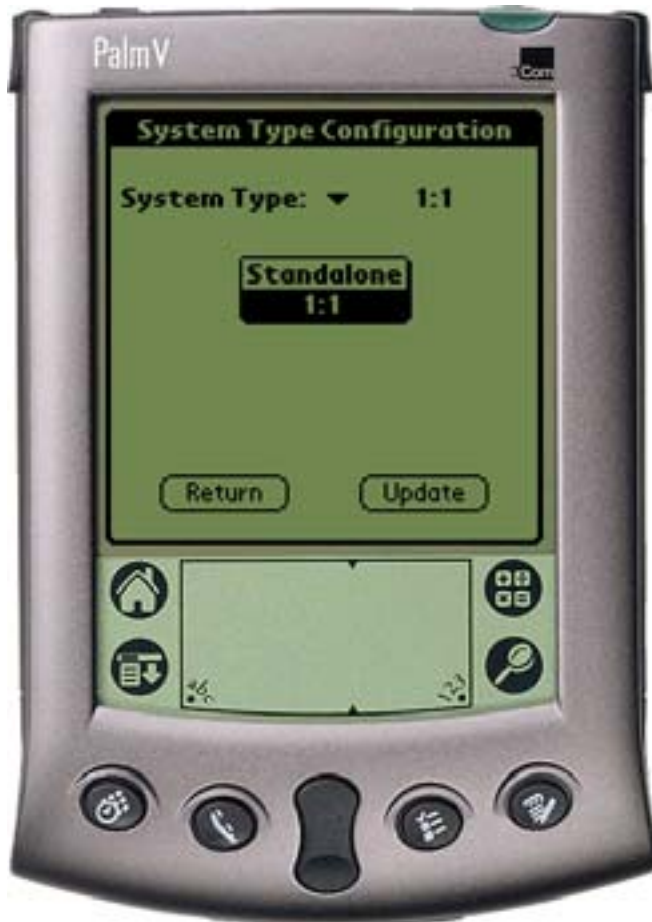
It should be noted that when the 1:1 system is selected, some of the menus may look slightly different then when in standalone mode. The major difference is that the user will have an option to select XSAT #1 (A)* or XSAT #2 (B)*.

When selecting XSAT #1, the parameters and controls are displayed for XSAT #1. Alternately, when XSAT #2 is selected, the corresponding parameters and controls are displayed for the (B) XSAT.

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

Figure 3

Chapter 6.Signal Path Configuration

<Main Menu><Configuration><Signal Path> (Ref. Figure 4)

XSAT#: (XSAT1/XSAT2) Sets the currently selected XSAT. The Currently Selected XSAT is used in several menus (in 1:1 mode only) that allows the user to **view** or **change** *most* parameters of the Currently Selected XSAT.

Note: This selection is not to be confused with the Online XSAT selection in the Redundancy controller section.

ONLINE/OFFLINE status field:

(Status only). Displays the line status of the Currently Selected XSAT.

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

Mute: Allows the user to mute the output of the Currently Selected XSAT when set to ON.

***Frequency:** Both the transmitter and receiver frequencies are user configurable. The transmitter frequency can be selected to any frequency divisible by either 1.0 MHz or 2.5 MHz in the valid TX frequency range. The receiver 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 transmitter and receiver attenuation are user configurable. The TX and RX attenuation can be adjusted in 0.25 dB increments.

Figure 3

***Note:** The Up and Down converter frequency and attenuation settings can only be changed if the Currently Selected XSAT is ONLINE.

Chapter 7.LNA Configuration

<Main Menu><Configuration><LNA> (Ref. Figure 5)

> **XSAT#:** (XSAT1/XSAT2) Sets the currently selected XSAT. The Currently Selected XSAT is used in several menus (in 1:1 mode only) that allows the user to **view** or **change** *most* parameters of the Currently Selected XSAT.
>
> **Note: this selection is not to be confused with the Online XSAT selection in the Redundancy controller section.**

ONLINE/OFFLINE status field:

(Status only). Displays the line status of the Currently Selected XSAT.

Current Source: The XSAT has the circuitry to source up to 400mA of current at 12 VDC to power a LNA. This current source can be turned ON/OFF by the user. Care should be taken when directly connecting the XSAT 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: The XSAT 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: The XSAT 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.

Figure 4

Chapter 8. Miscellaneous Configuration

<Main Menu><Configuration><Miscellaneous> (Ref. Figure 6)

> **XSAT#:** (XSAT1/XSAT2) Sets the currently selected XSAT. The Currently Selected XSAT is used in several menus (in 1:1 mode only) that allows the user to **view** or **change** *most* parameters of the Currently Selected XSAT.
>
> **Note**: **This selection is not to be confused with the Online XSAT selection in the Redundancy controller section.**

*Cold Start: The XSAT 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 output will automatically be turned ON providing all fault conditions and appropriate settings are met. If an XSAT was powered ON with "Cold Start" ON, the operator can override this function by selecting "Cold Start OFF".

*Auto Fault Recovery (AFR): This AFR parameter defines how the XSAT 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 XSAT will remain muted. If AFR is ON, and the same situation occurs, the XSAT will automatically be unmuted and return to normal operating mode. To protect against repetitive, momentary faults, if the XSAT experiences 5 occurrences of the same fault, the AFR parameter will automatically be set to OFF.

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.

*Note: The **Cold Start** and **AFR** settings can only be changed if the Currently Selected XSAT is **ONLINE**.
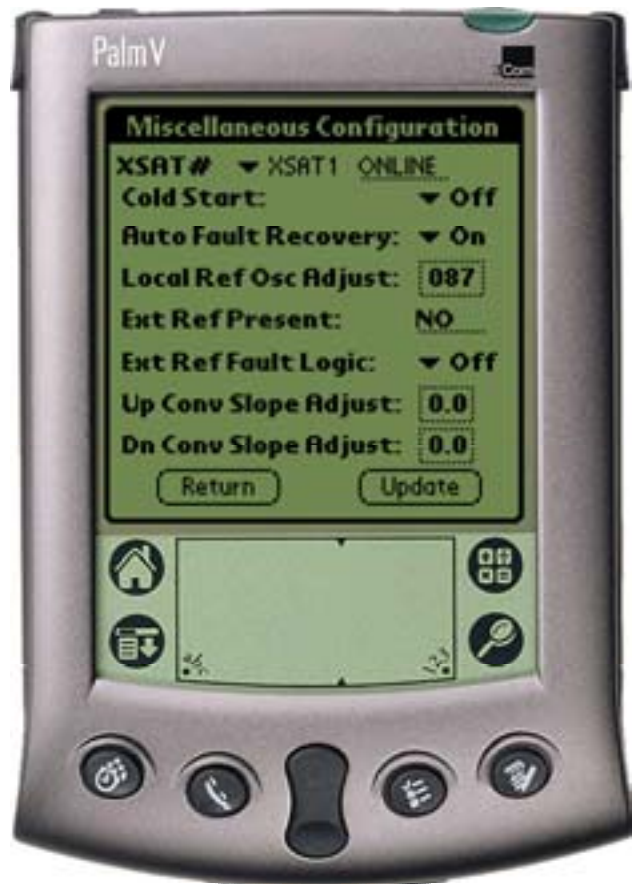

Figure 5

Chapter 9.Redundancy Controller

<Main Menu><Configuration><Redundancy Controller> (Ref. Figure 7)

Online Unit: Allows the user to **observe or select** which XSAT in a redundancy configuration is currently **ONLINE** or **OFFLINE**.

To change the online unit, the trigger should be pressed to display the two options (XSAT #1 or XSAT #2). Highlight the desired XSAT to switch online, and press the (UPDATE) button.

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

Operating Mode: Allows the user to control the operating mode of the Redundancy Control Box (Red Box). The operating mode selections are <u>Auto</u> or <u>Manual</u> modes. When in Auto mode, the Red Box monitors the state of XSAT #1 and XSAT #2 (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.

TX Switch Status:

(Status only) Reports the status OK/FT of the TX RF and IF switches.

RX Switch Status:

(Status only) Reports the status OK/FT of the RX RF and IF switches.

Controller Voltages:

(Status only) Displays the Red Box internal power supply voltages.

Figure 5

Chapter 10.   Maintenance Status

<Main Menu><Configuration><Maintenance Status> (Ref. Fig. 10.1)

> **XSAT#:** (XSAT1/XSAT2) Sets the currently selected XSAT. The Currently Selected XSAT is used in several menus (in 1:1 mode only) that allows the user to **view** or **change** *most* parameters of the Currently Selected XSAT.
>
> **Note: This selection is not to be confused with the Online XSAT selection in the Redundancy controller section.**

XSAT Internal Voltages:

The XSAT unit monitors the 5 internal DC voltages: 24,20,12,+5, and –5. The voltages are displayed for the Currently Selected XSAT. These voltages are updated when the Maintenance screen is entered, or if the Currently Selected XSAT is changed, or if the (GET DATA) button is pressed.

Tuning (Volts): The XSAT 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 XSAT is changed, or if the (GET DATA) button is pressed.

Currents (mA): 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.
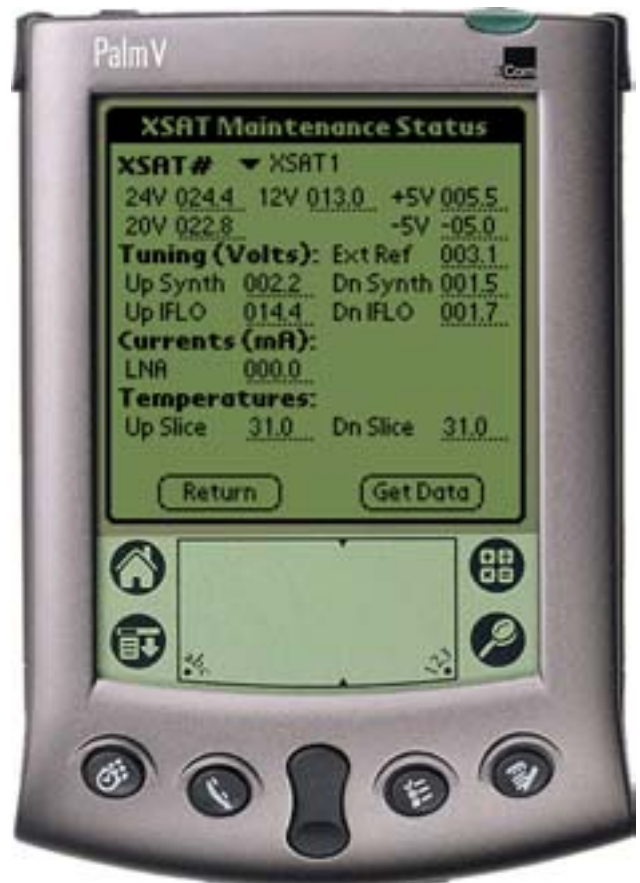
Figure 6

Chapter 11.   Current Fault Status

<Main Menu><Current Fault Status> (Ref. Figure 9)

> **XSAT#:** (XSAT1/XSAT2) Sets the currently selected XSAT. The Currently Selected XSAT is used in several menus (in 1:1 mode only) that allows the user to **view** or **change** *most* parameters of the Currently Selected XSAT.
>
> **Note: This selection is not to be confused with the Online XSAT selection in the Redundancy controller section.**

XSAT Internal Voltages:

The XSAT unit monitors the 5 internal DC voltages: 24,20,12,+5, and –5 for the Currently Selected XSAT. 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 XSAT is changed, or if the (GET DATA) button is pressed.

Lock Detects: The XSAT monitors the 4 phase lock loops (PLLS) for each XSAT. 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 section.

Currents & Temperatures:

The LNA is 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 XSAT, a fault will appear in the Heat Sink field. As the Heat Sink temperature continues to rise, the XSAT will automatically disable the FET amplifiers and display a shutdown fault.

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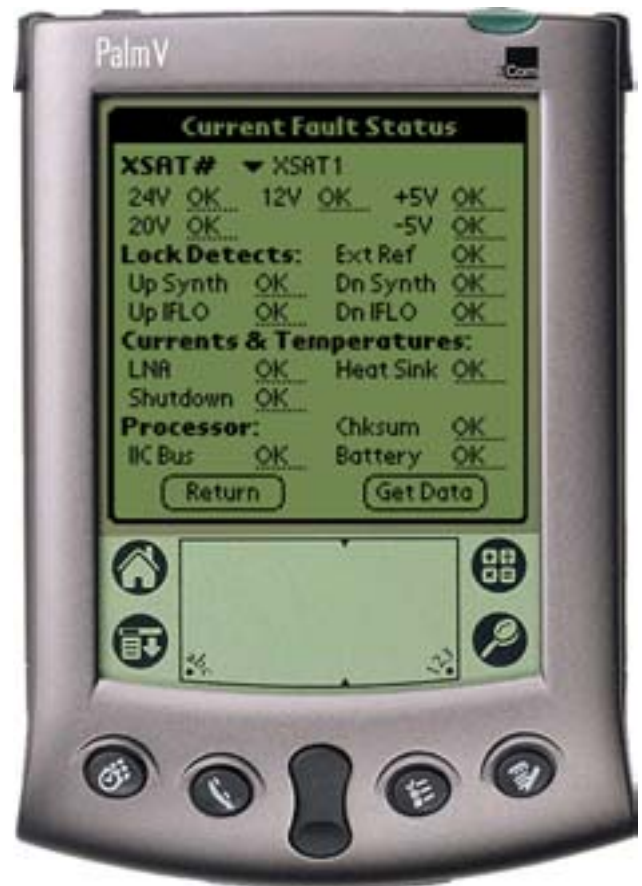

Figure 7

Chapter 12.   Stored Events & Alarms

<Main Menu><Stored Events & Alarms> (Ref. Fig. 12.1)

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

XSAT Indicator Field: This field to the immediate right of the Stored Events number displays the Currently Selected XSAT. This is a status only and the Currently Selected XSAT 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.

(GET DATA) button: This button will refresh the Event Window with any new event data.

Figure 8

Chapter 13.   Set Time / Date & Circuit ID Msg. (CID)

<Main Menu><Stored Events / Alarms> (Ref. Figure 11)

> **XSAT#:** (XSAT1/XSAT2) Sets the currently selected XSAT. The Currently Selected XSAT is used in several menus (in 1:1 mode only) that allows the user to **view** or **change** *most* parameters of the Currently Selected XSAT.
>
> **Note: This selection is not to be confused with the Online XSAT selection in the Redundancy controller section.**

Date: Displays the date of the Currently Selected XSAT.

Time: Displays the time of the Currently Selected XSAT.

(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 XSAT.

(GET DATA) button:

Retrieves the date, time and CID message from the Currently Selected XSAT.

(SEND DATA) button:

Sends the date, time, and CID message to the Currently Selected XSAT.

(RETURN) button:

Returns to the Main Menu.

Figure 11

Chapter 14.   Menu Bar Options

14.1 COMMUNICATIONS SETUP:

<Menu Bar><Options><Communications>

> **Note:** The Menu Bar is accessed on the Palm m100 and other models by tapping the fixed menu bar icon/button in the bottom left corner (just to the left of the abc dot area) of the Palm device.

Baud Rate: The Baud Rate can be set manually to 1200, 2400, 4800, 9600, or 19,200.

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

If the Baud Rate and / or XSAT address is not known, the CPXLINK software can locate the connected XSATS.

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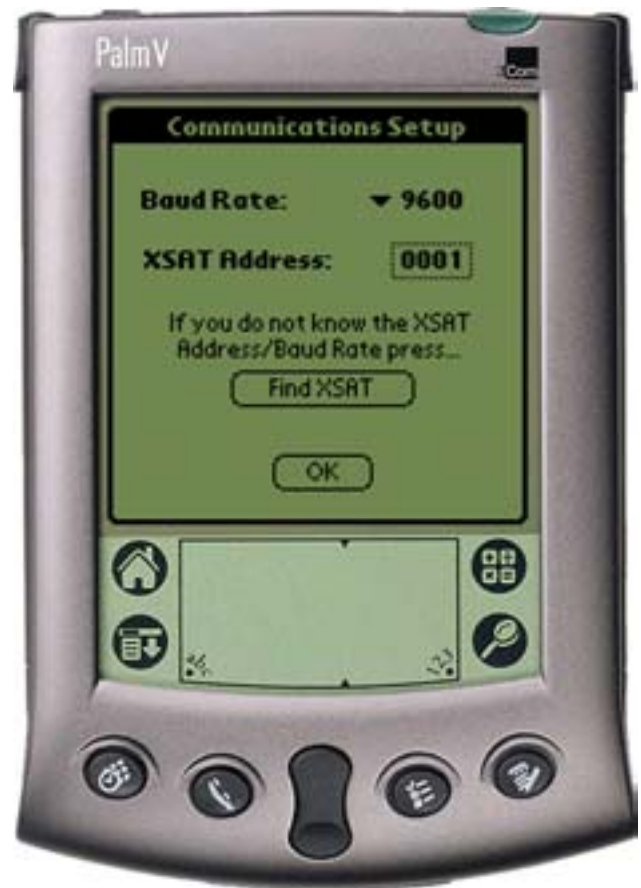

Figure 12

14.2 ABOUT CPXLINK

<Menu Bar><Options><About CPXLINK>

About CPXLINK will display the Software Version number and Company Information.

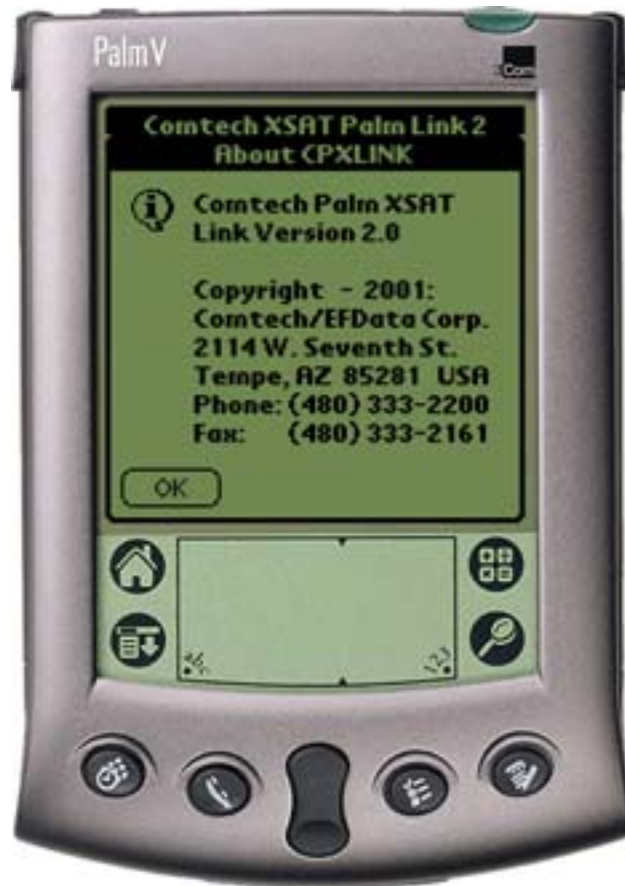(OK) button: Returns to the Main Menu.

Figure 13

Chapter 15.   Palm™ m100 Battery Recommendations

15.1 USE ALKALINE BATTERIES

For the Palm m100, use only quality AAA alkaline batteries.

Nickel-cadmium batteries are not recommended, as they do not supply sufficient voltage and will not trigger low battery warnings properly.

15.2 TYPICAL BATTERY LIFE

The Palm m100 organizer uses two AAA alkaline batteries that last approximately one month with normal use. Always carry spare batteries, to avoid losing the CPXLINK program stored in the Palm m100.

Conserve battery life using these methods:

1. Use the back-light feature as little as possible.

2. Reduce the "Auto-off" period setting.

Battery life is significantly influenced by the "Auto-off" setting. This setting controls the amount of time before the organizer shuts itself off after a period of inactivity. To change the default 2 minute setting:

1. Go to **Applications**, then **Preferences.**

2. From the "**Auto-off after**:" pull down menu, select 1, 2, or 3 minutes.

Shorter settings preserve battery life, but allow less time to use the organizer before it turns off.

15.3 CHECK THE PALM M100 BATTERY INDICATOR.

Check the organizer's battery indicator daily. The battery indicator is located in the Applications Launcher window, next to the clock. The black bar indicates the amount of battery life remaining, and will recede to the left as the batteries are depleted. If the black bar is very short, it may be time to replace your batteries.

Always check the battery indicator before traveling. Carry spare batteries to avoid losing the CPXLINK program stored in the Palm m100.

15.4 LOW BATTERY WARNING

The Palm m100 organizer automatically displays a low battery warning when its batteries need to be replaced. After seeing the warning, put new batteries into the organizer as soon as possible.

The low battery warning remains on the screen until acknowledged, and may be seen several times before the batteries are replaced. The organizer may operate for a few days after the first low-battery warning; however, replace the batteries soon to avoid possible loss of function.

15.5 LOW BATTERY POWER CAUSING UNUSUAL BEHAVIOR

If the organizer starts to exhibit unusual or irregular behavior, weak batteries are a possible cause. This may be the case if a low battery warning has occurred. In exceptional circumstances, the unusual behavior may actually precede the warning. Symptoms associated with weak batteries may include:

- General application sluggishness

- Having to press the power or application buttons twice before the organizer turns on

If these or similar phenomenon occur and the organizer's batteries are low, install fresh batteries.

15.6 LOSS OF THE CPXLINK PROGRAM

Do not let the batteries go dead in the Palm m100.

Dead batteries cause the Palm m100 organizer to lose the CPXLINK program, and lose the ability to communicate with any of the CSAT transceivers. If this happens, follow these steps:

1. Replace the batteries with two high-quality AAA alkaline batteries.

2. Reset the Palm m100.

3. Re-load the CPXLINK software (see below).

To obtain a copy of the CPXLINK software, contact Comtech EF Data Customer Service.

15.7 CHANGE THE BATTERIES

The organizer loses data after one minute, so the battery replacement operation must be completed quickly.

1. Have new batteries on hand.
2. Open the package and place the batteries near the organizer.
3. Find the organizer's batter door, located immediately above the serial connection on the back of the unit.
4. Working quickly, remove the organizer battery door:
   a Place slight downward pressure on the "fingernail"-like depression.
   b. Slide the door out towards the side.
5. Take one battery out of the organizer, note its orientation, and place it away from the new batteries.
6. Place a new battery where the old one was, with the same orientation (the battery compartment also shows proper orientation with "+" and "-" symbols).
7. Repeat steps 4 through 7 for the other battery (note that the orientation is different).
8. Slide the battery door back in place.

15.8 IF THE ORGANIZER WON'T TURN ON BECAUSE THE BATTERIES ARE DEAD

If the organizer does not turn on when the power button is pressed, replace the batteries immediately.

If the batteries are depleted so that the organizer does not operate, there should be enough residual power left to store data safely for a few weeks.

However, if you leave depleted batteries in the organizer for an extended period of time, all of the stored data can be lost. If this happens, replace the batteries and use the reset button to reset the organizer. It is necessary to re-load the CPXLINK software after resetting the organizer. To obtain a copy of the CPXLINK software, please contact Comtech EF Data Customer Service.

15.9 RESET THE ORGANIZER

Caution! Perform a Reset operation ONLY if ALL these conditions are true:

- The organizer's batteries are dead.

- All data and stored programs are lost.

- The batteries have been replaced.

To reset the organizer, follow these steps:

1. Install new batteries.

2. Hold down the power button on the front of the organizer.

3. While holding down the power button, use the reset tip tool, or the tip of an unfolded paper clip (or similar object *without* a sharp tip) to gently press and release the reset button.

4. Wait for the Palm ™ logo to appear; then release the power button.

5. When a message appears on the screen warning that you are about to erase all the data stored on your handheld, press the upper scroll button on the front of the organizer.

Units of Length

Unit	Centimeter	Inch	Foot	Yard	Mile	Meter	Kilometer	Millimeter
1 centimeter	—	0.3937	0.03281	0.01094	6.214×10^{-6}	0.01	—	—
1 inch	2.540	—	0.08333	0.2778	1.578×10^{-5}	0.254	—	25.4
1 foot	30.480	12.0	—	0.3333	1.893×10^{-4}	0.3048	—	—
1 yard	91.44	36.0	3.0	—	5.679×10^{-4}	0.9144	—	—
1 meter	100.0	39.37	3.281	1.094	6.214×10^{-4}	—	—	—
1 mile	1.609×10^5	6.336×10^4	5.280×10^3	1.760×10^3	—	1.609×10^3	1.609	—
1 mm	—	0.03937	—	—	—	—	—	—
1 kilometer	—	—	—	—	0.621	—	—	—

Temperature Conversions

Unit	° Fahrenheit	° Centigrade
32° Fahrenheit	—	0 (water freezes)
212° Fahrenheit	—	100 (water boils)
-459.6° Fahrenheit	—	273.1 (absolute 0)

Formulas
$C = (F - 32) * 0.555$
$F = (C * 1.8) + 32$

Units of Weight

Unit	Gram	Ounce Avoirdupois	Ounce Troy	Pound Avoir.	Pound Troy	Kilogram
1 gram	—	0.03527	0.03215	0.002205	0.002679	0.001
1 oz. avoir.	28.35	—	0.9115	0.0625	0.07595	0.02835
1 oz. troy	31.10	1.097	—	0.06857	0.08333	0.03110
1 lb. avoir.	453.6	16.0	14.58	—	1.215	0.4536
1 lb. Troy	373.2	13.17	12.0	0.8229	—	0.3732
1 kilogram	1.0×10^3	35.27	32.15	2.205	2.679	—