



Universal Handheld Controller Operations Manual



Teledyne Paradise Datacom, a division of Teledyne Defense Electronics LLC, is a single source for high power solid state amplifiers (SSPAs), Low Noise Amplifiers (LNAs), Block Up Converters (BUCs), and Modem products. Operating out of two primary locations, Rancho Cordova, CA, USA and Chelmsford, England, Teledyne Paradise Datacom has more than a 20 year history of providing innovative solutions to enable satellite uplinks, battlefield communications, and cellular backhaul.

Teledyne Paradise Datacom
11361 Sunrise Park Drive
Rancho Cordova, CA 95742 USA
(814) 238-3450

Teledyne Paradise Datacom Ltd.
106 Waterhouse Lane,
Chelmsford, Essex, England, CM1 2QU
Tel: +44(0)1245 847520

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| | |
|--|-----------|
| Table of Contents | 3 |
| Section 1: About This Manual..... | 7 |
| 1.0 Introduction | 7 |
| 1.1 Scope and Purpose | 7 |
| 1.2 Manual Organization..... | 7 |
| 1.3 Manual Conventions | 7 |
| 1.4 Abbreviations | 8 |
| Section 2: Description of Handheld Unit | 9 |
| 2.0 Introduction | 9 |
| 2.1 Unit Overview..... | 9 |
| 2.1.1 Physical Characteristics | 9 |
| 2.1.1.1 Ingress Protection Rating | 10 |
| 2.1.1.2 Shock/Vibration Specifications | 10 |
| 2.1.1.3 Environmental Specifications..... | 10 |
| 2.1.2 Connector..... | 10 |
| 2.2 Connecting Cables..... | 11 |
| 2.2.1 Quick Start Cable for Compact Outdoor and Mini Compact SSPAs | 11 |
| 2.2.2 Default Settings with Quick Start Cable Connected | 12 |
| 2.2.3 Communication Cable for High Power Outdoor SSPAs | 12 |
| 2.2.4 Ensuring Proper Cable Connection | 13 |
| Section 3: Front Panel Operation | 15 |
| 3.0 Introduction | 15 |
| 3.1 Front Panel Indicators and Keys | 15 |
| 3.1.1 HOME key | 15 |
| 3.1.2 ONLINE key and LED | 15 |
| 3.1.3 MUTE key and LED..... | 16 |
| 3.1.4 POWER LED..... | 16 |
| 3.1.5 CONNECTED LED..... | 16 |
| 3.1.6 FAULT LED | 16 |
| 3.1.7 TX ON LED | 16 |
| 3.1.8 ENTER key..... | 16 |
| 3.1.9 Navigation keys | 17 |
| 3.1.10 Navigating the Menus..... | 17 |
| 3.1.10.1 Highlighting Selections | 17 |
| 3.1.10.2 Entering Numerical Values | 17 |
| 3.1.10.3 Entering Groups of Numerical Values..... | 18 |
| 3.1.10.4 Entering Alpha-numeric Values | 18 |
| 3.1.11 Screen Saver mode..... | 18 |
| 3.2 Display Screen Menus - Standard Compact Outdoor SSPA..... | 19 |
| 3.2.1 STATUS Menu | 19 |
| 3.2.2 FAULTS Menu..... | 19 |
| 3.2.3 CONDITION Menu | 21 |
| 3.2.3.1 Temperature | 21 |
| 3.2.3.2 Summary Fault | 22 |

| | |
|---|----|
| 3.2.3.3 External Mute..... | 22 |
| 3.2.3.4 Internal Mute..... | 22 |
| 3.2.3.5 Online State..... | 22 |
| 3.2.3.6 Attenuation..... | 22 |
| 3.2.3.7 Forward RF Power..... | 22 |
| 3.2.3.8 DC Current..... | 22 |
| 3.2.3.9 Regulator (Master)..... | 22 |
| 3.2.3.10 P.S. (Master)..... | 22 |
| 3.2.3.11 Gate (Master)..... | 22 |
| 3.2.3.12 Current (Slave)..... | 23 |
| 3.2.3.13 Regulator (Slave)..... | 23 |
| 3.2.3.14 P.S. (Slave)..... | 23 |
| 3.2.3.16 Gate HP (Slave)..... | 23 |
| 3.2.3.17 Gate Pre (Slave)..... | 23 |
| 3.2.4 SETTINGS Menu..... | 24 |
| 3.2.4.1 Operation Mode..... | 24 |
| 3.2.4.2 System Address..... | 24 |
| 3.2.4.3 Standby Select..... | 24 |
| 3.2.4.4 Mute State..... | 24 |
| 3.2.4.5 Attenuation..... | 24 |
| 3.2.4.6 Gain Control..... | 26 |
| 3.2.4.7 Amplifier Address..... | 26 |
| 3.2.4.8 Temperature Alarm..... | 26 |
| 3.2.4.9 Calibration Mode..... | 26 |
| 3.2.4.10 Spare Fault..... | 26 |
| 3.2.4.11 Spare Action..... | 26 |
| 3.2.4.12 Auxiliary Fault..... | 26 |
| 3.2.4.13 Aux. Action..... | 26 |
| 3.2.4.14 BUC Fault..... | 26 |
| 3.2.4.15 BUC Action..... | 26 |
| 3.2.4.16 Protocol Select..... | 27 |
| 3.2.4.17 Baud Rate..... | 27 |
| 3.2.4.18 Standby Mode..... | 27 |
| 3.2.4.19 BUC Reference..... | 27 |
| 3.2.4.20 RF Fault Trigger..... | 27 |
| 3.2.4.21 RF Fault..... | 27 |
| 3.2.4.22 RF Fault Threshold..... | 28 |
| 3.2.4.23 IP Address..... | 28 |
| 3.2.4.24 IP Gateway..... | 28 |
| 3.2.4.25 Subnet Mask..... | 28 |
| 3.2.4.26 IP Port..... | 28 |
| 3.2.4.27 IP Lock Address..... | 28 |
| 3.2.4.28 Web Password..... | 29 |
| 3.2.4.29 SNMP Community Get Key..... | 29 |
| 3.2.4.30 SNMP Community Set Key..... | 29 |
| 3.2.5 LOCAL Menu..... | 29 |
| 3.3 Display Screen Menus - Mini Compact Outdoor SSPA..... | 30 |
| 3.3.1 STATUS Menu..... | 30 |
| 3.3.2 FAULTS Menu..... | 30 |
| 3.3.3 CONDITION Menu..... | 32 |

| | | |
|----------|------------------------|----|
| 3.3.3.1 | Temperature | 32 |
| 3.3.3.2 | Summary Fault | 33 |
| 3.3.3.3 | External Mute | 33 |
| 3.3.3.4 | Internal Mute | 33 |
| 3.3.3.5 | Reference Source | 33 |
| 3.3.3.6 | Online State | 33 |
| 3.3.3.7 | Attenuation | 33 |
| 3.3.3.8 | Forward RF Power | 33 |
| 3.3.3.9 | Total DC Current | 33 |
| 3.3.3.10 | PS2 Regulator | 33 |
| 3.3.3.11 | PS2 Voltage | 33 |
| 3.3.3.12 | Gate Voltage | 34 |
| 3.3.3.13 | PS1 DC Current | 34 |
| 3.3.3.14 | PS1 Regulator | 34 |
| 3.3.3.15 | PS1 Voltage | 34 |
| 3.3.3.16 | Ext. Ref. Level | 34 |
| 3.3.3.17 | Baseplate Temp. | 34 |
| 3.3.4 | SETTINGS Menu | 34 |
| 3.3.4.1 | Operation Mode | 34 |
| 3.3.4.2 | System Address | 36 |
| 3.3.4.3 | Standby Select | 36 |
| 3.3.4.4 | Mute State | 36 |
| 3.3.4.5 | Attenuation | 36 |
| 3.3.4.6 | Amplifier Address | 36 |
| 3.3.4.7 | Temperature Alarm | 36 |
| 3.3.4.8 | Calibration Mode | 36 |
| 3.3.4.9 | Spare Fault | 36 |
| 3.3.4.10 | Spare Action | 36 |
| 3.3.4.11 | Auxiliary Fault | 37 |
| 3.3.4.12 | Aux. Action | 37 |
| 3.3.4.13 | BUC Fault | 37 |
| 3.3.4.14 | BUC Action | 37 |
| 3.3.4.15 | Protocol Select | 37 |
| 3.3.4.16 | Baud Rate | 37 |
| 3.3.4.17 | Fiber Fault | 37 |
| 3.3.4.18 | Fiber Action | 37 |
| 3.3.4.19 | Standby Mode | 37 |
| 3.3.4.20 | BUC Reference | 38 |
| 3.3.4.21 | RF Fault Trigger | 38 |
| 3.3.4.22 | RF Fault | 38 |
| 3.3.4.23 | RF Fault Threshold | 38 |
| 3.3.4.24 | IP Address | 38 |
| 3.3.4.25 | IP Gateway | 38 |
| 3.3.4.26 | Subnet Mask | 39 |
| 3.3.4.27 | IP Port | 39 |
| 3.3.4.28 | IP Lock Address | 39 |
| 3.3.4.29 | Web Password | 39 |
| 3.3.4.30 | SNMP Community Get Key | 39 |
| 3.3.4.31 | SNMP Community Set Key | 40 |
| 3.3.5 | LOCAL Menu | 40 |
| 3.4 | LOCAL Menu | 41 |

| | |
|--|-----------|
| 3.4.1 Connected Device Details | 41 |
| 3.4.2 Communication Information..... | 41 |
| 3.4.3 Search for Device | 42 |
| 3.4.4 View Event Log..... | 42 |
| 3.4.5 Clear Event Log..... | 43 |
| 3.4.6 Screen Saver..... | 44 |
| 3.4.7 Power Units dBm/W | 44 |
| 3.4.8 Link to Manual | 44 |
| Section 4: Troubleshooting | 45 |
| 4.0 Introduction | 45 |
| 4.1 Troubleshooting Connectivity..... | 45 |
| 4.2 Troubleshooting Faults..... | 45 |
| Appendix A: Documentation..... | 47 |
| Figures | |
| Figure 2-1: Outline, Universal Handheld Controller..... | 9 |
| Figure 2-2: Quick Start Cable (L212638-2) | 11 |
| Figure 2-3: Communication Cable for High Power Outdoor SSPAs (L212640-2) | 12 |
| Figure 2-4: Pull on O-Ring to Remove Cable from Controller | 13 |
| Figure 3-1: Front Panel, Universal Handheld Controller..... | 15 |
| Figure 3-2: STATUS Window, Compact Outdoor SSPA | 19 |
| Figure 3-3: FAULTS Window, Page 1, Major Faults | 19 |
| Figure 3-4: FAULTS Window, Page 2, Minor Faults, Compact Outdoor SSPA..... | 20 |
| Figure 3-5: CONDITION Window, Compact Outdoor SSPA | 21 |
| Figure 3-6: SETTINGS Window, Compact Outdoor SSPA | 25 |
| Figure 3-7: STATUS Window, Mini Compact Outdoor SSPA..... | 30 |
| Figure 3-8: FAULTS Window, Page 1, Major Faults, Mini Compact Outdoor SSPA . | 30 |
| Figure 3-9: FAULTS Window, Page 2, Minor Faults, Mini Compact Outdoor SSPA . | 31 |
| Figure 3-10: CONDITION Window, Mini Compact Outdoor SSPA..... | 32 |
| Figure 3-11: SETTINGS Window, Mini Compact Outdoor SSPA | 35 |
| Figure 3-12: LOCAL Window | 41 |
| Figure 3-13: Example, Event Log..... | 43 |
| Tables | |
| Table 2-1: Pin-Out, Molex UltraLock M12(M)..... | 10 |
| Table 2-2: Pin-Out, Quick Start Cable (L212638-2) | 11 |
| Table 2-3: Pin-Out, Communication Cable (L2XXXXX-X)..... | 13 |
| Table 4-1: Troubleshooting Connectivity..... | 43 |

1.0 Introduction

This manual provides a general product overview and description of the Teledyne Paradise Datacom Universal Handheld Controller, with model number RCH-1000.

1.1 Scope and Purpose

This manual provides the following:

- An overview of the Universal Handheld Controller, with Model Number RCH-1000.
- General description and specifications of the Universal Handheld Controller, with Model Number RCH-1000.
- Operating instructions of the controller and connected equipment.
- Maintenance and troubleshooting information.

1.2 Manual Organization

The manual is divided into the following sections:

Section 1: About This Manual
Section 2: Descriptions of Handheld Unit
Section 3: Front Panel Operation
Section 4: Troubleshooting and Maintenance

1.3 Manual Conventions

This manual uses the following conventions to help the reader follow its organization:

When not otherwise specified, “controller” refers to the Universal Handheld Controller.

When not otherwise specified, “unit” refers to the amplifier that is connected to the Universal Handheld Controller.

Note: Information contained in a Note is meant to instruct the operator about important information regarding the operation, care or dispensation of the equipment. Notes will always follow the formatting shown here.

Warning! Warnings contain information critical to the safety of the user or for the safe operating parameters of the equipment. The user should heed all warnings. Failure to do so may result in injury to the user, damage to the equipment, or both. Warnings will always follow the formatting shown here.

1.4 Abbreviations

The following is a list of abbreviations that can be found within this manual.

| | |
|-----------|--|
| C | Celsius (Centigrade) |
| dB | Decibel |
| dBm | Power ratio of a measured power referenced to one milliwatt, expressed in decibels. |
| dBc | Power ratio of a signal to a carrier signal, expressed in decibels. |
| DC | Direct Current |
| ESD | Electrostatic Discharge |
| IF | Intermediate Frequency |
| KHz | KiloHertz, 1,000 cycles per second |
| kW | Kilowatt, 1,000 Watts |
| M&C | Monitor and control |
| MCU | Microcontroller Unit |
| MHz | Megahertz, 1,000,000 cycles per second |
| mW | Milliwatt = 1/1,000 Watts |
| P_{1dB} | Power level at which gain drops by 1 dB from its small signal value. |
| P_{sat} | Power level at saturation point. |
| RF | Radio Frequency |
| RMS | Root Mean Square |
| SNMP | Simple Network Management Protocol |
| SSPA | Solid State Power Amplifier |
| VSWR | Voltage standing wave ratio; the ratio of the amplitude of a partial standing wave at maximum to the amplitude at minimum. |
| W | Watt |

2.0 Introduction

This section offers a description of the Universal Handheld Controller, its physical characteristics, its connector and connecting cables, and any safety considerations for its use.

2.1 Unit Overview

The Universal Handheld Controller (RCH-1000) is a versatile handheld device used to interface with a variety of Teledyne Paradise Datacom amplifiers, including Compact Outdoor SSPA (with serial number $\geq 400,000$), Mini Compact Outdoor SSPA, or H-Series High Power Outdoor SSPA (with serial number $\geq 400,000$).

Compact Outdoor or H-Series SSPAs must be running firmware version 3.06 or later. Contact the factory if attempting to use the controller with a unit with older firmware.

2.1.1 Physical Characteristics

The device enclosure is made of ABS plastic with a continuous membrane keypad surface. **Figure 2-1** shows an outline drawing of a typical handheld unit.

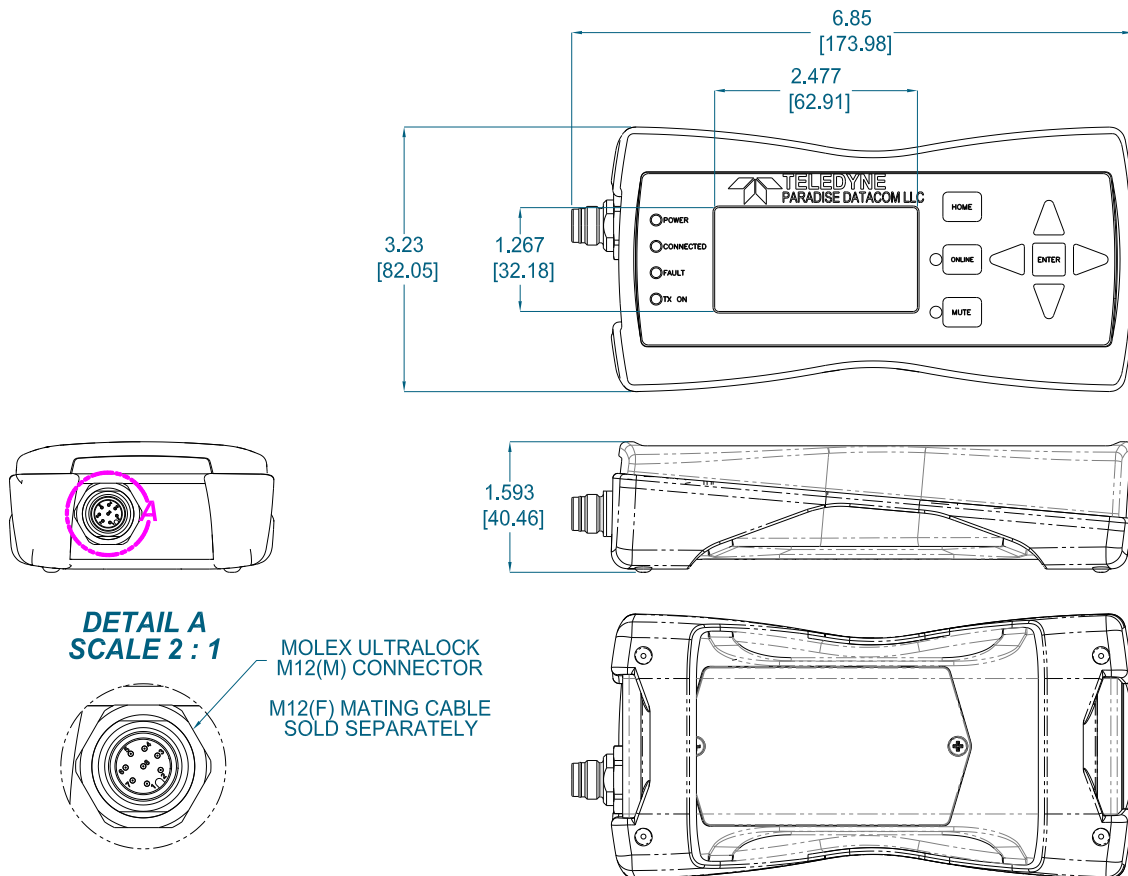


Figure 2-1: Outline, Universal Handheld Controller

2.1.1.1 Ingress Protection Rating

The device enclosure features a decor seal, which provides an ingress protection level of IP65. This allows the Universal Handheld Controller to be used in most outdoor environments.

The push-to-lock connector used on the Quick Start Cable provides a simple and secure operator-independent connection. The unique radial o-ring seal design, similar to what is found in hydraulic connectors, provides a robust protection against water ingress.

2.1.1.2 Shock/Vibration Specifications

The rugged construction of the device enclosure provides some protection from impact and vibration.

2.1.1.3 Environmental Specifications

Operating and storage temperature for the device is -40 to +85 °C.

The device may be used outdoors, but is not recommended for prolonged exposure to sunlight.

2.1.2 Connector

An eight-pin push-to-lock connector (Molex UltraLock M12(M)) is located on the left side of the device. The pin-out for this connector is shown in **Table 2-1**.

Table 2-1: Pin-Out, Molex UltraLock M12(M)

| Pin | Description |
|-----|----------------------|
| 1 | RS-485 - |
| 2 | RS-485 + |
| 3 | +6 to +30 VDC Input |
| 4 | +4 to +5.5 VDC Input |
| 5,6 | GND |
| 7,8 | No connection |

The mate for the connector is a Molex UltraLock M12(F) and is typically provided as part of the connection cables described in **Section 2.2**.

2.2 Connecting Cables

Each RCH-1000 is shipped with a connecting cable for the Teledyne Paradise Datacom unit with which it is meant to be used. The RCH-1000 may use connecting cables for other types of units, and will automatically sense the type of unit to which it is connected.

2.2.1 Quick Start Cable for Compact Outdoor and Mini Compact Outdoor SSPAs

To connect a RCH-1000 Universal Handheld Controller to a Compact Outdoor SSPA or Mini Compact Outdoor SSPA, the operator must connect a Quick Start Cable (L212638-2) between the J4 M&C connector of the amplifier and the eight-pin UltraLock connector of the RCH-1000. See **Figure 2-2**.

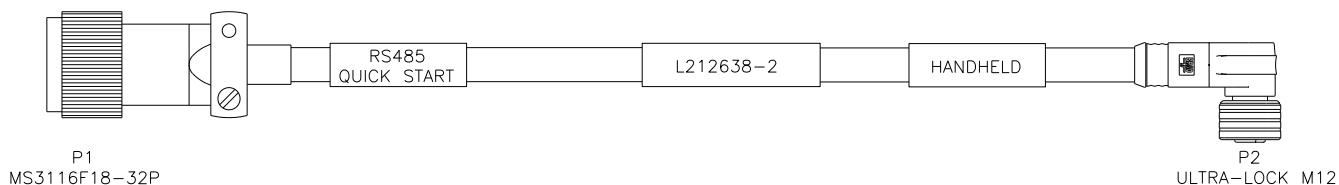


Figure 2-2: Quick Start Cable (L212638-2)

The Handheld Controller will automatically power up once connected to a powered amplifier, and will automatically attempt to communicate with the connected unit. If the Handheld Controller cannot communicate with the connected unit, see **Section 4**.

Table 2-2 shows the pin-outs for the Quick Start Cable (L212638-2).

Table 2-2: Pin-Out, Quick Start Cable (L212638-2)

| FROM | | TO | | FUNCTION |
|-----------|-----|-----------|-----|----------------------------|
| CONNECTOR | PIN | CONNECTOR | PIN | |
| P2 | 1 | P1 | F | RS485 - |
| P2 | 2 | P1 | T | RS485 + |
| P2 | 4 | P1 | h | +4.5 TO +5.5 VDC (LIMITED) |
| P2 | 5 | P1 | V | GND |
| P1 | V | P1 | B | GND (TX ENABLE) |
| P1 | F | P1 | E | RS485 - |
| P1 | T | P1 | U | RS485 + |
| P1 | B | P1 | d | GND (ISOLATED GROUND) |
| P1 | d | P1 | e | GND (BAUD SELECT 1) |
| P1 | e | P1 | j | GND (BAUD SELECT 0) |

2.2.2 Default Settings with Quick Start Cable Connected

If the Quick Start Cable (L212638-2) is connected to an amplifier (with Serial Numbers of 400,000 or greater) **at unit power-up**, the following settings are used:

Interface: IPNet, web, SNMP and Serial
Protocol: Normal
IP Address: 192.168.0.9
Baud Rate: 9600

If the Quick Start Cable (L212638-2) is connected to an amplifier (with Serial Numbers of 400,000 or greater) **after unit power-up**, the following settings are used:

Interface: User-defined
Protocol: User-defined
IP Address: User-defined
Baud Rate: User-defined

For further information regarding operation of the amplifier while using the Quick Start Cable, refer to the operations manual of the connected device.

Compact Outdoor SSPA Operations Manual: document number 208495;
Mini Compact Outdoor SSPA Operations Manual: document number 208143;
High Power Outdoor SSPA Operations Manual: document number 211670.

2.2.3 Communication Cable for High Power Outdoor SSPAs

The High Power Outdoor SSPA has a dedicated connector at Port J10 for communicating with a RCH-1000 Universal Handheld Controller. The connecting cable between the two units is part number L212640-2, and is shown in **Figure 2-3**. **Table 2-3** shows the pin-outs for the RCH-1000 communication cable for High Power Outdoor SSPAs.

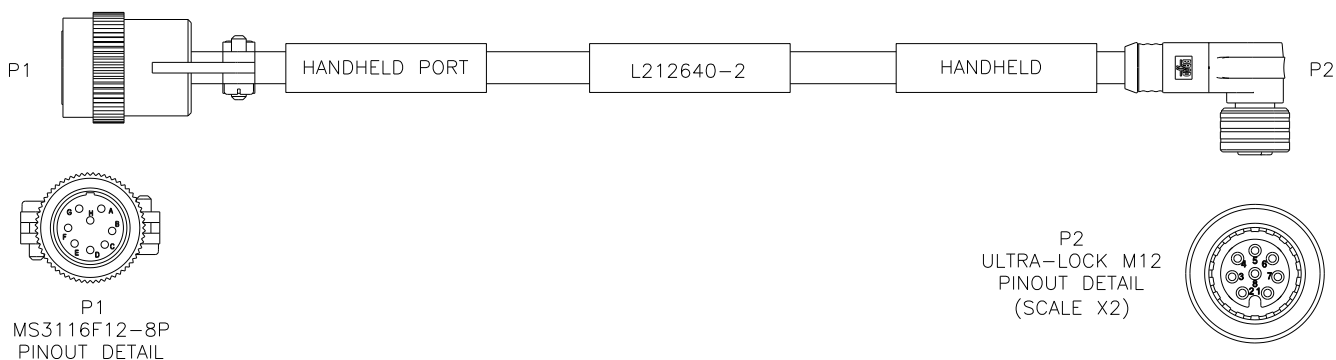


Figure 2-3: Communication Cable for High Power Outdoor SSPA (L212640-2)

Table 2-3: Pin-Out, Communication Cable (L212640-2)

| FROM | | TO | | FUNCTION |
|-----------|-----|-----------|-----|--------------|
| CONNECTOR | PIN | CONNECTOR | PIN | |
| P2 | 1 | P1 | A | RS485 - |
| P2 | 2 | P1 | B | RS485 + |
| P2 | 3 | P1 | C | +15 VDC |
| P2 | 4 | P1 | D | N/C |
| P2 | 5 | P1 | E | GND (ENABLE) |
| P2 | 6 | P1 | F | GND |
| P2 | 7 | P1 | G | N/C |
| P2 | 8 | P1 | H | N/C |

2.2.4 Ensuring Proper Cable Connection

When connecting the Quick Start Cable to the Universal Handheld Controller, align the connector so that the keyed slot on the cable connector aligns with the keyed tab in the controller connector. Push the connector into the receptacle until it snaps into place.

To remove the cable from the Universal Handheld Controller, pull firmly on the cable's o-ring. See **Figure 2-4**. Do not attempt to remove the connection by rotating the o-ring or by pulling on the cable itself.



Figure 2-4: Pull on O-Ring to Remove Cable from Controller

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3.0 Introduction

This section gives an overview of the Universal Handheld Controller front panel and the menu structure that the operator may navigate to monitor and control the connected unit.

3.1 Front Panel Indicators and Keys

The front panel of the Universal Handheld Controller features six light emitting diodes, eight keys and a 2.5 in. x 1.3 in. OLED display. See **Figure 3-1**.



Figure 3-1: Front Panel, Universal Handheld Controller

3.1.1 HOME key

The HOME key has two functions: pressing the **HOME** key returns the cursor to the top of the current screen; if the cursor is already at the top of the current screen, pressing the **HOME** key returns the display to the **STATUS** menu. The **HOME** key is also used to cancel activity when the operator is navigating through items in the **SETTINGS** menu.

3.1.2 ONLINE key and LED

When the connected unit is part of a redundant system, pressing the **ONLINE** key changes the online status of the unit. If the unit is currently online, pressing the **ONLINE** key will place the connected unit into standby mode. If the unit is currently in standby mode, pressing the **ONLINE** key has no effect. The online unit must give away its online condition.

The LED to the left of the **ONLINE** key will illuminate green when the connected unit is online. If the connected unit is in standby mode, the LED will illuminate red.

3.1.3 MUTE key and LED

Pressing the **MUTE** key changes the software mute setting of the connected unit. If the unit is muted, pressing the **MUTE** key will unmute the connected unit. If the unit is unmuted, pressing the **MUTE** key will mute the connected unit. This key will have no effect if the connected unit is under a “Fault with Mute” state or “External Mute” state.

The LED to the left of the **MUTE** key will illuminate red when the software mute setting of the connected unit is muted. If the setting is set to unmuted, the LED will not illuminate.

3.1.4 POWER LED

The **POWER** LED will illuminate green when power is applied to the Universal Handheld Controller.

3.1.5 CONNECTED LED

The **CONNECTED** LED will illuminate green when the Universal Handheld Controller establishes communication with the unit. If there is no communication link with the Universal Handheld Controller, the **CONNECTED** LED will illuminate red.

If the **CONNECTED** LED is flashing between red and green, the RCH-1000 is connected to the unit, but the firmware of the unit is incompatible for use with the controller.

3.1.6 FAULT LED

The **FAULT** LED will illuminate green when the connected unit is clear of any Summary fault conditions. If the connected unit experiences a Summary fault condition, the **FAULT** LED will illuminate red. Minor faults will not be indicated by this LED.

3.1.7 TX ON LED

The **TX ON** LED will illuminate green when the connected unit is clear of any mute state. If the connected unit is muted, the **TX ON** LED will illuminate red.

3.1.8 ENTER key

The **ENTER** key is used to make a selection after navigating to a menu selection that allows operator input. This is primarily used when navigating the **SETTINGS** and **LOCAL** menus.

Pressing the **ENTER** key when the **STATUS** tab is displayed will allow the operator to change the Attenuation level of the connected unit. See **Section 3.2.4.5** and **Section 3.3.4.5**.

Pressing the **ENTER** key on a selection in the **SETTINGS** or **LOCAL** menus opens a new screen that lists the choices available under the highlighted menu item, or shows the current value(s) for that menu item.

In the **SETTINGS** menu, the unit’s current setting will be highlighted in the display window. The operator may use the navigation keys to select a new setting or change the value of a variable setting. Pressing the **ENTER** key will save the new setting or value to the connected unit’s non-volatile memory.

3.1.9 Navigation keys

The navigation keys allow the operator to navigate through the displayed menu structure. The navigation keys consist of an **Up Arrow (▲)** key, a **Down Arrow (▼)** key, a **Left Arrow (◀)** key, and a **Right Arrow (▶)** key.

Pressing the **Right Arrow (▶)** or **Left Arrow (◀)** keys allows the operator to switch to the next or previous screen on the display.

Pressing the **Up Arrow (▲)** or **Down Arrow (▼)** keys allows the operator to scroll through the current screen. Pressing and holding the **Up Arrow (▲)** or **Down Arrow (▼)** keys increases the speed at which the cursor moves through the menu and the rate at which the numbers or characters cycle through the range of selectable characters.

3.1.10 Navigating the Menus

There are a variety of formats for menu selection in the **SETTINGS** tab.

3.1.10.1 Highlighting Selections

Used when selecting from a list of possible values (e.g., Baud Rate). This is also common when navigating the menu selections in the **LOCAL** tab.

Press the **Up Arrow (▲)** key or **Down Arrow (▼)** key to navigate the cursor until the desired selection is highlighted.

Press the **ENTER** key to save the highlighted selection to the connected unit's non-volatile memory. Press the **HOME** key to cancel the selection and return to the **SETTINGS** menu.

3.1.10.2 Entering Numerical Values

Used when entering a numerical value for a setting (e.g., Amplifier Address).

Press the **Up Arrow (▲)** key to increase the value. Press the **Down Arrow (▼)** key to decrease the value. Press and hold the **Up Arrow (▲)** key or **Down Arrow (▼)** key to increase the speed at which the value increases or decreases.

Press the **ENTER** key to save the highlighted selection to the connected unit's non-volatile memory. Press the **HOME** key to cancel and return to the previous menu.

3.1.10.3 Entering Groups of Numerical Values

Used when modifying the IP Address, IP Gateway, Subnet Mask or IP Lock Address settings.

Each set of numbers is assigned separately. Press the **Up Arrow (▲)** key to increase the value. Press the **Down Arrow (▼)** key to decrease the value. Press and hold the **UP ARROW (▲)** key or **Down Arrow (▼)** key to increase the speed at which the value increases or decreases. Press the **Right Arrow (▶)** key to move to the next set of numbers. Press the **Left Arrow (◀)** key to move to the previous set of numbers.

Press the **ENTER** key to save the selection to the connected unit's non-volatile memory. Press the **HOME** key to cancel and return to the **SETTINGS** menu.

3.1.10.4 Entering Alpha-numeric Values

Used when modifying the Web Password, Community Get or Community Set settings.

Press the **Down Arrow** (▼) key to cycle through the character sets from [0-9][A-Z][a-z]. Press the **Up Arrow** (▲) key to cycle through the character sets from [z-a][Z-A][9-0]. Press and hold the **Up Arrow** (▲) key or **Down Arrow** (▼) key to increase the speed at which the characters cycle. Press the **Right Arrow** (▶) key to move to the next character. Press the **Left Arrow** (◀) key to move to the previous character.

Press the **ENTER** key to save the selection to the connected unit's non-volatile memory. Press the **HOME** key to cancel and return to the **SETTINGS** menu.

3.1.11 Screen Saver mode

The display of the Universal Handheld Controller will enter a Screen Saver mode after a set period of time. This period of time is adjustable by the user. See **Section 3.4.6**.

Press any key to exit Screen Saver mode.

3.2 Display Screen Menus - Standard Compact Outdoor or H-Series SSPA

The Universal Handheld Controller menu structure allows the operator monitor and control capabilities of the connected standard Compact Outdoor or H-Series SSPA unit.

3.2.1 STATUS Menu

The **STATUS** menu displays the functional status of the connected unit. The display shows the connected unit's output power (in dBm or Watts), the attenuation setting (in dB), the connected unit's baseplate temperature (in degrees Celsius) and DC current consumption (in Amps). All values displayed are read-only. See **Figure 3-2**. Pressing the Enter key from this screen allows the operator to adjust the Attenuation of the unit. See **Section 3.2.3.6**.

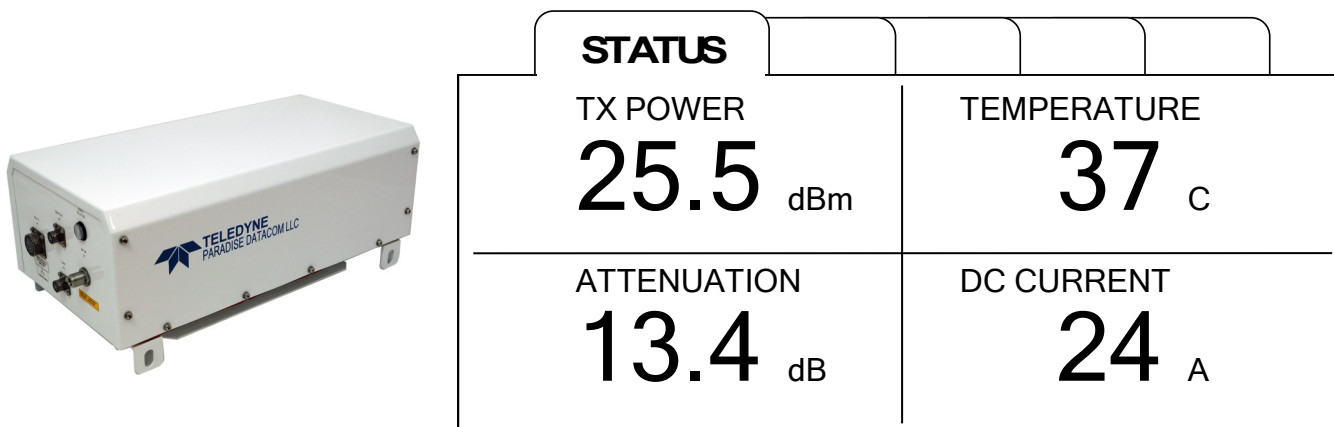


Figure 3-2: STATUS Window, Compact Outdoor SSPA

3.2.2 FAULTS Menu

When the **STATUS** menu is displayed, press the **Right Arrow** (▶) key to navigate to the **FAULTS** menu. When the **CONDITIONS** menu is displayed, press the **Left Arrow** (◀) key to navigate to the **FAULTS** menu.

The **FAULTS** menu (read only, live update, **Enter** key disabled) displays the major (Summary) and minor faults that affect the connected unit. Any major (Summary) faults affecting the connected unit are listed on Page 1; minor faults affecting the connected unit are listed on Page 2. Press the **Up Arrow** (▲) or **Down Arrow** (▼) key to navigate between the pages. All values displayed are read-only. See **Figure 3-3** and **Figure 3-4**.

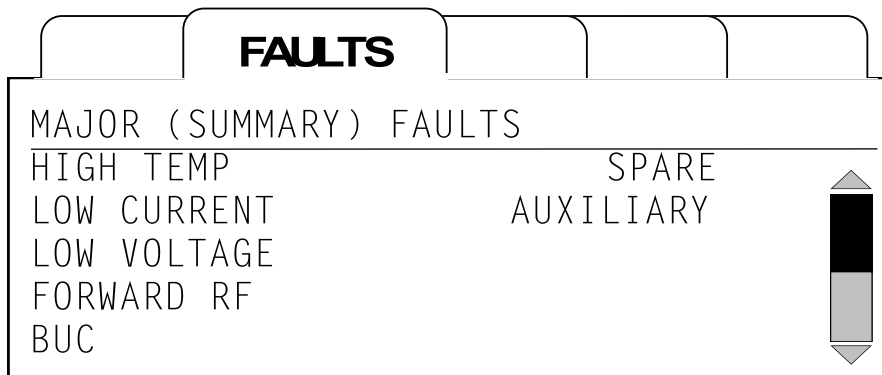


Figure 3-3: FAULTS Window, Page 1, Major Faults

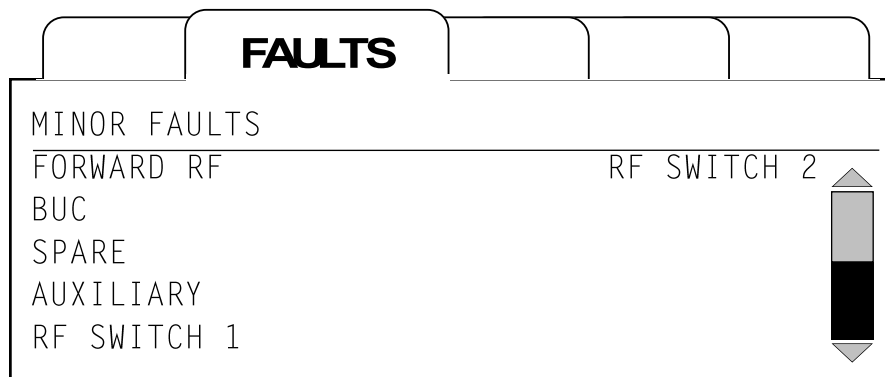


Figure 3-4: FAULTS Window, Page 2, Minor Faults, Compact Outdoor SSPA

Major faults may include: High Temperature, Low Current, Low Voltage, Forward RF, BUC, Spare and Auxiliary. Any major faults affecting the connected unit will be displayed in the order listed above, regardless of the order in which the fault conditions occurred.

Minor faults may include: Forward RF, BUC, Spare, Auxiliary, RF Switch 1 and RF Switch 2. Any minor faults affecting the connected unit will be displayed in the order listed above, regardless of the order in which the fault conditions occurred.

If the connected unit is free from any major or minor fault conditions, the display message will state “No Active Faults”.

The Forward RF fault may be either a major or minor fault depending on the RF Fault Setting. See **Section 3.2.4.20**.

The BUC fault may be either a major or minor fault depending on the BUC Action Setting. See **Section 3.2.4.13**.

The Spare fault may be either a major or minor fault depending on the Spare Action Setting. See **Section 3.2.4.9**.

The Auxiliary fault may be either a major or minor fault depending on the Auxiliary Action Setting. See **Section 3.2.4.11**.

See the Compact Outdoor SSPA Operations Manual (208495) for a description of conditions that may cause each of the major or minor faults, and for suggestions for clearing the fault conditions.

3.2.3 CONDITION Menu

When the **FAULTS** menu is displayed, press the **Right Arrow** (▶) key to navigate to the **CONDITION** menu. When the **SETTINGS** menu is displayed, press the **Left Arrow** (◀) key to navigate to the **CONDITION** menu.

The **CONDITION** menu (read only, live update, **Enter** key disabled) displays the conditions that affect the connected unit. The screen can display five lines at a time. Press the **Down Arrow** (▼) key to scroll down the list of conditions; press the **Up Arrow** (▲) key to scroll up the list. All values displayed are read-only. See **Figure 3-5**.

3.2.3.1 Temperature

This element displays the baseplate temperature of the connected unit. It is the same value shown on the **STATUS** menu. Displayed in degrees Celsius.

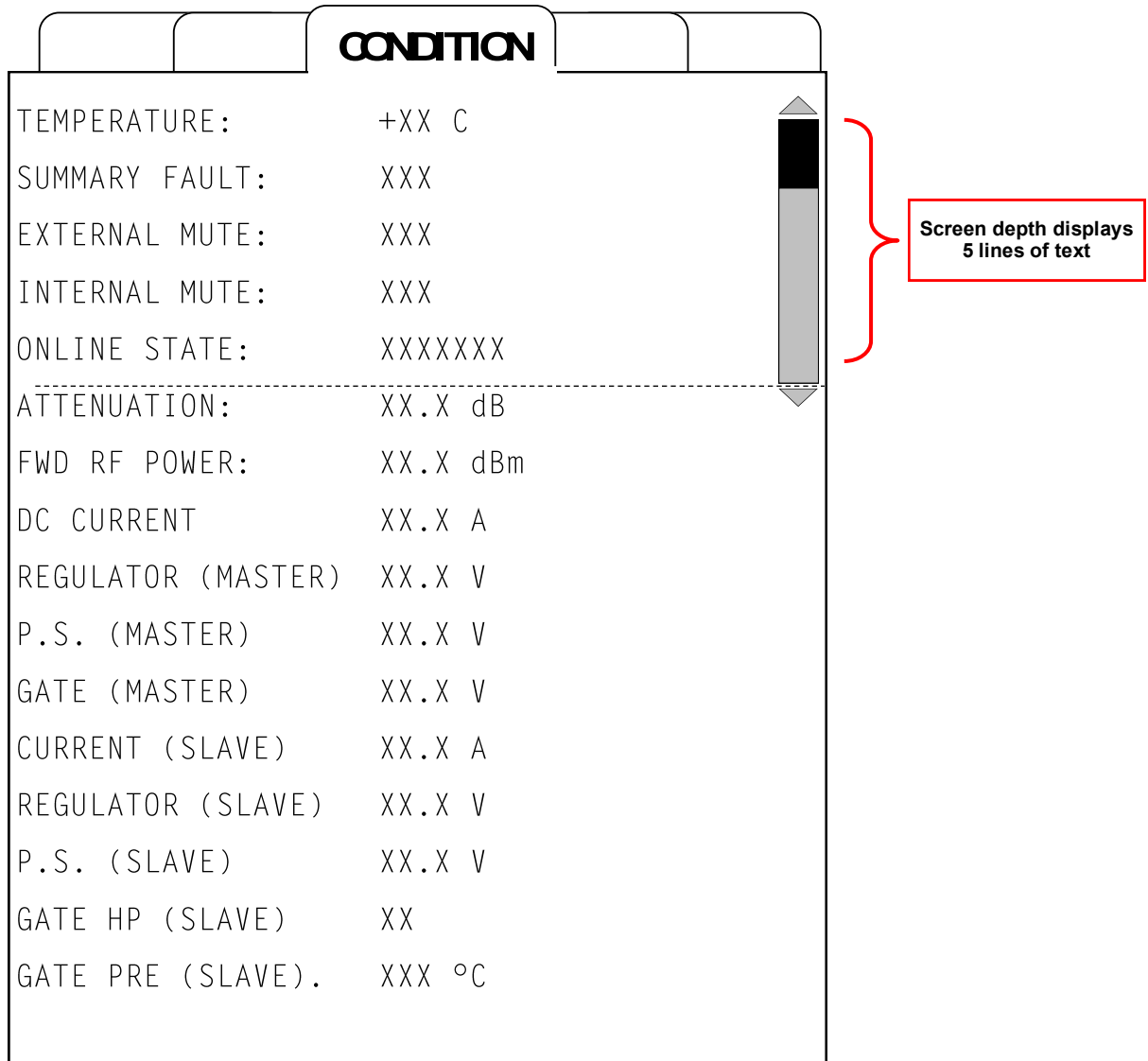


Figure 3-5: CONDITION Window, Compact Outdoor SSPA

3.2.3.2 Summary Fault

Displays whether the connected unit is experiencing a Summary fault condition. Values may be Yes or No.

3.2.3.3 External Mute

Displays whether the connected unit is experiencing an External Mute condition. Values may be Yes or No.

3.2.3.4 Internal Mute

Displays whether the connected unit is experiencing a Internal Mute condition. Values may be Yes or No.

3.2.3.5 Online State

Displays the state of the connected unit when in a redundant configuration. Values may be Online or Standby.

3.2.3.6 Attenuation

Displays the gain attenuation setting for the connected unit. This is the same value displayed in the **STATUS** menu. Displayed in decibels (dB).

3.2.3.7 Forward RF Power

Displays the RF Output Power level present at the output of the connected unit. Displayed in dBm.

3.2.3.8 DC Current

Displays the total DC current draw of the connected unit. This is the same value displayed in the **STATUS** menu.

3.2.3.9 Regulator (Master)

Displays the DC voltage of the connected unit's regulator. Displayed in Volts.

3.2.3.10 P.S. (Master)

Displays the voltage of the connected unit's power supply. Displayed in Volts.

3.2.3.11 Gate (Master)

Displays the transistor gate voltage of the connected unit. Displayed in Volts.

3.2.3.12 Current (Slave)

For units with a master/slave configuration, displays the DC current draw of the slave side of the connected unit. Displayed in Amps.

3.2.3.13 Regulator (Slave)

For units with a master/slave configuration, displays the voltage of the slave side of the connected unit's power supply. Displayed in Volts.

3.2.3.14 P.S. (Slave)

For units with a master/slave configuration, displays the DC voltage of the slave side of the connected unit's regulator. Displayed in Volts.

3.2.3.16 Gate HP (Slave)

For units with a master/slave configuration, displays the high power transistor gate voltage on the slave side. Displayed in Volts.

3.2.3.17 Gate Pre (Slave)

For units with a master/slave configuration, displays the pre-amp transistor gate voltage on the slave side. Displayed in Volts.

3.2.4 SETTINGS Menu

When the **CONDITION** menu is displayed, press the **Right Arrow** (▶) key to navigate to the **SETTINGS** menu. When the **LOCAL** menu is displayed, press the **Left Arrow** (◀) key to navigate to the **SETTINGS** menu.

The **SETTINGS** menu displays the user-selectable settings that affect the connected unit. The screen can display five lines at a time. Press the **Down Arrow** (▼) key to scroll down the list of conditions; press the **Up Arrow** (▲) key to scroll up the list. The selected item will be highlighted in the display. See **Figure 3-6** on the following page.

Press the **ENTER** key to modify the selected setting. Doing so will open a new screen that displays the available setting variables.

3.2.4.1 Operation Mode

This setting determines the mode of operation for the connected unit.

The operator may choose between the following: 1:1 Redundant, Dual 1:1, Maintenance Switch and Single Amplifier.

3.2.4.2 System Address

This setting determines the connected unit's hierarchical address when in a redundant system.

The operator may choose between the following: HPA 1 and HPA 2.

3.2.4.3 Standby Select

This setting determines the connected unit's startup state when in a redundant configuration. This setting is sometimes referred to as the "Redundant Startup State" setting.

The operator may choose between the following: Standby and Online.

3.2.4.4 Mute State

This setting determines whether the connected unit's transmit function is enabled (Mute Clear) or disabled (Mute Set).

The operator may choose between the following: Set and Clear.

3.2.4.5 Attenuation

This setting allows the operator to set the gain attenuation level of the connected unit to any level from 0.0 dB to 20.0 dB, in 0.1 dB steps.

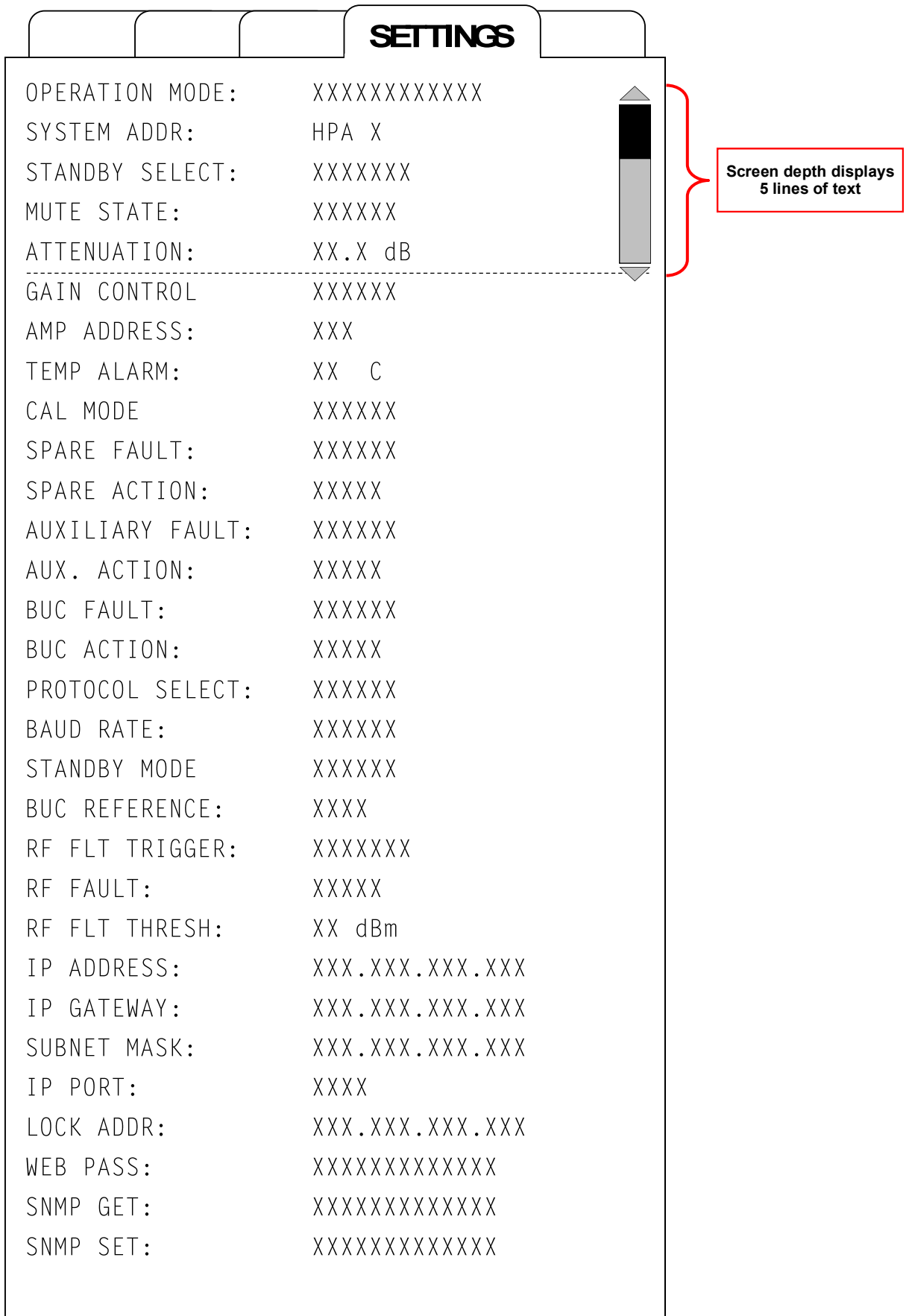


Figure 3-6: SETTINGS Window, Compact Outdoor SSPA

3.2.4.6 Gain Control

This setting allows the operator to set the gain control method between External Analog Voltage and Serial Port Control. The default setting is Serial Port Control.

3.2.4.7 Amplifier Address

The operator may set the network address of the connected unit to any number from 0 to 255.

3.2.4.8 Temperature Alarm

The operator may set the high temperature threshold of the connected unit to any number from 0 to 125 degrees Celsius. If the baseplate temperature of the connected unit rises to the temperature set as the threshold, a temperature fault alarm will be triggered.

3.2.4.9 Calibration Mode

This setting allows the operator to select the calibration mode for the connected module. The only setting available is: Temp. Comp. (Normal). [Temperature Compensation]

3.2.4.10 Spare Fault

The operator may choose between the following: ADC 0, ADC 1, ADC 2, ADC 3, ADC 4, ADC 5, ADC 6, ADC 7, External Mute or Ignore.

3.2.4.11 Spare Action

The operator may choose between the following: Major Fault, Major Fault with Mute or Minor Fault.

3.2.4.12 Auxiliary Fault

The operator may choose between the following: Fault on Logic High, Fault on Logic Low, Startup in Low Z, Startup in High Z, or Ignore.

3.2.4.13 Aux. Action

The operator may choose between the following: Major Fault, Major Fault and Mute, Minor Fault and Mute, or Minor Fault.

3.2.4.14 BUC Fault

The operator may choose between the following: Fault on Logic High, Fault on Logic Low, or Ignore.

3.2.4.15 BUC Action

The operator may choose between the following: Major Fault, Major Fault and Mute, or Minor Fault.

3.2.4.16 Protocol Select

The operator may choose between the following: VSAT Legacy, IPNET, SNMP or Serial.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.4.17 Baud Rate

The operator may choose between the following: 38400, 19200, 4800, 2400, or 9600 baud.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.4.18 Standby Mode

The operator may choose between the following: Cold Standby or Hot Standby.

3.2.4.19 BUC Reference

The operator may choose between the following: Auto, External, or Internal Reference.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.4.20 RF Fault Trigger

The operator may choose between the following: Low, 10% Window, 15% Window, High, or Disable.

When set to “Low”, a RF Fault Alarm will be triggered if the RF Output of the unit falls below the value set as the RF Fault Threshold (See **Section 3.2.4.22**).

When set to “10% Window”, a RF Fault Alarm will be triggered if the RF Output of the unit falls outside 10% of the value set as the RF Fault Threshold (See **Section 3.2.4.22**).

When set to “15% Window”, a RF Fault Alarm will be triggered if the RF Output of the unit falls outside 15% of the value set as the RF Fault Threshold (See **Section 3.2.4.22**).

When set to “High”, a RF Fault Alarm will be triggered if the RF Output of the unit rises above the value set as the RF Fault Threshold (See **Section 3.2.4.22**).

3.2.4.21 RF Fault

The operator may choose between the following: Major or Minor.

3.2.4.22 RF Fault Threshold

The operator may set the RF Fault Threshold of the connected unit to any level from 0 dBm to 80 dBm.

3.2.4.23 IP Address

The operator may set the IP Address of the connected unit in the format **###.###.###.###**, where **###** is a set of numbers from 000 to 255.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.4.24 IP Gateway

The operator may set the IP Gateway of the connected unit in the format **###.###.###.###**, where **###** is a set of numbers from 000 to 255.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.4.25 Subnet Mask

The operator may set the Subnet Mask of the connected unit in the format **###.###.###.###**, where **###** is a set of numbers from 000 to 255.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.4.26 IP Port

The operator may set the IP Port of the connected unit in to any value from 0 to 65535.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.4.27 IP Lock Address

When this address is set to anything other than 000.000.000.000 or 255.255.255.255, the connected unit will only accept remote commands from the IP Address assigned in this setting.

The operator may set the IP Lock Address in the format **###.###.###.###**, where **###** is a set of numbers between 000 and 255.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.4.28 Web Password

This setting allows the operator to set a password that will be used to access the internal web server of the connected unit.

The password may be up to 15 characters in length, and may contain any alphanumeric character.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.4.29 SNMP Community Get Key

This setting allows the operator to set a SNMP Community Get key that will be used for SNMP communication with the connected unit.

The Community Get key may be up to 15 characters in length, and may contain any alphanumeric character.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.4.30 SNMP Community Set Key

This setting allows the operator to set a SNMP Community Set key that will be used for SNMP communication with the connected unit.

The Community Set key may be up to 15 characters in length, and may contain any alphanumeric character.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.5 LOCAL Menu

When the **SETTINGS** menu is displayed, press the **Right Arrow (▶)** key to navigate to the **LOCAL** menu.

The **LOCAL** menu is common to all units and is described in **Section 3.4**.

3.3 Display Screen Menus - Mini Compact Outdoor SSPA

The Universal Handheld Controller menu structure allows the operator monitor and control capabilities of the connected Mini Compact Outdoor SSPA unit.

3.3.1 STATUS Menu

The **STATUS** menu displays the functional status of the connected unit. The display shows the connected unit's output power (in dBm or Watts), the attenuation setting (in dB), the connected unit's baseplate temperature (in degrees Celsius) and DC current consumption (in Amps). All values displayed are read-only. See **Figure 3-7**. Pressing the Enter key from this screen allows the operator to adjust the Attenuation of the unit. See **Section 3.2.3.6**.

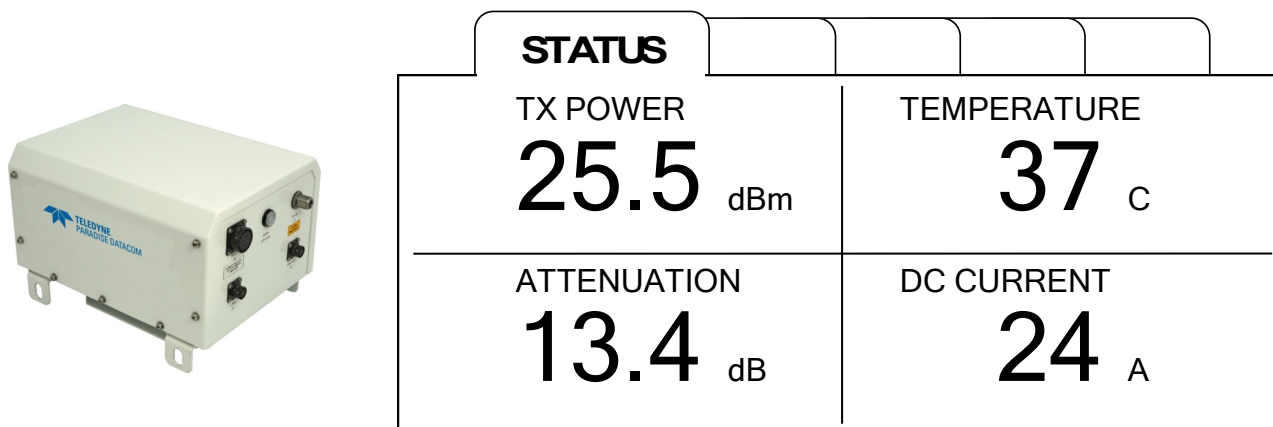


Figure 3-7: STATUS Window, Mini Compact Outdoor SSPA

3.3.2 FAULTS Menu

When the **STATUS** menu is displayed, press the **Right Arrow** (▶) key to navigate to the **FAULTS** menu. When the **CONDITIONS** menu is displayed, press the **Left Arrow** (◀) key to navigate to the **FAULTS** menu.

The **FAULTS** menu (read only, live update, **Enter** key disabled) displays the major (Summary) and minor faults that affect the connected unit. Any major (Summary) faults affecting the connected unit are listed on Page 1; minor faults affecting the connected unit are listed on Page 2. Press the **Up Arrow** (▲) or **Down Arrow** (▼) key to navigate between the pages. All values displayed are read-only. See **Figure 3-8** and **Figure 3-9**.

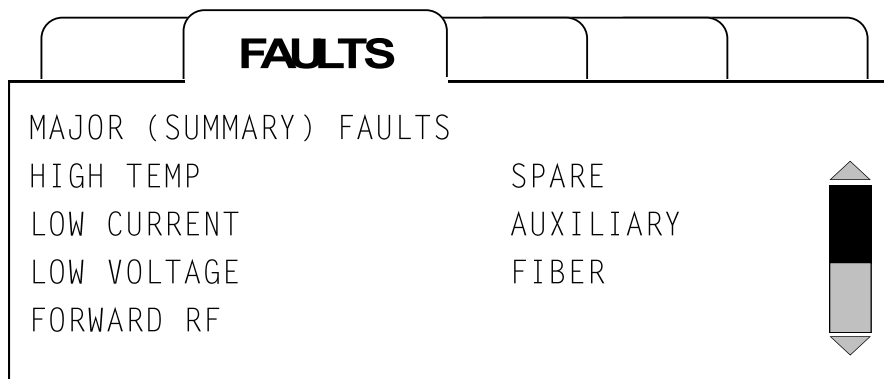


Figure 3-8: FAULTS Window, Page 1, Major Faults, Mini Compact Outdoor SSPA

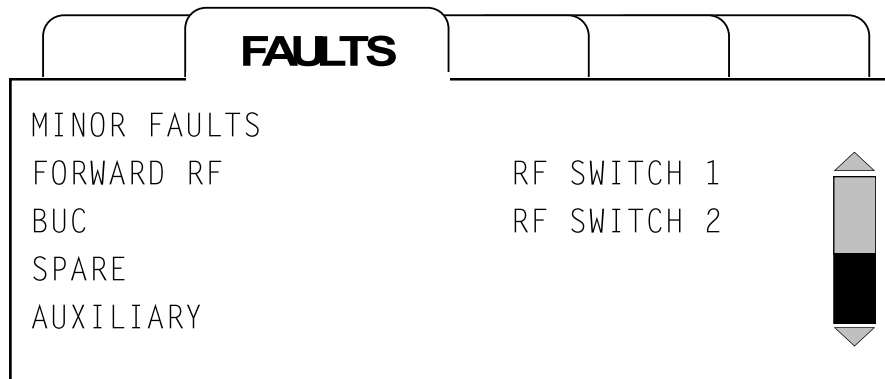


Figure 3-9: FAULTS Window, Page 2, Minor Faults, Mini Compact Outdoor SSPA

Major faults may include: High Temperature, Low Current, Low Voltage, Forward RF, BUC, Spare, Auxiliary and Fiber. Any major faults affecting the connected unit will be displayed in the order listed above, regardless of the order in which the fault conditions occurred.

Minor faults may include: Forward RF, BUC, Spare, Auxiliary, Fiber, RF Switch 1 and RF Switch 2. Any minor faults affecting the connected unit will be displayed in the order listed above, regardless of the order in which the fault conditions occurred.

If the connected unit is free from any major or minor fault conditions, the display message will state "No Active Faults".

The Forward RF fault may be either a major or minor fault depending on the RF Fault Setting. See **Section 3.3.4.20**.

The BUC fault may be either a major or minor fault depending on the BUC Action Setting. See **Section 3.3.4.13**.

The Spare fault may be either a major or minor fault depending on the Spare Action Setting. See **Section 3.3.4.9**.

The Auxiliary fault may be either a major or minor fault depending on the Auxiliary Action Setting. See **Section 3.3.4.11**.

The Fiber fault may be either a major or minor fault depending on the Fiber Action Setting. See **Section 3.3.4.17**.

See the Mini Compact Outdoor SSPA Operations Manual (208143) for a description of conditions that may cause each of the major or minor faults, and for suggestions for clearing the fault conditions.

3.3.3 CONDITION Menu

When the **FAULTS** menu is displayed, press the **Right Arrow** (▶) key to navigate to the **CONDITION** menu. When the **SETTINGS** menu is displayed, press the **Left Arrow** (◀) key to navigate to the **CONDITION** menu.

The **CONDITION** menu (read only, live update, **Enter** key disabled) displays the conditions that affect the connected unit. The screen can display five lines at a time. Press the **Down Arrow** (▼) key to scroll down the list of conditions; press the **Up Arrow** (▲) key to scroll up the list. All values displayed are read-only. See **Figure 3-10**.

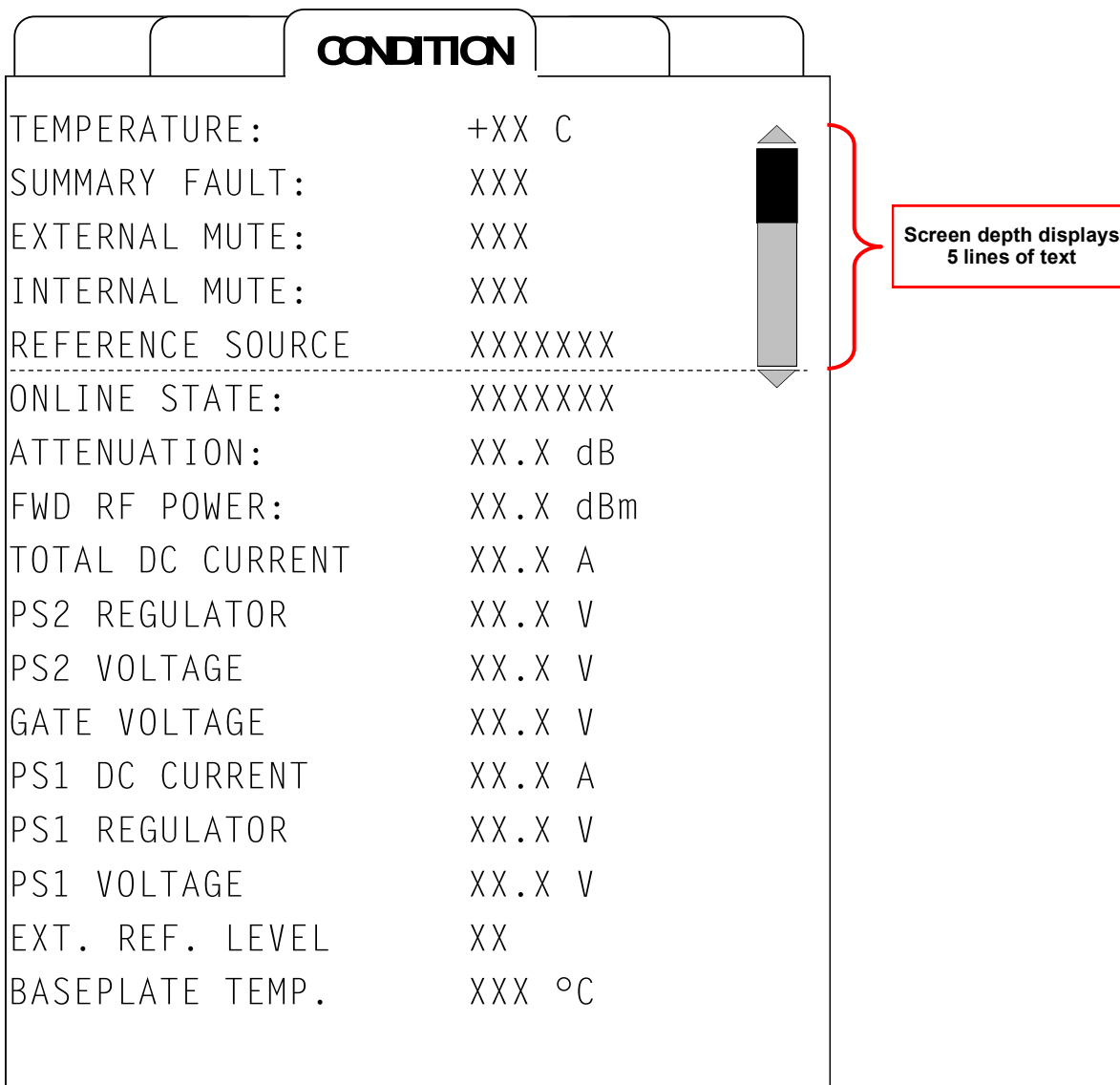


Figure 3-10: CONDITION Window, Mini Compact Outdoor SSPA

3.3.3.1 Temperature

This element displays the temperature of the interior of the connected unit. This value is the same as shown on the **STATUS** menu. Displayed in degrees Celsius.

3.3.3.2 Summary Fault

Displays whether the connected unit is experiencing a Summary fault condition. Values may be Yes or No.

3.3.3.3 External Mute

Displays whether the connected unit is experiencing an External Mute condition. Values may be Yes or No.

3.3.3.4 Internal Mute

Displays whether the connected unit is experiencing a Internal Mute condition. Values may be Yes or No.

3.3.3.5 Reference Source

Displays the reference source of the connected unit. Values may be Ext. (External) or Int. (Internal).

3.3.3.6 Online State

Displays the state of the connected unit when in a redundant configuration. Values may be Online or Standby.

3.3.3.7 Attenuation

Displays the gain attenuation setting for the connected unit. This is the same value displayed in the **STATUS** menu. Displayed in decibels (dB).

3.3.3.8 Forward RF Power

Displays the RF Output Power level present at the output of the connected unit. Values may be 0 to 1023. Displayed in dBm.

3.3.3.9 Total DC Current

Displays the total DC current draw of the connected unit. This is the same value displayed in the **STATUS** menu. Displayed in Amps.

3.3.3.10 PS2 Regulator

Displays the DC voltage of the connected unit's secondary power supply regulator. Displayed in Volts.

3.3.3.11 PS2 Voltage

Displays the voltage of the connected unit's secondary power supply. Displayed in Volts.

3.3.3.12 Gate Voltage

Displays the transistor gate voltage of the connected unit. Displayed in Volts.

3.3.3.13 PS1 DC Current

Displays the DC current of the connected unit's primary side DC current draw. Displayed in Amps.

3.3.3.14 PS1 Regulator

Displays the DC voltage of the connected unit's primary power supply regulator. Displayed in Volts.

3.3.3.15 PS1 Voltage

Displays the voltage of the connected unit's primary power supply. Displayed in Volts.

3.3.3.16 Ext. Ref. Level

Displays the external reference ADC value.

3.3.3.17 Baseplate Temp.

Displays the baseplate temperature of the connected unit. Displayed in degrees Celsius.

3.3.4 SETTINGS Menu

When the **CONDITION** menu is displayed, press the **Right Arrow** (▶) key to navigate to the **SETTINGS** menu. When the **LOCAL** menu is displayed, press the **Left Arrow** (◀) key to navigate to the **SETTINGS** menu.

The **SETTINGS** menu displays the user-selectable settings that affect the connected unit. The screen can display five lines at a time. Press the **Down Arrow** (▼) key to scroll down the list of conditions; press the **Up Arrow** (▲) key to scroll up the list. The selected item will be highlighted in the display. See **Figure 3-11** on the following page.

Press the **ENTER** key to modify the selected setting. Doing so will open a new screen that displays the available setting variables.

3.3.4.1 Operation Mode

This setting determines the mode of operation for the connected unit.

The operator may choose between the following: 1:1 Redundant, Dual 1:1, Maintenance Switch and Single Amplifier.

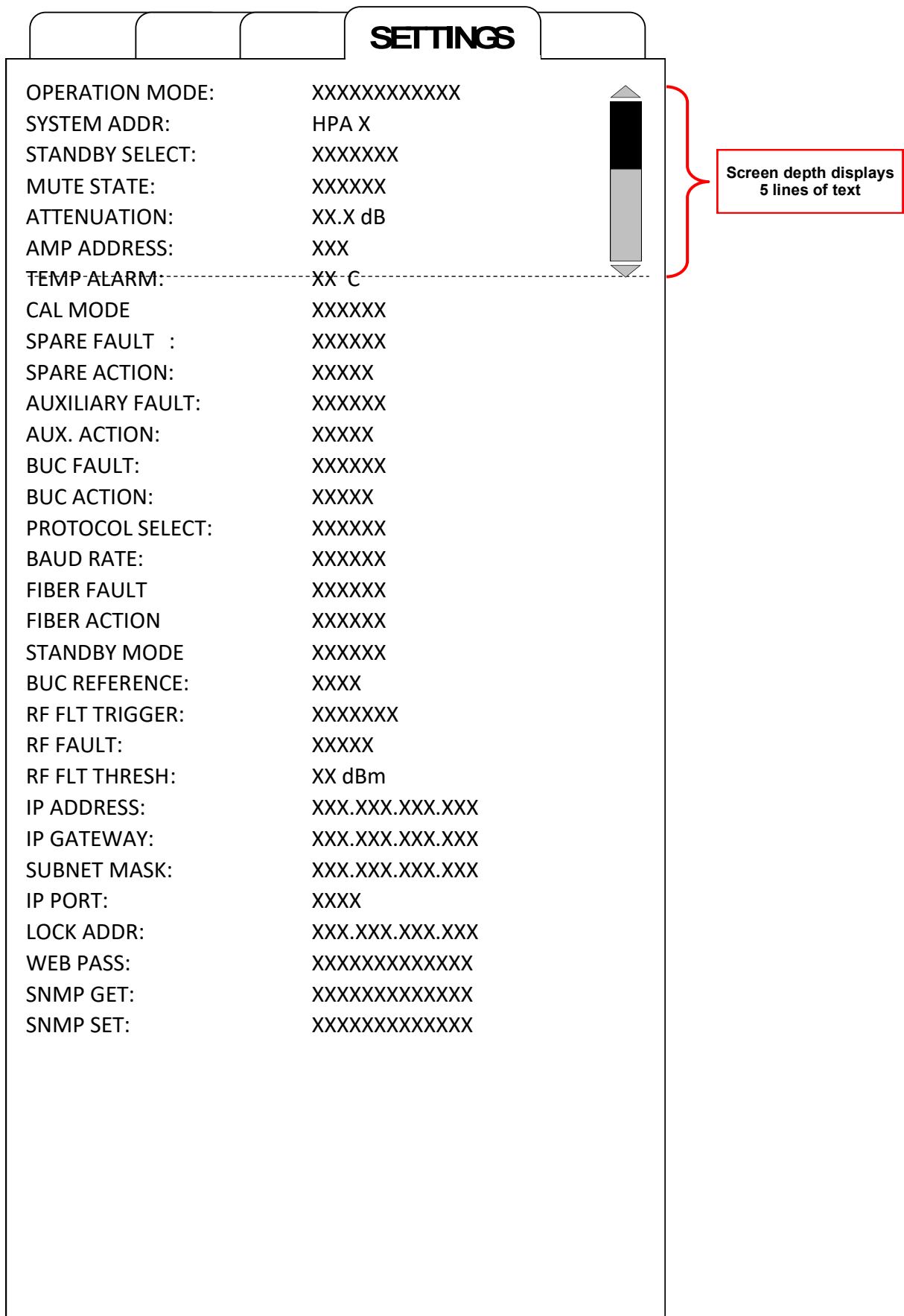


Figure 3-11: SETTINGS Window, Mini Compact Outdoor SSPA

3.3.4.2 System Address

This setting determines the connected unit's hierarchical address when in a redundant system.

The operator may choose between the following: HPA 1 and HPA 2.

3.3.4.3 Standby Select

This setting determines the connected unit's startup state when in a redundant configuration. This settings is sometimes referred to as the "Redundant Startup State" setting.

The operator may choose between the following: Standby and Online.

3.3.4.4 Mute State

This setting determines whether the connected unit's transmit function is enabled (Mute Clear) or disabled (Mute Set).

The operator may choose between the following: Set and Clear.

3.3.4.5 Attenuation

This setting allows the operator to set the gain attenuation level of the connected unit to any level from 0.0 dB to 20.0 dB, in 0.1 dB steps.

3.3.4.6 Amplifier Address

The operator may set the network address of the connected unit to any number from 0 to 255.

3.3.4.7 Temperature Alarm

The operator may set the high temperature threshold of the connected unit to any number from 0 to 125 degrees Celsius. If the baseplate temperature of the connected unit rises to the temperature set as the threshold, a temperature fault alarm will be triggered.

3.3.4.8 Calibration Mode

This setting allows the operator to select the calibration mode for the connected module. The only setting available is: Temp. Comp. (Normal). [Temperature Compensation]

3.3.4.9 Spare Fault

The operator may choose between the following: ADC 0, ADC 1, ADC 2, ADC 3, ADC 4, ADC 5, ADC 6, ADC 7, External Mute or Ignore.

3.3.4.10 Spare Action

The operator may choose between the following: Major Fault, Major Fault with Mute or Minor Fault.

3.3.4.11 Auxiliary Fault

The operator may choose between the following: Fault on Logic High, Fault on Logic Low or Ignore.

3.3.4.12 Aux. Action

The operator may choose between the following: Major Fault, Major Fault and Mute or Minor Fault.

3.3.4.13 BUC Fault

The operator may choose between the following: Enable or Disable.

3.3.4.14 BUC Action

The operator may choose between the following: Major Fault, Major Fault and Mute, or Minor Fault.

3.3.4.15 Protocol Select

The operator may choose between the following: IPNET, SNMP or Serial.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.3.4.16 Baud Rate

The operator may choose between the following: 38400, 19200, 4800, 2400, or 9600 baud.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.2.4.17 Fiber Fault

The operator may choose between the following: Fault on Logic High, Fault on Logic Low, or Ignore.

3.2.4.18 Fiber Action

The operator may choose between the following: Major Fault, Major Fault and Mute, or Minor Fault.

3.3.4.19 Standby Mode

The operator may choose between the following: Cold Standby or Hot Standby.

3.3.4.20 BUC Reference

The operator may choose between the following: Auto, External, or Internal Reference.

3.3.4.21 RF Fault Trigger

The operator may choose between the following: Low, 10% Window, 15% Window, High, or Disable.

When set to “Low”, a RF Fault Alarm will be triggered if the RF Output of the unit falls below the value set as the RF Fault Threshold (See **Section 3.3.4.22**).

When set to “10% Window”, a RF Fault Alarm will be triggered if the RF Output of the unit falls outside 10% of the value set as the RF Fault Threshold (See **Section 3.3.4.22**).

When set to “15% Window”, a RF Fault Alarm will be triggered if the RF Output of the unit falls outside 15% of the value set as the RF Fault Threshold (See **Section 3.3.4.22**).

When set to “High”, a RF Fault Alarm will be triggered if the RF Output of the unit rises above the value set as the RF Fault Threshold (See **Section 3.3.4.22**).

3.3.4.22 RF Fault

The operator may choose between the following: Major or Minor.

3.3.4.23 RF Fault Threshold

The operator may set the RF Fault Threshold to any level from 0 dBm to 80 dBm.

3.3.4.24 IP Address

The operator may set the IP Address of the connected unit in the format **###.###.###.###**, where **###** is a set of numbers from 000 to 255.

Cycle power to the connected unit for any change to this setting to take effect.

3.3.4.25 IP Gateway

The operator may set the IP Gateway of the connected unit in the format **###.###.###.###**, where **###** is a set of numbers from 000 to 255.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.3.4.26 Subnet Mask

The operator may set the Subnet Mask of the connected unit in the format **###.###.###.###**, where **###** is a set of numbers from 000 to 255.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.3.4.27 IP Port

The operator may set the IP Port of the connected unit in to any value from 0 to 65535.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.3.4.28 IP Lock Address

When this address is set to anything other than 000.000.000.000 or 255.255.255.255, the connected unit will only accept remote commands from the IP Address assigned in this setting.

The operator may set the IP Lock Address in the format **###.###.###.###**, where **###** is a set of numbers between 000 and 255.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.3.4.29 Web Password

This setting allows the operator to set a password that will be used to access the internal web server of the connected unit.

The password may be up to 15 characters in length, and may contain any alphanumeric character.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.3.4.30 SNMP Community Get Key

This setting allows the operator to set a SNMP Community Get key that will be used for SNMP communication with the connected unit.

The Community Get key may be up to 15 characters in length, and may contain any alphanumeric character.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.3.4.31 *SNMP Community Set Key*

This setting allows the operator to set a SNMP Community Set key that will be used for SNMP communication with the connected unit.

The Community Set key may be up to 15 characters in length, and may contain any alphanumeric character.

Cycle power to the connected unit for any change to this setting to take effect. A description of how the Quick Start Cable will affect unit settings is shown in **Section 2.2.2**.

3.3.5 LOCAL Menu

When the **SETTINGS** menu is displayed, press the **Right Arrow (▶)** key to navigate to the **LOCAL** menu.

The **LOCAL** menu is common to all units and is described in **Section 3.4**.

3.4 LOCAL Menu

When the **SETTINGS** menu is displayed, press the **Right Arrow** (▶) key to navigate to the **LOCAL** menu.

The **LOCAL** menu displays the utilities available on the Universal Handheld Controller. The screen can display five lines at a time. Press the **Down Arrow** (▼) key to scroll down the list of utilities; press the **Up Arrow** (▲) key to scroll up the list. The selected item will be highlighted in the display. See **Figure 3-12**.

Press the **ENTER** key to view the selected utility functions.

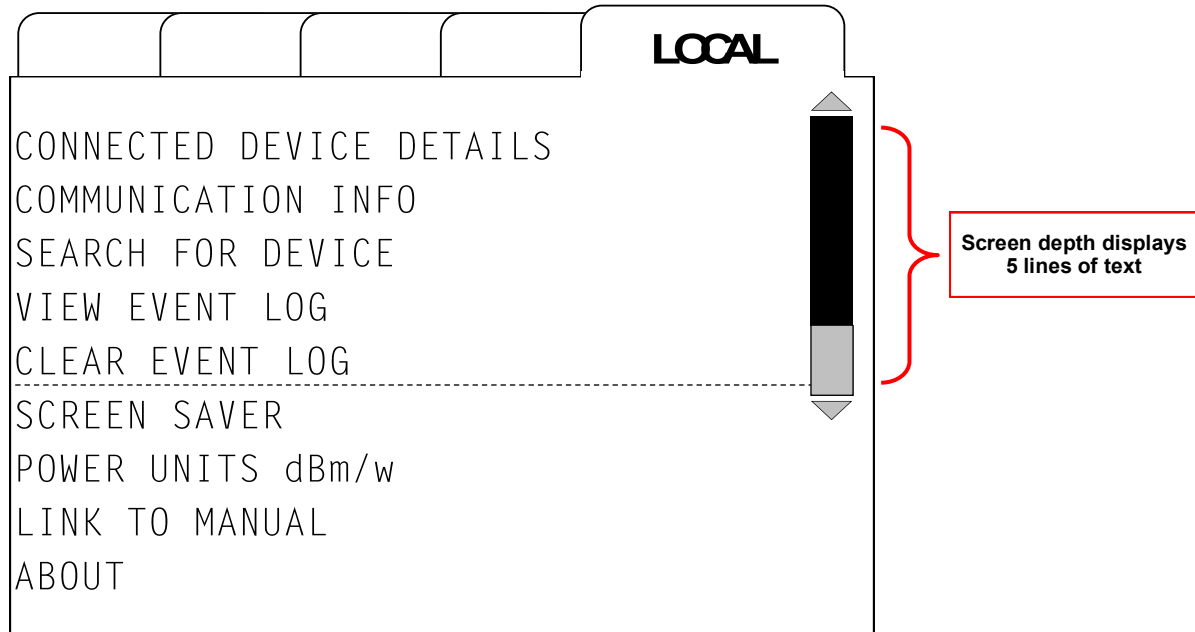


Figure 3-12: LOCAL Window

3.4.1 Connected Device Details

If the controller is not connected to a unit, or if communication to a connected unit has been interrupted, this utility will report “NO DEVICE DETECTED”.

If the controller is connected to a unit, this utility will list the model number, serial number, firmware version, network address and MAC address. This information is read-only.

Press the **ENTER** key or the **HOME** key to return to the **LOCAL** menu.

3.4.2 Communication Information

This utility provides information about the number of packets sent to the connected unit, the number of missed packets, the number of disconnects between the handheld controller and the connected device, the protocol used by the connected device, and the baud rate. This information is read-only.

Press the **ENTER** key or the **HOME** key to return to the **LOCAL** menu.

3.4.3 Search for Device

This utility allows the operator to search for a connected device, if communication with the connected unit was interrupted.

This utility will list the model number of a connected unit. This information is read-only.

Press the **ENTER** key to start searching or the **HOME** key to return to the **LOCAL** menu.

3.4.4 View Event Log

This utility allows the operator to review the connection status of the connected unit and any fault conditions that may have affected the connected unit. The operator may press the **Down Arrow (▼)** key to scroll down the list, or press the **Up Arrow (▲)** key to scroll up the list.

The time of occurrence for each log item prefaces the status or event logged. The time-stamp (formatted as dd:hh:mm:ss) is based on the amount of time elapsed since the last power-up of the Universal Handheld Controller. The recorded time is limited to 30 days; any event logged beyond an elapsed time of 30 days is recorded as > 30 DAYS.

Only the last 41 entries are saved to the controller's memory.

Possible Event Log entries include:

| | |
|------------------|------------------------------|
| SUMMARY FLT | SUMMARY CLR |
| *HIGH TEMP. FLT | HIGH TEMP. CLR |
| *LOW CURRENT FLT | LOW CURRENT CLR |
| *LOW VOLTAGE FLT | LOW VOLTAGE CLR |
| EXT. MUTE ON | EXT. MUTE OFF |
| INT. MUTE ON | INT. MUTE OFF |
| FORWARD RF FLT | FORWARD RF CLR |
| OUT OF LOCK FLT | OUT OF LOCK CLR |
| SPARE FLT | SPARE CLR |
| AUXILIARY FLT | AUXILIARY CLR |
| FIBER FLT | FIBER CLR (where applicable) |
| RF SWITCH 1 FLT | RF SWITCH 1 CLR |
| UNIT ONLINE | UNIT IN STANDBY |
| CONNECTED | DISCONNECTED |

Entries labeled with an asterix (*) are typically accompanied by a SUMMARY fault indicator.

If the operator clears the Event Log (see **Section 3.4.5**), this action will be recorded in the Event Log as LOG CLEARED.

If any faults were present on the connected unit, but have been cleared, this will be recorded in the Event Log as ALL FAULTS CLEARED.

Figure 3-13 shows an example of messages displayed in the Event Log. The example shows that the Universal Handheld Controller has been connected to the unit for more than

| TIME | EVENT |
|-------------|------------------|
| 00:06:34:41 | ALL FLTS CLEARED |
| 00:06:34:41 | LOW VOLTAGE CLR |
| 00:06:34:41 | SUMMARY CLR |
| 00:06:28:37 | LOW VOLTAGE FLT |
| 00:06:28:37 | SUMMARY FLT |
| 27:14:34:40 | INT. MUTE OFF |
| 27:14:25:19 | INT. MUTE ON |
| > 30 DAYS | UNIT ONLINE |
| > 30 DAYS | CONNECTED |

Figure 3-13: Example, Event Log

30 days. An internal mute condition was recorded 27 days ago, and cleared after less than 10 minutes. A Low Voltage fault (which is also a Summary fault) was recorded approximately 6 1/2 hours ago and cleared after 6 minutes.

While the operator is reviewing the Event Log, new items will continue to be recorded, but will not show up on the current screen. To update the Event Log, the operator will need to press the **HOME** key to return back to the **LOCAL** menu and press the **ENTER** key to re-enter the Event Log.

Press the **ENTER** key while in the View Event Log to display the current time (in relation to the last power-up of the Universal Handheld Controller). The current time is displayed for five seconds, then disappears.

Press the **HOME** key to return to the **LOCAL** menu.

3.4.5 Clear Event Log

This utility allows the operator to clear the events recorded in the Event Log. When this menu item is selected, the operator will be prompted to select 'OK' to clear the Event Log.

The operator may press the **Down Arrow** (▼) key to scroll down the list, or press the **Up Arrow** (▲) key to scroll up the list. The operator must select OK from the menu and press the **ENTER** key to clear the Event Log.

This action is recorded in the Log Report as LOG CLEARED.

3.4.6 Screen Saver

This utility allows the operator to select the time interval since the last key press before the display screen is blacked out. The operator may select between the following: 1 minute, 5 minutes, 10 minutes, or Disabled (not recommended).

Press the **Up Arrow** (▲) or **Down Arrow** (▼) keys to navigate the cursor until the desired selection is highlighted. Press the **ENTER** key to save the highlighted selection to the controller's non-volatile memory. This setting will remain saved in the controller even between power cycles. Press the **HOME** key to cancel the selection and return to the **LOCAL** menu.

3.4.7 Power Units dBm/W

This utility allows the operator to select the "TX Power" units displayed on the **STATUS** tab. Select either dBm or Watts. This setting will not affect power levels displayed in either the **CONDITIONS** or the **SETTINGS** tabs.

When power is displayed as dBm, the precision of the reading will be to the nearest tenth of a dBm.

When power is displayed as Watts, the precision of the reading will be to the nearest tenth of a Watt for power levels under 100W. Above 100W, the precision will be to the nearest 1 Watt.

3.4.8 Link to Manual

This utility displays a Quick Response (QR) Code which may be scanned with a mobile device to download this manual (211668) from the Teledyne Paradise Datacom web site. The web site address of the location of the manual is also displayed, should the operator wish to manually enter the address into a web browser window.

Press the **ENTER** key or the **HOME** key to return to the **LOCAL** menu.

3.4.9 About

This utility provides information about the controller unit, including the model number, serial number, firmware revision level, build date and amount of battery charge in percentiles, if applicable. This information is read-only.

Press the **ENTER** key or the **HOME** key to return to the **LOCAL** menu.

4.0 Introduction

This section gives an overview of common scenarios and guidelines the operator may follow to troubleshoot using the Universal Handheld Controller.

4.1 Troubleshooting Connectivity

Refer to **Table 4-1** for guidance on connectivity issues between the Universal Handheld Controller and a connected amplifier.

Table 4-1: Troubleshooting Connectivity

| Problem | Action |
|---|--|
| No power to RCH-1000 (no display; no LEDs) | <ol style="list-style-type: none"> 1) Verify Quick Start cable is properly connected; 2) Verify connected amplifier is powered up; 3) Verify connected amplifier is compatible for use with RCH-1000; 4) If connected unit's serial number is < 400,000, contact factory to obtain the appropriate Quick Start cable for use with the unit. |
| RCH-1000 powered; No connection (Red LED on CONNECTED) | <ol style="list-style-type: none"> 1) Verify Quick Start cable is properly connected; 2) Verify connected amplifier is compatible for use with RCH-1000; 3) Verify connected unit's Serial mode is active; 4) Cycle power to connected unit with Quick Start cable attached. |
| RCH-1000 powered; CONNECTED LED flashes between Red and Green | <ol style="list-style-type: none"> 1) Connected amplifier is incompatible for use with RCH-1000. Consult factory. |
| RCH-1000 powered; LEDs illuminated; OLED screen blank | <ol style="list-style-type: none"> 1) Push any key to exit screen saver mode; 2) If screen remains blank, contact factory. |
| RCH-1000 powered; MUTE LED not illuminated | <ol style="list-style-type: none"> 1) Unit is unmuted; 2) Check SETTINGS > MUTE STATE. If enabled (Mute Set), and Mute LED remains not illuminated, contact factory. |
| RCH-1000 powered; Any other LED not illuminated | <ol style="list-style-type: none"> 1) Contact factory. |
| Under Settings Menu, Setting reports: ERR(###) | <ol style="list-style-type: none"> 1) Handheld Controller does not recognize Setting value; Press ENTER key on selection to change to recognized variables. 2) Contact factory for update. |

4.2 Troubleshooting Faults

For troubleshooting guidance on fault conditions affecting the connected amplifier, refer to the connected unit's Operations Manual.

Compact Outdoor SSPA Operations Manual (208495);
Mini Compact Outdoor SSPA Operations Manual (208143);
H-Series High Power Outdoor SSPA Operations Manual (211670).

The following pages comprise the specification sheet for the Teledyne Paradise Datacom RCH-1000 Universal Handheld Controller (Drawing Number **211667**).

The most up-to-date specifications for this product may be found on the company web site: www.paradisedata.com.

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