

CG-1294

(previously
TM-LT3000)

**OPERATION & MAINTENANCE
MANUAL
UP/DN CONVERTER
L-BAND
LT-3000 SERIES**



**1915 Harrison Road
Longview, Texas 75604 USA
Tel. (903)-295-1480
Fax. (903)-295-1479**

WARRANTY

VertexRSI warrants its products for a period of two (2) years from the date of shipment to be free from defects caused by faulty materials or poor workmanship.

The terms and conditions of this warranty are as follows

- The purchaser must notify VertexRSI promptly upon discovery of such defect.
- The purchaser must return the defective product, postpaid, to:

VertexRSI
1915 Harrison Road
Longview, Texas 75604 USA

- Evaluation of the defective product at VertexRSI shall disclose that such defects exist and have not been caused by misuse, neglect, improper handling, alteration or accident.

VertexRSI reserves the right to make product improvements and/or design changes in any of its products without incurring any obligation or liability to make the same changes in units previously shipped.

Copyright © 2003 by VertexRSI

All rights reserved
Printed in the United States of America

Contents of the manual are subject to change.

No part may be reproduced or transmitted in any form
or by any means without the written permission of
VertexRSI, a TriPoint Global Company
1915 Harrison Road
Longview, Texas 75604 USA

TABLE OF CONTENTS

Section 1	General Information.....	5
1.0	Introduction.....	5
1.1	Safety Information.....	5
1.2	General Introduction.....	5
1.3	Purpose of Equipment.....	5
1.4	Specifications.....	6
1.5	Front Panel.....	6
1.6	Rear Panel.....	6
1.7	Cooling.....	6
1.8	Part Number Selection.....	7
Section 2	Installation.....	11
2.0	Introduction.....	11
2.1	Unpacking and Inspection.....	12
2.2	Installation Requirements.....	11
2.3	Mechanical Installation.....	11
2.4	Electrical Connections.....	11
2.4.1	Power Input.....	11
2.4.2	Tx L-Band Output (J1).....	11
2.4.3	Tx IF Input (J2).....	11
2.4.4	Rx IF Output (J3).....	11
2.4.5	Rx L-Band Input (J4).....	11
2.4.6	External 10 MHz Input (J5).....	12
2.4.7	Serial SSPB Interface (J6).....	12
2.4.8	Remote Serial I/O Interface (J7).....	12
2.4.9	High Stability 10 MHz Reference (J9) (Optional Connector).....	12
2.5	Operational Check.....	12
2.5.1	Setup.....	12
Section 3	Operation.....	13
3.0	Introduction.....	13
Section 4	Serial Command Set.....	16
4.0	General.....	16
4.1	LT-3000 Serial Interface.....	16
4.2	Communication Protocol.....	16
4.2.1	General Data Format.....	16
4.3	Commands.....	16
4.3.1	Set Transmitter Frequency.....	16
4.3.2	Set Receiver Frequency.....	16

4.3.3	Set Transmitter Gain	17
4.3.4	Set Receiver Gain.....	17
4.3.5	Set Internal 10 MHz Reference Oscillator Offset	17
4.3.6	Enable SSPB	18
4.3.7	Receiver (LNB) Spectrum Control	17
4.3.8	SSPB Band Control.....	17
4.3.9	Set SSPB Gain (Attenuation).....	17
4.3.10	Enable Transmitter	17
4.3.11	Enable Receiver.....	17
4.3.12	Satellite Memory Store.....	17
4.3.13	Satellite Memory Recall.....	18
4.4	Status Requests.....	18
4.4.1	Command Status	18
4.4.2	Level Status	18
4.4.3	L-Band Status.....	19
4.4.4	Set Cable Slope Factor	19
4.4.5	Query Cable Slope Factor	19
4.4.6	Serial Number Read	19
4.4.7	Query Software Version.....	19
4.4.8	Query Card Type.....	20
4.4.9	Satellite Memory Status Query	20

APPENDICES

A	Technical Manual Revision History.....	21
B	GUI Software Revision History	21
C	CCA Software Revision History.....	21
D	Display Panel Software Revision History.....	21

LIST OF ILLUSTRATIONS

Figure 1-1	Front Panel with Keypad and LCD Display.....	6
Figure 1-2	Rear Panel	7
Figure 3-1	Front Panel Controls and Indicators.....	13
Figure 3-2	Menu Listing	14
Figure 3-3	Satellite Memory	15

LIST OF TABLES

Table 1-1	Integrated L-Band Specifications.....	7
-----------	---------------------------------------	---

SECTION 1**General Information****1.0 INTRODUCTION**

This manual contains installation, operation, and maintenance information for the Integrated L-Band Up/Dn Converter manufactured by VertexRSI, Longview, Tx. Information is organized according to section. Within each section the pages, figures and tables are numbered by section and by order of appearance within the section. Unless otherwise noted, any information about the unit applies to the LT-3000, Model 201539-100.

1.1 SAFETY INFORMATION

This equipment has been designed to minimize exposure of personnel to hazards.

WARNING

A continuous safety earth ground must be provided from the main power source through the main power cord. This is provided in the power cable shipped with the unit. If this power cord is damaged, it should be replaced with cord of equal or better specifications. This cord can be obtained from VertexRSI.

Servicing instructions are for use by trained personnel only. To avoid dangerous electric shock, do not perform any servicing unless qualified to do so. Do not replace components with the power cord connected to the equipment.

WARNING

Some of the adjustments described in this manual are performed with power applied while protective covers are removed. Always be careful not to come in contact with dangerous voltages while performing these procedures, and never work alone. With power applied to the unit and the cover removed, be aware that a rotating fan is operating.

1.2 GENERAL INTRODUCTION

This manual provides operation and service instructions for the Integrated L-Band Up/Dn Converter. The unit consists of a power supply, forced-air cooling system, microprocessor-based CCA (circuit card assembly) and control circuitry and the modules required for up and down conversion. It incorporates extensive monitor and control functions that are accessible from the front panel as well as through a remote serial bus. A general description of the front and rear panels is given in Sections 1.5 and 1.6. A description of the Keypad and Display option can be found in Appendix A.

The Integrated L-Band Up/Dn Converter is housed in an enclosure destined for mounting in a standard EIA 19-inch rack, requiring a 1.75-inch high vertical space.

1.3 PURPOSE OF EQUIPMENT

The Integrated L-Band Up/Dn Converter is a fully synthesized up and down converter covering full 575 MHz bandwidth receiving RF frequencies in up to 1 MHz steps. The unit incorporates extensive monitor and control functions that are accessible from the front panel as well as through a remote RS-232/422/485 bus.

The LT-3000 can be configured to accommodate various requirements involving an IF of 70 or 140 MHz, non-inverted or inverted spectrum, with standard or high-stability 10 MHz reference oscillator or any combination the user desires. Combined with jumper selectable and user programmable options, the LT-3000 is flexible to user requirements.

1.4 SPECIFICATIONS

The specifications for the Integrated L-Band Up/Dn Converter are listed in Table 1-1, along with the mechanical dimensions.

1.5 FRONT PANEL

All the operating controls and indicators for the Integrated L-Band Up/Dn Converter are located on the front panel. The front panel is depicted in Figure 1-1. Alarm and level monitoring of the L-Band Up/Dn Converter CCA, an external LNB, and SSPB modules is accomplished through the front panel display and keyboard interface.

1.6 REAR PANEL

The rear panel is depicted in Figure 1-2. It incorporates, from left to right, Power On/Off Switch, Power Connector, Grounding Lug

(GND), optional SSPB current (J8), On/Off Switch for Dc output on J4 (S1), On/Off Switch for Dc output on J4 (S2), L-Band Out (J1), IF In (J2), IF Out (J3), L-Band Out (J4), 10 MHz reference (J5), high stability 10 MHz reference output (J9), SSPB monitor and control (J6), remote serial interface (J7).

1.7 COOLING

Cooling of the equipment is achieved by pulling in cool air through the two side inlet grills. The heated air exits the equipment through the two rear panel mounted exhaust fans.

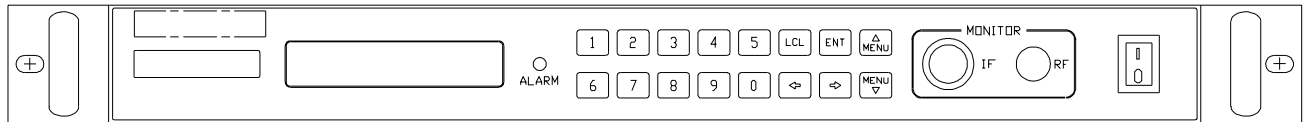


Figure 1-1 Front Panel w/Keypad and LCD Display

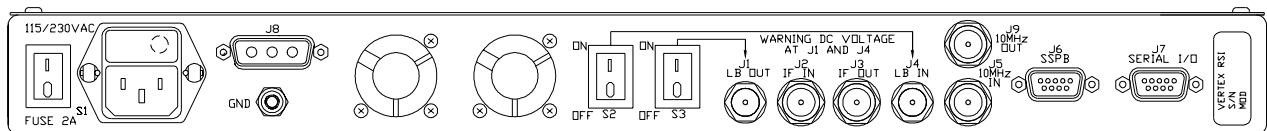


Figure 1-2 Rear Panel

1.8 Part Number Configuration

The Part Number Selection Chart shows configuration options that are set at the factory prior to shipment. The voltage output to J1 and J4 may be changed as required by the customer, however this requires removal of the cover and resetting internal jumper connections. This should be performed by qualified personnel.

Base Number	Dash	1 st Digit		2 nd Digit		3 rd Digit		4 th Digit	
		Frequency		Power Output		CE Compliance		Ref. Oscillator	
201539	-	1	70 MHz	0	J1 22VDC 2A J4 22VDC 0.5 A	0	No	Blank – Standard Internal 10 MHz	
		2	140 MHz	1	J1 15VDC 2A J4 15VDC 0.5A	1	Yes	1	Hi Accuracy 10 MHz
		3	70MHz Inv. Tx	2	J1 22VDC 2A J4 15VDC 0.5A				
		4	140MHz Inv. Tx	3	J1 15VDC 2A J4 22 VDC 0.5A				
				4	No Power Output				
				5	J1 22VDC 2A J4 None				
				6	J1 None J4 22VDC 0.5A				
				7	J1 15VDC 2A J4 None				
				8	J1 None J4 15VDC 0.5A				

Table 1-1 Integrated L-Band Specifications

UPCONVERTER	
Input Frequency Range	50 to 90 MHz
Input Impedance	75 Ohms
Input Level Range	-20 to -40 dBm
Output Frequency Range	950 to 1525 MHz
Output Impedance	75 Ohms
VSWR (In and Out)	1.5 : 1
Conversion Gain	10 to 30 dB (0.5 dB steps)
Gain Linearity (over 10 dB)	± 0.5 dB
Gain Linearity (over 20 dB)	± 1.0 dB
Gain Stability (0 to +50 °C)	± 0.5 dB
Frequency Response (over any 36 MHz)	± 0.75 dB
Frequency Response (over 575 MHz)	± 1.0 dB
Output Power (1 dB GCP)	+6 dBm (minimum)
3 rd Order Intermodulation (for 2 car. each at -5 dBm o/p)	-40 dBc
Spurious (at 0 dBm output)	-55 dBc
Transmit Spectrum Sense	Non-Inverting (Inverting option)
DOWNCONVERTER	
Input Frequency Range	950 to 1525 MHz
Input Impedance	75 Ohms
Input Level Range	-75 to -35 dBm
Output Frequency Range	50 to 90 MHz
Output Impedance	75 Ohms
VSWR (In and Out)	1.5 : 1
Conversion Gain	30 to 50 dB (0.5dB steps)
Gain Linearity (over 10 dB)	± 0.5 dB
Gain Linearity (over 20 dB)	± 1 dB
Gain Stability (0 to +50 °C)	± 1 dB
Frequency Response (over 36 MHz)	± 0.75 dB
Frequency Response (over 575 MHz)	± 1 dB
Output Power (1 dB GCP)	+6 dBm
Spurious Over 52 to 88 MHz (at -5 dBm output)	-50 dBc
Receive Spectrum Sense	Inverting or Non-Inverting
Noise Figure	15 dB max

Table 1-1 Integrated L-Band Specifications

OPTIONAL INTERNAL REFERENCE	
Reference Frequency	10.000 MHz
Stability (0 to +50 °C)	$\pm 2 \times 10^{-8}$
Aging per Day	$\pm 1 \times 10^{-9}$
Output Level (rear panel)	+ 12 dBm ± 2 dB
Phase Noise @ 10 Hz	-115 dBc/Hz
100 Hz	-135 dBc/Hz
1 kHz	-145 dBc/Hz
10 kHz	< -150 dBc/Hz

UPCONVERTER and DOWNCONVERTER	
Synthesizer Configuration	Dual Tx and Rx with Independent Programmability
Tx Synthesizer and Rx Synthesizer Step Size	1 MHz
Parameter Memory Storage	Non-Volatile EEPROM
L-Band Output Phase Noise:	
at 100 Hz Offset	-65 dBc/Hz
at 1 kHz Offset	-75 dBc/Hz
at 10 kHz Offset	-80 dBc/Hz
at 100 kHz Offset	-90 dBc/Hz

INTERNAL REFERENCE	
Reference Frequency	10.000 MHz
Stability (0 to +50 °C)	± 1 PPM
Reference Output Calibration	± 10 Hz
Reference Programmable Control	± 20 Hz
Output Level (10 MHz on LB IN J4 coax)	-2 dBm ± 2 dB
Output Level (10 MHz on LB OUT J1 coax)	-2 dBm ± 2 dB
Optional Output Level (50 MHz on LB OUT J1 coax)	-10 dBm ± 2 dB
Output 2 nd Harmonic	-40 dBc

EXTERNAL REFERENCE INPUT	
Input Frequency	10.000 MHz
Input Level	0 to +13 dBm
Frequency Stability	As Required

CHASSIS PHYSICAL SIZE	
Height	1.75 inches
Depth	18 inches
Width	19 inches
Weight	10 lbs. max.

Table 1-1 Integrated L-Band Specifications

INTERFACE AND CONNECTORS	
Voltage (auto-ranging)	115/230 VAC $\pm 15\%$
Internal Electronics (Power)	25 watts
Input & Output Coaxial Connectors	
Remote Serial Interface: Standard: RS-232/RS-422/RS-485 (J7)	DB-9 (Male)
External SSPB Monitor and Control (J6)	DB-9 (Female)
DC Output to LNB on J4 (coaxial)	22 or 15VDC @ 0.5 amps (max)
DC Output to SSPB on J1 (coaxial)	22 or 15VDC @ 2.0 amps (max)
Operational Temperature Range	0 to 50 °C

SECTION 2**Installation****2.0 INTRODUCTION**

This section defines the installation requirements by which the Integrated L-Band Up/Dn Converter will meet the published specifications.

2.1 UNPACKING AND INSPECTION

Remove the unit from its shipping container and inspect for any damage sustained during shipment. Save the packing material for reshipment back to the factory or to another site. Report any damage to the shipping forwarder in accordance with required procedures.

2.2 INSTALLATION REQUIREMENTS

The LT-3000 is designed for mounting in a standard EIA 19-inch rack. The unit must be supported on the sides and space must be allowed at the side of the unit to permit the flow of cooling air. The unit should be installed in an environment that is within the environmental envelope described in Table 1-1. Primary power must be made available that is within the specified limits.

2.3 MECHANICAL INSTALLATION

The mechanical configuration of the unit is shown in Figure 2-1. It is equipped with threaded inserts on either side for the installation of slides. Slides are not provided with the unit. The front panel is equipped with slots to accommodate user-supplied retaining screws.

CAUTION

MOUNTING THE UNIT BY ONLY THE FRONT PANEL WILL CAUSE EXTENSIVE DAMAGE.

2.4 ELECTRICAL CONNECTIONS

All electrical connections are made to the rear panel of the unit. The following describes the rear panel connectors and its interface

requirements. The chassis ground is a #10-32 lug on the back panel.

2.4.1 Power Input

This connector is an IEC 320-C14 male and will accept any compatible mating connector. The power cord supplied as standard with the unit is equipped with a NEMA 5-15P male plug at the opposite end and is compatible with most 115 VAC supplies. The unit is manufactured with a Universal Input Power supply that will accept voltages in the range of 115 to 230 VAC.

CAUTION

DAMAGE MAY RESULT IF THE INCORRECT VOLTAGE IS APPLIED TO THE UNIT.

2.4.2 Tx L-Band Output (J1)

This connector is an F-Connector female. The mate (not supplied) should be compatible with the 75-ohm coax used to connect to the system.

CAUTION

DC OUTPUT CURRENT MAY BE PRESENT ON J1 AND J4 DEPENDING ON POWER OPTIONS SUPPLIED FOR THE SSPB AND LNB.

2.4.3 Tx IF Input (J2)

This connector is a BNC female. The male mate (not supplied) should be compatible with the 75-ohm coax used to connect to the system.

2.4.4 Rx IF Output (J3)

This connector is a BNC female. The male mate (not supplied) should be compatible with the 75-ohm coax used to connect to the system.

2.4.5 Rx L-Band Input (J4)

This connector is an F-Connector female. The male mate (not supplied) should be compatible with the 75-ohm coax used to connect to the system.

2.4.6 External 10 MHz Input (J5)

This connector is a BNC female. The male mate (not supplied) should be compatible with the 75-ohm coax used to connect to the system.

2.4.7 Serial SSPB Interface (J6)

This connector is a 9-pin female miniature type “D” connector with standard #4-40 female screw-lock hardware mounting. The mating shell, pins, and strain relief are not supplied. The electrical interface to this connector is for a standard RS-422/485/232 bus. For bus protocol requirements, refer to Section 3-3. The convention used for the signals is a logic Hi for Mark (Rest) and a logic Lo for Space. The pin-out is as follows:

Pin 1	SSPB Band Control Output
Pin 2	Amplifier Fault
Pin 3	Thermal Alarm Input
Pin 4	Lock Alarm Input
Pin 5	Up/Dn Converter Ground
Pin 6	SSPB Attenuator/Enable Control
Pin 7	Not Used
Pin 8	SSPB Detector Input +
Pin 9	SSPB Detector Input –

2.4.8 Remote Serial I/O Interface (J7)

This connector is a 9-pin male miniature type “D” connector with standard #4-40 female screw-lock hardware mounting. The mating shell, pins, and strain relief are not supplied. The electrical interface to this connector is for a standard RS-422/485/232 bus. For bus protocol requirements, refer to Section 3-3. The convention used for the signals is a logic Hi for Mark (Rest) and a logic Lo for Space. The pin-out is as follows:

Pin 1	Rx -
Pin 2	Rx +
Pin 3	Tx +
Pin 4	Tx -
Pin 5	Ground
Pin 6	Alarm Relay: Common
Pin 7	Alarm Relay: Normally Closed
Pin 8	Not Used
Pin 9	Alarm Relay: Normally Open

2.4.9 High Stability 10 MHz Reference Output (J9) (Optional Connector)

This connector is a BNC female. BNC jumper cable is supplied with this option for connection to J5.

2.5 OPERATIONAL CHECK

To verify that the basic functions of the unit are operational, it is recommended that the following check-out procedure be followed prior to final system integration. If there are any questions regarding performing the indicated operations, refer to Section 3-3.

2.5.1 Setup

Connect the unit to a primary power source and turn on the power switch at the front of the unit. Verify that the power led is illuminated. If the power led is not illuminated, check the power cord and fuse. A spare 3.15 A fuse is provided inside the power connector.

Switch the primary power off and connect the Tx LB, Tx IF, Rx IF and the Rx LB at the rear of the chassis to J1, J2, J3 and J4 respectively. Re-establish the primary source of power. The Front display will light and status will be displayed.

SECTION 3

Operation

3.0 INTRODUCTION

The Up/Down Converter can be controlled from the front panel or remotely via a serial bus located on the rear panel of the converter. Various menus are available for **EDIT** and **DISPLAY** purposes.

See Figure A-2 for a listing of the menus. Section 5 gives a complete description of the bus commands and conventions for operating the converter remotely.

Red LED illuminates when any of the monitor functions in the converter are not within pre-defined parameters.

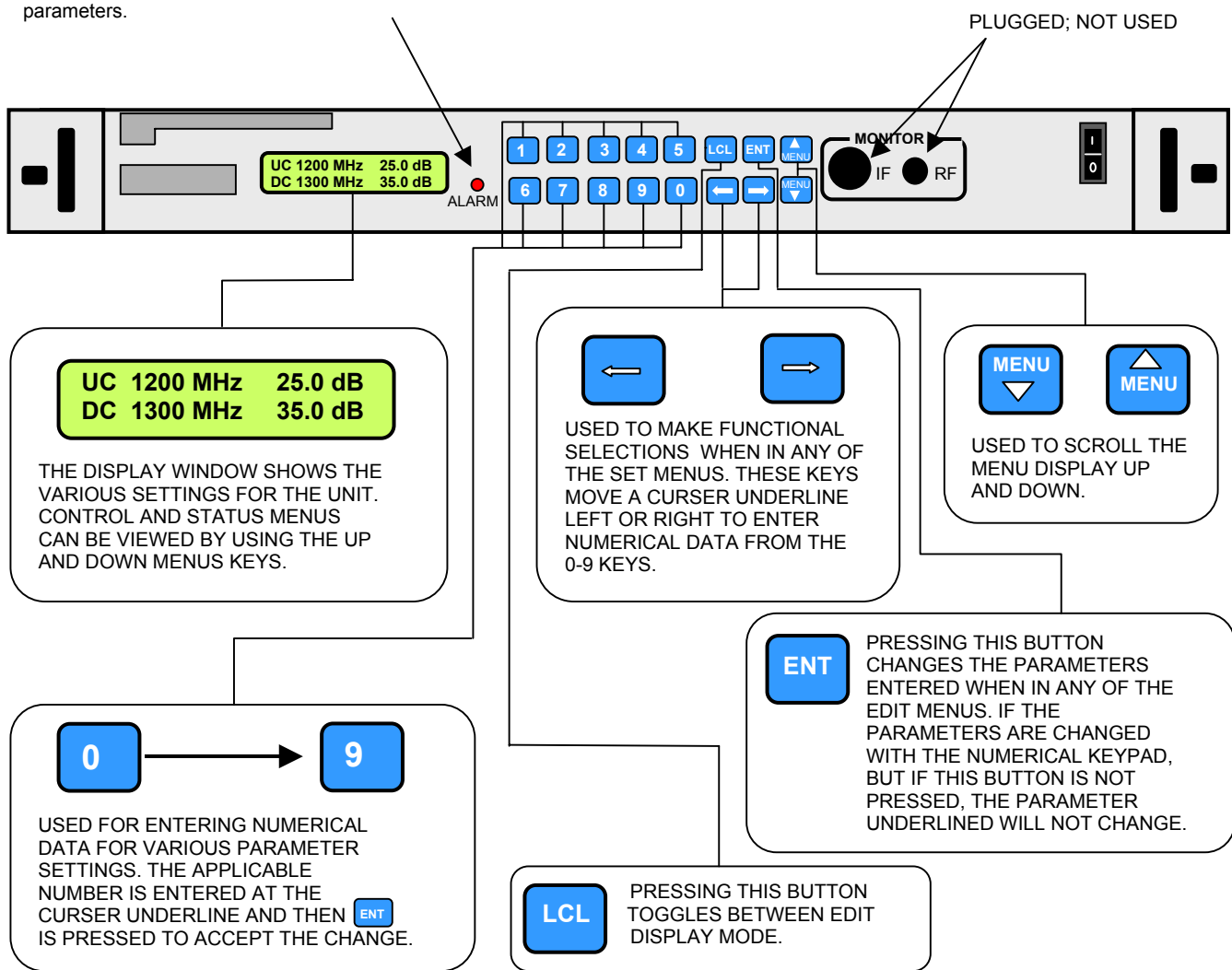


Figure 3-1 Front Panel Controls and Indicators

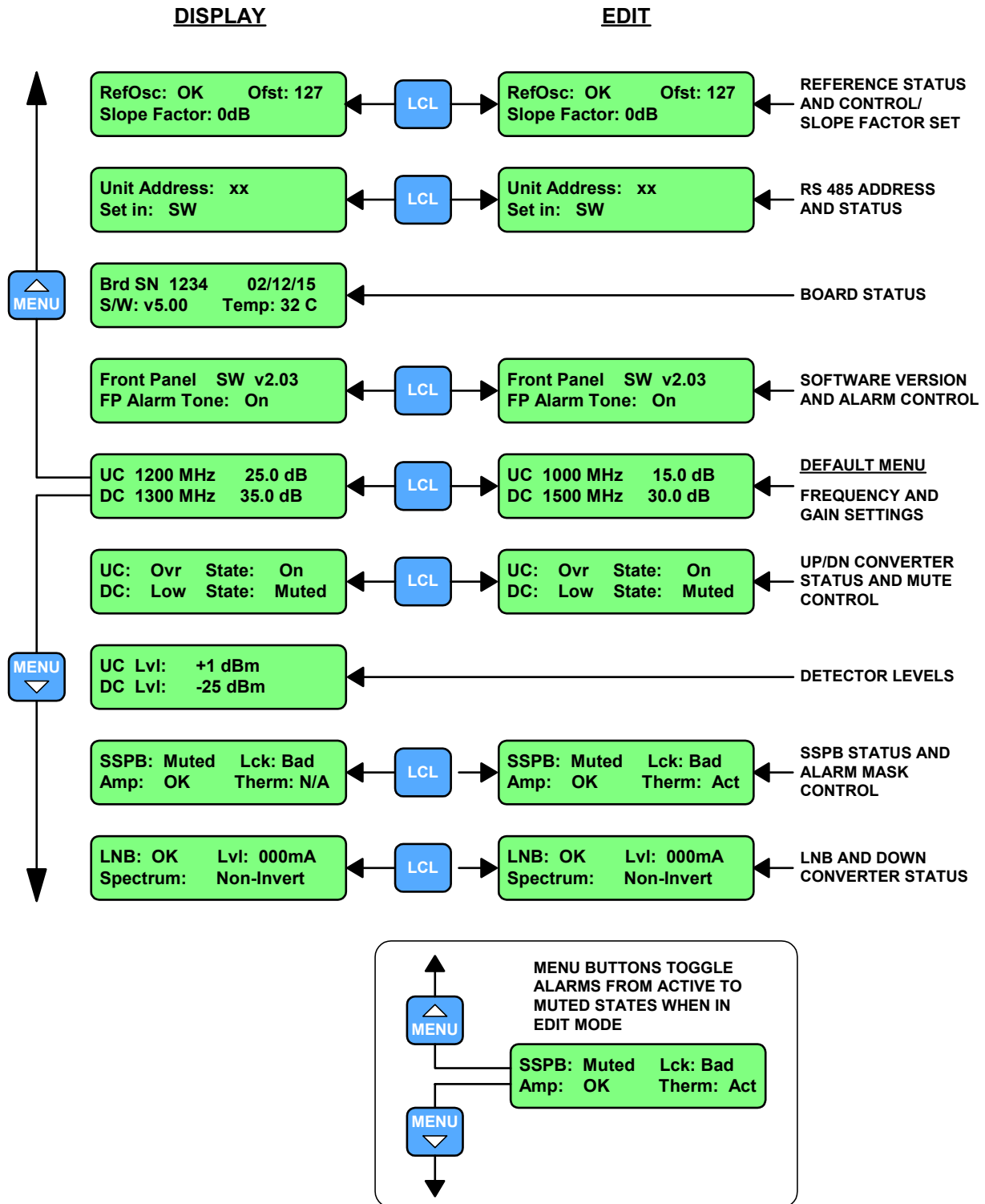


Figure 3-2 Menu Listing

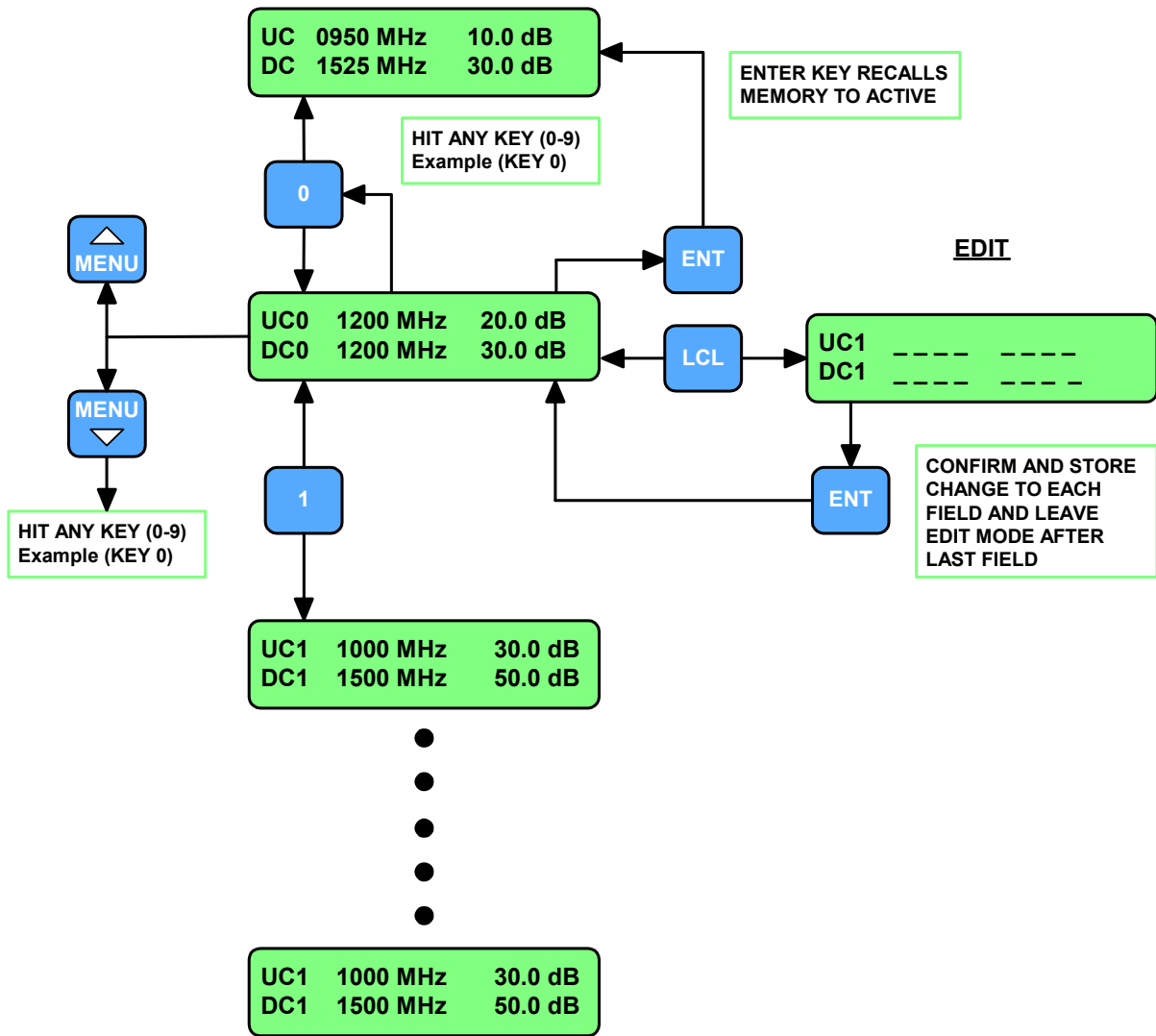


Figure 3-3 Satellite Memory

SECTION 4**Serial Command Set****4.0 GENERAL**

The standard Up/Dn Converter is controlled via a rear panel serial link (RS232/422/485). With the front panel control option, a user can operate the L-Band Up/Dn Converter from its front panel as well as from the serial link. This section describes the format for the ASCII serial control as well as front panel operation.

4.1 LT-3000 SERIAL INTERFACE

The serial interface format to the Up/Dn Converter for RS-232/422 is identical to the RS-485 format except that under RS-485, the format includes an address field (aa in the format below).

4.2 COMMUNICATION PROTOCOL

Baud Rate: 9600
 Parity: None
 Data Bits: Eight
 Start Bits: One
 Stop Bits: One

4.2.1 General Data Format

{aaCND...}

Where:

{ = Start byte
 aa = 2 character address (00 to 50, remote interface only)
 C = 1 character, either C (Command) or S (Status)
 N = 1 number 0 to 9, A,B,C Command or Status Number
 D = 1 or more Data characters (depending on command)
 } = Stop byte

Note: The address is only used in the RS-485 mode when having several addressable units communicating with one station.

4.3 COMMANDS**4.3.1 Set Transmitter Frequency**

{aaC1xxxx} Where xxxx = 4 numeric data characters
 Range: 0950 to 1525 (MHz) for Low Band units
 Range: 1450 to 1750 (MHz) for High Band units

4.3.2 Set Receiver Frequency

{aaC2xxxx} Where xxxx = 4 numeric data characters
 Range: 0950 to 1525 (MHz) for Low Band units
 Range: 1450 to 1750 (MHz) for High Band units

4.3.3 Set Transmitter Gain

{aaC3xxx} Where xxx = 3 numeric data characters
Range: 100 to 300 (10.0 dB to 30.0 dB)
in 0.5 dB steps)

4.3.4 Set Receiver Gain

{aaC4xxx} Where xxx = 3 numeric data characters
Range: 300 to 500 (30.0 dB to 50.0 dB)
in 0.5 dB steps)

4.3.5 Set Internal 10 MHz Ref Oscillator Offset

{aaC5xxx} Where xxx = 3 numeric data characters
Range: 000 to 255 (0 through 10 volts)

4.3.6 Enable SSPB

{aaC6x} Where x = 0 to disable SSPB control
and x = 1 to enable SSPB control

4.3.7 Receiver (LNB) Spectrum Control

{aaC7x} Where x = 0 for Non-Inverting spectrum
and x = 1 for Inverting spectrum

4.3.8 SSPB Band Control

{aaC8x} Where x = 0 for SSPB Low Band control
and x = 1 for SSPB High Band control

4.3.9 Set SSPB Gain (Attenuation)

{aaC9xx} Where xx = 2 data characters (sign and number)
Range: -8 to -0 (-8 to 0 dB) or ++ for full on.

4.3.10 Enable Transmitter

{aaCAx} Where x = 0 to disable or mute the transmitter
and x = 1 to enable or un-mute the transmitter

4.3.11 Enable Receiver

{aaCBx} Where x = 0 to disable or mute the receiver
and x = 1 to enable or un-mute the receiver

4.3.12 Satellite Memory Store

{aaCSSxyyyyyyyyy} Where x = Number from 0 to 9 (memory position)
y = ASCII character making up to a 10 character name for the satellite

Stores current Tx and Rx Frequencies and Gains to storage position specified along with a Text name for that satellite is so desired.

4.3.13 Satellite Memory Recall

{aaCSR_x} Where x = Number from 0 to 9 (memory position)
 Recalls saved satellite settings of Frequencies and
 Gains to the current set-up.

4.4 STATUS REQUESTS**4.4.1 Command Status**

{aaS1}
 Returns: {aaS1bbbbccccdddeefffNL}

Where bbbb = Tx Frequency (as above)
 cccc = Rx Frequency (as above)
 ddd = Tx Gain
 eee = Rx Gain
 fff = Ref. Osc. Offset
 N = 0 for SSPB disable, 1 for SSPB enable
 L = 0 for non-Inverting LNB, 1 for inverting

4.4.2 Level Status

{aaS2}
 Returns: {S2MLffppeett}

Where: M = ASCII-hex Char. MSN of bitmapped status
 F indicates no alarm in group
 D7 – Low = SSPB Lock Alarm
 D6 – Low = SSPB Thermal Alarm
 D5 – Low = SSPB Amp Alarm
 D4 – Low = LNB Alarm

Where: L = ASCII-hex Char. LSN of bitmapped status
 F indicates no alarm in group
 D3 – Low = Ext. 10 MHz Ref. Osc. Alarm
 D2 – Low = Rx Synthesizer Alarm
 D1 – Low = Tx Synthesizer Alarm
 D0 – Low = Summary Alarm

Where: ff = 2 Chars., Forward SSPB Power Detection
 Range: 00 or 16 to 40 (dBm) (00 = No SSPB)

Where: pp = 2 Chars., L-Band Tx Output Level Detection
 Range: 25 to +5 (-25 to +5 dBm)

Where: rr = 2 Chars., L-Band Rx Input Level Detection
 Range: 25 to +5 (-25 to +5 dBm)

Where: tt = 2 Chars., on board Temperature Monitor
 Range: 00 to 70 (0 to 70°C)

4.4.3 L-Band Status

{aaS3}

Returns: {S3bbCddTRee}

Where:

- bb = 2 Chars., LNB current Detection
Range: 00 to 55 (0 – 550 mA) or
00 to 99 (0 - 990 mA) for high current units
- C = 1 Character, SSPB Band Control
Range: 0 = low band, 1 = high band
- dd = 2 Characters, SSPB Gain
Range: -8 to -0 or ++ (dB) ++ = Full On
- T = 1 Character, Tx enable
Range: 0 = disable, 1 = enable
- R = 1 Character, Rx enable
Range: 0 = disable, 1 = enable
- ee = 2 Character, SSPB current detection
Range: 00 to 30 (0 – 3.0 A)

4.4.4 Set Cable Slope Factor

{aaFx}

Where x = numeric character

Range: 0 to 5 (dB/100 MHz)

4.4.5 Query Cable Slope Factor

{aaF}

Returns: {F = x}

Where: x = numeric character

Range: 0 to 5 (dB/100 MHz)

4.4.6 Serial Number Read

{aaID}

Returns: {aaIDyymmddxxxx}

Where :

- yy = last 2 digits of year
- mm = month
- dd = day
- xxxx = 4 digit sequence number

4.4.7 Query Software Version

{aaV}

Returns: {aaVr.ii}

Where:

- r = Software Release number (1 – 9)
- ii = Software Issue number (00 – 99)

4.4.8 Query Card Type

{aaZ}

Returns: {aaZx}

Where:

- x = L-Band Card Type (1 – 8)
- 1 = 70 MHz IF, Low Band Unit (LBU)
- 2 = 140 MHz IF, LBU
- 3 = 70 MHz IF, High Band Unit (HBU)
- 4 = 140 MHz IF, HBU
- 5 = 70 MHz IF, LBU with Inv. Tx Spectrum
- 6 = 140 MHz IF, LBU with Inv. Tx Spectrum
- 7 = 70 MHz IF, HBU with Inv. Tx Spectrum
- 8 = 140 MHz IF, HBU with Inv. Tx Spectrum

4.4.9 Satellite Memory Status Query

{aaSSx}

Where x = Number from 0 to 9 (memory position)

Returns: {aaSSxbbbbccccdddeee} {yyyyyyyyyyy}

Where:

- x = The number of the Satellite Memory location
- bbbb = Frequency for the Transmitter
- cccc = Frequency for the Receiver
- ddd = Gain for the Transmitter
- eee = Gain for the Receiver
- y = ASCII character making up to a 10 character name for the satellite

Appendix A	Manual Revision History
-------------------	--------------------------------

The following Technical Manual revision history applies.

<u>Release Date</u>	<u>ECO</u>	<u>REV. Level</u>	<u>Page</u>
August 15, 2001		0	
March 5, 2002		1	
April 11, 2002	02-14664	A	ALL
June 03, 2002	02-14746	B	ALL
October 17, 2002		C	ALL
August 14, 2003		D	ALL

Became CG-1294:

August 25, 2003	4756	-	ALL
-----------------	------	---	-----

Appendix B	GUI Software Revision History
-------------------	--------------------------------------

The following GUI Software revision history applies.

<u>Release Date</u>	<u>ECO</u>	<u>REV. Level</u>
August 15, 2001		1.1
March 5, 2002		1.2

Appendix C	CCA Software Revision History
-------------------	--------------------------------------

The following LT-3000 CCA revision history applies.

<u>Release Date</u>	<u>ECO</u>	<u>REV. Level</u>
August 15, 2001		4.08
June 15, 2002		5.01

Appendix D	Display Panel Software Revision History
-------------------	--

The following LT-3000 Display Panel Software revision history applies.

<u>Release Date</u>	<u>ECO</u>	<u>REV. Level</u>
May 28, 2002		2.03