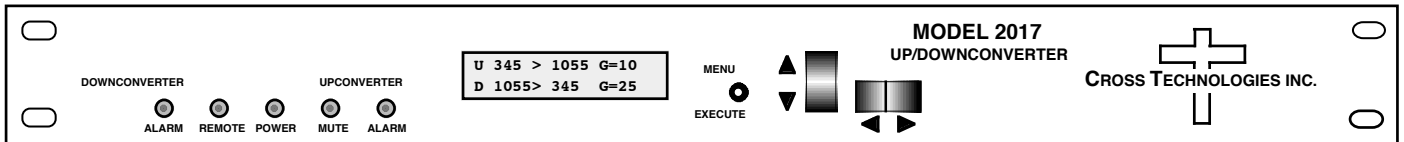


Instruction Manual

Model 2017-1111-345 Up/Downconverter

March 2021, Rev. A



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INSTRUCTION MANUAL

MODEL 2017-1111-345 Up/Downconverter

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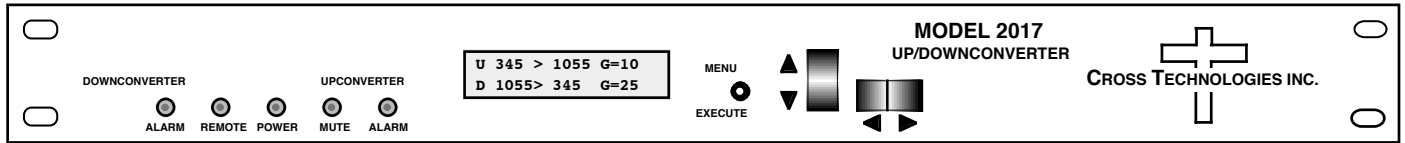
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MODEL 2017-1111-345 Up/Downconverter

1.0 General

1.1 Equipment Description

The 2017-1111-345 L-band Up/Downconverter converts 345 ± 105 MHz to 0.95-1.16 GHz (Up) and 0.95-1.16 GHz to 345 ± 105 MHz (Down). Multi-function switches select the gain (upconverter 0 to +30 dB; downconverter 0 to +30 dB), and other parameters. Front panel LEDs provide indication of DC power (green), PLL alarm (red), remote operation (yellow), and Upconverter mute (yellow). Remote operation allows selection of gain and external 10 MHz reference (option E). Gain settings appear on the LCD display. Connectors are BNC female for the IF, RF (SMA and N optional) and optional external reference input and output (option E). A high stability (± 0.01 ppm) option (H) is also available. It is powered by a $100\text{-}240 \pm 10\%$ VAC power supply and housed in a 1.75" X 19" X 16" 1RU chassis.



FRONT PANEL

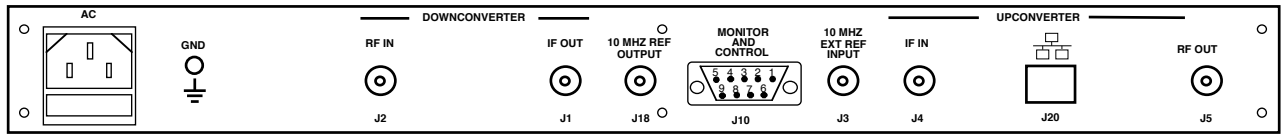
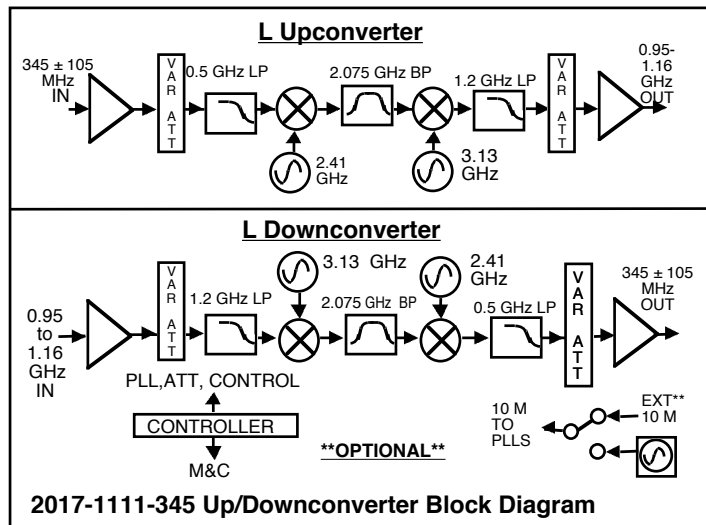


Figure 1.1 Model 2017-1111-345 Front and Rear Panels



REAR PANEL

Figure 1.2 Model 2017-1111-345 Up/Downconverter Block Diagram

1.2 Technical Characteristics

TABLE 1.0 2017-1111-345 Up/Downconverter Specifications*

-----UPCONVERTER-----

Input Characteristics (UP, S)

Impedance/Return Loss	50 Ω /14 dB
Frequency	345 ± 105 MHz
Noise Figure, Max.	20 dB @ Max. Gain
Input Level Range	-40 to -10 dBm

Output Characteristics

Impedance/Return Loss	50Ω/14 dB
Frequency (GHz)	0.95 to 1.16 GHz
Output level Range	-20 to 0 dBm
1 dB comp, Max Gain	+5 dBm
Mute @ 0 dBm out	>60 dB

Channel Characteristics

Gain, Max. at Fc	+30 ±3 dB
Gain, Range 1±1 dB Steps	+30 to 0 dB
Image Rejection	N/A
Spurious, Inband, sig. rel.	<-50 dBC, 0dBm
Spurious, Inband, sig. ind.	<-50 dBC, Gmax
Spurious Out of Band	<-50 dBC, Gmax
Intermod-2 carriers	<-50 dBC, Gmax
Frequency Resp.band	±1.5 dB
Frequency Resp.36,40MHz	±0.5 dB, ±1.0 dB
Frequency Sense	Non-inverting

-----DOWNCONVERTER-----

Input Characteristics (DOWN, L)

Impedance/Return Loss	50 Ω /14 dB
Frequency	0.95 - 1.16 GHz
Noise Figure (max.)	15 dB @ max. gain
Input Level Range	-40 to -10 dBm

Output Characteristics

Impedance/Return Loss	50Ω/14 dB
Frequency (GHz)	345 ± 105 MHz
Output level Range	-20 to 0 dBm
1 dB comp, Max Gain	+5 dBm
Mute @ 0 dBm out	N/A

Channel Characteristics

Gain, Max. at Fc	+30 ±3 dB
Gain, Range 1±1 dB Steps	+30 to 0 dB
Image Rejection	> 50 dB, min
Spurious, Inband, sig. rel.	<-50 dBC, 0dBm
Spurious, Inband, sig. ind.	<-50 dBC, Gmax
Spurious Out of Band	<-50 dBC, Gmax
Intermod-2 carriers	<-50 dBC, Gmax
Frequency Resp.band	±1.5 dB
Frequency Resp.36,40MHz	±0.5 dB, ±1.0 dB
Frequency Sense	Non-inverting

-----UP AND DOWNCONVERTER-----

Channel Characteristics

Gain, Max. at Fc	+30 ± 3
Gain, range, 1±1 dB steps	+30 to 0 dB
Image Rejection	NA
Spurious Response	<-50 dBC in band
Group Delay (max.)	0.01 ns/MHz ² parabolic; 0.03 ns/MHz linear; 1 ns ripple

Synthesizer Characteristics

Frequency Accuracy	± 1.0 ppm max. over temp (±0.01ppm, option -H) internal ref.
Frequency Step	None, Fixed Tuned
Phase Noise (dBc/Hz)	< -70 @ 100Hz, < -70 @ 1kHz; < -80 @ 10kHz; < -95 @ 100kHz; < -110 @ 1 MHz
10 MHz Level (In or Out)	+3 dBm ± 3 dB, 75 ohms (option -E)

Controls, Indicators

Frequency Selection	Fixed
Gain Selection	direct readout LCD; manual or remote selection
Power	Green LED
Down/Up Alarm	Red LED
Up Mute	Yellow LED
Remote	Yellow LED; RS232C, 9600 baud (RS485, option -Q)

Other

RF Connectors	Type F (female) (see Table 2.2 for connector options)
IF Connectors	BNC (female) (see Table 2.2 for connector options)
10 MHz Connectors	BNC (female) (option -E)
Alarm/Remote Connector	DB9 (female) - NO or NC contact closure on Alarm
Size	19 inch, 1RU standard chassis 1.75”H X 16.0”D
Power	100-240 ±10% VAC, 47-63 Hz, 45 watts max.

Available Options

-E	External 10 MHz reference with RF insertion
-H	High Stability (±0.01ppm) internal reference

Remote M&C Interfaces

-L	LNB Voltage, +24VDC, 0.5 amps
-V	SSPB Voltage, +24VDC, 2.5 amps
-Q	RS485 Remote Interface
-T	Temperature Sensor
-W8	Ethernet M&C Remote Interface
-W18	Ethernet M&C Remote Interface with SNMP
-W28	Ethernet with TCP/IP, Telnet®

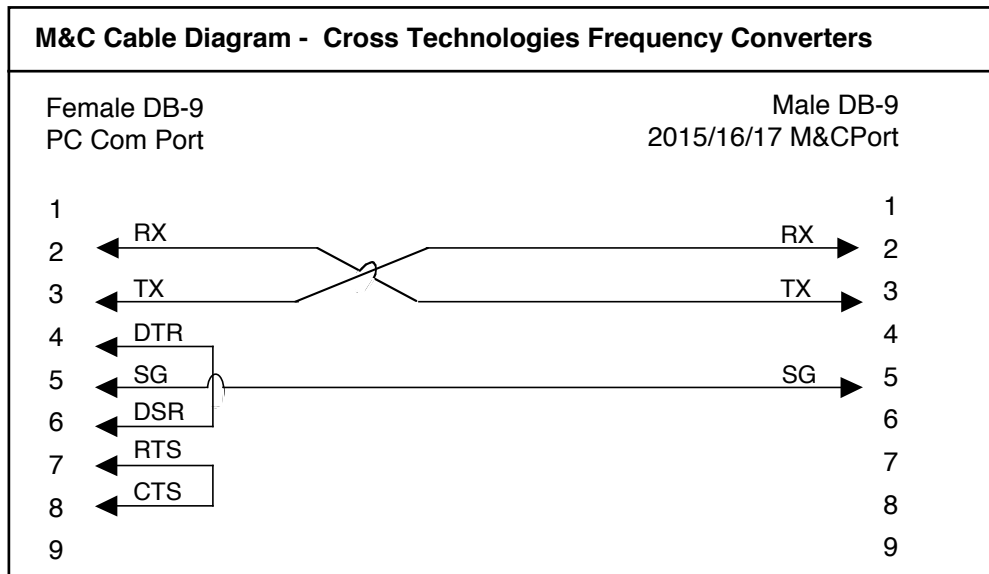
Connectors/Impedance See Table 2.2

Contact Cross for other options.

1.3 Monitor and Control Interface

A) Remote serial interface

Protocol: RS-232C, 9600 baud rate, no parity, 8 data bits, 1 start bit, and 1 stop bit.
(RS-232C, RS-422, or **RS-485 - option -Q**)



Connector: Rear panel, DB-9 male

J10 Pinouts (RS-232C/422/485)	
Pin	Function
1	Rx-
2	Rx+ (RS-232C)
3	Tx+ (RS-232C)
4	Tx-
5	GND
6	Alarm Relay: Common
7	Alarm Relay: Normally Open
8	Not Used
9	Alarm Relay: Normally Closed

B) Status Requests

Table 1.1 lists the status requests for the 2017-1111-345 and briefly describes them.

* PLEASE NOTE: The two character {aa}(00-31) prefix, in the table below, should be used ONLY when RS-485, (OPTION-Q), is selected.

Table 1.1 2017-1111-345 Status Requests		
Set Upconverter Input Level	{aaClxxx}	where:
		aa = unit address, range = 00 to 31, only used if interface is RS485,
		otherwise omit
		1 = command code
		xxx = input level in dBm, range = 40 to 10 (minus sign is optional) in 1 dBm steps.
		example: {Cl25}, or {Cl-25}
		Will set the upconverter's input level to -25 dBm.
		The unit will reply with the '>' character if the command is successfully processed.
Set Upconverter Gain	{aaC3xx}	where:
		aa = unit address, range = 00 to 31, only used if interface is RS485, otherwise omit
		3 = command code
		xx = gain in dB, range = 0 to 30 in 1 dBm steps
		example: {C320}
		Will set the upconverter's gain to 20 dB.
		The unit will reply with the '>' character if the command is successfully processed.
Set Downconverter Gain	{aaC4xx}	where:
		aa = unit address, range = 00 to 31, only used if interface is RS485, otherwise omit
		4 = command code
		xx = gain in dB, range = 0 to 30 in 1 dBm steps
		example: {C425}
		Will set the downconverter's gain to 25 dB.
		The unit will reply with the '>' character if the command is successfully processed.
Set Upconverter Mute	{aaCMx}	where:
		aa = unit address, range = 00 to 31, only used if interface is RS485, otherwise omit
		M = command code
		x = 1 to mute the output, x = 0 to unmute the output
		example: {CM1}
		Will mute the upconverter's output carrier.
		The unit will reply with the '>' character if the command is successfully processed.
Set Reference Mode (Options E, xE, or E1 only)	{aaCEx}	where:
		aa = unit address, range = 00 to 31, only used if interface is RS485, otherwise omit
		E = command code
		x = 0 to set to internal reference, x = 1 to set to external reference
		x = 2 to set to auto reference (option xE or E1 only)
		example: {CE1}
		Will set the reference mode to External.
		The unit will reply with the '>' character if the command is successfully processed.

C) Commands

Table 1.2 lists the commands for the 2017-1111-345 and briefly describes them. After a command is sent the 2017-1111-345 sends a return “>” indicating the command has been received and executed.

General Command Format - The general command format is {aaCND...}, where:

- { = start byte
- aa = address (RS-485 only **option -Q**)
- C = 1 character, either C (command) or S (status)
- N = 1 character command or status request
- D = 1 character or more of data (depends on command)
- } = stop byte

* PLEASE NOTE: The two character {aa}(00-31) prefix, in the table below, should be used ONLY when RS-485, (OPTION-Q), is selected.

Table 1.2 2017-1111-345 Status Requests, Inquiries		
Set Upconverter Reference Insertion	{aaC5x}	where:
		aa = unit address, range = 00 to 31, only used if interface is RS485, otherwise omit
		5 = command code
		x = 0 to disable 10 MHz insertion on the upconverter's RF output connector.
		x = 1 to enable 10 MHz insertion on the upconverter's RF output connector.
		example: {C51}
		Will enable the selected 10 MHz reference signal on the upconverter's RF output connector
		The unit will reply with the '>' character if the command is successfully processed.
Set Downconverter Reference Insertion (Option E only)	{aaC6x}	where:
		aa = unit address, range = 00 to 31, only used if interface is RS485, otherwise omit
		5 = command code
		x = 0 to disable 10 MHz insertion on the upconverter's RF output connector.
		x = 1 to enable 10 MHz insertion on the upconverter's RF output connector.
		example: {C51}
		Will enable the selected 10 MHz reference signal on the upconverter's RF output connector
		The unit will reply with the '>' character if the command is successfully processed.
Set Remote Off	{aaCR0}	where:
		aa = unit address, range = 00 to 31, only used if interface is RS485, otherwise omit
		R = command code
		0, ascii number zero.
		example: {CR0}
		Will disable the unit's serial M&C port.
		The unit will reply with the '>' character if the command is successfully processed.
		(Note: this command only affects the serial M&C port, the ethernet port is always on and will not be affected)
Set Remote On	#	Just the ascii pound sign, (0x23)
		Will enable the unit's serial M&C port.
		The unit will reply with the '>' character if the command is successfully processed.
		(Note: this command only affects the serial M&C port, the ethernet port is always on and w

Table 1.2 2017-1111-345 Status Requests, Inquiries

Converter Status	{aaS1}	returns: {aaS1bbbccdefgh}
		where:
		aa = unit address, range = 00 to 31, only used if interface is RS485, otherwise omit
		1 = command code
		bbb = upconverter gain in dB
		cc = downconverter gain in dB
		dd = upconverter input level in dBm, minus sign omitted i.e. 25 = -25 dBm
		e = upconverter alarm status, 0 = no alarm, 1 = alarm
		f = downconverter alarm status, 0 = no alarm, 1 = alarm
		g = summary alarm status, 0 = no alarm, 1 = alarm
		The unit will append the '>' character if the command is successfully processed.
External Reference Mode Status	{aaSE}	returns: {aaSEb}
<i>(Option E only)</i>		where:
		aa = unit address, range = 00 to 31, only used if interface is RS485, otherwise omit
		E = command code
		b = 0 if internal reference mode is selected, 1 if external reference mode is selected
		b = 2 if auto reference mode is selected
External Reference Status	{aaS2}	returns: {aaS2bcd}
<i>(Option E only)</i>		where:
		aa = unit address, range = 00 to 31, only used if interface is RS485, otherwise omit
		2 = command code
		b = 0 if internal reference is selected, 1 if external reference is selected
		c = 0 if upconverter 10 MHz insertion is off, 1 if upconverter 10 MHz insertion is on
		d = 0 if downconverter 10 MHz insertion is off, 1 if downconverter 10 MHz insertion is on
		The unit will append the '>' character if the command is successfully processed.

2.0 Installation

2.1 Mechanical

The 2017-1111-345 consists of one RF/Controller PCB housed in a 1 RU (1 3/4 inch high) by 16 inch deep chassis.

A switching, ± 12 , $+5$, $+24$ VDC power supply provides power for the assemblies. The 2017-1111-345 can be secured to a rack using the 4 holes on the front panel. Figure 2.0 shows how the 2017-1111-345 is assembled.

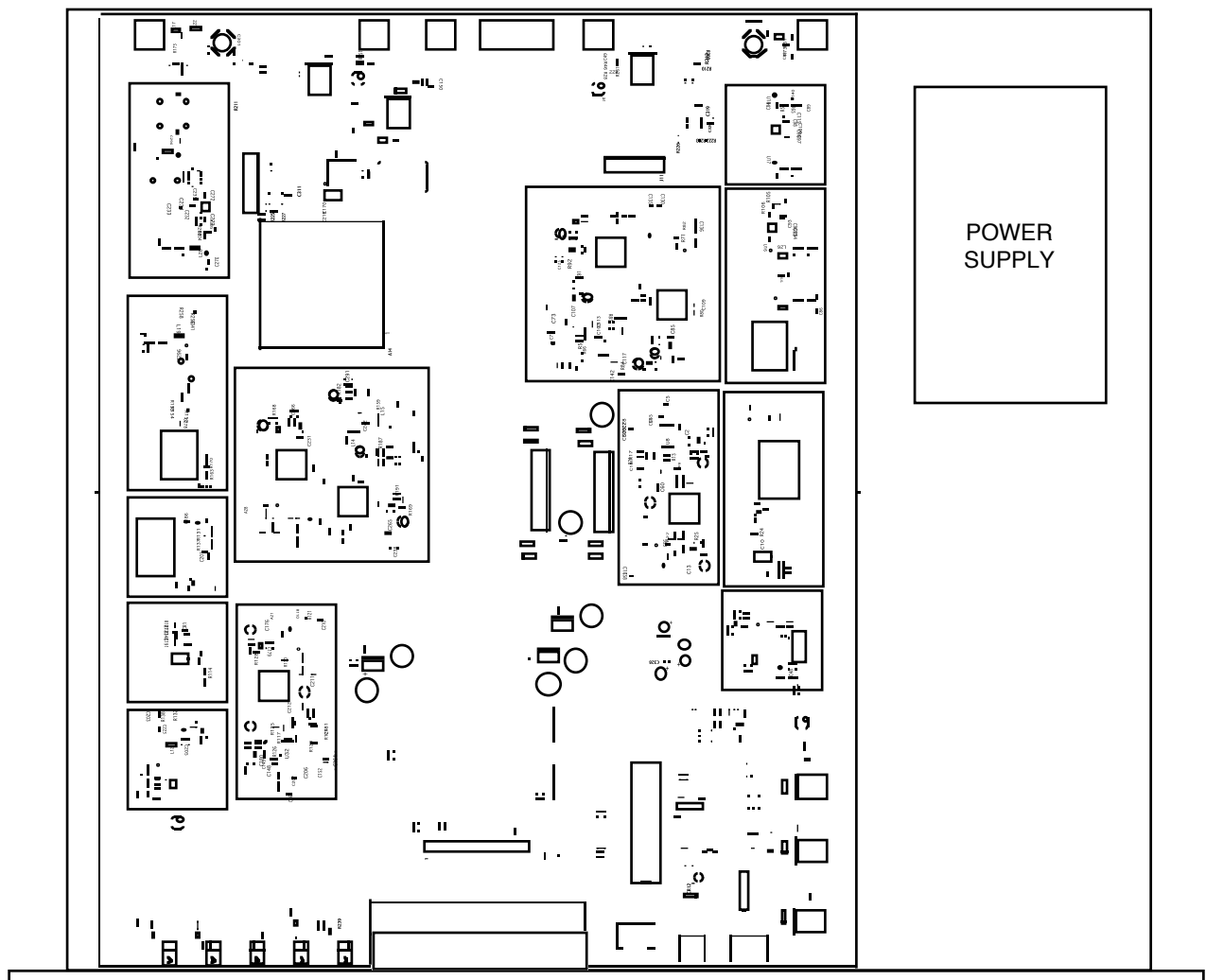


Figure 2.0 Model 2017-1111-345 Mechanical Assembly

2.2 Rear Panel Input/Output Signals and Control - Figure 2.1 shows the input and output connectors on the rear panel.

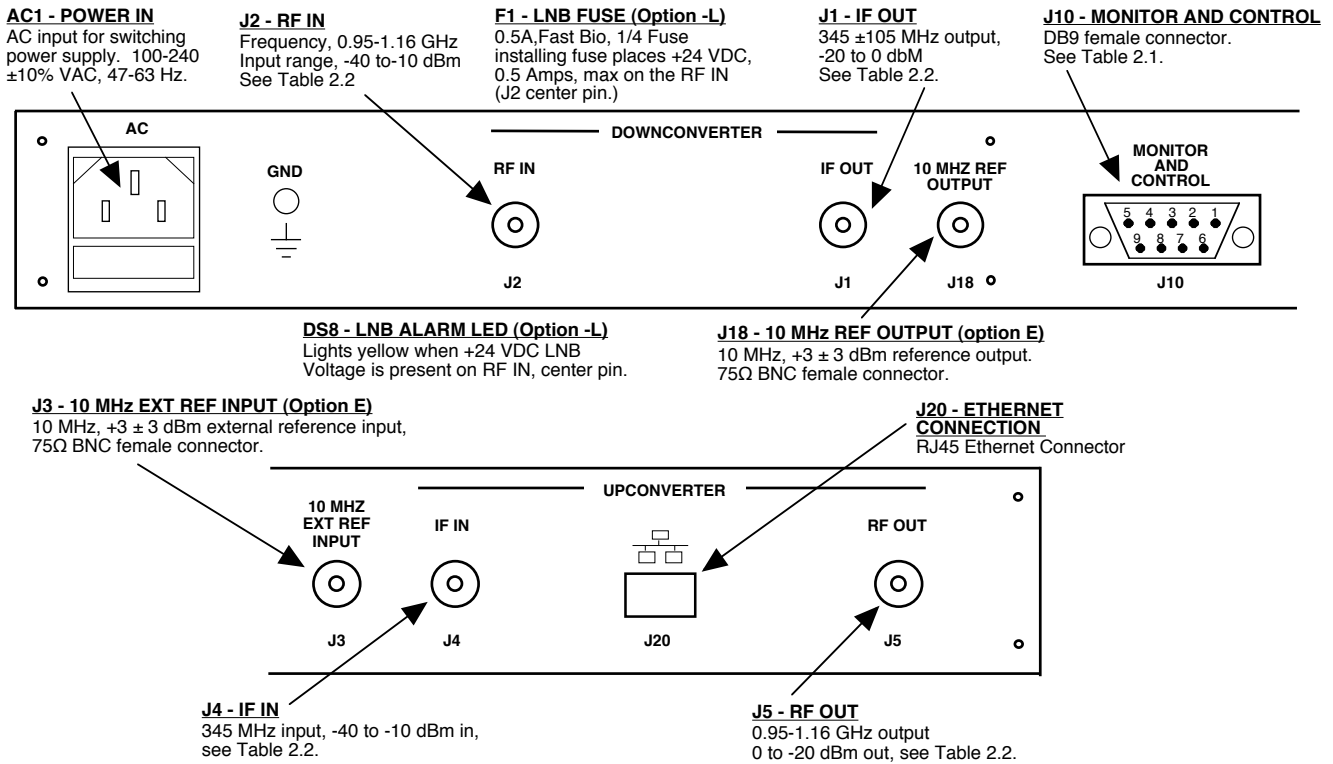


Figure 2.1 Model 2017-1111-345 Rear Panel I/O's

TABLE 2.1 J10 Pinouts (RS-232C/422/485*)	
Pin	Function
1	Rx-
2	Rx+ (RS-232C)
3	Tx+ (RS-232C)
4	Tx-
5	GND
6	Alarm Relay: Common
7	Alarm Relay: Normally Open
8	Not Used
9	Alarm Relay: Normally Closed

***Remote Serial Interface - Interface: DB-9 Male**
Protocol: RS-232C (RS-232C/422/485 **option -Q**), 9600 baud rate, no parity, 8 data bits, 1 start bit, 1 stop bit.

TABLE 2.2 IF/RF Connector Options		
Option	IF	RF
STD	BNC, 75 Ω	Type F, 75 Ω
-B	BNC, 75 Ω	BNC, 75 Ω
-C	BNC, 75 Ω	BNC, 50 Ω
-D	BNC, 50 Ω	BNC, 50 Ω
-NN	N, 50 Ω	N, 50 Ω
-N	BNC, 75 Ω	Type N, 50 Ω

2.3 Front Panel Controls and Indicators - The following are the front panel controls and indicators.

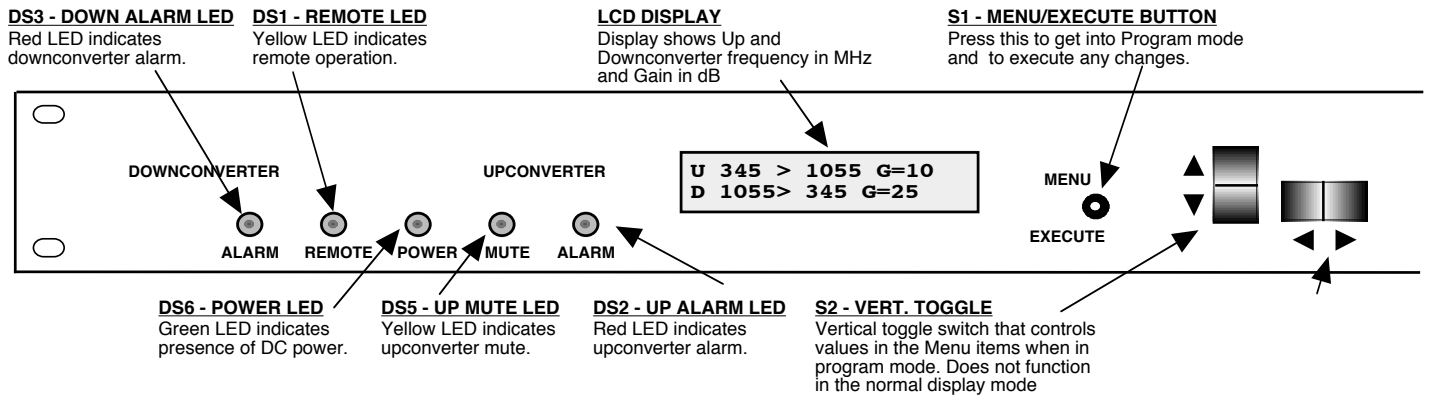


Figure 2.2 Model 2017-1111-345 Front Panel Controls and Indicators

2.4 Installation / Operation

2.4.1 Installing and Operating the 2017-1111-345, Upconverter Section

- 1.) Connect a -40 dBm to -10 dBm, 345 MHz \pm 105 MHz signal to IF In, J4 (Figure 2.1).
- 2.) Connect the RF OUT, J5, to the external equipment.
- 3.) Connect 100-240 \pm 10% VAC, 47 - 63 Hz to AC on the back panel.
- 4.) The output frequency fixed at 1055 MHz \pm 105 MHz.
- 5.) Set the input level (See Section 2.5 Menu Settings).
- 6.) Set the gain (See Section 2.5 Menu Settings).
- 7.) (option -V) To power the SSPB (+24 VDC, 2.5 amps max.) from the 2017-1111-345 install a 2.5 amp 1/4" fuse in F2.

CAUTION!!! INSTALLING A FUSE IN F2 PUTS +24 VDC, 2.5 AMP POWER ON THE CENTER PIN AND MAY DAMAGE EQUIPMENT IF IMPROPERLY CONNECTED TO EQUIPMENT THAT CANNOT HANDLE THIS VOLTAGE OR HAS A DC PATH TO GROUND.

- 8.) Be sure DS6 (green, DC Power) is on and DS2 (red, Alarm) is off (Figure 2.2).

2.4.2 Installing and Operating the 2017-1111-345, Downconverter Section

- 1.) Connect a -40 dBm to -10 dBm 1055 \pm 105 MHz signal to RF In, J2 (Figure 2.1).
- 2.) Connect the IF OUT, J1, to the external equipment.
- 3.) Connect 100-240 \pm 10% VAC, 47 - 63 Hz to AC on the back panel.
- 4.) The output frequency fixed at 345 MHz \pm 105 MHz.
5. Set the gain to get the desired output level.
- 6.) (option -L) To power the LNB (+24 VDC, 0.5 amps, max.) from the 2017-1111-345 install a 1 amp 1/4" fuse in F1.

CAUTION!!! INSTALLING A FUSE IN F1 PUTS +24 VDC, 0.5 AMP POWER ON THE CENTER PIN AND MAY DAMAGE EQUIPMENT IF IMPROPERLY CONNECTED TO EQUIPMENT THAT CANNOT HANDLE THIS VOLTAGE OR HAS A DC PATH TO GROUND.

- 7.) Be sure DS6 (green, DC Power) is on and DS3 (red, Alarm) is off (Figure 2.2).
- 8.) **AC Fuse** - The fuse is a 5 mm X 20 mm, 2 amp slow blow (Type T) and is inserted in the far slot in the drawer below the AC input as shown in Figure 2.3. There is a spare fuse in the near slot. If a fuse continues to open, the power supply is most likely defective.

2.4.3 External 10 MHz Reference Operation

The External Reference Option is required if the unit is to synch to a 10 MHz reference from an *external* source. The unit will still have an internal 10 MHz reference as a ‘back-up’ should the external reference be removed or fail. Described below are the two (2), 10 MHz External Reference Options, Option E & E1.

Option E

Internal Reference Mode

When the internal reference mode is selected, the unit's internal 10 MHz reference will become the ‘primary’ source and the unit’s synthesizers will lock to this internal 10 MHz reference. The unit will ignore any external 10 MHz signal present on the external reference input (J3). The unit will also buffer the internal 10 MHz signal and provide it on the Reference Out connector (J18) at +3 dBm, +/- 3 dB.

External Reference Mode

When the external reference mode is selected, the external 10 MHz reference (received on J3) will become the ‘primary’ source and the unit’s synthesizers will lock to this external 10 MHz reference. The unit *must* have a 10 MHz signal connected to the external reference input (J3) on the rear panel. The external 10 MHz signal must be +3 dBm, +/- 3 dB. The unit will also buffer the external 10 MHz signal and provide it on the Reference Out connector (J18) at +3 dBm, +/- 3 dB.

NOTE: There is no “auto-detect” capability in Option E. [See Option E1 below if this capability is required.] If the External Reference Mode is selected and the external reference fails or is removed, the unit will ALARM, but it will NOT automatically switch to the internal reference. The user will be required to manually select Internal Reference Mode (via the front panel LCD or Remote M&C) for the *internal* 10 MHz reference to become the ‘primary’ source for the unit.

Once the external 10 MHz reference is restored (on J3), the user must again manually (via the front panel LCD or Remote M&C) reselect External Reference Mode for the *external* 10 MHz reference to become the ‘primary’ source.

L-band units with option E also have the ability to ‘insert’ the (internal or external) 10 MHz signal that has been buffered (as described above) on the center pin of the L-band (RF) connector(s).

Option E1

Units with option E1 operate as described above but also have an Auto mode. When in auto mode the unit will detect and select the external 10 MHz signal if it is present and at least +3 dBm. If the external 10 MHz signal falls below 1 dBm (+/- 1 dB) the unit will automatically switch to the internal 10 MHz reference. The reference out connector (J18) provides a buffered rendition of the selected 10 MHz signal at +3 dBm, +/- 3 dB. The LCD display will show either -E or -I in the lower left corner of the REF MODE menu to indicate the currently selected reference when Auto mode is selected.

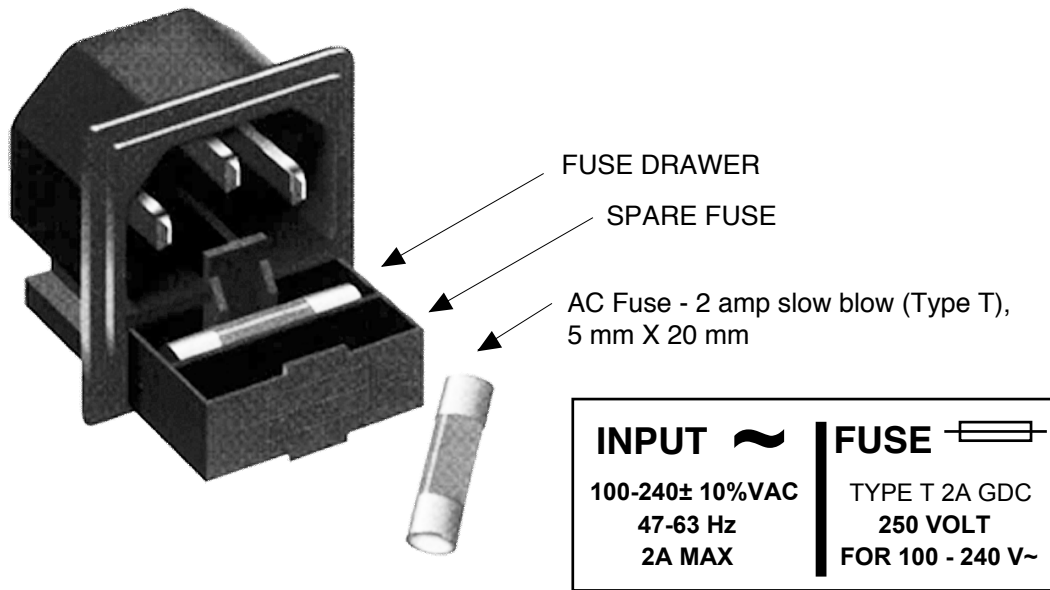


Figure 2.3 Fuse Location and Spare Fuse

2.5 Menu Settings

2.5.1 Functions - This section describes operation of the front panel controls. There are three operator switches, the LCD display and alarm indicator LEDs. All functions for the equipment are controlled by these components. The functions are (see Figure 2.2):

Power Up

Normal Display

- Menu 1** Up Input Lvl (Set from -40 to -10)
- Menu 2** Up Gain (0 to +30)
- Menu 3** Down Gain (set 0 to +30 for -40 to -10 dBm out range)
- Menu 4** Up Mute
- Menu 5** Set Unit to Remote Operation
- Menu 6** Set Remote Interface
- Menu 7** Set RS-485 address (option -Q)
- Menu 8** Select External 10 MHz Reference (option -E) (option -E1)
- Menu 9** Upconverter Reference Out (option -E)
- Menu 10** Downconverter Reference Out (option -E)
- Menu 11** View PCB Temperature (option -T)
- Menu 12** View LNB and/or SSPB Current (options -L and/or -V)

Save Menu When go to end

Alarm indications appear on the LEDs (see figure 2.2).

All program changes must start with the operation of the Menu/Execute switch and must also end with the operation of the Menu/Execute switch verified by the “Save Settings?” Menu. If this sequence is not followed, none of the changes will take effect. If programming is initiated and no operator action takes place for approximately 30 seconds (before the final press of the Menu/Execute switch) the display will revert to its previous status and you will need to start over.

2.5.2 Power-On Settings

NOTE: THE LAST STATUS OF A UNIT IS RETAINED EVEN WHEN POWER IS REMOVED. WHEN POWER IS RESTORED, THE UNIT WILL RETURN TO IT'S PREVIOUS SETTINGS.

When power is first applied, the LCD display goes through three steps.

1. The LCD goes black to show all segments are functioning.
2. The model number with options software version will be displayed.

2017-111-345EW8 4.00

3. The present frequency and gain of the up and downconverter is shown.

U F=345 G=+10.0
D F=1055 G=+20.0

The unit is now operational and ready for any changes the operator may desire.

2.5.3 Control Switches

1. Menu/Execute - Any change to the programming of the unit must be initiated by pressing the Menu/Execute switch and completed by pressing the Menu/Execute switch.
2. Horizontal Switch - This switch is mounted so its movement is horizontal and moves the cursor left or right.
3. Vertical Switch - This switch is mounted so its movement is vertical and has two functions:
 - a. During frequency, gain, input level changes, the vertical movement will raise or lower the number in the direction of the arrows.
 - b. For other functions such Mute on/off, the vertical switch will alternately turn the function on or off regardless of the direction operated.

2.5.5 Gain Changes

When you get to this menu note that the gain changes will be made as you make them but if you do not wish to save the changes you have made, scroll to “**R**” and push the menu/Execute switch and select “**NO**” in the “**SAVE SETTINGS?**” window or **do not press the Menu/Execute switch**; simply do nothing for approximately 30 seconds, and the system will return to the normal operating mode.

2.5.5.1 Upconverter Gain

To set the upconverter gain, first push the Menu/Execute switch to get to the gain setting:

Operate the Menu/Execute switch until you get to the menu item you want to change. See Figure 2.4 for the sequence of menu options.

The following display is for changing the upconverter input level. This is an important setting to optimize spurious and should be made as accurately as possible:

UP INLVL = -20	R
----------------	---

Pressing the Up/Down switch to change the level in 1 dB steps and then push the Menu/Execute switch to get to the Gain setting:

UP G = +20	R
------------	---

By using the horizontal rocker switch the cursor can be moved left or right .

Press the Up/Down switch until you have the desired gain.

NOTE: THE GAIN WILL CHANGE AS YOU ADJUST THE NUMBERS. HOWEVER, THE VALUE WILL NOT BE STORED UNTIL YOU INDICATE YES IN THE SAVE SETTINGS WINDOW. DO NOT SET A GAIN THAT WOULD EXCEED A 0 dBm OUTPUT LEVEL.

When the display indicates the value desired you can push the Menu/Execute switch to the next item OR you can scroll to “R”, push the Menu/Execute switch to get to:

SAVE SETTINGS?	Y N
----------------	-----

Selecting Y will save the new settings. Selecting N will revert to the previous settings.

Pushing the Menu/Execute switch then takes you to the :

U F=345	G=+20.0
D F=1055	G=+20.0

Figure 2.4 shows all the menu items and how to make changes.

2.5.5.2 Downconverter Gain

To set the downconverter gain, first push the Menu/Execute switch to get to the gain setting:

Operate the Menu/Execute switch until you get to the menu item you want to change. See Figure 2.4 for the sequence of menu options.

The following display is for changing the downconverter gain. Set the gain to provide an appropriate output level.

DN G = + <u>3</u> 0	R
---------------------	---

Press the Up/Down switch to change the level in 1 or 10 dB steps. By using the horizontal rocker switch the cursor can be moved left or right. Pressing the Up/Down switch down will toggle the display digit selected until you have the desired gain.

NOTE: THE GAIN WILL CHANGE AS YOU ADJUST THE NUMBERS. HOWEVER, THE VALUE WILL NOT BE STORED UNTIL YOU INDICATE YES IN THE SAVE SETTINGS WINDOW.

When the display indicates the value desired you can push the Menu/Execute switch to the next item OR you can scroll to “R”, push the Menu/Execute switch to get to:

SAVE SETTINGS?	<u>Y</u> N
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Selecting **Y** will save the new settings. Selecting **N** will revert to the previous settings. Pushing the Menu/Execute switch then takes you to the :

U F=345	G=+20.0
D F=1055	G=+30.0

Figure 2.4 shows all the menu items and how to make changes.

2.5.5 Alarm Indications

An alarm condition will occur if any local oscillator phase lock loop (PLL) comes out of lock.

	ON POWER UP			
Power Up	2017-1111345E1W8 4.00			
	NORMAL DISPLAY			
Normal Display	U 345 > 1055 G = 10 D 1055 > 345 G = 25			PUSH
	PUSHING MENU/EXECUTE SEQUENCE			
Menu 1 Up Input Level (Set from -40 to -10).	UP INLVL = -20	SCROLL ⇐ SCROLL ⇨		PUSH BUTTON
Menu 2 Up Gain (0 to +30).	UP G = + 10	SCROLL ⇐ SCROLL ⇨		PUSH BUTTON
Menu 3 Down Gain (set 0 to +30 for -40 to -10 dBm. out range).	UP G = + 20	SCROLL ⇐ SCROLL ⇨		PUSH BUTTON
Menu 4 Up Mute	UP MUTE OFF R	SCROLL ⇐ SCROLL ⇨		PUSH BUTTON
Menu 5 Set Unit to Remote Operation	REMOTE OFF R	SCROLL ⇐ SCROLL ⇨		PUSH BUTTON
Menu 6 Set Remote Interface	INTERFACE RS232 R	SCROLL ⇐ SCROLL ⇨		PUSH BUTTON
Menu 7 Set RS-485 Address (option -Q)	ADDRESS = 0Q R	SCROLL ⇐ SCROLL ⇨		PUSH BUTTON
Menu 8 Select External 10 MHz Reference (option -E)	REF MODE INT R	SCROLL ⇐ SCROLL ⇨		PUSH BUTTON
Menu 9 Select Upconverter Reference Out (option -E)	UP REF OUT OFF R	SCROLL ⇐ SCROLL ⇨		PUSH BUTTON
Menu 10 Select Downconverter Reference Out (option -E)	DN REF OUT OFF R	SCROLL ⇐ SCROLL ⇨		PUSH BUTTON
Menu 11 View PCB Temperature (option -T)	TEMP = 35 DEG R	SCROLL ⇐		PUSH BUTTON
Menu 12 View LNB current and SSPB current (options -L, -V)	LNB DC = 0.32 A R SSB DC = 1.86 A	SCROLL ⇐		PUSH BUTTON
Save Settings? At the end or when "R" is selected from any of the above menus	SAVE SETTINGS? Y N	SCROLL ⇐		PUSH BUTTON

Figure 2.4 Menu Display and Sequence

3.0 Environmental Use Information

- A. **Rack-Mounting** - To mount this equipment in a rack, please refer to the installation instructions located in the user manual furnished by the manufacturer of your equipment rack.
- B. **Mechanical loading** - Mounting of equipment in a rack should be such that a hazardous condition does not exist due to uneven weight distribution.
- C. **Elevated operating ambient temperature** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack may be greater than room ambient temperature. Therefore, consideration should be given to Tmra (Maximum Recommended Ambient Temperature).
- D. **Reduced air flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Additional space between unit may be required.
- E. **Circuit Overloading** - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits could have on over current protection and supply wiring. Appropriate consideration of equipment name plate rating should be used, when addressing this concern.
- F. **Reliable Earthing** - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connection to the Branch (use of power strips).
- G. **Top Cover** - There are no serviceable parts inside the product so, the Top Cover should not be removed. If the Top Cover is removed the ground strap and associated screw **MUST BE REINSTALLED** prior to Top Cover screw replacement. **FAILURE TO DO** this may cause **INGRESS** and/or **EGRESS** emission problems.



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Printed in USA