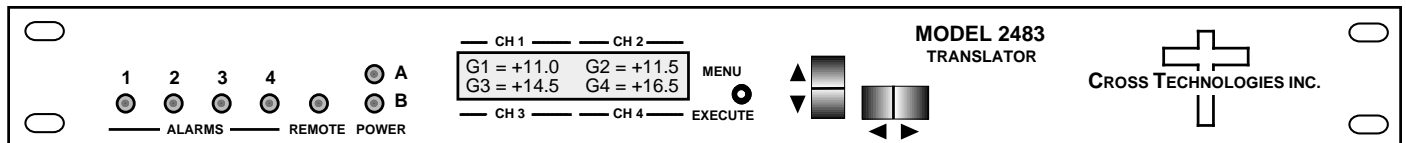


Instruction Manual

Model 2483-40311 Translator

2483-40311 Four Channel • 2483-30311 Three Channel • 2483-20311 Two Channel • 2483-10311 One Channel

August 2018, Rev. 0



(Shown, Model 2483-40311 - Four Channel, Front Panel)

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INSTRUCTION MANUAL

Model 2483-40311 Translator

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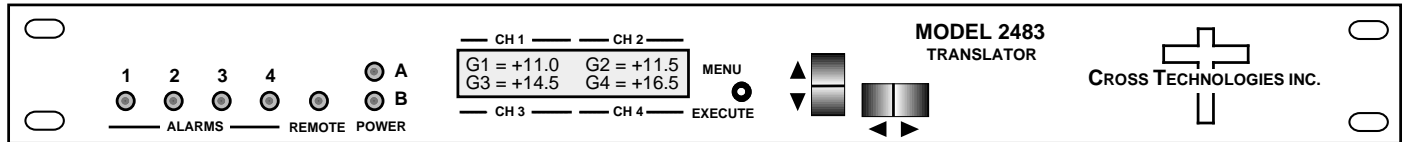
2483-40311 Four Channel • 2483-30311 Three Channel • 2483-20311 Two Channel • 2483-10311 One Channel

1.0 General

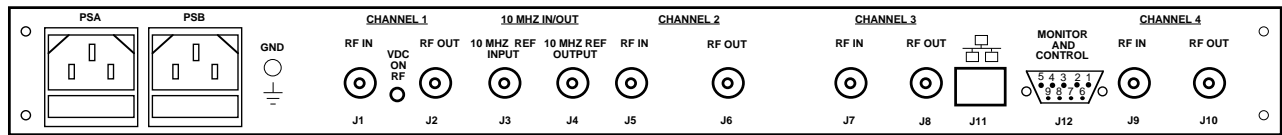
1.1 Equipment Description

The 2483-40311 Translator has four individual channels, each one converts 220 to 380 MHz (300 ± 80 MHz) to 970 to 1130 MHz with low group delay and flat frequency response. Synthesized local oscillators (LO) provide frequency selection. Push button switches select the gain and other parameters. Front panel LEDs provide indication of DC power, PLL alarm and Remote operation. Gain is adjustable manually over a 0 to +20 dB range in 0.5 ± 0.5 dB steps. The gain of each channel is also remotely selectable. Parameter selection and gain settings appear on the LCD display. Connectors are BNC female for the RF IN and RF OUT and external 10 MHz reference input and output. The table below shows available options. The unit is powered by a 100-240 $\pm 10\%$ VAC, 47-63 Hz power supply, and is housed in a 1 3/4" x 19" x 16" rack mount chassis.

* 2483-40311, Four (4) Channels, 2483-30311, Three (3) Channels, 2483-20311, Two (2) Channels, 2483-10311, One (1) Channel.



FRONT PANEL (2483-40311 - Four Channel shown)



REAR PANEL (2483-40311 - Four Channel shown with optional Ethernet)

FIGURE 1.1 Model 2483-40311 Front and Rear Panels

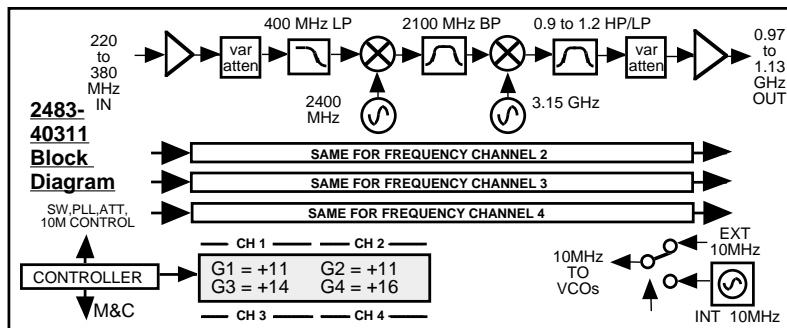


FIGURE 1.2 Model 2483-40311 Downconverter Block Diagram

(Block Diagram applies to Models 2483-40311, 2483-30311, 2483-20311 & 2483-10311)

TABLE 1.0 2483-40311 Translator Technical Specifications**

Input Characteristics						
Impedance/Return Loss	50Ω/14 dB (See Table 2.2 for connector options)					
Frequency	220 to 380 MHz (300 ± 80 MHz)					
Noise Figure, max.	20 dB (set to minimum input, maximum gain)					
Input Level Range	-30 to -10 dBm					
Output Characteristics						
Impedance/Return Loss	50Ω / 12 dB					
Frequency	970 to 1130 MHz					
Output Level Range	-30 to -10 dBm					
Output 1 dB compression	+0 dBm, maximum gain					
Channel Characteristics						
Gain Range (adjustable)	0 to +20.0 dB in 0.5 ±0.5 dB steps					
Frequency Response	±1.5 dB, 970 -1130 MHz; ±0.5 dB, 40 MHz BW; ±1.0 dB, 40 MHz BW					
Spurious	<-50 dBC, in band					
Intermodulation	<-50 dBC for two carriers at 4 MHz spacing, each at -15 dBm out (set to -30 dB input, 20 dB gain)					
Channel to Channel Isolation	<-60 dB type, < -50 dB min.; G=20, -30 dBm input level					
Group Delay, maximum	5 ns total, 970 - 1130 MHz out					
Frequency Sense	Non-inverting					
Synthesizer Characteristics						
Frequency Accuracy	±1.0 ppm max. over temp. (±0.01 ppm, Option H)					
Frequency Step	None, fixed tuned					
Phase Noise @ Freq (Hz)	10	100	1k	10k	100k	1M
Standard 125 kHz steps dBc/Hz	-60	-65	-70	-80	-95	-110
Typical: dBC/Hz	-65	-69	-77	-83	-97	-115
10 MHz Level (In or Out)	3 dBm, ± 3 dB, 75 ohms (Option -E)					
Controls, Indicators						
Frequency Selection	Direct readout LCD; manual or remote selection					
Gain Selection	Direct readout LCD; manual or remote selection					
Power; Alarm; Remote	Green LED; Red LED; Yellow LED					
Remote	RS232/RS485 selectable, (Ethernet optional)					
Other						
RF IN /RF Out Connector	50Ω BNC (female)					
10 MHz Connectors	75Ω BNC (female), works with 50 & 75Ω					
Alarm, Remote Connector	DB9 (female) - NO or NC contact closure on Alarm					
Size	19 inch, 1RU standard chassis, 1.75" high x 16.0" deep					
Power	100-240 ±10% VAC, 47- 63 Hz, 45 watts maximum					

(Technical Specifications continued on page 5...)

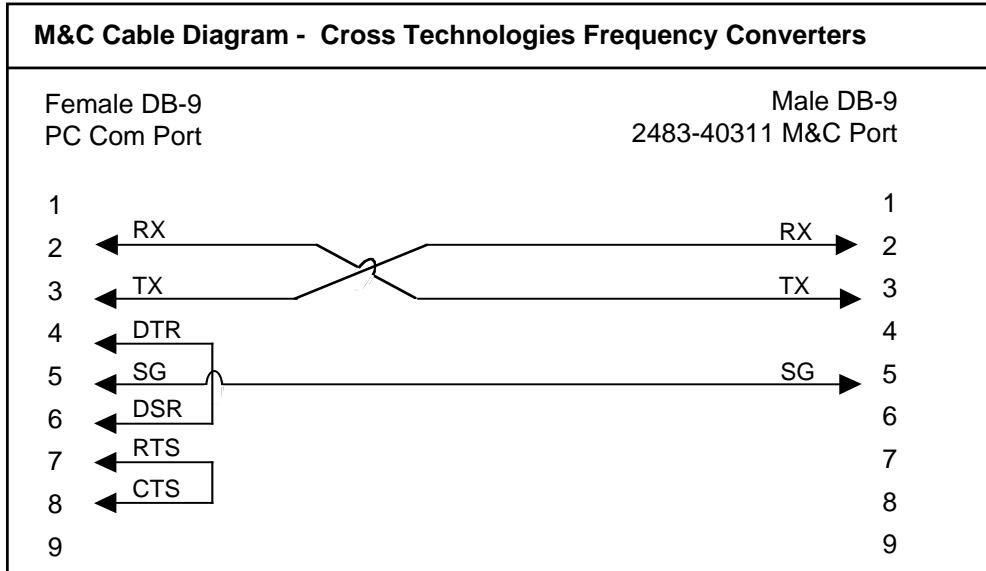
(Technical Specifications continued from page 4...)

Available Options		Channel Model Numbers: Model 2483-40311 - (4) Channels Model 2483-30311 - (3) Channels Model 2483-20311 - (2) Channels Model 2483-10311 - (1) Channel x = Number of Channels
H -	High Stability (± 0.01 ppm) internal ref.	
R -	Redundant Power Supply	
W8 -	Ethernet with Web Browser	
W18 -	Ethernet with Web Browser & SNMP	
W28 -	Ethernet with TCP/IP, Telnet®	
Connectors/Impedance		
STD -	50 Ω BNC (RF OUT), 50 Ω BNC (RF IN)	
Bx	75 Ω BNC (RF OUT), 75 Ω BNC (RF IN)	
Cx	50 Ω BNC (RF OUT), 75 Ω BNC (RF IN)	
Kx	75 Ω BNC (RF OUT), 50 Ω BNC (RF IN)	
Contact Cross for other options		
**+10°C to +40°C; Specifications subject to change without notice		Cross Technologies, Inc. 2018

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)



Connector: Rear panel, DB-9 female

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 2483-40311 and briefly describes them.

* **PLEASE NOTE:** Status requests of values specific to a channel must be preceded by a *i where *i is the channel number.

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

TABLE 1.1 2483-40311 Status Requests		
Command	Syntax*	Description
Get channel gain	{aa*ISG}	Returns {*ISGxxx} where: <ul style="list-style-type: none"> • i = 1, 2, 3 or 4 designating the channel number • xxx = gain to nearest 0.5 dB (e.g., +140 = 14 dB)
Get mute setting	{aa*ISM}	Returns {*ISMx} where : <ul style="list-style-type: none"> • i = 1, 2, 3, or 4 designating the channel number • x = 1 for Mute ON (carrier OFF) • x = 0 for Mute OFF (carrier ON)
Get setting for reference insertion on output	{aa*ISL}	Returns {*ISLx} where : <ul style="list-style-type: none"> • i = 1, 2, 3 or 4 designating the channel number • x = 0 for non-insertion; 1 for insertion
Get reference status	{aaSE}	Returns {SExy} where : <ul style="list-style-type: none"> • x = setting: 0 for internal 10 MHz; 1 for external 10 MHz; 2 for auto detect • y = currently selected in hardware : 0 for internal 10 MHz; 1 for external 10 MHz
Get reference offset (Option O)	{aaSO}	Returns {SOxxxxx} where : <ul style="list-style-type: none"> • xxxxx = an offset amount between -2000 & +2000

(Status Requests continued from page 7...)

TABLE 1.1 2483-40311 Status Request Continued		
Command	Syntax*	Description
Get IP address (If Ethernet Option, W8, W18, or W28, enabled)	{aaSI}	Returns {Sixxx.xxx.xxx.xxx} where : • xxx.xxx.xxx.xxx = IP address
Get subnet mask (If Ethernet Option, W8, W18, or W28, enabled)	{aaSs}	Returns {Ssxxx.xxx.xxx.xxx} where : • xxx.xxx.xxx.xxx = subnet mask
Get channel base parms	{aa*IS1}	Returns {*iS1tgggma} where : • i = 1, 2, 3 or 4 designating the channel number • t=channel type: 0 for unused; 1 for upconverter; 2 for downconverter • ggg = gain to nearest 1.0 dB (e.g., +25 = 25 dB) • m = mute (0 = mute off, 1 = mute on) • a = alarm: 0 for alarm off; 1 for alarm on
Get alarm status	{aaSA}	Returns {SAabcd} where: • a=channel 1 alarm state (0 for alarm off; 1 for alarm on) • b=channel 2 alarm state (0 for alarm off; 1 for alarm on) • c=channel 3 alarm state (0 for alarm off; 1 for alarm on) • d=channel 4 alarm state (0 for alarm off; 1 for alarm on)
Get product/model info	{aaSV}	Returns {SV2483-40311xxxver5.00} where: • 2483-40311 = product model • xxx = list of options, if any • "ver"=separates model & options from firmware version • 5.00 = firmware version

(C) Commands

Table 1.2 lists the commands for the 2483-40311 and briefly describes them. After a command is sent the 2483-40311 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**)

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:** Commands specific to a channel must be preceded by *i where i is the channel number.

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

Table 1.2 2483-40311 Commands		
Command	Syntax*	Description
Set Channel Gain	{aa*ICGxx}	where i = : <ul style="list-style-type: none">• 1, 2, 3 or 4 designating the channel number• xx = gain to nearest 0.5 dB (e.g., {1CG150} sets channel 1 gain to 15.0 dB.)
Set Channel Mute	{aa*ICMx}	where i = : <ul style="list-style-type: none">• 1, 2, 3 or 4 designating the channel number• x = 1 for Mute ON (carrier OFF)• x = 0 for Mute OFF (carrier ON)
10 MHz reference mode	{aaCEx}	where x = : <ul style="list-style-type: none">• 0 for internal 10 MHz; 1 for external 10 MHz; 2 for auto detect
Reference offset/adjust (Option O)	{aaCOxxxxx}	where x = : <ul style="list-style-type: none">• xxxxx = an offset amount between -2000 & +2000

1.4 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 units may be required.
NOTE: Additional space between units is **recommended** if multiple Quad-channel units are to be stacked in the same rack.
- 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.

2.0 Installation

2.1 Mechanical

The 2483-40311 consists of one RF/Controller PCB housed in a 1 RU (1 3/4 inch high) by 16 inch deep chassis. A switching, ± 12 , +24, +5 VDC power supply provides power for the assemblies. The 2483-40311 can be secured to a rack using the 4 holes on the front panel. Figure 2.1 shows how the 2483-40311 is assembled.

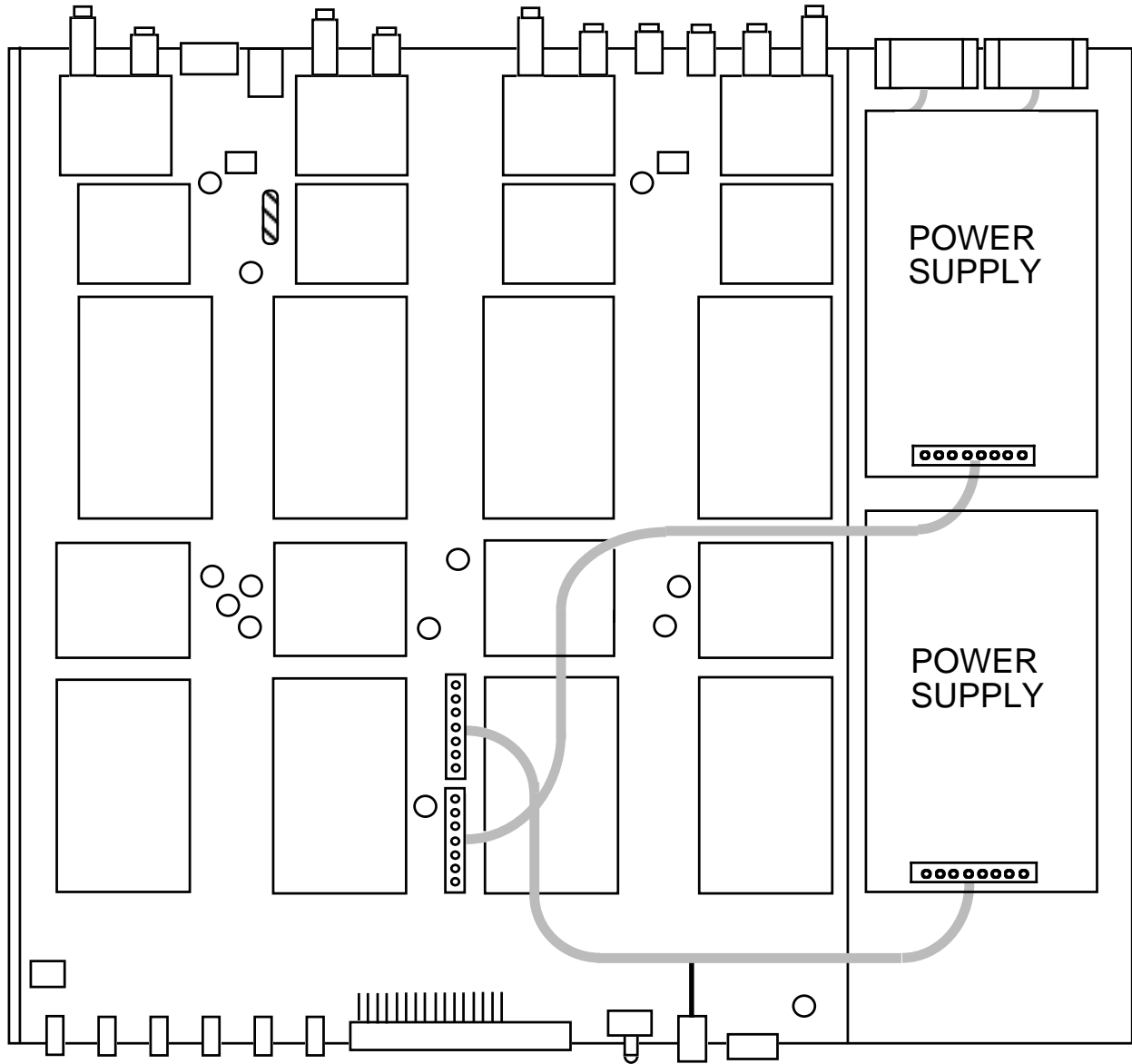


FIGURE 2.1 2483-40311 Mechanical Assembly
(Shown, Model 2483-40311 - Four Channel)

2.2 Rear Panel Input/Output Signals

Figure 2.2 shows the input and output connectors on the rear panel.

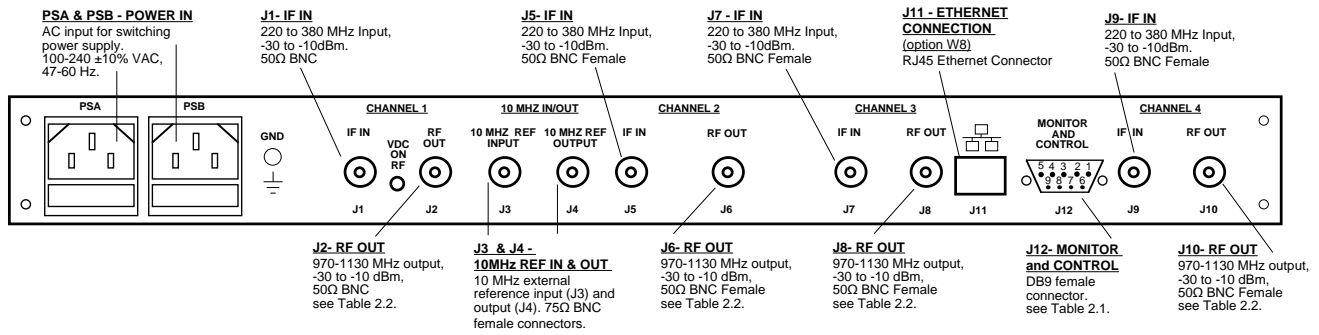


FIGURE 2.2 2483-40311 Rear Panel I/Os
REAR PANEL (2483-40311 - Four Channel show above)

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

*Remote Serial Interface

Interface: DB-9 female

Protocol: RS-232C, 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, 50Ω	BNC, 50Ω
Bx	BNC, 75Ω	BNC, 75Ω
Cx	BNC, 75Ω	BNC, 50Ω
Kx	BNC, 50Ω	BNC, 75 Ω

x = # of Channels

Contact Cross Technologies for other options

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

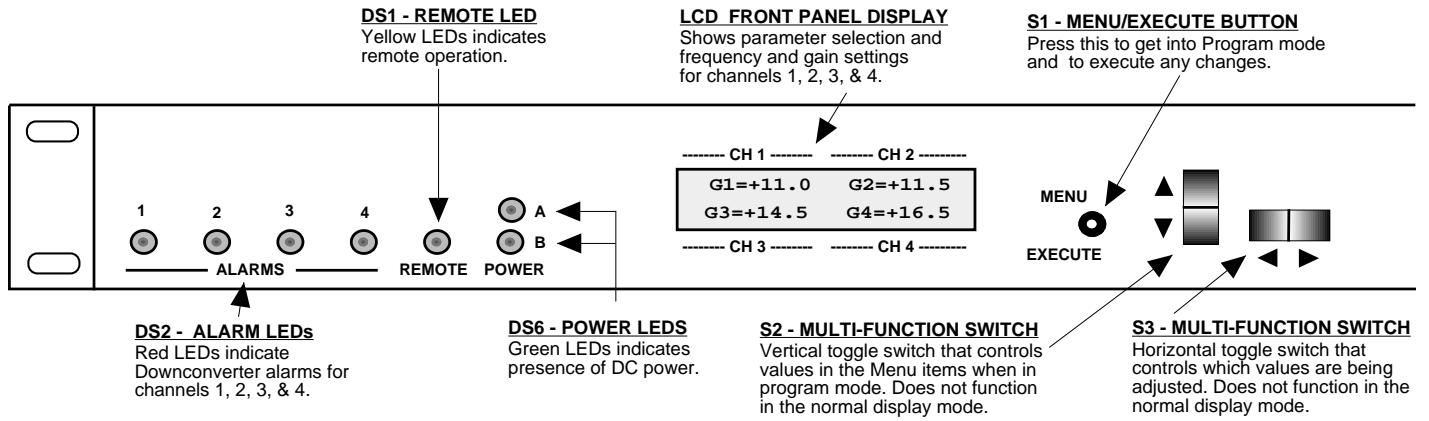


FIGURE 2.3 2483-40311 Front Panel Controls and Indicators
FRONT PANEL (2483-40311 - Four Channel show above)

2.4 Operation

2.4.1 Installing and Operating the 2483-40311 Translator

1. Connect a -30 dBm to -10 dBm signal to IF IN, for the designated channel (ie: J1, J5, J7, J9), (Figure 2.2).
2. Connect the RF OUT, for the designated channel (ie: J2, J6, J8, J10), to the external equipment, (Figure 2.2).
3. Connect 100-240 \pm 10% VAC, 47 - 63 Hz to AC on the back panel.
4. Set the gain for 0 to +20.0 dB (See Section 2.5 Menu Settings).
5. Be sure DS6 (green, DC Power, PSA, PSB) is on and DS2 (red, Alarm) is off (Figure 2.3).
6. 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 2.4. There is a spare fuse in the near slot. If a fuse continues to open, the power supply is most likely defective.

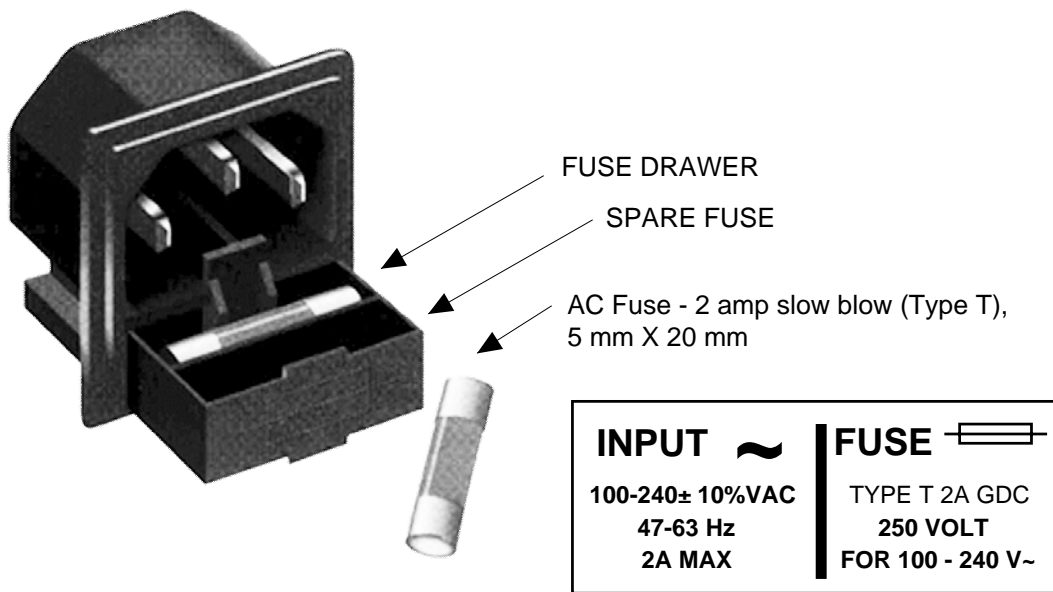


FIGURE 2.4 Fuse Location and Spare Fuse

2.5 Power On Settings

Figure 2.5 shows the various Front Panel LCD Displays that you will see during the Power Up sequence and the Settings modes. The first two displays (Power Up, displaying Model Number, Rev. Level and IP Address) are only displayed briefly during the Power On sequence.

The Normal Display is what you will see while the unit is in normal operating mode.

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

1. The model number and options will be displayed.
2. The unit reads the IP address (if Ethernet option installed) and displays IP Address.
3. The current gain setting of each channel downconverter is displayed.

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

The Menu Displays are those displays you will see when making any Setting changes.

NOTE: Mode Settings and Values will be changed as you select them, but they will NOT BE SAVED if you do not select Save and YES. If you do not wish to save any settings you can either select Save and NO or you can NOT press the Menu/Execute switch and simply do nothing for approximately 30 seconds and the unit will return to the previously saved Mode and Value Settings.

The “**R**” shown on the menu is a Return setting that allows you to Stop and Save wherever you are in the Settings mode, without going through all the Menu screens.

2.5.1 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 (Figure 2.3).
2. Horizontal Switch - This switch is mounted so its movement is horizontal and moves the cursor left or right (Figure 2.3).
3. Vertical Switch - This switch is mounted so its movement is vertical and has two functions:
 - a. During frequency, gain changes, the vertical movement will raise or lower the number in the direction of the arrows (Figure 2.3).
 - b. For other functions such Mute on/off, the vertical switch will alternately turn the function on or off regardless of the direction operated.

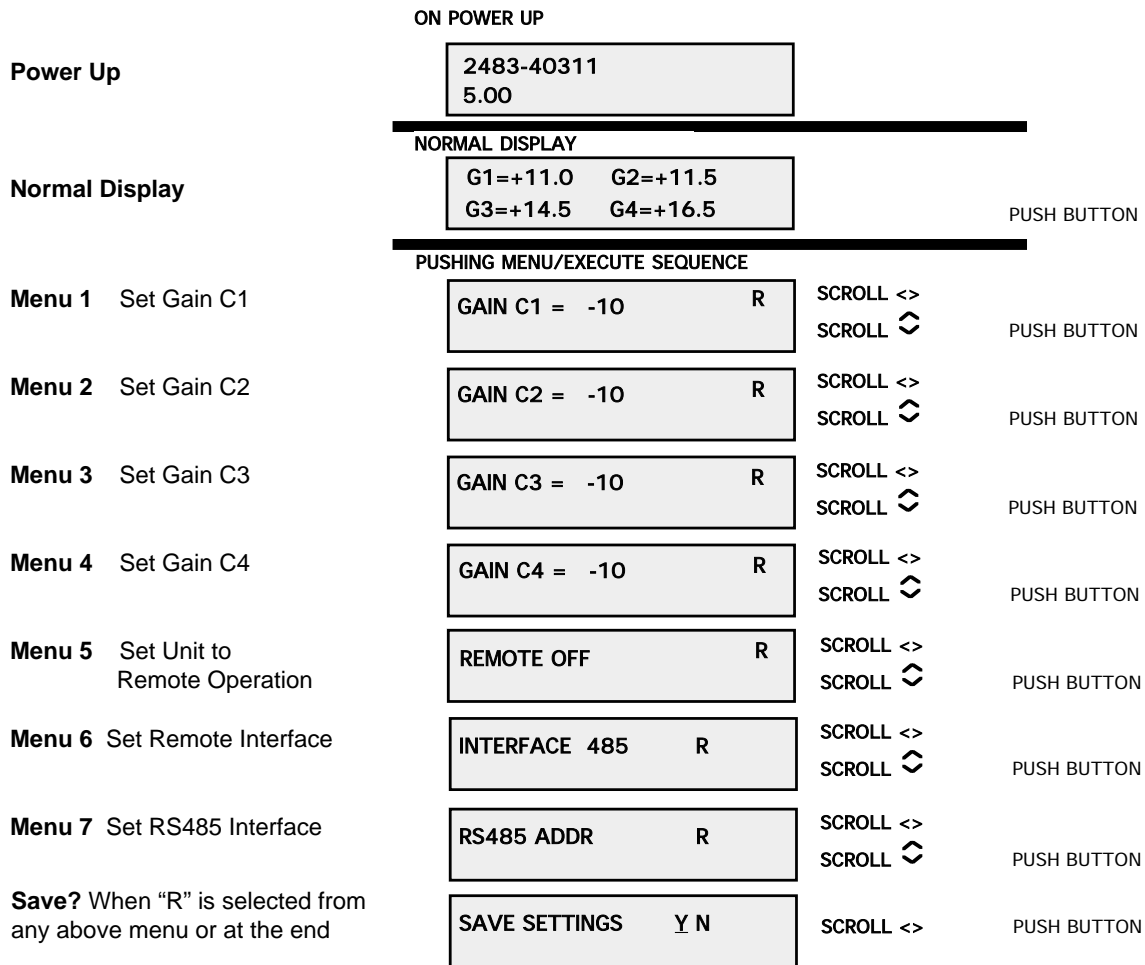


FIGURE 2.5 Front Panel Menu Display & Sequence



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