

Instruction Manual

Model 4116-T24 Translator, UHF to UHF Weather Resistant Unit

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6170 Shiloh Road

Alpharetta, Georgia 30005

(770) 886-8005 • FAX (770) 886-7964 • Toll Free 888-900-5588

WEB www.crosstechnologies.com

E-MAIL info@crosstechnologies.com

INSTRUCTION MANUAL

MODEL 4116-T24 Translator, UHF to UHF

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All Cross Technologies, Inc. products are warranted against defective materials and workmanship for a period of one year after shipment to customer. Cross Technologies, Inc.'s obligation under this warranty is limited to repairing or, at Cross Technologies, Inc.'s option, replacing parts, subassemblies, or entire assemblies. Cross Technologies, Inc. shall not be liable for any special, indirect, or consequential damages. This warranty does not cover parts or equipment which have been subject to misuse, negligence, or accident by the customer during use. All shipping costs for warranty repairs will be prepaid by the customer. There are not other warranties, express or implied, except as stated herein.



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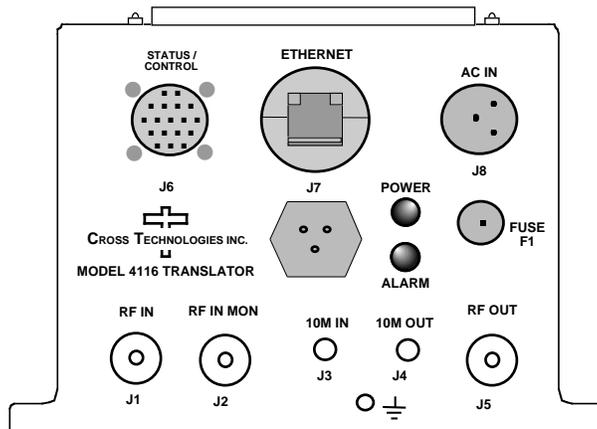
MODEL 4116-T24 Translator, UHF to UHF, Weather Resistant*

1.0 General

1.1 Equipment Description

The 4116-T24 Translator converts a 20 MHz bandwidth signal from the UHF input band (0.2 to 0.4 GHz) to a 20 MHz bandwidth signal on the UHF output band (0.2 to 0.4 GHz), in 0.1 MHz steps. Front panel LEDs provide indication of DC Power, and PLL Alarm. The UHF to UHF gain is +20 dB, maximum. Connectors are Type N female for the UHF out, UHF in and UHF in Monitor and SMA female for the external 10 MHz reference input. Gain, band select, mute, and internal 10 MHz frequency are controlled by the M&C (Ethernet and/or Status/Control). In AUTO, the 10 MHz reference stays in external if the external level is in the +2 to +8 dBm range. The 4116 is powered by a 100-240 \pm 10% VAC power supply, and mounted in a 8"W X 6"H X 16"D Weather Resistant* enclosure.

NOTE: *Weather Resistant enclosures are designed to be water resistant for installation in an outdoor enclosure/antenna hut OR mounted outdoors on an antenna assembly at their specified temperature ranges. They are designed to be located "out in the elements" (water, sleet, snow, etc.) but they are *not* designed to be "submerged under" water. If an extended temperature range is required, there is an **Extended Temperature** option (**Option W21**; -30°C to +60°C) available at an additional cost. Contact Cross for quote.



Model 4116-T24 Multi-Band Block Translator Front Panel

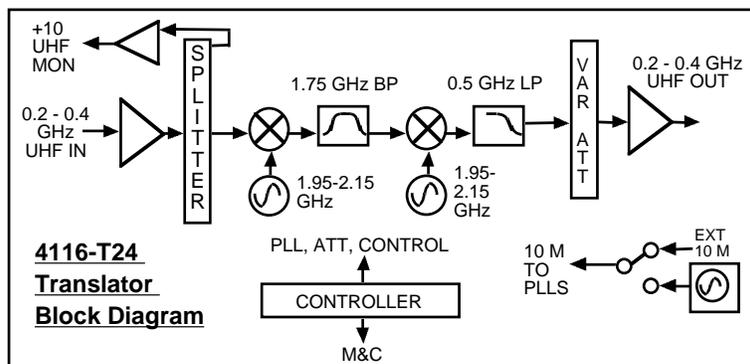


FIGURE 1 Model 4116-T24 Multi-Band Block Translator Block Diagram

1.2 Technical Characteristics

TABLE 1.0 4116-T24 Translator, UHF to UHF Specifications**					
Input Characteristics					
Impedance/Return Loss	50Ω/14 dB				
Frequency (GHz)	0.2 to 0.4 GHz				
Noise Figure, Maximum	20 dB at maximum gain				
Input Level Range	-30 to -10 dBm				
Output Characteristics					
Impedance/Return Loss	50Ω/13 dB, 14 typical, Mute & Unmute				
Frequency (GHz)	0.2 to 0.4 GHz				
Output Level Range	-60 to 0 dBm				
Output 1dB Compression	+9 dBm, +10 dBm typical, maximum gain				
Mute	>60 dB @ 0 dBm output				
Channel Characteristics					
Gain @ Fc	+20 ±5 dB max., (+20 to -40 dB variable in 1 ±1 dB steps)				
Input to Output isolation	>45 dB, minimum at +20 dB gain				
Spurious, Inband	> -40 dBC in band, -15 to 0 dBm out, <-50 dBC, typical; $F_{in} \neq F_{out}$				
Spurious, LO	<-60 dBm LO				
Intermodulation	<-50 dBC for two carriers at 4 MHz spacing, each at -5 dBm out				
Frequency Response	±2 dB, over UHF band; ± 0.5 dB, 20 MHz BW				
Frequency Sense	Non-inverting				
Monitor Gain/Response	+10 ±3 dB Gain at Fc/±2 dB Frequency Response, over 200-400 MHz band				
LO Characteristics					
LO Step Size	0.1 MHz, input and output selection; $F_{in} \neq F_{out}$				
Frequency Accuracy	± 0.05 ppm max. over temp internal reference; external reference input				
10 MHz Level	Input = +2dBm to +8 dB in; Monitor Output = input level ± 1.0 dB, 50Ω				
Phase Noise @ F (Hz) >	100	1K	10K	100K	1M
Specification dBC/Hz	-70	-70	-80	-95	-110
Typical dBC/Hz	-74	-75	-85	-105	-130
Controls, Indicators					
Gain, Band, 10M Frequency	Gain, Band select and internal 10MHz frequency via Ethernet M&C or Status / Control Connector.				
Power; PLL Alarm	Green LED; Red LED, External Contact Closure				

Technical Characteristics Continued on page 5...

1.2 Technical Characteristics (Continued)

Other	
UHF In, Mon. Connector	Type N (female), 50Ω
UHF Out Connector	Type N (female), 50Ω
10 MHz Connectors	SMA (female), 50Ω
Weather Resistant* Connectors	<p>Status/Control Connector, MS3112E14-18S; Mating Cable Connector, MS3116F14-18P.</p> <p>Ethernet Connector, RJF21B; Mating Cable Connector, RJF6G; Cable interface, Standard RJ45.</p> <p>AC Input Connector, Clipper Series, CL1M1102, Mating Cable Connector, CL1F1101. (Unless otherwise specified, the mating connector is provided preassembled onto a standard NEMA 5-15 U.S. power cord.)</p>
Size	8" Wide X 6" High X 16" Deep, Weather Resistant* Enclosure
Power	100-240 ±10% VAC, 47-63 Hz, 25 Watts Maximum, FCI Clipper Series CL1M1102, Weather Resistant* Connector.
**+10°C to +40°C; Specifications subject to change without notice.	

2.0 Installation

The 4116-T24 Translator consists of a 8” Wide X 6” High X 16” Deep Weather Resistant* enclosure. A switching, ± 12 , +24, +5 VDC power supply provides power for the internal assemblies. The 4116-T24 can be secured to a mounting plate using the 4 holes on the bottom of the front and rear panel. See Figure 2.2. for mounting dimensions.



2.0.1 Connection to AC Input Power

The 4116-T24 utilizes a pre-assembled AC power input cable as described below.

4115-31 Power Input Connector, FCI Clipper Series, CL1M1102 & Crimp Pins	
Mating Connector FCI Clipper Series, CL1F1101, Crimp Pins and CL101021 Backshell	
Pin	Input Connector Pin Description
1	100-240 $\pm 10\%$ VAC, 47-63 Hz, 20 watts max.
2	Neutral
3	Ground

2.1 ETHERNET Interface Installation and Operation

The 4116-T24 Translator is equipped with a 10/100 Base-T compatible Ethernet interface for control and monitoring of its operating parameters. An HTML script interface allows the user to monitor and control the converter using a standard web browser. SNMP (Simple Network Management Protocol) is also supported. Contact Cross Technologies for the SNMP MIB file.

2.1.1 Methods of Connection

Directly Connected to a PC:

For control from a local PC, attach the 4116-T24's Ethernet port to the Ethernet network connector on the PC using a crossover RJ-45 cable.

LAN Connection

For LAN connections, attach the 4116-T24 Ethernet port to the LAN using a normal RJ-45 cable. Use any PC on the LAN to connect to the 4116-T24.

2.1.2 Ethernet Configuration

Each 4116-T24 must be configured with an appropriate IP address, Netmask, and Gateway assigned by your network manager. The 4116-T24 is set at the factory with a static address that is written on a tag attached to the unit. The device server in the 4116-T24 has a built in HTTP based configuration manager that is used to configure network settings. To access the configuration manager open a web browser and enter the IP address of the 4116-T24 in the browser's address field. The window shown in Figure 2-A will appear. As delivered, there is no password set. Choose your user name and password here or leave those fields blank and click OK to proceed to the configuration manager webpage.



Figure 2-A Password Screen

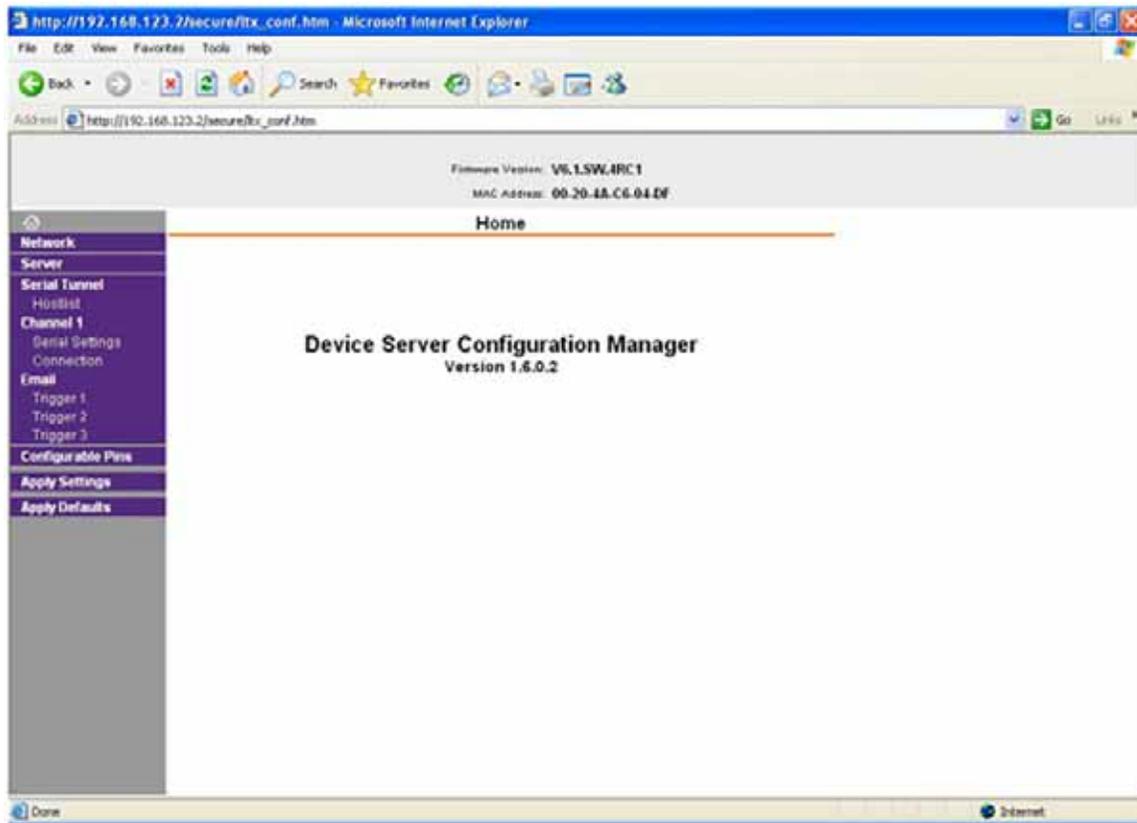


Figure 2-B Configuration Manager Screen

In the left frame of the configuration manager click on Network to display the Network Settings screen. Enter the IP address, Subnet mask, and Gateway address with delimiter dots (example: 192.168.192.47). Click apply settings in the left frame to apply the new settings in the network device.

2.1.3 Webpage M & C

Enter the following address in a web browser to access the M & C webpage:

http://<ip address of 41xx>/serial/0/setup.htm where <ip address> is the IP address of the unit.

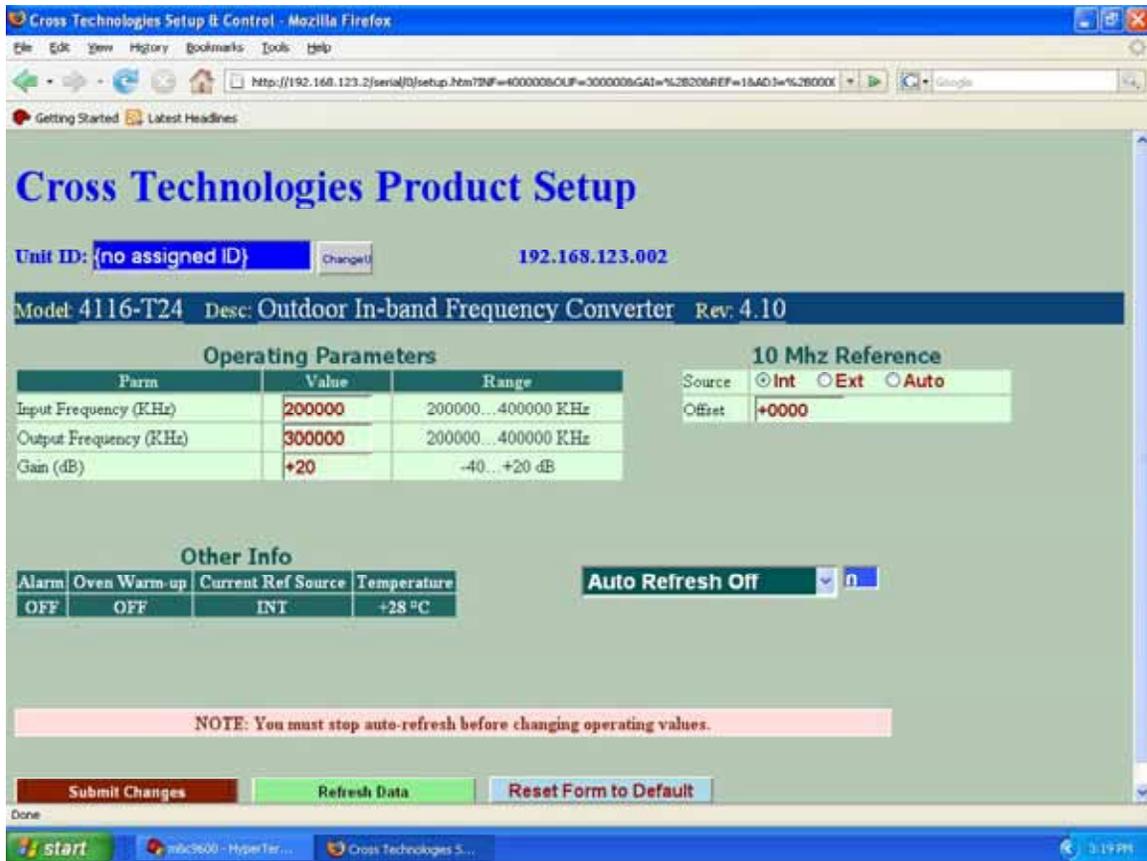


Figure 2-C: Model 4116-T24 Webpage

2.1.4 SNMP Configuration

Setting of SNMP parameters such as Community Write and Community Read strings requires a *Telnet*[®] connection to port 9999. The following instructions explain how to establish such a *Telnet*[®] connection using Windows XP's Hyper Terminal utility .

Start the Hyper Terminal application and select "New Connection" from the "File" drop down menu. The next screen is a "Connect To" dialog box. Select TCP/IP (Winsock) from the "Connect" drop down menu. Enter the IP address of the 4116-T24 in the "Host address:" field and 9999 in the "Port number" field. Figure 2-E shows an example of the Hyper Terminal settings required to access the SNMP configuration menu.

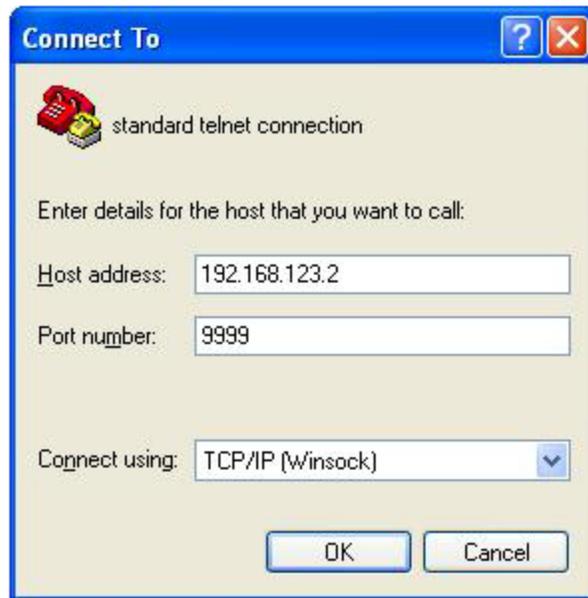


Figure 2-E: Telnet® Settings in Hyper Terminal

Once the *Telnet*® connection is established you will be prompted to “Press Enter for Setup Mode”. Press enter and a menu of device server configuration options will appear (see Figure 2-F). Select menu item 3, “SNMP configuration.” You will be prompted to enter SNMP community read and write strings. After setting your desired community strings you will be prompted to “Enter IP addresses for SNMP traps.” You must enter at least one and up to four IP addresses of SNMP managers that will access the unit. This is required even though SNMP traps are not implemented. The unit will not process SNMP SET and GET requests from an SNMP manager unless the IP address associated with that manager is entered in the device server.

Figure 2-F: Device Server Configuration Menu

```
xport_telnet_setup - HyperTerminal
File Edit View Call Transfer Help
Enhanced Password is disabled

***** Channel 1 *****
Baudrate 38400, I/F Mode 4C, Flow 00
CPU performance : Standard
Web RAM size 01000

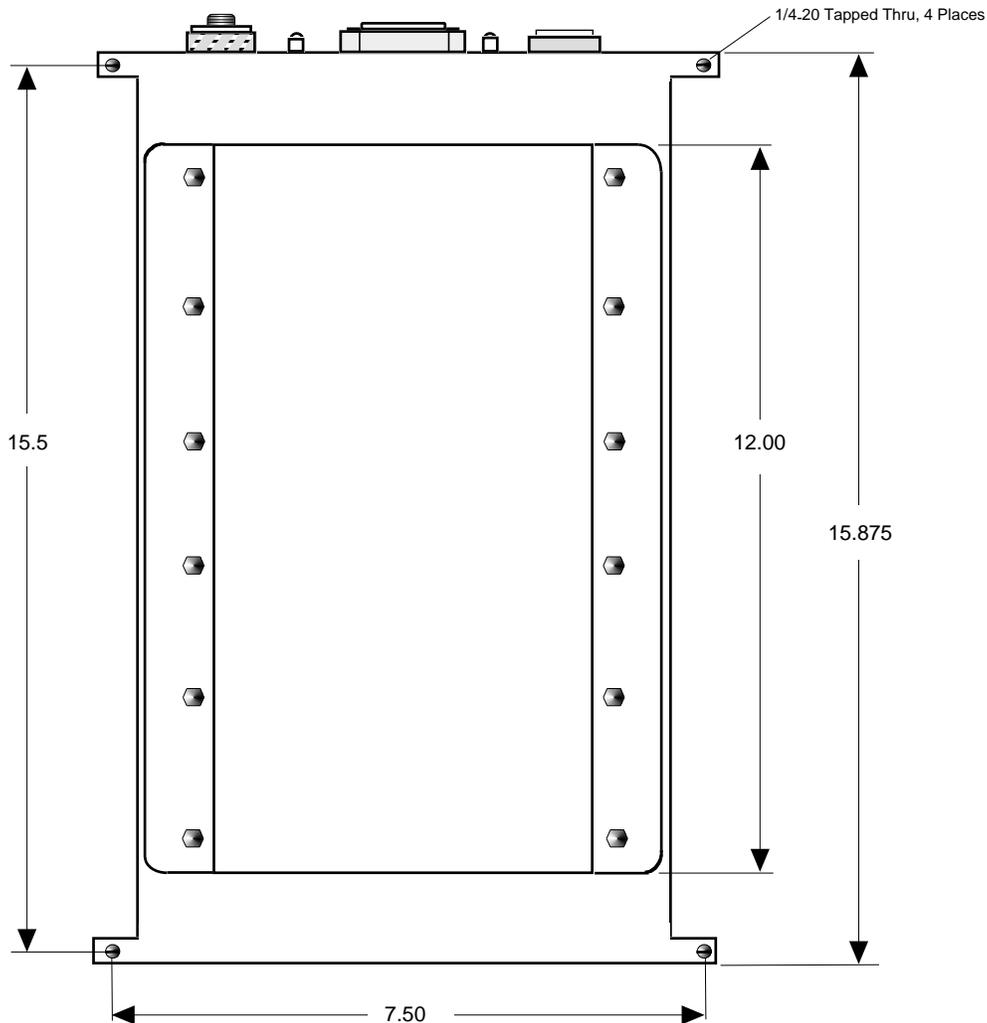
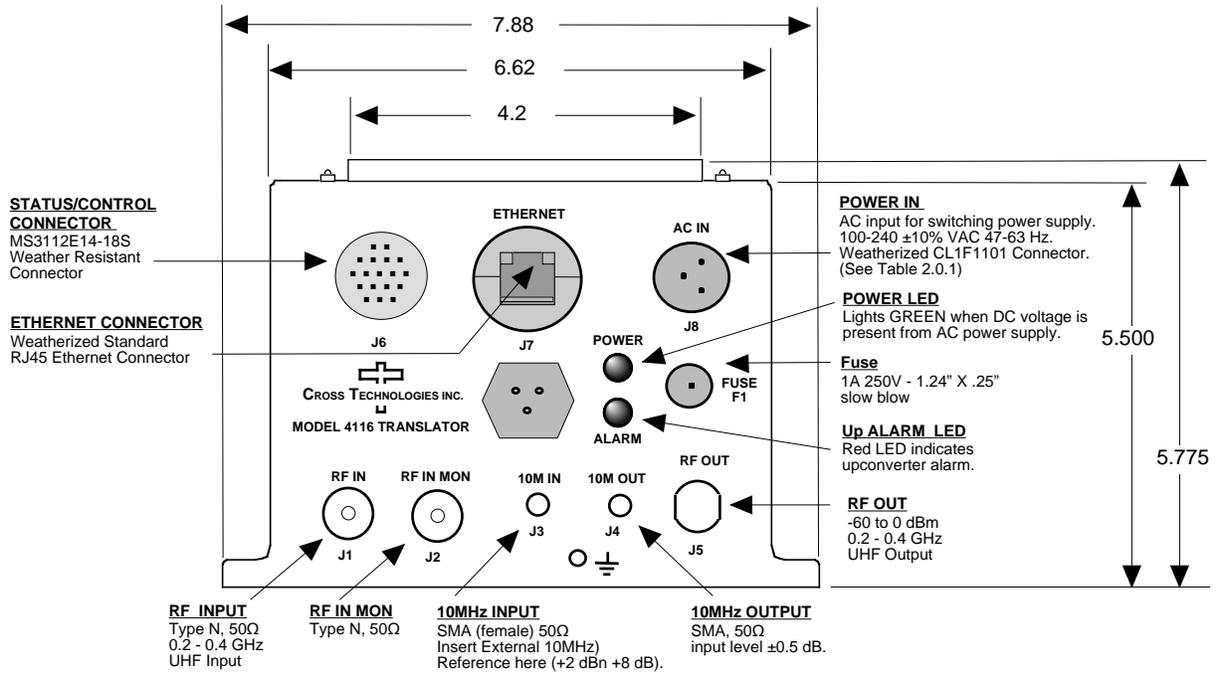
***** SNMP Configuration *****
SNMP community name for read: public
SNMP community name for write: public
Trap IP addresses:
1: 192.168.123.1
2: 0.0.0.0
3: 0.0.0.0

Change Setup:
0 Server configuration
1 Channel 1 configuration
3 SNMP configuration
6 Security
7 factory defaults
8 exit without save
9 save and exit

Your choice ?

Connected 0:00:20 ANSIW TCP/IP SCROLL CAPS NUM Capture Print
```

2.2 Outline Drawing shows the input and output connection on the front panel and top view of the 4116-T24.



2.3 Physical Interface

All 4115 and 4116 units provide a RS232/RS422/RS485 interface port and a 10/100 Base-T Ethernet port. Both ports are available when the unit is installed and powered up. Commands may be sent to either port at any time and they will be processed in the order that they are received. The RS232/RS422/RS485 signals connect via an 18 pin, MS3112E14-18S connector as shown in Figure 2.2. The Ethernet signals connect via a standard RJ45 connector, RJF6G.

Table 2.5.1: Monitor and Control Connector

Monitor and Control Connector Pinout	
Mating connector part number MS3112E14-18S	
Pin	Signal Description
A	Chassis Ground
N	Summary Alarm Normally Closed
P	Summary Alarm Common
R	Summary Alarm Normally Open
E	RS422/RS485 Data Out-
F	Signal Ground
C	RS422/RS485 Data In-
D	RS422/RS485 Data Out+, RS232 Data Out
B	RS422/RS485 Data In+, RS232 Data In

NOTE: Planning Ethernet Access

It is recommended that IP knowledgeable customer personnel be consulted as a resource in the installation and use of the Ethernet access features of the Cross Technologies product.

2.4 Installation/Operation

Installing and Operating the 4116-T24 Translator

1. Connect a -30 dBm to -10 dBm signal to L-BAND INPUT, (Figure 2.2).
2. Connect the RF OUTPUT, to the external equipment.
3. Using the pre-assembled AC power input cable (furnished), connect 100-240 \pm 10% VAC, 47 - 63 Hz to AC IN connector on the front panel.
4. If a custom length power cable must be made, refer to description below for connections*.
5. Be sure DS1 (green, DC Power) is on and DS2 (red, Alarm) is off (Figure 2.2).
6. Set the gain insuring that the output level is always in the range of +20 to -40 dB.
7. Select either INT (for internal 10 MHz ref), AUTO (for internal 10 MHz ref UNLESS a external 10 MHz, +2 to +8 dBm signal is connected to J2), or EXT (for external 10 MHz, +2 to +8 dBm ref that is inserted at J2) via Ethernet or serial command.
8. Check that a 10 MHz, signal is present at the 10 MHz REF OUTPUT at the same level as the input, \pm 0.5 dB (J4 - Figure 2.2).
9. AC Fuse - The fuse is a 1.25" x .25" - 1.5 amp (slow blow) and is inserted in the fuse F1 position.

NOTE: If a fuse continues to open, the power supply is most likely defective.

CAUTION: When checking or replacing the fuse, do not over tighten the fuse holder cap.

This can displace the cap's O-ring and the weatherproof seal will be lost.

* 4115-31 AC Power Input Connections	
Mating Connector, FCI Clipper Series, CL1M1102 and crimp pins	
Pin	Input Connector Pin Description
1	100-240 \pm 10% VAC, 47-63 Hz, 20 watts max.
2	Neutral
3	Ground



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