FREQUENCY BAND TRANSLATORS
OUTDOOR MOUNTED
FOR SATELLITE COMMUNICATION

These Frequency Band Translators are designed for applications where frequency translation is needed with a minimum of amplitude and group delay distortion.

The outdoor package is allows for mounting on the antenna.

Multiple remote connections and a robust protocol provide strong M&C support.

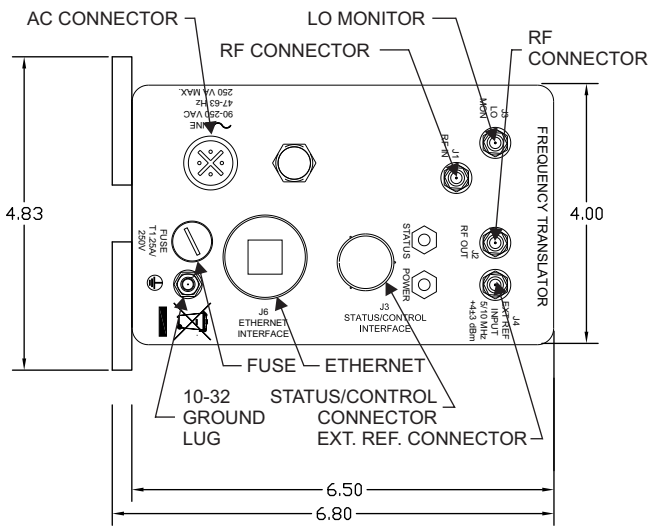
STANDARD FEATURES

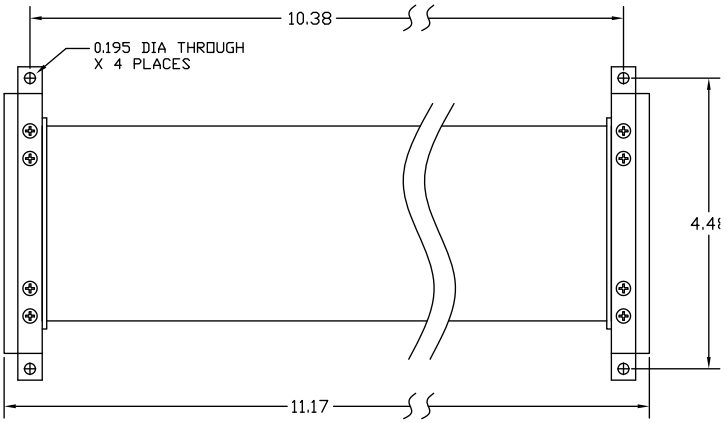
- Small-sized weather resistant enclosure
- Local oscillator monitor port
- RS422, RS485 and 10/100Base-T Ethernet
- Output signal monitor port (L-band output only)
- Low phase noise, IESS-308/309
- Low intermodulation distortion
- 30 dB level control
- CE Mark

OPTIONS

- Additional gain - Transmit to L-band
- Reference clean-up loop and improved stability
- Selectable External LO input

TYPICAL OUTLINE





NOTE:
1. MOUNTING LEGS CAN BE DISASSEMBLED AND REINSTALLED ON WIDE SIDE OF ENCLOSURE (SHOWN INSTALLED ON NARROW SIDE.)

RF TRANSMIT-BAND TO RF RECEIVE-BAND

Input Frequency (GHz)	Output Frequency (GHz)	LO Frequency (GHz)	Model Number
5.85-6.425	3.625-4.2	2.225	TRE-6.1-3.9
5.85-6.65	3.4-4.2	2.45	TRE-6.25-3.8
6.725-7.025	4.5-4.8	2.225	TRE-6.8-4.6
7.9-8.4	7.25-7.75	0.65	TRE-8.15-7.5
7.9-8.4	7.175-7.675	0.725	TRE-8.15-7.4
12.75-13.25	10.7-11.2	2.05	TRE-13-11.2
13.2-14.2	10.7-11.7	2.5	TRE-13.7-11.2
13.75-14.5	10.7-11.45	3.05	TRE-14-11
13.75-14.5	11.45-12.2	2.3	TRE-14-11.8
13.75-14.5	12.0-12.75	1.75	TRE-14-12.3
13.75-14.5	10.95-11.7	2.8	TRE-14-11.3
13.75-14.5	11.7-12.45	2.05	TRE-14-12
17.3-17.8	12.2-12.7	5.1	TRE-17.55-12.45
17.3-18.1	11.7-12.5	5.6	TRE-17.7-12.1

Ka Band also available – See GS47-SPC

RF TRANSMIT-BAND TO L-BAND

Input Frequency (GHz)	Output Frequency (GHz)	LO Frequency (GHz)	Model Number
5.85-6.65	0.95-1.75	4.9	TLE-6.25
5.925-6.425	0.95-1.45	7.375	TLE-6.175-INV
7.9-8.4	0.95-1.45	6.95	TLE-8.15
12.75-13.25	0.95-1.45	11.8	TLE-13
14.0-14.5	0.95-1.45	13.05	TLE-14.25
13.75-14.5	0.95-1.7	12.80	TLE-14.125
14.5-14.8	0.95-1.25	13.55	TLE-14.65
17.3-18.1	0.95-1.75	16.35	TLE-17.7
17.3-18.4	0.95-2.05	16.35	TLE-17.85

Ka Band also available – See GS47-SPC

SPECIFICATIONS

INPUT CHARACTERISTICS	RF TRANSMIT-BAND TO RF RECEIVE BAND	RF TRANSMIT-BAND TO L-BAND
Frequency	Refer to model number table	
Impedance	50 ohms	
Return Loss	18 dB minimum	
Input Level (Non-damage)	+10 dBm maximum	

OUTPUT CHARACTERISTICS		
Frequency	Refer to model number table	
Impedance	50 ohms	
Return Loss	18 dB minimum	
Output Signal Monitor	N/A	-20 dBc nominal

SPECIFICATIONS (CONTINUED)

TRANSFER CHARACTERISTICS	RF TRANSMIT-BAND TO RF RECEIVE BAND	RF TRANSMIT-BAND TO L-BAND
Level Control	30 dB continuously adjustable, 30 dB/0.2 dB step	
Amplitude Response	±0.25 dB/40 MHz, ±1 dB/output frequency band	
Noise Figure at Minimum Attenuation	25 dB maximum	15 dB maximum
Frequency Stability	±2 x 10^{-8}, 0 to 50°C	
Frequency Aging	5 x 10^{-9}/day after 24 hours on time	
Conversion Loss	25 dB maximum	15 dB maximum (20 dB gain optional)
Conversion Loss Stability	±0.25 dB/day at 23°C	
Intermodulation	-50 dBc minimum at -5 dBm input	

Phase Noise (dBc/Hz) – Typical Phase Noise	LO Frequency	Offset (Hz)				
		100	1K	10K	100K	1M
	≤ 4.2 GHz	-85	-90	-92	-100	-120
	4.2 < LO ≤ 9 GHz	-80	-84	-87	-90	-115
	9 GHz < LO ≤ 16 GHz	-70	-77	-85	-87	-110

Automatic Reference Configuration	External 5 or 10 MHz at +4 ±3 dBm. If external reference is below +1 dBm nominal, the converter will automatically lock to the internal reference.
Input/Output Isolation	60 dB minimum
Translator Mute	60 dB minimum

INDICATOR and ALARMS

LO Out-of-lock	Red LED (front panel)
Internal Reference	Yellow LED (front panel)
Power ON Indicator	Green LED (front panel)
Summary Alarm	Contact closure status for DC voltage and local oscillator

REMOTE CONTROLS

Serial Interface	RS485/RS422
Ethernet Interface	10/100Base-T Ethernet interface providing:
	-HTTP-based web server
	-SNMP1.0 configuration
	-Alarm reporting via SNMP Trap
	-Telnet Access
	-Password protection

OPTIONS

10-1. Reference Clean-up Loop and Improved Frequency Stability ..... Reference oscillator acts as an analog phase lock with a 0.1 Hz nominal loop bandwidth.
Typical loop suppression of the external reference is as follows:
28 dB at 1 Hz offset, 65 dB at 10 Hz offset and
100 dB at 100 Hz offset
Frequency Stability:
±2 x 10^{-9}, 0 to 50°C
Frequency Aging:
1 x 10^{-9} per day after 24 hours operation
preceded by 10 days operation

OPTIONS

10-3. Gain on Transmit to L-band Units -

Gain	20 ±3 dB
Power Output (1 dB Compression)	+18 dBm minimum
Gain Slope	0.03 dB/MHz maximum
Gain Stability	±0.25 dB/day maximum at constant temperature
Group Delay	1 ns peak-to-peak maximum
Spurious Outputs (Inband) -	
Signal Related	65 dBc minimum at 0 dBm output
Signal Independent	-75 dBm maximum
Intermodulation Distortion (Third Order)	With two inband signals at 0 dBm output, third order intermodulation products are less than 60 dBc minimum and 50 dBc minimum (Ka-band units)

10-4. External LO input-

Selectable external LO Input	+10 dBm ±3 dB, frequency determined by model.
Connector	SMA female

PRIMARY POWER REQUIREMENTS

Voltage	90-250 VAC
Frequency	47-63Hz
Consumption	16W typical
Fuse	T1.25A

PHYSICAL

Weight	6 pounds (2.7 kg) nominal
Connectors-	
RF	SMA female
L-band	N female
L-band Monitor	SMA female
LO Monitor	SMA female
External Reference	SMA female
Status/Control Interface	MS3116F14-18P type for summary alarm, RS422/ RS485
Remote Interface	RJ-45 female for Ethernet RS485 available on Status connector
Primary Power	FCI clipper series CL1M1102

ENVIRONMENTAL

Enclosure rating	IP-65
Operating-	
Ambient Temperature	-40 to 60°C
Altitude	Up to 10,000 feet
Non-operating–	
Ambient Temperature	-50 to 70°C
Altitude	Up to 40,000 feet
Shock and Vibration	Normal handling by commercial carriers

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