

OUTDOOR V-BAND BLOCK CONVERTERS WITH HIGH PERFORMANCE OPTIONS

This series of V-band Outdoor Block Upconverters and Downconverters are designed for antenna mounting.

A strong set of monitor and control functions support powerful remote control. A contact closure summary alarm is provided for fault monitoring.

A corresponding set of outdoor Ka band block converters can be found in data sheet GS26.



STANDARD FEATURES

- Small-sized weather resistant enclosure
- Amplitude slope adjust
- RS422, RS485 and 10/100 Base-T Ethernet
- Serial output for Redundancy Switchover units
- L-band monitor ports
- Automatic 5/10 MHz internal/external reference selection
- Electronic adjust of internal reference frequency
- Low phase noise
- Low intermodulation distortion
- 30 dB of L-band level control
- Mute function on alarm or external mute input command

BLOCK UPCONVERTERS

RF Output (GHz)	L-Band (GHz)	LO (GHz)	Model Number
43.5-45.5	1-3	42.5	UBE-2-44.5
44-45	0.95-1.95	43.05 (Band 1)	UBE-1.45-44.5/48
47.5-48.5	0.95-1.95	46.05 (Band 2)	

SPECIFICATIONS (1/2)

INPUT CHARACTERISTICS

Return Loss (50 Ohms)
Signal Monitor
LO Leakage
Input Level (Non-damage)

OUTPUT CHARACTERISTICS

Return Loss (50 Ohms)
Signal Monitor
Power Output (1 dB Compression)

UPCONVERTER

Return Loss (50 Ohms) 14 dB minimum
Signal Monitor -20 dBc nominal
LO Leakage N/A
Input Level (Non-damage) +10 dBm

DOWNCONVERTER

Return Loss (50 Ohms) N/A
Signal Monitor -80 dB maximum
Power Output (1 dB Compression) +10 dBm minimum

OPTIONS

- High performance package
- Lower gain
- Reference clean-up loop and improved stability
- Lower phase noise
- RF Monitor

REVERSE BAND BLOCK DOWNCONVERTERS

RF Output (GHz)	L-Band (GHz)	LO (GHz)	Model Number
37.5-38.5	0.95-1.95	36.05	DBE-38-1.45
39.5-40.5	0.95-1.95	38.05	DBE-40-1.45
43.5-44.5	0.95-1.95	42.55	DBE-44.5-1.45
38.5-39.5	0.95-1.95	37.05 (Band 1)	DBE4-39.5-1.45
39.5-40.5	0.95-1.95	38.05 (Band 2)	
40.5-41.5	0.95-1.95	39.05 (Band 3)	
41.5-42.5	0.95-1.95	40.05 (Band 4)	



OUTDOOR V-BAND BLOCK CONVERTERS WITH HIGH PERFORMANCE OPTIONS

SPECIFICATIONS (1/2)

UPCONVERTER

DOWNCONVERTER

TRANSFER CHARACTERISTICS

Gain	33 dB, ± 3 dB at center frequency	36 dB, ± 3 dB at center frequency
L-band Level Control		30 dB in 0.2 dB steps
RF-band Level Control		N/A
Level Stability	± 0.25 dB over any 20°C, 31.5 dB over -40° to 60°C	
Amplitude Response	± 0.25 dB/40 MHz maximum, ± 1 dB maximum over RF frequency band	
Slope Adjust	0 to 6 dB	
Noise Figure at Minimum Attenuation	20 dB maximum at maximum gain	
Image Rejection	70 dB minimum	
Third Order Intermodulation Distortion	40 dBc minimum	50 dBc minimum
With two inband signals each at 0 dBm, measured at the output	(+20 dBm IP3)	(+25 dBm IP3)
Spurious Outputs (Inband)		
Signal Related up to 0 dBm output	60 dBc minimum	
Signal Independent	-70 dBm maximum	
Signal Harmonic Related up to 0 dBm output	65 dBc minimum (including 2 x 1 spurious on IF bandwidths >1 GHz)	55 dBc minimum (including 2nd harmonic)
Maximum Phase Noise (dBc/Hz)		
With Maximum Reference Phase Noise:		
	LO Frequency	Offset (Hz)
10 Hz: -120 dBc/Hz	37 to 40 GHz	10 100 1K 10K 100K 1M
100 Hz: -145 dBc/Hz	42 to 45 GHz	-57 -66 -86 -90 -101 -107
1 kHz: -160 dBc/Hz	46 to 51 GHz	-55 -67 -85 -87 -99 -105
		-51 -57 -77 -84 -95 -101
Frequency Stability	$\pm 5 \times 10^{-8}$, -40° to +60°C (reference 25°C)	
Frequency Aging	5 x 10 ⁻⁹ /Day after 24 hours on time	
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.	
Converter Mute	60 dB minimum on summary alarm or mute command.	

REMOTE CONTROLS

Serial Interface	RS485/RS422
Ethernet Interface	10/100Base-T Ethernet • HTTP-based web server • SNMP 1.0 configuration • Alarm reporting via SNMP Trap • Telnet access

INDICATORS and ALARMS

Status Indicator	Red LED: Alarm, Yellow LED: External Reference
Power ON Indicator	Green LED
Summary Alarm	Contact closure/open for DC voltage and local oscillator (programmable LNA current alarm on downconverters +12VDC at 250 mA)

Note: All specifications are at maximum gain unless otherwise noted.



OUTDOOR V-BAND BLOCK CONVERTERS WITH HIGH PERFORMANCE OPTIONS

OPTIONS

64-1. High Performance Package

Power Output (1 dB Compression)

Gain Slope

Level Stability

Group Delay

Spurious Outputs (Inband)

Signal Related

Signal Independent

Image Rejection

Intermodulation Distortion (Third Order)

AM/P M Conversion (at 0 dBm Output)

Upconverter Mute.

+15 dBm minimum

0.03 dB/MHz maximum

±0.25 dB/day maximum at constant temperature,

±1.0 dB maximum/-40 to 60°C

1 ns peak-to-peak maximum

-65 dBc minimum at 0 dBm output

-80 dBm maximum

80 dB minimum

With two inband signals at 0 dBm output, third order
Intermodulation products are less than 60 dBc minimum

0.1°/dB maximum

80 dB minimum on summary alarm, external mute input control
or remote command

64-2. Lower Gain

20 ±3 dB at 23°C, 22 dB noise figure

signal related spurious, 65 dBc at -10 dBm output

2-4. 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:

15 dB at 1 Hz offset, 35 dB at 10 Hz offset and

55 dB at 100 Hz offset

0 dBm ±10 dB Lock range typical

Frequency Stability: $\pm 5 \times 10^{-9}$, -40 to 60°C

Frequency Aging: 1×10^{-9} per day after 24 hours operation
preceded by 10 days operation

64-5. Coaxial RF Connector

2.4 mm female

64-6. RF monitor

20 dBc nominal

64-7. RF Square flange

UG-599/U

64-8. Vertical mount

VM mounting location on short surface





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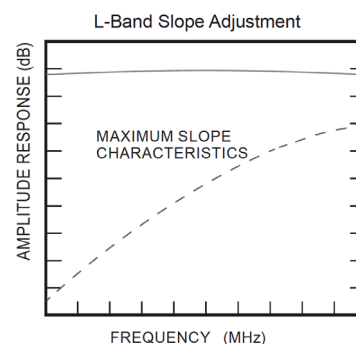
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PRIMARY POWER REQUIREMENTS

Voltage	90-250 VAC
Frequency	47-63 Hz
Consumption	15W typical
Fuse	T1.25A

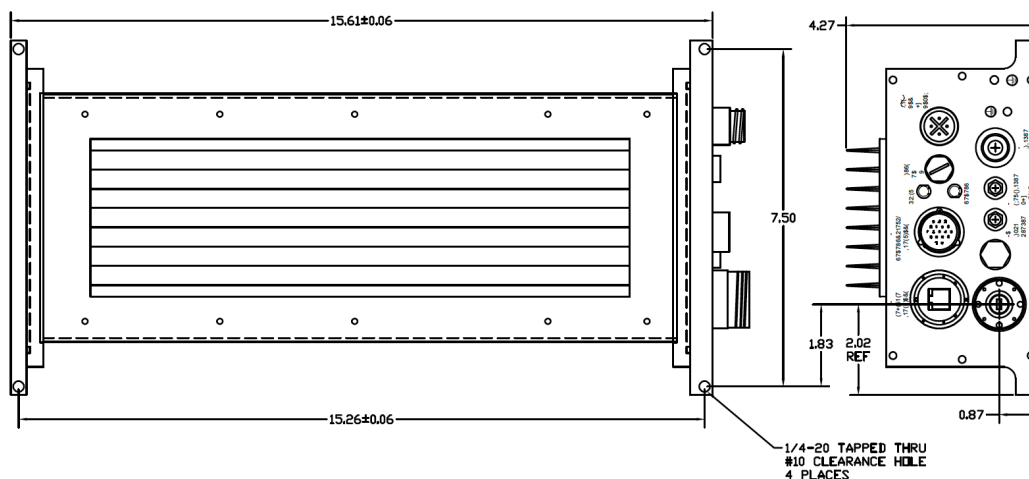
PHYSICAL

Weight	15 pounds (6.8 kg) nominal
Connectors	
RF	WR-22 grooved, UG-383/U flange
L-band	N female
RF Monitor	SMA female compatible
L-band Monitor	SMA female
External Reference	SMA female
Status/Control Interface	MS3116F14-18P type for summary alarm, RS422, RS485, and LNA power
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



EUROSATCOM
VSATECH ASSOCIÉ

3 avenue du Canada, bât. Zeta, 91940 Les Ulis, France

+33 1 69 18 19 30

www.eurosatcom.eu

sales@eurosatcom.eu

