

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

OPTIONS

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

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)	

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)	

SPECIFICATIONS

INPUT CHARACTERISTICS -	UPCONVERTER	DOWNCONVERTER
Return Loss (50 Ohms)	14 dB minimum	
Signal Monitor	-20 dBc nominal	N/A
LO Leakage	N/A	-80 dB maximum
Input Level (Non-damage)	+10 dBm	

OUTPUT CHARACTERISTICS -

Return Loss (50 ohms)	14 dB minimum	
Signal Monitor	N/A	-20 dBc nominal
Power Output (1 dB Compression)	+10 dBm minimum	+15 dBm

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, ±1.5 dB over -40° to 60°C						
Amplitude Response	±0.25 dB/40 MHz maximum, ±1 dB maximum over RF frequencyband						
Slope Adjust	0 to 6 dB minimum						
Noise Figure at Minimum Attenuation	20 dB maximum at maximum gain						
Image Rejection	70 dB minimum						
Third Order Intermodulation Distortion With two inband signals each at 0 dBm, measured at the output	40 dBc minimum (+20 dBm IP3)			50 dBc minimum (+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 -15 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) –		Offset (Hz)					
With Maximum Reference Phase	LO Frequency	10	100	1K	10K	100K	1M
10 Hz: -120 dBc/Hz	37 to 40 GHz	-57	-66	-86	-90	-101	-107
100 Hz: -145 dBc/Hz	42 to 45 GHz	-55	-67	-85	-87	-99	-105
1 kHz: -160 dBc/Hz	46 to 51 GHz	-51	-57	-77	-84	-95	-101
Frequency Stability	±5 x 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.

OPTIONS

64-1. High Performance Package -

Power Output (1 dB Compression)	+15 dBm minimum
Gain Slope	0.03 dB/MHz maximum
Level Stability	±0.25 dB/day maximum at constant temperature, ±1.0 dB maximum/-40 to 60°C
Group Delay	1 ns peak-to-peak maximum
Spurious Outputs (Inband)	
Signal Related	-65 dBc minimum at 0 dBm output
Signal Independent	-80 dBm maximum
Image Rejection	80 dB minimum
Intermodulation Distortion (Third Order)	With two inband signals at 0 dBm output, third order intermodulation products are less than 60 dBc minimum.
AM/PM Conversion (at 0 dBm Output)	0.1°/dB maximum
Upconverter Mute.....	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
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64-4. Reference Clean-up Loop and Improved Frequency Stability	Reference oscillator acts as an digital 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
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64-5. Coaxial RF Connector.....	2.4 mm female
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64-6. RF monitor	20 dBc nominal
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64-7. RF Square flange.....	UG-599/U
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64-8. Vertical mount	VM mounting location on short surface
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PRIMARY POWER REQUIREMENTS

Voltage.....90-250 VAC
 Frequency.....47-63Hz
 Consumption15W typical
 Fuse.....T1.25A

PHYSICAL

Weight 15 pounds (6.8 kg)
 Connectors- nominal
 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

