

HIGH-PERFORMANCE OUTDOOR BLOCK UPCONVERTERS AND DOWNCONVERTERS



FOR Q-BAND APPLICATIONS



FEATURES

- Small weather resistant enclosure
- Automatic 5/10 MHz internal/external reference selection
- RS-485/RS-422 and 10/100 Base-T Ethernet remote control
- RF input signal monitor ports
- 30 dB gain control
- 32 memory locations
- High-frequency stability
- Summary alarm
- AC power supply (CE mark)

OPTIONS

- High-performance package
- Higher frequency stability
- Lower gain
- DC power
- LO level monitoring
- Low-noise amplifier (downconverters only)
- Custom higher IF frequency bands (ie: X-Band) are available as a special order option

This series of L3 Narda-MITEQ outdoor block upconverters and downconverters is 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 continuously updated log of time-stamped records of activity is also provided.



HIGH-PERFORMANCE OUTDOOR BLOCK UPCONVERTERS AND DOWNCONVERTERS

BLOCK UPCONVERTERS

SPECIFICATIONS	UPCONVERTER	DOWNCONVERTER
Input characteristics		
Return loss (50 ohms)	18 dB minimum	18 dB minimum
LO leakage	N/A	-80 dB maximum
Signal monitor	-20 dBc nominal	N/A
Output characteristics		
Return loss	18 dB minimum	18 dB minimum
Signal monitor	N/A	-20 dBc nominal
Power output (1 dB compression)	+10 dBm minimum	+18 dBm minimum
Transfer characteristics		
Gain	33 dB \pm 3 dB at 23 °C	38 dB \pm 3 dB at 23 °C
Gain control	30 dB in 0.2 dB steps	30 dB in 0.2 dB steps
Gain stability	\pm 0.25 dB/day maximum at constant temperature \pm 2 dB, -40 °C to +60 °C	
Amplitude response	\pm 0.25 dB/40 MHz maximum, \pm 1 dB maximum over RF frequency band	
Image rejection	80 dB minimum	80 dB minimum
Noise figure at min attenuation	20 dB maximum	20 dB maximum
Intermodulation distortion (third order)	With two inband signals at 0 dBm output, third-order intermodulation products are less than: 40 dBc minimum 60 dBc minimum	
Spurious outputs (inband)		
Signal-related	65 dBc minimum up to 0 dBm output at maximum gain	
IF Harmonic related (IF bandwidth > 1 GHz)	(2 x 1) 65 dBc minimum up to -10 dBm output at maximum gain	
Signal-independent	-65 dBm maximum	-65 dBm maximum
Phase noise	See graph	See graph
Frequency stability	\pm 5 x 10 ⁻⁸ , -40 °C to +60 °C (higher stability options available), 5 x 10 ⁻⁹ /day typical (fixed temperature after 24 hours on time)	
Automatic reference configuration	External 5 MHz or 10 MHz at +4 \pm 3 dBm. Unit will automatically switch to internal reference if external reference level falls below +1 dBm nominal.	
Upconverter mute	60 dB minimum on summary alarm or mute command	
Remote interface	10/100 Base-T Ethernet interface providing web-browser based configuration, SNMP 1.0 configuration, alarm reporting via SNMP trap, telnet access, password protection and selectable RS-485/RS-422. Refer to L3 Narda-MITEQ Technical Note 25T066 for details.	
Indicator and Alarms		
LO out-of-lock	Red LED (front panel)	Red LED (front panel)
Power ON indicator	Green LED (front panel)	Green LED (front panel)
Summary alarm	Contact closure status for DC voltage and local oscillator (Programmable LNA current alarm for downconverters +12 VDC up to 500 mA maximum)	

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



BLOCK UP CONVERTERS

INPUT FREQUENCY (GHz)	OUTPUT FREQUENCY (GHz)	TRANSLATION FREQUENCY (GHz)	MODEL NUMBER
0.95 to 1.45	43.5 to 44.0	42.55	UPB-WS-43.75
0.95 to 1.45	44.0 to 44.5	43.05	UPB-WS-44.25
0.95 to 1.45	44.5 to 45.0	43.55	UPB-WS-44.75
0.95 to 1.45	45.0 to 45.5	44.05	UPB-WS-45.25
0.95 to 1.95	43.5 to 44.5	42.55	UPB-WS-44
0.95 to 1.95	44.5 to 45.5	43.55	UPB-WS-45
0.95 to 1.95	43.5 to 45.5	42.55/43.55	UPB2-WS-44.5
1 to 2	43.5 to 45.5	42.50/43.50	UPB2-WS-44.5.1

BLOCK DOWN CONVERTERS

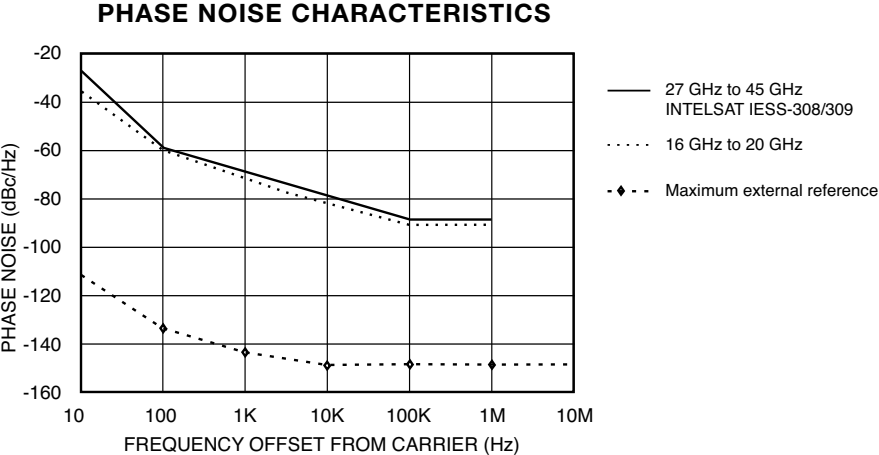
INPUT FREQUENCY (GHz)	OUTPUT FREQUENCY (GHz)	TRANSLATION FREQUENCY (GHz)	MODEL NUMBER
18.3 to 18.8	0.95 to 1.45	17.35	DNB-WS-18.55
19.7 to 20.2	0.95 to 1.45	18.75	DNB-WS-19.95
20.2 to 21.2	0.95 to 1.95	19.25	DNB-WS-20.7
20.2 to 21.2	1 to 2	19.2	DNB-WS-20.7-1

TEST DOWN CONVERTERS

INPUT FREQUENCY (GHz)	OUTPUT FREQUENCY (GHz)	TRANSLATION FREQUENCY (GHz)	MODEL NUMBER
43.5 to 44.0	0.95 to 1.45	42.55	DNB-WS-43.75
44.0 to 44.5	0.95 to 1.45	43.05	DNB-WS-44.25
44.5 to 45.0	0.95 to 1.45	43.55	DNB-WS-44.75
45.0 to 45.5	0.95 to 1.45	44.05	DNB-WS-45.25
43.5 to 44.5	0.95 to 1.95	42.55	DNB-WS-44
44.5 to 45.5	0.95 to 1.95	43.55	DNB-WS-45
43.5 to 45.5	0.95 to 1.95	42.55/43.55	DNB2-WS-44.5

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PHASE NOISE SPECIFICATIONS





OPTIONS

Missing option numbers are not applicable for this product.

- 1. High-performance package
 - Power output (1 dB compression).....15 dBm minimum (upconverters),
20 dBm minimum (downconverters)
 - Gain slope0.03 dB/MHz maximum
 - Gain stability±0.25 dB/day maximum at constant temperature,
±1.0 dB peak-to-peak maximum/-40 °C to +60 °C
 - Group delay1 ns peak-to-peak maximum
 - Spurious outputs (inband)
 - Signal-related65 dBc minimum up to 0 dBm output
 - Signal-independent-80 dBm maximum
 - Intermodulation distortion (third order).....With two inband signals at 0 dBm output, third-order
intermodulation products are less than 50 dBc minimum
(upconverters), 60 dBc minimum (downconverters)
 - Noise spectral density-78 dBm/4 kHz maximum (downconverters),
-83 dBm/4 kHz maximum (upconverters)
 - AM/PM conversion (at 0 dBm output).....0.1°/dB maximum
 - Upconverter mute.....80 dB minimum on summary alarm, external mute
input command or remote control.
- 2. Lower gain
 - Gain20 ±3 dB at 23 °C, 22 dB noise figure,
signal related spurious -65 dBc at -10 dBm output.
- 8. LO level alarm
 - Summary alarm is generated for loss of power in any of the required local oscillators
- 10. Higher frequency stability reference
 - C. ±5 x 10⁻⁹, -40 °C to +60 °C,
1 x 10⁻⁹/day typical (fixed temperature after 24 hours on time).
 - F. 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,
100 dB at 100 Hz offset.
- 14. Low Noise Option (Downconverters only).

FREQUENCY (GHz)	AVAILABLE NOISE TEMPERATURE	
	AT +25 °C (MAXIMUM)	INTERFACE INPUT
18.30 to 18.80	120°	WR-42 Grooved Flange
19.70 to 20.20	120°	WR-42 Grooved Flange
20.20 to 21.20	120°	WR-42 Grooved Flange

Note: Gain increase to 62 ±3 dBm.

- 19. DC power input
 - A. +24 VDC to +32 VDC input
 - B. +42 VDC to +60 VDC input
 - C. -42 VDC to -60 VDC input
- 27. RF connector optionRF connector on rear panel as per outline drawing
waveguide location. Please consult factory.
- VM. Vertical mounting option for integration on RB plates

HIGH-PERFORMANCE OUTDOOR BLOCK UP CONVERTERS AND DOWN CONVERTERS

GENERAL SPECIFICATIONS

PRIMARY POWER REQUIREMENTS

Voltage 90 VAC to 250 VAC
 Frequency 47 Hz to 63 Hz
 Consumption 40 W typical

PHYSICAL

Weight 15 lb. [6.80 kg] nominal

Front panel connectors

RF-Band

Below 22 GHz SMA female compatible
 Above 40 GHz WR-22 grooved, UG-383/U flange

L-Band N female

L-Band monitor SMA female

External reference input SMA female

Status monitor MS3116E14-18S for summary alarm and RS-422/RS-485*

Remote interface RJ-45 female for Ethernet, RS-422/RS-485 available on status connector

Primary power input FCI Clipper Series

*Note: Unit supplied with mating connector.

ENVIRONMENTAL

Operating

Temperature -40 °C to +60 °C

Atmospheric pressure Up to 10,000 feet

Nonoperating

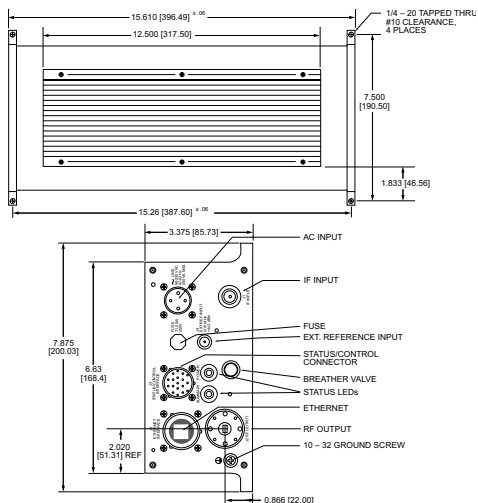
Temperature -50 °C to +70 °C

Atmospheric pressure Up to 40,000 feet

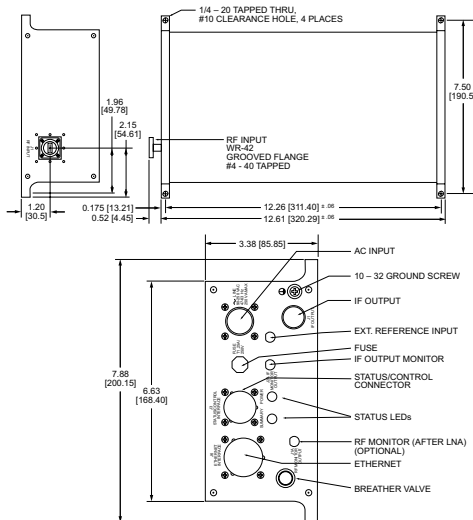
Shock and vibration Normal handling by commercial carriers

OUTLINE DRAWINGS

Q-BAND UP CONVERTER PACKAGE



Q-BAND DOWN CONVERTER WITH LOW NOISE OPTION



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