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**Block/Fixed Tuned  
Converters**

## High Performance Outdoor Block Up- and Downconverters



**MITEQ**

**HIGH PERFORMANCE  
OUTDOOR BLOCK  
UPCONVERTERS  
AND BLOCK  
DOWN-  
CONVERTERS**

**FEATURES**

- Small weather resistant enclosure
- Automatic 5V0 Vpp internal external reference selection
- FHSS/FHSS and 10/100base-T Ethernet options available
- High speed digital interface ports
- 20 dB gain control
- 32 memory locations
- High frequency stability
- Supervisory alarm
- AC power supply (CE mark)

This series of outdoor block upconverters and downconverters are designed for antenna mounting.

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

A continuously updated log of time stamped records of activity is also provided.

**OPTIONS**

- Higher performance package
- Higher frequency stability
- Lower group delay
- LD level monitor
- Lower gain
- DC power

**S&C**

- Specifications
- Options
- Phase Noise
- Outline Drawing



# HIGH PERFORMANCE OUTDOOR BLOCK UPCONVERTERS AND BLOCK DOWN- CONVERTERS



## FEATURES

- Small weather resistant enclosure
- Automatic 5/10 MHz internal/external reference selection
- RS485/RS422 and 10/100Base-T Ethernet remote control
- RF input/output signal monitor ports
- 30 dB gain control
- 32 memory locations
- High frequency stability
- Summary alarm
- AC power supply (CE mark)

This series of 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 continuously updated log of time stamped records of activity is also provided.

## OPTIONS

- Higher performance package
- Higher frequency stability
- Lower phase noise
- LO level monitor
- Lower gain
- DC power





## SPECIFICATIONS (CONT.)

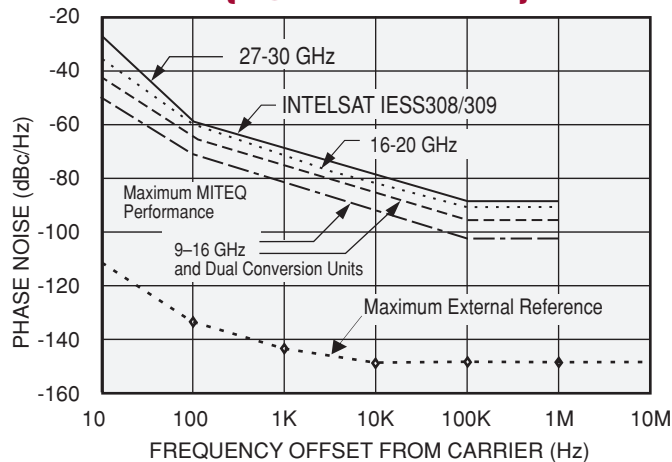
### TRANSFER CHARACTERISTICS

Gain	
Upconverters.....	33 dB, $\pm 3$ dB at 23°C
Downconverters .....	38 dB, $\pm 3$ dB at 23°C
Gain adjustment.....	30 dB in 0.2 dB steps
Gain stability.....	$\pm 0.25$ dB/day maximum at constant temperature
Amplitude response .....	$\pm 0.25$ dB/ $\pm 40$ MHz maximum, $\pm 1$ dB over RF frequency band
Image rejection.....	80 dB minimum
Noise figure (at minimum attenuation).....	15 dB maximum (20 dB for upconverters with 1 GHz IF bandwidth and Ka-band above 22 GHz)
Intermodulation distortion (third order) .....	With two inband signals at 0 dBm output, third order intermodulation products are less than 60 dBc minimum (downconverters) and 50 dBc minimum (upconverters, and all Ka-band units)
Spurious outputs (inband)	
Signal related.....	65 dBc minimum up to 0 dBm output (including 2x1 spurious on 1 GHz IF bandwidth units)
Signal independent .....	-75 dBm maximum
Phase noise .....	See graph
Frequency stability .....	$\pm 5 \times 10^{-8}$ , -40 to +60°C (higher stability options available), $5 \times 10^{-9}$ /day typical (fixed temperature after 24 hour on time)
Automatic reference configuration .....	External 5 or 10 MHz at +4 $\pm 3$ dBm. If external reference is above +1 dBm, the internal reference oscillator will lock to the external reference input. 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
Upconverter mute.....	60 dB minimum on summary alarm or mute command
Remote interface.....	10/100Base-T Ethernet interface providing Web-browser based configuration, SNMP 1.0 configuration, alarm reporting via SNMP trap, telnet access, password protection and selectable RS485/RS422. Refer to MITEQ's Technical Note 25T060 for details.

### INDICATOR AND ALARMS

LO out-of-lock.....	Red LED (front panel)
Power ON indicator.....	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)

### PHASE NOISE CHARACTERISTICS (1.0 Hz BANDWIDTH)





## OPTIONS (CONT.)

**14.** Low noise option (downconverters only).

Frequency (GHz)	Available Noise Temperature At +25°C (Maximum)	Interface Input
3.40 - 4.20	35	CPR-229GN
3.70 - 4.20	35	CPR-229GN
7.25 - 7.75	50	CPR-112G
10.70 - 11.70	80	WR-75 Grooved Flange
10.95 - 11.70	70	WR-75 Grooved Flange
11.45 - 12.25	70	WR-75 Grooved Flange
11.70 - 12.50	70	WR-75 Grooved Flange
12.20 - 12.75	70	WR-75 Grooved Flange
18.30 - 18.80	140	WR-42 Grooved Flange
19.70 - 20.20	140	WR-42 Grooved Flange
20.20 - 21.20	140	WR-42 Grooved Flange

NOTE: Gain increase to 62 ±3 dBm.

**19.** DC power input.

**A.** +24 to +32 VDC input

**B.** +42 to +60 VDC input

**C.** -42 to -60 VDC input

**27.** RF connector option ..... RF connector on rear panel as per Outline Drawing 3 Waveguide TBD

## GENERAL SPECIFICATIONS

### PRIMARY POWER REQUIREMENTS

Voltage .....	90–250 VAC
Frequency .....	47–63 Hz
Consumption .....	12 W typical

### PHYSICAL

Weight ..... 15 pounds nominal

#### Connectors

##### Front panel connectors

##### RF band

Below 22 GHz ..... SMA female compatible

Above 26.5 GHz ..... WR-28 grooved

L-band ..... N female

RF band monitor ..... SMA female compatible

L-band monitor ..... SMA female

External reference input ..... SMA female

Status/Control interface ..... MS3116F14-18P for summary alarm, RS422/485\*, and LNA power

Remote interface ..... RJ-45 female for Ethernet, RS422/485 available on status connector

Primary power input ..... FCI clipper series CL1M1102\*

\*Note: Unit supplied with mating connector.

### ENVIRONMENTAL

#### Operating

Ambient temperature ..... -40 to +60°C

Atmospheric pressure ..... Up to 10,000 feet

#### Nonoperating

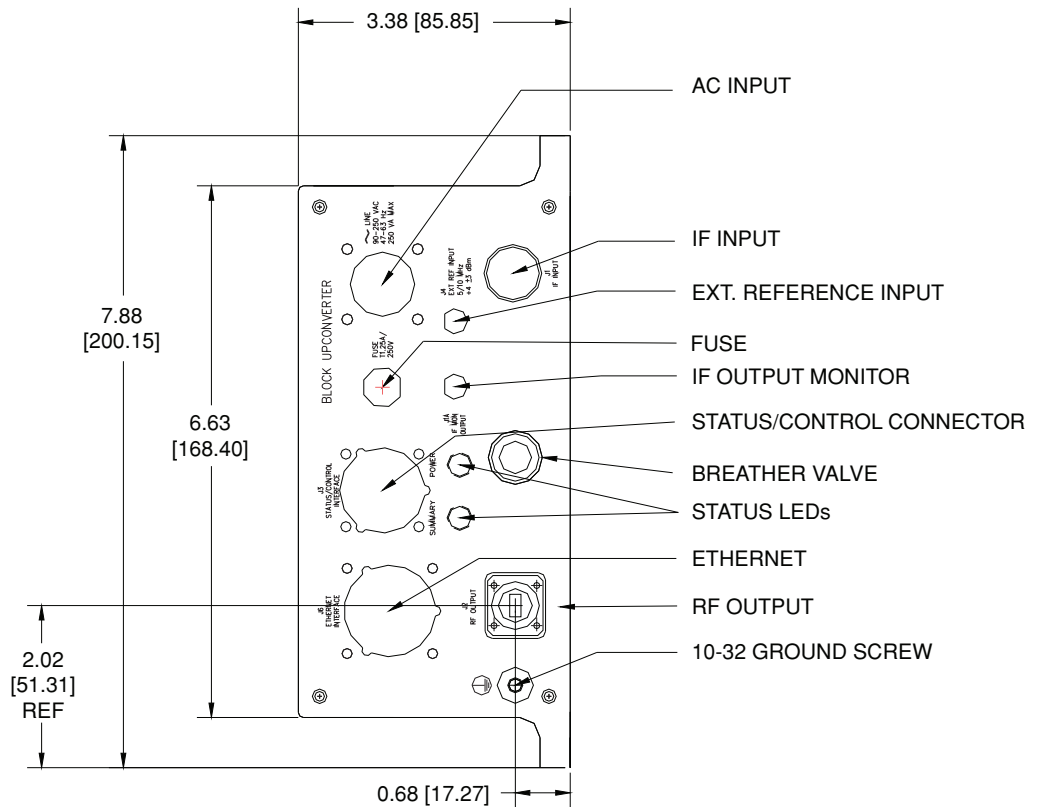
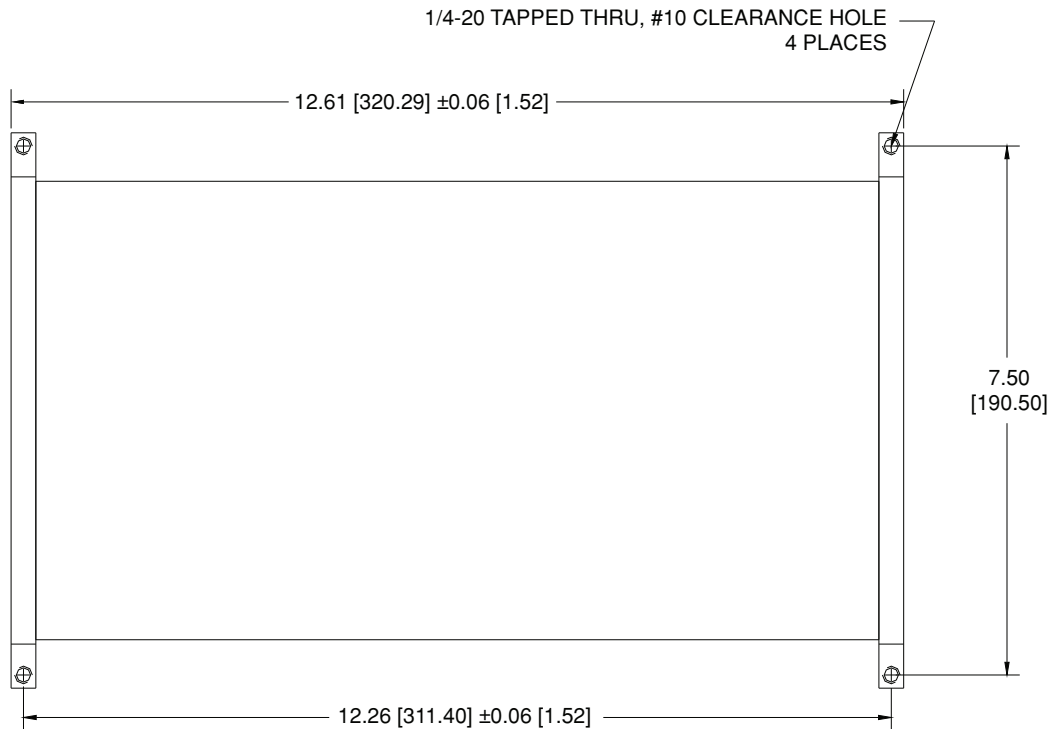
Ambient temperature ..... -50 to +70°C

Atmospheric pressure ..... Up to 40,000 feet

Shock and vibration ..... Normal handling by commercial carriers



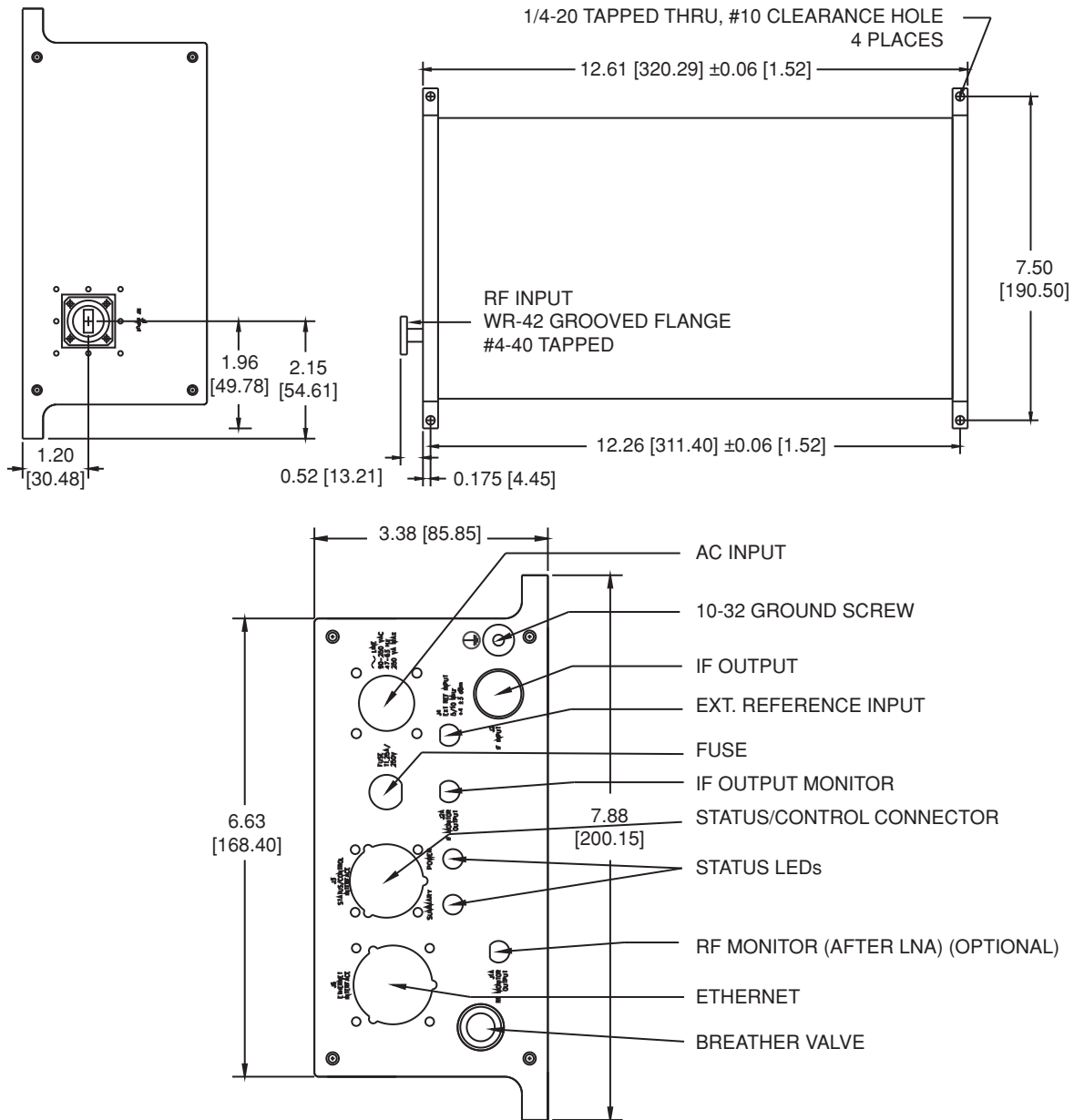
# OUTLINE DRAWING - Ka-BAND UP PACKAGE



NOTE: Dimensions shown in brackets [ ] are in millimeters.

# HIGH PERFORMANCE OUTDOOR BLOCK UP CONVERTERS AND BLOCK DOWN CONVERTERS

## OUTLINE DRAWING - Ka-BAND DOWN WITH LOW NOISE OPTION



NOTE: Dimensions shown in brackets [ ] are in millimeters.