



# Ka-BAND OUTDOOR BLOCK UPCONVERTERS AND LOW-NOISE BLOCK DOWNCONVERTERS



## FEATURES

- Small size
- Weather resistant enclosure
- Low noise temperature downconverters
- Automatic 5/10 MHz and internal/external reference selection
- Low phase noise
- High frequency stability
- Summary alarm

This series of Ka-band block upconverters and downconverters are designed for antenna mounting. A contact closure summary alarm is provided for fault monitoring.

## OPTIONS

- Higher stability reference
- Remote Ethernet and RS422/RS485 remote control
- 30 dB gain control
- AC power supply (CE mark)

## SPECIFICATIONS

### UPCONVERTERS

Model Number	Input Frequency (GHz)	Output Frequency (GHz)	LO Frequency (GHz)
UB-WS-28.475	0.95 – 1.2	28.35 – 28.6	27.4
UB-WS-29.375	0.95 – 1.2	29.25 – 29.5	28.3
UB-WS-29.25	0.95 – 1.45	29 – 29.5	28.05
UB-WS-29.75	0.95 – 1.45	29.5 – 30	28.55
UB-WS-28.5	1 – 2	28 – 29	27
UB-WS-29.5	1 – 2	29 – 30	28
UB-WS-30.5	1 – 2	30 – 31	29

### DOWNCONVERTERS

Model Number	Input Frequency (GHz)	Output Frequency (GHz)	LO Frequency (GHz)
DB-WS-18.55	18.3 – 18.8	0.95 – 1.45	17.35
DB-WS-19.95	19.7 – 20.2	0.95 – 1.45	18.75
DB-WS-20.7	20.2 – 21.2	0.95 – 1.95	19.25
DB-WS-20.7-1	20.2 – 21.2	1 – 2	19.2

Type .....	Single conversion
Frequency sense.....	No inversion
Input characteristics	
Impedance .....	50 ohms
Return loss.....	18 dB minimum
Output characteristics	
Impedance .....	50 ohms
Return loss.....	18 dB minimum
Power output (1 dB compression) .....	+10 dBm minimum
Transfer characteristics	
Gain (at minimum attenuation with Option 17)	
Upconverters .....	30 dB minimum
Downconverters.....	50 dB minimum
Image rejection.....	80 dB minimum
Level stability	
Constant temperature .....	±0.25 dB/day maximum
Over operating temperature.....	2 dB maximum
Noise figure (at minimum attenuation)	
Upconverters.....	18 dB maximum
Noise temperature	
Downconverters .....	150°K maximum at 23°C
Amplitude response .....	±0.5 dB/±40 MHz, ±2.0 dB over RF-band
Group delay.....	1 ns peak-to-peak maximum
Intermodulation distortion (third order).....	With two 0 dBm output signals, 40 dBc minimum
Spurious outputs	
Signal related.....	65 dBc minimum up to 0 dBm output level
Signal independent .....	-70 dBm maximum
LO leakage at RF.....	-70 dBm maximum
Gain adjustment (Option 17 only) .....	30 dB in 0.2 dB steps
Frequency stability .....	±5 x 10 <sup>-8</sup> , -40 to +60°C (higher stability options available), ±5 x 10 <sup>-9</sup> /day typical (fixed temperature after 24 hour 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.

## OPTIONS

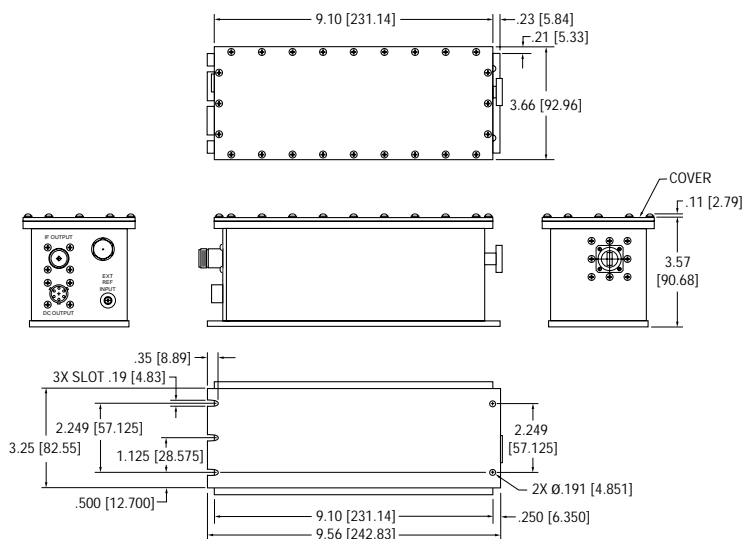
1. AC input power  
Voltage: 90–250 VAC  
Frequency: 47–63 Hz  
Connector: FCI Clipper series CL1M1102 (supplied with mating connector)  
Mechanical: Outline 2
  
10. Higher frequency stability reference.  
 $\pm 5 \times 10^{-9}$ , -40 to +60°C,  
 $1 \times 10^{-9}$ /day typical (fixed temperature after 24 hour on time).
  
17. Remote interface and digital level adjust  
10/100 Base-T Ethernet and RS422/485  
TCP/IP  
Static or DHCP addressing  
User selectable: Control, SNMP, Agent, HTTP Server or Telnet  
Serial remote: RS485 or RS422 selectable  
Level adjust: 30 dB in 0.2 dB steps  
Ethernet interface connector: RJ-45 female  
RS422/RS485 summary alarm connector: MS3116F12-10P  
Mechanical: Outline 2

Notes: Missing option numbers are not applicable for this product.

For literature describing Option 17 remote control (bus protocols), refer to MITEQ's Technical Note 25T060.

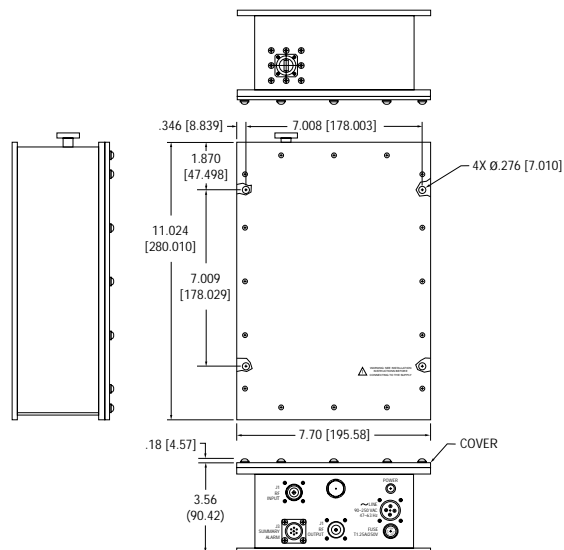
## OUTLINE DRAWINGS

**OUTLINE 1**



**OUTLINE 2**

(FOR UNITS WITH OPTION 1 AND/OR 17)



NOTE: DIMENSIONS ARE IN INCHES, MILLIMETERS ARE SHOWN IN BRACKETS [ ].

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## POWER REQUIREMENTS

Voltage ..... 12–20 VDC  
Current ..... 800 mA maximum (no options)

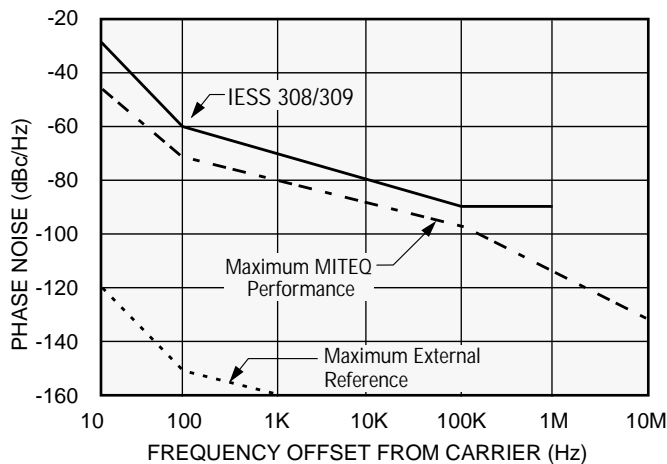
## PHYSICAL

Weight ..... 5 pounds nominal, 12 pounds with Options 1 and/or 17  
Connectors  
RF  
    Below 26.5 GHz ..... WR-42 grooved  
    Above 26.5 GHz ..... WR-28 grooved  
IF ..... N female  
External reference ..... SMA female  
Power/status interface ..... MS3116F10-6S (mating connector supplied)

## 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

**PHASE NOISE CHARACTERISTICS  
(1.0 Hz BANDWIDTH)**



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