Synthesized Dual-Channel Outdoor Downconverters

For Tracking Applications

Dual-Conversion
1 kHz or 125 kHz Step Size

Input Frequency (GHz)	Step Size (kHz)	Phase Noise Characteristics	Model Number
3.4 – 4.2	125	Curve 1	D2-101-1
3.4 – 4.2	1	Curve 1	D2-101-1-1K
4.5 – 4.8	125	Curve 1	D2-102-2
4.5 – 4.8	1	Curve 1	D2-102-2-1K
7.25 – 7.75	125	Curve 2	D2-105
7.25 – 7.75	1	Curve 2	D2-105-1K
10.7 – 12.75	125	Curve 3	D2-108-6*
10.7 – 12.75	1	Curve 3	D2-108-6-1K*

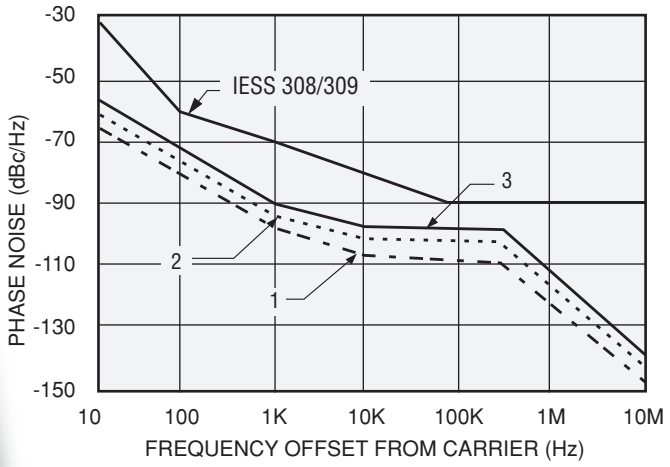
* Refer to noise figure specification.

The dual-channel 100 series synthesized frequency downconverters are designed for tracking applications in an outdoor environment. An internal synthesizer provides frequency tuning. All units are fully compliant with INTELSAT requirements IESS 308/309.

In addition to an RS422/485 remote monitor and control port, each unit has an RS232 local control port. A robust feature set is provided with the local control software that communicates with the converter via a COM port on an IBM compatible PC.

Phase Noise Specifications

Typical Phase Noise Characteristics (1.0 Hz Bandwidth)



Features

- **Compact outdoor unit**
- **Low phase noise**
- **Dual conversion**
- **Low intermodulation distortion**
- **No spectral inversion**
- **Local control via RS232 remote**
- **Simple installation**
- **Temperature compensated gain**
- **Summary alarm outputs**
- **Remote reference oscillator adjust**
- **Time-stamped alarm history**
- **System temperature monitor**

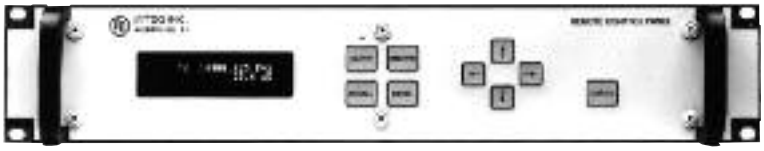
Specifications

Type	Dual conversion
Tunability	First local oscillator only
Frequency sense	No inversion
Input characteristics	
Frequency	Refer to model number table
Impedance	50 ohms
Return loss	20 dB minimum
Signal monitor	-20 dBc nominal (Option 2A)
LO leakage	-80 dBm maximum
Output characteristics	
Frequency	70 ±2 MHz
Impedance	75 ohms (50 ohms optional)
Return loss	23 dB minimum
Power output (1 dB compression)	+10 dBm minimum
Signal monitor	-20 dBc nominal
Transfer characteristics	
Noise figure	10 dB typical, 12 dB maximum, *12 dB typical, 15 dB maximum
Gain	30 dB nominal (higher gain optional)
Image rejection	80 dB minimum
Level stability	
Constant temperature	±0.25 dB/day at constant temperature
Operating temperature range	±1.5 dB typical
Amplitude response	0.3 dB peak-to-peak/4 MHz
Intermodulation distortion (third order)	With two 0 dBm output signals, 40 dBc minimum
Channel-to-channel isolation	50 dB minimum
Channel-to-channel gain tracking	±1.0 dB/day maximum at constant temperature
Channel-to-channel phase tracking	±2°/day maximum at constant temperature
Spurious outputs	
Signal independent	-90 dBm max., -75 dBm max. (Option 16A), -65 dBm max. (Option 16C)
Signal related	65 dBc min. (for converters with RF frequencies below 8.5 GHz), 60 dBc min. (for converters with RF frequencies above 8.5 GHz)
Gain adjustment	30 dB in 0.2 dB steps
Frequency stability	±5 x 10^{-8}, -30 to +60°C (higher stability options available), ±5 x 10^{-9}/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.

Control Accessories

Weather resistant
hand-held control unit
MITEQ Model Number HCT-100
(sold separately)

Robust software feature set
(supplied as standard)



19” Rack-mount control unit, 2RU
MITEQ Model Number RCT-100
(sold separately)

Options

2. A. RF signal monitor (RF connector (SMA) with -20 dBc nominal level).

10. Higher frequency stability reference.
- **A.** ±2 x 10^{-8}, -30 to +60°C,
  5 x 10^{-9}/day typical (fixed temperature after 24 hour on time).
- **B.** ±1 x 10^{-8}, -30 to +60°C,
  1 x 10^{-9}/day typical (fixed temperature after 24 hour on time).
- **C.** ±5 x 10^{-9}, -30 to +60°C,
  1 x 10^{-9}/day typical (fixed temperature after 24 hour on time).

15. 50 ohm IF impedance.

16. Higher gain option.
- **A.** 45 dB nominal RF/IF gain.
- **C.** 55 dB nominal RF/IF gain.

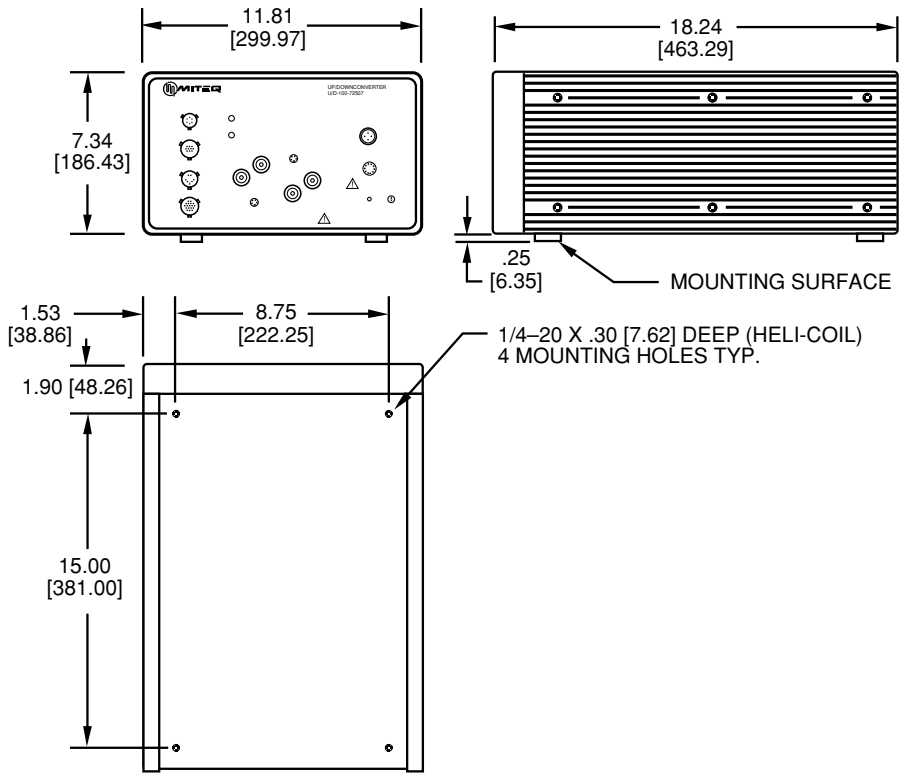
Specification of signal independent spurious increases with increase in RF/IF gain (e.g., if without option, specification is -90 dBm maximum, an increase of 15 dB in gain (Option 16A) will result in signal independent spurious of -75 dBm maximum).

17. Remote control.
- **A.** RS422.
- **B.** RS485 (supplied as standard).
  Unit is supplied with an RS232 communications port and an optional secondary remote interface.

26. Pressurization.
Converter enclosures capable of 0.5 PSI.
Leak rate 3.0 standard cubic feet per hour maximum.

Notes: Missing option numbers are not applicable to this product.
For literature describing local control and remote control (bus protocols), refer to MITEQ's Technical Note 25T032.

Outline Drawing



NOTE: DIMENSIONS IN [ ] BRACKETS ARE IN MILLIMETERS.

General Specifications

Primary Power Requirements

Voltage	90–250 VAC
Frequency	47–63 Hz
Power consumption	120 W typical

Summary Alarm

Contact closure/open for DC voltage and/or LO alarm
Status alarm readout on remote control bus

Physical

Converter enclosure	Refer to outline drawing
RF connectors	SMA female
IF connectors	N female
External reference connector	BNC female
Redundancy interface mating connector	MS3116F14-18P*
Status interface mating connector	MS3116F12-10S*
Local control (RS232) interface mating connector	MS3116F10-6P*
AC input connector	FCI Clipper series CL1M1102* (Clipper series is interchangeable with MIL-C-5015 and AMP CPC product)

*Note: Unit supplied with mating connector.

Converter enclosure weight	30 (13.6 kg) pounds typical

Environmental

Operating	
Ambient temperature	-30 to +60°C
Atmospheric pressure	Up to 10,000 feet
Nonoperating	
Temperature	-50 to +70°C
Atmospheric pressure	Up to 40,000 feet
Shock and vibration	Normal handling by commercial carriers

100 Davids Drive, Hauppauge, NY 11788
TEL.: +1-631-436-7400 • FAX: +1-631-436-7431
www.miteq.com