

**Centre for Development of Telematics**

**KU-BAND UP CONVERTER  
KU-UCN-70/140**

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## OVERVIEW

The CDOT Ku Band Up Converter KU-UCN-70/140 is designed to give out RF frequencies in the range of 13.75 GHz to 14.5 GHz. It has excellent P1 dB of 10 dBm and IF to RF gain of 15 dB. The gain can be varied over 20 dB in steps of 0.5 dB. Frequency synthesis is in steps of 125 KHz with excellent phase noise specifications.

All parameters of the converter can be monitored and controlled either through the front panel or through a remote terminal (or PC). The converter can be connected to a switchover unit for redundancy support. The converter meets QM333 category B2 specifications and the standard EMI/EMC requirements.

The converter is designed to take DC power input of -48V. Optional AC power input of 110-230V is provided.

## SPECIFICATIONS

• Converter Type	: Dual Conversion
• First conversion frequency	: Above 1 GHz
• Output Frequency	: 13.75 to 14.5 GHz
• Frequency Sense	: No Inversion
• Input Frequency	: 70 ± 18 MHz / 140 ± 36 MHz (Optional)
• Input Level range	: -35 dBm to -15 dBm
• Input Impedance	: 75 Ohms, Unbalanced
• Input Return Loss	: 23 dB minimum
• Input Connector Type	: BNC Female
• Frequency Selection	: By Synthesizer with 125 KHz step size
• Output Impedance	: 50 ohms, Unbalanced
• Output Return Loss	: 20 dB minimum
• 1 dB Compression Point	: 10 dBm
• Output Connector type	: SMA (Female)
• Output Level Stability	: ±-0.25 dB/day over 25° C ±10°C with constant input.
• Output Level Range	: -20 dBm to 0 dBm
• IF- RF Gain	: 15 dB Minimum
• Gain Response	: ± 0.5 dB p-p / 36 MHz
• Gain Adjustment	: 20 dB in steps of 0.5 dB
• Inter modulation Products	: -30 dBc for two carriers at a level of -3 dBm each at output.

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- AM / PM Conversion : 0.2° /dB
- Group Delay : Linear : 0.05 ns/MHz
- Parabolic : 0.005 ns / MHz<sup>2</sup>
- Ripple : 1 ns p-p /±18 MHz
- Spurious Output :
  - a. Signal Related : -50 dBc
  - b. Signal Independent : -70 dBm at minimum attenuation
  - c. Harmonics : -25 dBc
- Frequency Stability : ± 0.1 ppm/day at constant temperature of 25°C
- Phase Noise : -55 dBc/Hz @ 100 Hz offset  
-70 dBc/Hz @ 1 KHz offset  
-80 dBc /Hz @ 10 KHz offset  
-90 dBc/Hz @ 100 KHz offset  
-100 dBc/Hz @ 1 MHz offset
- Frequency and gain setting : By the front Panel key pad
- Input / Output Connectors : At Rear Panel

## MONITORING & ALARMS

Power ON Indicator, REF Frequency Monitoring, LO's Phase Lock, Summary Fail Alarm, Potential Free Contact.

## Environmental Specifications:

- As per QM333 category B2 including vibration and corrosion.

## Electromagnetic Compatibility (EMC):

The equipment conforms to the EMC requirements as per following standards

1. Conducted and radiated emissions: As per CISPR 22, Class A
2. Electrostatic discharge: As per IEC 1000-4-2
3. Fast transients common mode: As per IEC 1000-4-4
4. Immunity: As per 1000-4-3
5. Surges Common and differential mode: As per IEC 1000-4-5
6. Radio frequency common mode: As per IEC 1000-4-6

## Power Supply:

- -48V DC nominal input (-40V to -60V) with reverse polarity protection. (110V AC – 230V AC optional)
- Over voltage, short circuit and overload protection for derived voltages.