

Analog Signal Processing C8U-MSI-*.*

Commander™ 8 Dual Upconverter, MultiStandard International (PAL/China)



The C8U-MSI upconverter has great performance and many features, and is an ideal solution for both analog and digital headend and hub locations. Two frequency agile models, the C8U-MSI-L (47 to 600 MHz) and the C8U-MSI-H (550 to 1000 MHz), cover all current and future broadband frequency requirements up to 1 GHz, with a convenient 50 MHz frequency overlap between models. A C8U-MSI-LH model (one independent L and one independent H upconverter) is also available for special applications. The C8U-MSI supports all PAL IF standards as well as China IF standards. It is also compatible with EuroDocsis Systems.

The C8U-MSI consists of dual independent upconverters in a reliable single rack unit (1RU) package, avoiding thermal and mating problems while providing space efficiency. A bright, wide two-line vacuum fluorescent display (VFD) provides access to all upconverter controls and is accessed via a convenient menu system. Front panel access to independent RF and IF test points is provided. Easy rear panel fuse access is also provided. Each independent upconverter in the C8U-MSI incorporates three switchable IF inputs for redundancy, emergency alert or programming purposes, providing operational flexibility. These IF sources may be switched automatically or manually.

The C8U-MSI is network management ready and is compatible with SNMP Network Management Systems via the LIFEnet™ proxy. It is also compatible with Motorola's Headend Control Software (HCS).

The Commander™ 8 Upconverter Multi-Standard International (C8U-MSI) is a next generation headend upconverter that builds on the award winning success of the Commander 6 Upconverter.

In a digital system, the C8U-MSI can accept any digital IF signal between 31.0 and 40.0 MHz. The C8U continues the C6U legacy of handling many types of digital signals including 64 QAM, 256 QAM, 8-VSB and QPSK signals.

In an analog system, the C8U-MSI supports addressable channels. An encoded composite IF signal is received from a scrambler such as Motorola's model MVP-II, and upconverted to the desired RF channel for transmission.

BENEFITS INCLUDE:

- Superior phase noise performance
- Dual independent upconverters in 1RU
- 1 GHz bandwidth in two models
- Frequency selection in 12.5 kHz steps
- User-friendly display and interface
- Network management ready
- Internal sensors for IF and RF signals
- DC power capable
- Downloadable firmware



SPECIFICATIONS

RF	
Output	Frequency tunable in 12.5 kHz steps
Frequency Range	47 to 600 MHz (C8U-MSI-L); 550 to 1000 MHz (C8U-MSI-H)
Output level	+60 dBmV minimum
Recommended Operating Range	+57 to +61 dBmV
Spurious	<-63 dBc for intermodulation products (47 to 1000 MHz) <-72 dBc for fixed frequency products (47 to 1000 MHz) (measured relative to analog picture carrier @ +60 dBmV RF output and sound carrier @ -15 dBc) 14 dB minimum within channel
Output Return Loss	
C/N Ratio (normalized to 4 MHz)	
In-Band	73.0 dB minimum, 74.0 dB typical
Adjacent Channels	73.0 dB minimum, 75.0 dB typical
Semi-Adjacent Channels	75.0 dB minimum, 77.0 dB typical
Other Channels	77.0 dB minimum, 79.0 dB typical
RF Carrier Phase Noise	
@1 kHz offset	-71 dBc/Hz minimum
@10 kHz offset	-99 dBc/Hz minimum
@20 kHz offset	-105 dBc/Hz minimum
RF Test Point	-20 dB \pm 1 dB
Group Delay	25 ns p-p maximum within a channel
Passband Flatness	1.0 dB p-p maximum within a channel
Converter to Converter Isolation	65 dB minimum
Incidental FM (+120 Hz)	-30 dBc minimum
Phase-lock Input (8.000 MHz)	
Return Loss	18 dB minimum
Input Level	+15 to +30 dBmV
IF	
Input Frequency	31.0 to 40.0 MHz
IF Input Levels	+25 dBmV to +35 dBmV
IF Input Return Loss	20 dB minimum, 31.0 to 40.0 MHz
IF Isolation	70 dBc minimum, A and B IF inputs @ +30 dBmV
IF Test Point Level	-20 dB nominal \pm 1.0 dB
IF Test Point Return Loss	16 dB minimum
IF AGC Range	\pm 5 dB minimum (RF output: \pm 0.5 dB)
CW IF Output Frequency	38.9 MHz (PAL mode); 38.0 MHz (China mode)
CW IF Output Level	+53 dBmV \pm 3 dB
CW IF Phase Noise @ 1 kHz offset	-86 dBc/Hz minimum
General	
AC Voltage Requirements	100 to 240 Vrms, 47 to 63 Hz
Power Requirements	45 Watts Maximum
Operating Temperature	0° to 50° C
Weight	14.5 lbs (6.6 kgs) Maximum
Dimensions	9"W x 1.75"H x 18"D (48.2 cm x 4.4 cm x 45.7 cm)

C8U OPTIONAL ACCESSORY

DC Power Option (DC). (Order C8U with DC option as C8U-*-D).

The DC power option (DC) for the Commander® line of headend products allows powering from a DC source instead of an AC line source.

Input Voltage	-20 Vdc to -60 Vdc (-48 Vdc recommended)
Input Power	45 Watts Maximum

Model Number	Description
C8U-MSI-L-X	Dual Upconverter, Multit-standard International, 47-600MHz
C8U-MSI-L-D	Dual Upconverter, Multit-standard International, 47-600MHz, DC Power
C8U-MSI-H-X	Dual Upconverter, Multit-standard International, 550-1000MHz
C8U-MSI-H-D	Dual Upconverter, Multit-standard International, 550-1000MHz, DC Power
C8U-MSI-LH-X	Dual Upconverter, Multit-standard International, 1 Low Channel & 1 High Channel
C8U-MSI-LH-D	Dual Upconverter, Multit-standard International, 1 Low Channel & 1 High Channel, DC Power

