

The DUAL4040D is a fully agile commercial quality dual IF to RF upconverter for data over cable and digital video-on-demand applications. Advanced design allows the DUAL4040D to cover a frequency band from 53 to 858 MHz and still maintain a phase noise specification which exceeds the DOCSIS requirements for 64/256 QAM. Remarkably low out of band noise performance and low spurious are achieved through high level mixing, a

microwave frequency IF and multiple levels of filtering. The DUAL4040D is fully DOCSIS compliant and optimized for 256 QAM cable modem traffic.

Built in IF & RF power detectors allow for easy input and output level configuration. The remote control interface allows full control and monitoring of all frequencies and levels. This advanced, cost effective upconverter offers high performance, flexibility and space efficiency.



Features:

- High level output; +61 dBmV 53 to 858 MHz
- Front panel selectable output frequency in 12.5 kHz step size
- Digital slope compensation to achieve $< \pm 0.3$ dB slope over any channel (any 5MHz Band)
- A range of custom IF input frequencies are available
- Auto IF AGC automatically corrects for input level changes (non-bursty)
- Out of band noise performance -12 dBmV/6 MHz, -30dBmV/6 MHz
- Excellent in-band noise performance
- User defined soft alarms (thresholds) for IF and RF levels can be enabled via remote control
- RF output mutes when changing output configuration in order to prevent interference with other signals
- High reliability, state-of-the-art design using microstrip MMIC and surface mount technology
- 50 ms Max switching time when used in one-for-one redundancy mode
- Conservative component derating and 100% burn in help ensure reliable operation
- Low power consumption
- Local control via LCD and 4 soft touch push buttons
- Remote control via RS232/RS485/terminal or optional SNMP
- FLASH program memory for easy firmware updates
- All local oscillators are frequency synthesized and locked to a common internal high stability reference (each Upconverter has individual reference)
- Front panel displays IF and RF power levels
- International internal switching power supply (100 to 240 VAC) or optional -48 VDC power supply
- High reliability fans ensure cool operation for long product life



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THE VCOM
DUAL4040D
 DUAL FREQUENCY AGILE 64/256 QAM UPCONVERTER

SPECIFICATIONS — VCom DUAL4040D

DUAL FREQUENCY AGILE 64/256 QAM UPCONVERTER

IF INPUT

IF Frequency (center of the band)	44.00 MHz (Optional 36.125 MHz) (43.75 MHz optional)
Bandwidth	Passband 6 MHz (Optional 8 MHz)
Input Level	+25 to +35 dBmV (total power) (+33 optimum level)
Impedance	75 ohm
Return Loss	20 dB
Connector	F type (female)
IF Detector Accuracy	1 dB
IF Attenuator Step Size	0.05 dB typical
IF AGC	enable/disable (for analog/digital input)

RF OUTPUT

Frequency Range	53 to 858 MHz (band center)
Frequency Step Size	12.5 kHz
Frequency Accuracy	2 ppm
Frequency Response (any 5 MHz band)	±0.3 dB
Frequency Response (any 7 MHz band)	±0.4 dB (for wide band options)
Group Delay (any 5 MHz band)	15 nsec p-p max. (8 nsec typical)
Output Level	+61 dBmV max.
Output Level Step Size	0.05 dB typical
RF Detector Accuracy	±1 dB typical
Gain Control Range	+45 to +61 dBmV
Impedance	75 ohm
Return Loss	16 dB
Connector	F type
RF Monitor Point (calibrated)	-20 dBc ±0.5 dB (typical)
Spurious (50 MHz to 950 MHz)	-60 dBc (-70 dBc typical)
Phase Noise	
1 to 10 kHz (double side band noise power)	-37 dBc (-40 dBc typical)
10 to 50 kHz (double side band noise power)	-54 dBc (-57 dBc typical)
50 kHz to 3 MHz (double side band noise power)	-53 dBc (-55 dBc typical)
10 kHz offset (Single Side Band)	-95 dBc/Hz@10 kHz (-99 dBc/Hz typical)
Broadband Noise (< 59 dBmV RF Output) (average noise all channels outside ±18 MHz)	-12 dBmV/6 MHz (-15 dBmV/6 MHz typical) -11 dBmV/8 MHz (8 MHz option) -30 dBmV/6 MHz at twice RF frequency
Modulated Adjacent Noise (6 MHz channel Passband)	
±3 to 3.75 MHz	-58 dBc min (<-60 dBc typical)
±3.75 to 9 MHz	-62 dBc min (<-64 dBc typical)
±9 to 15 MHz	-65 dBc min
Modulated Adjacent Noise (8 MHz channel Passband option)	
±4 to 5 MHz	-58 dBc min
±5 to 12 MHz	-61 dBc min
±12 to 20 MHz	-64 dBc min
Carrier Mute	Automatic upon frequency change
Redundant Switching Speed	50 ms max

MISCELLANEOUS

Remote Control Serial Interface	RS232, RS485 or Terminal (selectable from front panel) (Optional SNMP over IEEE 802.3 10-Base-T Ethernet)
Connector	Dual RJ45
Power Requirements	100 to 240 VAC, 50 to 60 Hz -48 VDC (Option 6S2) 50 Watts max
Power Consumption	50 Watts max
Operating Temperature	0 to 50°C (32 to 122°F)
Mounting	Standard 19" (48.3 cm) - 1U (1.75") rack space
Dimensions	19"(w) x 14.25"(d) x 1.75"(h) (48.3 x 36.2 x 4.45 cm)
Weight	11 lbs. (5kg)
F Connectors	ANSI SP 406-1998

OPTIONS

1P1 - Input-Digital 44.000 MHz with 8 MHz Passband
1P2 - Input-Digital 36.125 MHz with 8 MHz Passband
1P4 - 43.75 MHz IF with 8 MHz Passband
2S1 - SNMP Proxy Agent and Interface
6S2 - Internal -48 VDC Power Supply

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