BMCU34
X-band upconverter 70MHz to 7145-7235MHz

MAIN FEATURES

- Indoor upconverter for X-band
- Tuneable in 1kHz steps
- ALC for precise output level control
- Excellent phase noise parameters
- Low intermodulation distorsion
- Low unwanted spurious level
- High stability internal reference
- Local/remote control

DESCRIPTION

This high performance upconverter is intended for use in professional applications in X-band such as satellite earth stations. This device includes a double conversion upconverter modul with low phase noise local oscillators, a microprocessor based monitor and control circuitry, a front panel with control keys and status display and internal AC / DC power supply. The equipment can be controlled from the front panel (local control) and via TCP/IP over Ethernet (remote control). ALC circuit for precise output level control.

SPECIFICATIONS

GENERAL	
RF output frequency [MHz]	7145-7235MHz
IF input frequency	70MHz
Type	Double conversion without inversion
No. of Channels	1
Local source	Internal LO source
RF OUTPUT CHARACTERISTICS	
RF output frequency	7145-7235MHz
Output VSWR	≤1.35
Nominal output impedance	50Ω
Output power control	An ALC circuit ensures that output power is user selectable in the -7...+13dBm range in 0.5dB steps independently of the IF input level. The only requirement on IF input level that it should be in the -30...0dBm range to have proper ALC operation. A manual gain control mode is also available.
Output power range	-7...+13dBm in 0.5dB steps
Output power accuracy	better than ±1dB, target: ±0.5dB
In-band spurious	≤-60dBc
Out-of-band spurious	≤-100dBm in the 8.4-8.5GHz band ≤-75dBm for other bands
LO leakage	≤-70dBm
RF output monitor level	0dBc±1dB with reference to RF output

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IF INPUT CHARACTERISTICS	
IF input frequency	70MHz
IF bandwidth	±4MHz useful signal bandwith ±10MHz typical 3dB bandwidth
Noise figure	≤14dB @ maximum gain (43dB) ≤16dB @ 15dB gain
Input VSWR	≤1.3
Nominal input impedance	50Ω
Input operational signal level	-30dBm to 0dBm
Max. input power level (nondestructive)	>+5dBm
TRANSFER CHARACTERISTICS	
Conversion gain	-7…+43dB (determined by ALC circuit, depends on input power level and desired RF output power)
Attenuation range	50dB (determined by ALC circuit, depends on input power level and desired RF output power)
RF output power range	-7…+13dBm in 0.5dB steps
Output power accuracy	better than ±1dB, target: ±0.5dB
Gain ripple within RF band	≤±0.8dB
Gain ripple in any 8MHz RF band	≤±0.5dB
Gain slope	≤±0.1dB/MHz
Output power stability	<0.5dBpp in temperature range of 22±3°C
Image rejection	>60dB
Carrier mute	>60dB rejection
Group delay variation vs. frequency within IF band	Linear: ≤0.5ns/MHz Parabolic: ≤0.1ns/MHz^2 Ripple: ≤1ns peak-to-peak within 70±5MHz frequency range
Group delay stability vs. temperature	≤2ns peak-peak in temperature range of 22±3°C
Phase stability	≤5° at 22±3°C
INPUT FREQUENCY REFERENCE	
Frequency	The equipment shall lock on 5MHz, 10MHz and 100MHz (There is a <5min. warm-up time at the return to internal reference.)
Connector	BNC female
Level	0dBm±6dB
VSWR	≤1.5/50Ω
LOCAL OSCILLATOR CHARACTERISTICS	
Step size	1kHz
Frequency accuracy	0Hz considering a perfect external frequency reference
Frequency stability	±0.005ppm within temperature range on internal reference
Frequency drift per day	±0.001ppm per day on internal reference
Frequency aging	±0.05ppm/year
Local oscillators monitor level	>-10dBm
Local oscillator monitor ports VSWR	≤1.5/50Ω

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LOCAL OSCILLATOR CHARACTERISTICS		
	@100Hz	≤-77
	@1kHz	≤-90
	@10kHz	≤-100
	@100kHz	≤-100
	@1MHz	≤-115
LO spurious content		<-60dBc frequency dependent <-70dBc frequency independent
NON-LINEAR BEHAVIOUR		
3rd order intermodulation		≤-50dBc with two carriers (Δf =2MHz) at 0dBm at RF output at maximum gain
CONTROL & MONITORING		
Control and monitoring interface		Keypad and LCD display for local M&C TCP/IP over 100Mbps Ethernet for remote control
Controls		ON/OFF switch, output frequency, output power, mute, ALC mode
Monitoring		output frequency, output power, input power, mute, reference source, PLL status, local/remote status
Warnings		local oscillator fault, reference frequency fault, digital fault, general alarm
MECHANICAL CHARACTERISTICS		
Dimensions		1U 19" rack (364mm depth)
Front and rear panel finishing		Light grey (RAL7035) powder coating
Weight		10kg
RF output connector		N female (rear panel)
IF input connector		N female (rear panel)
RF output monitor connector		N female (rear panel)
Reference input connector		BNC female (rear panel)
LO monitor connectors		SMA female (front panel)
AC mains input connector		IEC C14 inlet
Control connector		RJ45 for Ethernet RS232 and RS422 for test purposes
POWER SUPPLY		
Voltage		90-264VAC
Frequency		47-63 Hz
Power consumption		≤100VA
Fuse value		T4A (4A, Slow blow)
ENVIRONMENT		
Operating temperature range		0°C … +50°C
Storage temperature range		-30°C … +70°C
Humidity		95% (not condensing)
Ingress protection level		IP50
Vibration		according to MIL-STD-810G Method 514.6-Cat 4
Shock		½ sinus 30g, 11msec on 3 axis

Specifications are subject to change without notice.

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OUTLINE DRAWING (mm)

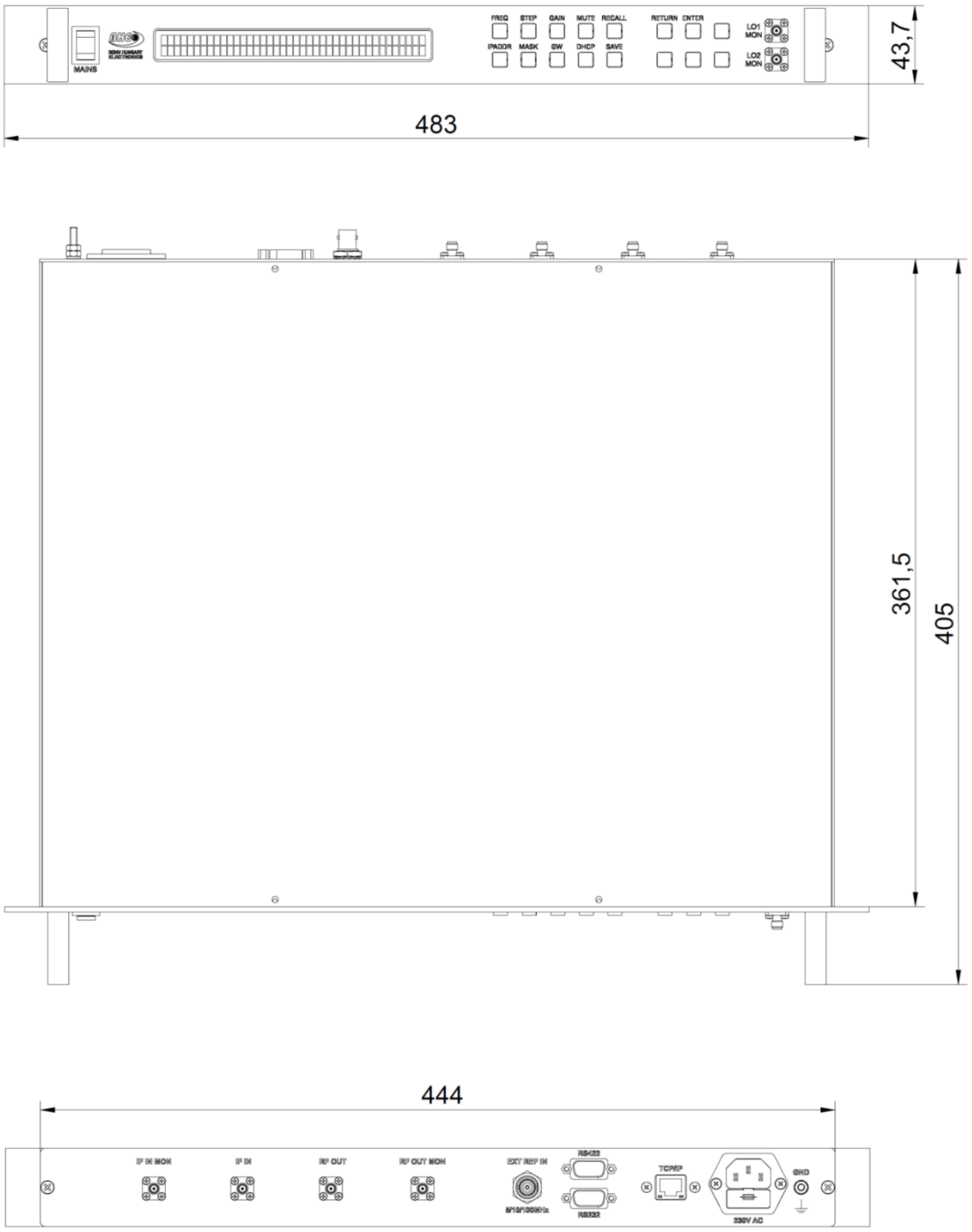

Figure 1. Outline drawing

ORDERING INFORMATION

MODEL NUMBER	DESCRIPTION
K11303BMCU34	BMCU34 X-band upconverter 70 MHz to 7145-7235 MHz; Ethernet control, RS232 and RS422 service connectors

DOCUMENT REVISION

DOCUMENT NAME	REVISION	DATE
BMCU34-LM-K11303	V01	2023/02/07

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