

MAIN FEATURES

- ❖ Indoor upconverter for Ka-band
- ❖ Tuneable in 1kHz steps
- ❖ Excellent phase noise parameters
- ❖ Low intermodulation distortion
- ❖ Low group delay ripple
- ❖ Low unwanted spurious level
- ❖ High stability internal reference
- ❖ Local/remote control



DESCRIPTION

This high performance upconverter is intended for use in professional applications in Ka-band such as satellite earth stations. This device includes a double conversion upconverter module 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 Ethernet, RS232 and RS422 (remote control).

SPECIFICATIONS

GENERAL	
RF output frequency [MHz]	17300-18100MHz
IF input frequency	70MHz
Type	Double conversion without inversion
No. of Channels	1
Local source	Internal LO source
RF OUTPUT CHARACTERISTICS	
RF output frequency	17300-18100MHz
Output VSWR	≤1.22
Nominal output impedance	50Ω
Output P1dB	≥ +10dBm (+15dBm typ.) @ maximum gain
Signal related spurious	≤ -60dBc
Signal independent spurious	≤ -70dBm
LO leakage	≤ -70dBm
RF output monitor level	-20dBc±2dB with reference to RF output



BMCU102 Ka-band Upconverter 70MHz to 17300-18100MHz

IF INPUT CHARACTERISTICS		
IF input frequency	70MHz	
IF bandwidth (-1dB points)	± 18 MHz	
Noise figure	≤ 14 dB @ maximum gain	
Input VSWR	≤ 1.22	
Nominal input impedance	50 Ω	
Input operational signal level	-100dBm to -30dBm	
Max. input power level (nondestructive)	$> +10$ dBm	
IF input monitor level	-20dBc ± 2 dB with reference to IF input	
TRANSFER CHARACTERISTICS		
Nominal conversion gain	35dB ± 1 dB	
Attenuation range	0dB to 25dB attenuation	
Attenuation step	0.25dB	
Attenuation accuracy	$\leq \pm 0.5$ dB	
Gain ripple within RF band	$\leq \pm 1$ dB	
Gain ripple in any 36MHz range	$\leq \pm 0.5$ dB, ± 0.3 dB typ.	
Gain ripple within IF band	$\leq \pm 0.5$ dB, ± 0.3 dB typ.	
Gain stability	< 0.25 dB/day @ constant temperature	
Image rejection	> 70 dB	
Carrier mute	> 60 dB rejection	
Group delay within IF band	Linear	≤ 0.03 ns/MHz (within ± 18 MHz band)
	Parabolic	≤ 0.01 ns/MHz ² (within ± 18 MHz band)
	Ripple	≤ 1 ns peak-peak (within ± 18 MHz band)
INPUT FREQUENCY REFERENCE		
Frequency	The equipment shall lock on 5MHz, 10MHz and 100MHz	
Connector	BNC female	
Level	0dBm ± 6 dB	
VSWR	$\leq 1.5/50\Omega$	
LOCAL OSCILLATOR CHARACTERISTICS		
Step size	1kHz	
Frequency accuracy	± 10 Hz considering a perfect external frequency reference	
Frequency stability	± 0.005 ppm within temperature range on internal reference	
Frequency drift per day	± 0.001 ppm per day on internal reference	
Frequency aging	± 0.1 ppm/year	
Local oscillators monitor level	> -10 dBm	
Local oscillator monitor ports VSWR	$\leq 1.5/50\Omega$	

LOCAL OSCILLATOR CHARACTERISTICS	
	@100Hz ≤ -65
	@1kHz ≤ -85
	@10kHz ≤ -95
	@100kHz ≤ -95
	@1MHz ≤ -105
NON-LINEAR BEHAVIOUR	
3 rd order intermodulation	≤ -50dBc with two carriers ($\Delta f = 2\text{MHz}$) at 0dBm at RF output at 0dB attenuation
AM/PM conversion	≤ 0.1°/dB at 0dBm RF output power
CONTROL & MONITORING	
Control and monitoring interface	Keypad and LCD display for local M&C Ethernet, RS232 and RS422 for remote M&C
Controls	ON/OFF switch, output frequency, gain, mute
Monitoring	output frequency, gain, mute, reference source, PLL status, local/remote status
Warnings	local oscillator fault, reference frequency fault, digital fault, general alarm, dry contact summary alarm on RS422 control connector
MECHANICAL CHARACTERISTICS	
Dimensions	1U 19" rack (364mm depth)
Front and rear panel finishing	Light grey (RAL7035) powder coating
Weight	10kg
RF output connector	SMA female (rear panel)
IF input connector	BNC female (rear panel)
RF output monitor connector	SMA female (front panel)
IF input monitor connector	SMA female (front panel)
Reference input connector	BNC female (rear panel)
LO monitor connectors	SMA female (rear panel)
AC mains input connector	IEC C14 inlet
Control connector	RJ45 for Ethernet, DSUB-9 for RS232 and RS422
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.

OUTLINE DRAWING (mm)

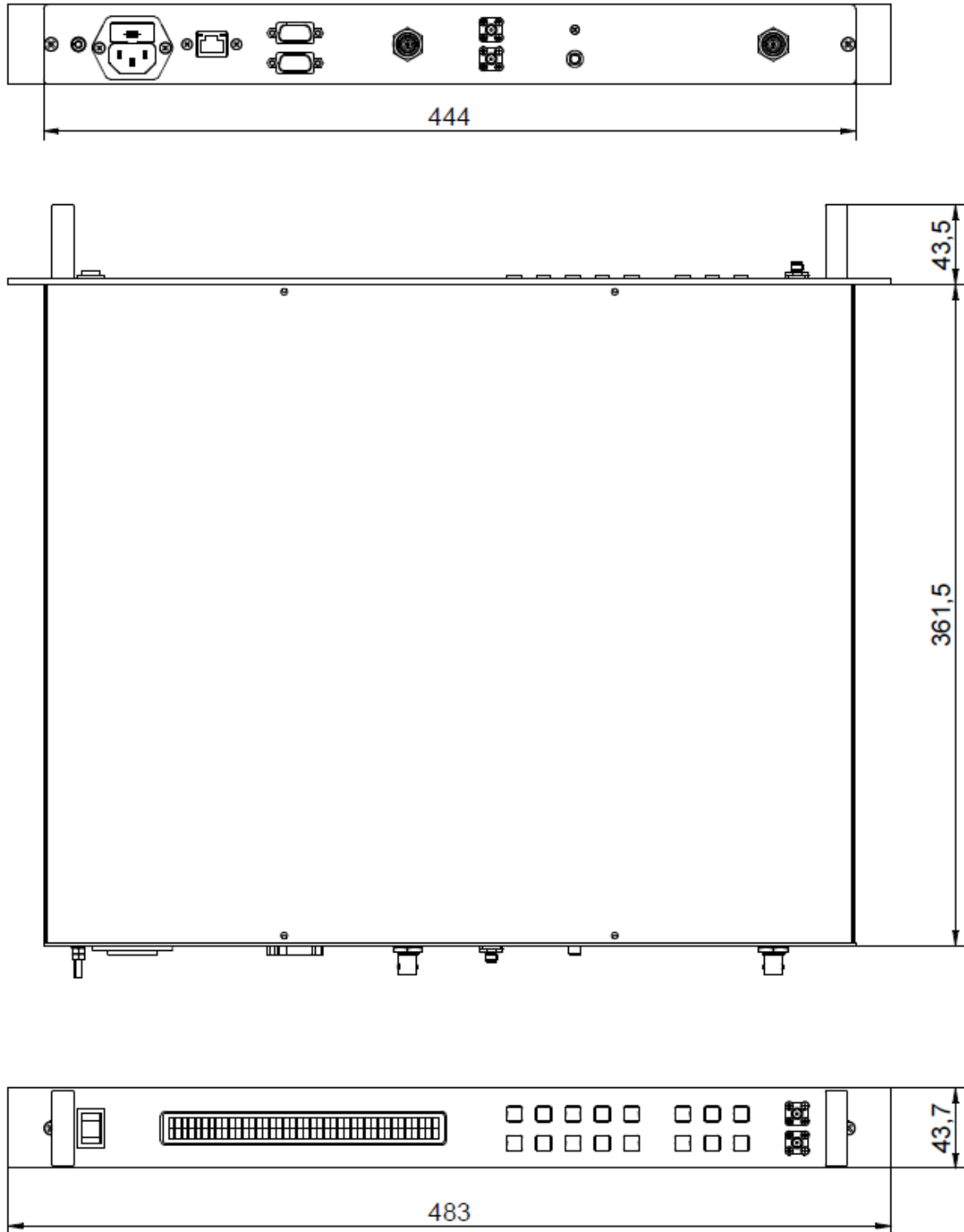


Figure 1. Outline drawing



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ORDERING INFORMATION

MODEL NUMBER	DESCRIPTION
BMCU102K11350	BMCU102 Ka-band upconverter, 70MHz to 17300-18100MHz, BW+/-18MHz, 19" 1U rack

DOCUMENT REVISION

DOCUMENT NAME	REVISION	DATE
BMCU102-LM-K11350	V02	2024/02/26