

## MAIN FEATURES

- ❖ Low phase noise
- ❖ Fine frequency step
- ❖ Low intermodulation distortion
- ❖ Dual conversion
- ❖ High stability internal reference
- ❖ High reliability
- ❖ Local/remote control

## DESCRIPTION

This high performance upconverter is intended for use in professional applications in L band such as satellite earth stations. This device includes a double conversion upconverter modul, internal local sources, a front panel with control keys, status display and microprocessor based monitor and control circuitry and an AC / DC power supply. The equipment can be controlled from the front panel (local control) and via Ethernet, RS232 and RS485 (remote control).

## SPECIFICATIONS

GENERAL	
IF input frequency	70±20MHz
RF output frequency	950-2150MHz
Type	Double conversion without inversion
No. of Channels	1
Local source	Internal LO source
INPUT CHARACTERISTICS	
IF input frequency	70±20MHz
Nominal input impedance	50Ω
Input return loss	≥20dB
LO leakage at IF input	≤-85dBm (-95dBm typ.)
IF monitor port coupling	-20dBc±2dB
Max. input power level (nondestructive)	+15dBm
OUTPUT CHARACTERISTICS	
RF output frequency	950-2150MHz
Nominal output impedance	50Ω
Output return loss	≥18dB
Output P1dB	≥+14dBm (+16dBm typ.)
LO leakage at RF output	≤-90dBm (-100dBm typ.)
RF monitor port coupling	-20dBc±2dB

TRANSFER CHARACTERISTICS		
Nominal conversion gain	30dB at maximum gain	
Gain adjustment	40dB	
Attenuation step	1dB	
Gain flatness	$\leq \pm 1\text{dB}$ in full RF band $\leq \pm 0.5\text{dB}$ ( $\pm 0.3\text{dB}$ typ.) in any 40MHz in RF band	
Gain slope	$\leq 0.03\text{dB/MHz}$	
IF flatness	$\leq \pm 0.5\text{dB}$ in IF band	
Gain stability	$\leq 0.25\text{dB/day}$ @ constant temperature	
Noise figure	$\leq 15\text{dB}$ , 12dB typical at maximum gain	
Image rejection	$\geq 80\text{dB}$ (-90dB typ.)	
3 <sup>rd</sup> order IMD	$\leq -52\text{dBc}$ (-55dBc typ.) with two in-band 0dBm signals at output (at max. gain)	
AM/PM conversion	$\leq 0.03^\circ/\text{dB}$ @Pout=0dBm	
Group delay	Linear	$\leq 0.03\text{ns/MHz}$
	Parabolic	$\leq 0.01\text{ns/MHz}^2$
	Ripple	$\leq 1\text{ns}$ peak-peak
Spurious	Signal related	$\leq -65\text{dBc}$ @ 0dBm output (spurious signals related to the harmonics of input frequency degrades when input frequency is lower than 70MHz)
	Signal independent	$\leq -75\text{dBm}$
Harmonics	$\leq -40\text{dBc}$ @ 0dBm output power	
EXTERNAL REFERENCE INPUT		
Frequency	The equipment shall lock on 5, 10 and 100MHz automatically.	
Connector	BNC female (rear panel)	
Level	0dBm $\pm$ 6dB	
Nominal input impedance	50 $\Omega$	
Reference input return loss	$\geq 18\text{dB}$	
LOCAL OSCILLATOR CHARACTERISTICS		
Step size	1kHz	
Frequency accuracy	$\leq \pm 0.1\text{Hz}$ considering a perfect external frequency reference	
Frequency stability	$\leq \pm 0.005\text{ppm}$ within temperature range on internal reference	
Frequency drift per day	$\leq \pm 0.001\text{ppm}$ per day on internal reference	
Frequency aging	$\leq \pm 0.1\text{ppm/year}$	
Phase Noise	@10Hz	$\leq -60\text{dBc/Hz}$ (-65dBc/Hz typ.)
	@100Hz	$\leq -75\text{dBc/Hz}$ (-80dBc/Hz typ.)
	@1kHz	$\leq -90\text{dBc/Hz}$ (-95dBc/Hz typ.)
	@10kHz	$\leq -95\text{dBc/Hz}$ (-100dBc/Hz typ.)
	@100kHz	$\leq -95\text{dBc/Hz}$ (-100dBc/Hz typ.)
	@1MHz	$\leq -110\text{dBc/Hz}$ (-115dBc/Hz typ.)



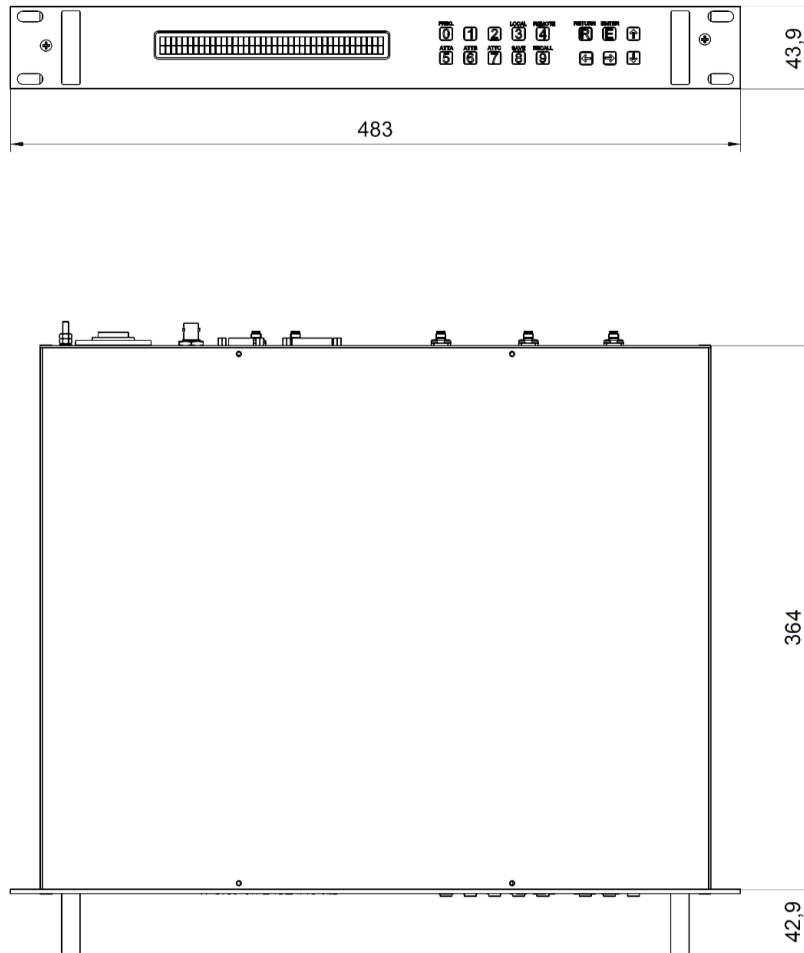
## BMCU87

### L-band indoor upconverter, 70MHz to 950-2150MHz

CONTROL & MONITORING	
Control and monitoring interface	Keypad and LCD display for local M&C Ethernet, RS232 and RS485 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 RS485 control connector
MECHANICAL CHARACTERISTICS	
Dimensions	1U 19" rack (364mm depth)
Front and rear panel finishing	Light grey (RAL7035) powder coating
Weight	12kg
RF output connector	N female (rear panel)
IF input connector	N female (rear panel)
RF monitor connector	N female (rear panel)
IF monitor connector	N female (rear panel)
Reference input connector	BNC female (rear panel)
AC mains input connector	IEC C14 inlet
Control connector	RJ45 for Ethernet, DSUB-9 for RS232 and RS485
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	-20°C ... +70°C
Humidity	95% (not condensing)
Ingress protection level	IP40
Altitude	up to 3000 feet
Vibration	Normal handling by commercial carriers
Shock	Normal handling by commercial carriers
QUALITY CONTROL AND PRODUCT ASSURANCE	
MTBF	50000 hours
Warranty	1 year

Specifications are subject to change without notice.

## OUTLINE DRAWING (mm)



## ORDERING INFORMATION

MODEL NUMBER	DESCRIPTION
BMCU87K11038	L-band indoor upconverter, 70MHz to 950-2150MHz

## DOCUMENT REVISION

DOCUMENT NAME	REVISION	DATE
BMCU87-LM-K11038	V01	29/03/2023