

MAIN FEATURES

- ❖ Indoor construction
- ❖ X-band input frequency range
- ❖ 200MHz IF BW
- ❖ Low group delay ripple
- ❖ Tuneable in 1kHz steps
- ❖ Excellent phase noise parameters
- ❖ Low unwanted spurious level

DESCRIPTION

This document describes the BMCD170 X-band indoor downconverter developed and manufactured by BHE. This downconverter has 200MHz IF bandwidth and low group delay ripple for high data rate signal reception. It has an indoor 1U 19" rack construction. The downconverter channel is operated from internal local sources which have very good spectral purity. The downconverter can be controlled and monitored via Ethernet, RS232 and RS422.

SPECIFICATIONS

GENERAL	
RF input frequency	8000-8400MHz (Nominal input signal carrier frequency. Input signal can have 200MHz BW, thus RF filter passband is 7.9-8.5GHz.)
IF output frequency	720MHz
Type	Double conversion without inversion
No. of Channels	1
Local source	Internal LO sources
RF INPUT CHARACTERISTICS	
RF input frequency	8000-8400MHz
Input operational signal level	-100dBm to -20dBm
Max. input power level (nondestructive)	> +10dBm
Input VSWR	≤ 1.5
Nominal input impedance	50Ω
Noise figure	≤ 10dB @ maximum gain
LO leakage	≤ -80dBm
IF OUTPUT CHARACTERISTICS	
IF output frequency	720MHz
IF bandwidth (-1dB points)	± 100MHz
Output P1dB	≥ +10dBm @ maximum gain
Output VSWR	≤ 1.5
Nominal output impedance	50Ω
Signal independent spurious	≤ -70dBm
Signal related spurious	≤ -60dBc
LO leakage	≤ -60dBm

TRANSFER CHARACTERISTICS		
Nominal conversion gain		30dB±1dB
Attenuation range		0dB to 20dB attenuation
Attenuation step		0.5dB
Attenuation accuracy		≤0.5dB
Gain ripple within RF band		≤±1dB
Gain ripple within IF band		≤±1dB
Gain drift versus temperature		≤±1dB within the temperature range
Gain stability		<0.25dB/day @ constant temperature
Image rejection		>80dB
Group delay within IF band (f _{IF} ±100MHz)	Linear	≤0.03ns/MHz
	Parabolic	≤0.01ns/MHz ²
	Ripple	≤1ns peak-peak
INPUT FREQUENCY REFERENCE		
Frequency		The equipment shall lock on 5MHz, 10MHz and 100MHz
Connector		SMA female
Level		0dBm±3dB
VSWR		≤1.5/50Ω
LOCAL OSCILLATOR CHARACTERISTICS		
Step size		1kHz
Frequency accuracy		10Hz 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		±0.1ppm/year
Local oscillator monitor level		> -10dBm
Local oscillator monitor port VSWR		≤1.5/50Ω
Phase noise on internal reference [dBc/Hz]	@10Hz	≤-48
	@100Hz	≤-75
	@1kHz	≤-85
	@10kHz	≤-95
	@100kHz	≤-95
	@1MHz	≤-105
NON-LINEAR BEHAVIOUR		
3 rd order intermodulation		≤-50dBc with two carriers (Δf =2MHz) at -10dBm at IF output
AM/PM conversion		≤0.1°/dB at 0dBm IF 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, input frequency, conversion gain
Monitoring		input frequency, conversion gain, reference source
Warnings		local oscillator fault, reference frequency fault, digital fault, general alarm

MECHANICAL CHARACTERISTICS	
Dimensions	1U 19" rack (364mm depth)
Weight	12kg
RF input connector	SMA female (rear panel)
RF monitor connector	SMA female (rear panel)
IF output connector	SMA female (rear panel)
IF monitor connector	SMA 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, 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	1½ sinus 30g, 11msec on 3 axis

Specifications are subject to change without notice.

OUTLINE DRAWING (mm)

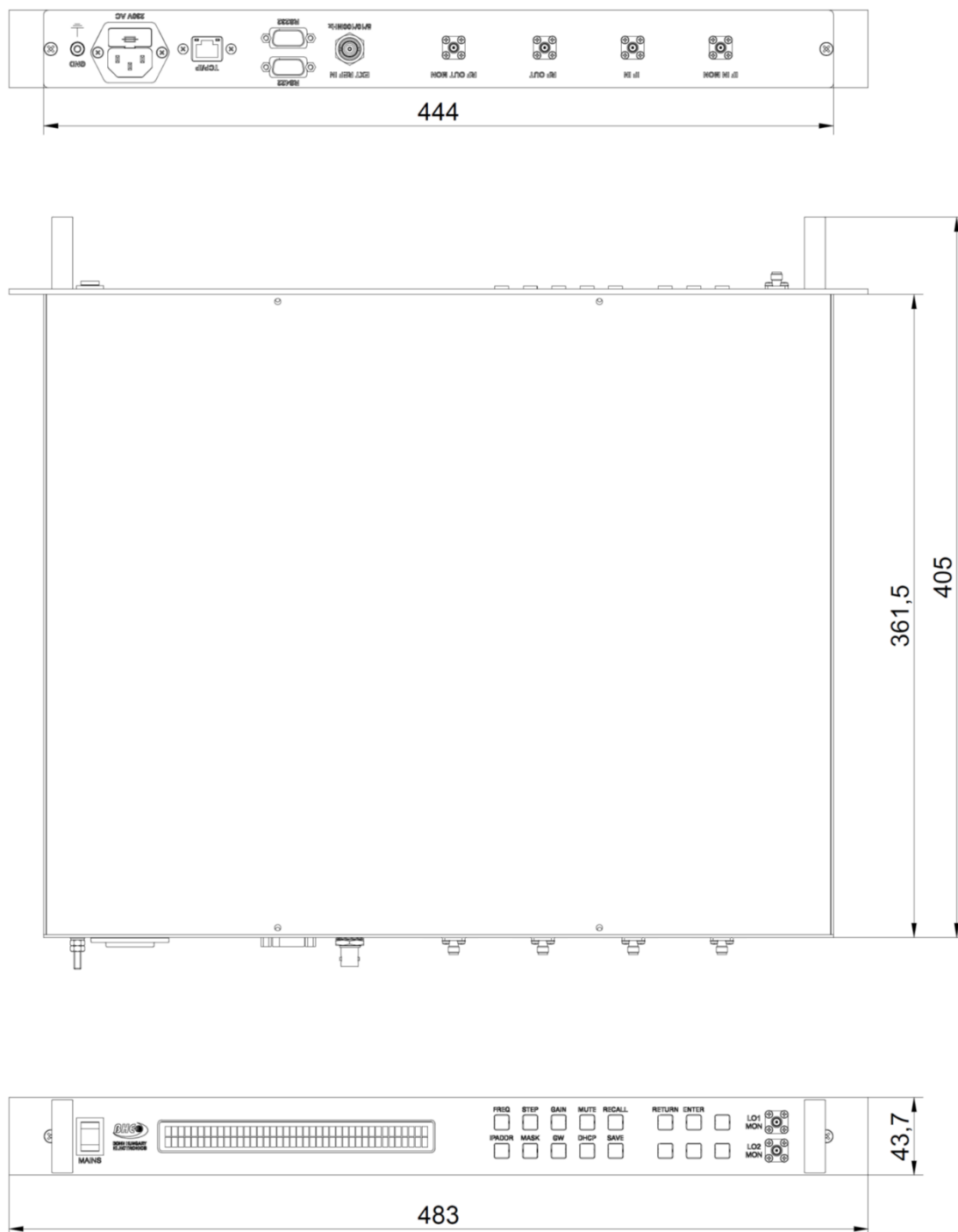


Figure 1. Outline drawing



BMCD170

X-band Indoor Downconverter 8000-8400MHz to 720MHz

ORDERING INFORMATION

MODEL NUMBER	DESCRIPTION
K11449BMCD170	BMCD170 X-band downconverter, 8000-8400MHz to 720MHz, BW+/-100MHz

DOCUMENT REVISION

DOCUMENT NAME	REVISION	DATE
BMCD170-LM-K11449	V01	2025/04/08