BMCD143
3400-4200MHz to 70MHz 3-channel Indoor Tracking Downconverter

MAIN FEATURES

- Indoor construction
- Three independent channels with good phase and amplitude tracking
- Tuneable in 1kHz steps
- Excellent phase noise parameters
- Low unwanted spurious level

DESCRIPTION

The BMCD143 is a 3-channel C-band indoor tracking downconverter. The input filtering is followed by a two stage downconverter in all channels. The channels are operated from common local sources which have very good spectral purity. The converter channels are equipped with phase and amplitude control elements in order to achieve very good phase and amplitude balance between the channels. The downconverter can be controlled and monitored via front panel keyboard and display or remotely via Ethernet, RS232 or RS422.

SPECIFICATIONS

GENERAL	
RF input frequency	3400 to 4200MHz
IF output frequency	70MHz
Type	Double conversion without inversion
No. of Channels	3
Local source	Common internal LO sources
RF INPUT CHARACTERISTICS	
RF input frequency	3400 to 4200MHz
Input operational signal level	-100dBm to -20dBm
Max. input power level (nondestructive)	>+10dBm
Input VSWR	≤1.3
Nominal input impedance	50Ω
Noise figure	≤10dB @ maximum gain
LO leakage	≤-80dBm
IF OUTPUT CHARACTERISTICS	
IF output frequency	70MHz
IF bandwidth (-1dB points)	>30MHz
Output P1dB	≥+10dBm @ maximum gain

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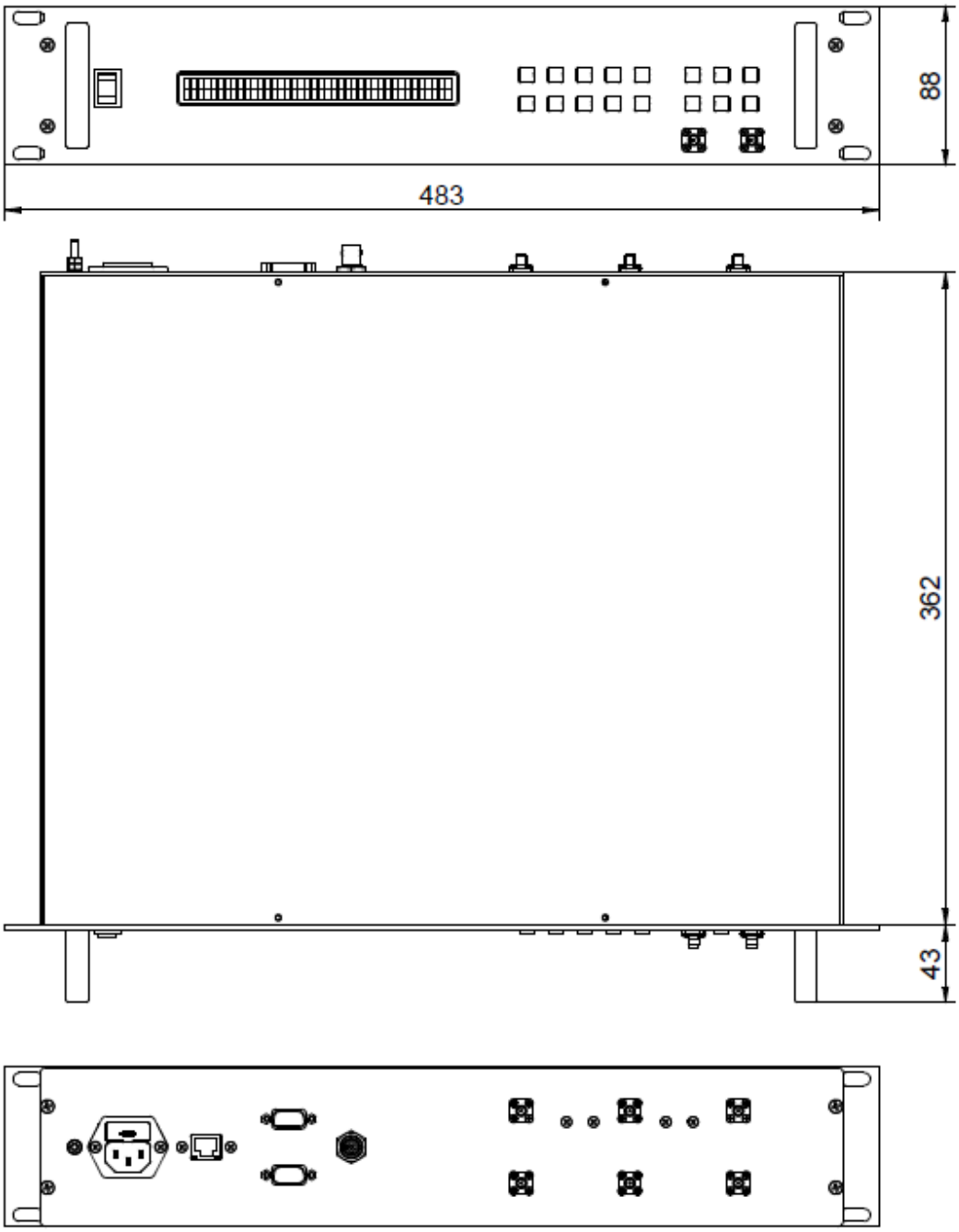
IF OUTPUT CHARACTERISTICS		
Output VSWR		≤1.2
Nominal input impedance		50Ω
Signal independent spurious	outside F_0±4MHz	≤-70dBm
	inside F_0±4MHz	≤-100dBm
Signal related spurious		≤-60dBc
TRANSFER CHARACTERISTICS		
Nominal conversion gain		35dB±1dB
Attenuation range		0dB to 25dB attenuation
Attenuation step		0.5dB
Attenuation accuracy		≤0.5dB
Gain ripple within RF band		≤±1dB
Gain ripple within IF band		≤±0.5dB
Gain drift versus temperature		≤±1dB within the temperature range
Gain stability		<0.25dB/day @ constant temperature
Differential gain between channels		<1dB at 20°C, center frequency and nominal gain
Variation of differential gain		<2dB within RF bandwidth + full temperature range + full attenuation range
Differential Time Delay between channels		<0.5ns
Variation of Differential Phase between channels		<±5° within RF bandwidth + full temperature range + full attenuation range
Image rejection		>70dB
Isolation between channels		>60dB
Total group delay variation in ±15MHz		≤4ns
Group delay slope within IF band		≤0.3ns/MHz
INPUT FREQUENCY REFERENCE		
Frequency		The equipment shall lock on 5MHz, 10MHz and 100MHz
Connector		BNC 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	@10Hz	≤-54dBc/Hz
	@100Hz	≤-80dBc/Hz
	@1kHz	≤-90dBc/Hz
	@10kHz	≤-100dBc/Hz
	@100kHz	≤-105dBc/Hz
	@1MHz	≤-120dBc/Hz

NON-LINEAR BEHAVIOUR	
3rd 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, attenuation
Monitoring	input frequency, attenuation, gain mode, reference source
Warnings	local oscillator fault, reference frequency fault, digital fault, general alarm
MECHANICAL CHARACTERISTICS	
Dimensions	2U 19" rack cabinet (364mm depth)
Weight	12kg
RF input connectors	SMA female
IF output connectors	SMA female
Reference input connector	BNC female
LO monitor connectors	SMA female
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
QUALITY CONTROL AND PRODUCT ASSURANCE	
MTBF	50000 hours

Specifications are subject to change without notice.

OUTLINE DRAWING (mm)



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ORDERING OPTIONS

MODEL NUMBER	DESCRIPTION
BMCD143K11492	BMCD143 3400-4200MHz to 70MHz 3-channel Indoor Tracking Downconverter

DOCUMENT REVISION

DOCUMENT NAME	REVISION	DATE
BMCD143-LM-K11492	V01	2025/04/08