EVO-RBR (Rev B)

Rackmount Beacon Receiver

Features:

- Track CW Beacon Carrier and BPSK Carrier
- CEPT Carrier-Edge-Power-Track for DVB-like Carrier
- Monitoring & Control (M&C) via Multiple Interfaces
- L-Band and Extended Frequency Band Options

The EVO-RBR is a satellite beacon receiver designed on a completely new platform to meet today's system challenges. This robust product features many capabilities to provide reliable operation and monitoring in rackmount applications.

A CW satellite beacon carrier can be acquired quickly and tracked in On-the-Move, as well as in fixed-site applications. The receiver can lock on and track BPSK-type carrier signals and is uniquely capable of locking on and tracking DVB-like carriers utilizing an exclusive Avcom-only Carrier- Edge-Power-Tracking (CEPT) function. In addition, it provides a voltage output from 0 to 10 VDC proportional with the input signal.

A unique feature of this beacon receiver is that when the beacon receiver function is not in use it can be used as a full-function spectrum analyzer. This allows systems to track on a beacon and monitor a carrier without the need for a separate device.

The beacon receiver can be connected via ethernet, USB, or serial, and supports communication with a WEB-GUI, POSIX-C API, text-based API, and Avcom' s EVO GUI. This wide range of options makes the unit ideal for interfacing with large complex M&C systems or simple microprocessor-based systems.

For more information and support, please contact salesrfq@avcomofva.com.

EVO-RBR (Rev B)
TECHNICAL SPECIFICATIONS

RF SPECIFICATIONS			
INPUT CONNECTORS:	SMA, BNC, F, and/or N		
NOMINAL INPUT IMPEDANCE:	50 Ω (SMA, BNC, N) 75 Ω (F)		
MAX DC INPUT VOLTAGE:	25 V		
INPUT FREQUENCY RANGE:	MODEL	MIN (MHz)	MAX (MHz)
	2290	900	2200
	3040	400	3000
	6070	70	6000
MAX SPAN WIDTH:	1300 MHz		
MIN TUNING STEP SIZE:	1 kHz		
RESOLUTION BANDWIDTH:	1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz		
REFERENCE LEVELS:	-40 dBm, -30 dBm, -20 dBm, -10 dBm		
MAXIMUM INPUT POWER LEVEL:	-10 dBm		
RF SENSITIVITY (-40 REF LVL):	-100 dBm		
SPUR FREE DYNAMIC RANGE (3kHz RBW):	60 dB		
NOISE FLOOR (-40 REF LVL, 3kHz RBW):	-100 dBm, -134 dB/Hz		
NOISE FLOOR (-10 REF LVL, 3kHz RBW):	-70 dBm, -104 dB/Hz		
ISOLATION BETWEEN INPUTS:	>40 dB typical		
AMPLITUDE ACCURACY:	+/- 1 dB typical		
FREQUENCY ACCURACY:	+/- 1 kHz typical		
PHASE NOISE (2 GHz):	OFFSET FREQUENCY	PHASE NOISE (dBc/Hz)	
	10 kHz	-100	
	100 kHz	-100	
	1 MHz	-109	

BEACON RECEIVER SPECIFICATIONS	
DETECTION BANDWIDTH:	10 to 750 kHz
TRACKING BANDWIDTH:	10 to 150 kHz
DETECTED LEVEL FILTERING:	Low-Pass, User-Select: 0.25 Hz, 0.5 Hz, 1.0 Hz, 2.0 Hz, 3.0 Hz
SEARCH/TRACK RATE:	User-Selectable: 10 Hz, 25Hz, 100Hz
ACQUISITION TIME:	<1 second typical
ADJUSTABLE DELAY BEFORE LOCK:	0 to 5000 milliseconds
ACQUISITION/TRACKING LEVEL:	Minimum C/No, 39 dB-Hz
BEACON/CARRIER TYPE:	CW, BPSK (No Demod), CEPT(Carrier-Edge-Power-Track) on DVB (No Demod)
SPECIAL FEATURE:	Spectrum Analyzer features are available when Beacon Receiver is not running

EVO-RBR (Rev B)
TECHNICAL SPECIFICATIONS – CONTINUED

COMMUNICATION INTERFACE	
ETHERNET:	10/100, DHCP or Static, RJ45
SERIAL:	RS232, 115200 8n1, DB-9
USB:	115200 8n1, USB-B
BEACON RECEIVER OUTPUTS:	Analog and Digital outputs, 6-Pos Terminal Block

M & C				
	EVO GUI	POSIX-C API SBS2API	TEXT-BASED API	WEB-GUI
ETHERNET:	Yes	Yes	N/A	Yes
SERIAL:	N/A	Yes	Yes	N/A
USB:	Yes	Yes	Yes	N/A

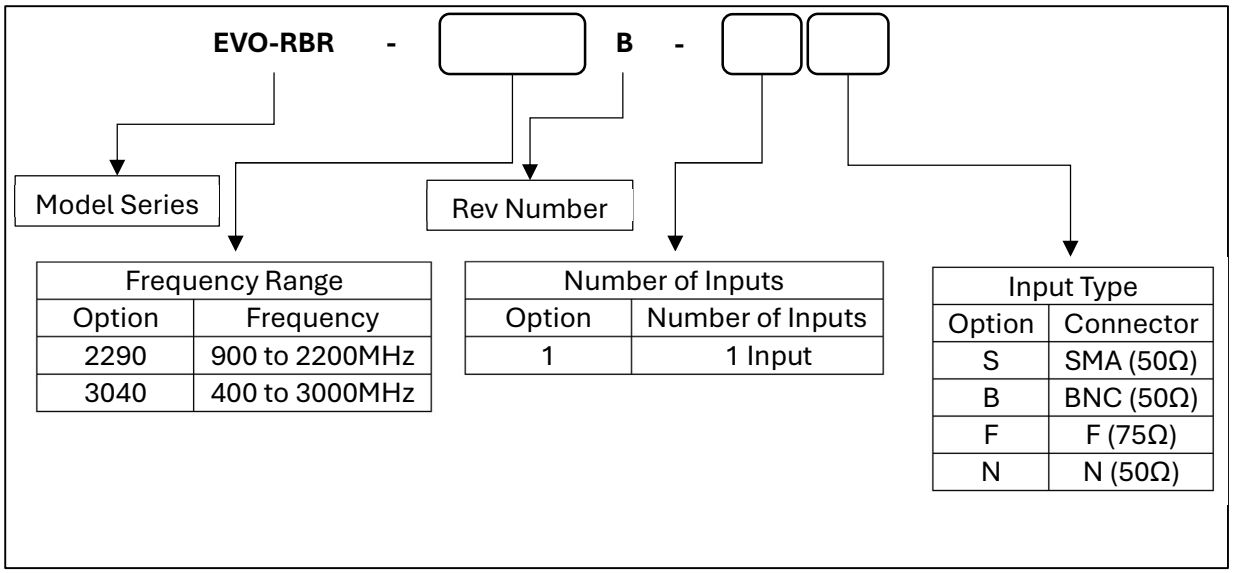
RECEIVER OUTPUTS	
CONNECTOR:	6-Pos Terminal Block
ANALOG SIGNAL STRENGTH INDICATOR OUTPUT:	0 to 10 VDC, 10 mA
ANALOG SLOPE:	0.1 to 3.0 Volts/dB
ANALOG SLOPE POLARITY:	Positive or Negative
ANALOG OUTPUT FILTERING:	Low-Pass, 0.5 Hz, fixed.
DIGITAL LOCK INDICATOR OUTPUT:	0 – 3.3 VDC
DIGITAL LOCK INDICATOR OUTPUT POLARITY:	Adjustable (H=LOCK or L=LOCK)

POWER	
CONNECTOR:	Barrel Connector Jack
POWER SUPPLY:	15 VDC, 0.5A

PHYSICAL	
DIMENSIONS:	1 RU, 19 in. x 18.13 in. x 1.72 in. 48.26 cm x 46.04 cm x 4.37 cm
WEIGHT:	7.2 lbs, 3.27 kg

ENVIRONMENTAL	
OPERATING TEMPERATURE:	0°C to 50°C
STORAGE TEMPERATURE:	-40°C to 85°C
HUMIDITY:	0 to 95%, non-condensing
MAX OPERATING ALTITUDE:	40,000 ft; 12,000 m

EVO-RBR (Rev B)
MODEL INDENTIFICATION



Frequency Range	
Option	Frequency
2290	900 to 2200MHz
3040	400 to 3000MHz

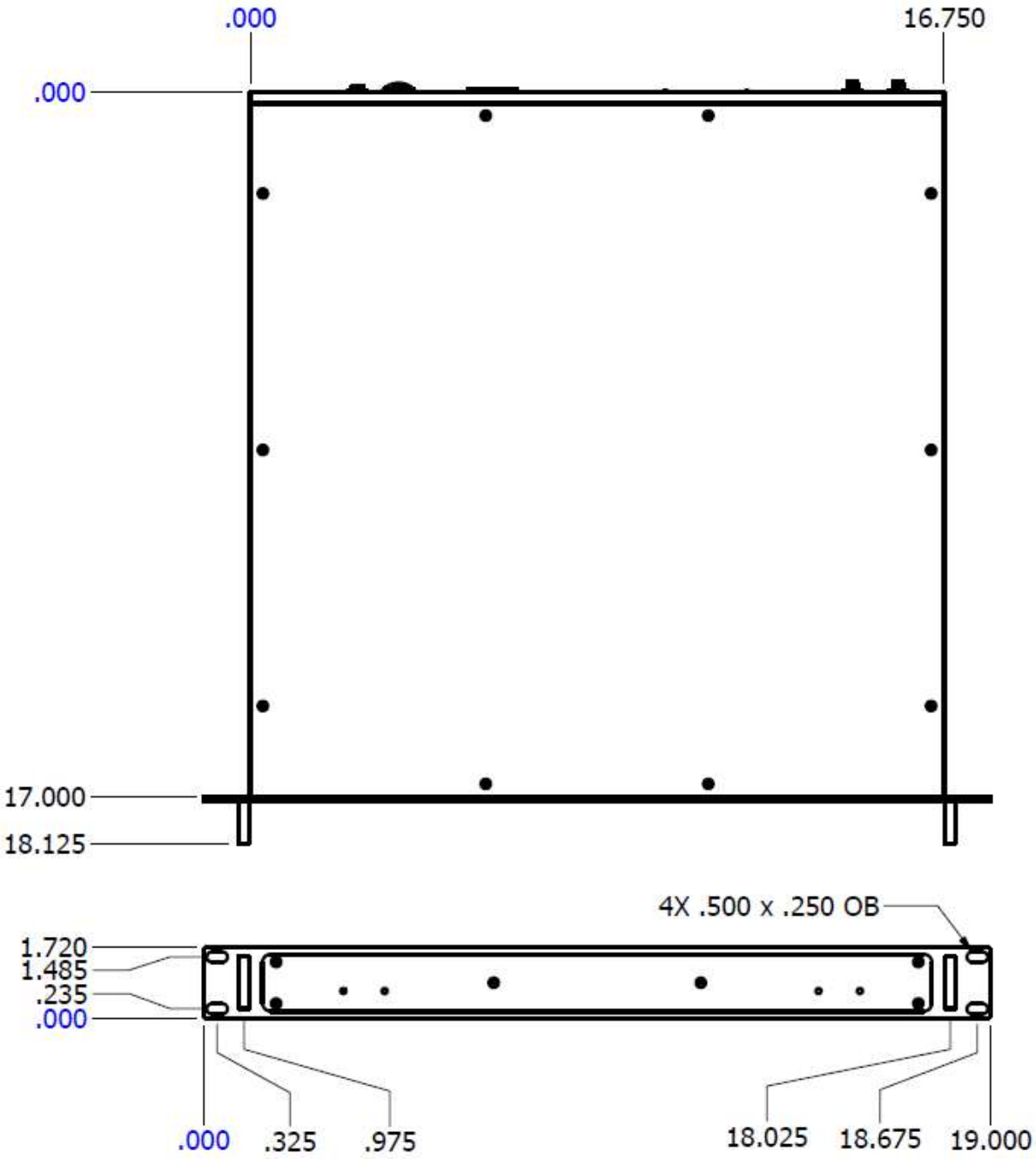
Number of Inputs	
Option	Number of Inputs
1	1 Input

Input Type	
Option	Connector
S	SMA (50Ω)
B	BNC (50Ω)
F	F (75Ω)
N	N (50Ω)

FULL MODEL NAME LIST

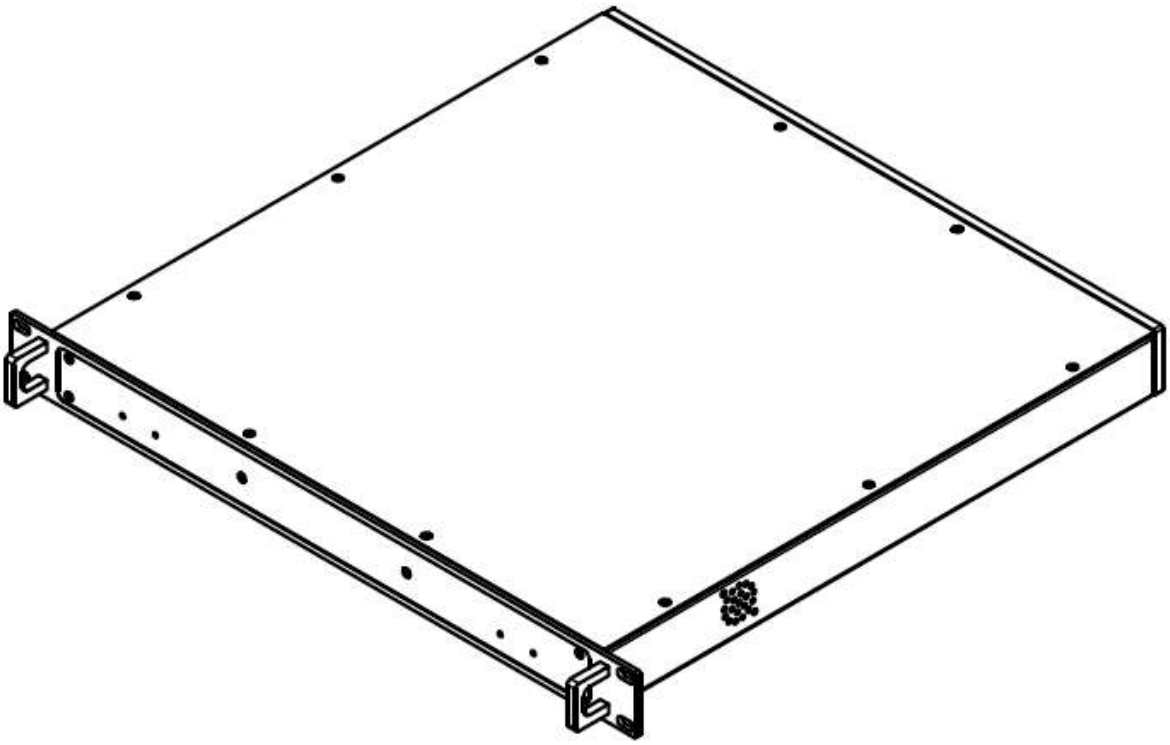
Connector	Number of Inputs	Frequency	
		900 to 2200MHz	400 to 3000MHz
SMA (50Ω)	1	EVO-RBR-2290B-1S	EVO-RBR-3040B-1S
BNC (50Ω)	1	EVO-RBR-2290B-1B	EVO-RBR-3040B-1B
F (75Ω)	1	EVO-RBR-2290B-1F	EVO-RBR-3040B-1F
N (50Ω)	1	EVO-RBR-2290B-1N	EVO-RBR-3040B-1N

EVO-RBR (Rev B)
PHYSICAL DIMENSIONS



NOTES:	UNLESS OTHERWISE STATED:
1. REFER TO CAD MODEL FOR UNLISTED DIMENSIONS	DIMENSIONS ARE IN INCHES TOLERANCES: .XX = ± 0.01 .XXX = ± 0.005 .XXXX = ± 0.0002 ANGLES = ± 0.5 °

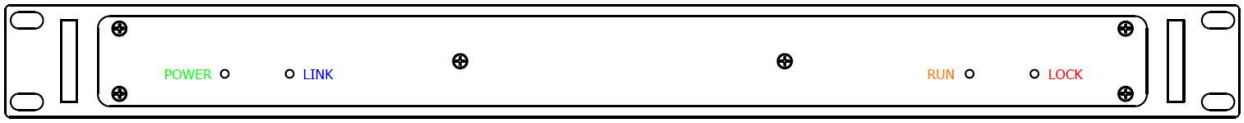
EVO-RBR (Rev B)
PHYSICAL DIMENSIONS - CONTINUED



NOTES:	UNLESS OTHERWISE STATED:
1. REFER TO CAD MODEL FOR UNLISTED DIMENSIONS	DIMENSIONS ARE IN INCHES TOLERANCES: .XX = ± 0.01 .XXX = ± 0.005 .XXXX = ± 0.0002 ANGLES = ± 0.5 °

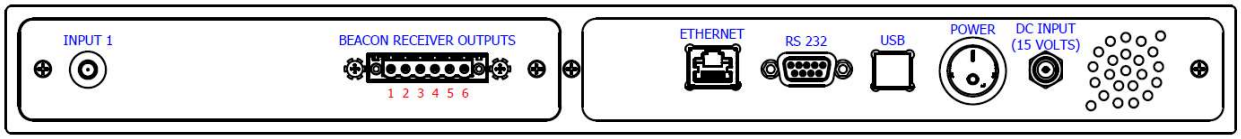
EVO-RBR (Rev B)
PIN POSITIONS AND DESCRIPTIONS

FRONT OF CHASSIS



BACK OF CHASSIS

SMA CONNECTOR OPTIONS:
NOTE: BNC, F AND N CONNECTORS ARE NOT SHOWN BUT FOLLOW A SIMILAR LAYOUT



BEACON RECEIVER OUTPUTS	
PIN	FUNCTION
1	GND
2	BR 0-10V OUT
3	RESERVED FOR FUTURE USE
4	BR RUN OUT
5	BR LOCK OUT
6	3.3V REF

ETHERNET
STANDARD 10/100 PINOUT

DC INPUT	
PIN	FUNCTION
INNER	POWER IN
OUTER	GND

RS232	
PIN	FUNCTION
1	RESERVED FOR FUTURE USE
2	RS232 TX
3	RS232 RX
4	RESERVED FOR FUTURE USE
5	GND
6	RESERVED FOR FUTURE USE
7	RESERVED FOR FUTURE USE
8	RESERVED FOR FUTURE USE
9	RESERVED FOR FUTURE USE

USB
STANDARD USB-B PINOUT

POWER
UNIT ON/OFF ROCKER SWITCH

EVO-RBR (Rev B)
PIN INTERFACE

MATING CONNECTORS		
Connector Name	Description	Manufacturer Part Number
BEACON RECEIVER OUTPUTS	6-Pos Terminal Block Plug	Phoenix Contact: 1805343
ETHERNET	RJ45	Standard Cable
RS232	RS232 via DB9	Standard Cable
USB	USB-B	Standard Cable
DC INPUT	Power Barrel Connector Jack	AVCOM Power Supply Part number: PS 00010 Barrel Connector: Switchcraft INC: S761K

Connector Name	**Pin Number**	**Function Name**	**I/O Type**	**Recommended Interface Circuit/Voltage**	**Limiting Voltages and Protection Notes**
BEACON RECEIVER OUTPUTS	1	GND	Ground Reference	0 V	--
	2	BR 0-10V OUT	Analog Output 0 V to 10 V	Analog Input with 1 kΩ or Greater Input Impedance	Protected to +/- 40 V. Short-to-Ground Protected.
	3	RFU	--	--	--
	4	BR RUN OUT	Digital Output 0 V to 3.3 V	Digital Input with 1 kΩ or Greater Input Impedance	Protected to +/- 40 V. Short-to-Ground Protected.
	5	BR LOCK OUT	Digital Output 0 V to 3.3 V	Digital Input with 1 kΩ or Greater Input Impedance	Protected to +/- 40 V. Short-to-Ground Protected.
	6	3.3V REF	3.3 V Voltage Reference Out	Connect to high-impedance voltage input.	Voltage reference only.
ETHERNET	ALL	STANDARD ETHERNET	Communications I/O (Unused Pins not connected)	Ethernet 10/100	Galvanically Isolated. Magnetics on unit. (Unused Pins not connected)

EVO-RBR (Rev B)
PIN INTERFACE - CONTINUED

Connector Name	Pin Number	Function Name	I/O Type	Recommended Interface Circuit/Voltage	Limiting Voltages and Protection Notes
RS232	1	RFU	N/A	Open Circuit	--
	2	RS232 TX	Communications Output	Connect to User Equipment RS232 RX	-0.03 V Absolute Min to 6.0 V Absolute Max Voltage. Limited by Transceiver IC
	3	RS232 RX	Communications Input	Connect to User Equipment RS232 TX	+/- 25 V Absolute Max Voltage Input. Limited by Transceiver IC
	4	RFU	N/A	Open Circuit	--
	5	GND	Ground Reference	0V	--
	6	RFU	N/A	Open Circuit	--
	7				
	8				
	9				
USB	ALL	STANDARD USB	Communications I/O (USB 5 V Unused)	USB 2.0 0 V to 5 V	0 V Min. 5 V Max. Limited by USB ESD steering diode array and power rails for USB IC.
DC INPUT	INNER	POWER IN	Power Supply Input	15 V DC Power	0.5 A, recommended to use AVCOM provided Power Supply
	OUTER	GND	Power Supply Ground	0V	

REVISION NOTES

VERSION	RELEASE DATE	CHANGES
1.0	4/23/2025	• Initial Release
1.1	5/28/2025	• Add Additional RF Specifications • Update Descriptions (summary, and abbreviations) • Add Revision Notes
1.2	8/4/2025	• Change recommended circuit interface for 3.3V Reference Output to “High-Impedance Voltage Input”.
1.3	8/11/2025	• Fix incorrect part numbers in Full Model Name Table