



Innovative Solutions in Engineering

BBG-CRPTR-MK-XV



Compass Repeater

Description

The BBG-CRPTR-MK-XV Compass Repeater is a unit which receives and indicates the true heading transmitted electrically from the Master GyroCompass.

The BBG-CRPTR-MK-XV Compass Repeater is equipped with a 360° compass dial and a digital display for heading indication.

The BBG-CRPTR-MK-XV includes: Compass Repeater assembly and junction box which are both factory configurable to customer requirements for easy field installation.

Applications

- Gyrocompass, Navigation Systems

Features

- 28 VDC Powered
- Analog and Digital Display
- Dimmable Display
- Configurable Baud Rate
- NMEA 0183 Interface
- Self - Synchronizing

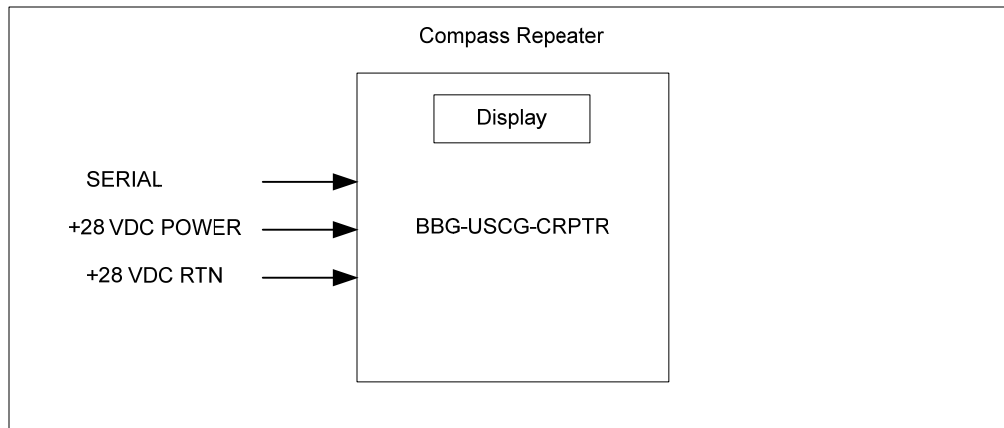


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Chart



During power up or reset, an onboard microcontroller is used to configure the interface and provide all signals and control necessary to rotate the stepper motor in order to indicate the course heading. The Repeater is self aligning after power failure, once it receives serial input, it will automatically check its orientation, and make any required adjustments.

The Compass Repeater provides digitally accurate, precise readings of 1/10th of the course heading on an easy-to-read, bright digital display in addition to the 360° compass dial.

Technical Specifications

Parameter	Value	Units
Power Supply	+28V DC (~18 - 36V DC)	Volts DC
	1	Amps
Temperature Range		
	Operating	-40 to +60
Storage	-40 to +80	C°
Input		
Serial	RS-422 2400, 4800, 9600, 19,200, 38,400, 57,600, 11,5200, and 230,400	Bits per Second
Message	NMEA-0183	\$HEHDT
Junction Box Dimensions	4.724 (L) x 4.724 (W) x 3.189 (H)	In
	12 (L) x 12 (W) x 8.1 (H)	Cm
Accuracy		
Analog	+/- 0.05	Degrees
Digital	+/- 0.05	Degrees
Analog Slew Rate	720	Degree/min
Serial Voltages	+/-5	Volts DC



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OVERVIEW

The BBG-CRPTR-MK-XV Compass Repeater receives and indicates the true heading transmitted electrically from the Master GyroCompass. The BBG-CRPTR-MK-XV Compass Repeater has an analog and digital display for the clear indication of the heading information. The analog display is divided into a 360° outer scale. The analog display provides a graduation of one degree, the digital display outputs in 1/10th degree. It is compatible with a NMEA serial signal via a Junction a box. The illumination of the dial can be controled from a knob located on the side of the junction box.

INPUTS/OUTPUTS

Inputs are available via straight gland stuffing tubes and DIN rail mounted terminal blocks located inside the Junction Box. Inputs are listed below:

Serial Interface

Serial Input:

The BBG-CRPTR-MK-XV receives one channel of RS-422 serial data. The unit can be factory configured for dual channels.

Serial Input:

The serial data interface uses the standard National Marine Electronics Association (NMEA) message formats NMEA-0183 as shown below. Custom serial data formats and frequencies are available upon request. Serial baud rate selection is determined from the configuration switches at power up or reset. Selectable baud rates include: 2400, 4800, 9600, 19,200, 38,400, 57,600, 115200 and 230,400 bits per second. **Default** data input is **4800, 8 bits, no parity, and one stop bit (4800, 8, N, 1)**, checksum checking enabled. Table 1 defines the switch position for the available baud rates. Default protocol is RS-422.

Note: BBG also offers this repeater with Synchro and Step input.



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BBG-CRPTR-MK-XV BAUD RATE SELECTION								
BAUD RATE (bits per sec)	Configuration Switch S1							
	1	2	3	4	5	6	7	8
2400	ON	ON	ON	X	X	X	X	X
4800	OFF	ON	ON	X	X	X	X	X
9600	ON	OFF	ON	X	X	X	X	X
19200	OFF	OFF	ON	X	X	X	X	X
38400	ON	ON	OFF	X	X	X	X	X
57600	OFF	ON	OFF	X	X	X	X	X
115200	ON	OFF	OFF	X	X	X	X	X
230400	OFF	OFF	OFF	X	X	X	X	X
X = Don't Care								

Table 1. BBG-CRPTR-MK-XV Configuration Switch

NMEA-0183 Format

The Compass Repeater can be factory programmed for any NMEA-0183 data format. Default data format is as follows:

\$XXHDT,AAA.A,T*CSCRLF

\$ - start of message ascii character 24 Hex

XX - Don't Care

HDT - Heading True

AAA.A - Heading angular information (ex: 045.1)

T - ASCII character 54 Hex

* - ASCII character 2A Hex

CS - checksum (8 bit XOR of characters between \$ and *)

CR - carriage return

LF - Line feed



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CONNECTOR LIST FOR BBG-CRPTR-MK-XV

I/O CONNECTOR TYPE: Terminal Blocks

CONNECTOR MATE: Stripped Wire, Wire Ferrule or Lug

TERMINAL	SIGNAL	WIRE PAIR
TB1 – 1	V+ (Input) (+28 VDC Fused at 1 Amp Slow)	Black-Wht
TB1 – 2	COM (Input) (+28 VDC RETURN Fused at 1 Amp Slow)	Black-Blk
TB1 – 3	Chassis Ground ¹	Cable Shield
TB1 – 4	HDG RXD422/A (Input)	Red-Blk
TB1 – 5	HDG RXD422/B (Input)	Red-Wht
TB1 – 6	Chassis Ground ¹	Cable Shield
TB1 – 7	NO EXTERNAL CONNECTION (Dimmer Signal ²)	White-Wht
TB1 – 8	NO EXTERNAL CONNECTION (Dimmer Ground ²)	White-Blk

1- This terminal is grounded to case

2- This signal is local to the junction box, and needs no external connection.



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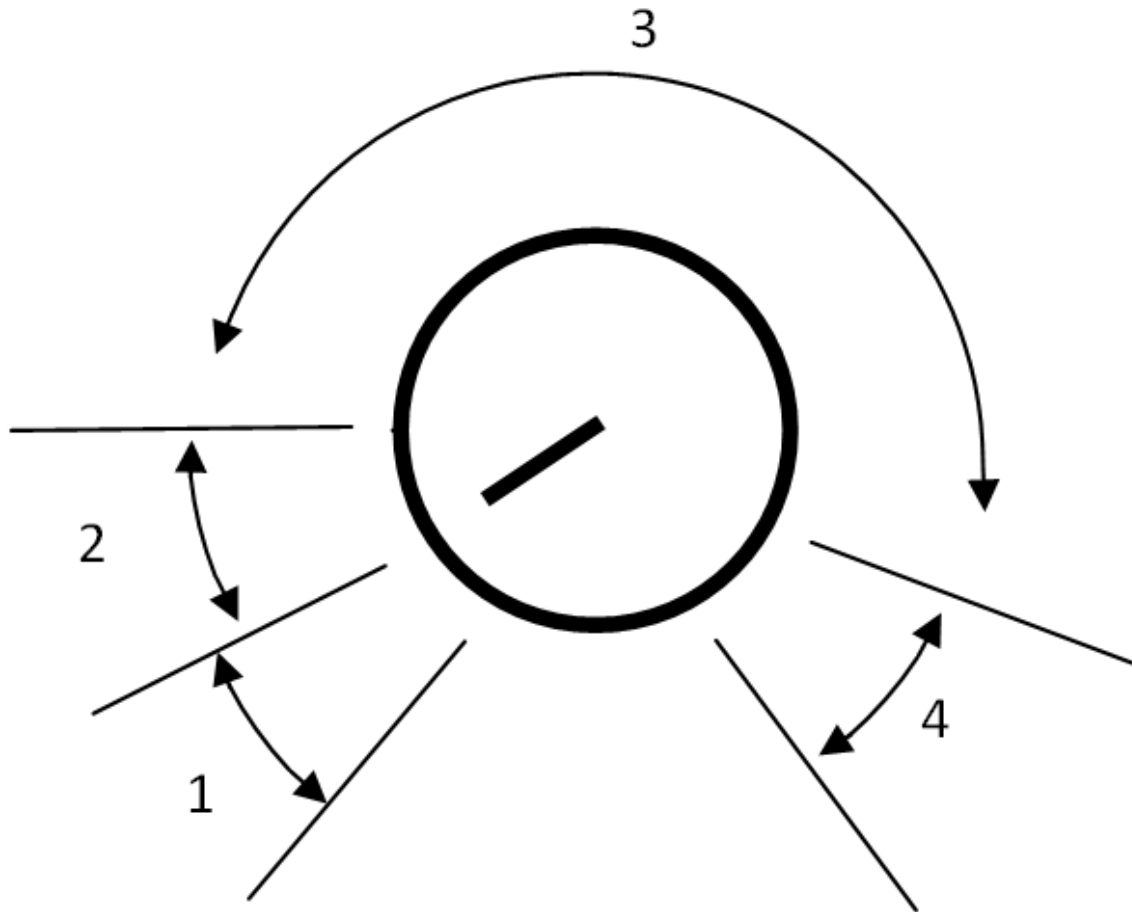
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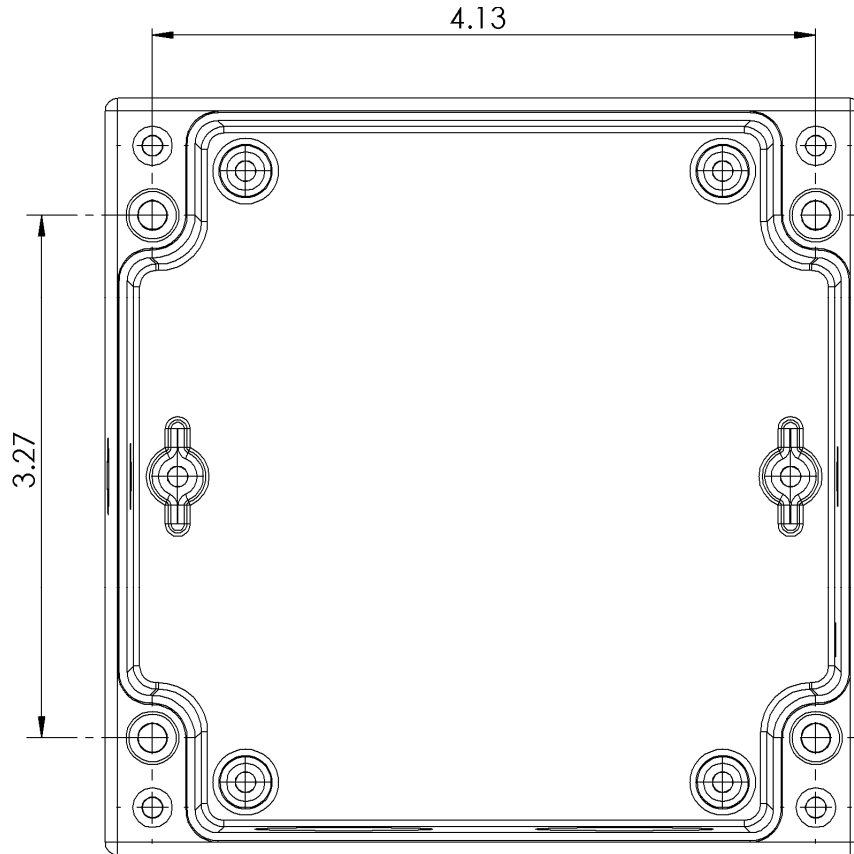
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ILLUMINATION KNOB OPERATION

Brightness is controlled via the black knob on the right side of junction box. Behavior is divided into regions, details of each region are listed in table below. Refer to figure for location of each region.

KNOB POSITION	SETTING
1	All Lighting Off
2	Digital Readout Off, Backlight Dim
3	Digital and Backlight ON, CW = Brighter
4	Day Mode, Digital Display Full Brightness, Backlight Off



JUNCTION BOX MOUNTING HOLE DIMENSIONS

Note: Brightness knob is on right side of junction box.



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