

# Using the iGR Repeater with the Carlson BRx7

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You can use the BRx7 as a Base in Repeater Mode or directly connected to the radio with a cable.

Important Notes:

ROX is an uncompressed format and cannot be used at 9600 baud as a repeater. Based on our testing we strongly recommend that you use Message Type = RTCM3.2. FEC must be disabled for operation at 9600 baud. For direct cable connections, you can use 9600 or 19200 over-the-air baud rate. For repeater operation, you must use 19200 over-the-air baud rate. A special wideband 25 kHz bandwidth FCC license is required for 19200 over-the-air use.

The following configurations have been tested and are known to work:

## As a Repeater

Warning: 9600 baud will not have enough capacity to support RTCM3.2 with more than 15 satellites tracked.

Rad	io	Con	fion	rati	on
Nau	IU	COIL	ngu	au	UII

iGRadio Programmer (Ver: 2021.2.20.1155) File Edit Radio					— C	1 X
Gage COM Port COM 1 V Load CO	Ms BAUD 11520	0 V Downloa	d from Radio	Upload to	Radio	] Supervisor
Radio Configuration Log						
Device Information	Channel Ta	ble				
Radio Model DU8616D	Verify Free	quencies	Force	12.5 KHz BW	Force 2	i KHz BW
Serial Number D21042472	Channel	TX Frequency	RX Frequency	Bandwidth		^
Firmware Version M025.00.01	CH 000	461.025,000	461.025,000	25 KHz		
Hardware Version V01	CH 001	461.075,000	461.075,000	25 KHz		
Frequency Range 410 to 470 MHz	CH 002	462.375,000	462.375,000	25 KHz		
	CH 003	462.400,000	462.400,000	25 KHz		
Radio Settings	CH 004	464,500,000	464.500,000	25 KHz		
Radio Mode 3 - Repeater	CH 005	464.550.000	464.550.000	25 KHz		
Current Radio Channel 0	CH 006	464.650.000	464.650.000	25 KHz		
Over-the-Air Protocol 9 - Satel	CH 007	464,700,000	464,700,000	25 KHz		
FEC (Forward Error Correction)	CH 008	464,725,000	464,725,000	25 KHz		
Output Power 2 - Low (5-watts)	<ul> <li>CH 009</li> </ul>	464,750,000	464,750,000	25 KHz		
Over the Air Liek Date 10200 band	CH 010	1011730,000	101.730,000	251012		
Over-the-Air Link Rate 19200 baud	CH 011					
UART (Cable) baud Rate 115200 baud	CHOIL					
Call Sign (CW Morse Code)	CH 012					
Call Sign Interval (default 15) 15 minutes	CHUIS					
Low Voltage Warning 11.0 Volts	CH 014					
Low Voltage Tx Disable 10.2 Volta	CH 015					
Volta	CH 016					
	CH 017					
	CH 018					*
Radio updated with 0 errors.						



Note: Over the air baud rate is 19200 and Bandwidth must be set to 25 kHz. A wideband FCC license is required for this operation mode.

#### BRx7 Configuration

Current       Comms       Receive         Antenna Type:       [BRX7 Intenta Antenna Height:       2       n         Antenna Height:       2       n         Elevation Mask:       Position Rate:       1         Use IMU       1       4         Adva       1       1	Ver       RTK         ternal <ul> <li>Image: Slant</li> <li>Abs. 70.1mm</li> <li>10</li> <li>11</li> <li>Auto Start Base</li> </ul> Inced
GPS Base Current Comms Recei Device: Internal Radio Network: None Message Type: RTCM V3	
Configure Internal UHF Ra Radio FW Version: Protocol: Power: Channel: New Channel Frequency ( Modulation Channel Spacing: Forward Error Correct	Adio

30-seconds after the Base is configured in SurvCE, it will begin to broadcast corrections. The RxTx LED on the iGR should blink GREEN then RED every second.



# Direct Cable Connection

Connect the serial/power cable provided with your BRx7 to the center connector on the receiver. A UHF antenna is not required as the internal radio will not be used.



Connect the provided iGR programming cable to the BRx7 serial cable with a 'DB9 Male-Male Null Modem Adapter':



iGR Configuration Configure the iGR radio as shown below:

# Gage

iGRadio Program <u>File Edit R</u> adio	mer (Ver: 2	2021.2.20.1155)					_		×
Gage COM	Port CON	4 1 V Load COM	s BAUD 11520	0 V Downloa	d from Radio	Upload to	Radio	Sup	erviso
Radio Configuration	.og								
Device Information			Channel Tal	ble	_				
Radio Model	DU8616D		Verify Free	quencies	Force	12.5 KHz BW	Force	e 25 KHz	BW
Serial Number	D2104247	2	Channel	TX Frequency	RX Frequency	Bandwidth			-
Firmware Version	M025.00.0	01	CH 000	461.025,000	461.025,000	12.5 KHz			
Hardware Version V01 Frequency Range 410 to 470 MHz		CH 001	461.075,000	461.075,000	12.5 KHz				
		CH 002	462.375,000	462.375,000	12.5 KHz				
			CH 003	462.400,000	462.400,000	12.5 KHz			
Radio Settings		-	CH 004	464.500,000	464.500,000	12.5 KHz			
Ra	adio Mode	1 - Tx Only ~	CH 005	464.550,000	464.550,000	12.5 KHz			
Current Radi	o Channel	0	CH 006	464.650,000	464.650,000	12.5 KHz			
Over-the-Ai	ir Protocol	9 - Satel 🗸 🗸	CH 007	464.700,000	464.700,000	12.5 KHz			
FEC (Forward Error C	orrection)		CH 008	464.725,000	464.725,000	12.5 KHz			
Out	put Power	2 - Low (5-watts) ~	CH 009	464.750,000	464.750,000	12.5 KHz			
Over-the-Air	Link Rate	9600 baud ~	CH 010						
UART (Cable) h	aud Rate	115200 baud ~	, CH 011						
Coll Sign (CW Mg	rea Cada)	WOSE605	CH 012						
Call Sign (CW Ho	(se code)	11002000	CH 013						
Call Sign Interval (de	efault 15)	15 minutes	CH 014						
Low Voltage	Warning	11.0 Volts	CH 015						
Low Voltage 1	Tx Disable	10.2 Volts	CH 016						
			CH 017						
			CH 018						

Both 9600 and 19200 baud over-the-air will work (the base and rover must match of course.)

## BRx7 Configuration





GPS Base	в		~	X
Current	Comms Receiver RTK		Massile	
Device:	Cable or Generic Device	6		
Network:	None			
RTK Port:	COM 1 Baud:	115	200	
Message T	ype: RTCM V3.2 💌			
		ASTREE.		

Continue setting up the base normally. 30-seconds after the base is setup, it should begin sending corrections out the serial port. The RxTx LED on the iGR will blink RED once per second.

The BRx7 Rover radio configuration should match the iGR configuration:

Configure Internal UHF Ra	adio 🗸 🗙	
Radio FW Version:	V07.44.2.5.0.1(403-473)	)
Protocol:	Satel	1
Power:	100 mW	
Channel:	1: 461.025 MHz	
New Channel Frequency (	0.00000	1
Modulation	4FSK	i
Channel Spacing:	25 kHz	
Forward Error Correct		

Note: if the iGR is set to 19200, then the Rover Channel Spacing must be 25 kHz. If the iGR is set to 9600 baud, then the Rover Channel Spacing must be 12.5 kHz. The Frequency (ignore the channel number) and FEC must match on the Base and Rover.