

iGR External Radio Operation

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Using the iGR as an external radio, instead of as a repeater, lessens the issues with correction messages that are longer than ½-second in transmitted length. External radio operation also greatly reduces the complexity of configuration and lessens the effects of other users on the same frequency.

| Part Number | Compatible Devices | Power for Base Receiver |
|-------------|---|--|
| 2004030051 | CHC X91+, X900+, P3, N71 | YES |
| A00630 | Ashtech/Spectra: ProMark/ProFlex 500 ,800, ZMax, ZExtreme, ZSurveyor Javad: Most receivers Topcon: Most receivers | NO, a separate power cable is needed for the GPS receiver. |
| 66656-10 | iGage iG8, iG8a, iG9, iG9a CHC: i70, i80, i90, i86 Trimble: R12, R10, R8S, R8 series, R7, 5700, 5800, 4800, 4700 Spectra: Epoch 35, Epoch 50 SP80, SP85 | YES |
| A00780 | Carlson: BRx7, BRx6 E-Survey: E300, E500, E800, E900 FOIF: A90 Gintec: G20, G30, G30 PRO Genec/SxBlue: F100, F90 GeoMax: Zenith 60, 10, 20, F2 Hemisphere: C631, S631 Stonex: S990A, S980A, S900A, S900, S850A, S700A UniStrong: E500, E800, G970II, G970IIPro, G960, G970C, G990II, G950, G960 | YES |

Some GNSS/GPS receivers also benefit by having a single cable power both the base and the external radio:

GeoMax, Carlson, Hemisphere, Stonex Receiver note

These receivers have two circular connectors on the bottom. Use the 5-pin connector for connecting to an external radio.

Configuring the iGR radio

The only differences between configuring a repeater (as described in the iGR User Manual) and configuring an external radio are:

- 1. Change the 'Radio Mode' from '3 Repeater' to '1 Tx Only'.
- 2. Possibly modify the UART (Cable) baud Rate to match the external port on the GNSS receiver.



| iGRadio Programmer (Ver: 2022.3.22.1157) | | | | | - | | × |
|---|----------------|--------------------|---------------|-------------|-------|----------|-------|
| | | | | | | | |
| Gage COM Port COM 1 ~ Load | COMs BAUD 1152 | 00 V Downloa | id from Radio | Upload to | Radio | | ervis |
| adio Configuration Log | | | | | | | |
| Device Information | Channel T | able | | | | | |
| Radio Model DU8616D | Verify Fre | equencies | Force | 12.5 KHz BW | Foro | e 25 KHz | BW |
| Serial Number D21042472 | Channel | TX Frequency | RX Frequency | Bandwidth | | | |
| Firmware Version M025.00.01 | CH 000 | 461.025,000 | 461.025,000 | 12.5 KHz | | | |
| Hardware Version V01 | CH 001 | 461.050,000 | 461.050,000 | 12.5 KHz | | | |
| Frequency Range 410 to 470 Minz | CH 002 | 51.100,000 | 461.100,000 | 12.5 KHz | | | |
| | CH 00 | | 461.150,000 | 12.5 KHz | | | |
| Radio Settings | | | 462.125,000 | 12.5 KHz | | | |
| Radio Mode 1 - TX Only | | | 462.375,000 | 12.5 KHz | | | |
| | CH 00 | | 462.400,000 | 12.5 KHz | | | |
| Over-the-Air Protocol 9 - Satel | CH 007 | \$4.500,000 | 464.500,000 | 12.5 KHz | | | |
| FEC (Forward Error Correction) | CH 008 | 464.550,000 | 464.550,000 | 12.5 KHz | | | |
| Output Power 2 - Low (5-watts | s) 🗸 CH 009 | 464.600,000 | 464.600,000 | 12.5 KHz | | | |
| Over the Air Link Rate 0600 have | CH 010 | 464.625,000 | 464.625,000 | 12.5 KHz | | | |
| UART (Cable) baud Rate 115200 baud | Cab | le Bauc | Rate | 2.5 KHz | | | |
| Call Sign (CW Morse Code) WOUN3b7 | CI1012 | 10 1.700,000 | 10 11700,000 | 12.5 KHz | | | |
| Call Sign Interval (default 15) 15 printer | CH 013 | 464.725,000 | 464.725,000 | 12.5 KHz | | | |
| Can orgen anter var (derault 15) 15 minutes | CH 014 | 464.750,000 | 464.750,000 | 12.5 KHz | | | |
| Low Voltage Warning 11.0 Volts | CH 015 | | | | | | |
| Low Voltage Tx Disable 10.2 Volts | CH 016 | | | | | | |
| | CH 017 | | | | | | |
| | CH 018 | | | | | | |

Start with the **Output Power** set to **Low (5-watts)**. Once you get the base working in the field, with the antenna set above your head and a rover is receiving corrections, then you can change the output power to **High** or **Medium**.

Configuring your GNSS Base Receiver

When choosing the destination for correction messages, choose the correct external port and cable baud rate. The exact method will depend on the field software you are using. Typical configurations for X-PAD, SurvCE/SurvPC and Landstar7 are detailed below.

X-PAD Ultimate Survey

From the Settings, GNSS & Total Stations Instruments list, when you create a Base Profile, choose External radio for the RTK – transmit corrections destination:



| 🔀 New profile |
|---|
| RTK - transmit corrections |
| Internal radio Uses the internal UHF radio of the receiver Internal GPRS (receiver) Uses the internal GPRS of the receiver External radio Uses an external UHF radio External GPRS (controller) Uses the internet connection of the |
| controller (GPRS/WiFi) |
| |
| ✓ Next |
| |

Then on the RTK Radio configuration dialog:

| New profile | | | | |
|------------------|---|--|--|--|
| | _ | | | |
| Baud rate 115200 | ~ | | | |
| Format RTCM3.2 | ~ | | | |
| Use Base ID O | | | | |
| Base ID 0 | ^ | | | |
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| Tools Nex | t | | | |

Set the Baud rate to match the rate selected on the iGR radio, typically 115200.

Set the Format to either RTCM3.2 or SCMRX. SCMRX is preferred for use with iGage iG8 and iG9 receivers.

After doing a START BASE operation from the main menu, the red RX/TX LED should blink once each second as corrections are sent from the GNSS receiver to the external iGR radio.

Carlson SurvCE/SurvPC

From the Equip: GPS Base configuration on the RTK tab:

3



| 🔔 GPS Base | | | 🗸 🗙 |
|---------------------------|---------------|------------|-------|
| Current | Comms | Receiver | RTK |
| Device: | Cable or Gene | ric Device | • |
| Network: | None | | ~ |
| RTK Port: | COM 1 👻 | Baud: 1152 | 200 - |
| Message Type: RTCM V3.2 - | | | |
| | | | |
| | | | |
| | | | |

Set the Device to Cable or Generic Device.

Set the **Baud** rate to match the **Cable Baud Rate** configured on the iGR radio.

After completing the Base configuration, the red RX/TX LED should blink once each second as corrections are sent from the GNSS receiver to the external iGR radio.

CHC Landstar7

From the Landstar7 main menu, select Config. Work Mode and build a new profile:

| ← 29150832 | 2-Edit w | ork mode | ? |
|------------------------------|----------------|----------|---|
| RTK settings Static settings | | | |
| RTK | | Yes | |
| Work mode | Manua | l Base | |
| Data link | External radio | | |
| Correction format | sCMRx | sCMRx | |
| Baud rate | 115200 | | |
| Elevation mask | 0 | | |
| | | | |
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| | | | |
| | | | |
| | √ 8 | Save | |
| | | | |

Enable RTK = Yes, set the Work mode to Manual Base, choose Data Link = External radio, choose an appropriate Correction format (typically sCMRx or RTCM3.2), choose the Baud rate to match the iGR radio configuration (typically 115200).

Once you save the profile, then you can Apply work mode? Yes. Finally Accept the selected work mode to start the base with a position.