

Rover Configuration for Topcon GR-3 using Carlson SurvCE 2.x & Internal CDMA Modem This Quick Guide outlines configuring the Topcon GR-3 with Carlson SurvCE & Internal CDMA modem to work with MaCORS.

• Configuring the GR-3 to use MaCORS



GR-3 with Internal CDMA Modem Configuration

Setting up rover for operation with an internal CDMA modem

JOB:NEWJOB Image: Cost of the second secon	Since we will be using the receiver within the network, we need to configure it to work with an internal CDMA device.
1 Job 🗳 6 Data Transfer ;	1. Open SurvCE
2 Job Settings 😩 7 Import/Export 😜	2 Go to the Equip tab
<u>3 Points</u> $\frac{3}{3} \equiv 8$ Delete Job	
4 Raw Data 🦉 9 Write Note 🥒	
<u>5</u> Feature Code List <u>0</u> Exit	
	3. Select <u>3</u> GPS Rover
<u>File</u> <u>Equip</u> <u>Survey</u> <u>C</u> OGO <u>R</u> oad	
1 Total Station 1 Collization	
2 GPS Base Z Monitor/Skyplot M	
3 GPS Rover 😨 8 Tolerances	
4 GPS Utilities 🔯 9 Peripherals	
<u>5</u> Configure 📌 _ Q About SurvCE 🔳	
😂 GPS Rover 🛛 💽 🔽	4. In the Current tab, select:
Current Comms Receiver RTK	
Manufacturer: Topcon	Manufacturer: Topcon
	• Model: GR-3
Load Save Rename Delete	



GPS Rover RTK Current Comms Receiver RTK Type: Bluetooth Device: Generic	 Select the Comms tab Select Type, either Bluetooth or Cable and the appropriate Port
Port: COM 3	
GPS Rover	7. Select the Receiver tab
Antenna Type: TPSGR3 Antenna Height: 5.5617 ft File 233.8 mm Vertical Slant NGS NGS Elevation Mask: Position Rate: THz RTK Calculation: Extrapolate THSGR3	8. Input your correct Antenna Height
Store Vectors in Raw Data Advanced Advanced	9. Select Advanced
Tag Stored Points in Log File mbiguity Fixing: High Co-op Tracking Multipath Reduction Send file after config No File Selected!	10. Set Ambiguity Fixing to High
GPS Rover	11. Select the RTK tab
Device: Internal CDMA	12. Change your Device to Internal CDMA & select the appropriate Baud rate for this connection
RTIK Port: C Year Parity: None Stop Bits: 1 Year Message Type: RTCM V3.0 SmartNet: RTCM3_IMAX	13. Push the Setting icon 🖄 to the right of Device



😂 Configure Topcon CDMA Modem 🛛 🗙	
Provider: <u>User Settings</u> Pin: 0000	14. In the Provider field, select User15. Select Settings
APN Settings	
APN User Name: APN Password: GPRS Dial: #777	16. In the GPRS Dial field, enter # 77717. Press the Green Check icon
Configure Topcon CDMA Modem C C C C C C C C C C C C C C C C C C C	18. Press the Green Check icon 🗹
GPS Rover Current Comms Receiver RTK Device: Internal CDMA Network: NTRIP RTK Port: C Y Baud: 115200 Parity: None Stop Bits: 1 Message Type: RTCM V3.0 SmartNet: RTCM3_IMAX Send Rover Position to Network	19. Push the Setting icon 🗷 to the right of Network



😂 NTRIP Broadcasters 🔽 🔀	20. In the Name field, enter MaCORS
Name: MaCORS Delete IP Address: 64 28 83 185 Port: 10000 User Name: username Password: ******* Broadcaster Information Identifier: Operator: Position Misc: NMEA:	 21. In the IP Address field, enter in the correct DNS address of the new server (please check the <u>RTK Data Products</u> tab on the MaCORS website) and a Port number of 10000 Example: For MaCORS enter: 64.28.83.185
Bases for SmartNet	22. Enter the User Name and Password provide by MaCORS, press the Green Check icon
Identifier: Short Id: Short Id: Type: Format: RTCM V3.0	23. A new screen will appear, in the Name field enter the Mount Point name for the real-time product that is desired (see <u>site</u>)
Position: Misc:	24. In the Format field, select RTCM V3.0
Send Rover Position to Network	25. Check "Send Rover Position to Network"
	26. Press the Green Check icon
GPS Rover Current Comms Receiver RTK Device: Internal CDMA Y Network: NTRIP Y RTK Port: C Baud: 115200 Parity: None Stop Bits: I Message Type: RTCM V3.0 SmartNet: RTCM3_IMAX Y Send Rover Position to Network	27. Verify all your settings
😂 GPS Rover 👔 🔽 🗙	28. Select the Current tab
Courrent Comms Receiver RTK Manufacturer: Topcon Image: Comms Co	29. Select Save
Model: GR-3	30. Enter a name for the new configuration file, such as MaCORS GR-3 Config
Load Save Rename Delete	31. Press the Green Check icon



➢ Instrument ✓ X Please enter the name for the new configuration file: MaCORS GR-3 Confiø Save As Default	
GPS Rover Current Comms Receiver RTK Manufacturer: Topcon Model: GR-3 MaCORS GR-3 Config Load Save Rename Delete	32. Congratulations, you should now be able to connect to MaCORS.





Rover Configuration for Topcon GR-3 using Carlson SurvCE 2.x & Internal GSM Modem This Quick Guide outlines configuring the Topcon GR-3 with Carlson SurvCE & Internal GSM modem to work with MaCORS.

• Configuring the GR-3 to use MaCORS



GR-3 with Internal GSM Modem Configuration

Setting up rover for operation with an internal GSM modem

JOB:NEWJOB Image: Cost of the second secon	Since we will be using the receiver within the network, we need to configure it to work with an internal GSM device.
1 Job 🔓 6 Data Transfer ;	1. Open SurvCE
2 Job Settings a Import/Export	2. Go to the Equip tab
<u>3 Points</u> <u>8 Delete Job</u>	
4 Raw Data 🧕 9 Write Note 🥒	
5 Feature Code List 🔯 0 Exit 🖇	
💝 JOB:NEWJOB	3. Select <u>3</u> GPS Rover
<u>File</u> <u>Equip</u> <u>Survey</u> <u>C</u> OGO <u>R</u> oad	
1 Total Station 1 Cocalization	
2 GPS Base 🕱 Z Monitor/Skyplot 🎉	
<u>3</u> GPS Rover <u>8</u> Tolerances	
4 GPS Utilities 🕸 9 Peripherals	
<u>5</u> Configure 👷 Q About SurvCE 🔳	
😂 GPS Rover 🛛 🔂 🗙	4. In the Current tab, select:
Current Comms Receiver RTK	
Manufacturer: Topcon 🔽 🛄	Manufacturor: Toncon
Model: GR-3	• Model: GR-3
Load Save Rename Delete	



 Select the Comms tab Select Type, either Bluetooth or Cable and the appropriate Port
 7. Select the Receiver tab 8 Input your correct Antenna Height
 9. Select Advanced
10. Set Ambiguity Fixing to High
 11. Select the RTK tab 12. Change your Device to either Internal GSM w/ FH915+ or Internal GSM w/ Digital UHF depending on what model receiver you are operating 13. Push the Setting icon to the right of Device



GPS Rover Current Comms Receiver RTK Device: Internal GSM w/ Digital UHF Network: NTRIP Y RTK Port: C Baud: 115200 Parity: None Stop Bits: I Message Type: RTCM V3.0 SmartNet: RTCM3_IMAX Y Send Rover Position to Network	
Configon GSM w/ FH915 Modem Cingular Settings Provider: Settings Pin:	 14. In the Provider field, select either Cingular or T-Mobile depending on your cellular service provider 15. Press the Green Check icon
GPS Rover Current Comms Receiver RTK Device: Internal GSM w/ FH915+ X Network: NTRIP X RTK Port: C Baud: 38400 Parity: None Stop Bits: 1 Message Type: RTCM V3.0 SmartNet: RTCM3_IMAX X Send Rover Position to Network	16. Push the Setting icon ☆ to the right of Network
Name: MaCORS IP Address: 64.28.83.185 Operator: Password: Broadcaster Information Identifier: Operator: Position Misc: NMEA:	 17. In the Name field, enter MaCORS 18. In the IP Address field, enter in the correct DNS address of the new server (please check the <u>RTK Data Products</u> tab on the MaCORS website) and a Port number of 10000 Example: For MaCORS enter: 64.28.83.185



Bases for SmartNet Name: RTCM3_IMAX User Name: Password: Identifier: Short Id: Type: Format: RTCM V3.0 Position: Misc: Send Rover Position to Network	 19. Enter the User Name and Password provide by MaCORS, press the Green Check icon 20. A new screen will appear, in the Name field enter the Mount Point name for the real-time product that is desired (see site) 21. In the Format field, select RTCM V3.0 22. Check "Send Rover Position to Network" 23. Press the Green Check icon
GPS Rover Current Comms Receiver RTK Device: Internal GSM w/ FH915+ Network: NTRIP RTK Port: C Baud: 38400 Parity: None Stop Bits: 1 Message Type: RTCM V3.0 SmartNet: RTCM3_IMAX Send Rover Position to Network	24. Verify all your settings
GPS Rover Current Comms Receiver RTK Manufacturer: Topcon Model: GR-3 Load Save Rename Delete	 25. Select the Current tab 26. Select Save 27. Enter a name for the new configuration file, such as MaCORS GR-3 Config 28. Press the Green Check icon
➢ Instrument ✓ ✓ ★ Please enter the name for the new configuration file: MaCORS GR-3 Config Save As Default	



😂 GPS Rover	🔁 🔽 🔀	
Current Com	ms Receiver RTK	
Manufacturer:	Topcon 💌 🔳	
Model:	GR-3 💌	
MaCORS GR-3 Config		
Load Save Rename Delete		

29. Congratulations, you should now be able to connect to MaCORS.





Rover Configuration for Topcon Hiper using Carlson SurvCE 2.x & Airlink Modem This Quick Guide outlines configuring the Topcon Hiper family of GPS with Carlson SurvCE & Airlink modem to work with MaCORS.

• Configuring the Hiper to use MaCORS



Hiper & Airlink Modem Configuration

Setting up rover for operation with an Airlink modem

► Survey COGO Road	Since we will be using the receiver within the network, we need to configure it to work with an Airlink device.
Eile Equip Survey COGO Road 1 Job 6 Data Transfer 1 2 Job Settings 2 7 Import/Export 1 3 Points 1 1 1 1 4 Raw Data 1 1 1 1 5 Feature Code List 1 1 1 1	 need to configure it to work with an Airlink device. 1. Open SurvCE 2. Go to the <u>Equip</u> tab
JOB:NEWJOB Image: Constraint of the second seco	3. Select <u>3</u> GPS Rover
GPS Rover Current Comms Receiver RTK Manufacturer: Topcon Image:	 4. In the Current tab, select: Manufacturer: Topcon Model: Hiper+ select the appropriate model of Hiper you will be using



GPS Rover Two Comms Receiver RTK	 Select the Comms tab Select Type, either Bluetooth or Cable and the appropriate Port
Port: COM 3	
GPS Rover RTK	7. Select the Receiver tab
Antenna Type: [TPSHIPER_PLI ▼] 105.9 mm Antenna Height: 5.5617 ft Image: Vertical mark Elevation Mask: 10	8. Input your correct Antenna Height
Position Rate: 1 Hz RTK Calculation: Extrapolate Store Vectors in Raw Data	
Advanced	9. Select Advanced
New York Advanced	
 Tag Stored Points in Log File Ambiguity Fixing: High Co-op Tracking Multipath Reduction Send file after config No File Selected! 	10. Set Ambiguity Fixing to High
Current Comms Receiver RTK	11. Select the RTK tab
Device: AirLink	12. Change your Device to Airlink & select the appropriate RTK Port for this connection
Parity: None Stop Bits: 1	13. Change Network setting to NTRIP
Message Type: RTCM V3.0 SmartNet: RTCM3_IMAX Send Rover Position to Network	14. Push the Setting icon 🖄



📚 NTRIP Broadcasters 🛛 🔽	15. In the Name field, enter MaCORS	
Name: MaCORS Delete ort: 10000 User Name: username Password: ******* Broadcaster Information Identifier: Operator: Position Misc: MMEA: MMEA: Operator: Operator:	 16. In the IP Address field, enter in the correct DNS address of the new server; (please check the <u>RTK</u> <u>Data Products</u> tab on the MaCORS website) and a Port number of 10000 Example: MaCORS For MaCORS enter: 64.28.83.185 	
Bases for SmartNet Name: RTCM3_IMAX Delete User Name: Password: Identifier: Short Id: Type: Format: RTCM V3.0 Position: Misc: Identifier: Send Rover Position to Network Position: Misc: Identifier: Send Rover Position to Network Position: Misc: Identifier: Rover Position to Network Position: Misc: Identifier: RTK Port: AirLink Network: NTRIP X Parity: None Stop Bits: Identifier: Send Rover Position to Network	 17. Enter the User Name and Password provide by MaCORS, press the Green Check icon 18. A new screen will appear, in the Name field enter the Mount Point name for the real-time product that is desired (see site) 19. In the Format field, select RTCM V3.0 20. Press the Green Check icon 21. Verify all your settings 	
GPS Rover Current Comms Receiver RTK Manufacturer: Topcon Model: HiPer+	 22. Select the Current tab 23. Select Save 24. Enter a name for the new configuration file, such as MaCORS Hiper Config 25. Press the Green Check icon 	



Please enter the name for the new configuration file:	
Save As Default	
GPS Rover Current Comms Receiver RTK Manufacturer: Topcon I Model: HiPer+ MaCORS Hiper Config	26. Congratulations, you should now be able to connect to MaCORS.

NOTE: You will need to verify that the R-Time Data in step 6, the Port number in step 13 and the Ref Network type in step 5 of the next section all correspond. The recommended settings are:

- R-Time Data: RTCM v3
- Port: 10000 (MAX corrections for all of MaCORS)
- Ref Network: MAX





Rover Configuration for TopSurv GR-3 GPRS with NTRIP.

TopSurv GR-3 GPRS NTRIP

- I. Job Setup.
 - a. Open **TopSurv** on your data collector.

Topen Job OK	The state of the s
	CF Card\TPS TopSURV\Jobs\
Job List	
Default	
	Created By
	Comments
Created: 09/09/2005 13:32 Modified: 09/09/2005 13:33	
(CF Card\TPS TopSURV\Jobs)	Current Date 9/9/2005 13:39 PM
Exit New Browse Open	Browse Next >>
∎▼ Surv Config Finish Cancel	Configurations OK Cancel
Select the Configuration for the Job or create a New Configuration.	Configuration Name
-	My RTK and PP
GPS+ Config	My Network RTK My mmGPS+ RTK
Name <default> V</default>	My mmGPS+ Network RTK
TS Config	My RT DGPS
Name <default></default>	My PP Static My PP Kinematic
	My PP DGPS
<< Back Next >>	

- b. In the Open Job screen, Click on New and the New Job screen will appear.
- c. In the *New Job* screen, enter the **Name** and *all other appropriate information*. Click **Next** and the Survey Config screen will show up.
- d. In the Survey Config screen, click on the ... Configuration button.



e. In the Configuration screens, click on Add.

Survey Finish Cancel	Text Rover Recvr Finish Cancel	Rover Recyr Finish Cancel
NameGR3 GPRSTypeNetwork RTKCorrectionsVRS	RTK Format Elevation Mask 10 deg	Laser Config RTK Protocol Help
Enable PP Survey		
Next >>	<< Back Next >>	<< Back Next >>

f. Enter the desired **Name**, choose the type as **Network RTK**, and the appropriate **Correction type**. Click **Next**.

The second secon	Ex Config: Modem Finish Cancel	Rover Radio Finish Cance
		Radio Modem
	Modem Connect Receiver	Internal GPRS 🗸 🗸
Elevation Mask 10 deg		Receiver Port Connected to Radio
		Port C
		Parity None 🔽
		Data 8
Protocol NTRIP		Baud 38400 🔽
		Stop 1
		Defaults
<< Back Next >>	<< Back Next >>	<< Back Next >>

- g. Under the *Rover Receiver Screen*, choose the appropriate **RTK Correction Format** and **Elevation Mask**. Choose the *context menu (Pull-down menu in the upper left corner)* and choose **RTK Protocol**. Select the RTK Protocol as **NTRIP**. Click **Next**.
- h. Choose Modem is connected to the Receiver. Click Next.
- i. Choose the Radio Modem as Internal GPRS. Configure the following, once finished, click Next:
 - i. Port: C
 - ii. Parity: None



- iii. Data: 8
- iv. Baud Rate: 38400
- v. Stop: 1

Sector Madem Cirich Concel		
Internet Info	NTRIP Server	Provider T-Mobile GPRS V
IP Address 64.28.83.185	User ID user1	Dialup Num *99#
		User ID
IPAddressList	Password topcon	Password
64.28.83.185/10000		PIN 0000
		APN internet2.voicestre
		HiPer XT/GR-3
Delete		Defaults
<< Back Next >>	<< Back Next >	>> <pre></pre>

- j. Enter the **IP address** and **Port number** of the network you are connecting to in the following format: *IP address/port number*. Note: The Port will coincide with the NTRIP Port of the network. Click **Add**.
- k. Once the desired IP addresses are entered, click Next.
- 1. Enter the NTRIP **User ID** and **Password** assigned to you by the *network administrator*. Click **Next**.
- m. Choose the Service Provider Associated with the Internal SIM Card. *Note: for T-Mobile and Cingular, these configurations are already provided.* Click **Next.**



- n. Select the **Virtual Radio Port**. *Note: The Virtual Radio Port is a port on the receiver that is not being used. Remember, B is the Bluetooth Port and C is the Radio modem port.* Click **Next.**
- o. Enter the following information once finished, click Next:



- i. Antenna Type being used
- ii. Antenna Height
- iii. Measurement Type
- p. Enter the following information once finished, click Next:
 - i. Check whether using mmGPS or not. If not, just click Next.
 - ii. If using mmGPS, enter the **receiver port for the PZS-1** as A (or D depending on which port the CDMA is on.)
 - iii. Sensor Gain Auto
 - iv. Check Init Time Improvement.
 - v. Check Weighted Height.
 - vi. Enter desired **height difference limit** between GPS and mmGPS determined height. Default is 0.3m

Survey Parms Finish Cancel	Stk Parms Finish Cancel	The Advanced Finish Cancel
Solution Type Fix Only Auto Accept Num Meas to Avg 3 Precision (m)	Hz Dist Tolerance 0.0500 m Reference Direction Moving Direction v Store Staked Point As Point Design Pt Suf v_stk	Multipath Reduction Co-Op Tracking Satellite System GPS+GLONASS RTK Position Matched Epoc
Hz 0.0150 Vert 0.0300 Auto Topo Method By Hz Dist V Interval 15.00 m	Note Design Point Solution Type Fix Only	
<< Back Next >>	< Back Next >>	<< Back

- q. On the *Survey Parameters* screen, enter the following, once finished click **Next**:
 - i. Solution Type Fix Only
 - ii. Desired Auto accept parameters
 - iii. Desired Auto-topo parameters.
- r. On the *Stakeout Parameters* screen, enter the following, once finished, click **Next**:
 - i. Desired Horizontal distance tolerance
 - ii. Desired Reference direction
 - iii. Solution Type Fix Only
- s. On the Advanced screen, enter the following, once finished click Finish:
 - i. Multipath Reduction checked
 - ii. Co-Op Tracking checked
 - iii. Satellite System GPS + GLONASS



iv. RTK Position – Matched Epoch.

Surv Config Finish Cancel	Coord System Finish Cancel	□ Units Finish Cancel
Select the Configuration for the Job or create a New Configuration.	Projection	Distance Meters
GPS+ Config	Use Grid to Ground	Angle
Name My Network RTI 🔽	Datum WGS84 🔽	DMS
TS Config Name <default></default>	Geoid <none> 💌</none>	
<< Back Next >>	<< Back Next >>	<< Back Next >>

- t. Click Next on the Survey Config screen.
- u. On the *Coordinate System* screen, enter the following, once finished click **Next**:
 - i. Desired Projection
 - ii. Desired Datum
 - iii. Desired Geoid Model that you wish to add.
- v. On the *Units* screen, enter the desired **distance and angular units**. Click **Next.**



- w. On the *Display* screen, enter the desired **coordinate type**, **order**, **etc**. Click **Finish**.
- x. On the *Alarms screen*, enter user Preferences.
- II. Connecting to the Network



a. Configure TopSurv Job accordingly



- b. Connect to your rover receiver via Bluetooth or serial cable.
- c. Click on Survey and then Topo.
- d. On the Topo screen, select Config Modem.

🖥 🔽 Config Mod 🤫 OK Cancel	Thernet Conne OK Cancel Internet
Modem Connected Rover Type Internal GPRS Radio Port C BaseAddress 64.28.83.185	Provider T-Mobile GPRS Dialup Num *99# User ID
Mount Pts	PIN 0000
PPP: Off	APN jinternet2.voicestr V HiPer XT/GR-3 Close
Update Disconnect Connect	Disconnect Connect

e. On the *Config Modem* screen, click on the **Red icon** to the left of the OK button.

f. On the *Internet Connection* screen, choose the provider of your Internal GPRS SIM Card and enter the appropriate dialup networking information.



Note: For *T*-Mobile and Cingular users, this information is already provided by default.

Click on **Connect** and the receiver will connect to the Internet. MaCORS address is 64.28.83.185 & NTRIP port is 10000

Internet Conne OK Cancel Provider T-Mobile GPRS ♥ Dialup Num *99# User ID	Config Mod OK Cancel Modem Connected Rover Type Internal GPRS Radio Port C	Config Mod Cancel Modem Connected Rover Type Internal GPRS Radio Port
Password 0000	Base Address64.28.83.185	Base Address64.28.83.185
APN internet2.voicestr I HiPer XT/GR-3	Stream Info PPP: Connecting Speed 38400	Stream Info PPP: Connected Speed 38400
Disconnect Connect	Update Disconnect Connect	Update Disconnect Connect

- g. Click **Ok** after connecting to the Internet to return to the *Config Modem* screen.
- h. Wait for the *PPP Connection* to become **Connected** (most likely at 38400), then click on the **Update** button to generate the *NTRIP Mount Point Sourcetable*.

Config Mod 🕀 OK Cancel	Config Mod 😁 OK Cancel	Config Mod 🖶 OK Cancel
Modem Connected	Modem Connected	Modem Connected
Type Internal GPRS Radio Port C	Type Internal GPRS Radio Port C	Type Internal GPRS Radio Port C 🗸
Base Address 64.28.83.185 Mount Pts NET1(NET1;CMR V Stream Info	Base Address 64.28.83.185	Base Address 64.28.83.185 Mount Pts NET1(NET1;CMR V Stream Info
PPP connection is: Connected	Starting Radio Port	Modem Set Successfully
Update Disconnect Connect	Update Disconnect Connect	Update Disconnect Connect

i. Once the Mount Points are generated, choose the one you wish to connect to and click on **Connect** and the message should say *Modem Set Successfully*.



j. Click **OK** to return to the *Topo* screen and after a few moments, you should receive 100% radio link and an RTK Age of 0, indicating you are receiving RTK correction from the network you dialed.

Topo Settings Close	Status Settings Close Pos Sys Plots SVs	Image: Status Settings Close Pos Sys Plots SVs
● Point H V Ø Ø 100% 0.019 0.022 7+2 Code ✓ ✓ Ant Ht 2.000 m Vertical ✓	Image: system Image: s	A Position Type Fixed Common Sats 11 Initialized Sats 11 Radio Link 100% Rtk-Age(sec) 0 Receiver Memor 1309
Epoch Count 0 Start	 № PDOP 2.6 H 0.011 № 0.020 m Base Dist 68.521 m 	Controller Memo 7311

