FLT Geosystems

Leica System 1200 GPS User Guide

Connecting to Reference Station Networks: Configuring the Sensor for RTK Site Corrections

Updated (FDOT) FPRN NTRIP Example

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Purpose

This guide illustrates how to change user-defined settings on your System 1200 GPS sensor to receive corrections from a Reference Station Network. The Florida Permanent Reference Network is used as an example.

This guide assumes that the user's sensor is already set up for a Cellular modem with System 1200 RTK rover configurations. It is further assumed that the user has basic familiarity with the Leica 1200 sensor.

The following are some notes regarding the RTK corrections available to the GPS receiver and what those options mean for the user.

- There are different RTK messages and RTK Products available to the rover. These RTK outputs are defined within the provider's Reference Station Software and are available to the user via assigned IP addresses and ports.
- The RTK data message consists of several pre-defined RTCM formats or CMR+ message formats. RTCM (Radio Technical Commission for Maritime Services) sets international standards for generic differential GNSS broadcast formats. These may be in differing adopted versions, i.e. ver.2.x, or 3.x.
- Together with the type of message, the type of correction broadcast may be Single Baseline corrections, the "Nearest" function or Network-derived corrections (MAX, iMAX, etc.)
 Single Baseline setting allows user to pick a Reference Station via the MountPoint table.
 "Nearest" function automatically selects the Reference Station nearest to the user.
 Network corrections for Leica Rovers may be Max or i-Max corrections.
- These formats are sent to a pre-defined Internet address with separate IP ports assigned for different data and message types.
 NTRIP connections allow multiple correction types on single ports.
 The user accesses the RTK products in the MountPoint table by pressing the Source (SRCE) key and then selecting the correction or correction source desired.

To configure your rover for Reference Network connections, follow the steps outlined on the following pages.

This guide revised Sept. 2013 for FPRN updates and NTRIP connections. FPRN products depicted here are for example. The user should configure the RTK rover for the sites or products they deem appropriate for their use. FPRN products require registration at the FPRN website to create account. Registration page for the FPRN is at http://204.90.21.205/sbc/





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In Interfaces, highlight the Real-Time	Interfaces					×
Option.	Interface	Port		De	vice	
The Port should already be set to NET1	Real-Time	NET1		Inter	rnet	
	ASCII Input	-			-	
Select F4 CTRL to view existing	NMEA Out 1	-			-	
IP Address and Port settings	Export Job	-			-	
	Hidden Pt	-			-	
	SmartAntenna	BT 1		ΑΤΧ	1230	
	Internet	Clip	MultiT	echVer	izon	
	ASCII Remote	≱-			-	-
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	CONT	EDIT	CTRL			

Highlight the Server field and press ENTER to edit or create a new connection

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Set NET Port					×
General Ranges	3				
Name	•			net	· •
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Server	:	NTRI	P RTI	N POR	TS∳I
Host	:				
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CONT					PAGE

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To EDIT Existing Site	Server t	o Connect	Ł	×
	Name			Host
From the Server list,	FPRN DIS	TR1 SBL	20	4.90.21.205
To make changes to an existing site	FPRN DIS	TR6 SBL	20	4.90.21.205
highlight site and Select F3 EDIT.	FPRN DIS	TR7 SBL	20	4.90.21.205
5 5	NTRIP RT	N PORTS	20	4.90.21.205
Make changes, then F1 STORE.				
3,				
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	CONT	IEW EDIT	DEL	MORE
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To Granta Now Site	Edit Ser	ver		X
To create new Site	Name	•	EPRN DTS	
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To create a new site in the Server List,	Host			
Select F2 NEW	103 0	•		

TCP/IP Port :

Enter Site name, IP Address and the Port. When complete,

Select F1 STORE



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	20:21 CONFIGURE	=11 `` 🕺 * 🖫 🖓 🖥
This returns you to the Server List.	Server to Connect	<u> </u>
	Name	Host
	FPRN DISTR1 SBL	204.90.21.205
	FPRN DISTR6 SBL	204.90.21.205
	FPRN DISTR7 SBL	204.90.21.205
	NTRIP RTN PORTS	204.90.21.205
Highlight the desired server and Confirm your current site selection.		
Select F1 CONT		
	CONT NEW EDIT	DEL MORE
This returns you to the Set NET Port Screen.	CONFIGURE	Σ=11 *
	General Ranges	
In this example we are selecting a	Name :	Net 1 🗖
Single Baseline port in District 6.	User :	Client <u></u>

Select F1 CONT

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Set NET Port						×
General Range	IS 🗌					
Name	:			Net	1	
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Server	:	FPRN	DISTR	(6 S	BL₫	M
Host	:					
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This returns you to Interfaces Screen	Interfaces				×	C
	Interface	Port		De	evice	
Select F3 EDIT to change Real-Time	Real-Time	NET1		Inte	rnet 🗖	•
settings.	ASCII Input	E -			-	
	NMEA Out 1	-			II	l
	Export Job	-			1	l
	Hidden Pt	-			1	l
	SmartAntenn	na <mark>BT 1</mark>		ATX	1230	l
	Internet	Clip	MultiT	echVer	izon	_
	ASCII Remot	te-				r
					A 1	t
	CONT	EDIT	CTRL			

			'z ⊙₽
Set the correct data type to match your	Real-Time Mo	ode	<u>×</u>
Port and RTK correction	R-Time Mode:		Rover
For this Nearant site was will use	R-Time Data:	Le	ica 🔺 바
PTCM v3 data	Port :	Leica	4G 小
RTCIWI VS Udia	Device :		1K+
	ID Address :	RTCM 1 2	y2
Highlight R-Time Data Field.	Ref Sensor :	RTCM 9.2	v2 1
Select RTCM v3.1 as Data Type.	Ref Antenna:	RTCM 18,19	v2 🕩
		RTCM 20,21	v2 🚬
			A

	21:05 CONFIGURE	Σ=11 ** * * * * • • • • • • • • • • • • • •
	Real-Time Mode	×
	R-Time Mode: R-Time Data:	Rover∮► RTCM v3.1
Set Ref Sensor to Unknown.	Port :	Net 10
Set Ref Antenna to ADVNULLANTENNA	Device : ID Address :	Internet
	Ref Sensor : Ref Antenna:	Unknown <u>아</u> ADVNULLANTENNA <u>아</u>
Select F2 ROVER		
	CONT ROVER	SRCH DEVCE

Rover Options allows the user to select the Ref Network correction type	13:17 Image: Construction of the second se
and to set a User ID and Password,	Accept Ref : Any Received 1/1 × Ref Stn ID : 0 Ref Network : None Send User ID : Yes
(The NTRIP settings Page is accessed from this screen as well.)	User ID 1 : 000000 User ID 2 : 000000
	CONT GGA PAGE

	CONFIGURE 9 2 L2= 9 A A B
If Using Baseline Data, Ref Network is	Additional Rover Options 🛛 🗙
set at NONE. If using NEAREST or	GeneralNTRIP
MAX corrections, select the appropriate	Accept Ref : Any Received 🔶 🔺
Ref Network setting	Ref Stn ID : 0
We are using None in this example	Ref Network : None • 1
	Send User ID : Nearest 🐠
Set User ID setting here to: No	User ID 1 : i-MAX
	User ID 2 : MAX
FPRN User ID and PWD will be set in	VRS
NTRIP settings.	
-	

	00:37 CONFIGURE 11 Σ=11 Configure	* :07
	Additional Rover Options	
	Accept Ref : Any	Rece i ved 🚺
	Ref Stn ID :	0
	Ref Network :	None 🔶
Select F4 GGA	Send User ID : User ID 1 :	No <u>∮Þ</u> 000001
	User ID 2 :	000001
	CONT GGA	A û PAGE

Set GGA Position to : Automatic Select F1 CONT	13:27 CONFIGURE 7 L1=7 Send GGA NMEA GGA Position :	Automatic
Select F1 CONT again	CONT	▲①

Select the NTRIP Tab for settings.	21:21 CONFIGURE ⊕ 11 G=7 Å Additional Rover Options	
Use NTRIP is Yes to allow configuring	General NTRIP RTCM Options Use NTRIP:	Yes 🕩
Enter USER ID from your FPRN account Enter your matching Password. Select F5 SRCE to see the MountPoint table. Highlight and select desired Site or desired RTK Product (Near, MAX, etc.)	User ID : (cont) : Password: Mountpnt:	USER1 ***** RMND
F1 CONT again	CONT	A ① SRCE PAGE

This returns you the Real-Time Mode screen.	13:31 CONFIGURE7 LReal-TimeModeR-TimeMode:R-TimeData:	1=7 2=7 ☆ * * * * * * * * * * * * * * * * * *
Select F1 CONT to Interfaces Screen.	Port : Device :	Net 1 <u>사</u> Internet
Select F1 CONT again to return to the Main Menu.	Ref Sensor : Ref Antenna:	Unknown 4년 ADVNULLANTENNA 4년
Begin Survey or Stakeout Operations. Press SHIFT, then CONEC	CONT ROVER	A ① DEVCE

Note: Real Time Data format can remain RTCM v3 for all connections for your Leica equipment.

If changing from SBL (Single Baseline) to Network (MAX or Near) make sure to change the Rover setting Ref Network between None and Max or Nearest. Remember to re-select the MountPoint in the NTRIP tab if you select different product.