

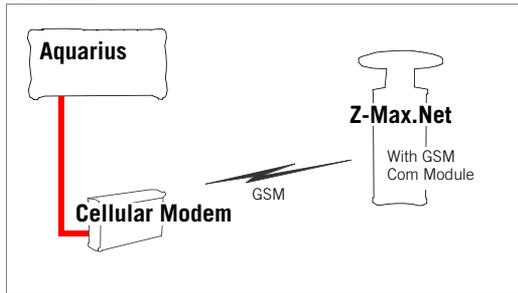
Setting Aquarius to Operate with a Z-Max.Net Base

Introduction

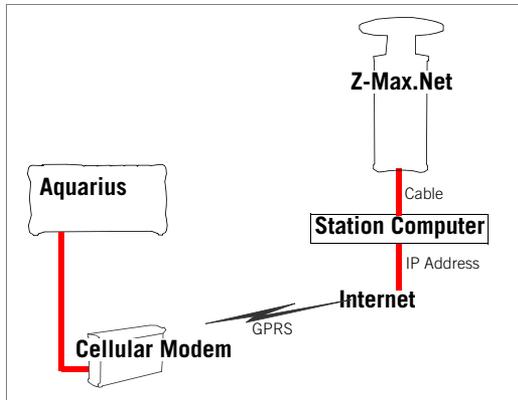
This Application Note tells you how you can set up your Aquarius receiver for LRK (Aquarius x2) or KART (Aquarius x1) operation using base data sent by a Z-Max.Net system via a GSM or GPRS link.

The two diagrams below show what needs to be done to make this possible.

Via GSM



Via GPRS



Additional Hardware Required with Aquarius

Whether a GSM or GPRS connection is envisioned, the same additional hardware is required on the Aquarius side, namely a GSM/GPRS wireless cellular modem such as the MTCBA-G-F1 from Multi-Tech Systems, with embedded TCP/IP stack.

Firmware Compatibility

The application described in this Application Note requires the use of the following firmware versions in Aquarius and Z-Max.Net:

Aquarius	Z-Max.Net
20053 or later	MD00

Z-Max Base Setup

For GSM Data Link

Attach a GSM Communication Module to the right flank of the receiver module.

For GPRS Data Link

Refer to *How to setup a Z-Max or Z-Xtreme as a Direct IP base Rev E*. This Application Note is available from the public FTP server file (<ftp://ftp.magellangps.com/Land Survey/Z-Max/Application Notes/How to setup a Z-Max or Z-Xtreme as a Direct IP base Rev E.pdf>).

With this configuration, Aquarius will be able to interrogate the station computer via GPRS and the Internet, based on its knowledge of the computer's IP address. The computer will in turn forward the base data from the Z-Max.Net unit to Aquarius.

Configuring Z-Max.Net Base

Whatever the data link you use, do the following:

- Configure the Z-Max.Net base as you would normally do, using a field terminal and FAST Survey.
- Make the following choices when FAST survey asks you to select a data link device, a data format and a port (Context: Equip tab, Configure Base button, ports tab):

	Data format ("Message Type" field)	Data Link ("Type" field)
For a GSM Data Link	RTCM-(RTK) or CMR	GSM
For a GPRS Data Link	CMR or RTCM-(RTK)	Cable

Selecting the Operating Mode in Aquarius

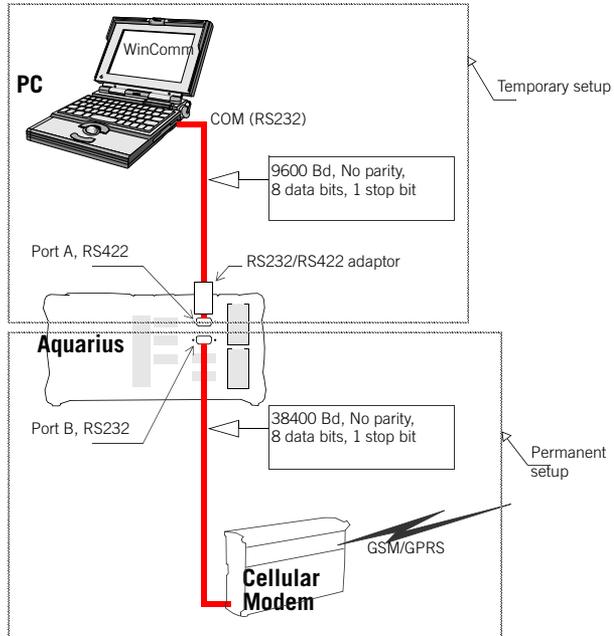
- From the Aquarius main menu displayed on its screen, select successively:
F2-DGNSS
F3-MODE
- Enter the following in the NUM row:
Port: B
Station: Leave blank
Used: Select the desired operating mode for the Aquarius receiver (e.g. LRK for Aquarius x2 or Aquarius² x2; Kart for Aquarius x1).
Screen example:

Jun 18 2006					GPS	Q.03/06	TD**/**s
UTC 13:11:12							10/11SVs
48°02.800000N		WGS84		00.2		KT	
001°30.040000E		0.00m		COG		***.*°	
/MAIN/DGNSS/MODE							
SOURC	PORT	STATION		USED			
GPS	-	.		.	N/U		
WAAS	-	122		.MADGPS	AB		
NUM1	B	.		LRK	U		
OPEN	-	.		.	N/U		
<-	N. LINE	<<<	>>>	OK			

NOTE: You don't need to specify the data format sent by the base. Aquarius will automatically decode the data whichever format is used.

Configuring Aquarius

Setup Diagram



Establishing a GSM Connection from Aquarius

- First connect the different items as shown in the setup diagram above.
- From the PC, run GNSS Solutions' WinComm utility and then send the following serial commands in succession to the Aquarius receiver:

Send the following commands:	Resulting Action:
\$PDAS,IDENT	This command always returns a reply. Use it to make sure communication with Aquarius is established.
\$PDAS,OUTOFF	Disables any data output (if any) via port A on Aquarius.
\$PDAS,JOIN,A,1,IO,B	Opens a virtual connection between ports A and B in Aquarius.
AT	Tests modem connection. Wait for the message "AT ok" to appear in the WinComm window before going any further.

Send the following commands:	Resulting Action:
ATDxx...xx	Dials the station call number, where xx...xx is that number. Once the connection is established, you should see flows of binary data coming in.
\$PDAS,JOIN,B,0 \$PDAS,JOIN,A,0	Run these two commands to close the virtual connection between ports A and B.
\$PDAS,OUTON	Re-enables any data output (if any) via port A on Aquarius.

After running this series of commands, the TDxx/yy¹ parameter located in the upper-right corner of the Aquarius data screen should indicate that corrections are now received and Aquarius should after a while operate in the desired mode (see example below).

Mar 29 2002	LRK+	0.18/06	TD12/01s
UTC 10:28:07	HDG	<->	TD128V.s
47° 17.937672N 001° 30.543197W			
WGS84	88.40 _m	HDG_T	60.5°
SOG	00.0 _{KT}	COG	***. *°
NAVIG	DGNSS	AUX	WPT-RTE MARK

At this stage, you can disconnect the computer from port A on the Aquarius receiver.

Establishing a GPRS Connection from Aquarius

- First connect the different items as shown in the setup diagram on page 5.
- From the PC, run GNSS Solutions' WinComm utility and then send the following serial commands in succession to the Aquarius receiver:

Send the following commands:	Resulting Action:
\$PDAS,IDENT	This command always returns a reply. Use it to make sure communication with Aquarius is established.
\$PDAS,OUTOFF	Disables any data output (if any) via port A on Aquarius.

1. Where xx indicates the number of corrections received and yy their age, in seconds.

Send the following commands:	Resulting Action:
\$PDAS,JOIN,A,1,IO,B	Opens a virtual connection between ports A and B in Aquarius.
AT	Tests modem connection. Wait for the message "AT ok" to appear in the Win-Comm window before going any further.
AT+CFUN=1	This command and the next 5 ones re-initialize the IP stack (running these commands is not mandatory although recommended)
AT+WOPEN=1	
AT+CREG=1	
AT+CGREG=1	
AT+CGATT=1	
AT#GPRSMODE=1	
AT#APNSERV="xx..xx"	Provides xx.xx as the server name (e.g. internet-entreprise)
AT#APNUN="xx..xx"	Provides xx..xx as the username
AT#APNPW="orange"	Provides xx.xx as the username password
AT#CONNECTIONSTART	Starts connection
AT#TCPSERV="xx.xx.xx.xx"	Provides "xx.xx.xx.xx" as the IP address of the Direct IP server (Station computer)
AT#TCPPORT="XX"	Provides XX as the TCP port number of the Direct IP server
AT#OTCP	Opens the GPRS connection
\$PDAS,JOIN,B,0 \$PDAS,JOIN,A,0	Run these two commands to close the virtual connection between ports A and B.
\$PDAS,OUTON	Re-enables any data output (if any) via port A on Aquarius.

After running this series of commands, the TDxx/yy parameter located in the upper-right corner of the Aquarius data screen should indicate that corrections are now received.

At this stage, you can disconnect the computer from port A on the Aquarius receiver.