



Q. uick Start Guide: Connecting a GPS to a Q.series Controller

Purpose: It is possible to connect a GPS receiver to a Q.series controller (i.e. Q.gate, Q.pac, or Q.station) to obtain *time synchronization* and *real time position data*.

We have tested and recommend the following GPS: Garmin GPS 18X (with DB9 or USB connector).

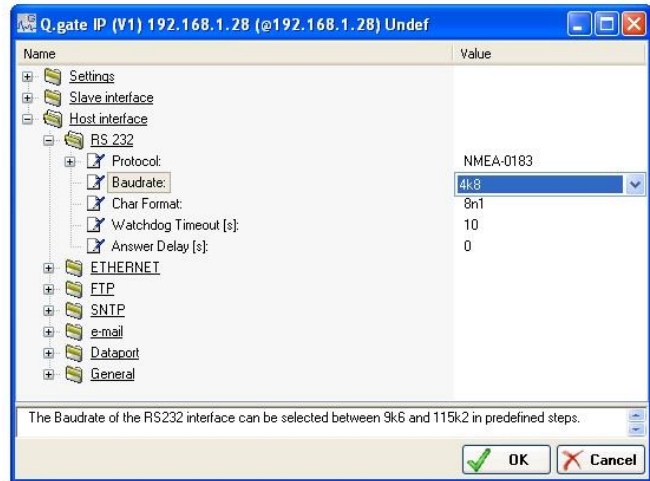
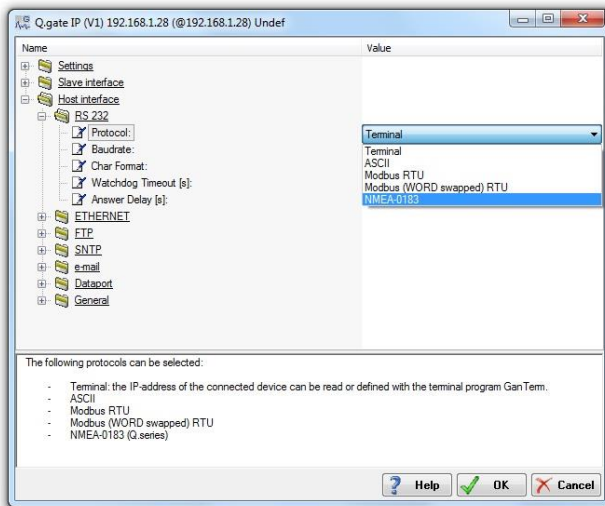
More Info: <http://www.gantnerinstruments.com/datasheets/misc/garmin-gps-18x.pdf>

NMEA-0183 is the standard used, which defines the communication between a GPS receiver and PC. The NMEA data sets used in the controller are \$GPRMC (Recommended Minimum Sentence C) and \$GPGGA (includes position information, number of satellites, etc.)

More Info: http://en.wikipedia.org/wiki/NMEA_0183

Procedure:

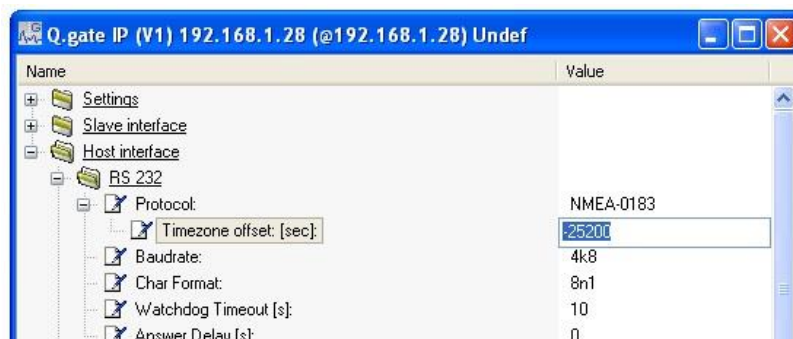
1. Double-click on the Q.series controller. Under Host interface > RS 232 > change the Protocol from Terminal to NMEA-0183. Also change the Baudrate to 4800.



2. Timezone Offset: Because the time information of the GPS signal is UTC (universal time clock), which is the Greenwich time at the 0 meridian, a time zone offset has to be specified, according to the location of the controller. Baudrate and Char Format are set according to the settings in the GPS receiver. The offset must be entered in seconds.

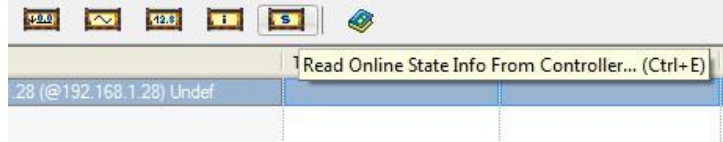
Example:

For PST (GMT – 7:00) = -7 Hours x 3,600 (seconds in an hour) = -25,200 seconds

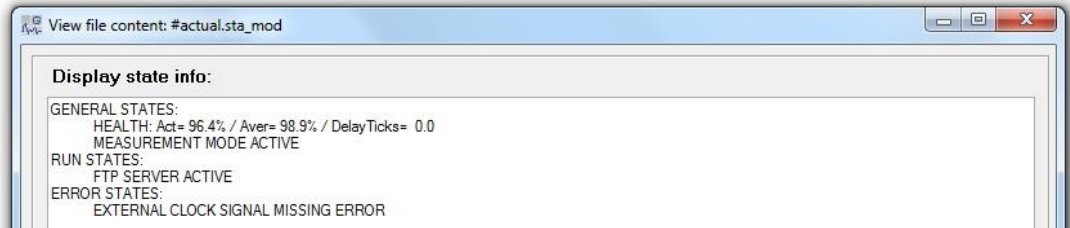




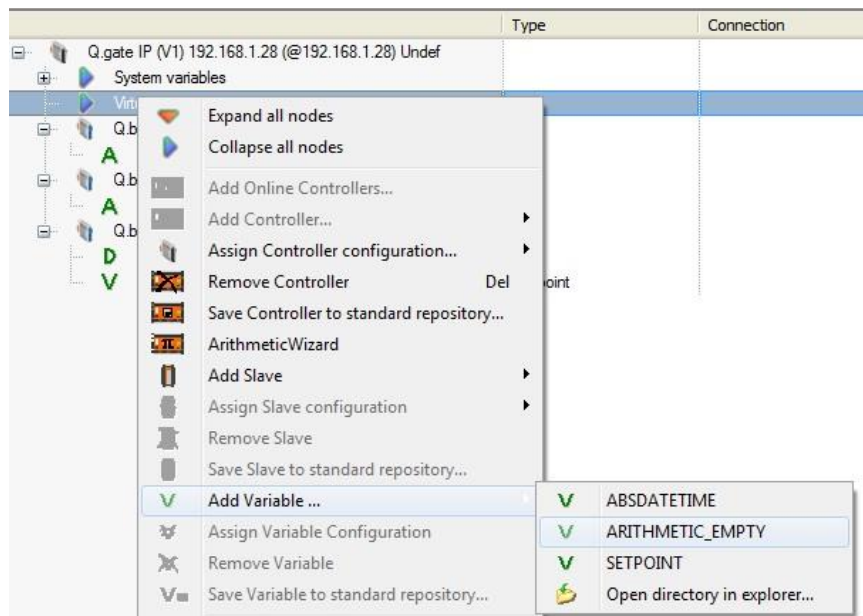
3. Update the project to the controller.
4. Verify the Time Synchronization:
Check to see if the red LED on the controller is not flashing or Read online state info from controller via test.commander.



5. If the signal is not connected, the following error state will appear:
External Click Signal Missing Error

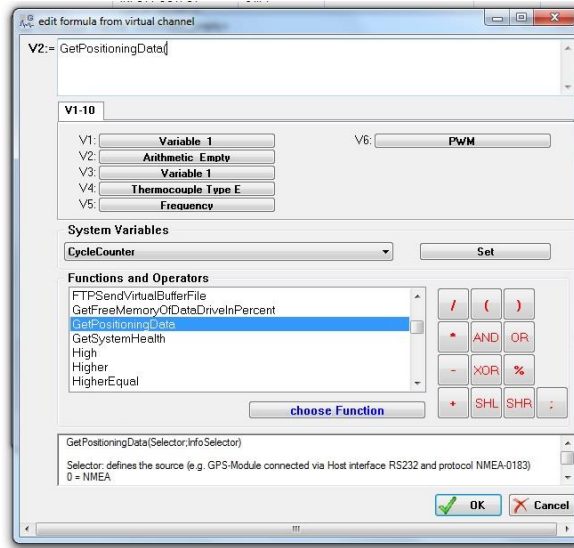


6. To set the RTC (real time clock) in the controller, click on the Read Online Values From Controller button in test.commander. Click on the Set RTC button, if there is a valid time signal the time of the device is set automatically.
7. This is done using an arithmetic variable in test.commander called **GetPositioningData(Selector;Info Selector)** function. Create the variable by adding a new Arithmetic under Virtual variables in test.commander. (a separate variable for each type of data)





8. The Edit Formula window appears. Select the GetPositioningData.



9. The following data types can be obtain from the GPS receiver:

Selector (defines the source)

0 = NMEA

InfoSelector (type of data)

0 = Time

1 = Latitude

2 = Longitude

3 = Speed in m/s

4 = Heading (0=N, 90=E, 180=S, 270=W)

5 = Number of Satellites Found

6 = Altitude above NN

The TIME variable can be converted using the OLE to Date/Time function; OLE2DateTime. The setup of the variable is done in the same way the GetPositioningData function. Create a new Virtual Variable > Arithmetic Empty. The following time characteristics can be obtained from the OLE time:

OLE2Time (defines the source) = GetPositioningData(0;0)

PartSelector

0 = Year

1 = Month

2 = Days

3 = Hours

4 = Minutes

5 = Seconds

6 = Milliseconds

Contact us today if you have any further questions!