GPS-1 Peripheral board

Quick Start Guide

(For use with MINI-MAX/ARM)

Document Revision: 1.01

Date: 8 September, 2009

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1. Overview

Thank you for your purchase of the GPS-1 peripheral board. GPS-1 is based MN5010HS GPS Receiver Module. GPS-1 output messages are NMEA-0183 compatible. This document describes how to use GPS-1 with MINI-MAX/ARM (-C or –E) Single Board Computer.

2. Tools

2.1 GCC (GNUARM) is an open-source software development tool. The package includes the GNU GCC compiler for C and C++.

2.2 Micro-IDE from BiPOM (www.bipom.com) is a Windows-based Integrated Development Environment for micro-controller application development. Micro-IDE provides a built-in terminal window to interact with MINI-MAX boards through a host PC's COM port.

2.3 CoordTrans and GpsGate from Franson Technology (http://franson.com) are multifunctional GPS utility programs for professional and personal use.

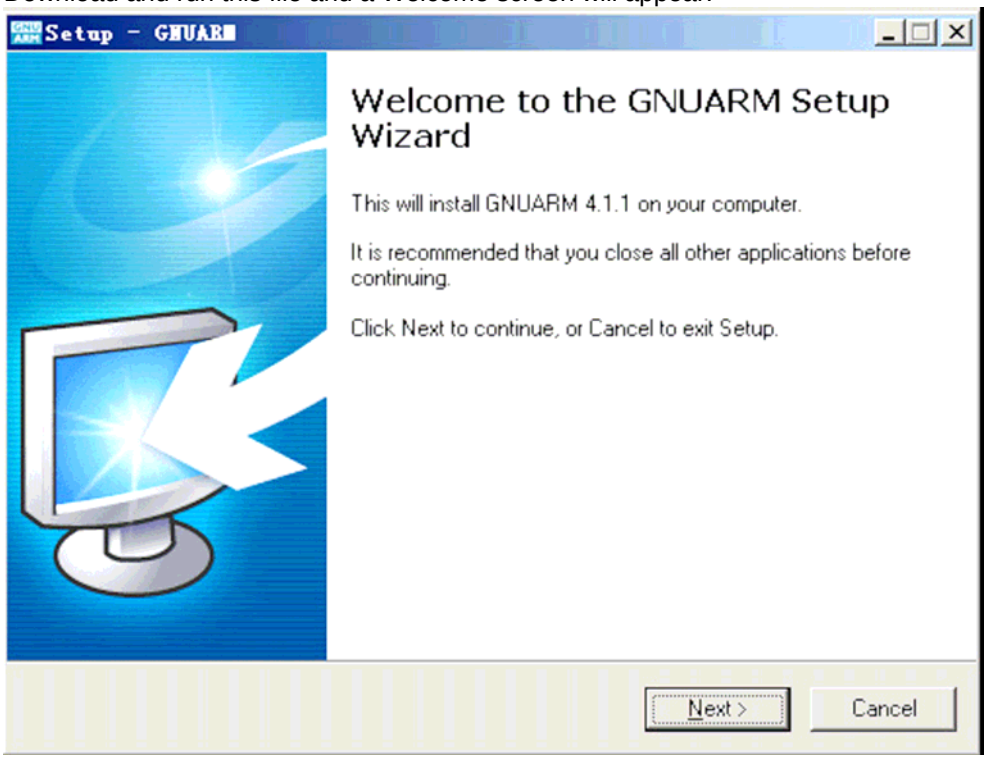
2.4 Project examples for MINI-MAX/ARM.

3. Software setup

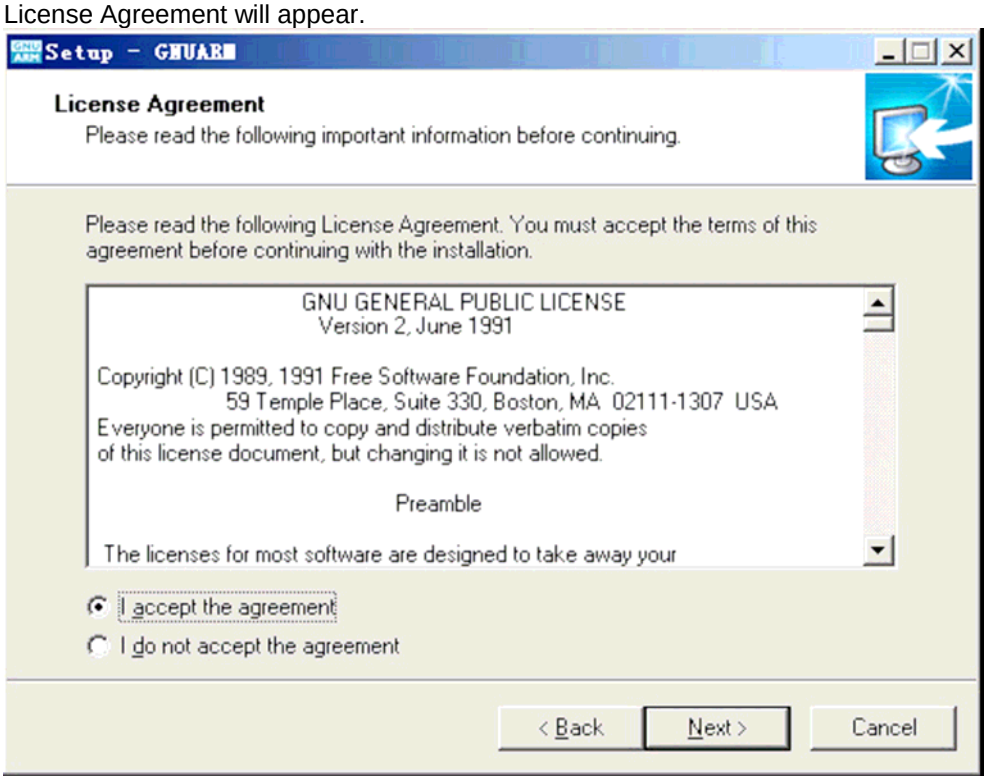
3.1 Installing GNU ARM C Compiler

Download GNU ARM C Compiler from:
http://www.bipom.com/armdev_down.php

Download and run this file and a Welcome screen will appear.

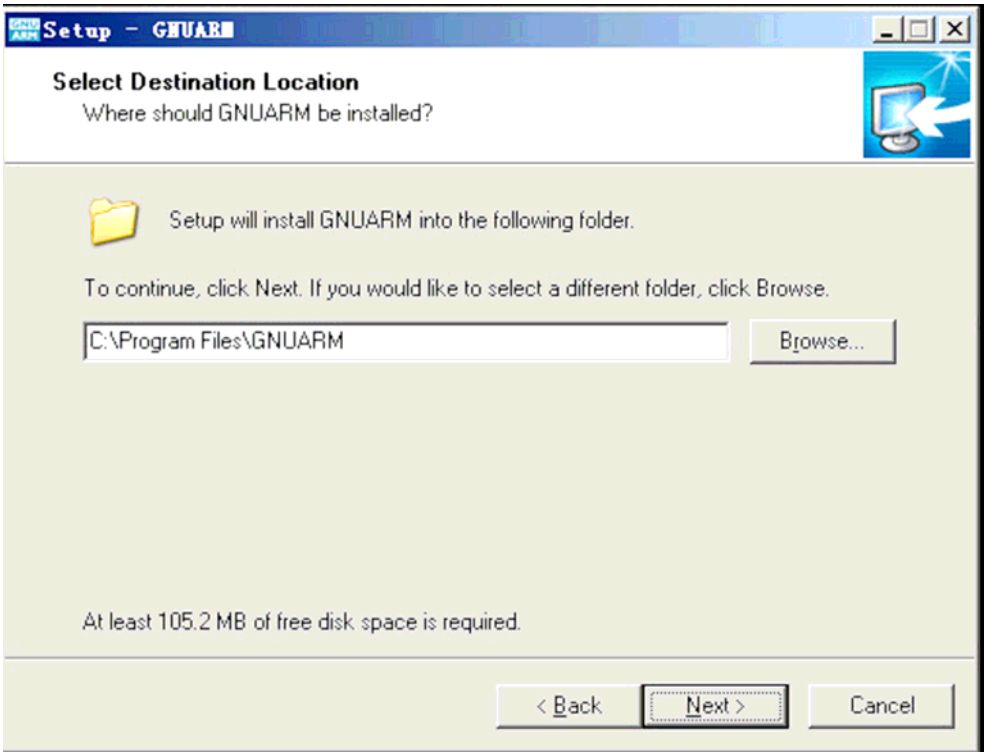


License Agreement will appear.



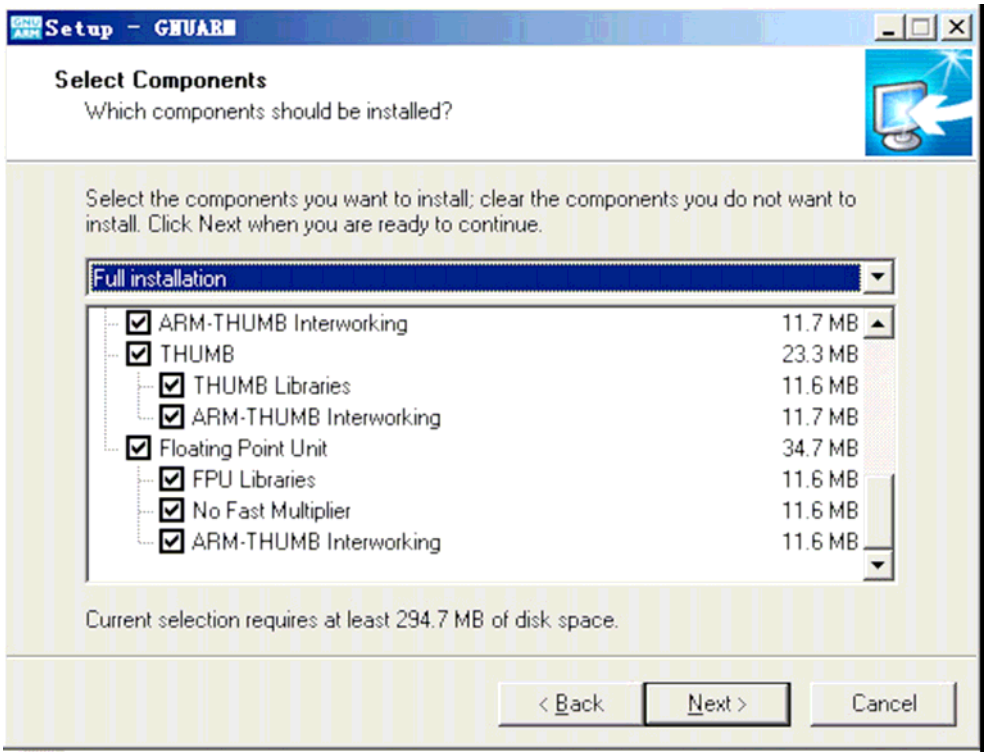
Please read the agreement. If you wish to continue with installation, select “I accept the agreement” and click Next.

Select destination location:

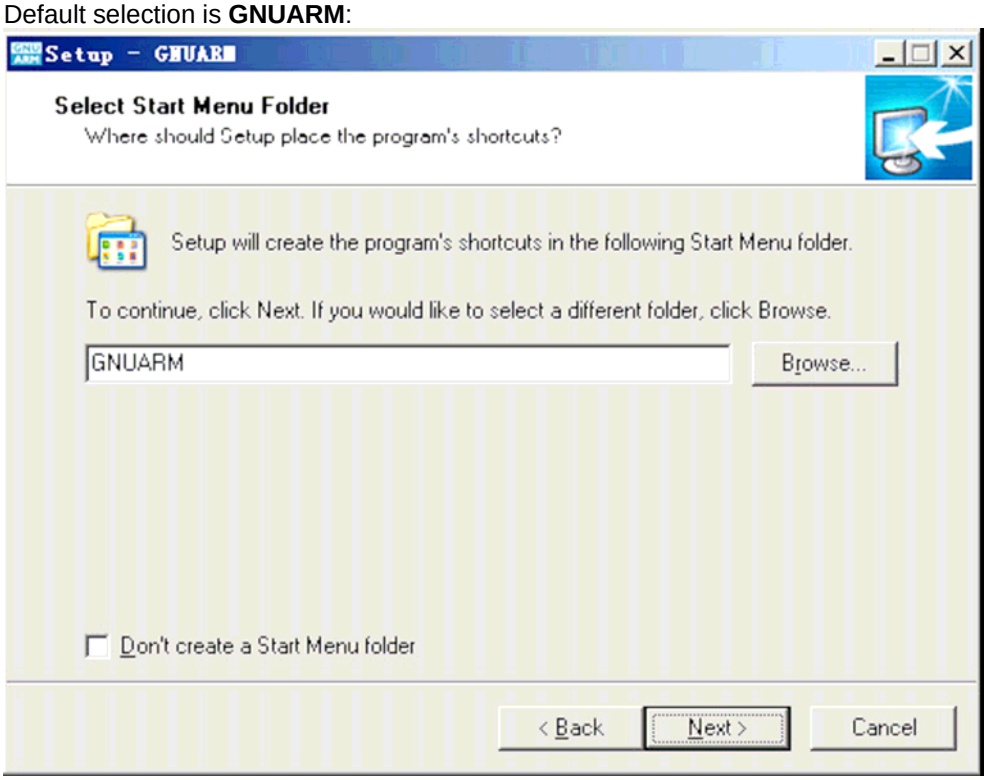


Using default location C:\Program Files\GNUARM is recommended. Click Next to continue.

On the next page, select components to install. Just keep the default settings if you do not know what to select:

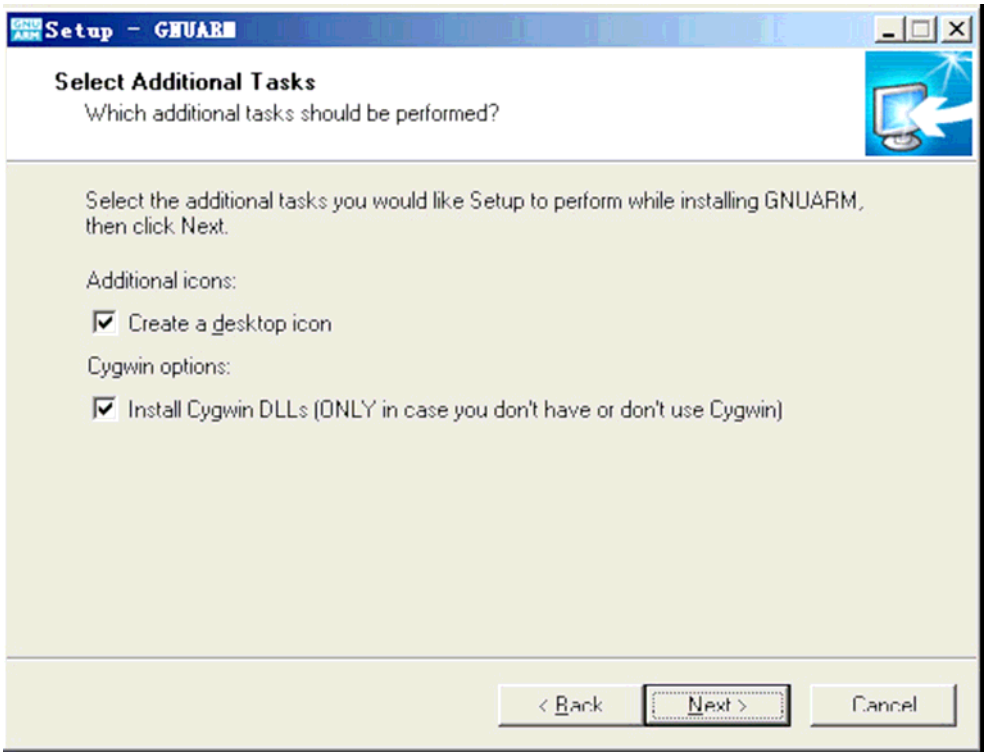


Click Next to select the Start Menu Folder where the shortcuts for GNUARM will be installed. Default selection is **GNUARM**:



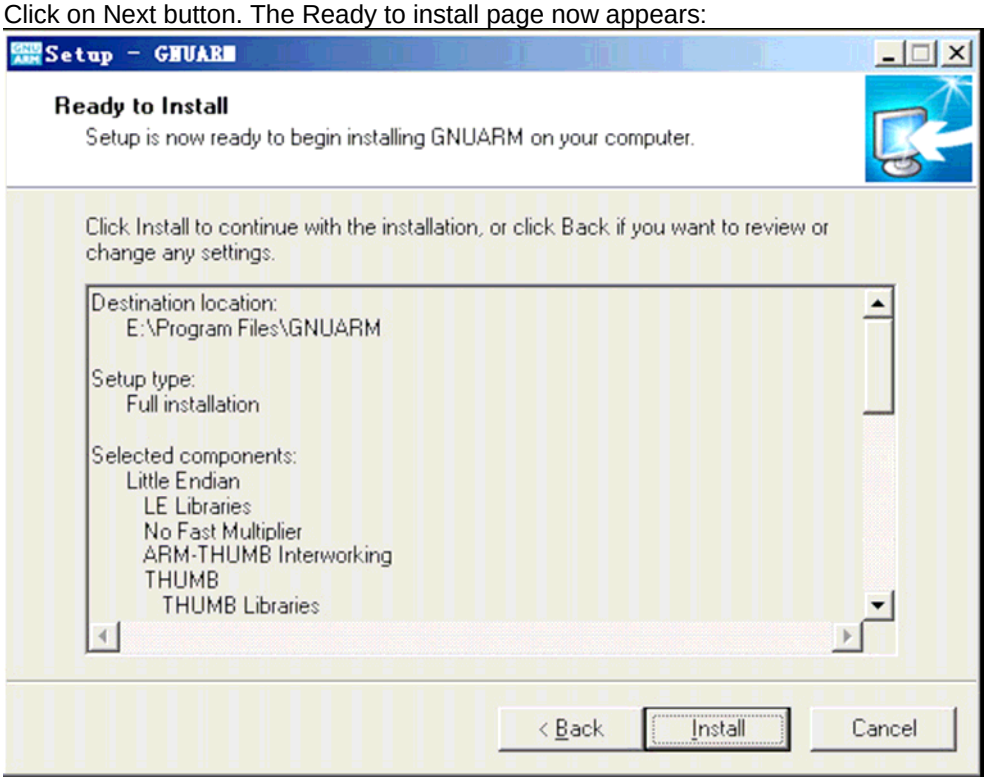
Click Next.

Select Additional Tasks:



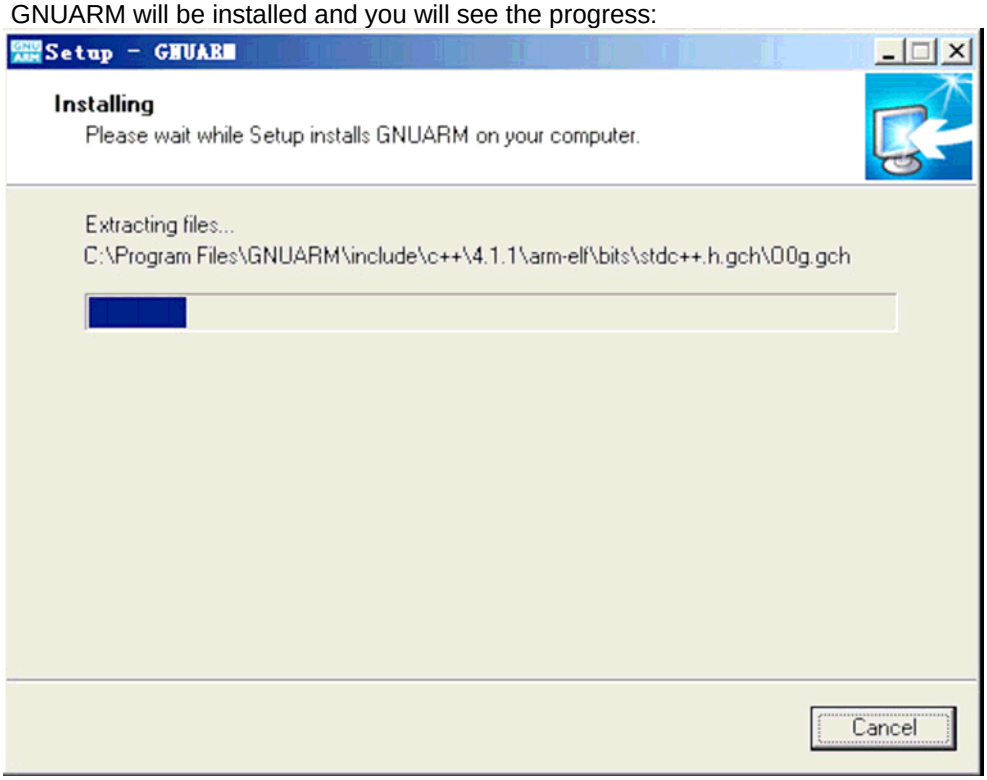
The option “Install Cygwin DLLs” should be checked. Uncheck this only if you are sure that you had installed Cygwin previously on your computer.

Click on Next button. The Ready to install page now appears:

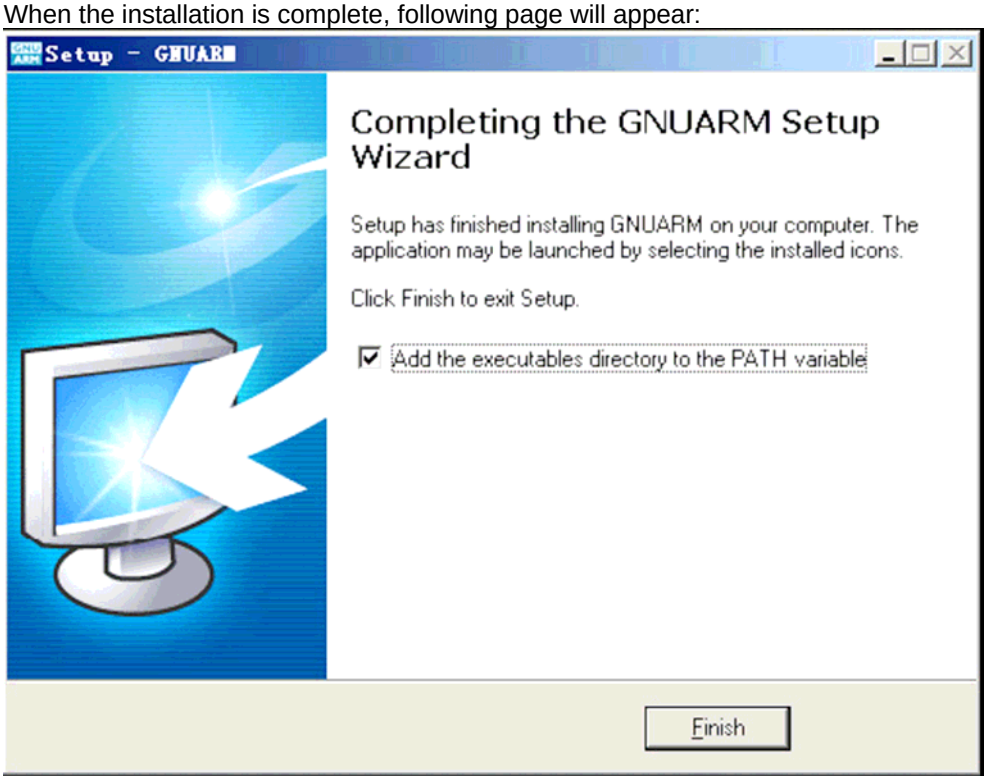


Click Install.

GNUARM will be installed and you will see the progress:



When the installation is complete, following page will appear:

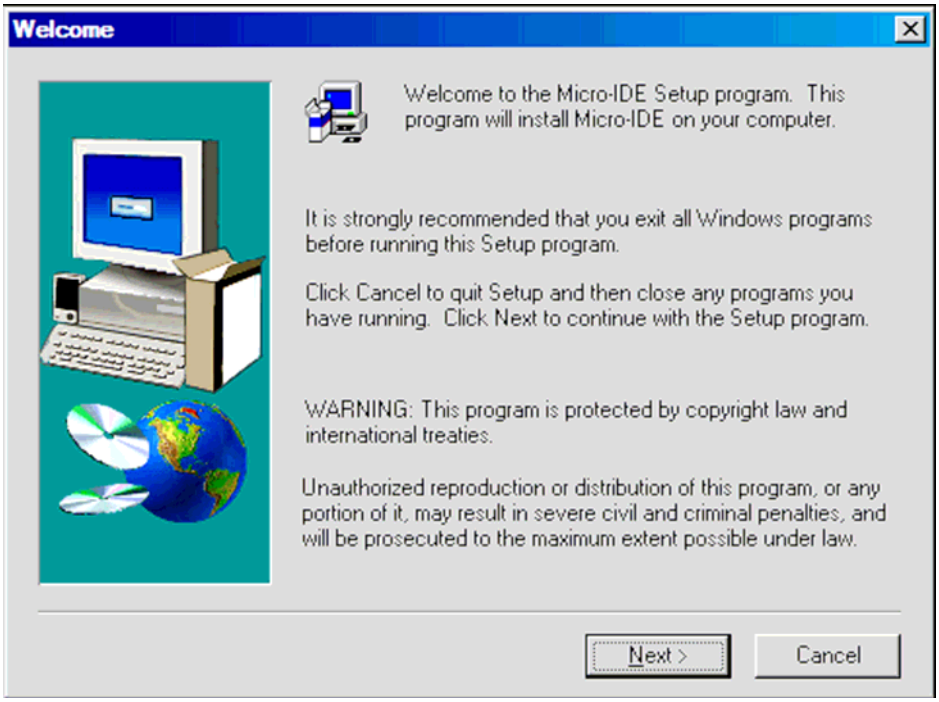


Click Finish to finish the installation.

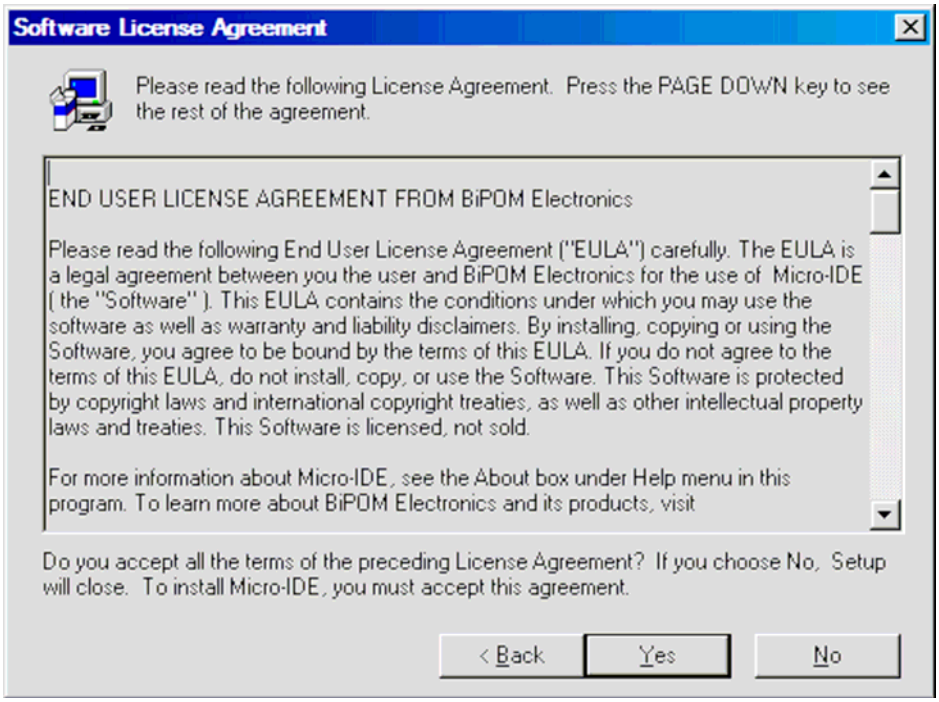
3.2 Installing ARM Development System

Download ARM Development System from: http://www.bipom.com/armdev.php

Open the zip file arm7dev.zip and install by running ***setup.exe***. A Welcome screen will appear:

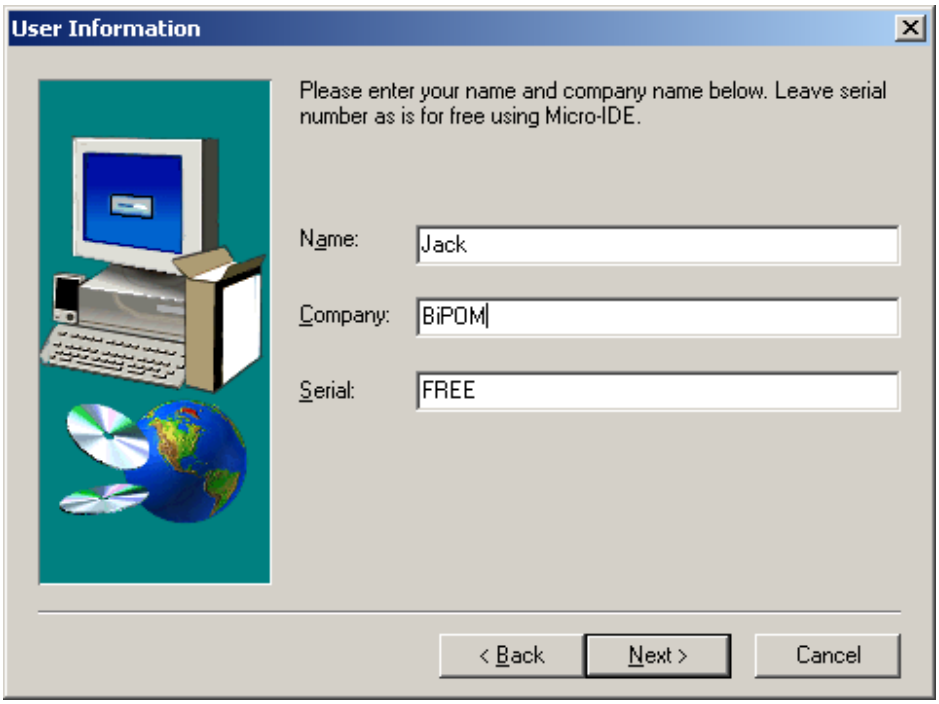


Click Next. An End User Agreement will appear:

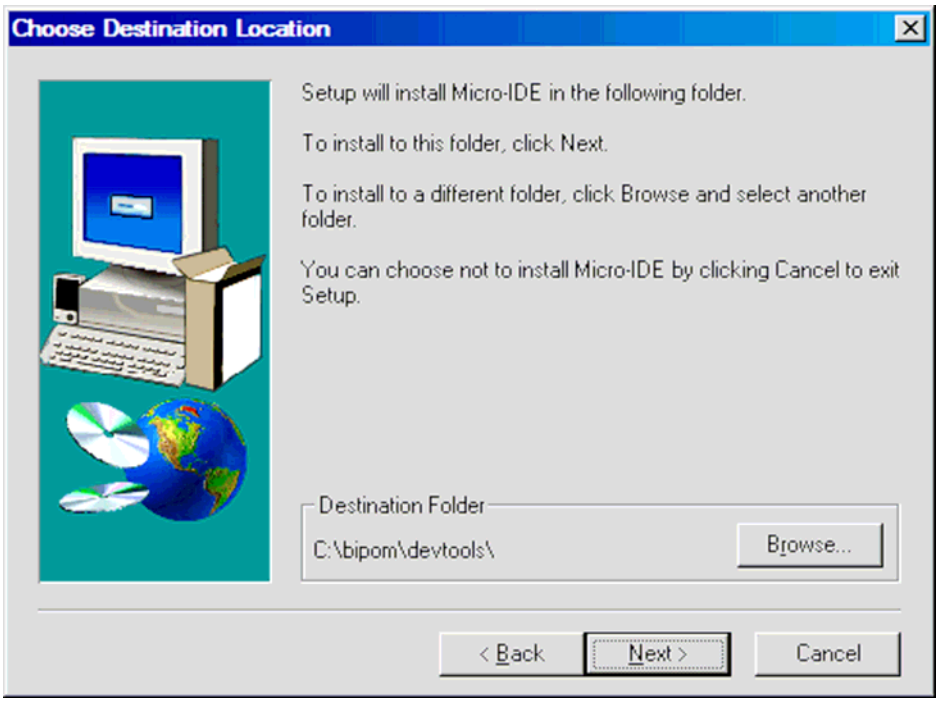


Please read the agreement and click Yes if you wish to continue with installation.

Enter your name, company and ‘FREE’ as a serial number. Then click Next:

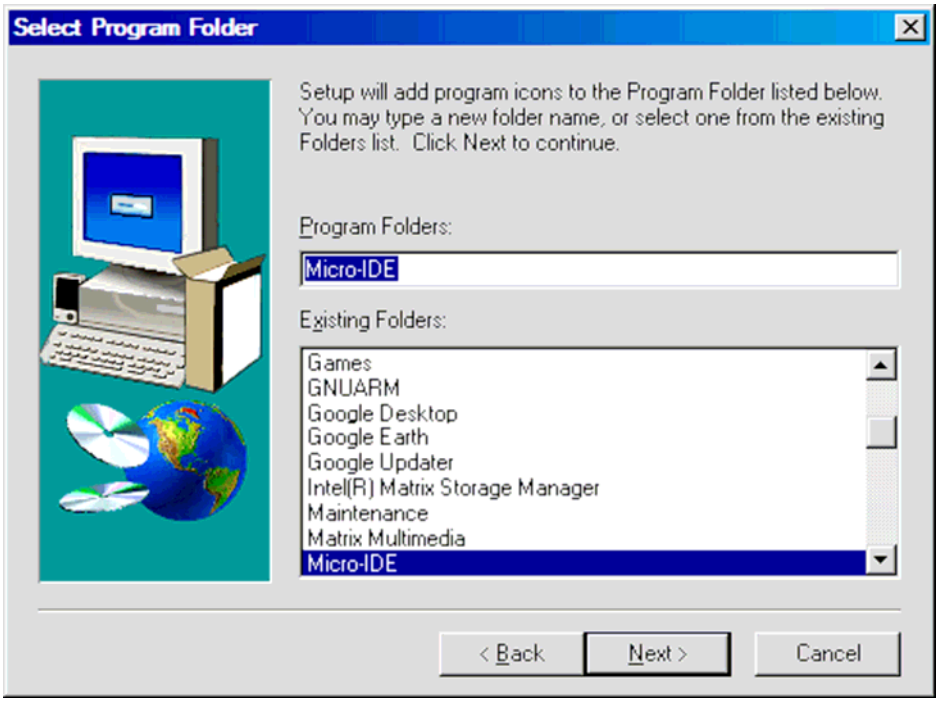


You can enter any Serial Number in the Serial field. Click Next to continue. Select the disk location where the software will be installed. Using the default location of c:\bipom\devtools is recommended:

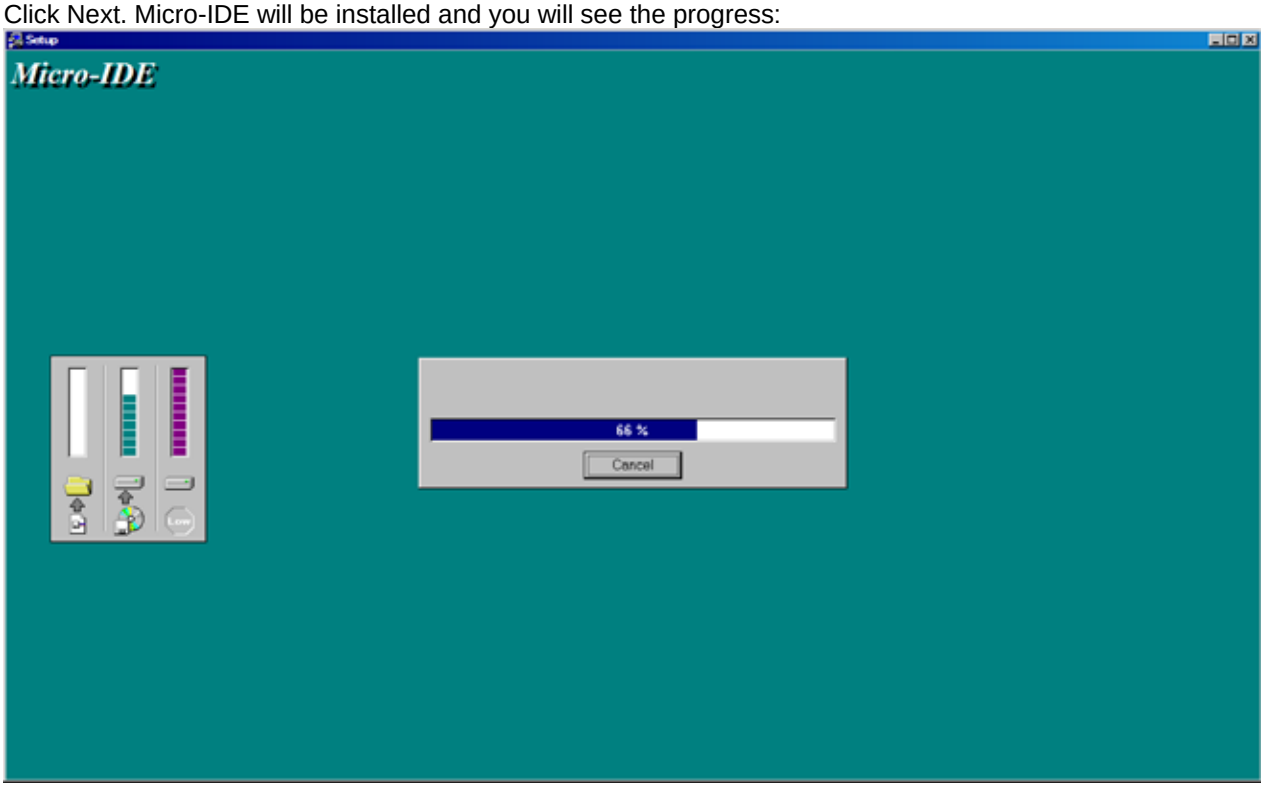


Click Next. Select the Program Folder where the icons for Micro-IDE will be installed.

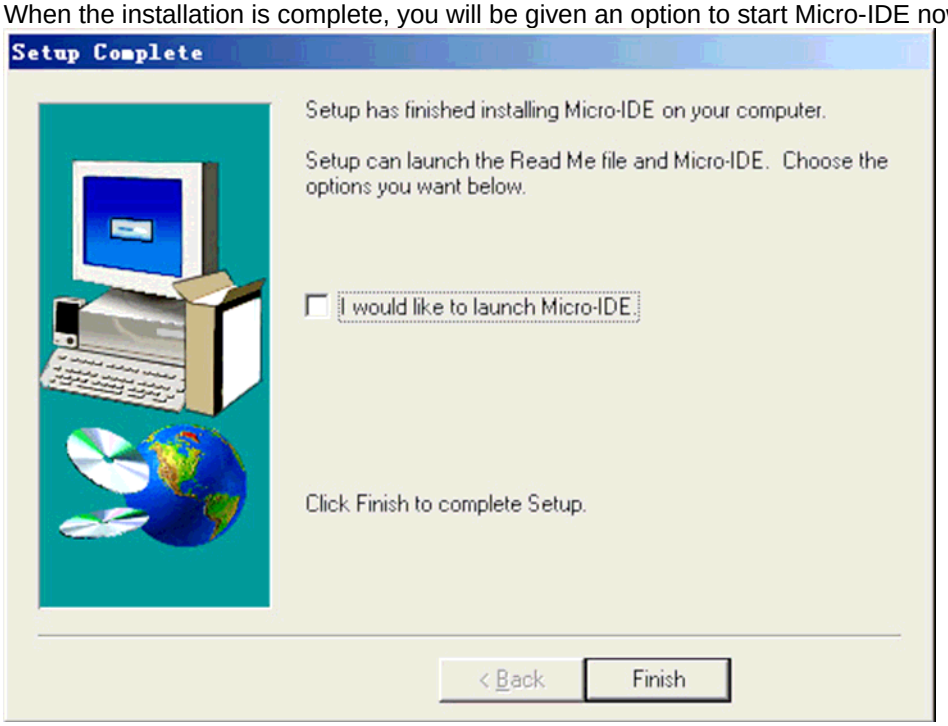
Default selection is **Micro-IDE** folder.



Click Next. Micro-IDE will be installed and you will see the progress:



When the installation is complete, you will be given an option to start Micro-IDE now.

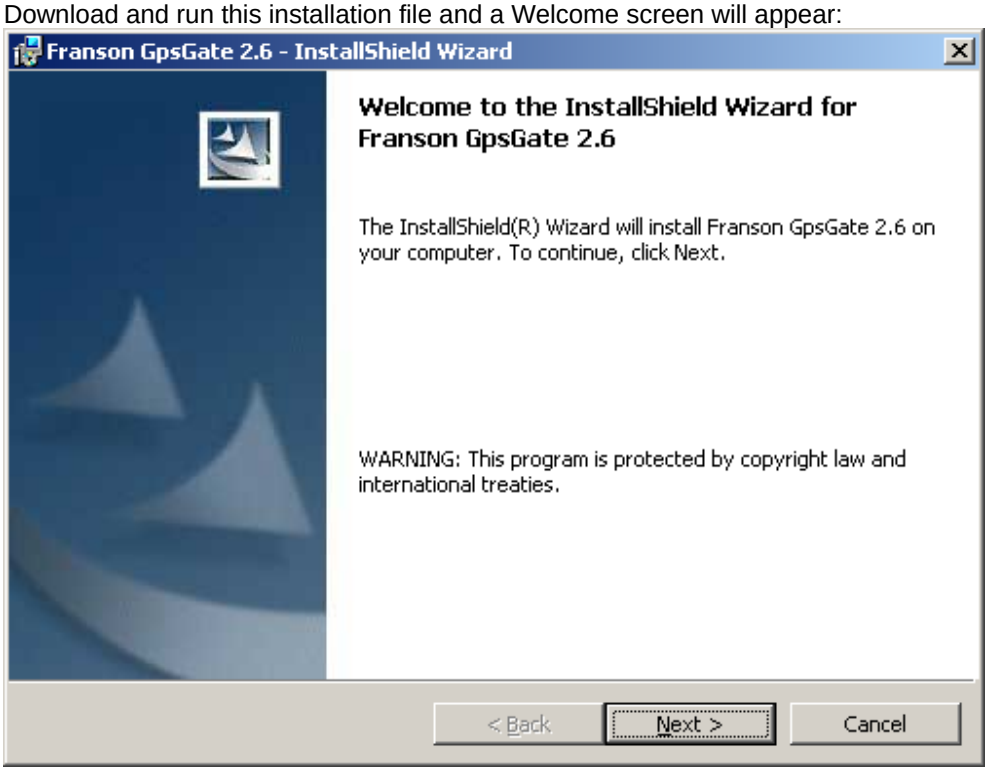


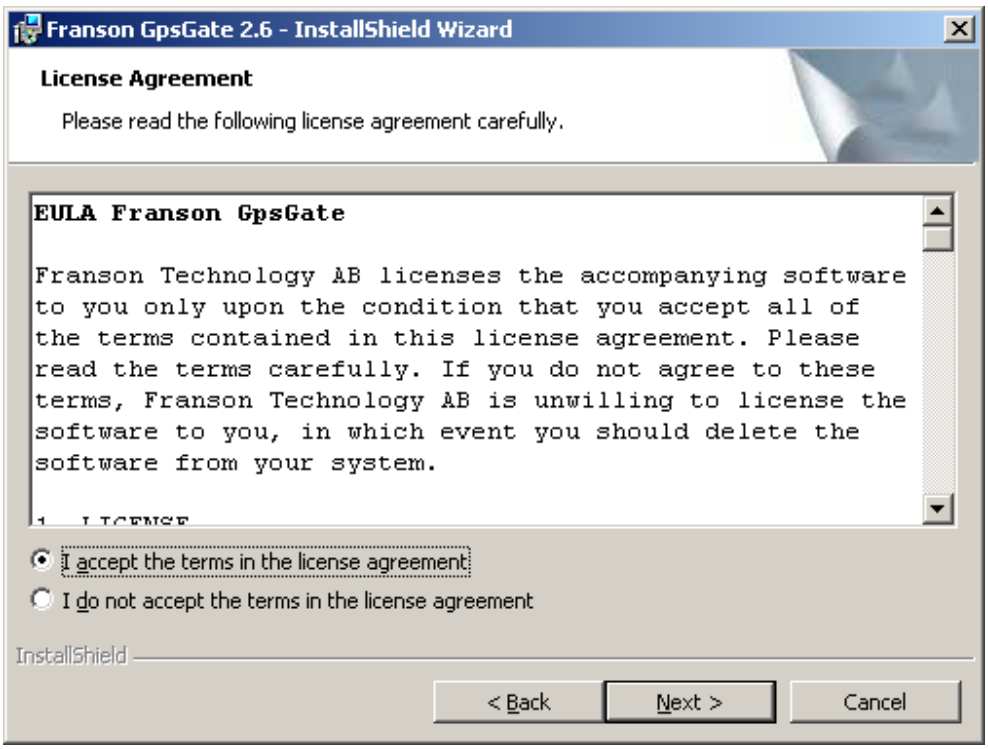
Uncheck the option and click Finish to finish the installation.

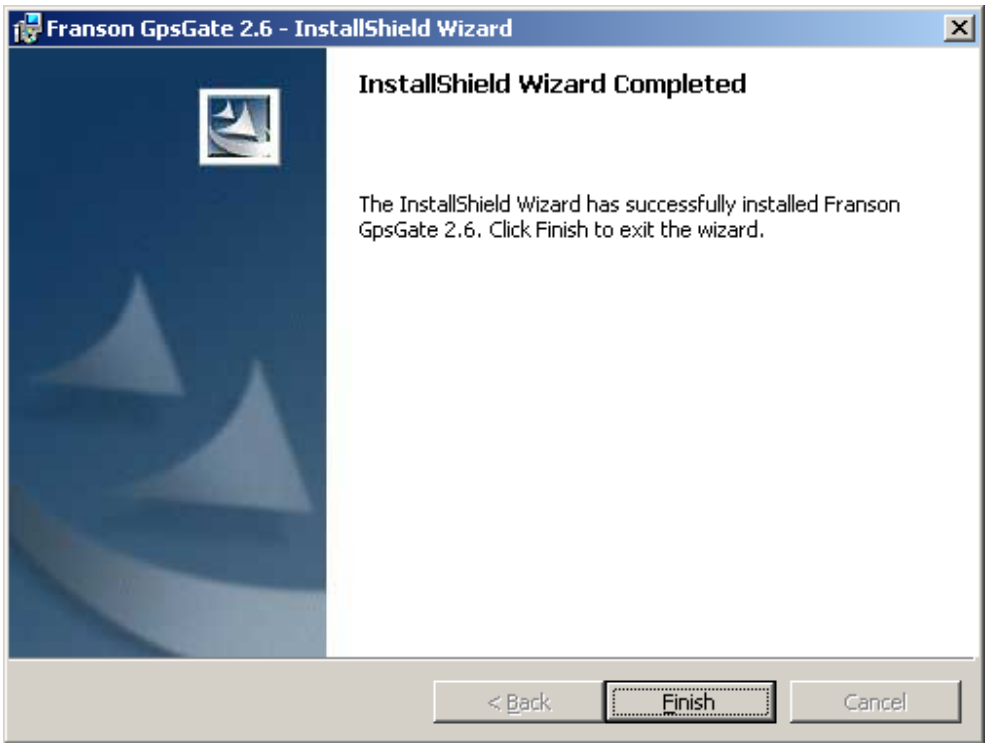
3.3 Installing GpsGate program

Download GpsGate from: http://franson.com/gpsgate/

Download and run this installation file and a Welcome screen will appear:



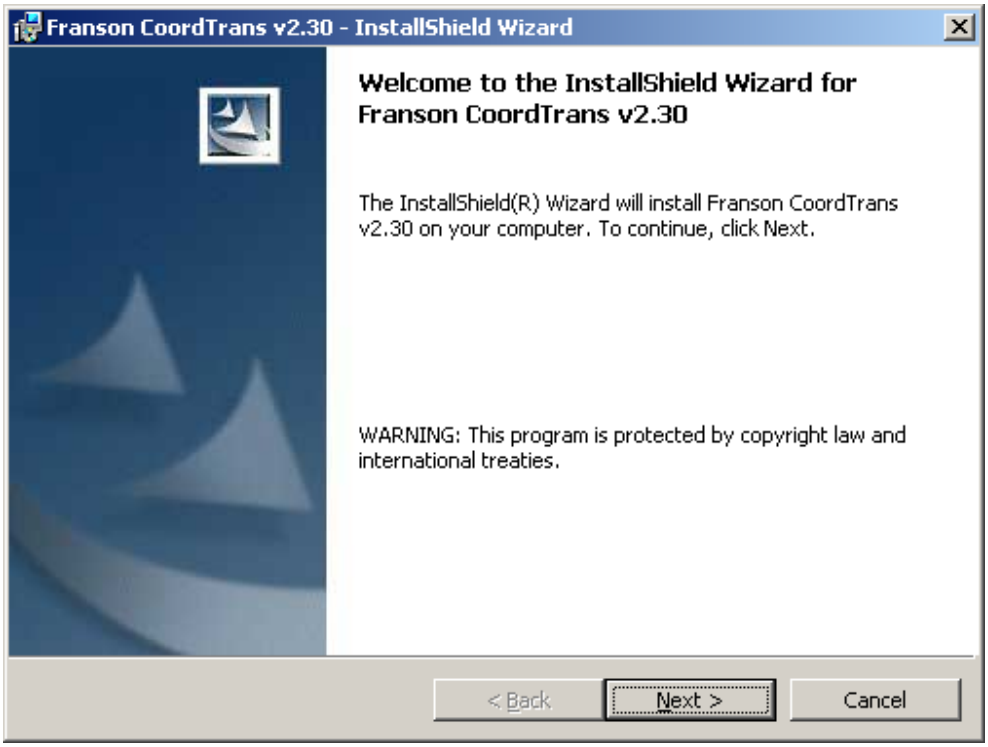

Franson GpsGate 2.6 - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
EULA Franson GpsGate
Franson Technology AB licenses the accompanying software to you only upon the condition that you accept all of the terms contained in this license agreement. Please read the terms carefully. If you do not agree to these terms, Franson Technology AB is unwilling to license the software to you, in which event you should delete the software from your system.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
< Back
Next >
Cancel

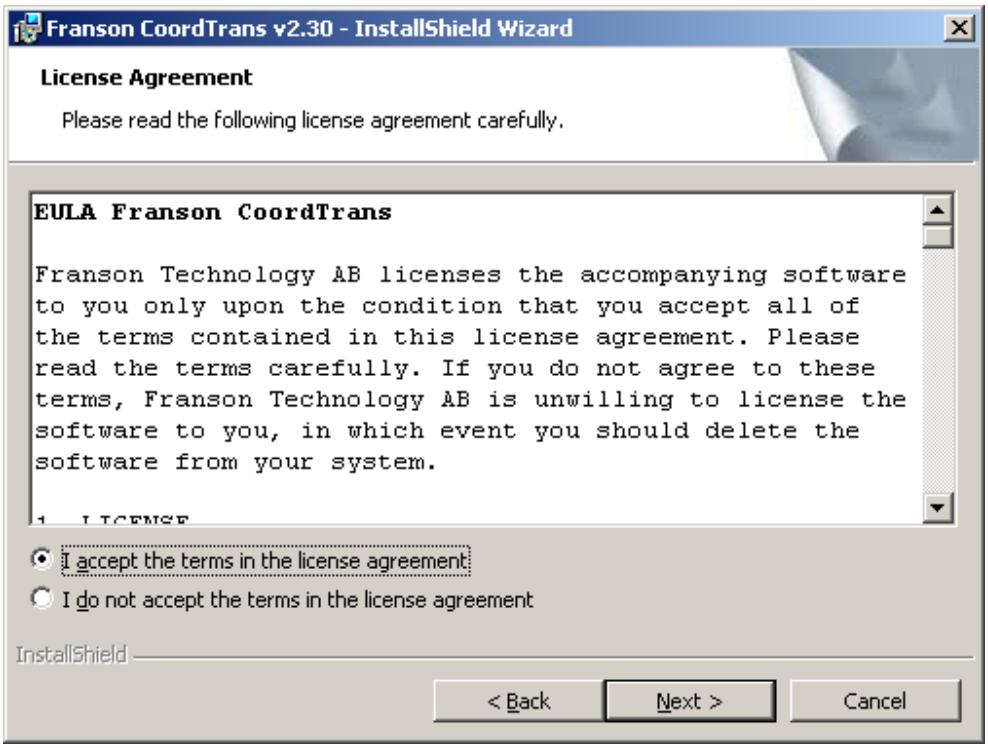

Franson GpsGate 2.6 - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Franson GpsGate 2.6. Click Finish to exit the wizard.
< Back
Finish
Cancel

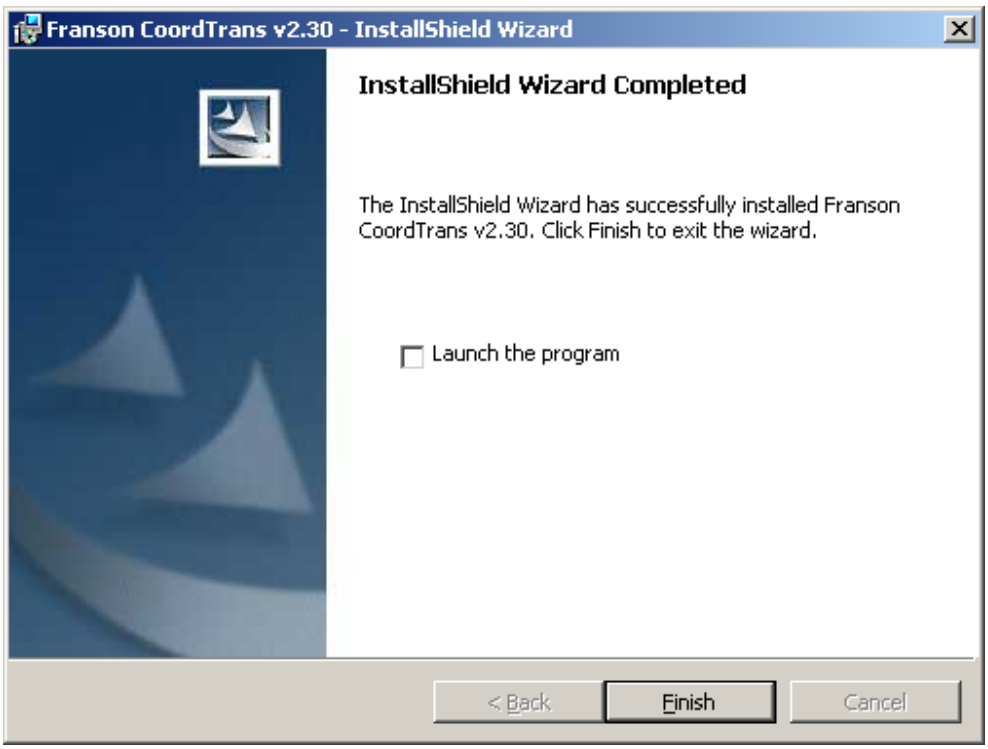
3.4 Installing CoordTrans program

Download CoordTrans from: http://franson.com/coordtrans/

Download and run the installation file and a Welcome screen will appear:







Uncheck the option and click Finish to finish the installation.

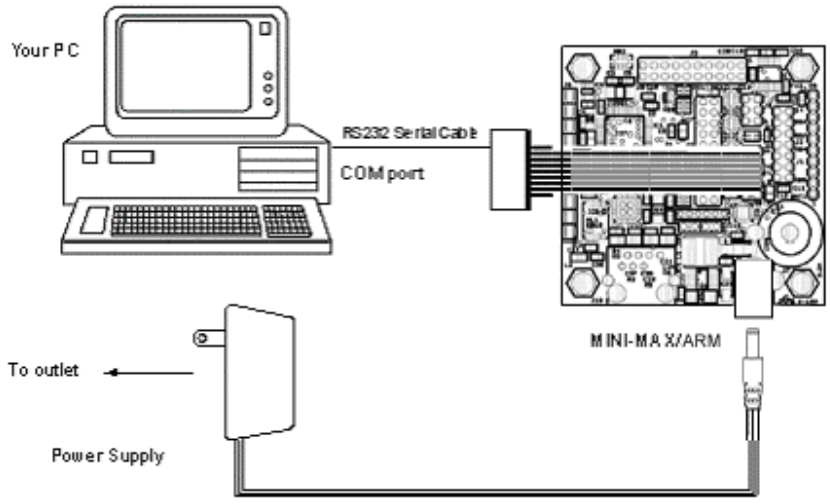
4. Hardware Setup

4.1 Place the MINI-MAX/ARM Microcontroller board on a clean, non-conductive surface.

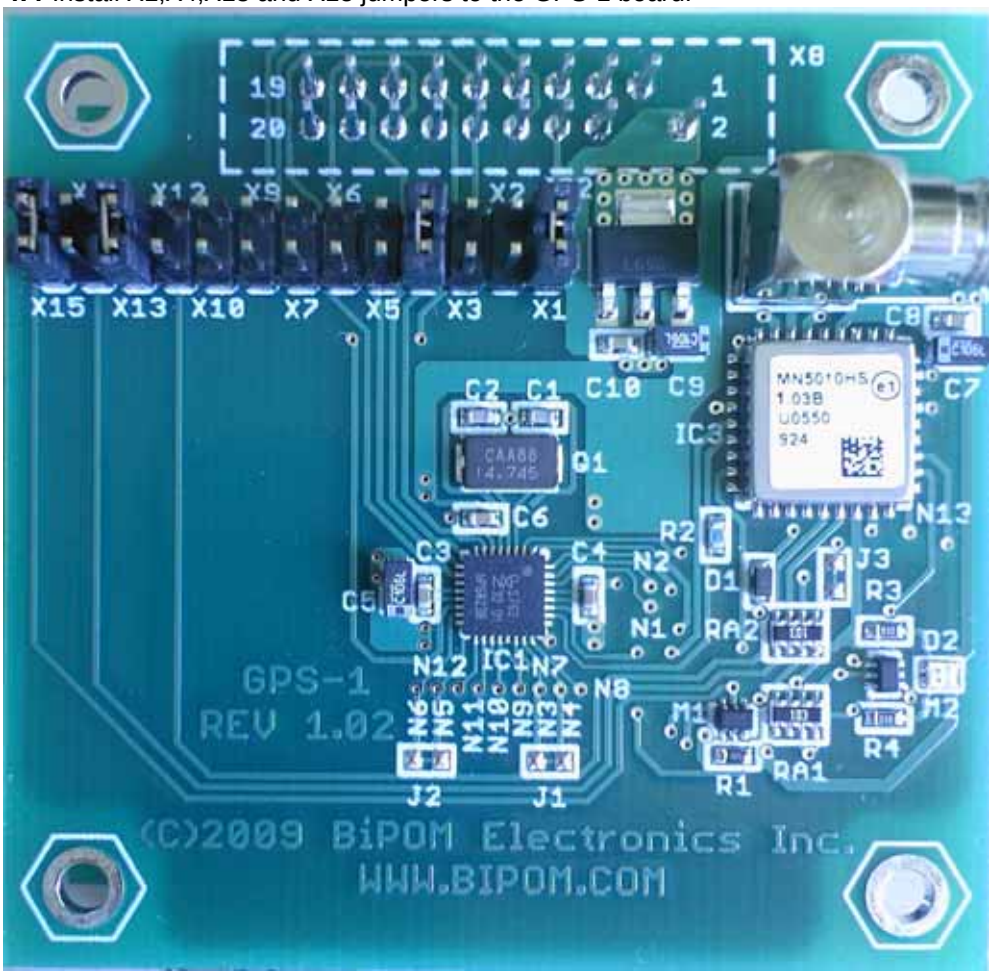
4.2 Connect the provided 6VDC power supply plug to the power jack on the MINI-MAX/ARM. Do not connect the power supply to the outlet yet.

CAUTION: Do not use a power supply other than one that is supplied or approved by BiPOM Electronics. Use of another power supply voids the warranty and may permanently DAMAGE the board or the computer to which the board is connected!!!

4.3 Connect the MINI-MAX/ARM to an available serial port on the PC using the supplied serial cable as shown:

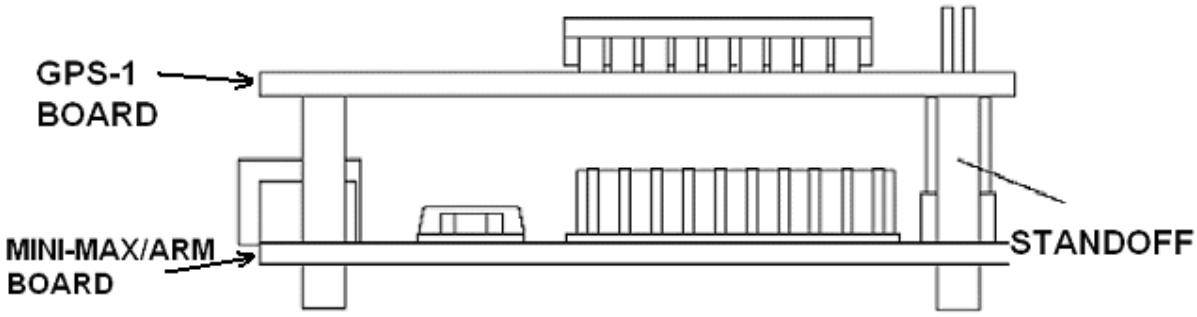


4.4 Install X1,X4,X13 and X15 jumpers to the GPS-1 board:



4.5 Connect GPS antenna (1575MHz).

4.6 Set a GPS-1 peripheral board on a socket of expansion MINI-MAX/ARM. Peripheral boards can either be stacked on top of MINI-MAX/ARM using stand-offs or connected in a chain configuration using flat ribbon cable. The following Figure shows how MINI-MAX/ARM can be connected to a GPS-1 board in a stacked fashion.

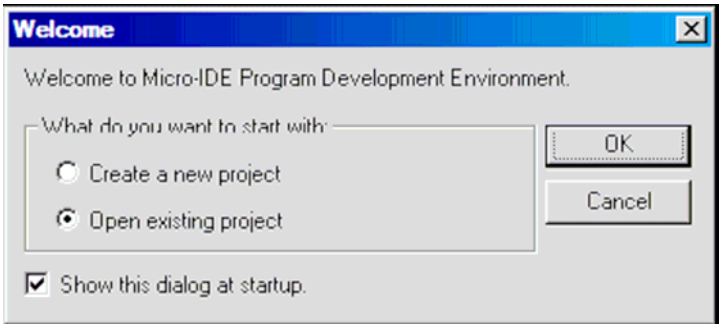


5. Downloading Programs

After the software is installed, you can build and download programs to the MINI-MAX/ARM board.
Follow the steps below:

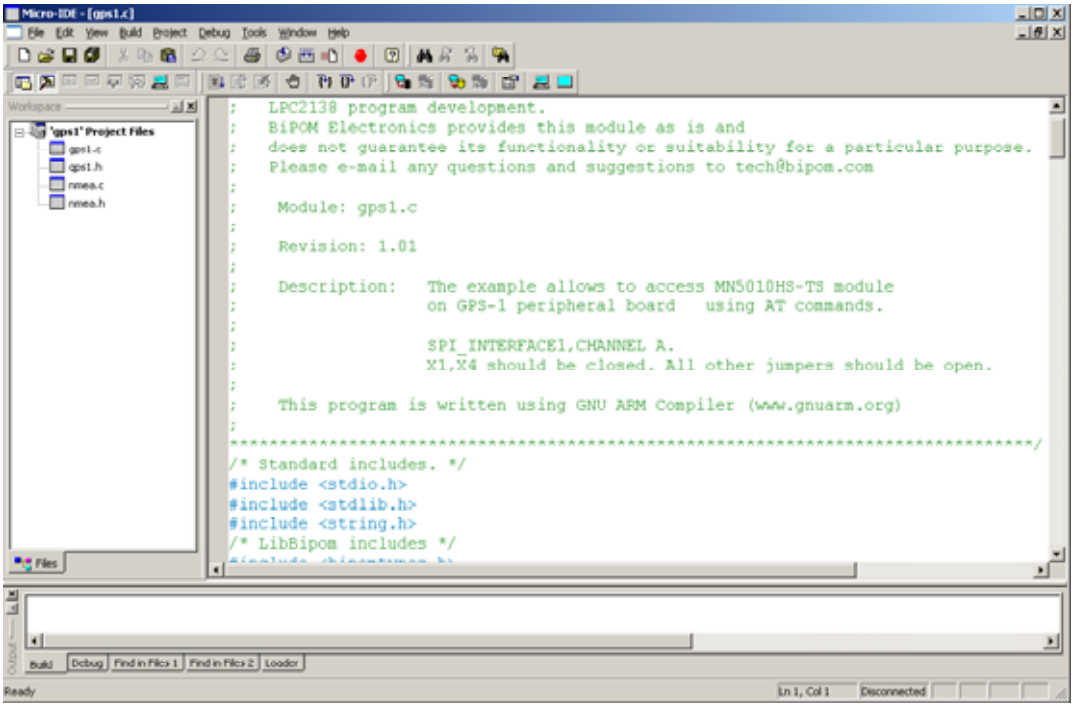
5.1 Make sure that the board is powered and connected to the PC as described in the section **Hardware Setup**.

5.2 Run Micro-IDE from Windows Start menu. When Micro-IDE starts, the Project Selection window appears:



Click OK to select an existing example project.

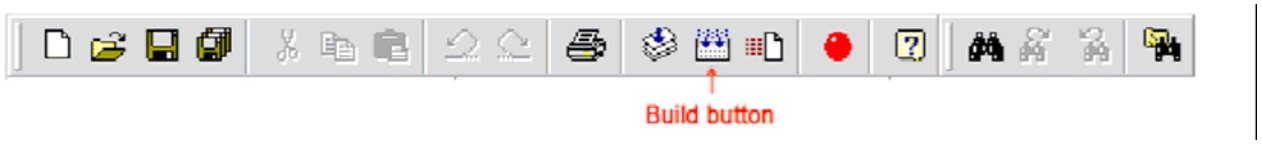
5.3 Open the example project ***gps1.prj*** from **C:\bipom\devtools\GCC\LPC2000\examples\GPS-1**



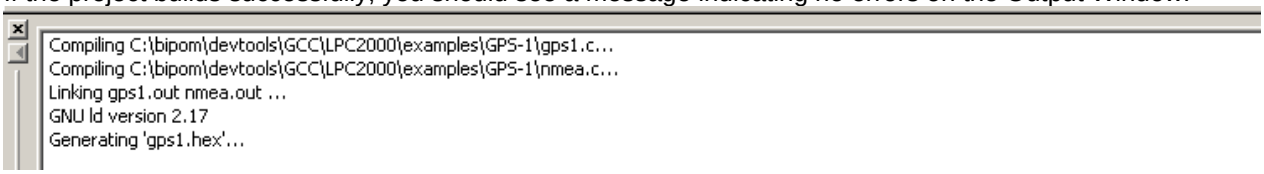
5.4 Select type of output messages in the gps1.h files.

	#define MODE_PARSING_DATA	-	Switch to a parsing mode.
//	***#define MODE_PARSING_DATA***	-	Switch to a bridge mode.

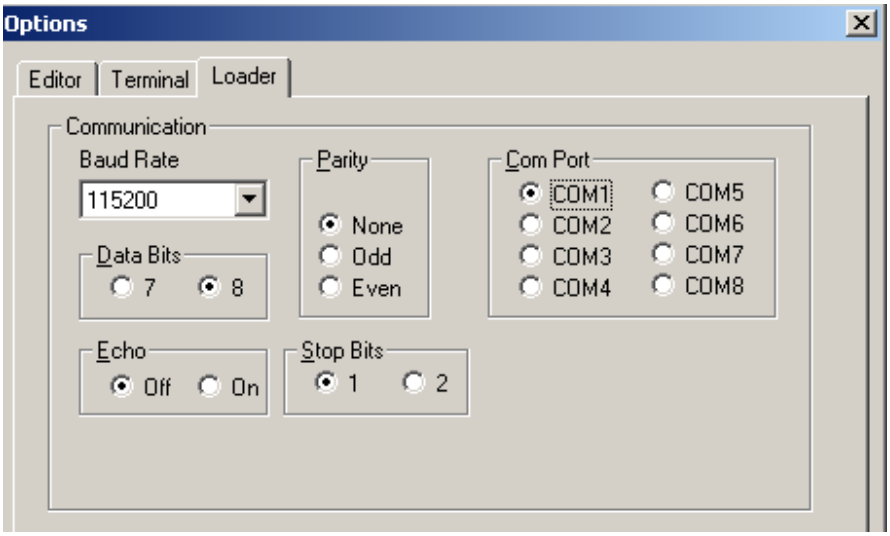
5.5 Click the Build button on the main toolbar. This will build the GPS1 project:



If the project builds successfully, you should see a message indicating no errors on the Output Window:



5.6 To specify the correct loader settings please select Tools->Options menu:

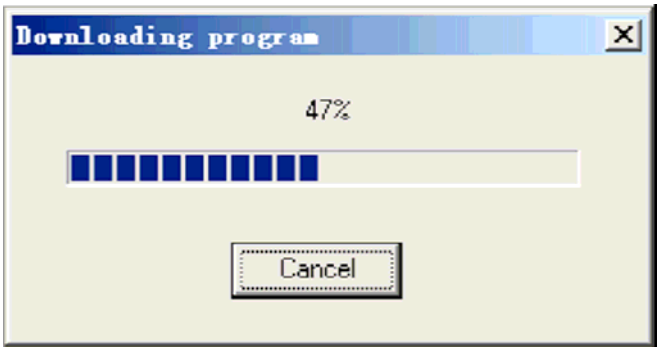


Select the correct PC COM port you have connected to the MINI-MAX/ARM. The following settings match the example that we run on MINI-MAX/ARM board:

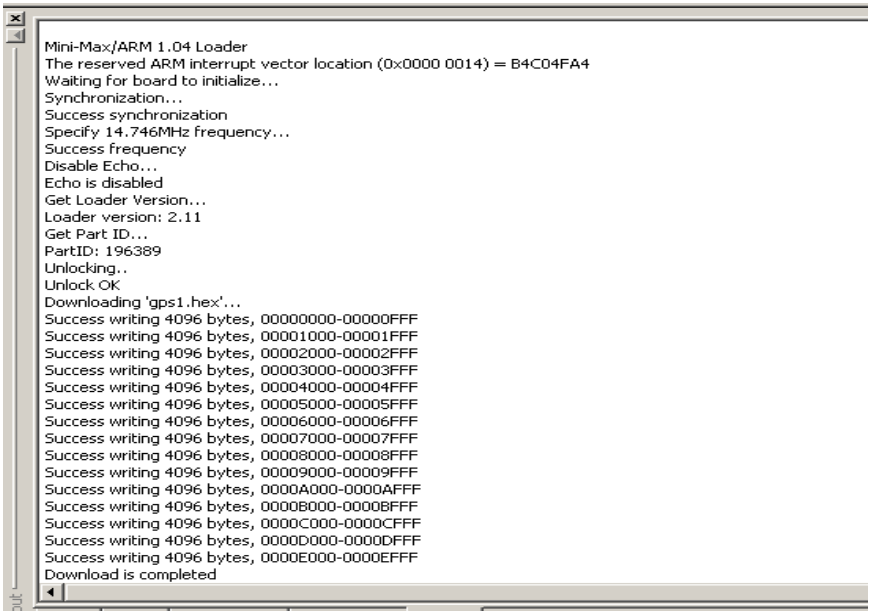
Baudrate: 115200
Parity: None
Data Bits: 8
Stop bits: 1
Echo: Off

Press OK button.

5.7 Press download button:



When the download is finished, the progress indicator disappears:

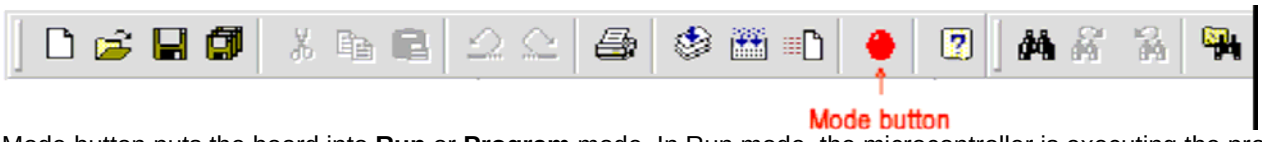


Please check if “Download is completed” appears. This means that the board has been programmed successfully.

6. Testing the program in the “Parsing” mode

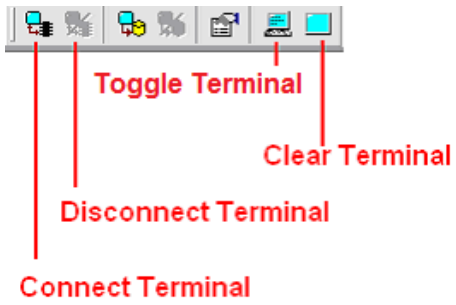
This mode is defined in section **Downloading Programs** (see 5.4).

6.1 After the program has been successful build and downloaded, it can be started using the Mode button on the main Toolbar:



Mode button puts the board into **Run** or **Program** mode. In Run mode, the microcontroller is executing the program in its memory. In Program mode, the microcontroller is in Reset state so no programs are running. In Program mode, microcontroller’s flash memory can be changed and a new program can be downloaded.

6.2 Open the terminal window using Toggle Terminal icon button:



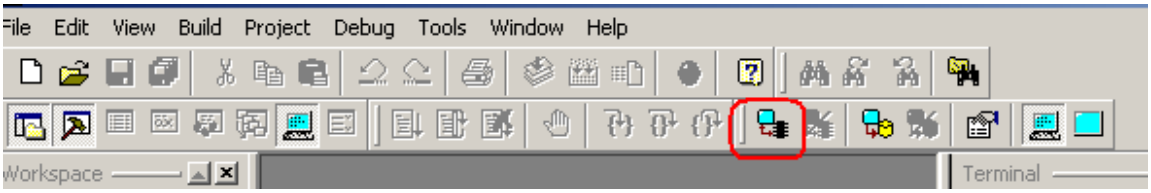
Connect Terminal connects the terminal window to a PC COM port. If a board sends data to the serial port, the messages will appear in Terminal window.

Disconnect Terminal disconnects the terminal window from a PC COM port.

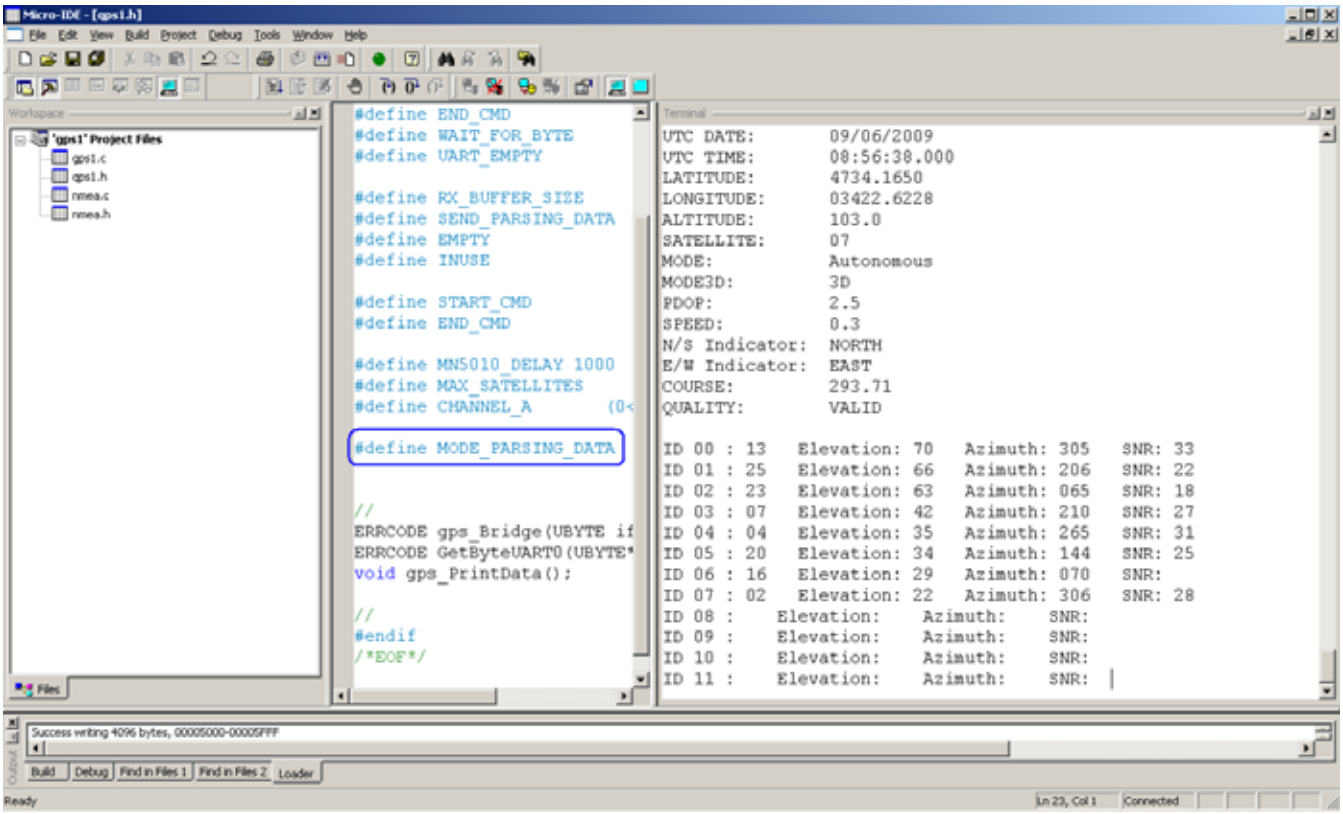
Toggle Terminal shows/hides the terminal window.

Clear Terminal clears all messages in the terminal window.

Press Connect icon button to connect the terminal window to the board:



6.3 GPS messages should appear in the terminal window:

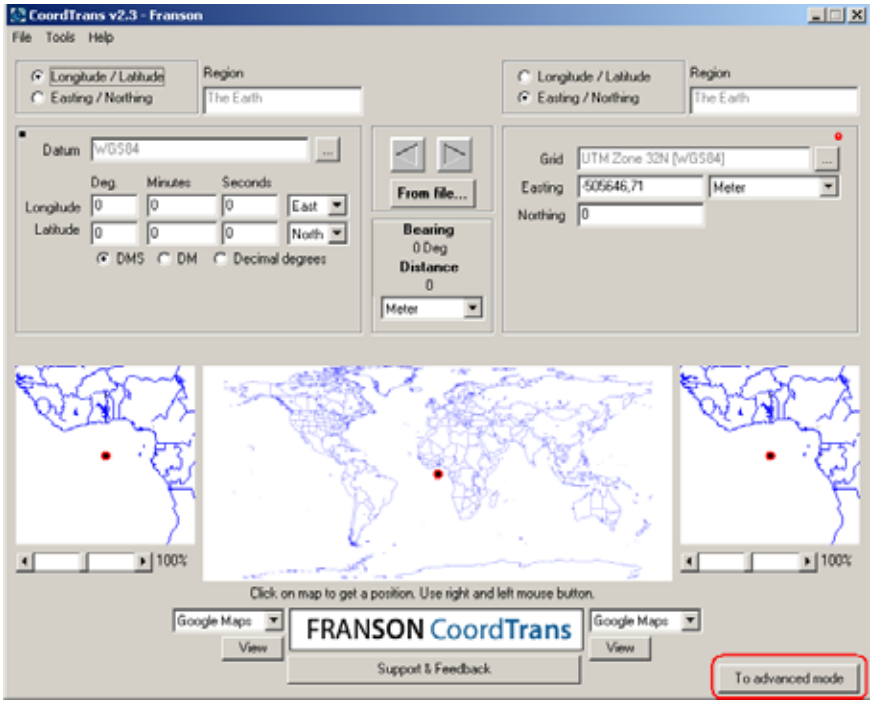


NOTE. The GPS-1 board starts to work from cold start. Valid GPS position information will start appearing on the terminal window in about 100 seconds.

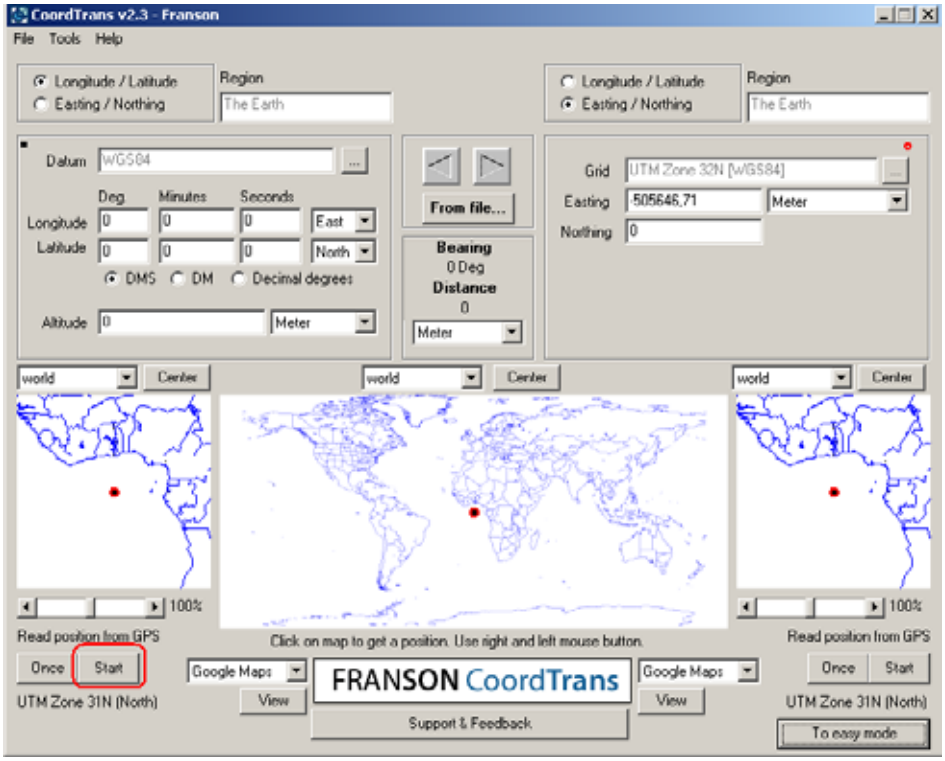
7. Testing the program in the “Bridge” mode

This mode is defined in section **Downloading Programs** (see 5.4).

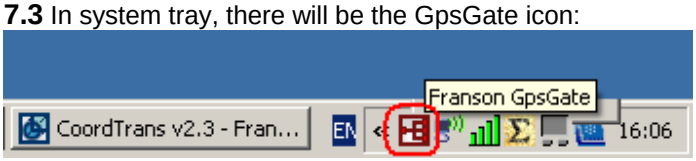
7.1 After the program has been successful built and downloaded, please run CoordTrans program and click **“To advanced mode”** button:



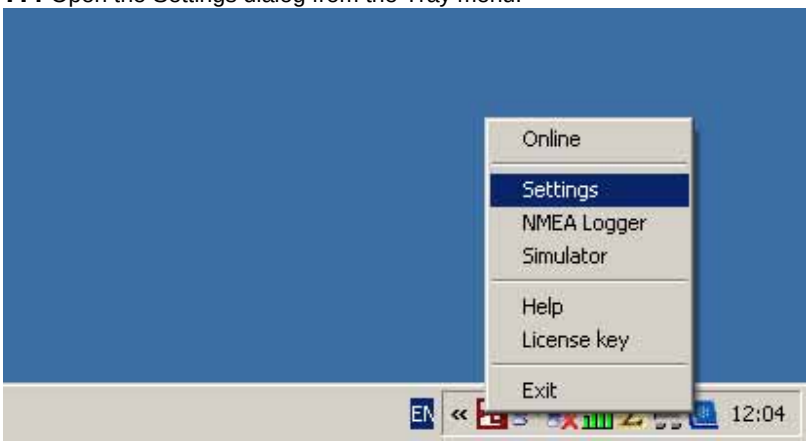
7.2 Click Start:



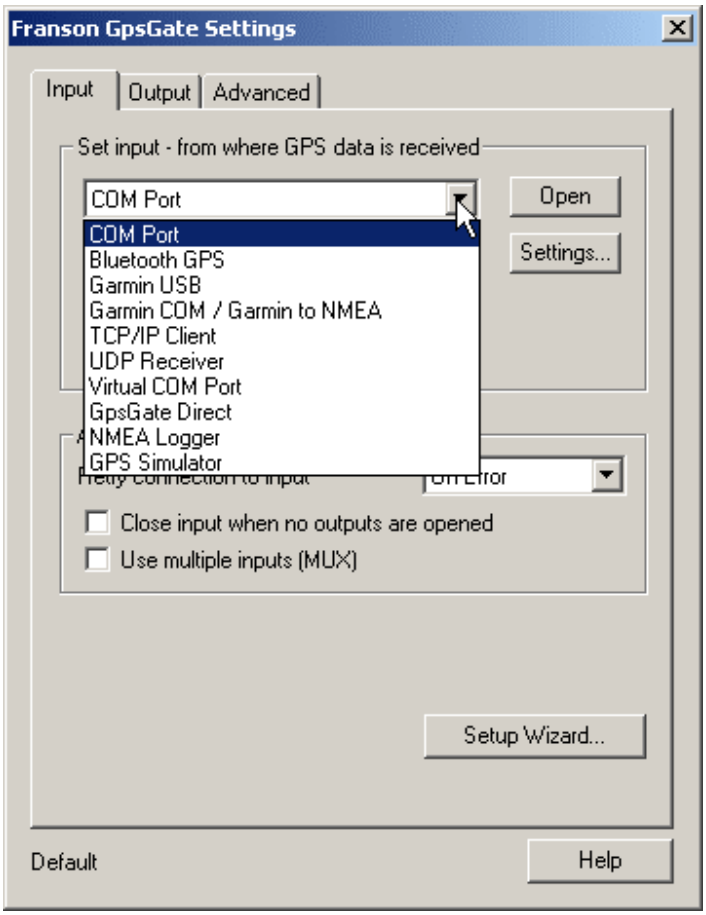
7.3 In system tray, there will be the GpsGate icon:



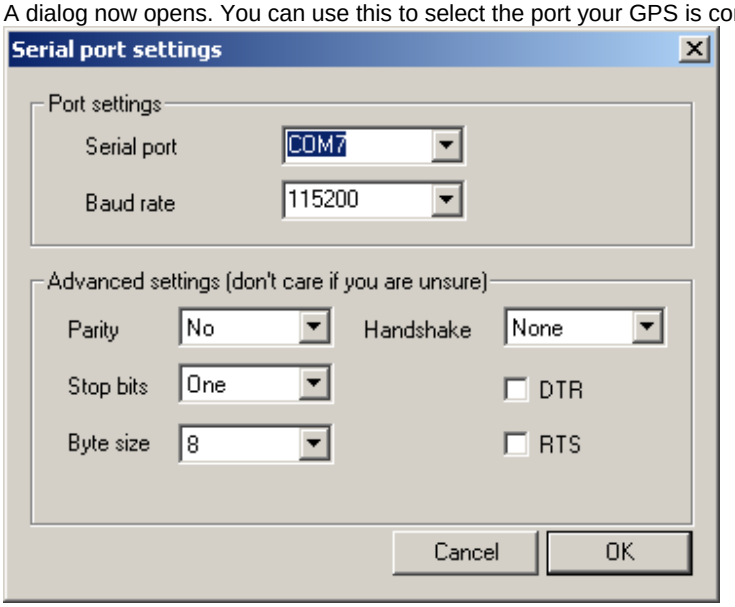
7.4 Open the Settings dialog from the Tray menu:



7.5 Select "COM Port" from the pull down menu. Click "Setting" :



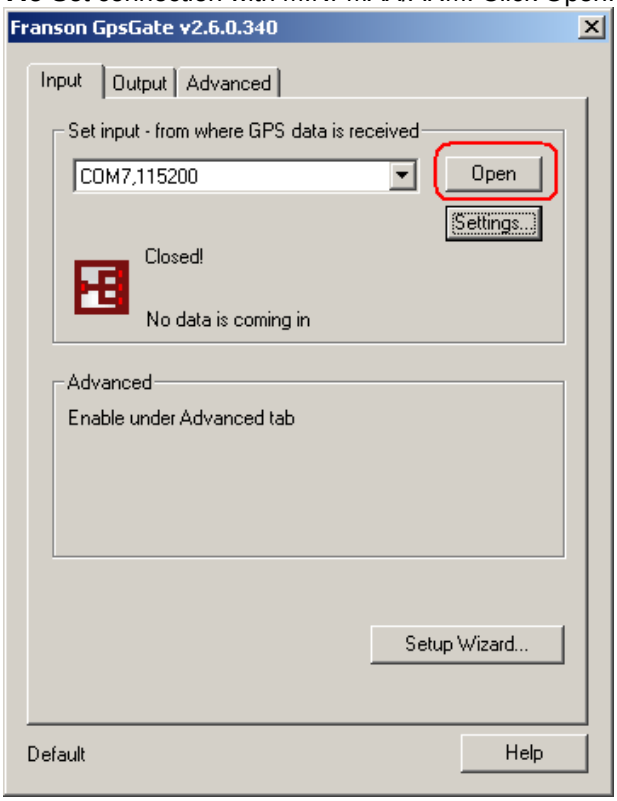
A dialog now opens. You can use this to select the port your GPS is connected to.

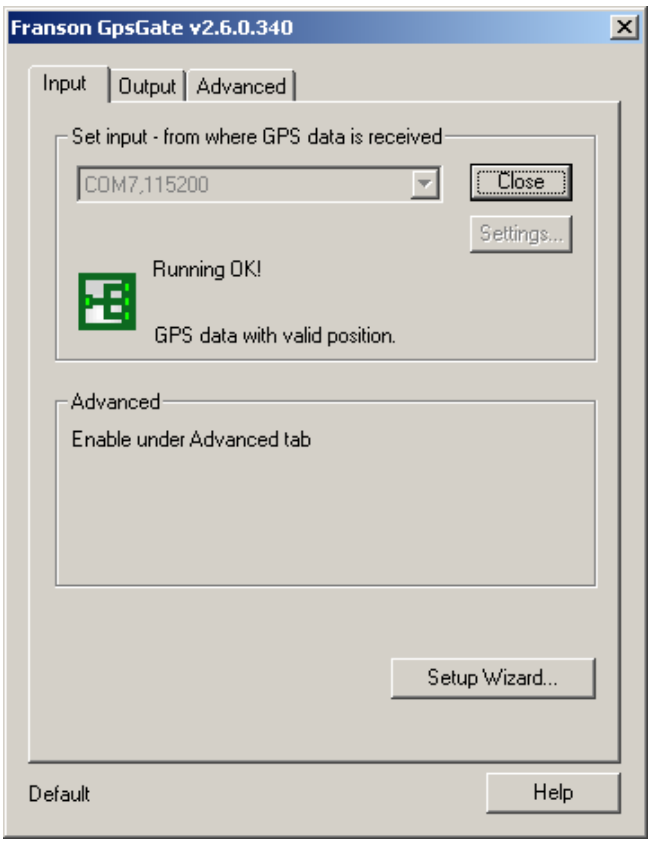


Select the correct PC COM port that is connected to the MINI-MAX/ARM. The following settings match the example that we run on the MINI-MAX/ARM board:

Baud rate: 115200
Parity: None
Data Bits: 8
Stop bits: 1
DTR: OFF
Press OK button.

7.6 Set connection with MINI-MAX/ARM. Click Open:





The tray icon always indicates the status of GpsGate. The status icon is also displayed in the Input tab of the Settings dialog. These are the possible tray icons:

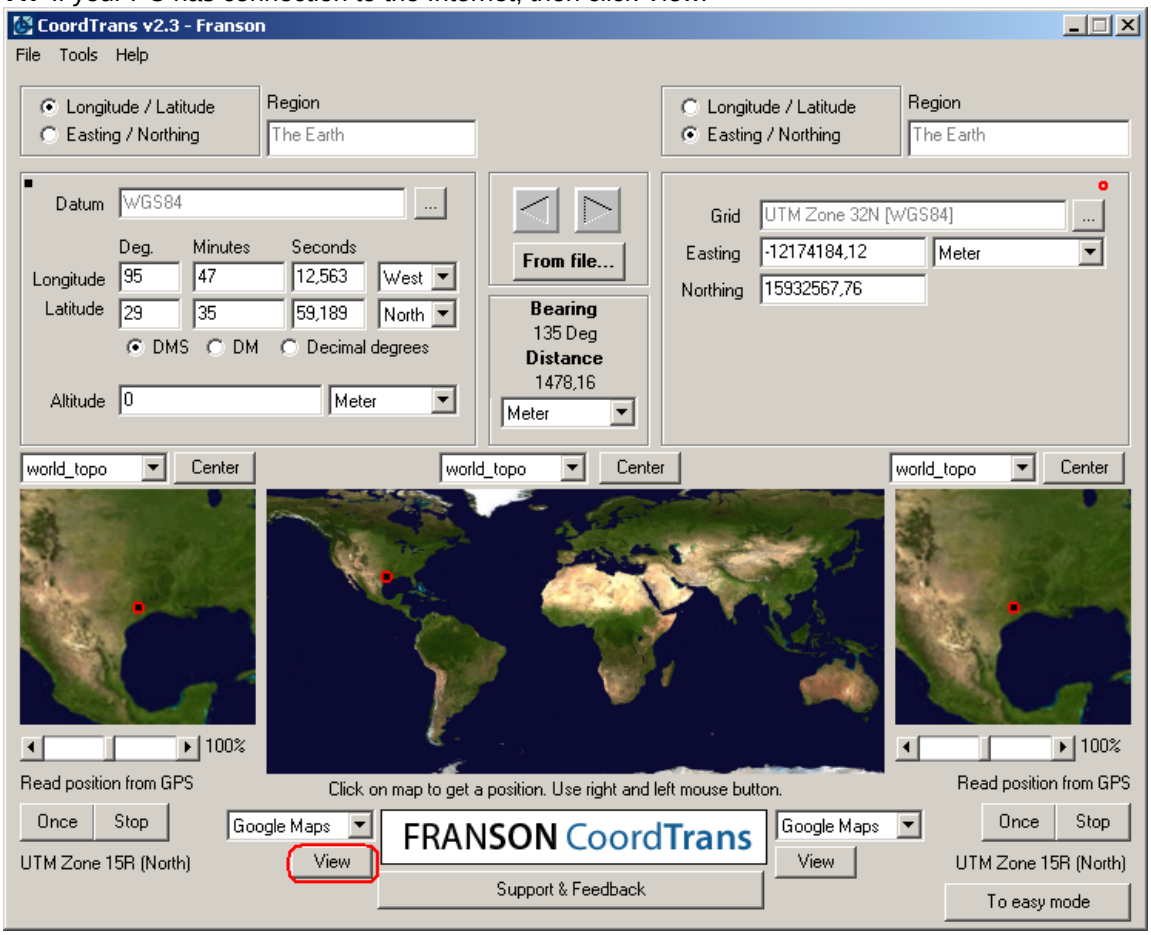
 No GPS or NMEA data is detected by GpsGate.

 Valid GPS data has been detected at the selected input, but the GPS data has no fix; that is, it cannot determine its position (yet).

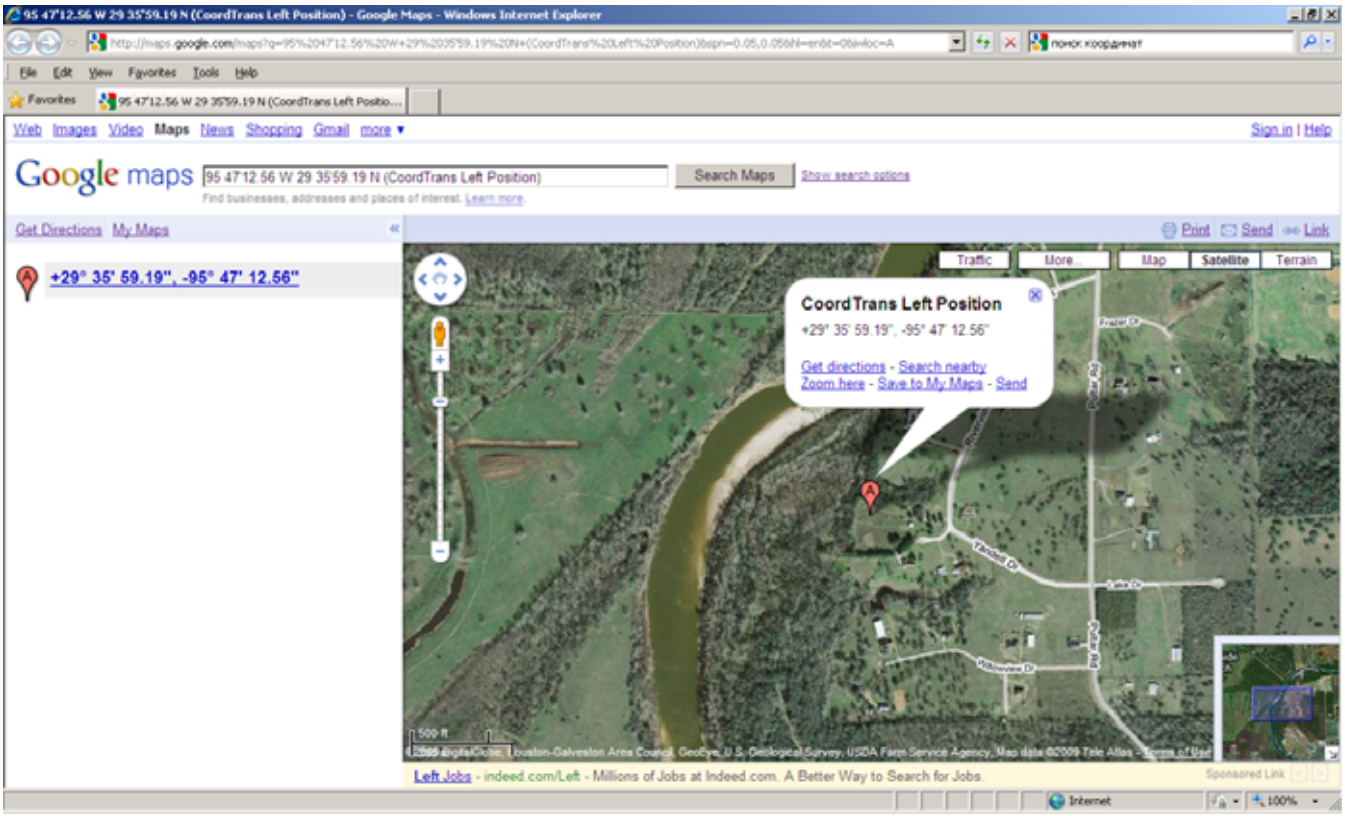
 A valid GPS position (fix) has been detected at the selected input.

NOTE. The GPS-1 board starts to work from cold start. Valid GPS position information will start appearing on the terminal window in about 100 seconds.

7.7 If your PC has connection to the Internet, then click View:



You can see your location from the satellite:



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