PNI – CommBoard RS232/485 GUI Users Guide

Connection Instructions

The following steps are for using the CommBoard's RS-232 option only.

Hardware Connections

1. Connect the CommBoard Serial Cable to a serial port of the computer to be used.
   Note: If a USB to Serial adapter is to be used, refer to the manufacturer's instructions on installing the proper drivers for the adapter.

2. Connect the CommBoard Serial Cable to the CommBoard.

3. Connect the module to be used to the CommBoard.
   Note: It is important that the module is connected correctly, with the white silk-screened arrows on both the module and the CommBoard pointing in the same direction (toward the LEDs on the CommBoard). Incorrect installation can result damage being done to the module, CommBoard or both.

4. Connect a 5 -12 VDC power source to the 9 VDC battery connector of the serial cable.

Software Connections

1. Open the program via the PNI OEM Demo icon at the location selected during the installation process.

2. To connect to the CommBoard for the first time it is recommended that the Communications Wizard be used. Select the **<Communications Wizard>** button in the **[I/O Settings]** tab.
   Note: If the connection settings are known, they can be set using the appropriate drop down menus on the **[I/O Settings]** tab, after which the **<Connect>** button can be selected.

3. Once the program has made a connection to the unit a window will appear stating "Please wait while the module's settings are accessed". Once the program's settings have been updated to reflect the status of the CommBoard and module, the **[I/O Settings]** tab will again be visible and the "Connected" light will be green.

4. If the connected light is not green or if an Error message is displayed, then check all of the hardware connections and begin again.

PNI – CommBoard RS232/485 GUI Users Guide

Calibration Instructions

Calibration of the module will be required the first time the unit is powered on, any time the unit is installed in a new system, or if the module returns the error code E200.

1. Select the **[Calibration]** tab.

2. Enable **Multi Polled Calibration**. The GUI will send the command to enable the magnetometer output as well as the calibration command.

3. Select the **<GO>** button.

4. Rotate the unit for two complete rotations keeping the unit as level as possible

   a. The **Calibration Data** plot should show a nearly round circle at the end of two rotations.
   b. If there are jagged edges then the unit was tilted out of level during calibration.
      i. Select **<HALT>**
      ii. *Disable* **Multi Polled Calibration**
      iii. *Enable* **Multi Polled Calibration**
      iv. Select the **<GO>** button
      v. Begin the rotation again.

5. Once the rotations are complete, select the **<HALT>** button to end the calibration then disable **Multi Polled Calibration**.

Module "GO" Mode Instructions

The data output during "go" mode will depend on module being used. The sample rate of the "go" mode is only every 0.25 seconds when using the GUI.

1. Select the **[Actions]** tab and select the **<GO>** button.

2. The data in the string displayed in the "Output" window can be varied according to the settings in the **[Output Options]** and the **[Sampling Options]** tabs.

3. To stop the continuous output of the "go" mode, select the **<HALT>** button.

Interface Overview

Graphical Data Display Window

The most common data output from the module is displayed graphically to the right side of the tabbed windows. This window is visible regardless of the active tab, with the data being displayed in accordance to the settings of the individual tabs.

PNI – CommBoard RS232/485 GUI Users Guide

Get Settings Button

The **<Get Settings>** button is available on all tabs. When the button is highlighted in red, that indicates that a change to the settings have been made. Selecting this button will update the settings on the *active tab* to match that of the actual module settings.

I/O Settings Tab

This tab is used to connect to the CommBoard.

- **Com Port** – Used to select the serial port used on the host computer.
- **Baud Rate** – Used to select the baud rate of the host computer.
- **Serial Mode** – Selects either RS-232 or RS-485 mode and is used in conjunction with the jumper settings on the CommBoard.
- **Communications Wizard** – Used to connect to the CommBoard when the Com Port and Baud Rate are <u>unknown</u>.
- **Connect** – Used to connect to the CommBoard when the Com Port and Baud Rate are <u>known</u>.
- **Disconnect** – Used to disconnect the CommBoard from the program. This should be done whenever the module is going to be changed.
- **Data Logging** – Selects whether or not Data Logging to a file is enabled.
- **Module Settings** – Allows a file of the modules settings to be saved to a file as well as uploading a settings file to a module.

Sampling Options Tab

This tab is used to change the settings of the sampling functions. Not all of the sampling options are available for all modules, check specific module data sheet to see if the option is supported.

- **Digital Damping** – Select if digital damping is enabled. See module data sheet for an explanation of the digital damping function.
- **Damping Size** – Sets the number of samples to be applied to the digital damping function.
- **Polling Frequency** – Sets the frequency which samples are polled from the module.
- **Period Select** – Sets the period select value of the ASIC on the module.   The lowest setting (0) will give the fastest response but the lowest resolution. The highest setting (7) will give the slowest response but the highest resolution. Refer to the specific module data sheet for response times and maximum setting allowed.
- **Skip Measurement** – This command will allow the module to take continuous measurements but output at a slower rate as defined by the setting.
- **Clipping Value** – Not available on modules without tilt compensation. Refer to the specific module data sheet for more information.
- **Declination Angle** – Sets the declination "offset" angle to compensate for Magnetic vs. True North.
- **Sample Delay** – Sets the time between samples when a slower rate is desired.

Output Options Tab
This tab is used to select which values will be sent via the output string.

Output Options
- **Echo** – Sets if typed in commands will be echoed in the output window.
- **RS-485** - Sets the address for the module and host computer when using RS-485.
- **Output Mode** – Selects one of the three output string formats.
- **End of Line** – Selects one of the three End of Line (EOL) options.

Module Options
- **Endian** – Selects the output format of the data as either Big Endian or Little Endian. Refer to the specific module data sheet for more information.

Units
- **Compass** – Selects either Degrees or Mils.
- **Inclinometer** – Not available on all modules. Refer to the specific module data sheet for more information.
- **Temperature** – Not available on all modules. Refer to the specific module data sheet for more information.

Data Output
All outputs not available on all modules. Refer to the specific module data sheet for more information.
- **Compass**
- **North Mode** – Sets the compass to output heading based on either True or Magnetic North.
- **Pitch**
- **Roll**
- **Temperature**
- **X (magnetometer axis)**
- **Y (magnetometer axis)**
- **Z (magnetometer axis)**

Commands Tab
This tab is used to get single samples of the various module outputs quickly. All outputs not available on all modules.

Query
- **Compass**
- **Magnetometer**
- **Inclinometer**
- **Temperature**
- **Single (sample)**
- **Raw (values)**
- **X (magnetometer axis)**
- **Y (magnetometer axis)**
- **Z (magnetometer axis)**
- **ID** – Shows the ID of the module.

PNI – CommBoard RS232/485 GUI Users Guide

Actions Tab

Actions
- **Factory** – Resets the module back to its default state
- **Save Module –** Use this button to save all current settings as startup values.
- **Power Mode** – Sets the power mode for the CommBoard. For more information, see the CommBoard Data Sheet.

Help/Status
- **Help** – Displays the general Help window.
- **Debug Help** – Displays the Debug Help window.
- **Signal Help** – Displays the Signal help window.
- **Status –** Displays the settings of the module. This is a visual output of the **Module Settings** save file.
- **Info** – Displays the CommBoard and Module firmware version.
- **Error Code** – Input the error code to get its description. Typing in "fff" will display the error code list.

Output
- **Go -** Begins the "go" mode for continuous output.
- **Halt** – Stops the continuous output, "go" mode.
- **Command -** Terminal input which allows commands to be typed in.

PNI – CommBoard RS232/485 GUI Users Guide

Calibration Tab

This tab is used for the calibration of the modules. This option is not available on all modules; please refer to the specific module data sheet for more information.

- **Multi Polled Calibration** – Enables or Disables module calibration.
- **GO** – Begins the continuous output of the data needed for the calibration process.
- **HALT** – Stops the continuous output of the data.
- **Last Score** – This option is not available on all modules, please refer to the specific module data sheet for more information.
- **Clear Calibration** – Select this button to clear the last calibration values.
- **Calibration Data Plot** – This window give a visual representation of the calibration process. The end result should be a nearly uniform circle.

Plot Tab

This tab allows for the continuous ("go" mode) output data from the module to be graphed for evaluation.

- **Heading –** Use this menu to select which data is to be plotted.
- **Plot** – Use this selection to enable the plot feature.
- **CLEAR –** This button clears the plot screen.