

## MIDG Series INS/GPS Parser Utilities

**NOTE:** This instruction assumes that the MIDG Series INS/GPS Software and Utilities has previously been installed on the computer. This software needs to be installed prior to performing this operation.

**1 Introduction.** The MIDG Series INS/GPS outputs messages in a raw binary form. Microbotics, Inc. provides two (2) parser programs (*INS Parse* and *II Parse*) for extracting the information. The information is placed into a text flat-file in rows and columns. The outputted textual table can be easily accessed by a variety of software packages and text editors. Included in the MIDG Series INS/GPS Software and Utilities is a freeware copy of PS PAD©2002-2004. This file will instruct the user on how to parse recorded data and edit the parsed files.

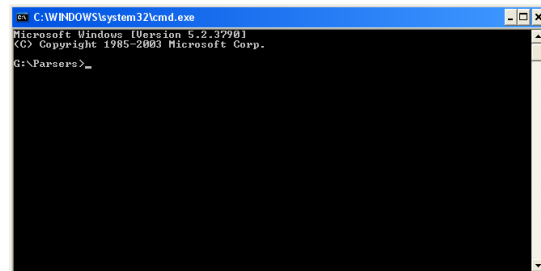
**2 Prerequisites.** MIDG Series IN/GPS Software and Utilities, MIDG Series INS/GPS data file (recorded from the unit), a text editor and this instruction.

**NOTE:** The parser program will only extract the messages which were enabled during the time of the data collection. Refer to Table 1 and Table 2 to decide which parser will be needed.

**3 Process Steps.** The following steps will guide the user through the process of parsing and editing the data for use in post processing analysis and plotting programs.

1. **On the Windows® desktop, Press the "Start" button and select "All Programs."**
2. **Select the "Microbotics, Inc" folder and select the appropriate parser program.**

This will open a command prompt with the directory path to the location of the parser program (Figure 1).

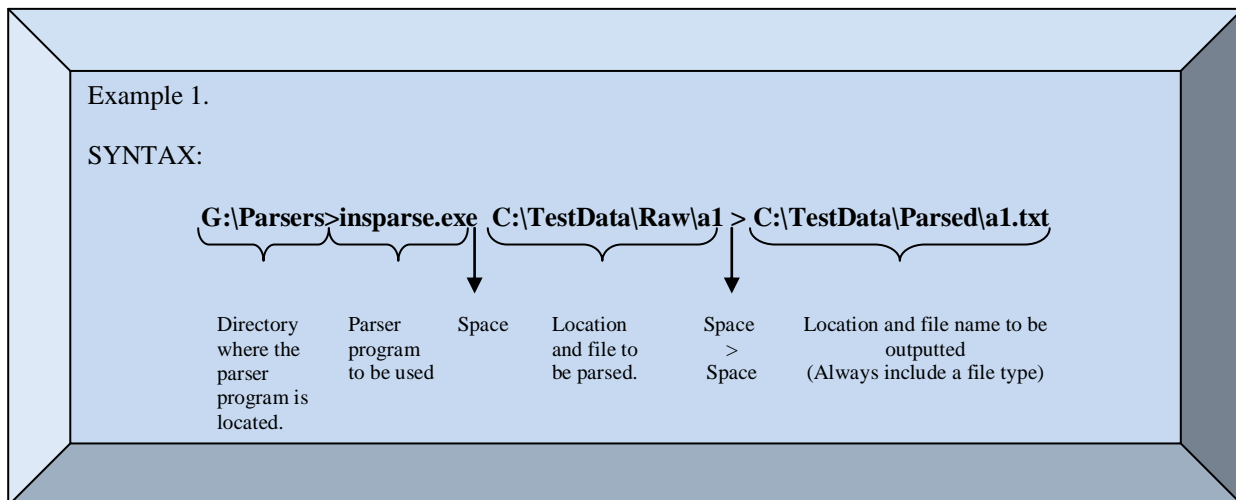


**Figure 1. Windows® Command Prompt box.**

3. **Enter the parser to be used, the location and file to be parsed.**
4. **Enter a "greater than" sign (>), the location and the name of the file to be outputted, Press the "ENTER" key.**

Example 1 contains a diagram and the syntax to be used with both parsers.

**Note:** If the data files outputs are to be located in the same location as the parser program, full path is not required.



The data in the file will be parsed and a report will be displayed in the command prompt window (Figure 2).

Note: If there are multiple files to be parsed and they are in the location, press the "UP" arrow key (↑) to display the last command entered. Change only the file names and press enter. This will save on having to re-enter the entire command line.

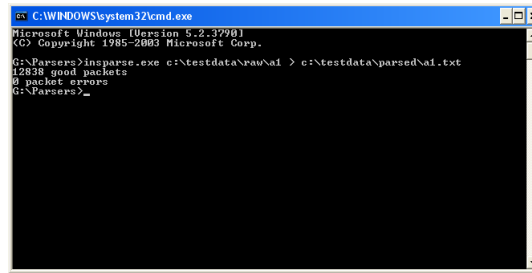


Figure 2. Parsed file report.

**3 Editing the Data.** Prior to using the data, the parsed files have to be edited to remove the meaningless portion at the beginning of each file. For the next several steps, PS Pad©2002-2004 will be used. This program is freeware and may be downloaded [here](#), it is also included in the MIDG Series INS/GPS Software and Utilities. This program may be accessed by the following:

1. **On the Windows® desktop, Press the "Start" button and select "All Programs."**
2. **Select the "Microbotics, Inc" folder and select "PS Pad."**

**3.1 Parsed File Editing.** Once the data file has been parsed and outputted to a text flat-file, it is necessary to remove the meaningless data from the beginning of the recorded data. This meaningless data appears in the first several rows and is easily identified as meaningless by the number zero (0) in the first column (Figure 3). Removal of this meaningless data has to be done prior to any evaluation or plotting.

1. **Open an instance of the text editor.**
  2. **Select "File" from the menu bar and select the "Open" option.**
- This will bring up the "Open" dialog box.
3. **Select the parsed data file to be edited and Press the "Open" button.**
  4. **Highlight all of the columns and rows which have a zero (0) in the first column and Press the "Delete."**
  5. **Save the file.**

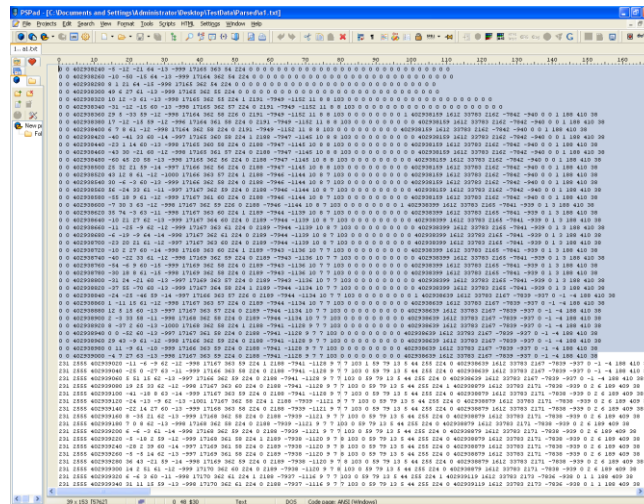


Figure 3. Meaningless data selected for removal.

This ends the parsing and editing of data files. The data is now ready for evaluation and plotting. Plotted data may be super imposed on maps with most any graphics programs which has the capability to manipulate the graphs via small angles. It is recommend to save the graphed plots in a **JPEG** format or similar format.

**Column Descriptions.** The following table displays the information of each column in the parsed data file. INS Parse produces a text output for the messages listed in Table 1.

Note: These messages must be enabled in the MIDG Series INS/GPS during the data collection to be recorded. Any messages not enabled will display a zero (0) is in columnar data.

| Table 1       |            |   |
|---------------|------------|---|
| Source Column | Packet     | Description   |
| 1             | STATUS     | Status word   |
| 2             | STATUS     | Temperature (0.01 °C)                                 |
| 3             | NAV_SENSOR | Time (milliseconds)                                   |
| 4-6           | NAV_SENSOR | P, Q, R angular rates (0.01 degrees/second)           |
| 7-9           | NAV_SENSOR | AX, AY, AZ accelerations (milli-g's)                  |
| 10-12         | NAV_SENSOR | Yaw, Pitch, Roll (0.01 degrees/second)                |
| 13            | NAV_SENSOR | Flags   |
| 14            | (NAV_PV)   | Boolean: NAV_PV data updated                          |
| 15-17         | NAV_PV     | Position (as defined in NAV_PV details)               |
| 18-20         | NAV_PV     | Velocity (as defined in NAV_PV details)               |
| 21            | NAV_PV     | Details   |
| 22            | (NAV_ACC)  | Boolean: NAV_ACC data updated                         |
| 23-24         | NAV_ACC    | H/V Position accuracy estimation (centimeters)        |
| 25-26         | NAV_ACC    | H/V Velocity accuracy estimation (centimeters/second) |
| 27            | NAV_ACC    | Tilt accuracy estimate (0.01 degree)                  |
| 28            | NAV_ACC    | Heading accuracy estimate (0.01 degree)               |
| 29            | NAV_ACC    | Flags   |
| 30            | (GPS_PV)   | Boolean: GPS_PV data updated                          |
| 31            | GPS_PV     | Time (ms)   |
| 32            | GPS_PV     | GPS Week  |
| 33            | GPS_PV     | Details   |
| 34-36         | GPS_PV     | Position (as defined by GPS_PV details)               |
| 37-39         | GPS_PV     | Velocity (as defined by GPS_PV details)               |
| 40            | GPS_PV     | PDOP (0.01 scaling)                                   |
| 41            | GPS_PV     | PAcc (cm)   |
| 42            | GPS_PV     | VAcc (cm/s)   |

The following table displays the information of each column in the parsed data file. II Parse produces a text output for the messages listed in Table 2.

Note: These messages must be enabled in the MIDG Series INS/GPS during the data collection to be recorded. Any messages not enabled will display a zero (0) is in columnar data.

| <b>Table 2</b>       |               |   |
|----------------------|---------------|---|
| <b>Source Column</b> | <b>Packet</b> | <b>Description</b>                          |
| 1                    | IMU_DATA      | Time (ms)                                   |
| 2-4                  | IMU_DATA      | P, Q, R angular rates (0.01 degrees/second) |
| 5-7                  | IMU_DATA      | AX, AY, AZ accelerations (mili-gravities)   |
| 8-10                 | IMU_DATA      | MX, MY, MZ magnetometer                     |
| 11                   | IMU_DATA      | Flags                                       |
| 12                   | (GPS_PV)      | Boolean: GPS_PV data updated                |
| 13                   | GPS_PV        | Time (ms)                                   |
| 14                   | GPS_PV        | GPS Week                                    |
| 15                   | GPS_PV        | Details                                     |
| 16-18                | GPS_PV        | Position (as defined by GPS_PV Details)     |
| 19-21                | GPS_PV        | Velocity (as defined by GPS_PV Details)     |
| 22                   | GPS_PV        | PDOP (0.01 scaling)                         |
| 23                   | GPS_PV        | PAcc (cm)                                   |
| 24                   | GPS_PV        | VAcc (cm/s)                                 |