RESEARCH CONCEPTS, INC.
Design & Development Engineers

RC2K Upload / Download Utility

Overview

The RC2K Upload/Download Utility can save, edit, and restore configuration data from a Research Concepts RC2000A satellite antenna controller. It features a simple, easy-to-use interface with a built-in text editor built on top of the reliable RciComm Serial Communications Library.

Software Setup

The installation program provided will automatically copy all the necessary files needed by this software to the subdirectory: "C:\Program Files\Research Concepts\rc2kud\". The installation includes the following:

- RC2K Upload / Download Utility (rc2kud)
  - The main software application.

- Serial Communication Troubleshooter
  - An interactive troubleshooter to assist in identifying and repairing serial communication problems.

- RCI Serial Communication Utility (rcsc)
  - Used to automatically detect the PC serial port settings required to connect to a controller.

Operation Tutorial

Interface Parts

The RC2K Upload/Download Utility interface has five main parts:

1. Menu Bar
2. Toolbar
3. Serial Communication Toolbar
4. Text Area
5. Status Bar
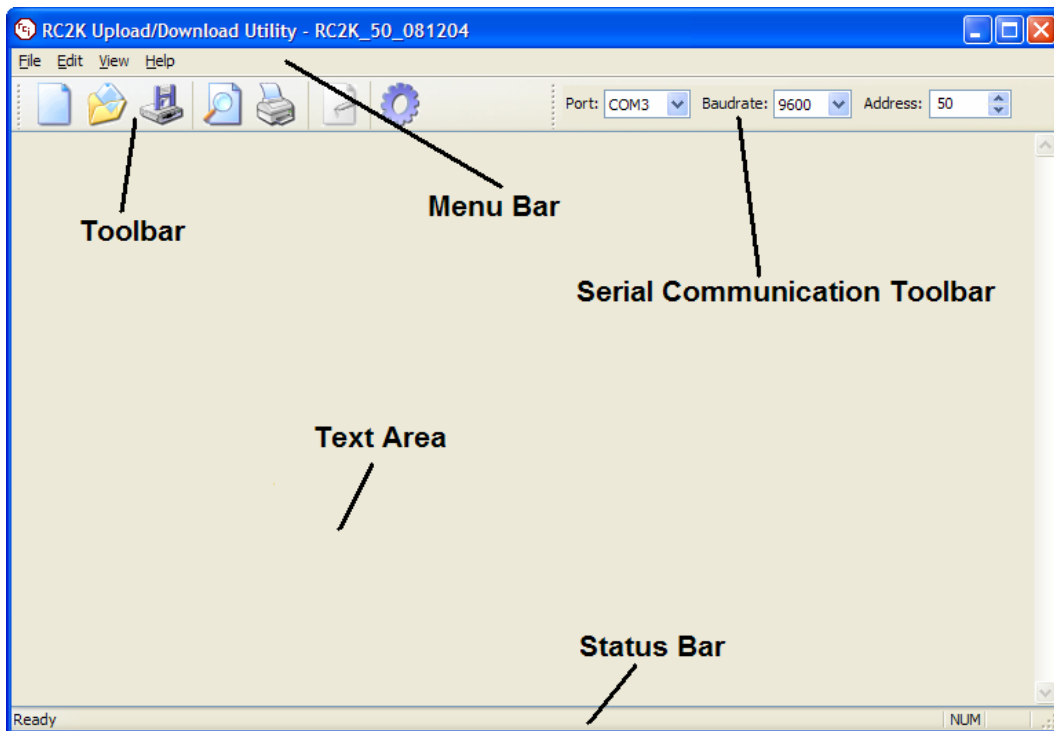
The Menu Bar and Toolbar hold commands equivalent to those of Notepad or any other simple text editor (New, Save, Open, Print, Print Preview, etc.) and two special commands, Transfer Configuration Data and Edit Mode.

Communications Settings

The first step in any upload/download operation is to choose the serial communications settings by using the Serial Communications Toolbar.
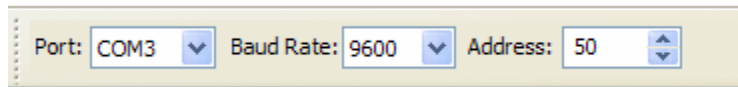

RC2KUD automatically detects all valid communication ports when it starts up and adds them to the dropdown list labeled "Port:". In addition, the Serial Communications Toolbar will remember the last port, baud rate, and address used when the program is started.

Transferring Data from Controller to PC

When commanded, RC2KUD first transfers all the configuration data to the PC. Then, all the current satellite data is also transferred to the PC and appended to the end of the text file.
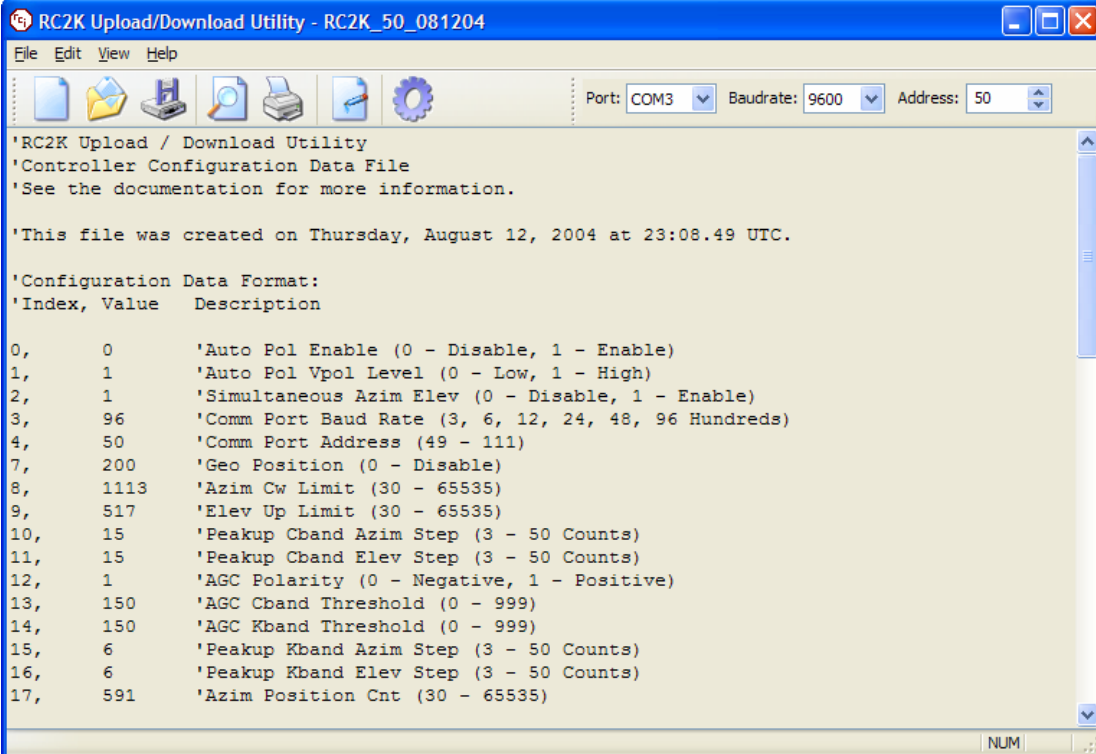
To transfer data from a RC2K controller to the PC, use the Transfer Configuration Data Command by choosing "Transfer configuration data…" from the Edit menu, or by clicking the last button on the Toolbar. The Transfer dialog box appears:
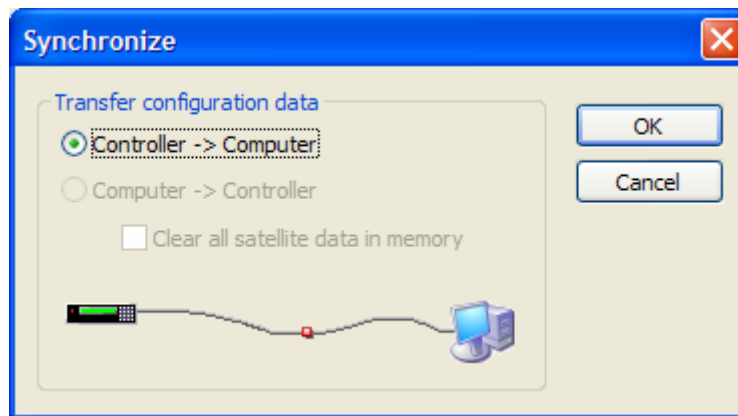
This dialog has two options: Controller -> PC and PC -> Controller. At this time, no data has been loaded, so only the Controller -> PC option is available. Clicking the OK button begins the transfer process.

Viewing Configuration Data

The following is a screen shot of rc2kud after a successful data transfer:

```
RC2K Upload/Download Utility - RC2K_50_081204                         [_][□][X]
File  Edit  View  Help

  [new] [open] [save] [find] [print]  [edit] [gear]    Port: COM3 ▼  Baudrate: 9600 ▼  Address: 50 ▲▼

'RC2K Upload / Download Utility                                              ▲
'Controller Configuration Data File
'See the documentation for more information.

'This file was created on Thursday, August 12, 2004 at 23:08.49 UTC.

'Configuration Data Format:
'Index, Value    Description

0,       0        'Auto Pol Enable (0 - Disable, 1 - Enable)
1,       1        'Auto Pol Vpol Level (0 - Low, 1 - High)
2,       1        'Simultaneous Azim Elev (0 - Disable, 1 - Enable)
3,       96       'Comm Port Baud Rate (3, 6, 12, 24, 48, 96 Hundreds)
4,       50       'Comm Port Address (49 - 111)
7,       200      'Geo Position (0 - Disable)
8,       1113     'Azim Cw Limit (30 - 65535)
9,       517      'Elev Up Limit (30 - 65535)
10,      15       'Peakup Cband Azim Step (3 - 50 Counts)
11,      15       'Peakup Cband Elev Step (3 - 50 Counts)
12,      1        'AGC Polarity (0 - Negative, 1 - Positive)
13,      150      'AGC Cband Threshold (0 - 999)
14,      150      'AGC Kband Threshold (0 - 999)
15,      6        'Peakup Kband Azim Step (3 - 50 Counts)
16,      6        'Peakup Kband Elev Step (3 - 50 Counts)
17,      591      'Azim Position Cnt (30 - 65535)                           ▼
                                                                      NUM
```
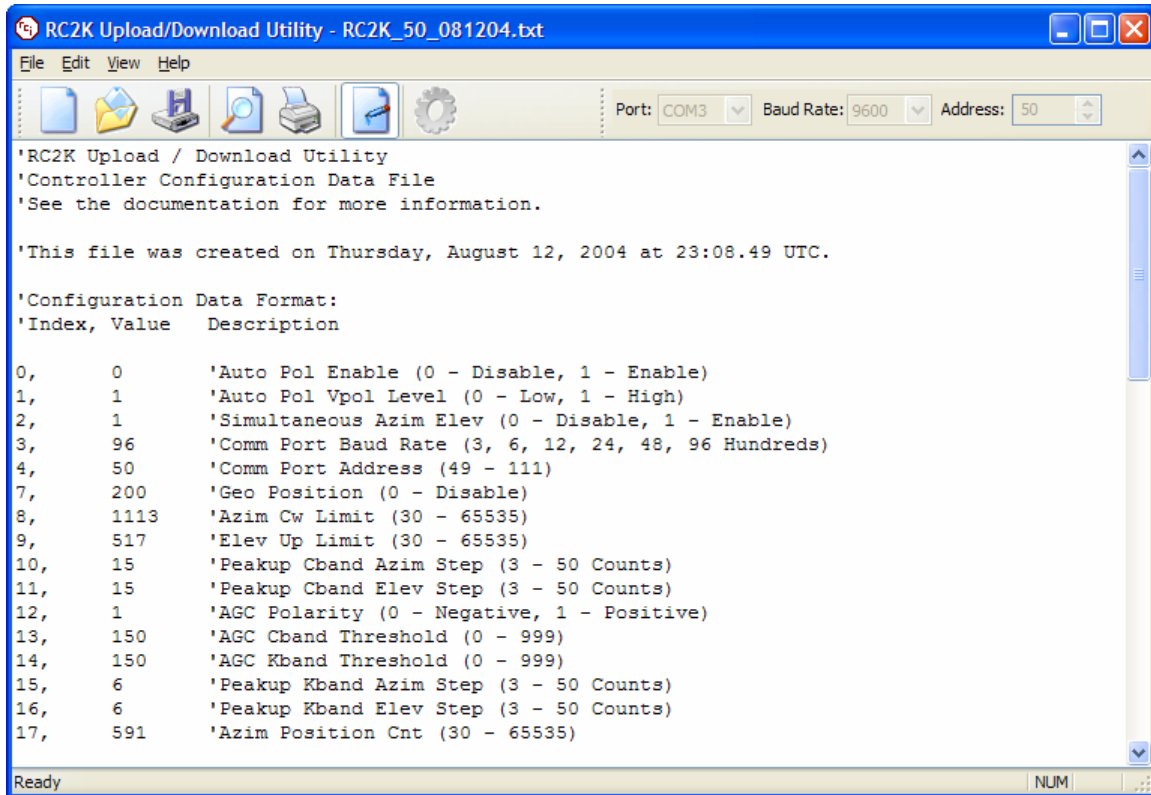
A text file is created with a default filename of RC2K_(address)_(date). Within the file, every data item (configuration data or satellite data) is listed on its own line in comma-delimited format along with a description. All characters on a line after a single quotation mark (') are considered comments.

Editing Configuration Data

To edit the data in an open file, the interface must be switched to Edit Mode by choosing "Edit Mode" from the View menu, or by clicking the "Toggle Edit Mode" button on the Toolbar. In this mode, RC2KUD acts just like a simple text editor. The following is a screen shot in Edit Mode:

```
RC2K Upload/Download Utility - RC2K_50_081204.txt

File  Edit  View  Help

                                              Port: COM3    Baud Rate: 9600   Address: 50

'RC2K Upload / Download Utility
'Controller Configuration Data File
'See the documentation for more information.

'This file was created on Thursday, August 12, 2004 at 23:08.49 UTC.

'Configuration Data Format:
'Index, Value    Description

0,      0        'Auto Pol Enable (0 - Disable, 1 - Enable)
1,      1        'Auto Pol Vpol Level (0 - Low, 1 - High)
2,      1        'Simultaneous Azim Elev (0 - Disable, 1 - Enable)
3,      96       'Comm Port Baud Rate (3, 6, 12, 24, 48, 96 Hundreds)
4,      50       'Comm Port Address (49 - 111)
7,      200      'Geo Position (0 - Disable)
8,      1113     'Azim Cw Limit (30 - 65535)
9,      517      'Elev Up Limit (30 - 65535)
10,     15       'Peakup Cband Azim Step (3 - 50 Counts)
11,     15       'Peakup Cband Elev Step (3 - 50 Counts)
12,     1        'AGC Polarity (0 - Negative, 1 - Positive)
13,     150      'AGC Cband Threshold (0 - 999)
14,     150      'AGC Kband Threshold (0 - 999)
15,     6        'Peakup Kband Azim Step (3 - 50 Counts)
16,     6        'Peakup Kband Elev Step (3 - 50 Counts)
17,     591      'Azim Position Cnt (30 - 65535)

Ready                                                              NUM
```

The Serial Communication Toolbar as well as the Transfer Configuration Data are unusable in Edit Mode to prevent accidental data corruption. To enable these two items, switch back to Normal Mode by choosing "Edit Mode" from the View menu, or by clicking the "Toggle Edit Mode" button on the Toolbar.

NOTE: Edit mode is not available for an empty file.

Transferring Data from PC to Controller

When commanded, RC2KUD first transfers all the configuration data to the controller, updating each index in order. Then, it transfers all the satellite data to the controller. If a satellite with the same name exists in the controller memory, that satellite is updated with the new data.

NOTE: Configuration Data Indices 3, 4, 5 and 6 are not updated by RC2KUD during a transfer to the controller. Changing the Baud Rate, Address, or Remote Mode Enable must be done from the front panel of the controller.

To transfer data from the PC to a RC2K controller, use the Transfer Configuration Data Command by choosing "Transfer configuration data…" from the Edit menu, or by clicking the last button on the Toolbar. The Transfer dialog box appears again:
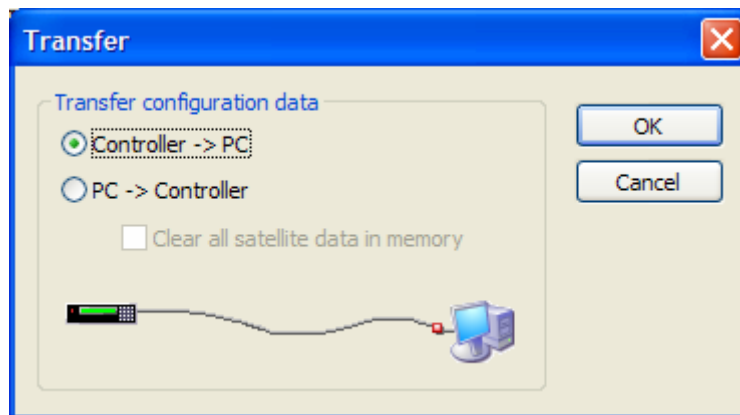
Both transfer options are now available.

To transfer data back to the controller, select the PC -> Controller option.
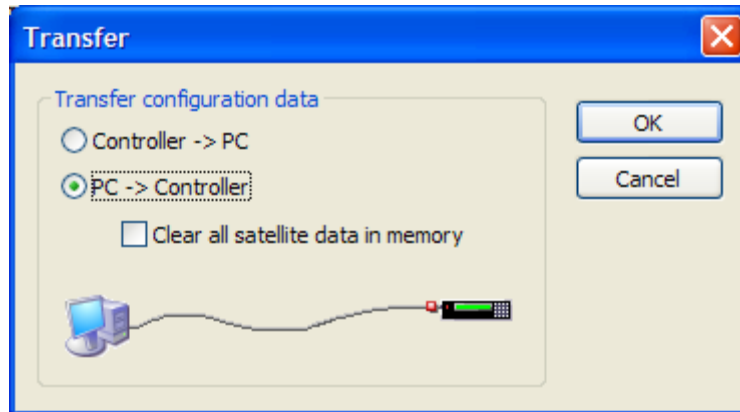
Notice that the "Clear all satellite data in memory" box now becomes available. Selecting this box causes RC2KUD to erase all satellite data in memory before transferring the new data. If this box is unselected, all satellite data in memory will remain intact.

NOTE: Choosing the Controller -> PC option at this point will overwrite all configuration and satellite data to the current file. All data in the file will be lost!

Clicking the OK button begins the transfer process.

Troubleshooting

RC2K Upload / Download Utility has a built in Troubleshooter for easily identifying communication problems. Select Tools, then Troubleshooter from the Help menu to start it.

Some additional things to check are listed below:

- The controller is plugged in and turned on.

- The cable between the computer and the controller is properly installed and connected on both ends.

- The cable is properly constructed in accordance with the diagrams found in the controller manual

- The protocol converter is correctly installed and has power if RS-422 communication is used.

- The address and data rate specified to the software is the same as entered within the controller.

- The data rate specified within the controller is the same data rate entered in the software.

- The communications port specified to the software is not already in use and is functioning properly.

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