DataBoy Users' Manual

Version 5.0
January 5, 2008

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Note: This version of *DataBoy Users' Manual* (v 5.0) describes features implemented in software versions 6.0 and 6.0P.

Introduction

DataBoy is a low-cost RS-232 data scope cartridge that runs on a Game Boy Color, Game Boy Advance, or Game Boy Advance SP console. It can simultaneously capture and display asynchronous serial data traffic on the RXD and TXD lines of an RS-232 serial communication bus. The latest software release comes in two versions: v6.0 is the standard software; v6.0P is a more

advanced version called DataBoy Plus. DataBoy Plus has some features not offered in the standard version:

- Time-stamps
- Support for a multi-drop (9-bit) protocol.
- Data record and playback

The difference between DataBoy and DataBoy Plus is strictly software; the hardware is identical. Note: Game Boy is a trademark of Nintendo Co. Ltd. DataBoy is a product of Micro Contraptions, and is not associated with or licensed by Nintendo.

Hardware

A DataBoy unit consists of the following components:

1. A Game Boy console. Three types of consoles can be used with DataBoy: Game Boy Color (GBC), Game Boy Advance (GBA), or Game Boy Advance SP (GBA SP).
2. A DataBoy cartridge that plugs into the Game Boy console and contains the following:
   - Circuitry for sensing and driving the RS-232 signals and for capturing and transmitting serial data.
   - Non-volatile memory for storing DataBoy software.
   - A 6-position DIP switch for selecting various options.
   - A 10-pin shrouded header for connecting the RS-232 cable.
3. An RS-232 cable. One end of the cable plugs into the connector on the cartridge; the other end has a pair of male and female DB9 connectors for hooking up to the target system.

Inserting Cartridge into Game Boy

Insert DataBoy cartridge into the game slot of a GBA SP, GBA, or GBC console with the label side of the cartridge facing up, as shown in Figure 1.

Figure 1. DataBoy cartridge running on GBA SP, GBA, and GBC

Target System Hookup

DataBoy is primarily used to investigate communication problems between two serial devices, such as a computer and an external modem. Such devices are usually equipped with DB9 or DB25 connectors; a cable with mating DB9/DB25 connectors on each end is used to interconnect the devices. In this document, these devices, along with the interconnecting cable, are collectively referred to as the target system. In order for DataBoy to capture data, it must tap into the signals in this cable. This is accomplished as follows:

- Break the connection between the two devices by removing one end of the interconnecting cable from one of the devices.
- Reconnect the cable to the device by using the DB9 connectors at the end of the DataBoy RS-232 cable. If the target system uses DB25 connectors, DB9 to DB25 adaptors will be required.

This arrangement allows DataBoy to monitor the RS-232 signals while the two devices are connected to each other.

Startup

Turn on the power switch on the Game Boy console. After going through the standard Game Boy power-on sequence, the DataBoy Startup screen will appear, as shown in Figure 2. This screen identifies the product and displays the software version number. The Startup screen is displayed for five seconds, but if a key is pressed it will persist until the key is released. Pressing and releasing a key will terminate the five-second delay. The Main Menu page is displayed after the Startup screen.

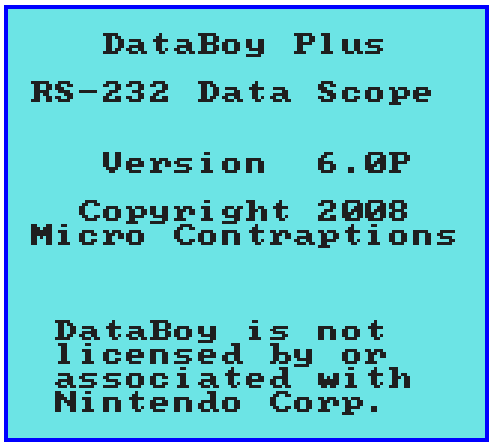

Figure 2. Startup screen

Main Menu

The Main Menu comes up after the Startup screen and contains a list of options, as shown in Figure 3. Use the Up/Down arrow keys to move the cursor to the desired option and then press the Right arrow to invoke that option. Use the Left arrow key to exit the option and return to the Main Menu.

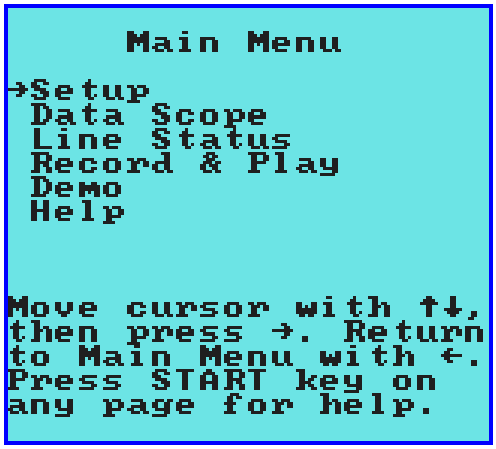

Figure 3. Main Menu

Help Screens

DataBoy has a number of help screens that explain how to use the instrument. Select Help from the Main Menu, and then use the Up/Down arrows keys to view various help screens. Use the Left arrow key to exit help and return to the Main Menu. Subsequent selection of help from the menu will bring up the most recently viewed help screen.

Context-sensitive help is also available on most screens by pressing the START key. This will bring up the help screen that is most relevant to the current page.

Setup Page

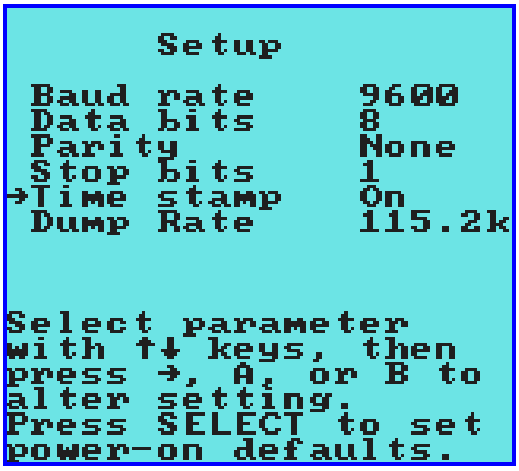

Figure 4. Setup page

The Setup Page is used to set the following parameters:

- **Baud rate.** This is the baud rate used in the Data Scope page and the Transmit page. The options are: 110, 150, 300, 600, 1200, 2400, 4800, 9600, 14.4 k, 19.2 k, 28.8 k, 38.4 k, 57.6 k, 115.2 k.
- **Data bits.** This is the number of bits per data character. The options are: 5, 6, 7, 8.
- **Parity.** The options are: None, Even, Odd, Mark, Space, A/D. A/D activates the multi-drop mode and is available only on DataBoy Plus.
- **Stop bits.** This is the number of stop bits added to each character. The options are: 1, 2.
- **Time stamp.** The options are: Off, On. Time-stamps are available only on DataBoy Plus.
- **Dump rate.** This is the baud rate used for dumping captured data via the serial port. The options are the same as for the Baud rate selection (above).

Move the cursor with the Up/Down arrow keys to select a parameter, then change the setting for that parameter using the A, B, or the Right arrow key.

Each time DataBoy is powered on, these parameters are set to default settings that are stored in non-volatile flash memory on the cartridge. The initial factory default settings are 9600 baud, 8 data bits, no parity, 1 stop bit, no time-stamps, Dump rate = 9600. These default settings can be modified by pressing the SELECT key in the Setup Page. This gives the user the option to set the power-on defaults to the settings currently selected in the Setup Page.

Data Scope (Live mode)

Use Data Scope to capture and display data traffic on the RXD and TXD lines. Follow these steps:

- Set the serial communication parameters from the Setup Page.
- Connect DataBoy to the target system using the RS-232 cable, as described in Target System Hookup.
- Put the RXD and TXD DIP switches in the OFF position. Usually the remaining switches are also turned off unless there is a need to assert an active high level on one of the RS-232 handshaking signals. This is discussed in the section on DIP switches.

While in this page, DataBoy continuously monitors the RXD and TXD lines and whenever it reads a character, it saves the character in a circular storage buffer and also displays it on the screen. The storage buffer can hold a maximum of 3880 characters with time-stamps disabled, 1940 with timestamps enabled. The screen consists of 16 rows of 20 characters each, with alternate rows assigned to RXD and TXD data. RXD data are displayed in black, TXD data are displayed in blue, as shown in Figures 5 and 6. Characters are displayed from left to right in the order in which they are received. The last character displayed on the screen is followed by a black rectangular cursor. When the cursor reaches the lower right corner of the screen, it will wrap to the upper left corner and previously displayed characters will be overwritten.

Figure 5. Live Data Scope page in ASCII display mode.

Figure 6. Live Data Scope page in Hexadecimal display mode.

The line at the bottom of the screen shows two prompts indicating what action will take place if the 'A' or 'B' keys are pressed. Press 'B' to toggle the display mode between ASCII and hexadecimal. Figures 5 and 6 show ASCII and hexadecimal views of the same data. The ASCII mode uses the extended IBM character set. Press 'A' to stop data acquisition and enter Freeze mode. Return from Freeze mode by pressing 'A' again. Press 'A' twice to clear the screen and the buffer. Press Left arrow in Live mode to return to the Main Menu.
Note: In Live Data Scope, pressing the START key for Help will discard all captured data.

Error Indicators

While acquiring data in Live Data Scope, DataBoy may detect a number of error conditions on either the RXD or TXD line. If an error is detected, a red error code is displayed at the bottom of the screen, as shown in Figure 7. These error codes are described below.

Figure 7. Error Indicators

B A break condition has been detected.
F A framing error has been detected.
P A parity error has been detected.
O A data overrun has occurred. This is actually not an indication of a line error, but rather a failure on the part of DataBoy to keep up with data traffic, resulting in the loss of one or more characters. This condition might occur when switching between ASCII and Hex display modes while there is RXD or TXD data traffic. The reason is that DataBoy is not able to continue monitoring the data lines while it is busy switching display modes.

Note that in live mode the error codes do not reveal whether a fault occurred on RXD or TXD, or identify individual faulty characters. More detailed information about error codes can be viewed in Freeze mode or in a detailed data dump (see Figure 13). The error indicators are cleared when leaving the Data Scope page.

Data Scope (Freeze mode)

As mentioned in the previous section, pressing the 'A' key in Live Data Scope halts data acquisition and initiates Freeze mode. Upon entering Freeze, DataBoy repaints the screen with the most recent data and places the cursor at the last character, as shown in Figure 8. The arrow keys can be used to reposition the cursor on any character in the buffer. As the cursor is moved, the following information is displayed in red at the bottom of the screen, as shown in Figures 8 and 9.

- The number of characters from the start of the buffer to the cursor location. In Figure 8 the cursor is on the last character in the buffer which is number 680. In Figure 9, the cursor is on character number 617.
- The location of the cursor as a percentage of the total captured data. In Figure 8 this is 100%, in Figure 9 it is 90%.
- If enabled on the Setup Page, the time-stamp of the character at the cursor is displayed, in milliseconds, relative to the first character in the buffer. In Figures 8 and 9 the time-stamps are 1133ms and 1036ms, respectively. Note that time-stamps are available only on DataBoy Plus.
- The hexadecimal value of the character at the cursor. In Figures 8 and 9 these values are 73 and 02, respectively.
- The ASCII representation of the character at the cursor. In Figure 8 the cursor is on a lower-case 's'. In Figure 9 it is on an STX control code.
- If any errors are associated with the character at the cursor, the corresponding error code(s) will be displayed, as described in the section on Error Indicators. In Figure 9 the character at the cursor (STX) has a parity error (P).

Figure 8. Freeze mode

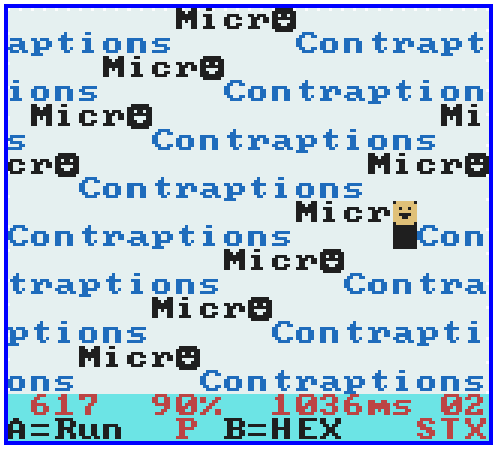

Figure 9. Freeze mode

Off-screen data can be viewed by scrolling the screen using the up/down arrow keys. Scrolling occurs when the cursor reaches the top or bottom row of data, as in a text editor.

As in Live Data Scope, pressing the 'B' key toggles the display mode between ASCII and hexadecimal. Pressing the 'A' key will discard all captured data and return to Live mode. Note that there is no way to go directly to the Main Menu from Freeze mode; this is accomplished by first going to Live mode, then back to the Menu.

Uploading Captured Data to a PC (Data Dump)

Using the Data Dump feature, DataBoy can transfer captured data to a PC (via serial port) for permanent storage, printing, analysis, etc. The procedure is as follows:

- On the Setup Page set the **Dump rate** parameter. This the baud rate used for Data Dump. Note: for Data Dump, Data bits, Parity, and Stop bits are always set to 8, N, 1.
- Connect DataBoy to the target system, capture data in Live Data Scope, and then activate Freeze mode by pressing the 'A' key.
- Disconnect the RS-232 cable from the target system and connect to a serial comm port on a PC. Use a DB9 to DB25 adaptor if the comm port has a DB25 connector.
- Put the DataBoy RXD DIP switch in the ON position. All other switches should be OFF.
- On the PC, run a terminal emulation program such as Hyper Terminal or PROCOMM, and set the comm port parameters to Dump rate, 8 bits, no parity, 1 stop bit. Dump rate is selected on the Setup Page. This discussion assumes the user is using Hyper Terminal.
- Activate data capture in Hyper Terminal by selecting "Capture Text" from the Transfer menu and specify a file name for saving the data.
- On DataBoy, press the SELECT key while in Freeze mode. This brings up the Freeze Options menu, shown in Figure 10.
- Select one of the data dump options:
  - **Screen dump** will transmit only the data shown on the screen (prior to pressing SELECT key). Data will be sent in the current display mode (ASCII or Hex). See Figures 11 and 12.
  - **Buffer dump** will transmit all data saved in DataBoy's capture buffer. Data will be sent in the current display mode (ASCII or Hex). See Figures 11 and 12.
  - **Detail screen dump** will transmit data displayed on the screen in a detailed format that includes error indicators and timestamp for each character. See Figure 13.
  - **Detail buffer dump** is a detailed dump of all data in the capture buffer.

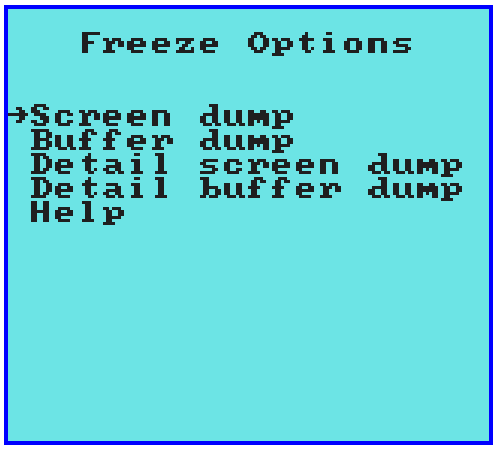

Figure 10. Freeze Options Menu

- DataBoy will begin transmitting data to the PC and will display "**Data Dump in progress..**" on the screen.
- At the end of transmission, DataBoy will display "**Data Dump complete"**. At this point the RS-232 cable can be re-connected to the target system to capture additional data, which can be uploaded to the PC as described above.
- When all uploads are complete, Hyper Terminal can be taken out of the capture mode. At this point all uploaded data will have been saved in the user-specified file.

DataBoy will transmit data as text, formatted according to the selected data dump option. Hyper Terminal will receive and display the data on the PC screen.

If **Screen dump** or **Buffer dump** is selected, each row of data is preceded with an "RXD" or "TXD" tag to identify which channel it came from. See figures 11 and 12. If data is captured in multi-drop mode and dumped in hexadecimal format, characters that have the address indicator bit (parity bit) set to '1' will be preceded by an angle bracket (>). See figure 12.

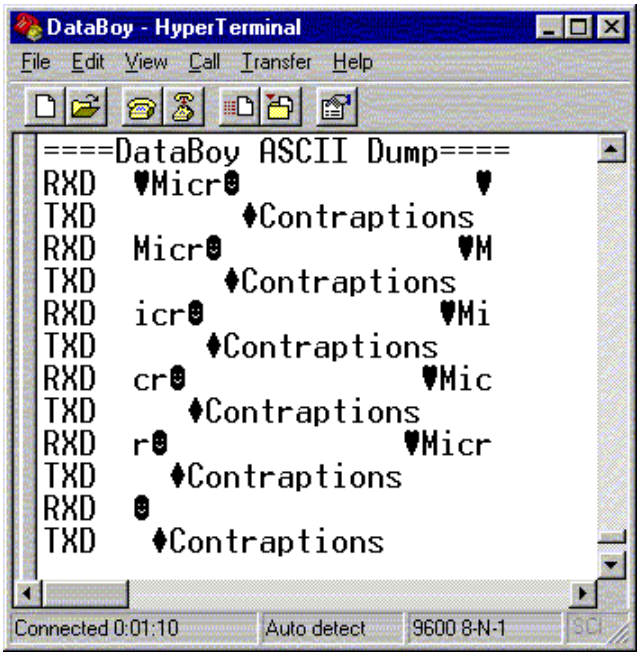

Figure 11. Screen dump in ASCII format.

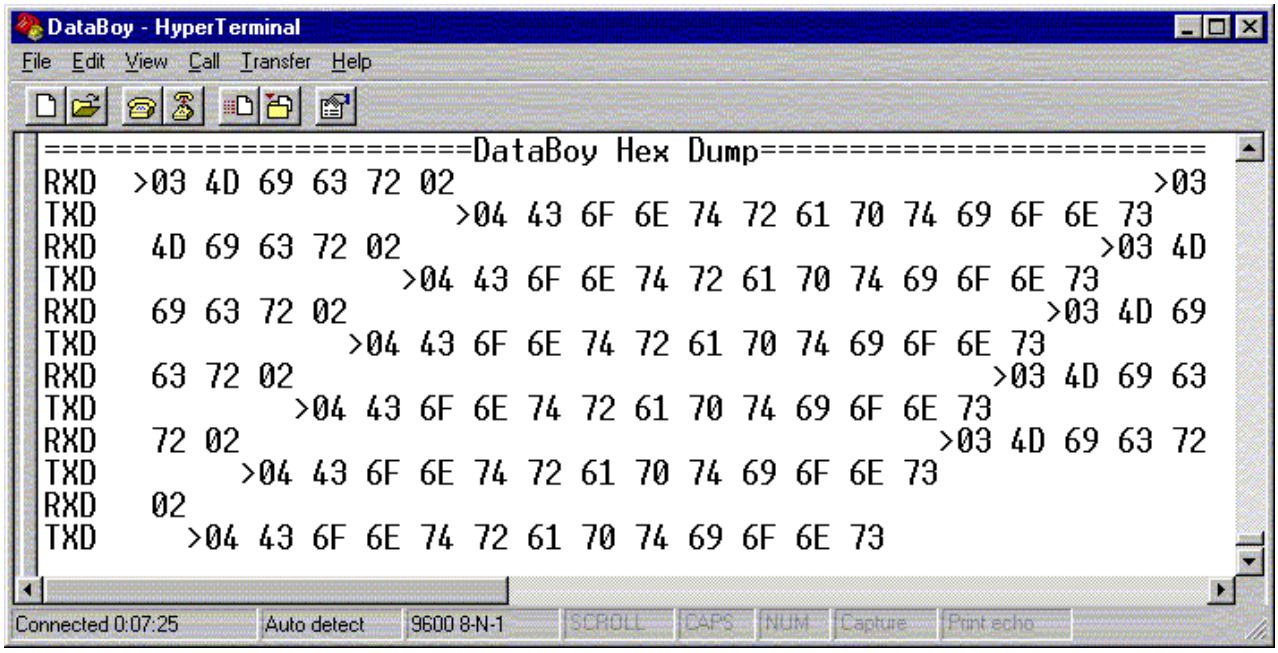

Figure 12. Screen dump of Figure 11 in hexadecimal format. Characters proceeded by '>' have the address indicator bit set (in multi-drop mode, this is the parity bit, or 9th bit).

Figure 13 shows a **Detailed screen dump**. Each line of text is a record containing information related to one captured character. Each record contains the following fields:

- The first field (N=) contains the record number. This is the relative position of the character within the data buffer.
- The second field indicates which channel the character came from (RXD or TXD).
- The third field contains the ASCII representation of the character.
- The fourth field contains the hexadecimal code for the character. If data is captured in multi-drop mode and the address indicator bit (parity bit) is set to '1', the hexadecimal code will be preceded by an angle bracket (>).
- The fifth field (E=) lists four possible error codes (Break, Framing, Parity, Overrun), as described in the section on Error Indicators. Error codes will appear in the BFPO order. A dash indicates that a particular error code is not present. In the example of figure 13, the second character (N=00002) has a framing error (F).
- The last field (T=) gives the time-stamp (if time-stamps are enabled). Time-stamps are given in milliseconds relative to the first character in the buffer (N=00001).

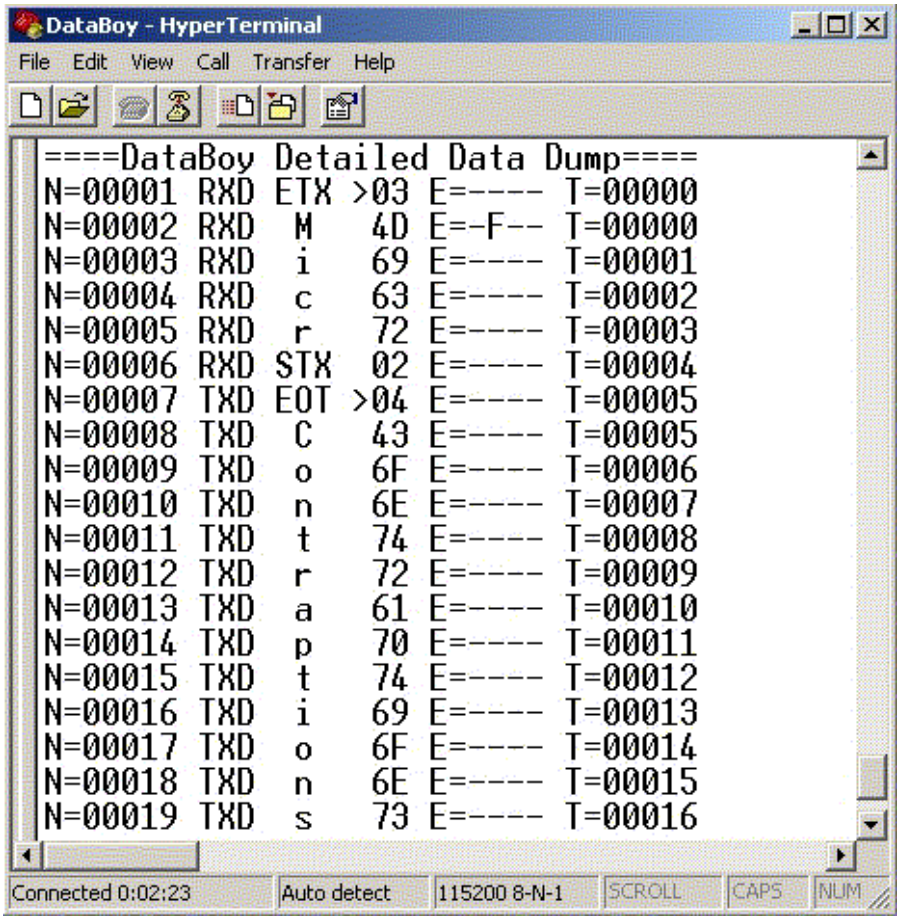

Figure 13. Detailed screen dump.

To perform a trial Data dump, select Demo from the Main Menu, "capture" some demo data, then press 'A' to freeze. Then follow the steps listed above.

Printing Captured Data

There are three ways of printing captured data:

1. Upload data to a PC and save to a file, as described in the previous section, then print the file.
2. Configure Hyper Terminal to send data directly to a printer by selecting "Capture to Printer" in the Transfer menu. Upload data as described above, Hyper Terminal will print the data. If the printer is a line printer (such as a dot matrix), each line will be printed as the printer receives it. If the printer is a page printer (such as a laser printer), printing will occur only when a page is full, or when "Capture to Printer" is disabled in the Transfer menu.
3. Connect DataBoy to a serial printer, instead of a PC. Configure the serial printer for Dump rate, 8 bits, no parity, 1 stop bit. Dump rate is selected on the Setup Page. Use the Data Upload procedures to send data directly to the printer.

As with Data Upload, the Demo page can be used to perform a trial printout using any of the three methods listed above.

Time-stamps

In live Data Scope, DataBoy Plus can record a 16-bit time-stamp with each captured character. Time-stamps can be viewed only in Freeze mode, as shown in Figures 8 and 9. The oldest character in the buffer will have a time-stamp of zero; subsequent time-stamps will be positive, displayed with a resolution of one millisecond and accurate to approximately one millisecond. Time-stamps are derived from a 16-bit, free-running counter clocked at 2.048 kHz. This counter (and the derived time-stamps) will overflow and wrap after 32 seconds.

Time-stamps are enabled on the Setup Page. Enabling time-stamps has two adverse side effects. First, the buffer storage capacity is reduced in half. Second, power consumption in live Data Scope page increases by about 60%. It is therefore advisable to disable time-stamps when not being used.

Multi-drop mode (9-bit protocol)

Figure 14. Live Data Scope with hex display in multi-drop mode

DataBoy Plus supports a multi-drop mode, also called a 9-bit protocol. This mode is used in systems where a master is connected to several slave devices on a common serial bus. Packets of data sent by the master are designated for a particular slave by the inclusion of an address character at the start of each packet. An additional bit is appended to each character to distinguish between address and data characters (0=data, 1=address). In systems with 8-bit data bytes, this additional bit becomes the 9th bit; hence it is called the 9-bit protocol. The 9th bit is transmitted following the last data bit (in place of the parity bit), and is followed by the stop bit. The multi-drop mode is selected on the Setup Page by setting parity to A/D. For the 9-bit protocol, the number of data bits should be set to 8. In Data Scope, characters that have the A/D indicator bit set to '1' are highlighted in green, as shown in Figure 14.

An example of this type of system is the SAS protocol used in the gaming industry. Another example is SeaTalk, a protocol used by Raymarine for interconnecting instruments on a ship.

However, in SeaTalk, the 9th bit is called the “command” bit. The multi-drop mode in DataBoy is compatible with both of these protocols.

Note 1: Multi-drop systems do not usually use an RS-232 bus, so in most situations a hardware adaptor will be required to connect DataBoy to such a system.

Note 2: In multi-drop mode, whenever Data Scope or Demo is selected from the menu, the display mode will default to hexadecimal. This can be overridden by pressing the ‘B’ key.

Line Status Page

This page has six simulated LED indicators that change color to show the live state of the RS-232 signal lines. Green indicates the line is high, red indicates the line is low. See Figure 15. The indicators are updated 10 times per second.

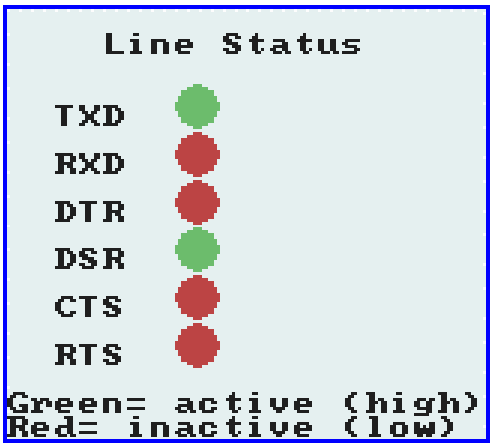

Figure 15. Line Status Page

Transmit Page

In older versions of software, this page was used to transmit a “canned” test message to a receiving device, such as a PC. In software version 6.0 this page has been replaced by “Record and Play”.

Record and Play

This page is used to record serial data into flash memory and to transmit the recorded data at a later time. This feature can be used to send recorded commands or message strings to a unit under test or development. The Record feature is only available on DataBoy Plus. Standard DataBoy cannot record data, but it can transmit a single, pre-recorded, fixed test message designated as File 0.

This page contains eight software switches (see Figure 16). Navigate the screen by moving the cursor with the Up/Down Arrow keys. Change switch selections with the Right Arrow key.

Note: Prior to entering this page, use the Setup Page to set the serial communication parameters.

A. Configuring flash memory

A total of 24 KBytes of flash memory is available for recording data. By setting the *Num files* switch, this memory can be configured into 1, 2, 3, or 6 files:

- 1 file of 24 KB
- 2 files of 12 KB each
- 3 files of 8 KB each
- 6 files of 4 KB each

In the example of Figure 16 (below), the flash has been divided into 6 files of 4KB each.

Note: Changing the number of files will cause all recorded data to be erased. A warning message will be displayed if the user attempts to change *Num files*.

B. Recording data

- Turn off the RXD and TXD DIP switches on the DataBoy cartridge.
- Using the RS-232 cable, connect DataBoy to a transmitting device, as described in Target System Hookup.
- Select a file (1-N) using the *File select* switch.
- Use the *Channel* switch to select RXD or TXD as the input channel. RXD is selected in Figure 16.
- Turn on the *Record* switch. A warning message will be displayed that all data in the selected file will be erased. Press the 'B' key to continue.

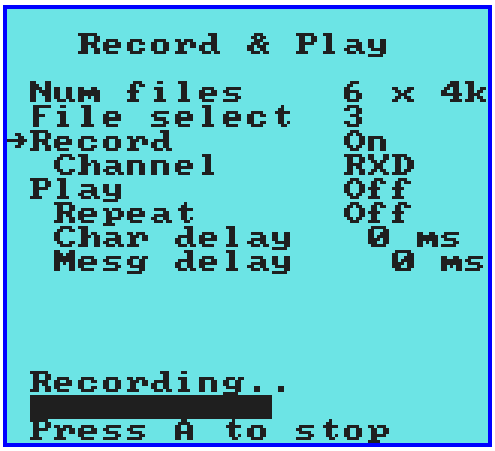

Figure 16. Recording data

At this point DataBoy will begin monitoring the selected serial channel and will record received data into memory. A horizontal progress bar near the bottom of the screen will indicate how much data has been recorded. In Figure 16 the progress bar indicates that File 3 is slightly more than half full. Recording will stop when the file is full or the user presses the 'A' key.

C. Playing back recorded data

- Using the RS-232 cable, connect DataBoy to a receiving device.
- Turn on the RXD or TXD DIP switch on the DataBoy cartridge. This will connect DataBoy's RS-232 driver to the line selected by the DIP switch.
- Select a file (0-N) using the *File select* switch. The character count in the selected file will be displayed at the bottom of the screen. Note: File 0 contains a pre-recorded test message that reads: "This is a test.".
- Set the *Repeat* switch (Off/On). "Off" will cause the file to be transmitted once. "On" will transmit the file repeatedly until the 'A' key is pressed.
- Set the *Char delay* switch (0-10 ms). This is the idle time between transmission of consecutive characters.

Figure 17. Playing back data

- Set the *Mesg delay* switch (0, 1, 2, 4, 8,16, 32, 64, 128 ms). This is the idle time between the end of a message and the start of the next message. This parameter applies only to the multi-drop mode (Parity=A/D), where the start of a message is indicated by a character with the parity bit set. *Mesg delay* is ignored if multi-drop mode is not active.
- Turn on the *Play* switch.

At this point DataBoy will begin transmitting characters from the selected file. As data is transmitted, the progress bar near the bottom of the screen will be updated. Pressing the 'A' key will terminate transmission.

If multi-drop mode is enabled, any characters recorded with the A/D bit (parity bit) set, will be transmitted with the parity bit set. Thus, the 9th bit in a 9-bit protocol is preserved.

Demo Page

This page demonstrates how the Data Scope operates in both Live and Freeze modes. Upon entry, Demo Page simulates Live Data Scope with the strings "Micro" [Note] and "Contraptions" repeatedly appearing on the RXD and TXD lines, as if DataBoy is monitoring communications between two devices that are exchanging these two strings. See Figures 5 and 6. Pressing the 'B' key toggles between ASCII and Hex display modes, the 'A' key enters Freeze mode, as in the Data Scope page.

If multi-drop mode is enabled, the strings "Micro" and "Contraptions" are preceded by an address byte of 03 and 04, respectively. This demonstrates how address bytes are highlighted, as shown in Figure 14.

The Demo page was originally created to help in program development, but it turned out to be useful for other purposes as well, so it was left in the final product. All Data Scope screen shots in this manual have been made using the Demo page.

DIP Switches

DataBoy has six switches that are connected to the RS-232 lines, as indicated in Table 1. These switches are used in the following ways:

- Switches 1 and 2 are used in the Record and Play Page to transmit data on the TXD and RXD lines. Placing these switches in the ON position will connect the corresponding line to the output of the RS-232 transmitter on the cartridge.
- Turning ON switches 3 through 6 will assert an active high RS-232 level on the corresponding line. When these switches are OFF, DataBoy does not drive the corresponding lines. DataBoy cannot assert an active low RS-232 level on these lines.

Caution: Before turning on any of these switches, the user should make sure the corresponding line is not being driven by another device connected to the RS-232 cable.

Switch No.	Signal
1	TXD
2	RXD
3	DTR
4	DSR
5	CTS
6	RTS

Table 1. Switch assignments

Connector Pinouts

One end of the RS-232 cable has a 10-pin IDC connector that plugs into the DataBoy cartridge. The other end of the cable has a pair of male and female DB9 connectors for hooking up to the target system. DB9 connectors are standard on many serial devices, but some devices use DB25 connectors, in which case a DB9 to DB25 adaptor is required. Table 2 shows the pin connections between the different connectors. The I/O column shows the signal direction relative to a DTE device. DataBoy does not use DCD and RI.

Signal	IDC-10	DB9	DB25	I/O
DCD	1	1	8	Input
DSR	2	6	6	Input
RXD	3	2	3	Input
RTS	4	7	4	Output
TXD	5	3	2	Output
CTS	6	8	5	Input
DTR	7	4	20	Output
RI	8	9	22	Input
GND	9	5	7	
-	10	-	-	-

Table 2. Connector pinouts

Game Boy Advance vs. Game Boy Color

DataBoy is designed to run on a Game Boy Color, Game Boy Advance, or Game Boy Advance SP console. Some users have asked if there is any advantage in using GBA vs. GBC. As far as DataBoy is concerned, the only advantage in using GBA is that it has a wider screen. However, since DataBoy runs in GBC compatibility mode, it cannot use the wider GBA screen to display more content, but pressing the L button will stretch the GBC image to fit the wider GBA screen. The R button will unstretch the image. The L and R buttons exist on the GBA but not on the GBC. Table 3 shows the screen resolution and size for GBA and GBC. The size and resolution of the GBA SP screen is the same as GBA.

Model	Display Mode	Screen Resolution W x H (pixels)	Screen Size W x H (mm)	Notes
GBA	Native GBA	240 x 160	61.2 x 40.8	Unavailable for DataBoy
GBA	GBC compatibility - stretched	160 x 144	61.2 x 36.7	Press L button
GBA	GBC compatibility - unstretched	160 x 144	40.8 x 36.7	Press L button
GBC		160 x 144	43 x 38	

Table 3. Resolution and size of GBA and GBC display screens.

GBC also has some advantages over GBA. GBC consumes less than half as much power as GBA, resulting in substantially longer battery life. GBA SP offers the advantage of a rechargeable battery and an illuminated screen.

DataBoy will also run on a Game Boy Classic or Game Boy Pocket, but due to the limited graphics capability of these monochrome models, not all screens will be displayed properly. Furthermore, these early models have a slower CPU, resulting in possible loss of data under some circumstances. It is not recommended to run DataBoy on a Game Boy Classic or Game Boy Pocket. DataBoy will not run on Game Boy Micro or Nintendo DS.

Software Upgrade

DataBoy software resides in a programmable flash memory on the cartridge. Software versions 2.0 and above can be upgraded in the field by running an installer program on a PC connected to DataBoy via the RS-232 cable. The installer downloads the new software to DataBoy via serial comm port. The installer program, along with instructions, will be sent by email.

Contact Information

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