BLE DATA LOGGER

USER MANUAL

Biomark

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Document History

Release Date	Doc Revision	Firmware Version	Comments
July, 2016	1	1.1.1	Original release of this manual.
February, 2017	2	1.3.0	Revised BLE Data Logger Commands and Updating Attached Reader Firmware sections; added ASCII Protocol and Message Types and Formats sections.
August, 2017	3	1.4.0	Updated the pictures and description to match BLE Data Logger PCB Rev. A.
May, 2018	4	1.6.0	Added RM310 Reader Idling Time command. Added support for FS1001A Transceiver and RAT command to set attached reader type. Added RSD command to periodically request status report from FS1001A.
June, 2019	5	1.7.0	Updated logger's memory capacity. Added Unique Mode and Unique Delay options for RM310 reader. Added option not to store Virtual Test Tag IDs received from IS1001 or FS1001A reader. Added Local Communication Port Transfer Rate setting. Added command to reset logger's parameters to default values.
July, 2020	6	1.7.2	Updated functionalities and list of commands to include changes from firmware v1.7.1 and v1.7.2 releases.
April, 2021	7	1.8.1	Updated functionalities and list of commands to include changes from firmware v1.8.0 and v1.8.1 releases.

READ THROUGH THIS ENTIRE MANUAL BEFORE INSTALLING AND OPERATING IS1001 BLE DATA LOGGER. FOLLOW ALL STEPS EXACTLY. USING THE IS1001 BLE DATA LOGGER IN A MANNER FOR WHICH IT WAS NOT DESIGNED MAY IMPAIR THE SAFETY FEATURES BUILT IN BY THE MANUFACTURER.

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Description

The BLE (Bluetooth Low Energy) Data Logger is a data storing accessory device intended for use with IS1001, RM310/Aleis, FS1001A, ASR650 or IMPINJ R420 readers. The BLE Data Logger stores tag IDs and diagnostics data it receives from the attached reader to its internal flash memory.

The BLE Data Logger incorporates a Real Time Clock and uses it to assign time/date stamp to each tag ID it receives and stores. The incorporated capacitor keeps the clock powered when the logger's power is off.

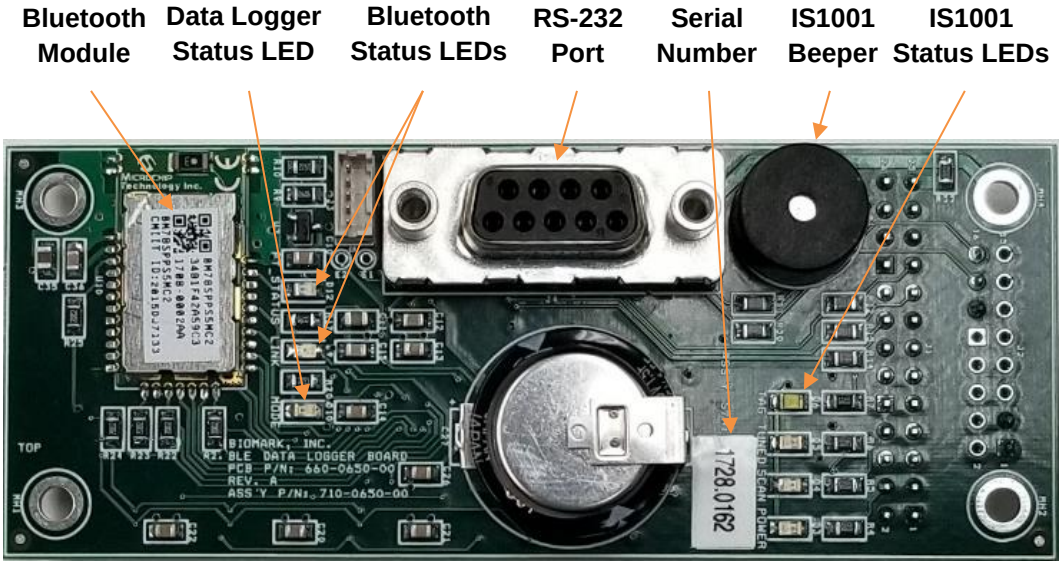
The BLE Data Logger also stores short versions of the attached IS1001, Aleis, FS1001A, ASR650 or IMPINJ R420 readers status reports (status reports are not available for an RM310 reader). Refer to the specific reader's User Manual for detailed description of its status report structure.

The BLE Data Logger can store up to **1,024,000 tag IDs** (with signal level and temperature measurements, when applicable) and **55,296 status reports**. The data is written into memory in First-In-First-Out (FIFO) manner: if the memory becomes full, the block of oldest records is erased to make room for the new ones.

The BLE Data Logger also has an option to transmit received tag IDs in real-time via its communication ports. The logger offers two ways of communication with a PC:

- Wired connection: RS-232 serial interface.
- Wireless connection: Bluetooth interface.

The BLE Data Logger's stored data can be downloaded via either of the communication ports. These communication ports can also be used to establish a direct connection with the attached reader to configure it or to update its firmware.



- **Data Logger Status LEDs:** indicate status of the BLE Data Logger:
  - Green "POWER" LED: indicates that power has been applied to the BLE Data Logger.
  - Yellow "MODE" LED: indicates bootloader mode code or error code:
    - Flashing once – bootloader has been entered for firmware update using BioTerm.

  - Flashing twice – bootloader has not found a valid firmware, waiting for re-programming via RS-232 port.
  - Flashing three times – bootloader has detected firmware checksum error, waiting for re-programming via RS-232 port.
  - Flashing four times – serial number has not been assigned. Bootloader is waiting for a serial number to be assigned via RS-232 port. Cannot proceed to Bluetooth initialization without a serial number assigned.
  - Flashing five times – unable to initialize Bluetooth module.

- **Serial Number:** Used to identify each specific BLE Data Logger.
- **RS-232 Port:** This port has two purposes:
  - Can be used to connect the BLE Data Logger to a local or remote computer to download the data that is stored in its internal flash memory or to collect the received tag IDs transmitted in real-time.
  - Can be configured to act as a communication port of the attached IS1001, RM310/Aleis, FS1001A, ASR650 or IMPINJ R420 reader. This enables monitoring and configuring of the reader from either a local or remote computer.

  By default, the RS-232 port is set as the BLE Data Logger communication port.
- **Bluetooth Module:** Enables Bluetooth wireless connection with the BLE Data Logger. This connection has the same purposes and operates the same way as the RS-232 port.
- **Bluetooth Status LEDs:** Indicate the status of the Bluetooth connection.
  - Blue “LINK” LED:
    - Flashing slowly – ready to connect.
    - Steady on – connection established.
    - Flashing rapidly – data being transmitted or received.
  - Yellow “BT_STATUS” LED:
    - Flashing once – ready to connect.
    - Flashing twice – connection established.
    - Steady on – configuration mode (CPU enters this mode for a short time after restart).
- **IS1001 Status LEDs and Beeper:** Indicate operational status of the attached IS1001 reader (applicable ONLY when BLE Data Logger is attached to an IS1001 reader).

Collecting Data from BLE Data Logger

Stored data can be collected from the BLE Data Logger's internal flash memory in two ways:

- Establishing the RS-232 port connection and downloading data to a PC.
- Establishing the Bluetooth connection and downloading data to a PC.

ASCII Protocol

ASCII protocol is used for communication between a BLE Data Logger and a PC. ASCII (American Standard Code for Information Interchange) is a character-encoding scheme based on the ordering of the English alphabet. A string of 7 binary digits represents each character. This is the simplest communications protocol. It transmits only ASCII characters and uses ASCII control codes. It implies little or no error checking. This protocol is supported by the BioTerm and BioStat programs developed by Biomark and by most standard communications programs such as Terminal, HyperTerminal, Tera Term Pro, ProComm, PuTTY, etc.

Biomark recommends using BioTerm program to securely monitor, maintain, and update a BLE Data Logger. For more details refer to **BioTerm and BioStat User Manual** available at: https://www.biomark.com/bioterm#product.info.specifications.

The BioTerm program is available for download at: https://www.biomark.com/bioterm.

Message Types and Formats

To help sort the data, all messages have an identifier that delineates their type:

- MSG: Used to define an informational message
- ALM: Used to define an alarm or error message
- TAG: Used to define a tag ID message
- INF: Used to define the beginning or end of multi-line informational messages (such as reports, memory downloads, etc.)

MSG, ALM type messages have the following format:

<Identifier>: <Date> <Time> <Message Body>

TAG type messages have the following format:

<Identifier>: <Reader ID> <Date> <Time> <Message Body>

INF type messages contain multiple lines and have two lines with identifier delineating the beginning and the end of the message.

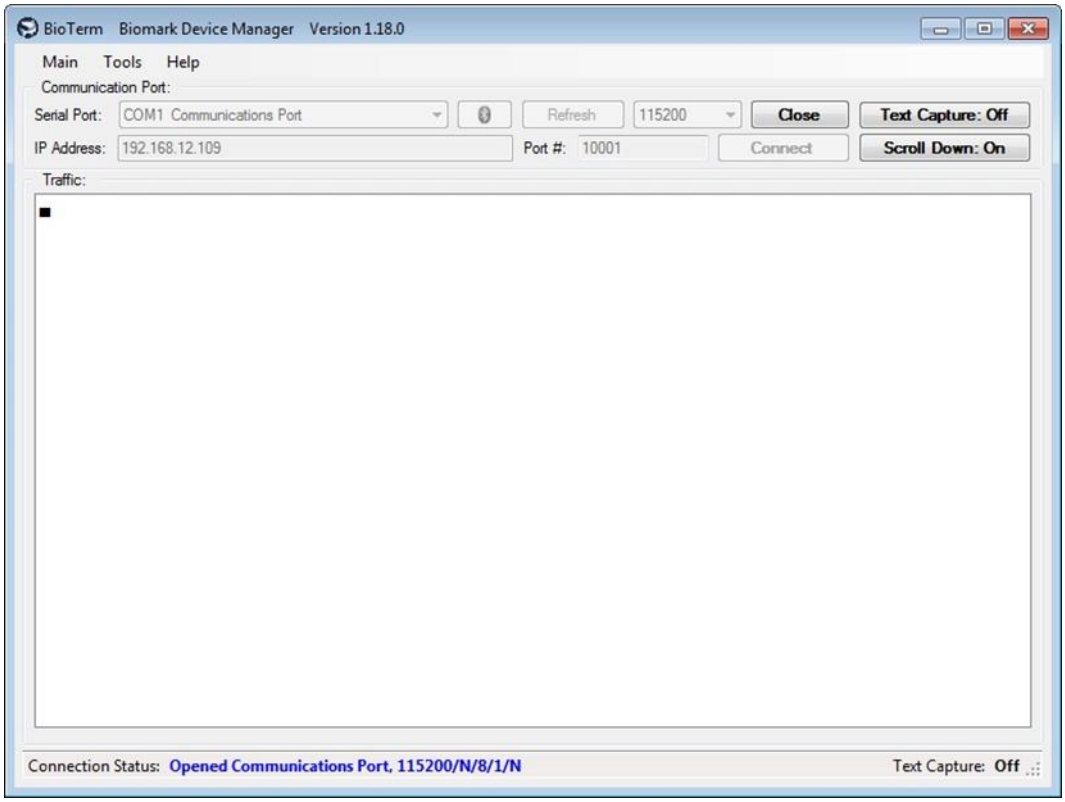
Note: An asterisk (*) at the beginning of a message indicates that the message is being sent as part of a memory download.

Establishing RS-232 Port connection and Downloading Data

Stored data can be downloaded from the internal flash memory using the RS-232 port connection:

1. Attach a DB-9 serial communication cable (male DB-9 connector; cable not supplied) to the RS-232 port of the BLE Data Logger.
2. Attach the other end of the cable (female DB-9 connector) to a PC.
3. Start the BioTerm communication program.

4. In the **Serial Port** box, make sure that **COMx** is selected (where x is the port number assigned to the computer's RS-232 port or to USB port that has USB-to-Serial adapter connected to).
5. In the **Baud Rate** box, make sure 115200 is specified.
6. Make a serial port connection to the BLE Data Logger by clicking on the **Open** button.



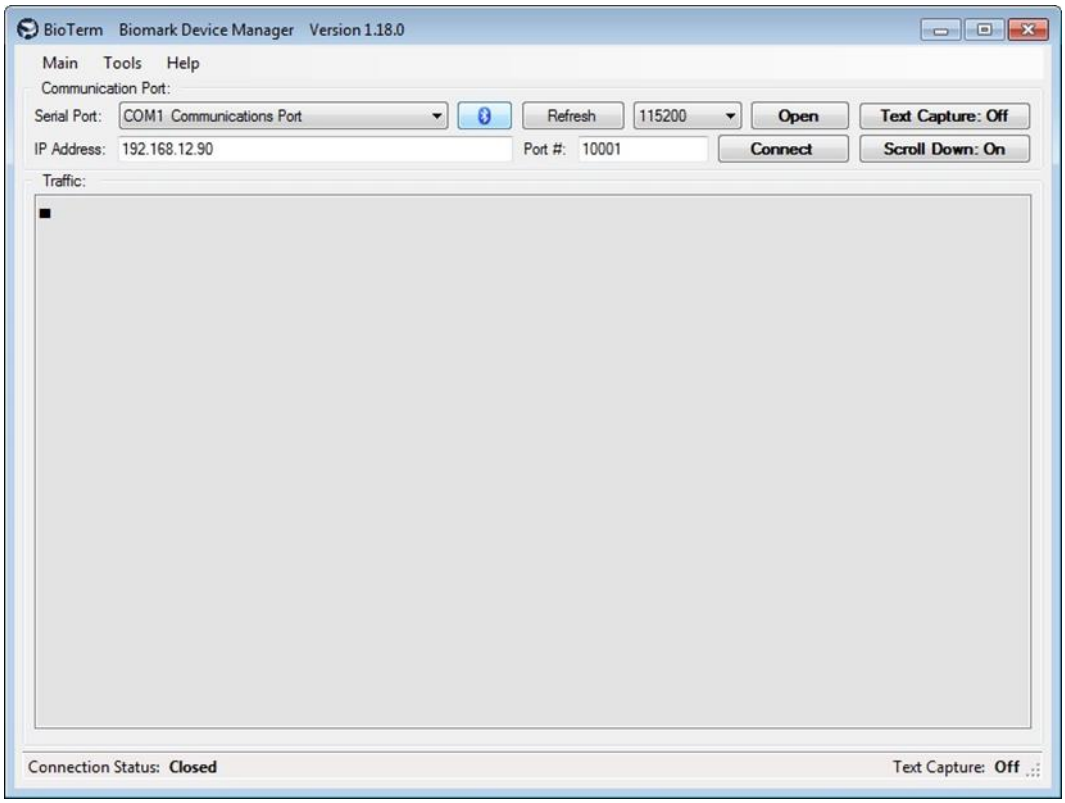
7. To verify the connection between the computer and the BLE Data Logger, within BioTerm **Traffic** window type **?** and then press **Enter**. A list of logger's available commands should be displayed.
8. To save the downloaded data in a text file, configure the BioTerm utility program to act as a data logger by selecting **Tools > Enable Capture** or by clicking on the **Capture On/Off** button.
9. Type the **MED** command and then press **Enter** to download the entire content of the memory.

   Note: The downloaded data will have a * symbol at the beginning of each line.

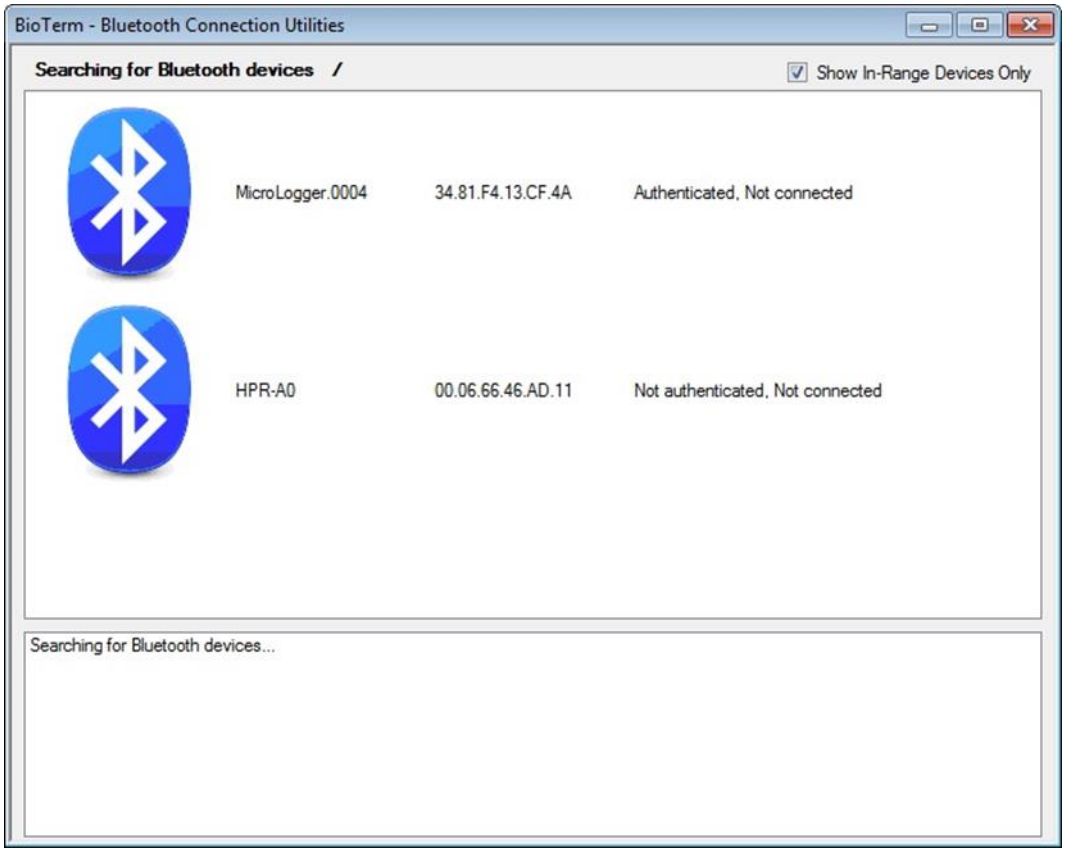
Establishing Bluetooth connection and Downloading Data

Stored data can be downloaded from the internal flash memory using the Bluetooth connection:

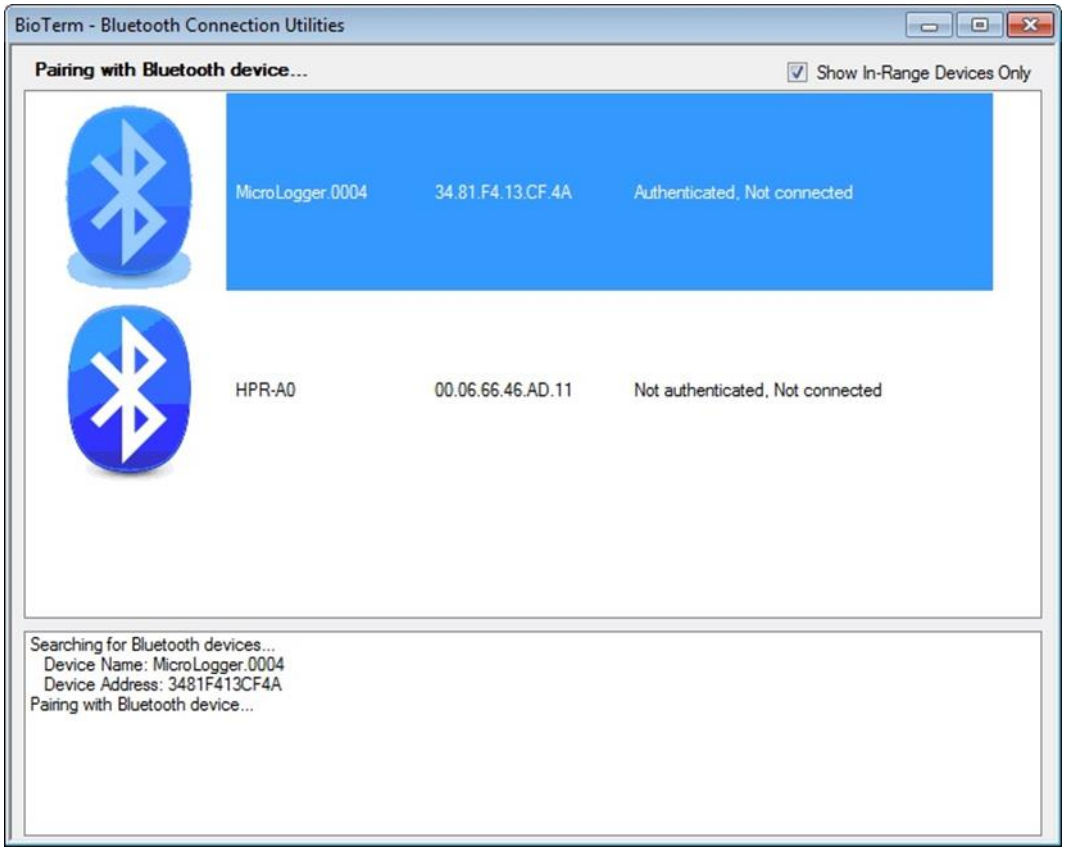
1. Start the BioTerm communication program.
2. Search for available devices by clicking on the **Bluetooth Devices** button within the main window of the BioTerm utility.

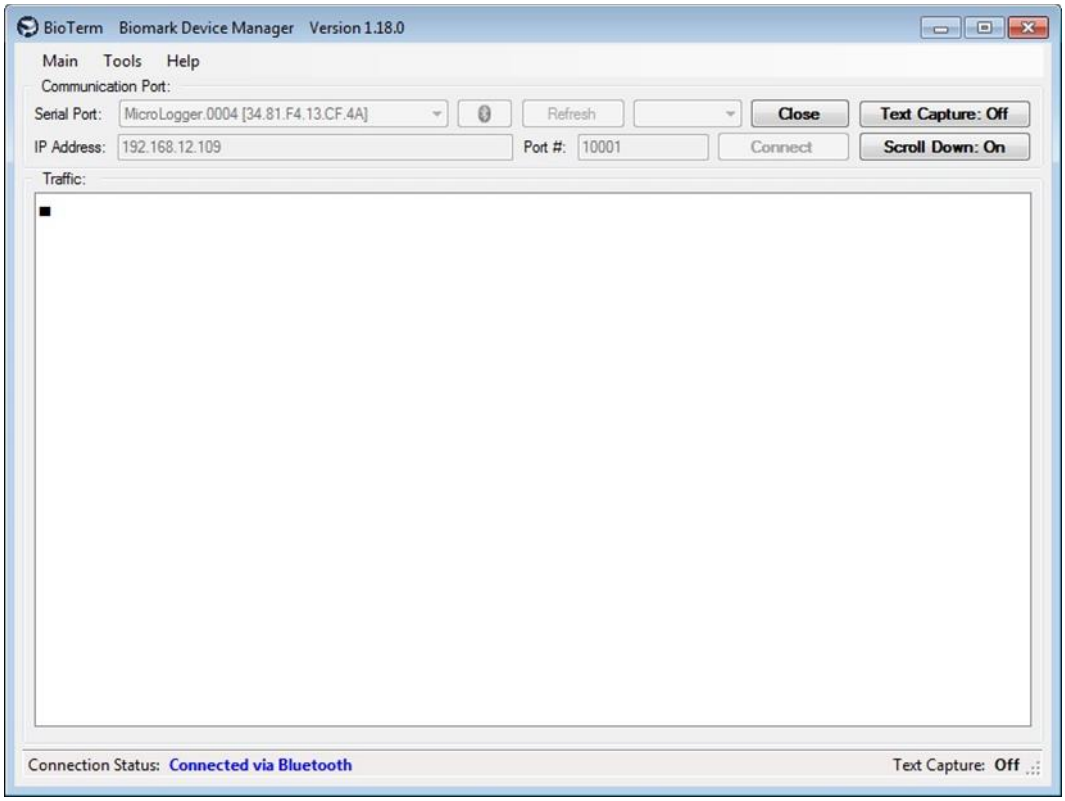


The window will open where all discoverable Bluetooth devices appear. It might take up to a minute for all the Bluetooth devices to appear in the list. The BLE Data Logger will appear in the list as "MicroLogger.XXXX" where XXXX is the logger's serial number.



3. Find the BLE Data Logger you want to connect to and double-click on it to establish the connection.





4. To verify the connection between the computer and the BLE Data Logger, within BioTerm **Traffic** window type **RFS** command and then press **Enter**. The logger's status report should be displayed next. Verify that that the connection is established with the intended device.
5. To save the downloaded data in a text file, configure the BioTerm utility program to act as a data logger by selecting **Tools > Enable Capture** or by clicking on the **Capture On/Off** button.
6. Type the **MED** command and then press **Enter** to download the entire content of the memory.

   Note: The downloaded data will have a ***** symbol at the beginning of each line.

Using Communication Port to Monitor and Configure Attached Reader

The BLE Data Logger's RS-232 port and Bluetooth connections can be configured to act as the attached reader's communication port.

1. Start the BioTerm communication program.
2. Make a connection to the BLE Data Logger using either RS-232 communication port or Bluetooth.
3. Enter the **CDC** command to configure the connection as the reader communication port.

   Note: There is no need to change communication speed to match the speed of the reader's communication port.
4. Use any of the reader's commands to manage it (refer to the appropriate reader's User Manual for the list of available commands and their description). Reader's firmware can be updated through this communication port also (IS1001 reader only).
5. To close the communication port connection with the attached reader, press and hold the **Ctrl** key and type **QUIT**.

   This will reconfigure the RS-232 port and Bluetooth connections to communicate only with the BLE Data Logger.

Important! Data **IS NOT** being written into BLE Data Logger's memory while the direct communication channel to the reader is open. Remember to close this communication channel after servicing the reader to prevent data loss. To prevent accidental data loss, the direct communication channel will close automatically in 60 minutes if left open. Resetting the power to BLE Data Logger will close the communication port connection with the attached reader.

Commands

The BLE Data Logger commands are made up of three or more characters followed by a carriage return, as illustrated in the following example:

CTL1↵

Generally, the first three letters designate the command group and the remaining letters/digits designate the command parameters. The commands are not case sensitive. The backspace key can be used to correct an improper command. The responses to the commands confirming the requested action or setting parameter change are sent to both communication ports.

The following table is a list of the available Data Logger Board commands:

Cmd	Format	Description
?		Print List of Commands Used to display the list of available commands.
Communication		
CDC		Open Direct Communication Channel to Reader Used to open the direct communication channel to the attached reader.
Ctrl+QUIT		Close Direct Communication Channel to Reader Used to close the direct communication channel to the attached reader.
CLR	{F|S}	Set Local Communication Port Transfer Rate {F} Full, {S} Slow Specifies the logger's communication ports transfer rate. Valid options are Full (up to 115 KB/sec) or Slow (1 KB/sec). Default is Full. Slow transfer rate option should be used whenever external communication hardware has limited data transfer capabilities.
CTL	{1|0}	Set Tags Communication to Local Port {1} On, {0} Off Specifies if received tag IDs are sent to the logger's communication ports. Valid options are On or Off. Default is Off.
Detection		
DUD	{1-43200}	Set Detection Unique Delay in Seconds Specifies the delay value for the RM310, ASR650 or IMPINJ R420 reader **Detection Unique Mode Delay** option. Valid values are 1 – 43200 seconds. Default is 60 seconds. **Note:** In order for **Detection Unique Delay** to take effect, **Detection Unique Mode** must be set to **Delay**. **Note:** The command is only applicable to tag IDs received from RM310, ASR650 or IMPINJ R420 reader and is only

		active when **Attached Reader Type** is set to **RM310**, **ASR650** or **IMPINJ R420**.
DUM	{5|1|0|D}	Set Detection Unique Mode {5} Last 5, {1} Last 1, {0} Off, {D} Delay Specifies how the tag ID is handled if it is received multiple times from RM310 or ASR650 reader. Valid values are: • **Last 5:** The newly received tag ID is stored in the logger's memory and is sent to the logger's communication ports (if this feature is enabled) **only** if it is different from the last five dissimilar tag IDs previously received from the RM310 or ASR650 reader. • **Last 1:** The newly received tag ID is stored in the logger's memory and is sent to the logger's communication ports (if this feature is enabled) **only** if it is different from the last tag ID previously received from the RM310 or ASR650 reader. • **Off:** All tag IDs received from the RM310 or ASR650 reader are stored in the logger's memory and are sent to the logger's communication ports (if this feature is enabled). This is the default value. • **Delay:** The newly received tag ID is stored in memory and is sent to the communication ports (if this feature is enabled) **only** if it is different from the last five dissimilar tag IDs previously received from the RM310 or ASR650 reader or if the specified number of seconds have passed since this tag ID was first received. Use the **DUD** (**Detection Unique Delay**) command to specify the delay value. **Note:** The command is only applicable to tag IDs received from RM310, ASR650 or IMPINJ R420 reader and is only active when **Attached Reader Type** is set to **RM310**, **ASR650** or **IMPINJ R420**.
Logger		
LDF	{H|D|N}	Set Logger Tag ID Display Format {H} Hexadecimal, {D} Decimal, {N} Numeric Specifies the format for storing and displaying received tag IDs. Valid values are Hexadecimal, Decimal or Numeric (Decimal without the delimiter). Default is Hexadecimal.
LDS	{MM/DD/YYYY}	Set Logger Date Sets the logger's real-time clock present date. The date is specified as mm/dd/yyyy. **Note:** When data logger's Date/Time settings are updated using "LDS"/"LTS" commands, Date/Time settings of the attached IS1001 reader get updated automatically also.

LOF	{S|F}	Set Logger Tag Record Display Format {S} Short (ID Only), {F} Full Specifies the tag record format for displaying received tag IDs. Valid values are Short (tag ID only), {F} Full (tag ID with reader ID and date and time stamp). Default is Full.
LPM		Switch To RM310 Programming Mode Switches the logger into RM310 programming mode. **Note:** To exit RM310 programming mode power to the logger must be reset. The logger will exit RM310 programming mode automatically in 10 minutes. **Note:** The command is only active when **Attached Reader Type** is set to **RM310**.
LTS	{HH:MM:SS}	Set Logger Time (24-hour) Sets the logger's real-time clock present time. The time is specified as hh:mm:ss (hours:minutes:seconds) in 24-hour format. **Note:** When data logger's Date/Time settings are updated using "LDS"/"LTS" commands, Date/Time settings of the attached IS1001 reader get updated automatically also.
RDP		Reset to Factory Default Parameters Replaces all BLE Data Logger present settings with the manufacturer default values. **Note: Attached Reader Type** present value will be preserved and will not be changed to default.
Memory		
MED		Download Entire Memory Initiates the download of all data contained in the logger's memory. The Esc key can be used to cancel the process. **Note:** The data will be sent only to the port from which the memory download was requested.
MEE		Erase Entire Memory Permanently erases all data contained in the logger's memory. The recommendation is to download the contents of memory to another computer or storage device before erasing memory.
MSD		Download Status Reports Memory Initiates the download of status reports data contained in the logger's memory. The Esc key can be used to cancel the process.

		Note: The data will be sent only to the port from which the memory download was requested. **Note:** Status reports are not available for RM310 reader.
MTD		Download Tags Memory Initiates the download of tags data contained in the logger's memory. The Esc key can be used to cancel the process. Note: The data will be sent only to the port from which the memory download was requested.
MVT	{1|0}	Store Virtual Test Tags To Memory {1} On, {0} Off Specifies if VTT IDs (3E7.xxxxxxxxxx/999.xxxxxxxxxxxx) will be stored in the logger's memory as they are received from IS1001 or FS1001A reader. Valid values are On or Off. Default is On. **Note:** The command is only applicable to VTT IDs received from IS1001 or FS1001A reader and is only active when **Attached Reader Type** is set to **IS1001** or **FS1001A**.
Reader		
RAT	{1-5}	Set Attached Reader Type {1} IS1001, {2} RM310, {3} FS1001A, {4} ASR650, {5} IMPINJ R420 Sets attached reader type: 1 – IS1001, 2 – RM310, 3 – FS1001A, 4 – ASR650, 5 – IMPINJ R420. Default is 1 (IS1001).
RIS	{01-FF}	Set Reader ID in HEX Sets the distinctive ID for the attached RM310 reader. The ID is a hexadecimal value in the range 01 – FF. Default is 01. **Note:** The command is only active when **Attached Reader Type** is set to **RM310**.
RIT	{0, 10-3600}	Set RM310 Reader Idling Time {0} Disabled, {10 - 3600} Seconds Enables switching RM310 reader into Read Mode periodically, according to the selected time interval. Valid values are 0 (disabled), 10 – 3600 seconds. Default is 0 (disabled). **Note:** RM310's **Read Mode** parameter must be set to **Requested** (I0020 command), so the reader returns to Standby mode after one scan cycle. This command is only applicable with RM310 firmware v3.36 and v3.49. **Note:** The command is only active when **Attached Reader Type** is set to **RM310**.
Reports		
RFS		Report Logger Status

		Used to generate the logger's status report.
RSD	{0-1440}	Set Automatic Reader Status Report Request Delay in Minutes Enables requesting status report periodically from the attached reader that does not have automatic status report sending functionality, specifically Alies, FS1001A or ASR650 reader, so that the short version of the received status reports is stored in the logger's memory. Default is 0 (disabled). **Note:** The command is only active when **Attached Reader Type** is set to **RM310**, **FS1001A** or **ASR650**. **Note:** IS1001 has automatic status report sending functionality that should be utilized for this purpose. RM310 does not provide status reports, so this command is applicable if Aleis reader is connected, not RM310.

Status Report

The BLE Data Logger status report contains its configuration settings information and the internal memory status. The report can be generated using the **RFS** command.

Status Message	Message Information
Logger	
S/N	Logger serial number (YYWW.XXXX)
Date	Logger date setting
Time	Logger time setting
Date/Time Correct	Specifies if logger date/time setting is correct or it has been lost and needs to be adjusted (Yes / No)
Application Firmware Version	Logger application firmware version
Tag ID Display Format	Tag ID display format setting (HEX / DEC / NUM)
Tag Record Display Format	Tag record display format setting (Full / Short)
Reader	
Attached Reader	Attached reader (IS1001 / RM310 / FS1001A / ASR650)
RM310 Reader ID	RM310 Reader ID setting in HEX (01-FF). Only displayed when **Attached Reader Type** is set to **RM310**.
RM310 Reader Idling Time	RM310 reader idling time in seconds. Only displayed when **Attached Reader Type** is set to **RM310**.
Communication	
BT Broadcast Name	Logger broadcast name
BT Connection Status	Status of the Bluetooth connection (Ready To Link / Connected / Error Code)
Tag Communication to Local Port	Tags communication to local ports setting (Enabled / Disabled)
Local Port Transfer Rate	Local communication ports transfer rate (Full / Slow)
Detection	
Unique Mode	RM310 or ASR650 detection unique mode setting (Last 5 / Last 1 / Delay / Disabled). Only displayed when **Attached Reader Type** is set to **RM310, ASR650 or IMPINJ R420**.
Unique Delay	RM310 or ASR650 detection unique delay setting in seconds (1 – 43200). Only displayed when **Attached Reader Type** is set to **RM310, ASR650 or IMPINJ R420**.
Memory	
Memory Status	Status of the internal memory
Tags Memory Usage	Percentage of tag IDs memory presently used
Tags Memory Count	Number of tag IDs presently stored in memory
Status Reports Memory Usage	Percentage of short status reports memory presently used
Status Reports Memory Count	Number of short status reports presently stored in memory
Store VTT To Memory	Storing IS1001 or FS1001A VTT IDs setting (Enabled / Disabled). Only displayed when **Attached Reader Type** is set to **IS1001** or **FS1001A**.

Reports	
Reader Stat.Report Req.Delay	Aleis, FS1001A or ASR650 automatic reader status report request delay in minutes (Disabled / 1 – 1440). Only displayed when **Attached Reader Type** is set to **RM310**, **FS1001A** or A**SR650**.
Diagnostics	
Input Voltage	Logger measured input voltage in Volts DC

Examples

BLE Data Logger with attached IS1001 reader:

```
INF: Start Of Full Status Report
  Logger:
    Serial Number:                    1903.0349
    Date:                             04/15/2021
    Time:                             10:26:43
    Date/Time Correct:                Yes
    Application Firmware Version:     1.8.1
    Tag ID Display Format:            HEX
    Tag Record Display Format:        Full
  Reader:
    Attached Reader:                  IS1001
  Communication:
    BT Broadcast Name:          MicroLogger.0349
    BT Connection Status:             Connected
    Tag Comm. To Local Port:          Disabled
    Local Port Transfer Rate:         Full
  Memory:
    Memory Status:                    Ready
    Tags Memory Usage:                0%
    Tags Memory Count:                0
    Status Reports Memory Usage:      0%
    Status Reports Memory Count:      0
    Store VTT To Memory:              Enabled
  Diagnostics:
    Input Voltage:                    24.1V
INF: End Of Full Status Report
```

BLE Data Logger with attached RM310 reader:

INF: Start Of Full Status Report

Logger:	
Serial Number:	1903.0349
Date:	04/15/2021
Time:	11:45:02
Date/Time Correct:	Yes
Application Firmware Version:	1.8.1
Tag ID Display Format:	HEX
Tag Record Display Format:	Full
Reader:	
Attached Reader:	RM310
RM310 Reader ID:	01
RM310 Reader Idling Time:	Disabled
Communication:	
BT Broadcast Name:	MicroLogger.0349
BT Connection Status:	Connected
Tag Comm. To Local Port:	Disabled
Local Port Transfer Rate:	Full
Detection:	
Unique Mode:	Disabled
Unique Delay:	60 sec
Memory:	
Memory Status:	Ready
Tags Memory Usage:	0%
Tags Memory Count:	0
Status Reports Memory Usage:	0%
Status Reports Memory Count:	0
Diagnostics:	
Input Voltage:	10.0V

INF: End Of Full Status Report

BLE Data Logger with attached FS1001A reader:

INF: Start Of Full Status Report

Logger:	
Serial Number:	1903.0349
Date:	04/15/2021
Time:	12:45:02
Date/Time Correct:	Yes
Application Firmware Version:	1.8.1
Tag ID Display Format:	HEX
Tag Record Display Format:	Full
Reader:	
Attached Reader:	FS1001A
Communication:	
BT Broadcast Name:	MicroLogger.0349
BT Connection Status:	Connected
Tag Comm. To Local Port:	Disabled
Local Port Transfer Rate:	Full
Memory:	
Memory Status:	Ready
Tags Memory Usage:	0%
Tags Memory Count:	0
Status Reports Memory Usage:	0%
Status Reports Memory Count:	0
Store VTT To Memory:	Enabled
Reports:	
Reader Stat.Report Req.Delay:	Disabled
Diagnostics:	
Input Voltage:	24.0V

INF: End Of Full Status Report

BLE Data Logger with attached ASR650 reader:

INF: Start Of Full Status Report

Logger:	
Serial Number:	1903.0349
Date:	04/15/2021
Time:	13:45:02
Date/Time Correct:	Yes
Application Firmware Version:	1.8.1
Tag ID Display Format:	HEX
Tag Record Display Format:	Full
Reader:	
Attached Reader:	ASR650
Communication:	
BT Broadcast Name:	MicroLogger.0349
BT Connection Status:	Connected
Tag Comm. To Local Port:	Disabled
Local Port Transfer Rate:	Full
Detection:	
Unique Mode:	Disabled
Unique Delay:	60 sec
Memory:	
Memory Status:	Ready
Tags Memory Usage:	0%
Tags Memory Count:	0
Status Reports Memory Usage:	0%
Status Reports Memory Count:	0
Reports:	
Reader Stat.Report Req.Delay:	Disabled
Diagnostics:	
Input Voltage:	11.5V

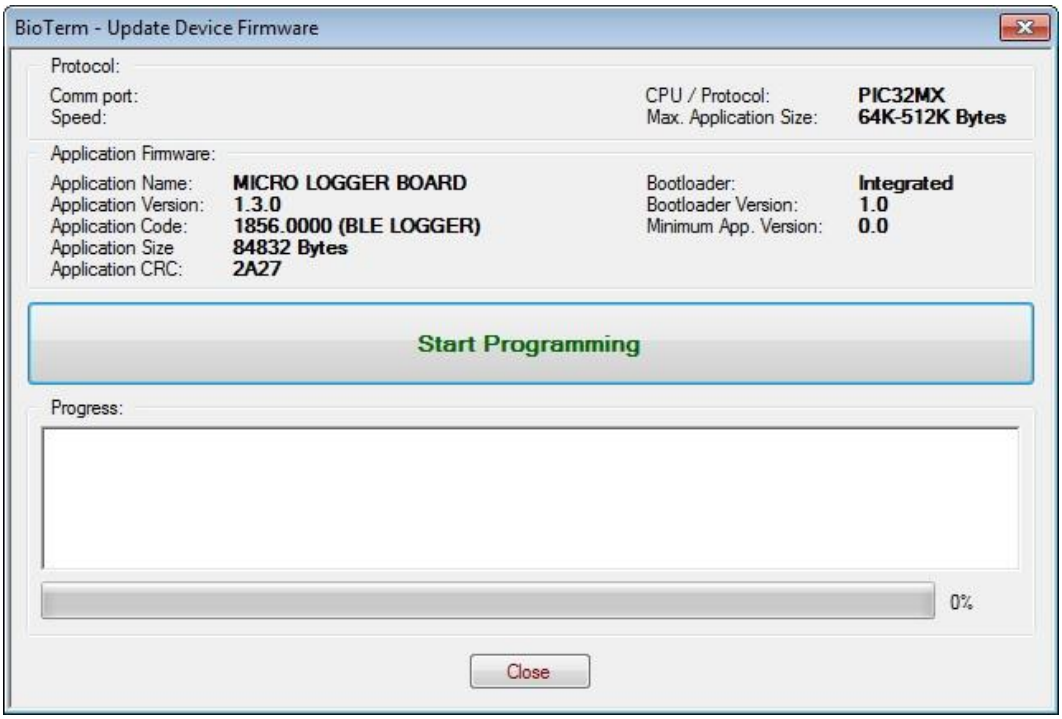
INF: End Of Full Status Report

Updating BLE Data Logger Firmware

Important! As a precaution, download all tag IDs and short status reports contained in memory before initiating the update process. Use the **MED** command to initiate the memory download. All settings may be reset to manufacturer default values during the update process, so it is recommended to take a note of the present settings prior to updating the BLE Data Logger.

To update firmware of the BLE Data Logger, follow these steps:

1. Start the BioTerm communication program.
2. Make a connection to the BLE Data Logger using either RS-232 communication port or Bluetooth.
3. Select **Tools > Update Device Firmware**.
4. Go to the location of the new firmware file, select it and then click on the **Open** button.



5. Click on the **Start Programming** button.
6. In the confirmation dialog, click on the **OK** button. The firmware update process should take less than a minute to complete.
7. In the **Application Update – Success** dialog, click on the **OK** button.

Updating Attached Reader Firmware

Important! All settings may get reset to manufacturer default values during the update process, so it is recommended to take a note of the present settings prior to updating the IS1001 or RM310 readers.

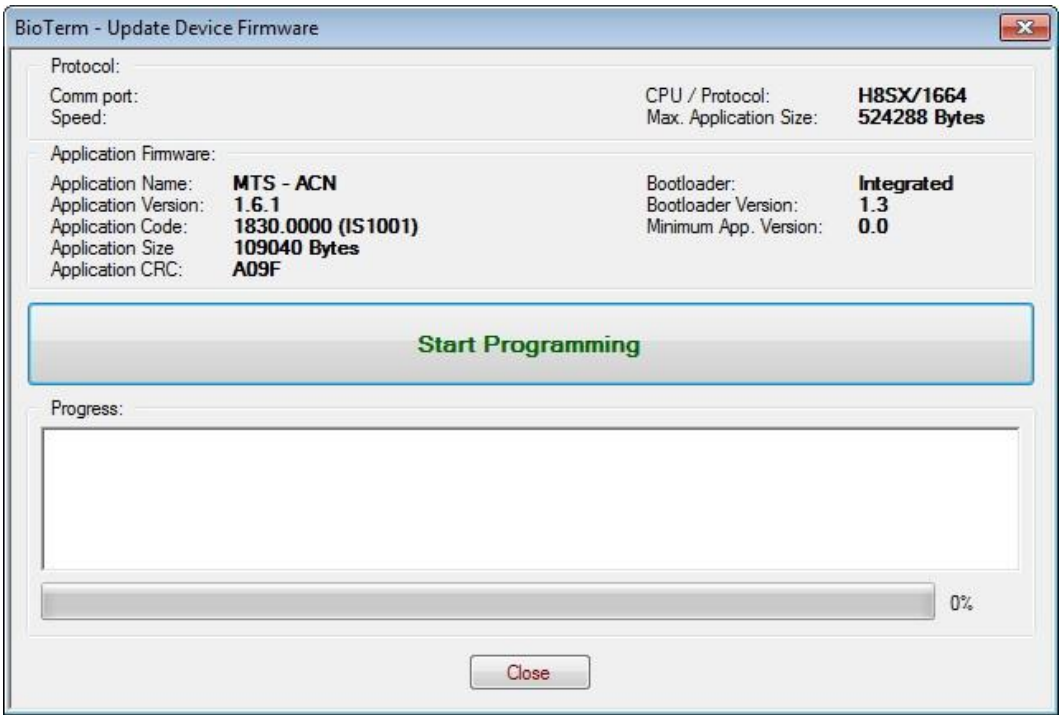
Updating Attached IS1001 Reader Firmware

To update firmware of the attached IS1001 reader, follow these steps:

1. Start the BioTerm communication program.
2. Make a connection to the BLE Data Logger using either RS-232 communication port or Bluetooth.
3. Enter the **CDC** command to configure the connection as the reader communication port.
4. Select **Tools > Update Device Firmware**.
5. Go to the location of the new firmware file, select it and then click on the **Open** button.

   Make sure to use the appropriate file for your IS1001 model:

   - **IS1001:** This model uses IS1001 Application Firmware v1.x.x.
   - **IS1001-12V:** This model uses IS1001 Application Firmware v2.x.x.



6. Click on the **Start Programming** button.
7. In the confirmation dialog, click on the **OK** button. The firmware update process should take less than a minute to complete.
8. In the **Application Update – Success** dialog, click on the **OK** button.
9. Press and hold the **Ctrl** key and type **QUIT** to close the communication port connection with the attached reader.

Updating Attached RM310 Reader Firmware

To update firmware of the attached RM310 reader, follow these steps:

1. Start the BioTerm communication program.
2. Make a connection to the BLE Data Logger using RS-232 communication port (RM310 firmware update through Bluetooth connection is not supported).
3. Enter the **LPM** command and type **Y** after confirmation question appears to switch the logger into RM310 programming mode.
4. Close the BioTerm communication program.
5. Use Allflex Reader Programmer software to update RM310 reader firmware (refer to RM310 User Guide for details).
6. After the update is complete reset power to the BLE Data Logger.

Note: To exit RM310 programming mode power to the logger must be reset. The logger will exit RM310 programming mode automatically in 10 minutes.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