Batteryless System Logger

Manual

February 01, 2011

Revision 1.2

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1 About this Document

1.1 Purpose

This document describes Hardware installation, features, specification and operation for AMFELTEC Batteryless System Logger device.

1.2 Feedback

AMFELTEC makes every effort to ensure that the information contained in this document is accurate and complete at time of release. Please contact AMFELTEC if you find any errors, inconsistence or have trouble understanding any part of this document.

To provide your feedback, please send an email to support @amfeltec.com.

Your comments or corrections are greatly valued in our effort for excellence and continued improvement.

1.3 Revision History

Rev. No.	Description	Rev. Date
1.0	Initial Release.	09-01-08
1.1	Update API description	10-07-03
1.2	Software update	11-02-01

2 General Description

2.1 Introduction

In recent years the computer industry has been growing rapidly. Increasing complexity of the modern embedded systems has made debugging and crash analysis extremely difficult. This raises the major question about the stability of any system and dedicated tools for allocation the problems that cause system fail.

The typical embedded system can be debugged by connecting to its serial port secondary computer with Hyper Terminal application. Another commonly used method involves storing log information on a hard disk. The above mentioned methods have a number of disadvantages. Operating system crashes can prevent log files from being properly written, and power failures can cause physical damage to the hard disk. Not to mention that many embedded systems these days don't have hard disks at all. The debugging via secondary computer and Hyper Terminal can be used only if the fail happened in the "office" not on the customer side (on the "field").

The Batteryless System Logger is a unique device designed to make it possible to store system log information in real time from any computer system in case of a power failure or system crash. System Logger stores log information from the operating system, device drivers and various applications into an internal buffer. It's powered by the system interface so no external power or batteries are required.

The System Logger implements the new **Smart Batteryless Backup**^{TM} Technology that allows continuous storing of log information even when the electrical characteristics of the System Logger are fluctuating due to humidity and temperature influences. This patent pending technology makes the loggers lifetime practically unlimited.

Figure 1: Batteryless System Logger

3 Hardware

3.1 Installation

System Logger connects to the Serial Port (DB9) of your test system. Currently, all the motherboards and embedded system has serial interface. You may find it on a front or rare panel of you system.

System Logger has two screws that help you to secure it location with the system. Both screws and compact design of System Logger guarantee the reliable connection with the system.

3.2 Default Serial Port Configuration

The default System Logger serial port configuration is

Baud rate: 19200 bps

Data format: 8 data bits / none parity / 1 stop bit

4 Specifications/Features

4.1 Batteryless System Logger (RS232)

- Plug-n-Play device (easy to configure)

- System interface RS232 (standard DB9 connector)

- Programmable baud rates: 9600/19200/57600/115200 bps.

- Data format: 8 data bits / none parity / 1 stop bit

- Memory buffer capacity is 128 Kbytes

- Powered from the system interface (no batteries or power cables required)

- Lifetime more then ten years

- Extremely compact size: 1.302" x 0.768" x 2.387" (33 x 19.5 x 60.5 mm)

- Operation temperature: -20°C to +70°C

- RoHS compliant.

4.2 Batteryless System Logger (USB)

- Plug-n-Play device (easy to configure)

- System interface USB (USB-A or USB header)

- Programmable baud rates: 9600/19200/57600/115200 bps.

- Data format: 8 data bits / none parity / 1 stop bit

- Memory buffer capacity is 128 Kbytes

- Powered from the system interface (no batteries or power cables required)

- Lifetime more then ten years

- Extremely compact size: 0.8" x 0.5" x 2.3"

- Operation temperature: -20°C to +70°C

- RoHS compliant.

5 Software

5.1 Architecture

System Logger doesn't require any software for operation. You will need our very small applications to retrieve the data from the System Logger.

Software package contents from two parts: communication library (binary) and command utilities. Communication library is responsible to communicate with System Logger and execute the required command. Utilities are distributed as open-source and provides high-level command interface.

Software release includes following high-level commands (see paragraph 6 for more information):

- Configure System Logger device

- Read data from System Logger device

- Read Info data from System Logger device

- Erase contents of System Logger device

- Verify System Logger device functionality

5.2 Integration into customer application

You can use utilities source code as example in order to integrate the System Logger interface into customer applications.

Please contact support@amfeltec.com for more information.

5.3 Installation

5.4 Linux OS

- Copy distribution package syslogger-X.Y.tar.gz to local directory

- Untar package by running: tar xvfz syslogger-X.Y.tar.gz

- Change directory to *syslogger-X.Y*

- Execute ./Setup install

All System Logger utilities are copied to /usr/sbin directory and default configuration file installed in /usr/etc directory.

6 Commands Description

6.1 General Description

The following command communicates with System Logger device using internal protocol.

6.2 Commands under Linux/FreeBSD OS

6.2.1 Configuration Utility (syslogger-config)

This command allows changing System Logger configuration, such as baud rate, enable/disable overwrite mode (see appendix B), apply default manufacture configuration.

Usage:	syslogger-config [-auto <baud>] [-baud <num>] [[+|-]overw] [port] [-h]
Where:	
-auto <baud>	The command will scan all available baud rates in order to connect to System Logger device and configure it to specified baud rate. If baud is equal to 0, the utility will use current Serial Port baud rate for System Logger device configuration.
-baud <num>	Reconfigure System Logger device for the new specified baud rate (your current System Logger configuration and System Logger device must have the same baud rate). The valid baud rates are 9600, 19200, 57600, 115200 (kbps). All other values will be ignored.
+overw	Enable System Logger data overwrite (default)
-overw	Disable System Logger data overwrite. This option will disable data overwrite after the first memory dump (power lost, system crash) after setting the mode.
port	Print current system Serial port configuration.
-h|help	Print this help message.

6.2.2 Scan Utility (syslogger-scan)

This command will scan Serial port and try to detect System Logger device. It will use following baud rates: 9600, 19200, 57600, 115200 kbps. If the utility detected the device, it will prompt to receive confirmation to reconfigure System Logger device to the specified baud rate. The configuration file will be updated.

Usage:	syslogger-scan [-h|-help]
Where:	
-h|-help	Print the help message

6.2.3 Info Utility (syslogger-info)

This command will read System Logger device info message and print it on a screen. The Info message does include current System Logger device mode (refer to Appendix A) and current System Logger firmware version. The following is an example for System Logger device Info message:

Batteryless System Logger

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Mode: 0x10 Ver: 3.0

Usage:	syslogger-info [-v] [-hex] [-h|-help]
Where:	
-hex	The utility will print output of System Logger Info message in a hex format.
-v	The utility will print System Logger Info message and will decode System Logger Operation mode.
-h|help	Print this help message.

For more details about System Logger Operation mode, please refer to Appendix A.

6.2.4 Erase Utility (syslogger-erase)

This command erases all data stored in System Logger device.

Usage:	syslogger-erase [-h|-help]
Where:	
-h|help	Print this help message.

6.2.5 Get Utility (syslogger-get)

This command reads the previously stored data from System Logger device.

Usage:	syslogger-get [-o <filename>] [-hex] [-h|-help]
Where:	
-o <filename>	Output all data into specified file instead of printing on a screen.
-hex	Output all data in hex format.
-h|help	Print this help message.

7 A.1 System Logger Device Operation Modes

The following table will show the details explanation for System Logger device mode returned by *syslogger-info* command:

Bit	Value	Description
0	1	Indicate that Trigger UP or Trigger Down is ready
1	1	Baud rate 9600 bps
2	1	Baud rate 19200 bps (default)
3	1	Baud rate 57600 bps
4	1	Baud rate 115200 bps
5	0	Enable Overwrite Flash (default)
	1	Disable Overwrite Flash
6	1	Trigger Down is set
7	1	Trigger Up is set

Table 1: System Logger mode bit-map