PocketShark USB Batteryless System Logger™

(SKU-091-3x)

Hardware Manual

April 20, 2024
Revision 1.0

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1   About this Document

1.1   Purpose

This document describes hardware installation, features, specification and operation of the *PocketShark* USB Batteryless System Logger™ from Amfeltec Corporation.

1.2   Feedback

AMFELTEC Corp. makes every effort to ensure that the information contained in this document is accurate and complete at the time of release. Please contact Amfeltec if you find any errors, inconsistency 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 continuous improvement.

1.3   Revision History

Rev. No.	Description	Rev. Date
1.0	Initial Release.	April 20, 2024

2   General Description

2.1   Introduction

The PocketShark USB Batteryless System Logger is the device that maximize the reliability of embedded appliance or IOT device that operate without human supervision. It helps to be able to rule out environmental conditions as possible contributing factors in of a host's operational failure.

The Logger is recorded both system and environmental data of the host and its surroundings, respectively. System data is captured via a USB port (from the host's operation system or running on the host applications). The environmental data is captured via internal sensors. All data is continuously recorded to the Logger's non-volatile memory during normal host operation. In the event of a system crash or power outage, the Logger keeps the data safe and this data is available for troubleshooting or analysis.

USB Logger recording the follow environmental information: ambient temperature, humidity, air pressure, vibration. There are three versions of the Logger:

- with USB-A type of connector to host (SKU-091-31)

- with USB-C type of connector to host (SKU-091-32)

- with USB 5x2 header type of connector to host (SKU-091-33)

The Logger is powered from the system interface (USB) without any internal battery or external power source. Recorded information can be restored later at any time on any computer. Batteryless Logger operating temperature is from -40°C up to +85°C. It does not require any service or maintenance during its lifetime (over ten years).

2.2   Package Contents

USB Batteryless System Logger package includes Logger itself (one of the Loggers below):

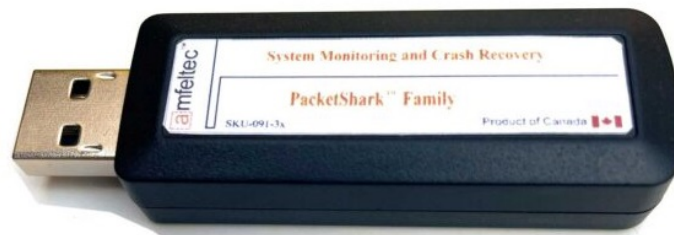**Figure 1**: USB Batteryless System Logger with USB-A connector (SKU-091-31)

Figure 2: USB Batteryless System Logger with USB-C connector (SKU-091-32)

Figure 3: USB Batteryless System Logger with USB 5x2 header (SKU-091-33)

The software utilities can be downloaded from the product Web page:

https://www.amfeltec.com/products/usb-batteryless-system-logger/

3   Features

3.1   Features

Easy 'Plug and Play" installation. No drivers are needed. Transparent to the operation system.

Connection to host via USB interface 2.0

No batteries or external power required

No service or maintenance

Life time over ten years

Internal non-volatile memory 128 Mbyte

Connection to host by USB-A connector, USB-C connector or USB 5x2 header

Industrial operation temperature range from -40° C to +85°C

Dimension: 57 mm x 22 mm x 12.5 mm

RoHS compliant.

4 Hardware Description

4.1 Connector

Ref. Des.	Type	Interface	Pinout			
			USB+	**USB-**	**Vbus(5V)**	**GND**
USB-A	Connector	USB 2.0 interface	3	2	1	4
USB-C	Connector	USB 2.0 interface	A6	A7	A4,A9	A1,A12
USB 5x2 header	Header	USB 2.0 interface	6	8	10	4

Table 1: USB Batteryless System Logger connector

5   Installation

5.1   Batteryless System Logger installation (hardware)

The following steps provide the exact sequence that needs to be followed in order to properly install the Amfeltec Batteryless System Logger:

Plug in the Logger to host computer/appliance USB port
Make sure that the Logger is accessible for OS (can be used any terminal software (like Putty) or the logger app.

For TTY terminal application settings are:
- Baudrate   57600
- Flow control   set to none
- Open Mode   Read/Write
- Data Bits   8
- Parity   set to none
- Stop Bits   1
- Input CR/LF   set to none

5.2   Batteryless System Logger Utility installation (software)

After connecting the Logger to host computer/appliance, the Logger utilities has to be installed.

Release includes the follow files:

- Utility executable file

- Utility source code and header files under GPL license;

- Makefile for buld release or debug version of the utility;

- Configuration file;

- Examples of the output data files in Data subdirectory;

Installation steps:

- Download distribution package Syslog-SKU-091-3x.tar.gz to local directory

- Untar package by running: tar -xvfz Syslog-SKU-091-3x.tar.gz

- Change directory to Syslog-SKU-091-3x

- Make sure that utility is executable (sudo chmode +x Syslog-SKU-091-3x)

System Logger Configuration:

- Check configuration file - settings.conf and change default setting if it's necessary.

(for changing please follow comments in the file)

5.3 USB device name discovery (software)

Script usb_port.sh implements automatic search system USB port name connected to the logger.
source ./usb_port.sh

Script uses sequential port number from 0 to 9 as the option for the utility command line:

Syslog-SKU-091-3x port /dev/ttyUSB[0-9]

It verifies that the logger is connected to the specified port and then stores the device number (address) into environment variable. If script fails, the application tries to work with hardcoded address:
/dev/ttyUSB0
After stored device number, the script adjusts port permissions by calling:

sudo chmod 666 [port name]

To avoid problems with permissions adjustment, user has to be included in **sudoers** list.

5.4 OS Kernel logging configuration (software)

Please make sure that all Kernel and system messages are forwarded to the USB port with System Logger.

6 Software

6.1 Architecture

System Logger doesn't require any software for operation. You will need only supplied utility to do configuration and retrieve the data from the System Logger.

Software release includes following high-level commands (see paragraph 7 for more information):

Configure System Logger device (" ./Syslog-SKU-091-3x set ")

Perform the Logger "warm" reset (" ./ Syslog-SKU-091-3x wrestart ")

Read the Logger configuration (" ./ Syslog-SKU-091-3x info ")

Read status and environmental information from the Logger (" ./ Syslog-SKU-091-3x dump ")

6.2 Integration into customer application

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

Please contact support@amfeltec.com for more information.

7 Utilities Description

7.1 General Description

The Utility communicate with System Logger by using internal protocol over USB interface.

7.2 Utility output format

As the result of running the Utility command with "dump" option the follow text files will going to be created in the Data subdirectory:

1. File status.txt (table with environmental information)

2. File acel.txt (accelerometer information)

3. File finarray.txt (all information from logger including kernel log, system log and environmental information)

4. File dump.txt (raw data received from the logger)

8   Appendix A: Limited warranty

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