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> Saleae Logic 8 - 8-Channel Logic Analyzer User Manual

Saleae Logic 8

Saleae Logic 8 - 8-Channel Logic Analyzer User Manual

Model: Logic 8

Brand: Saleae

1. INTRODUCTION

The Saleae Logic 8 is an advanced 8-channel logic analyzer designed for recording and displaying electrical signals within circuits. This device assists in debugging and understanding complex electronic designs, catering to both professional engineers and hobbyists. Its capabilities include general debugging, protocol decoding, reverse engineering, timing measurements, and long-duration data capture.



Image 1.1: The Saleae Logic 8 device, a compact black unit with two rows of input pins.

2. PACKAGE CONTENTS

Verify that all items listed below are present in your Saleae Logic 8 package:

- Saleae Logic 8 Device
- 1x Micro USB 2.0 Cable
- 2x Jumper Wire Sets
- 16x Test Clips
- Storage Case

Everything Included



Image 2.1: An illustration detailing the included accessories: the Logic 8 device, a Micro USB cable, two sets of jumper wires, sixteen test clips, and a protective storage case.

3. SETUP

3.1 Software Installation

1. Download the latest Logic 2 software from the official Saleae website.
2. Install the software on your computer. The Logic 2 software is compatible with Windows 10-11, Mac OS 10.14 Mojave and later, and Ubuntu 18.04 and later (64-bit).

3.2 Hardware Connection

1. Connect the Saleae Logic 8 device to your computer using the provided Micro USB 2.0 cable.
2. Attach the jumper wires and test clips to the input pins of the Logic 8 device.
3. Connect the test clips to the desired test points on your circuit. Ensure proper grounding.

It Just Works

20,000+ embedded developers actively use *Logic* every month

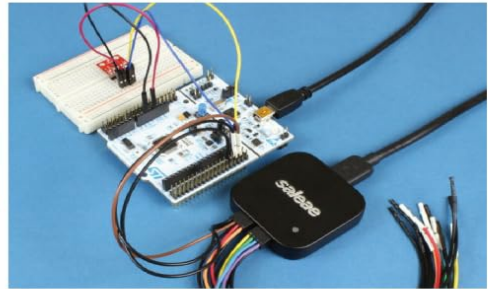
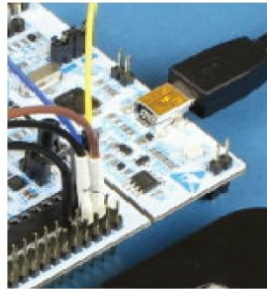
① Download



Logic2



② Hook Up



③ Start Recording

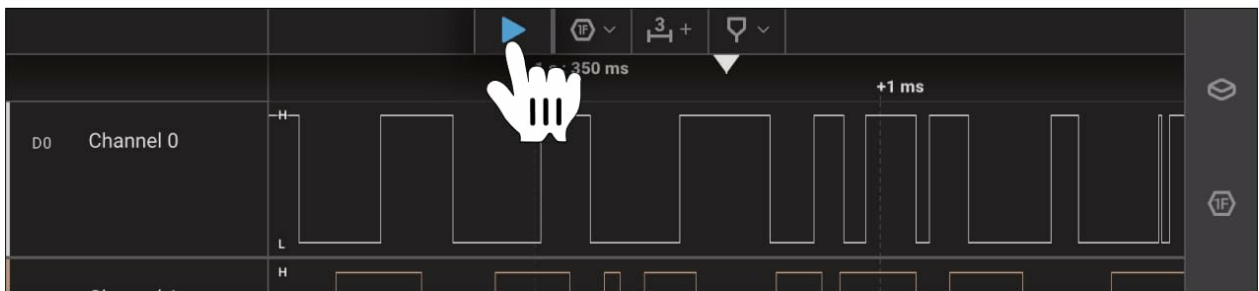


Image 3.1: A visual guide demonstrating the three primary setup steps: downloading the Logic 2 software, physically connecting the Logic 8 to a circuit, and initiating a signal recording within the software interface.

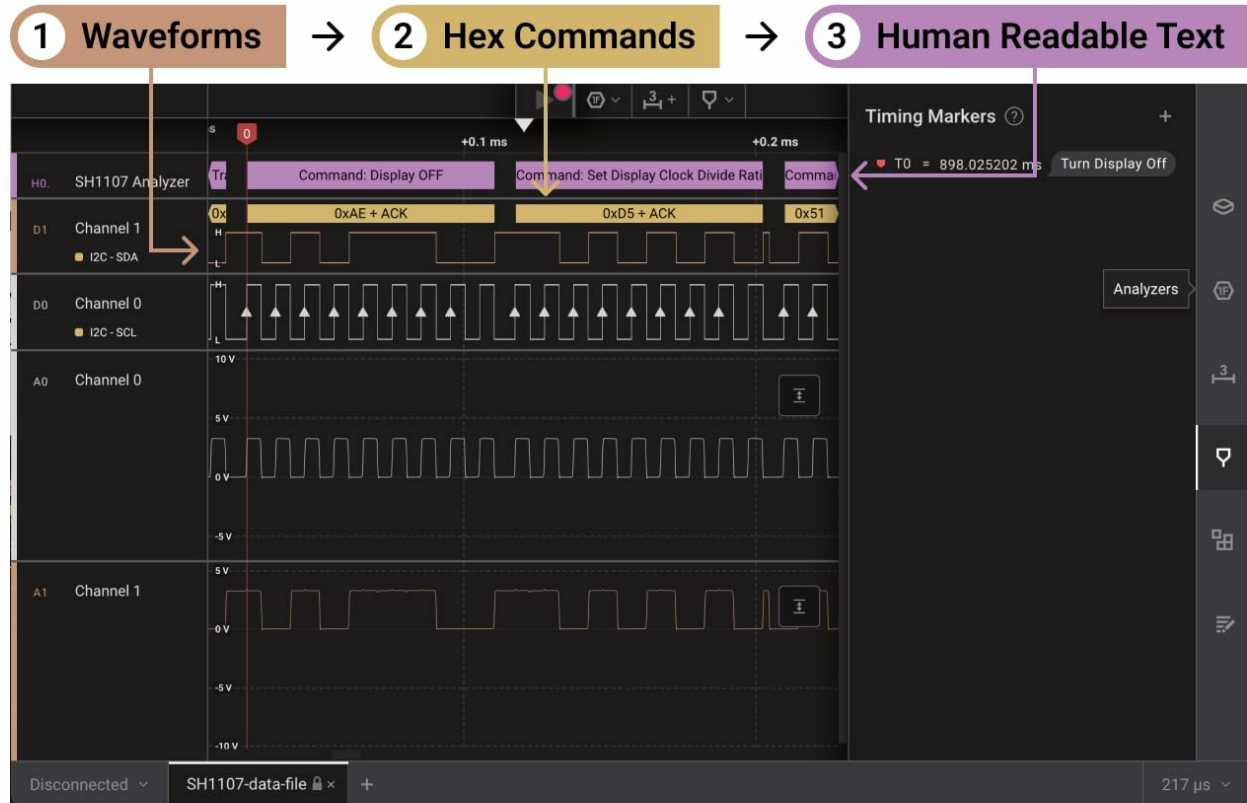
4. OPERATING INSTRUCTIONS

4.1 Software Overview

The Logic 2 software provides a comprehensive interface for capturing, visualizing, and analyzing digital and analog signals. It features a real-time view, allowing you to observe signals as they are acquired, and tools for navigating data with timing markers.

Powerful Software

Enhance your debugging process with our easy to use software



- ▶ Real time view lets you see your signals as they are acquired
- ▶ Navigate your data quickly with Timing Markers
- ▶ High Level Python Analyzer makes debugging faster

Image 4.1: A screenshot of the Logic 2 software displaying signal waveforms, decoded hexadecimal commands, and their conversion into human-readable text, illustrating the software's analytical capabilities.

4.2 Signal Acquisition

After connecting your device and launching the software, configure the desired sample rate and channels. Initiate a recording to capture the signals from your circuit. The software allows for long-duration recordings, enabling thorough analysis of extended data periods.

4.3 Protocol Analysis

The Logic 2 software supports decoding for over 60 protocols, including common ones like I2C, SPI, and Serial. This feature automatically translates raw signal data into meaningful protocol messages, simplifying debugging of communication interfaces. Users can also develop custom protocol analyzers using the provided SDK.

60+ Protocol Analyzers

Automatically decode protocols like SPI and I2C
or build your own with Logic 2

Automotive

CAN'
CAN-FD
CAN 2.0B
LIN'
ISO7816

Audio

MIDI'
I2S/PCM

Power Delivery

SMBus'
USB-C-PD

Computing

USB LS
USB FS
DisplayPort Aux
HD44780 LCD'
HDMI-CEC'
JTAG'
LPC
LPC Clockless
NAND
SD/MMC
SDIO
SDQ
Synchronous Parallel'
Gamecube Controller

IoT

1-Wire'
I2C'
I3C
I2S
SPI'
SWD'
Asynchronous Serial'
Atmel SWI'
IR Remote
DHT2x
Luos
PWM
TWI

Wireless Communication

APDU
MIPI DSI
MIPI RFFE
SIMCARD

Industrial

Modbus RTU & ASCII'
DCC
DMX512'
Anybus CompactCom SPI
BISS-C'
MBus
Quadrature



Open APIs for:

Test Automation

PYTHON LABVIEW

Custom Measurements

PYTHON

High Level Analyzer (HLA)

PYTHON

Protocol Low Level Analyzer (LLA)

C++

Image 4.2: A comprehensive list of over 60 supported communication protocols, categorized for various applications such as Automotive, Computing, IoT, and Industrial, highlighting the versatility of the Logic 8.

4.4 API Usage

For advanced users, Saleae provides Open APIs to extend the functionality of the Logic 8. These APIs support:

- **Test Automation:** Integrate with Python and LabVIEW for automated testing.
- **Custom Measurements:** Develop specific measurement routines using Python.
- **High Level Analyzer (HLA):** Create custom high-level protocol analyzers in Python.
- **Protocol Low Level Analyzer (LLA):** Implement low-level protocol analysis in C++.

5. MAINTENANCE

To ensure the longevity and optimal performance of your Saleae Logic 8, follow these maintenance guidelines:

- Keep the device and accessories clean and free from dust and debris. Use a soft, dry cloth for cleaning.
- Store the device in its protective case when not in use to prevent physical damage.

- Avoid exposing the device to extreme temperatures, humidity, or direct sunlight.
- Handle the jumper wires and test clips carefully to prevent bending or breaking.

6. TROUBLESHOOTING

If you encounter issues with your Saleae Logic 8, consider the following:

- **Device Not Detected:** Ensure the USB cable is securely connected to both the Logic 8 and your computer. Try a different USB port or cable. Verify that the Logic 2 software is installed correctly.
- **No Signal Capture:** Check all test clip connections to your circuit. Ensure proper grounding. Verify that the correct channels are enabled and configured in the Logic 2 software.
- **Software Performance Issues:** Ensure your operating system meets the minimum requirements. Close other demanding applications. Update the Logic 2 software to the latest version.
- **Limited Pattern Search:** The Logic 8 can trigger on a single serial byte but does not support advanced multi-byte pattern search directly within the built-in software. For complex pattern analysis, consider using the API to implement custom solutions.

7. SPECIFICATIONS

Detailed technical specifications for the Saleae Logic 8:

Feature	Specification
Model Number	SAL-000001
Inputs	8 Digital + Analog Channels
Digital Sample Rate	100 Ms/s
Analog Sample Rate	10 Ms/s
Digital Sample Memory	10+ Billion Samples
Analog Sample Memory	500+ Million Samples
Product Dimensions	9.5 x 5 x 2 inches (overall package); Device: 2.1 x 2.1 x 0.46 inches
Item Weight	0.5 Kilograms
Enclosure Material	6061 T6 Aluminum with Anodized Finish
PCB Layers	8+ Layer PCB

8 Digital + Analog Inputs



100 Ms/s
Digital
sample rate



10 Ms/s
Analog
sample rate



10+ Billion
Digital
sample memory



500+ Million
Analog
sample memory

Image 7.1: The Saleae Logic 8 device highlighting its core specifications, including the number of inputs, digital and analog sample rates, and memory capacities.

Premium Quality

6061 T6 aluminum enclosure with anodized finish

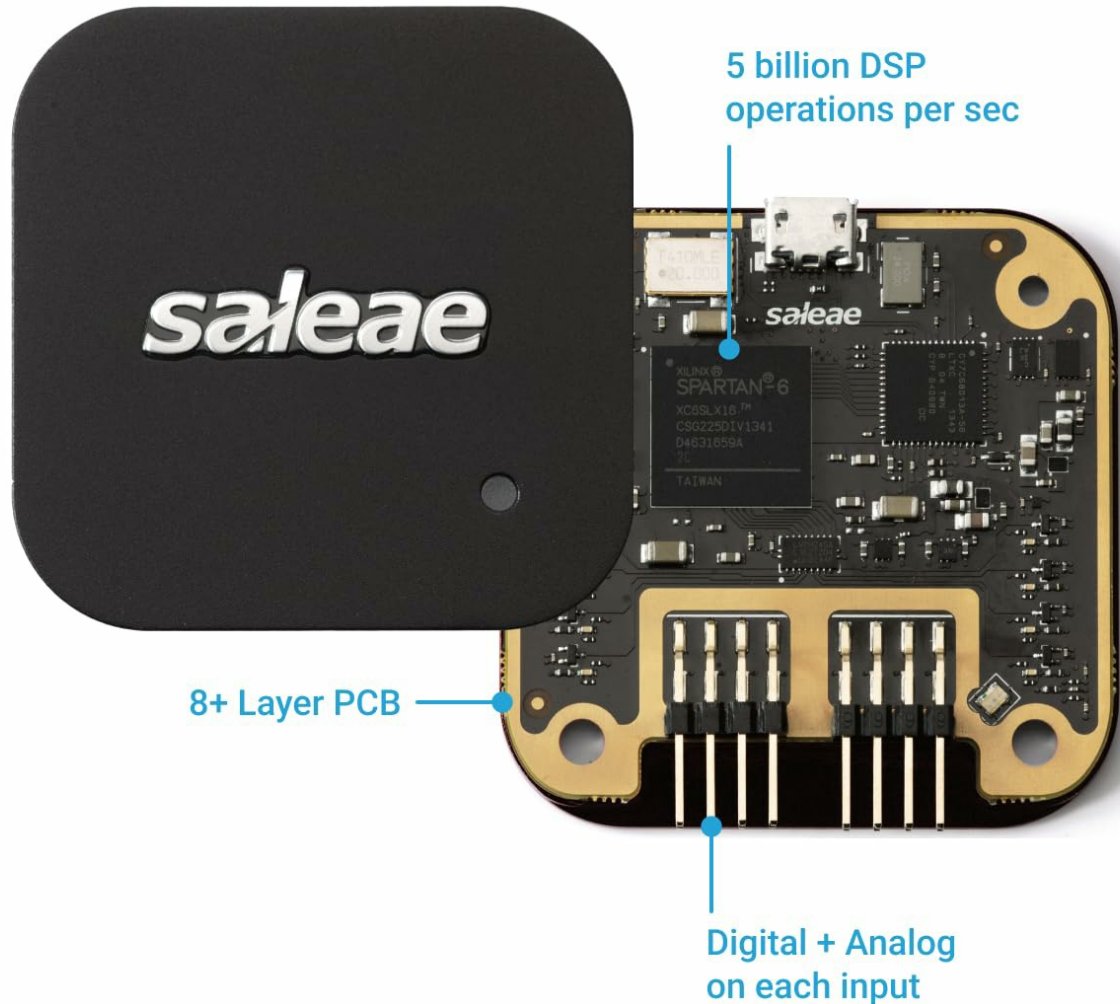


Image 7.2: An exploded view of the Saleae Logic 8, revealing its internal components such as the 8+ layer PCB, the Spartan 6 FPGA, and the durable 6061 T6 aluminum enclosure.

8. WARRANTY AND SUPPORT

Saleae provides a comprehensive three-year warranty for the Logic 8, covering repair or replacement of the device regardless of the cause of the issue. For software support, updates, and additional resources, visit the official Saleae website. The website also offers extensive documentation and community forums for further assistance.

For direct support inquiries, please refer to the contact information available on the Saleae official website.