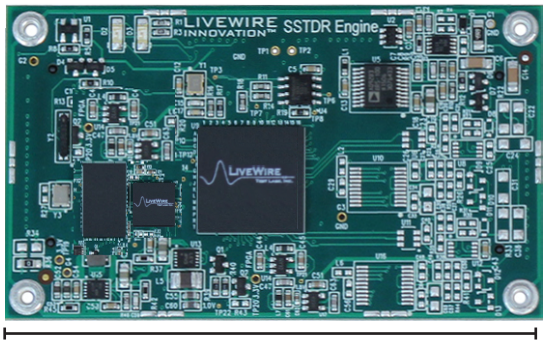
LIVEWIRE INNOVATION™

SENTINEL 100

SSTDR ENGINE



2″
(51 mm)

3.4″ (86mm)

LIVE MONITORING FOR THE DETECTION AND LOCATION OF FAULTS IN CABLES AND WIRES

LiveWire Innovation's new Sentinel 100 or S100 is the first in a growing line of board-level SSTDR "engines". The fully engineered, credit card-sized board and corresponding chipset enables engineers, OEMs, end-equipment manufacturers, as well as system operators to quickly develop and integrate the ability to monitor live cables, wires and electrical systems for the detection and location of critical open and short circuits, arc faults, and hard to see intermittent events. Because it can operate on live systems, the Sentinel 100 also allows system operators to collect valuable baseline data that can be used to help predict and prevent outages.

- "TDR ON A CARD" - FULLY ENGINEERED, READY TO INTEGRATE BOARD-LEVEL FAULT DETECTION ENGINE
- PATENTED SSTDR DETECTS AND LOCATES FAULTS WITH UP 98% ACCURACY
- MONITORS CIRCUITS FROM CENTIMETERS TO KILOMETERS IN LENGTH
- 24/7 MONITORING MEANS REAL TIME COLLECTION OF VALUABLE BASELINE DATA FOR FAULT ANALYSIS
- GENERAL INDUSTRY APPLICABILITY IN UTILITIES, AEROSPACE, RAIL SYSTEMS, TELECOM AND INDUSTRIAL POWER SYSTEMS
- CABLE AND POWER THEFT

LiveWire's patented Spread Spectrum Time Domain Reflectometry, or SSTDR, is a unique signal technology that uses low amplitude signals, pseudo-random noise (PN) codes and innovative correlation techniques to look for impedance changes in energized cables at distances of up to 7 kilometers (4 miles) with fault location accuracy of up 98%. SSTDR enables system operators and equipment manufacturers to monitor operational infrastructure while in use, including communications, data and control cables, something existing cable test methods and traditional TDR are not able to do. The ability to monitor without interrupting operations enables the detection of hazardous electrical faults, such as **open** and **short** circuits and intermittent events, like **arc faults**. Constant monitoring means collection of valuable data to predict and prevent dangerous, damaging, or costly failures.

Applications for live system monitoring include safety, security, reliability, and the collection of data. The operational benefits of continuous monitoring with precise fault location include increased revenue through less downtime, enhanced safety for employees and customers, reduced maintenance costs, rapid troubleshooting, and theft prevention. For many customers, the ability to characterize their systems' baseline performance and monitor for changes holds significant potential to proactively identify and address emerging faults.

Made in USA

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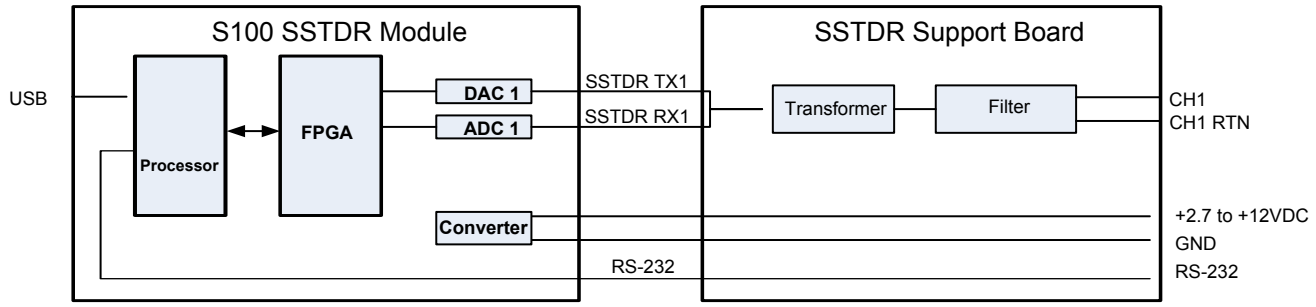
SSTDR ENGINE



System Level Block Diagram of S100 and support board.

Operating Characteristics

- 2.7 to 12 VDC Input Voltage
- Typical current draw at 3.3 VDC Input 0.35 mA
- Typical Power Consumption 1.2 W
- Size 3.4" x 2" (86 mm x 51 mm)
- Weight 1 oz, nominal
- Extended temperature products (-40 C to +85 C) available

Sentinel 100 or S100 shown mounted on the S100-EVSB support board with communication ports and connection options for speed of integration.

Features

- LiveWire's patented fault detection technology
- Digital Spread Spectrum Time Domain Reflectometry (SSTDR)
- Able to detect short circuit, open circuit, and arc faults
- Distance to Fault Accuracy of 98%
- Covers wide range of cable lengths, from cm to km
- Small, credit-card sized form factor
- Continuous Monitoring at ~60 scans per second
- Transmit voltage level 15mV to 1.1V peak-to-peak
- Communications Interface: UART
- Test Frequencies: 93.75 kHz to 24 MHz
- Field Updatable via USB via support board
- Maximum Distance Ratings:
  - Electrical Cable: 0 to 5 km
  - Data Cable: 0 to 1 km
  - Coaxial Cable: 0 to 1 km
  - Shield Power Distribution Cable: 0 to 6 km
- Application specific input voltage rating with external support board i.e. CAT III 600V

Additional products planned for the Sentinel product line

- DIN-rail mountable S100-DRM with MODBUS interface for industrial applications
- Sentinel 300 or S300, a higher-performance board-level solution based on a single chip SSTDR core capable of supporting high speed scan rates, simultaneous scanning of up to three channels and for use on Three Phase industrial power application
- SSTDR two-chipset and reference design for very high volume integration

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