DT7837
Sound & Vibration ARM Module

The DT7837 is a high accuracy dynamic signal acquisition module for noise, vibration, and acoustic measurements with an embedded Cortex -A8 600MHz ARM processor. Four, 24-bit, IEPE (ICP®) sensor input data can be algorithmically processed in real time with the optional use of a 24-bit stimulus D/A generator and the results presented to a host for analysis.

Key Features

- **Dynamic Signal Analyzer** with embedded ARM
- **4 IEPE channels,** 24-bit resolution, up to 102.4kHz simultaneous sampling
- **Digital I/O (8 In/8 Out),** Counter/Timers, Tachometer
- **High speed,** 24-bit, stimulus analog output for dynamic waveform generation
- **TI AM335x ARM Cortex-A8 MPU** with 2GB on-board NAND Flash memory
- **Open source Linux** computing platform using the TI AM335x SDK Essentials Version 7.0
- **SD-Card interface** for measurement results and raw data

Figure 1. The DT7837 provides 4 IEPE input channels along with an embedded BeagleBone Black industrialized ARM processor for real-time processing and analysis of sound and vibration measurements. Compact, rugged metal enclosure measures 165mm x100mm x55mm.

- **USB-host port** for additional SSD hard disk, Wireless LAN, or GSM communication stick
- **RS232 (3.3V) serial interface** to communicate with PLC
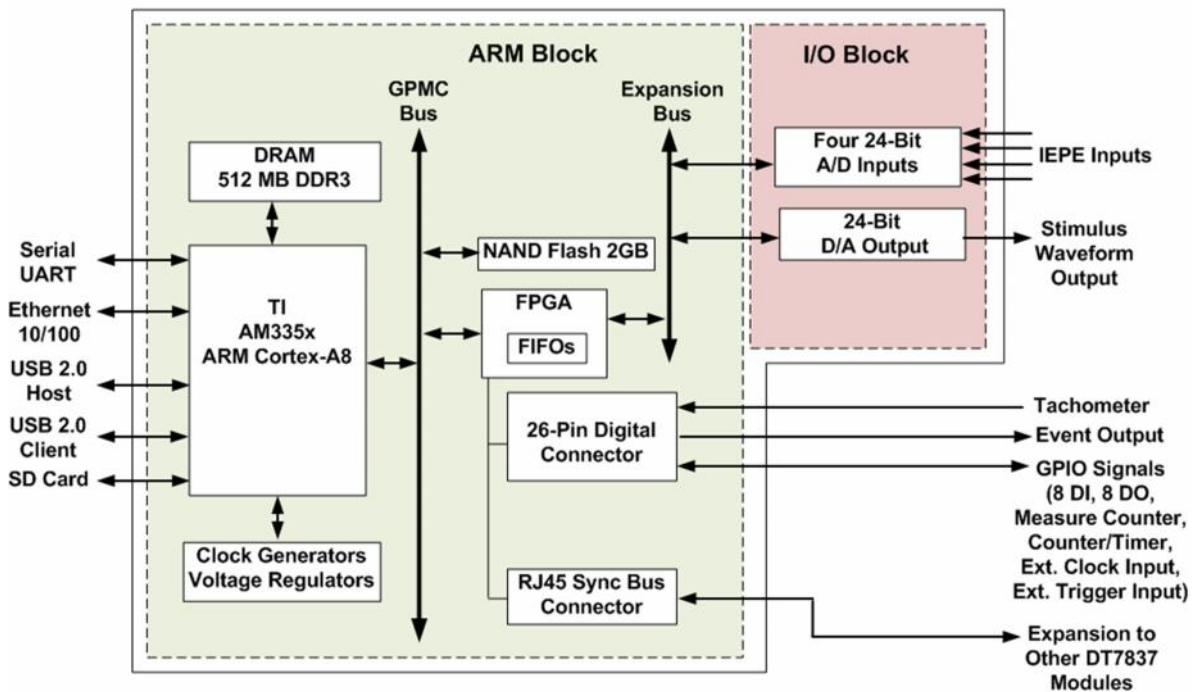- **Ethernet and USB client** for host communication

Figure 2. The DT7837 block diagram shows the base board, ARM Block, with the TI AM335x ARM Cortex-A8 processor, FPGA, memory and support peripherals as well as interfaces for a USB host and client, Ethernet, power, SD card and digital I/O, counters and timers. The daughter board, I/O Block, has the A/D and D/A and is mated to the ARM Block through a connector.
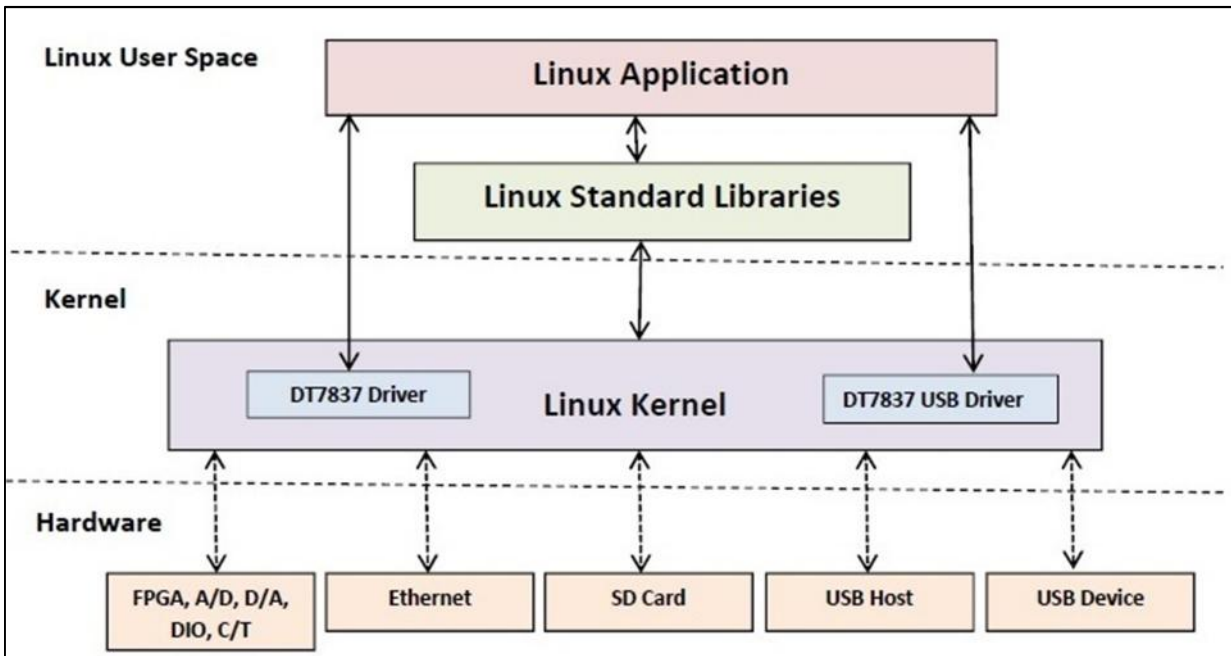
Figure 3. The DT7837 runs Linux 3.12 with custom loadable kernel modules, i.e., "device drivers" for the board hardware. These "drivers" expose the functionality of the board to Linux user space applications.

Additional Features

- Analog Input ranges of ±10V and ±1V
- Analog output range of ±10V bipolar
- IEPE inputs up to 4mA of 20V compliance
- Digital inputs configurable as clocks or triggers for analog inputs and outputs
- 3.3V UART, SPI, I2C interfaces through 6-pin headers on ARM Block
- NEON floating point accelerator
- Serial debug port
- 512 MB DDR3 SDRAM
- Micro SD Card connector; alternate boot source or external memory
- 3U European sub-rack compatibility (100 mm card height)
- Optional chassis configuration
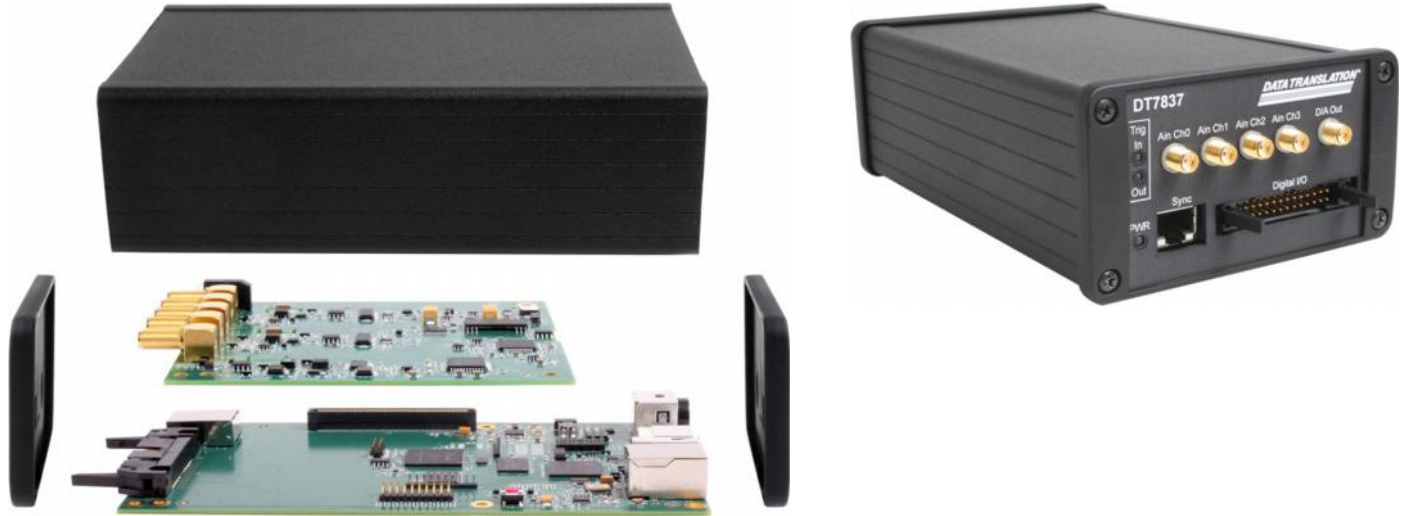- Operates from external 5V power supply

Figure 4. Exploded View. The DT7837 case packages the OEM embedded version (no case) of the DT7837 in a CE-compliant, rugged metal enclosure.
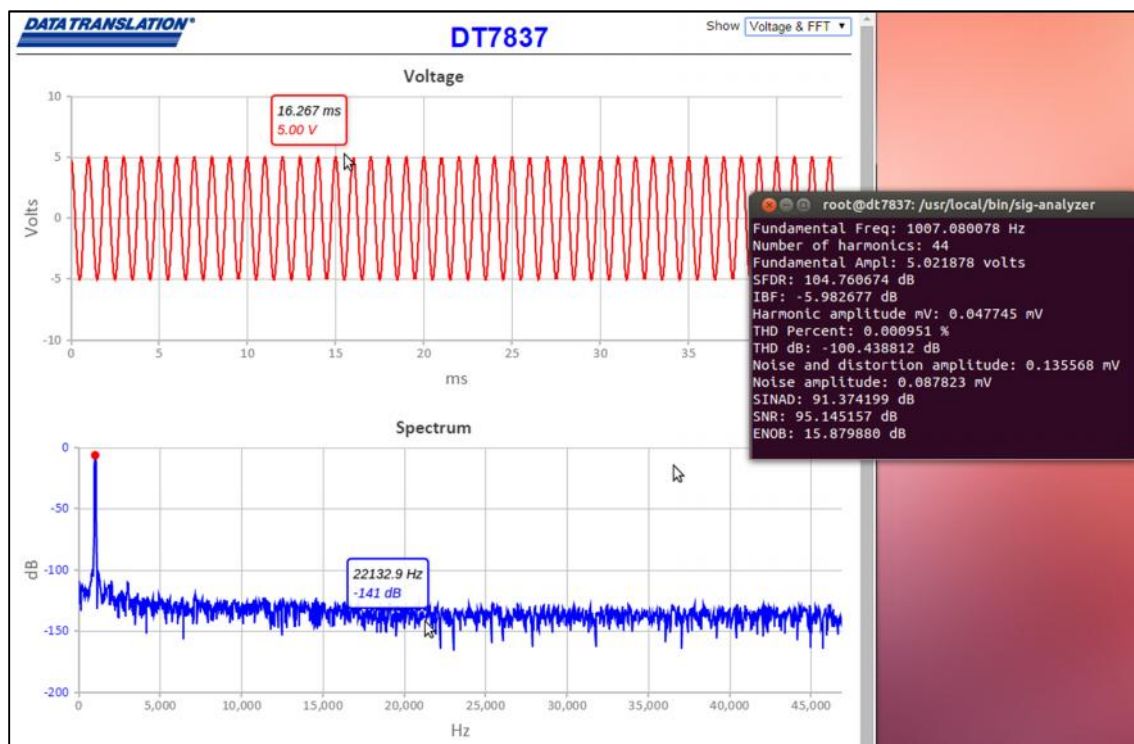

Figure 5. The DT7837 showing outstanding dynamic performance on a -6dB sine wave at 1kHz, including ENOB (Effective Number of Bits) of 15.9.

Ordering Summary

DT7837
- **DT7837** 4-channel ARM S&V Module, with Enclosure
- **DT7837-OEM** 4-channel ARM S&V Module, No Enclosure