





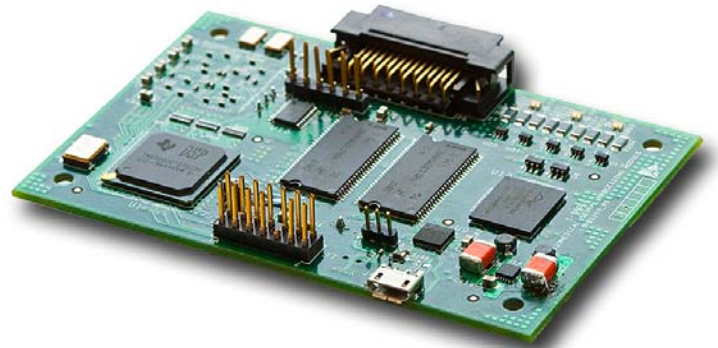


Biomedical Signal Processing Module

Electrophysiology

-  Advanced signal processing platform
-  Next generation signal acquisition
-  MATLAB to device deployment
-  Biomedical I/O module interface
-  USB 2.0 data streaming
-  FDA preferred protected domain



Overview

The Biomedical Signal Processing Module is a high performance floating point digital processing platform optimized for precision waveform capture and processing. The platform is specifically designed for biomedical applications that require substantial embedded computing resources for advanced diagnostics and real-time control. This module introduces the next generation E-TROLZ signal acquisition engine which builds on the precision acquisition core by adding data validation. As signal data is communicated multiple times by different hosts, data tagging as indexed by the source provides the mechanism to ensure validation.

The Biomedical Signal Processing Module is used in medical devices as an embedded controller or as a dedicated, protected domain algorithm processor streaming diagnostic results to an embedded host. It is also used as a MATLAB USB client delivering full bandwidth waveforms over USB for real-time processing or analysis in MATLAB. Lastly, it is used as a MATLAB development module for direct deployment of MATLAB code into a medical device.

Features

- Texas Instruments C6727 floating point DSP
- 128 MB RAM & 16 MB Flash
- Fully integrated E-TROLZ signal acquisition engine with data validation
- Fully integrated real-time data streaming to a host controller or PC
- Programmable with optional TI Code Composer Studio SDK and fully integrated API

Benefits

- Fast medical device deployment
- Easy to use, signal acquisition and processing USB client
- Powerful development & debug environment
- Medical device expertise designed in
- Secure processing and communications with data validation
- Fast FDA approval - regulatory compliance and dedicated domain

This module is available off-the-shelf. However, as is the case for all E-TROLZ's platforms, customization to meet your specific needs is always available. The basic development kit includes a module and the software development kit, while the full development kit adds Code Composer Studio and a USB JTAG emulator.

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Specifications

Processors

Floating-Point Digital Signal Processor	TI TMS320C6727 DSP, 64-bit, 270 MHz
E-TROLZ Signal Acquisition Coprocessor	Xilinx FPGA Spartan-3A
USB Client Controller	FTDI USB FT245RQ

Memory

Flash / SRAM	16 / 128 MB
DSP	256 KB RAM, 384 KB ROM, 32 KB program cache

Signal Acquisition Engine

Type	E-TROLZ I/O Bus, 4 Mb/s throughput, data validation
Number of I/O	Up to 64 16-bit channels
Number of Modules	Up to 4
Sample rate (Hz)	100, 200, 400, 1000 (128 – 32,768 available)

Communications

USB 2.0	1 full speed, data streaming API
Status	3 tri-color LEDs, 2 user programmable, 1 reserved

Programming

Application Development	TI Code Composer Studio V3.3 or higher, Free Evaluation Tool
JTAG Emulator	Numerous supported by Code Composer Studio

Connections

Programming	14-pin JTAG header, Tyco 87227-7
Data Acquisition I/O	E-TROLZ 30-pin I/O Bus, 3M P50-030P-RR1-EA
USB 2.0 cable	Micro-B receptacle
USB 2.0 board-to-board	10-pin header, Samtec AW-05-03-G-D-230-075-A

Physical

Size (H x W x D)	95 x 64 x 12 mm (3.75 x 2.5 x 0.5 in)
Weight	400 g (0.2 lb)
Power Consumption, Voltage	1.0 W, 5V from USB or medical grade, wall unit power supply

Classification & Safety

FDA / EU Risk	Class II device / 2B
IEC 60601-1	Medical Electrical Devices, General Requirements
UL2601.1	Including US National Deviations for IEC 60601-1
CSA22.2	Including Canadian National Deviations for IEC 60601-1

Ordering Information

Biomedical Signal Processing Module	10PES010
BPM Development Kit includes Module, SDK	110DSA320
Above with Code Composer Studio, JTAG Emulator	110DST320

Options

Expansion I/O Port	2 SPI, 2 I2C, 2 Serial, 100 GP
Electrophysiological Input Module	16 Channel ECG, 32/64 Channel EEG
Patient Protection Module	4 KV, reinforced insulation, IEC 60601-1 approved
Software Development Kit	Signal acquisition & USB Streaming API for Code Composer Studio

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