







Biomedical Data Acquisition System

Electrophysiology

-  Advanced ECG & EEG data acquisition
-  Stores digital waveforms
-  Simple data management features
-  Highly accurate signal acquisition
-  Low-power, portable monitor
-  Programmable



Overview

A simple yet powerful clinical research solution, the E-TROLZ Biomedical Data Acquisition System is an advanced ECG and EEG recorder designed for low power, portable monitoring of ECG and EEG signals. The Biomedical Data Acquisition System delivers high-end electrophysiological performance in a small lightweight package ideal for ambulatory or portable research.

The Biomedical Data Acquisition System is available in 16 to 64 channel configurations, with the following features:

- 16-bit A/D conversion
- Adjustable sample rate
- Low power, low noise instrumentation amplifiers with configurable gain
- 16-bit DAC for stimulus or monitor output
- Small, lightweight package for ambulatory research
- Real-time data streaming for host PC data verification or integration
- Programmable with optional Microsoft Visual Studio SDK and fully integrated API

The Biomedical Data Acquisition System performs with the accuracy of large, bulky systems without the need for separate amplifiers, cables, or communications equipment. The Research Instrument enables real-time monitoring or long term storage with user programmable event detection or signal processing.

- Ultra low power – enables complete portability, longer tests on a single set of batteries
- Large storage capacity – enables complete portability, longer tests
- Highly accurate signal acquisition – enables research into new areas
- Easy on-line event detection support – enables research into new areas and supports openness
- Multiple file formats – supports openness
- Drag & drop desktop integration – supports openness
- Validate embedded algorithms – enables product development
- Patient protection – assures patient safety

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Specifications

Processor	
Primary Multi-core applications processor	OMAP 5910 – ARM9, C55x DSP, 36MHz
E-TROLZ Coprocessor	XilinX CPLD
RTOS	Windows CE 5.0
Channel Count	
Characterization	Band pass filters and gain customizable by channel
ECG / EEG Research	16 / 32 / 64
Body Temperature	4 optional
Portable Metabolic	Optional
Pulse Oximeter	Optional
Accelerometer	Optional
Channel Conditioning	
Input Impedance	> 10 GOhms
Common Mode Rejection	> 100 dB
Channel Cross Talk	< -60 dB
Input Noise	< 1.8 μ V P-P @ 0.3 – 500 Hz @ 3 σ
Gain (all channels)	5 – 1,000 configurable by channel
DC Input Range	\pm 10 mV
Channel Digitization	
Resolution	0.061 μ V/bit (16-bit A/D, gain of 1,000)
Sample Rate	64 KHz (2 KHz per channel) max, record at 100, 200, 400, 1000 Hz
Data Format	16-bit RAW, WFDB
Test Duration (storage based)	
Minimum configuration (4 Channels @ 100 Hz)	700 hours
Maximum configuration (64 Channels @ 1,000 Hz)	4 hours
Communications	
USB 2.0	1 full speed, full data streaming or mass storage mode
RS-232	2 channels, data synchronized with ECG/EEG data
User Interface	
Display	2 x 16 character LCD (OLED touchscreen optional)
Tone / Pushbutton, switch	1 programmable / 1 input (keypad optional)
Physical	
Size (up to 32 channels) (H x W x D)	125 x 150 x 75 mm (5 x 6 x 3 in)
Weight (up to 32 channels)	4.4 kg (2 lb)
Power Consumption (32 channels)	750 mW
Voltage	3V from AA batteries 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

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