Specifications

Shimmer3 GSR+ Unit

Key Features

3.5 mm jack connector for 2 extra channels of analog or digital data capture

Dual channel GSR scientifically reliable data acquisition

EEPROM storage device (on the GSR+ expansion board) enables expansion board detection and identification as well as 2032 bytes of data storage available to user

Validated for use in biomedical-oriented research applications

4 digitally controlled measurement ranges which developers use to ensure accurate measurements across a variety of test subjects in real world deployments

Open system with no proprietary connectors, extensible software and data format

Introduction

Shimmer3 GSR+ unit provides connections and front-end amplifications for one channel of Galvanic Skin Response (GSR) data acquisition (Electrodermal Resistance Measurement - EDR). Compatible with the Shimmer3 platform, the GSR+ also boasts an additional 3.5 mm connector for 2 extra channels of analog or digital data capture.

Product Overview

The Shimmer3 GSR+ unit addresses challenges of mobility and provides high quality, scientifically reliable data. The Shimmer3 GSR+ unit monitors skin conductance between 2 residual electrodes attached to 2 fingers on one hand.

The 35 mm jack 3 V connector allows users to connect and power an external/third party device, supporting an extra 2 channels of analog or digital data acquisition. The GSR+ unit is compatible with the Shimmer3 platform and hardware. All development tools and enabling applications are compatible with the Shimmer3 platform.

Applications

Affective computing and cognitive factors

Connected/digital health solutions

Stress detection and analysis

Emotional engagement

Psychological arousal (excitement, mental effort, shock, etc.)

Marketing research

Weight and nutrition management

Technical Specifications

[1] Calculated specification assuming that on-board EEPROM is inactive and no external sensor is attached and powered via the analog/digital input channels; exact value is subject to environmental and component variation

[2] % Error is tabulated average across the measurement range

[3] Calculated specification, exact value subject to environmental and component variation

Current Consumption[1]	60µA
Measurement Range[2]	10kΩ - 4.7MΩ (.2uS - 100uS) +/- 10%, 22kΩ - 680kΩ (l. 5-45uS) +/- 3%
Frequency Range[3]	DC-15.9Hz
Connections	- GSR Input 1 (Red), GSR Input 2 (Black): Hospital-Grade 1mm Touchproof IEC/EN 60601-1 DIN42-802 jacks - Auxiliary Analog/Digital input: 3.5mm 4-position jack
Bias Voltage Across GSR Input	0.5V
Input Protection	RF/EMI filtering, current limiting, GSR inputs include defibrillation protection (survive only not repeat)
Dimensions	65mm x 32mm x 12mm

Shimmer3 Specifications

Processing	TI MSP 430 microcontroller (24mHz, 16Bit)
Communication	Bluetooth – RN4678
Storage	Integrated 8GB microSD card slot
Battery	450mAh rechargeable Li-ion
Integrated Motion Sensing	WideRange Accel: ±2g, ±4g, ±8g, ±16g LowNoise Accel: ±2g Digital Mag: ±4900 µT Gyro : ±250, ±500, ±1000, ±2000 dps Pressure Sensor: 300 - 1100 hPa

Supporting Software

Shimmer ConsensysPRO & ConsensysBASIC

Shimmer LabVIEW Instrument Driver

Shimmer MATLAB Instrument Driver

Shimmer Java / Android API

Shimmer C# API

Shimmer 9DoF Calibration

Supporting Hardware & Accessories

Optical Pulse Probe (Finger) & Ear-Clip

Shimmer3 Calibration Stand

Biophysical Leads

Straps, Documents, Charging Dock/Base, Case

Electrodes