Shimmer GSR+ Unit

INTRODUCTION

Shimmer GSR+ 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 3.5mm connector for 2 extra channels of analog or digital data capture.

KEY FEATURES

- 3.5mm 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

APPLICATIONS

GSR+ unit is compatible with the Shimmer3 platform and can be applied to a variety of applications such as:

- 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

PRODUCT OVERVIEW

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

The 3.5mm jack 3V 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.
Shimmer
GSR+ Unit

TECHNICAL SPECIFICATIONS

Current Consumption: 60μA
Measurement Range: 10kΩ - 4.7MΩ (2uS - 100uS) +/- 10%, 22kΩ - 680kΩ (1.5-45uS) +/- 3%
Frequency Range: DC-15.9Hz
Connections: GSR Input 1 (Red), GSR Input 2 (Black); Hospital-Grade 1mm Touchproof IEC/EN 60601-1 DIN41612 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 if not repeated)
Dimensions: 65mm x 32mm x 12mm

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 variability
2. % trim is tabulated average across the measurement range
3. Calculated specification, exact value subject to environmental and component variability

SUPPORTING APPLICATIONS

Shimmer Consensys Software
Synchronisation of Data: Consensys Software
ShimmerSensing LabVIEW Instrument Driver
Shimmer MATLAB Instrument Driver
Shimmer Java/Android API
Shimmer Capture - C# API/.NET Development
Calibration: Shimmer 9DoF Calibration

SHIMMER3 UNIT SPECIFICATIONS

Processing: TMS 430 microcontroller (24MHz, 16Bit)
Communication: Bluetooth - RN42
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, Gyro, Pressure Sensor

SUPPORTING HARDWARE & ACCESSORIES

- Optical Pulse Sensor Finger
- Optical Pulse Sensor Earlobe
- Biophysical Leads
- Straps, Documents, Charger, Case
- Finger Electrodes

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