ZUG
MEDICAL SYSTEMS

Prime Innovation for Medical Application

ECG Module

Zug 3/5 leads ECG module, referred herein after as MECG35 Module is designed to be integrated in adult, children or neonate patient monitoring systems in all hospital departments and emergency services.

The MECG35 ECG Module can measure ECG, Respiratory, and Temperature.

It allows the detection of 18 types of arrhythmias.

ECG Module

MECG35

Features

- Support 3/5 leads ECG (3 independent channels), 1 respiration, 2 temperature
- With 4 measurement mode: diagnose, monitor, HARDEST and operation measurement
- Arrhythmia diagnostic (18 types)
- With special function of ECG analysis, verified by MIT database
- Support ZUGMED protocol
- Support OEM, the best choice of multi-parameter monitor

Application

- ECG function of Patient Monitor

Overview

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The MECG35 ECG Module can measure ECG, Respiratory, and Temperature.

Methods of measurements:

The ECG measurement: as the heart generates electrical stimulation and biological electricity, these signals transmit to body surface before shrinking mechanically. Parts of the body generate different electrical potential and form the potential difference on body surface. The recorded potential difference creates dynamic curve which is ECG signal. **The respiratory signal measurement** is based on the impedance method and detects vital parameters by measuring the change of thoracic impedance when people breathe and the thorax fluctuation. **Temperature measurement** is performed through thermostat.

Functions

Measurement Modes

There are four kinds of measurement mode: diagnose, monitor, HARDEST and operation mode.

Diagnose mode ..... *The filter range is 0.05HZ-130HZ*
Monitor mode ..... *The filter range is 0.05HZ-40HZ*
HARDEST mode ..... *The filter range is 5HZ-20HZ*
Operation mode ..... *The filter range is 1HZ-25HZ*

Patient Types

Adult, Children, Neonate.

Calibration

Recording the amplitude of wave by inputting a standard voltage 1mv.

Gain Setting

Adjusting the amplitude of the ECG and respiratory waveform.

Heart Rate Calculation Channel

I, II, VI channel can be used as analysis channel or you can choose any other channel by yourself.

Leads Setting

You can select Lead I, Lead II, Lead AVL, Lead AVR, Lead AVF as the signal of Channel I and Channel II.

Reliability

The trapped wave mode: 50HZ, 60HZ, 50/60HZ are available and you also can turn off the trapped wave mode.

Arrhythmia Calculation List

No	Description	No	Description
1	Asystole	10	Supraventricular tachycardia
2	VF	11	Supraventricular bradycardia
3	Ventricular tachycardia	12	Multiform VPB
4	R ON T	13	Pace not capture
5	Multiple VPB	14	Pacer not paced
6	Couple VPB	15	Irregular rhythm
7	Accidental VPB	16	Missed beat
8	Bigeminy	17	Normal sinus rhythm
9	Trigeminy	18	Oversized noise

Performance

ECG

Range *0.15mv-5.5mv*
Accuracy *2.36uV/LSB*
Resolution *1%*

Respiratory

Range ..... *15-120 rpm*
Base resistance value ..... *500-2000 Ω*
Variable resistance value ..... *0.2-3.0 Ω*

Heart rate

Range ..... *15-300 bpm, 15-350 bpm for neonate*
Accuracy ..... *±1 bpm*
Resolution ..... *1 bpm*

Temperature

Range ..... *0-50°C*
Accuracy ..... */*
Resolution ..... *0.1°C*

Standards compliance description

Standard NO.	Number of standard	Version
IEC60601-2-25	*Medical electrical equipment—part 2-25: particular requirements for the basic safety and essential performance of electrocardiographs*	*2011*

Electrical characteristics

Input Voltage ..... *External power supply should provide +12V DC*
Voltage offset range should between ±10% of voltage full range

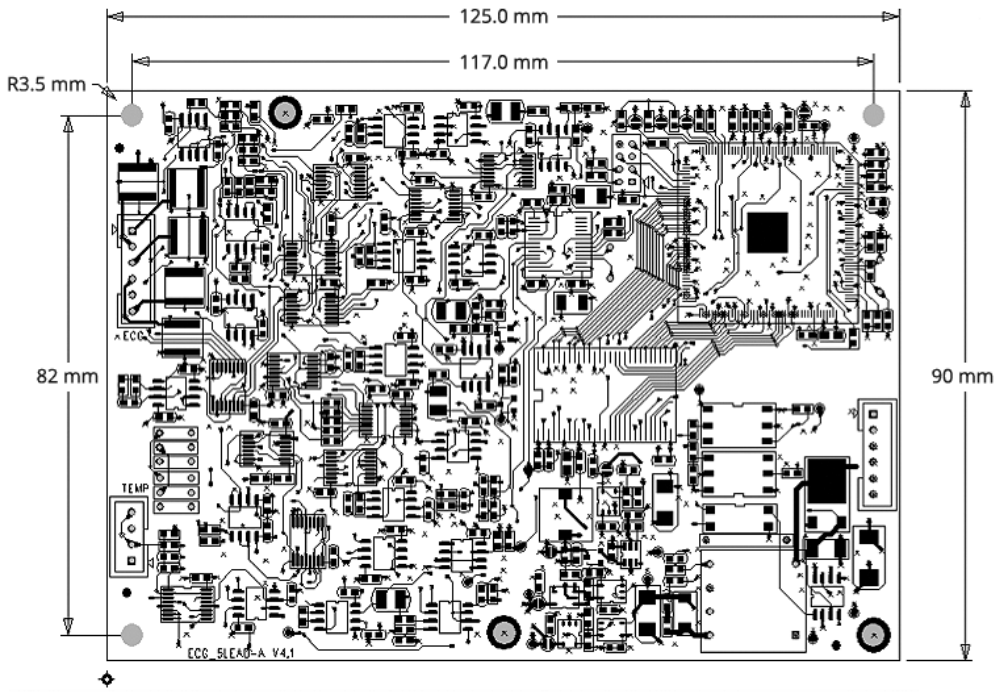
Power Consumption ..... *≤ 5W*

Environment characteristics

	Operating environment	Storage environment
Temperature	*10°C to 40°C (50°F to 140°F)*	*-20°C to +70°C (4°F to 158°F)*
Humidity	*15%-90% non-condensing*	*15%-90% non-condensing*
Altitude	*-170 m to +1700 m*	*-170 m to +1700 m*

Dimensions

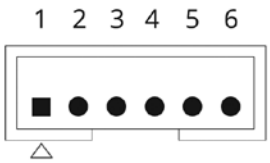
The board dimensions are given in millimeters.



Interfaces

Power and Communication Interface

The connector J4 shown below is used for the purpose of communication and power supply. The pin 1 is actually indicated by an arrow on the PCB.



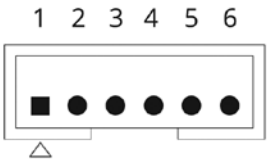
The table shows the pin assignment of this connector.

Pin No	Signal	Description
1	*TXD*	*UART Sending data from module to host*
2	*RXD*	*UART Receiving data from host to the module*
3	*DGND*	*Ground*
4	*+12V*	*Power Supply input 12V DC*
5	*DGND*	*Ground*
6	*+12V*	*Power Supply input 12V DC*

Note: Pins 4 and 6 are internally connected to +12V, and pins 3 and 5 are internally connected to DGND.

ECG Leads Input Interface

The connector J10 shown below is used for the purpose of ECG signals transmission. The pin 1 is actually indicated by an arrow on the PCB.

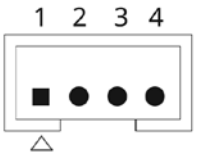


The table shows the pin assignment of this connector.

Pin No	Signal	Description
1	*RA*	*Right arm*
2	*LA*	*Left arm*
3	*LL*	*Left leg*
4	*V1*	*Chest lead, in No.4 ribs stick to sternum*
5	*ECG SHIELD*	*Signal shielding wire*
6	*RL*	*Right leg*

Temperature Sensor Interface

The connector J8 shown below is used for the purpose of temperature signals transmission. The pin 1 is actually indicated by an arrow on the PCB.



The table shows the pin assignment of this connector.

Pin No	Signal	Description
1	*TEMP1*	*Temperature sensor 1, positive input*
2	*TGND*	*Temperature sensor 1, negative input*
3	*TEMP2*	*Temperature sensor 2, positive input*
4	*TGND*	*Temperature sensor 2, negative input*

Ordering

Our 3/5 Leads module part number is **MECG35**.

For ordering our module, please contact directly our sales team by email at **sales@zugmed.com** or refer to our website **www.zugmed.com** for further information.

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