

**8201**

**IEPE Signal  
Conditioner**

**Product Manual**

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## Friendly Reminder:

This product is a precision instrument, ensure that you can use it correctly, please read the manual carefully before use. Without man-made damage, the warranty period is 12 months.

## 1. Introduction

8201 Portable Constant Current Conditioner is an instrument specially designed for using with IEPE sensors. Small size, light weight and easy to use, it has a wide range of applications in scientific research, teaching and many other fields.

This instrument has the following features:

- 1) Full metal housing with strong anti-interference
- 2)  $\times 1$ ,  $\times 10$  gain options
- 3) Small size and light weight
- 4) Wide frequency range and reliable operation
- 5) Status indicators for different operating states
- 6) Battery voltage low-voltage indication
- 7) Powered by built-in rechargeable battery
- 8) Built-in exciting circuit to provide suitable operating voltage for IEPE sensor
- 9) Ideal for using in the field and without external power

## 2. Technical parameters

### 1) Input characteristics

Input channel: 1

Input sensor: IEPE sensor

Input range:  $\pm 5V_p$

### 2) Excitation source

Voltage:  $+24 \pm 2$  VDC

Current: 4mA

### 3) Frequency characteristics

Upper frequency limit: 350kHz ( $-3dB \pm 1dB$ )

Lower frequency limit:  $\leq 0.3Hz$  ( $-3dB \pm 1dB$ )

Attenuation slope:  $-12dB \pm 1dB/oct$

### 4) Output characteristics

Gain:  $\times 1$ ,  $\times 10$  mV/mV

Output range:  $\leq \pm 5V_p$

Accuracy:  $\leq \pm 0.5\%$

Noise:  $\leq 1\mu V_{rms}$

### 5) Environmental conditions

Temperature:

Operating temperature:  $0^\circ C \sim 40^\circ C$

Storage temperature:  $-55^\circ C \sim 85^\circ C$

Humidity: 80% R.H. max.

6) Power mode

Power supply: Battery or external power supply

Internal: Rechargeable 9V battery

External: DC+12V

7) External features

Dimensions: 100mm(L)×66mm(W)×27mm(H)

Weight: approx. 300grams

8) Connector:

Input: BNC Jack (Female)

Output: BNC Jack (Female)

### 3. Principle of operation

The 8201 is an amplifier that provides power to the IEPE sensor and amplifies and filters the output signal of the IEPE sensor:

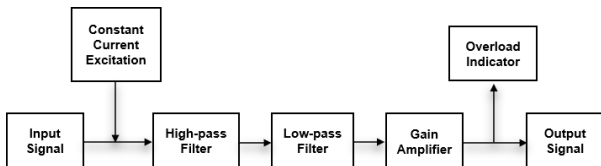


Figure 1 8201 Principle Diagram

- 1) Power supply section: the external 12V DC power supply is transformed to provide the power required for the normal operation of the instrument as well as to charge the internal 9V rechargeable battery.
- 2) Constant current source section: provides the power required for the normal operation of the IEPE sensor, which is supplied directly to the IEPE sensor via the input cable.
- 3) High-pass filtering section: the signal is filtered to remove the DC bias voltage from the sensor output.

- 4) Low-pass filtering section: the signal is filtered by 100kHz through LPF selections (cut-off frequency-3dB, -12dB/oct). The low-pass filter is a second-order Butterworth-type active filter with good flatness in the bandwidth.
- 5) Gain amplification section: the input signal is amplified by  $\times 1$  or  $\times 10$  through gain selection.
- 6) Low-voltage indicator section: the low-voltage indicator monitors the internal battery voltage, it consists of a voltage comparator and a light emitting diode with a threshold voltage of approximately 5Vp.

## 4. Panel function

### 4.1. Front panel

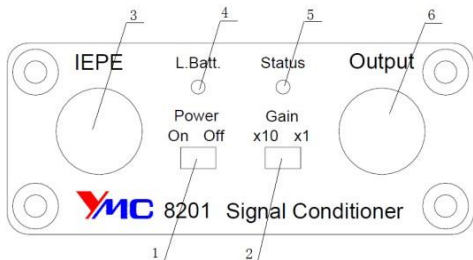


Figure 2 8201 Front Panel Diagram

1) Power switch

2) Gain selector switch

This switch selects the gain amplification of the signal.

3) IEPE sensor input

The IEPE sensor is fed through this input.

4) Built-in battery low-voltage indication



This indicator lights up when the internal battery of the conditioner is below the normal operating voltage. If the internal rechargeable battery is used, it can be charged by the power adapter supplied with the instrument.

#### 5) Status indicator

The status indicator has three states. When the IEPE sensor is not connected to the input, or when the IEPE sensor is open, the indicator shows red; when the IEPE sensor is correctly connected to the input and the sensor is working normally, the indicator shows green; when the IEPE sensor is short, the indicator shows orange.

#### 6) Signal output

The signal output of the 8201 IEPE signal conditioner can be connected to subsequent instruments such as voltmeters, oscilloscopes, collectors, etc.

## 4.2. Back panel

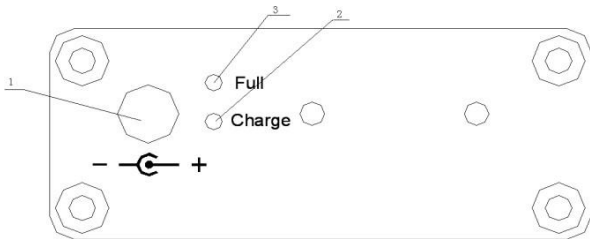


Figure 3 8201 Back Panel Diagram

### 1) Input socket for the power adapter

Input socket for external power adapter. The external adapter power supply can be used either as a normal operating power supply for the 8201 or as a charging adapter for the internal rechargeable battery.

Note: Please use suitable the rechargeable battery and adapter supplied.

### 2) Charging operation indicator

When the charger adapter is working, the red light is on.

### 3) Rechargeable battery full indicator

When the rechargeable battery is fully charged, the green light is on.

## **5. How to use**

- 1) Connect the IEPE sensor to the input jack.
- 2) Turn the power switch to “ON”.
- 3) Select the gain switch according to the value of the input signal.
- 4) Connect the output to subsequent instruments with the output cable.

## **6. Accessories**

- |                                  |     |
|----------------------------------|-----|
| 1) 8201 IEPE signal conditioner: | 1ea |
| 2) Power adapter:                | 1ea |