

### Features

- Ultra high effective input impedance, typically 20GΩ.
- Wide operating voltage from 4.0 to 8.0V.
- Operating temperature range 0 to 50°C.
- 200pF load drive capability.
- Ground referenced output.
- DC signal rejection.
- Dual sensor board allows differential operation.

### Applications

- Movement sensing due to electric field disturbance
- Electric field and potential sensing.

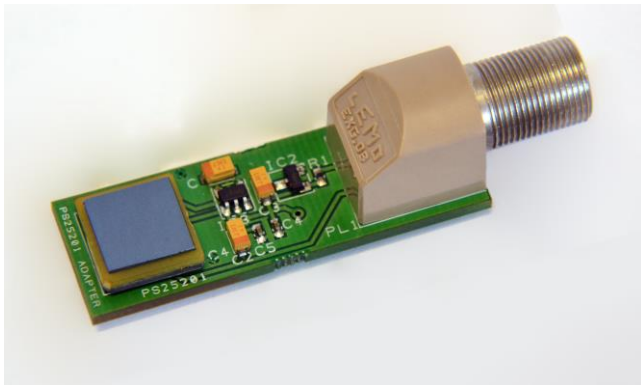


Figure 1: PS25014A single channel board carrying a single PS25401 sensor

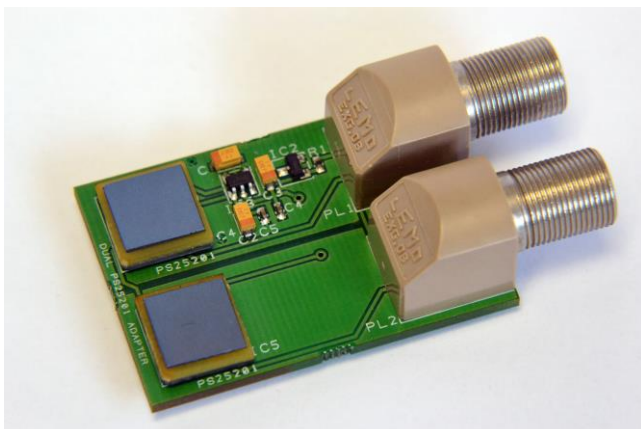


Figure 2: PS25014B dual channel board carrying two PS25401 sensors

### Description

The PS25014A and PS25014B are single and dual channel application boards for the demonstration of the Plessey PS25401 electric potential sensor.

The PS25401 electric potential sensors on these boards allow the measurement of a wide range of electric potential sources. Two sensors may be used differentially to determine electric field. The sensors incorporate a DC block feature that allows the DC component of an applied signal to be rejected while maintaining good low frequency response. The electrode surface of the detector is passivated with an inert dielectric that provides environmental protection. These sensors are not intended for direct coupling to the surface of the skin. In the case of electrophysiological sensing the following sensors should be used:

| ECG Sensor | -3dB bandwidth mHz | Voltage gain | Application Boards Single/Dual |
|------------|--------------------|--------------|--------------------------------|
| PS25201    | 200                | 50           | PS25012A<br>PS25012B           |
| PS25201A   | 200                | 50           | PS25012A1<br>PS25012B1         |
| PS25202    | 50                 | 50           | PS25012A2<br>PS25012B2         |
| PS25203    | 200                | 10           | PS25012A3<br>PS25012B3         |
| PS25204    | 50                 | 10           | PS25012A4<br>PS25012B4         |

The PS25401 sensor demonstrated on these boards is an integrated assembly designed for surface mount assembly on a motherboard.

The application boards provide a regulated +2.5V and generated -2.5V supplies that are used to operate the sensor. This allows the boards to demonstrate the sensors from a wide, single sided, power supply voltage while the output of the sensor can cover the range  $\pm 2.1V$ . The boards are connected by a high reliability five pin connector.

**Electrical Characteristics**

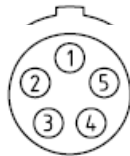
These electrical characteristics apply to the PS25014A and PS25014B application boards that carry the PS25401 sensors. The electrical characteristics (@25°C) are guaranteed by either production test or by design and characterisation. They apply within the specified supply voltage unless otherwise stated.

| Characteristics             | Value |      |      | Units | Conditions/Notes   |
|-----------------------------|-------|------|------|-------|--|
|                             | Min.  | Typ. | Max. |       |  |
| Supply voltage              | 4.0   |      | 8.0  | V     | Each PS25401 sensor consumes 2.0mA (typ). The additional current is consumed by the app'n board. |
| Supply current; PS25014A    | 2.7   |      | 10.0 | mA    |  |
| Supply current; PS25014B    | 5.4   |      | 20.0 | mA    |  |
| Effective input impedance   |       | 20   | tbd  | GΩ    |  |
| Effective input capacitance |       | 15   |      | pF    |  |
| Voltage Gain (Av)           |       | 50   |      |       |  |
| Noise                       |       | tbd  |      |       |  |

**Electrical Connector**

The PS25014A and PS25014B application boards are fitted with one or two five pin sockets. The connectivity of these sockets is shown below:

- Pin 1 Output
- Pin 2 Gnd
- Pin 3 Supply
- Pin 4 Gnd
- Pin 5 Not used



The supply and ground connections of the two sockets on the dual channel PS25014B board are connected in parallel so that the board will be active with either one or both connectors in use. However, when both sockets are powered the supplied voltages must be identical.

**Auxiliary Components**

- PS25000A Control and Interface Box; 50Hz.  
This box provides power for one or two sensors. It incorporates switchable low pass and 50Hz notch filters. The box contains an amplifier with switchable gain of either x1 or x10. The box also generates a differential signal from two sensors. The box incorporates a data acquisition card that provides the data from the sensors via a USB cable to a computer. The box is powered by the USB connection. A soft scope is provided with this box for display of the signals on a computer.
- PS25001A Control and Interface Box; 60Hz.  
This box is identical to the PS25000A except that the switchable notch filter is preset to reject 60Hz.
- PS25013 Adapter cable.  
This 1.5m long cable connects the sockets of the EPIC application boards to the PS25000A or PS25001A Control and Interface Box.

**For further information about this and other products, please visit:  
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Products are intended for normal commercial applications. For applications requiring unusual environmental requirements, extended temperature range, or high reliability capability (e.g. military, or medical applications), special processing/testing/conditions of sale may be available on application to Plessey.

Data Sheet 291463 Issue 2

Plessey Semiconductors Ltd.

Design & Technology Centre, Delta 500, Delta Business Park, Great Western Way, Swindon, UK SN5 7XE

Tel: +44 1793 518000

Fax: +44 1793 518030

Web: [www.plesseysemi.com](http://www.plesseysemi.com)



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#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.