

DRAFT PRODUCT INFORMATION

## NEW D440 EMG Isolated Amplifier

Low Noise Circuitry • 2 & 4 Channel Versions • AC or DC Mode

### Portable and Standalone

The Digitimer D440 Isolated Amplifier is a low noise solution for human EMG studies, specifically those related to nerve excitability. Low noise performance is significantly enhanced through the use of a Driven Right Leg (DRL) circuit which reduces Common-mode interference. The D440 features an amplification range of x100 to x20k. The gain, filter and mode settings for individual channels are adjusted using our own "virtual front panel" software or other software via a COM interface.



### AC and DC Operating Modes

The D440 is designed to operate in AC, DC, single-ended and differential modes and includes a manually activated or externally gated de-block function, which can be useful for minimising the effects of magnetic stimulation artifacts.

### Compatible with Standard Electrode Connectors

Electrodes are connected to the front panel via 1.5mm DIN 42 802 or standard 5-pole DIN connectors. Amplified analog signals exit the D440 via BNC (Ch.1 only) or "D" connector (all channels) on the rear panel.

### Designed for Human Research Applications

The D440 has been designed to meet the requirements of the European Medical Device Directive, however its use is currently limited to human research studies.

### QtracW - Threshold Tracking & Nerve Excitability

The D440 has been designed to appeal to users of our DS5 Bipolar Constant Current Stimulator, who employ the DS5 and QtracW software to research human nerve excitability. This application requires a very low noise amplifier, which outputs an analog signal and can be controlled directly by the QtracW data acquisition software. These requirements are fully satisfied by the Digitimer D440 Isolated Amplifier.



## Features Overview

Two [D440-2] or Four [D440-4] Channels of amplification, filtering and isolation – with independent control of each channel.

Primarily designed as an AC amplifier, the D440 will also operate in DC mode.

Input impedance of each channel is 1Gohm.

On/off control of individual channels. The electronic inputs of individual channels can be grounded reducing cross-talk noise when recording from fewer channels. This also disconnects the patient from the electronics.

Inputs may be electronically switched between a differential and single-ended system.

Common 'Driven Right Leg' system with adjustable gain for lower noise.

Overall system GAIN for each channel x100 (10mV/V) to x20,000 (5µV/V).

Outputs have a ±5V range. The rear panel has a BNC socket for monitoring the output of channel 1 (this signal is mirrored on a 9-way 'D' connector on the rear panel along with the output signals of channels 2, 3 and 4).

LOW-CUT FILTER settings are selectable between 0.159 Hz, 1Hz, 3Hz, 5Hz, 10Hz, 20 Hz, and 50Hz for -3dB and are first order.

HIGH-CUT FILTER settings are selectable between 1000Hz, 2000Hz, 3000Hz, and 10kHz for -3dB and are second order, low phase shift Bessel style filters.

The front panel contains three LEDs which are used to indicate the units power supply status, Internal-Error and Data-Bus Busy.

The rear panel contains a mains IEC inlet socket with mains voltage selection, fuses and mains on/off switch, as well as a 9-way "D" connector, for connecting channels to a data acquisition system and a USB port for connection to a Windows PC.

A push button Deblock control is present on the front panel with a TTL compatible Deblock facility available via a BNC connector on the rear panel.

Multiple D440 systems can be connected to a single PC.

Supplied with "virtual front panel" control software to adjust amplifier settings. The D440 will also include a COM interface to allow other software applications to control the amplifier settings.

Mains operating voltage between 115V and 230V (switch selectable) at 50-60Hz. Note: for locations with low mains voltage (< 105V), such as some areas of Japan, a custom D440 with a replaced mains transformer will be required.

## Digitimer Ltd

NEUROSPEC AG - Stansstaderstr.10 - CH 6370 Stans NW

Tel: +41 41 371 07 04 Fax: +41 41 371 07 03

E-mail: [info@neurospec.com](mailto:info@neurospec.com)

Website: [www.neurospec.com](http://www.neurospec.com)