

D440

Digitimer

NEUROSPEC

Research Neurosciences

D440 Isolated Amplifier

Low Noise Circuitry • 2 or 4 Channels • AC or DC Operating Modes

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 international medical device standards, including the requirements of the European Medical Device Directive, however, its use is currently limited to human research studies only.

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.

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Isolated Amplifier

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Windows™ Compatible D440 Virtual Front Panel

Each D440 amplifier is supplied with Windows™ compatible software which enables amplifier settings to be modified. For programmers, a COM interface is provided which allows control of amplifier settings by other software, such as that used for data acquisition.



Manual Push button De-block control.

LED Status Indicators

Signal output connectors:-
BNC (Ch1) & 9-way "D" Connector
for Ch1-2 (D440-2) or Ch1-4 (D440-4)

1.5mm Common Electrode
Connection (linked to Common
of each 5-pin DIN socket)

USB Socket for connection
to host computer

External TTL De-block control (BNC).

Choice of a pair of 1.5mm DIN 42802
sockets or 5-pin DIN connector for electrode
inputs..

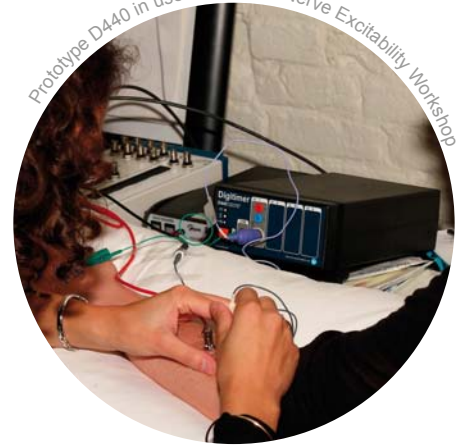


Supplied Accessories

As well as a mains lead, control software and operator's manual, the D440 is supplied with a selection of accessory cables to enable connection to the host computer (D-USB-F USB Cable), recording electrodes (D440-IL Input Lead, one per channel) and a BNC-based data acquisition system (D440-OL-2CH or D440-OL-4CH).

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Prototype D440 in use at a recent Nerve Excitability Workshop



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 (50 μ V/V).

Outputs have a $\pm 5V$ 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). A signal output cable terminated with an appropriate number of BNC connections is supplied with each amplifier.

LOW-CUT FILTER settings are selectable between 0 (DC), 0.159 Hz, 1Hz, 3Hz, 5Hz, 10Hz, 30 Hz and 50Hz for -3dB and are first order.

HIGH-CUT FILTER settings are selectable between 1kHz, 3kHz, 5kHz, 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.

Standalone Use - Previous amplifier settings will be maintained if a D440 is used without PC connection.

Supplied with "virtual front panel" control software to adjust the settings of a single D440 amplifier. For applications requiring more than 4 channels, we recommend our D360 8-Channel Isolated Patient Amplifier. The D440 includes 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.

The Digitimer D440 is NOT a medical device and use is currently limited to human research applications

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