

D360R-4

Digitimer

D360R-4

4 Channel Isolated Amplifier/Filter

Low Noise Circuitry • 4 Differential Channels • For EMG, EEG or EP



Designed for Safety in Human Research

The Digitimer D360R-4 is the first in a new family of isolated research amplifiers. Employing amplifier circuitry based on the design of our popular 8-channel D360 Patient Amplifier, the D360R-4 is intended for EMG, EP or EEG applications in a human research environment.

Four Low Noise AC Coupled Differential Channels

The D360R-4 provides the same high levels of performance as the 8-channel D360, but with only four channels, provides a budget friendly solution for those who don't need 8 channels.

Flexible Filter Ranges and High Gain Capabilities

The D360R-4 has a gain range of x100 to x3,000,000 and also includes flexible options for high and low pass filters as well as a 50/60Hz notch filter.

Windows (32/64bit) Compatible Control Software

The D360R-4 control software operates in 32 or 64 bit environments and includes an API allowing control by third party DAQ software, including CED Signal and Spike2*.

* Currently in development

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Windows™ Compatible D360R-4 Client Software

Each D360R-4 amplifier is supplied with Windows™ compatible Client Software which enables amplifier settings to be modified. For programmers, an API is provided to allow control of amplifier settings by other software, such as that used for data acquisition. For ease of use, channels may be linked to share settings and protocols may be saved for future recall.

Multiple D360R-4 amplifiers may be connected to a single PC and instance of the Client Software.



Supplied Accessories

As well as a mains lead and operator's manual, the D360R-4 is supplied with accessory cables including a USB cable for connection to the host PC, a 2m long headstage connection cable, an output cable (9-way "D" to 4x BNC) and flash drive containing the D360R Client Software.

Rear Panel Deblock Input and Signal Output

The rear panel of the the D360R-4 includes a USB socket for host PC connection, a 9-way "D" signal output socket and a BNC TTL deblock socket, which permits TTL controlled deblocking of the amplifier.



Headstage Connection via 2m fully detachable cable

Remote Preamplifier Headstage

The D360R-4 features a remote preamplifier headstage which can be located near or on the subject. The headstage includes 4 pairs of 1.5mm touch-proof DIN42802 input sockets for the differential pairs of electrodes, has a single Common input and a Deblock button.

Specifications Summary

Headstage

The headstage is a small remote pre-amplifier to which the operator connects the electrodes from the subject to the amplifier. The head stage is small enough to be attached to a subject to permit partial mobility should this be required. The headstage is connected to the main amplifier using a 2m multi-way cable.

- 1GΩ Input impedance
- Independent channel enable/disable (Inputs are connected to COM when a channel is disabled)
- Single COM reference input (1.5mm touch-proof DIN42802 socket).
- Differential Channel Inputs (+ve [ref] -ve[act]), (Red & Blue 1.5mm DIN42802 touch-proof sockets)

Analogue Channels

- Maximum Channels : 4
- CMRR : ≥90dB

The following channel parameters can be independently controlled and are accurate to within ±5%:

- Gain : x100–x3,000,000 (10mV/V–0.33μV/V) 80 gains from x100 to x3,000,000
- Low Cut Filter: 0.05–255Hz, 0.5–2.5Hz (0.01Hz Steps), 5–62.0Hz (0.25Hz Steps), 62–255Hz (1.0Hz Steps)
- High Cut Filter: 20–25,500Hz, 20–1300Hz (5Hz Steps), 1300–25,500Hz (100Hz Steps)
- Notch Filter (50/60Hz) auto-detected based on mains frequency

Outputs

Analogue channel outputs (max. range ±10V) are via a 9-way connector on the rear panel. An output lead is supplied, which breaks-out individual channels to 1m BNC terminated cable for connection to chosen acquisition interface.

Deblock

The deblock provides a means to remove excessive DC from the low pass series capacitors which in certain situations could block the signal. The de-block can be applied in using the Client Software/API, a button press on the headstage or using a precise TTL sync voltage connected to an input BNC on the rear panel. Deblock is applied to all channels.

- Deblock button on headstage, applied whilst button depressed.
- Deblock can be applied using the Client Software or API.
- TTL BNC Input (2 modes)
 - Timed - 0.1ms – 10ms (0.1 steps) – triggered on rising edge of TTL BNC input.
 - Gated – Deblock active for the time TTL BNC input is held high.

Software

Supplied D360R-4 Client Software compatible with Windows10 (32/64bit) and above.

Physical Size

Headstage: 134 x 76 x 39mm, weight: 0.255kg; Amplifier: 228 x 242 x 111mm, weight: 3kg

Safety

The D360R-4 is NOT a medical device and is intended for research use, however, it has been designed to meet all of the electrical requirements of IEC 60601-1, ensuring safety in human research. This includes but is not limited to:

- Input circuit is fully electrically isolated.
- Creepage and clearance meets or exceeds the minimum requirements.
- All inputs are single fault condition safe.

Power Requirements

Mains requirements: 120/240AVC (Switch selected) 50/60 Hz

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