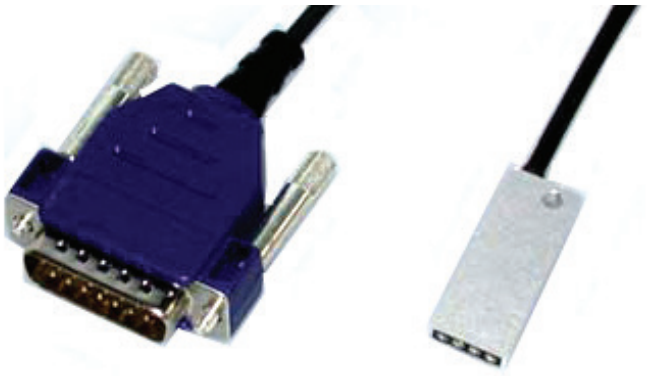
2-Channel Miniature Preamplifier MPA2I

2-Channel Miniature Preamplifier MPA2I for Use with the ME-System



2-Channel Miniature Preamplifier Input Connector

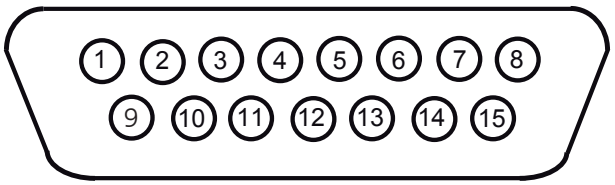
Pin 1	GND (Ground)
Pin 2	Reference input
Pin 3 and 4	Recording channels 1 and 2

Application

The 2-Channel Miniature Preamplifier MPA2I is connected to the microelectrodes for providing the initial tenfold amplification stage. It has additional common ground and reference electrode inputs. The reference electrode is ideally identical to the recording electrodes and placed into a comparable but inactive area or tissue. Background or noise signals that are picked up by both the reference electrode and the recording electrodes are removed.

The metal case provides electrical shielding. Electrode damage is prevented by the very low bias current. The high input impedance ensures stable long-term recordings: Ideally, the input impedance would be infinite. As low voltages are generally recorded, a high current would flow if the input impedance were low. As a result, the amplifier would not be able to deliver the current and the voltage would break down. The miniature preamplifier has a high input impedance to avoid this problem.

2-Channel Miniature Preamplifier Output Connector



15-Pin D-Sub Male Connector

Pin 1	GND (Power Ground)
Pin 9	GNDS (Signal Ground)*
Pin 15	Positive supply voltage
Pin 8	Negative supply voltage
Pin 3, 11, 4, 12, 5, 13, 6, 14, 7	(GND) Ground
Pin 2 and 10	Recording channels 1 and 2

* = Connected to the ground of the amplifier. The signal ground is used as the reference for the following filter amplifier.

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2-Channel Miniature Preamplifier MPA2I

Technical Specifications

Type	MPA2I
Operating temperature Storage temperature Relative humidity	0 ° to 50 °C 0 ° to 50 °C 10 % to 85 % non-condensing
Dimensions (W x D x H)	ca. 12 mm x 31 mm x 3 mm w/o connector
Length of the cable	1.5 m
Weight	ca. 1.3 g w/o cable, 21 g with cable and plug
Maximum tensile strength of the cable	20 N
Input connector type	Single-row precision socket, 100 mil (2.54 mm) grid pattern, for 0.6 ± 0.04 mm round pins
Output connector type	15-pin D-Sub, male
Number of input channels Number of output channels	2 2
Supply voltage Supply current	± 3 V to ± 8 V DC < ± 2 mA, typically ± 1 mA
Gain	10
Bandwidth	DC to 50 kHz
Input voltage	± 500 mV (with respect to a supply voltage of 5 V)
Input impedance	10^{12} Ω paralell to 10 pF
Input noise	typical 1.5 μV_{RMS} (1 Hz to 5 kHz, inputs short-circuited)
Noise density	e_n = 15 nV / √ Hz
Output voltage Output current	= supply voltage maximal 10 mA
Output impedance	0 Ω

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