MED64

The most sensitive microelectrode array system for *in vitro* extracellular electrophysiology

Product Manual

MED Mini Connector

P/N: MED-C04

ALPHA MED SCIENTIFIC

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1. MED Mini Connector Components and Functions

The MED Mini Connector (MED-C04) is a Connector for the MED64-Quad II System. It connects the MED Probe 16 to the MED64 Head Amplifier (MED-A64HE1S) allowing recording extracellular signals at 16 micro planar electrodes embedded in the MED Probe 16

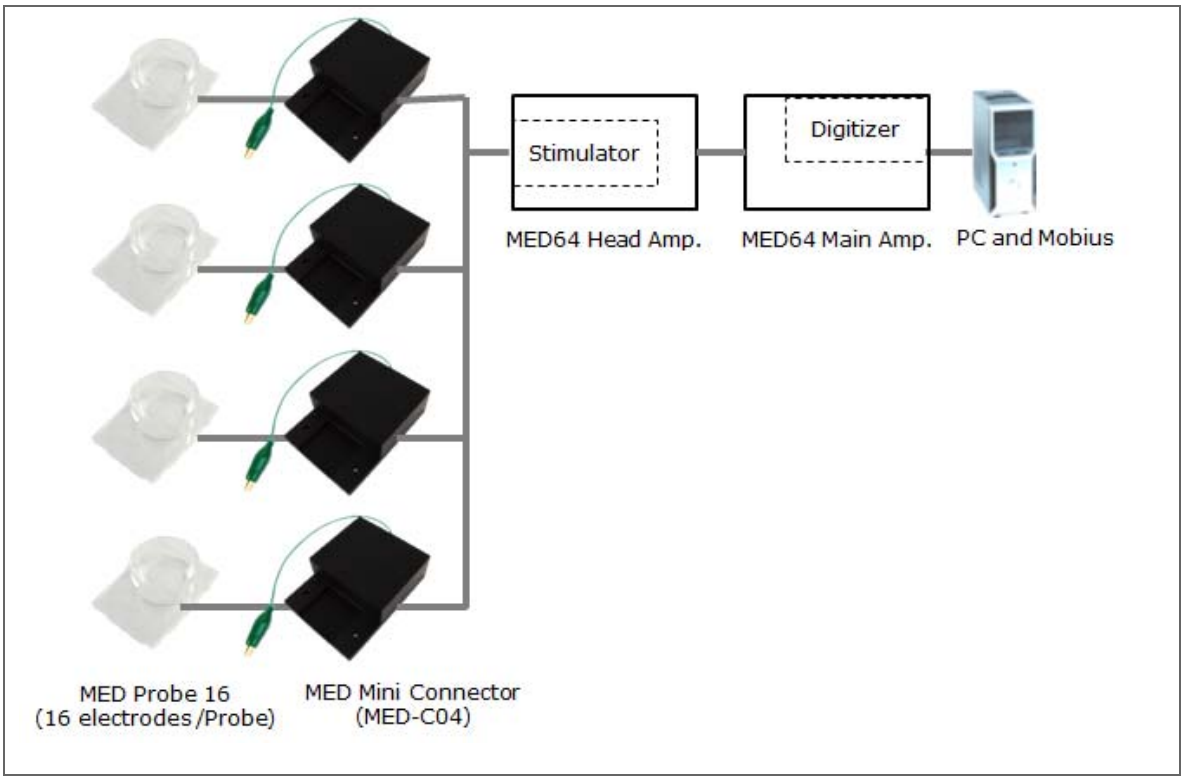


Figure 1. System diagram for the MED64-Quad II System.

1-1. Components and their functions

MED Mini Connector unit

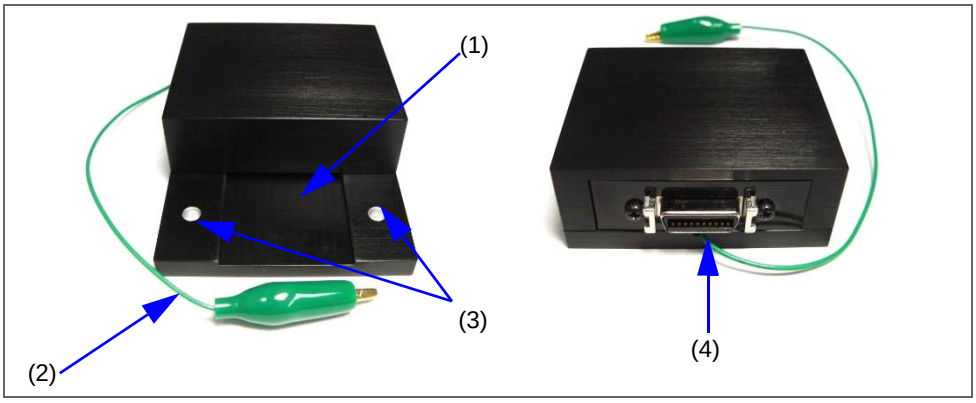


Figure 2. MED Mini Connector. Front view (left) and back view (right).

(1) MED Probe port:
Install the MED Probe 16 here.

(2) Ground wire:
Ground the additional ref. electrode here when additional ref. electrode (e.g. platinum wire in the Perfusion Cap) is used.

(3) Guide hole:
Those holes are used when the MED Mini Connector is installed onto the ThermoBase.

(4) 20-pin output terminal:
Connect the MED Connector Cable (20 pin) here.

Accessories

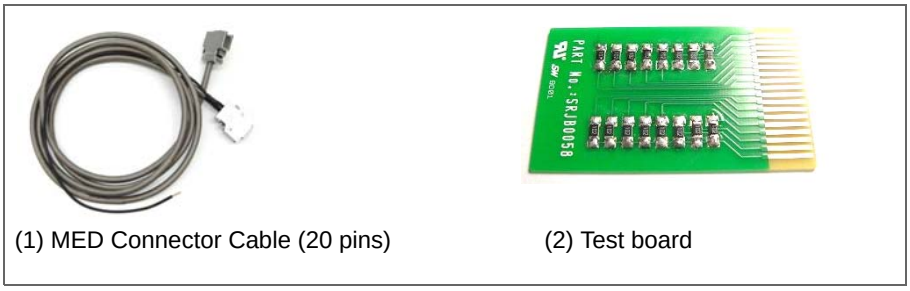


Figure 3. Accessories for the MED Mini Connector.

(1) MED Connector Cable (20 pin):
Connect the 20 pin output terminal to the INPUT 1-16CH, 17-32CH, 33-48Ch, 49-64CH in the MED64 Head Amplifier (MED-A64HE1S).

(2) Testt board:
Install in the Probe port. Use it to check the MED64-Quad II System is working appropriately.

2. Installation

2-1. Connecting the MED Mini Connector to the MED64 Head Amplifier

- Please read product manuals for all components and Operating instruction for the MED64-Quad II System as well for installation of the MED64-Quad II System.

1. Place the MED Mini Connector on a stable table and AWAY from any equipment which generates an electric or magnetic filed (e.g. power supply unit, peristaltic pump, heater).

2. Connects the 20 pin output terminals of the MED Mini Connector to either of the INPUT 1-16CH, 17-32CH, 33-48Ch, 49-64 terminal in the MED64 Head Amplifier (MED-64HE1S) with the MED Connector Cable (20 pin). Connect the side which has the ground wire to the MED Head Amplifier.

3. Place all cables AWAY from any equipment which generates electric or magnetic filed.

    - The MED Connector cable is very sensitive to noise and vibration. Make sure that the cable stays away from any equipment which generates electric of magnetic filed, and sits flat on a table.

4. Connect the Ground wire attached to the Connector cable to the SIGNAL GND in the MED64 Head Amplifier (MED-A64HE1S).

    - Let the ground wires for all Connectors go THROUGH the hole at the GND (Figure 2-3, top-left) to secure the grounding. If this cannot be made, use the short grounding wire (Figure 6, bottom left) to ground the all cables (Figure 6, right).

CAUTION:

Make sure to ground the MED Mini Connector to the Head Amplifier, otherwise large noise will be introduced.

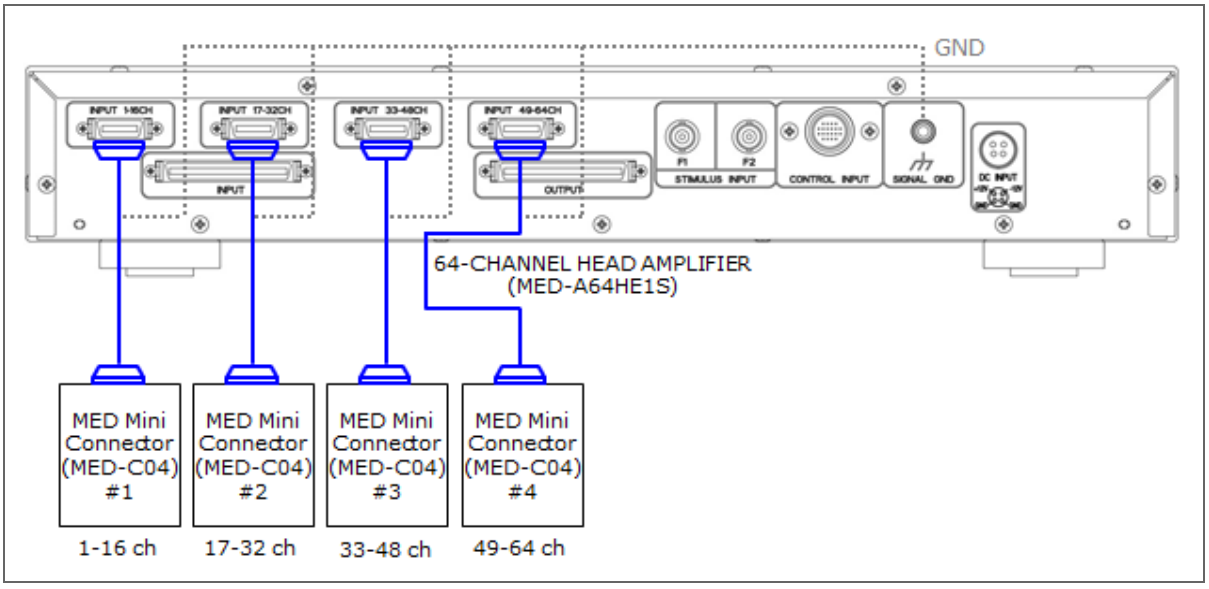


Figure 4. Connection of the MED Mini Connectors to the MED64 Head Amplifier (left).

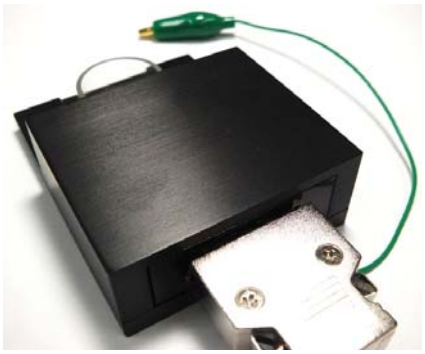


Figure 5. Connecting the MED Connector cable (20 pin) to the 20 pin output terminal.

Figure 6. Grounding the Connector cables to the GND terminal in the MED64 Head Amplifier.

2-2. Orientation for the electrodes and terminal assignment

The MED Mini Connector (MED-C04) has 2 types for its orientation and channel assignments in a connector as seen in the Figure 7 and 8.

1. Type B (MED-C04-B)

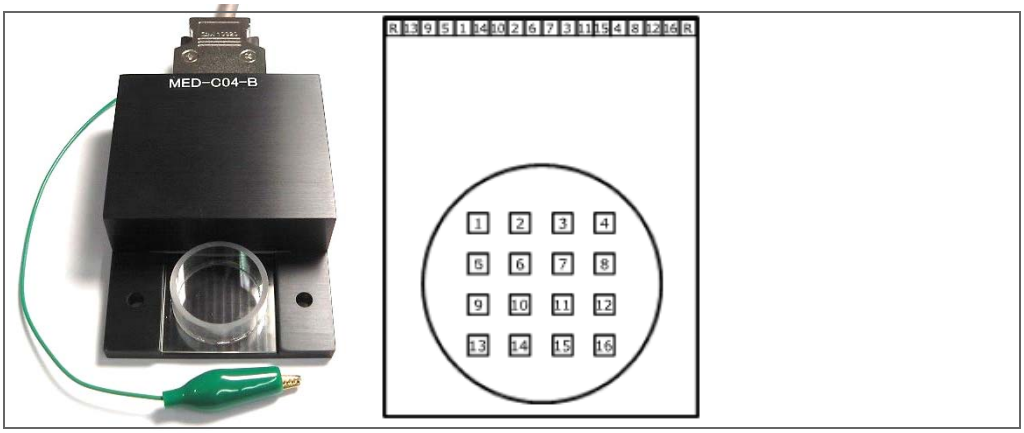


Figure 7. Type B Connector (left) and electrodes orientation when the connector terminal is located on the top.

2. Type R (MED-C04-R)

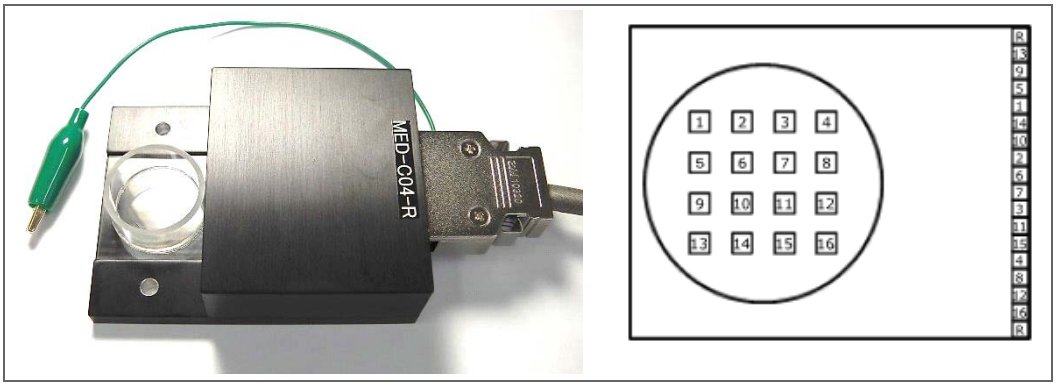
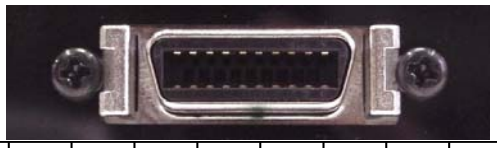


Figure 8. Type R Connector (left) and electrodes orientation when the connector terminal is located on the right.

3. Terminal assignment



12	11	10	9	NC	Ref	4	3	2	1
16	15	14	13	Ref	NC	8	7	6	5

-Ref: Reference electrode
-NC: No Connected

Figure 9. Terminal assignment for the MED Mini Connector.

3. Instruction for use

3-1. Installing the MED Probe 16 onto the MED Mini Connector

1. Clean the MED Mini Probe with kimwipe before loaded. (Figure 10, middle). Particularly, clean it with kimwipe soaked with 70% ethanol when a MED Probe 16 is taken out from a humidified incubator.

   - The leads in the MED Probe 16 contact with gold pins in the MED Mini-Connector. (Refer to Figure 13 in the page 8) Salt residue buildup (or even finger prints) in the leads can rust the contact pins.

2. Slide in the MED Probe 16 (the side of the terminals) gently and horizontally to the Probe port all the way.

CAUTION:

- Spilling liquid onto the pins will cause rust and adversely affect conduction. Be extremely careful not to get the pins wet, especially with saline solution.

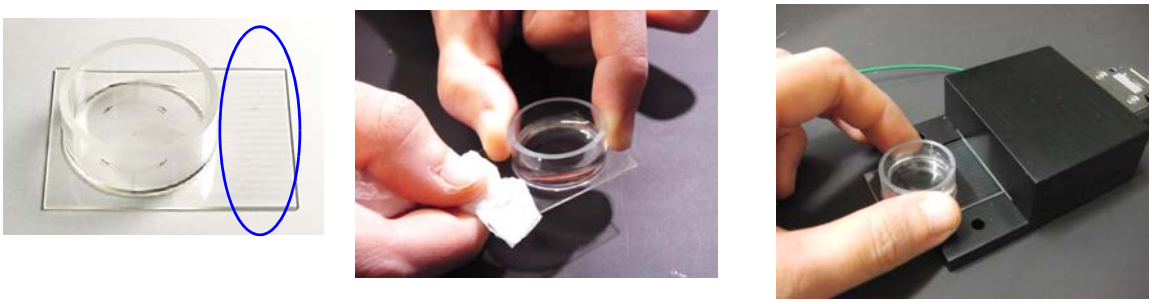


Figure 10. Terminal for the MED Probe 16 (left, marked with blue), cleaning its terminal (middle), and installing the MED Probe 16 onto the MED Mini Connector (right).

Grounding the additional ref. electrode (platinum wire)

When additional ref. electrode (planum wire) is used (e.g. platinum wire in the Perfusion Cap), make sure to ground it to the MED Mini Connecter with the green ground wire. Otherwise, large noise will be introduced.

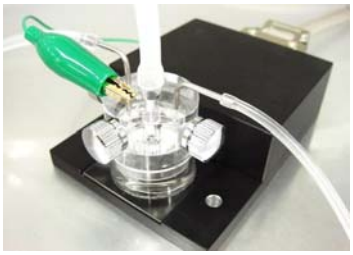


Figure 11. Grounding the additional ref. electrode (platinum wire) incorporated in the Perfusion cap.

4. Troubleshoot

When noise appears during your experiments, it is important to identify where it comes from. Representative reasons are:

- Damaged electrodes in the MED Probes.
- Uncleaned and/or damaged contact pins in the Connector.
- Loose contacts for the cables.
- Incorrect grounding.
- Equipment that generates an electric or magnetitic field (e.g. power supply, peristaltic pump, heater).
- Environment.

Poor contacts by damaged or uncleaned contact pins can cause problems such as noises or/and faulty recording. Identify this using the test board with following procedures.

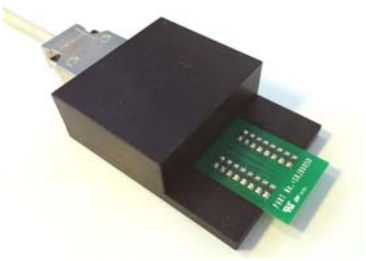


Figure 12. The Test board installed in the MED Mini Connector.

1. If noise appears at all 64 channels, the reason is likely to be in inappropriate grounding, environment, or amplifiers.

2. If noise is seen in specific channels, the reason is likely to be in the Connector, Connector cable, or Probes. Swap the MED Probe to a test board, and then run the MED64 Quad II System.

3. If noise is gone, the cause of the problem is the Probe.

4. If noise remains, it is likely caused by poor contacts. To see whether it is caused by poor contact with the cables, disconnect and then reconnect the Connector cables.

5. If it is NOT improved, clean the contact pins in the MED Mini Connector according to the instruction on page 8.

    - Please refer to the page 29 in the MED64 Quad II Operating Instruction, [Troubleshoot] for trouble shooting.

5. Maintenance

4-1. Cleaning of the contact pins

The 16 leads in a MED Mini Probe are connected to the Connector with small contact pins. Uncleaned contact pins can cause noise or faulty recordings. Clean the gold contact pins with following procedure if dirty pins cause noise or any other problems.

Figure 13. MED Mini Connector where the MED Probe 16 is loaded (left). View from side (left) and its structural scheme (right).

1. Loosen the 4 screws at the bottom of the MED Mini Connector to remove the upper “Connector unit” from the bottom “Base unit”.

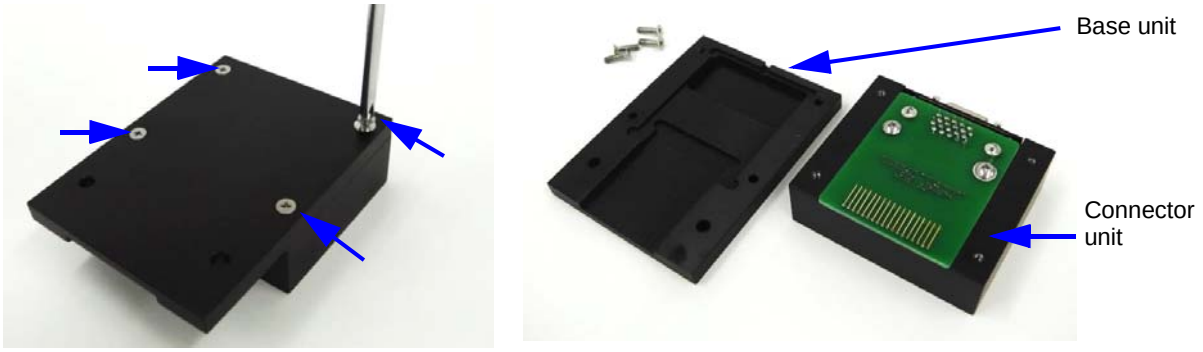


Figure 14. MED Mini Connector, bottom view (left) and reassembled Connector (right).

2. Clean the contact pins on the print circuit board with “kimwipe soaked with 70% ethanol”. Clean the 64 pins one by one longitudinally. Do NOT clean the pins laterally, which might damage the pins. (See Figure 17.) Do not touch the contact pins with bare hands.

Figure 15. Cleaning the contact pins. Clean them longitudinally.

3. Re-unite the Base unit and Connector unit.

4-2. Sterilization

Wipe it with a lint-free cloth soaked in 70% ethanol, and allow to dry.

CAUTION:

- Do NOT autoclave as it may damage the MED Mini Connector.

4-3. Storage

Store in a cool dry area. Avoid exposure to high temperatures or humidity.

6. Cautions

- DO NOT spill medium or any other liquid on the contact pins.
- DO NOT give strong mechanical shock by putting heavy material on the unit or dropping the unit.
- DO NOT touch the contact pins on the connector unit with bare hands or fingertips when they are cleaned. This may cause rust and adversely affect conduction.

What should I do if medium spilled on the contact pins?

Stop your experiment immediately. Disassemble your Connector and clean the contact pins with kim-wipe soaked with 70% ethanol according to the instruction on page 8, and allow to dry.

7. Warranty

This product will be repaired with new or refurbished parts, free of charge, for one (1) year from the date of original purchase in the event of a defect in materials or workmanship.

The product warranty covers failures due to defects in materials or workmanship which occur during normal use. It does NOT cover damage incurred during shipment or problems which are caused by products not supplied by Alpha MED Scientific. In addition, this warranty does not cover problems resulting from alteration, accident, misuse, neglect, faulty installation, maladjustment of user controls, improper maintenance, modifications or service by anyone other than AMS or damage attributable to acts of God.

8. Specifications

Connector unit

MED Probe securing mechanism	Slide in
Out put	20-pin MDR system connector
Material	Aluminum (Gold for contact pins)
Weight	190 g
Dimensions	W60 x L83 x H24 (mm)

MED Connector Cable

Plug	20-pin MDR
Plug cover	Metal
Length	2 m

Specifications may not be satisfied depending upon the type of computer or operating environments used. Only for use in animal studies research. Specifications and external appearance are subject to change without notice.

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