Control Station Connection via PMLN5072 Rear Accessory Connector

1. About This Document

This guide describes how to prepare a cable for connecting DM3000 and DM4000 series radios to the SmartPTT Radioserver computer (based on MOTOTRBO PMLN5072 Rear Accessory Connector).

2. Necessary Components

MOTOTRBO PMLN5072 Rear Accessory Connector	1 item
Double shielded audio cable (ALBA)	1.6 m
USB male cable	1.6 m
2.2 µF planar capacitor	1 item
100 Ohm planar resistor	1 item
3.5 mm mono jack plug	2 items
Black PVC shrink tube (5 mm diameter)	20 cm
Red PVC shrink tube (12 mm diameter)	2 cm
Green PVC shrink tube (12 mm diameter)	2 cm
4 × 15 mm blank printed circuit board	1 item
Solder	3 g
Single-core copper fluoroplastic-insulated cable (0.12 mm diameter)	3 cm
Plastic mounting clip	1 item

3. Pinouts and Schematics

The following figures contain the necessary visual information on cable making:
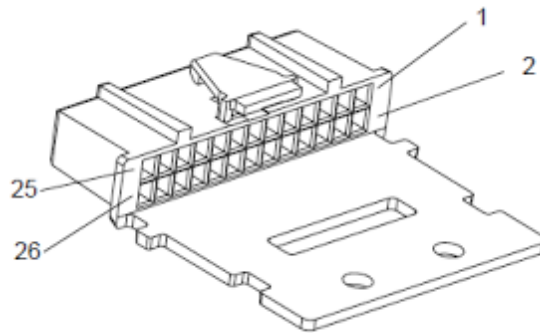
- PLMN5072 Rear Accessory Connector

Figure 1 – PLMN5072 Rear Accessory Connector

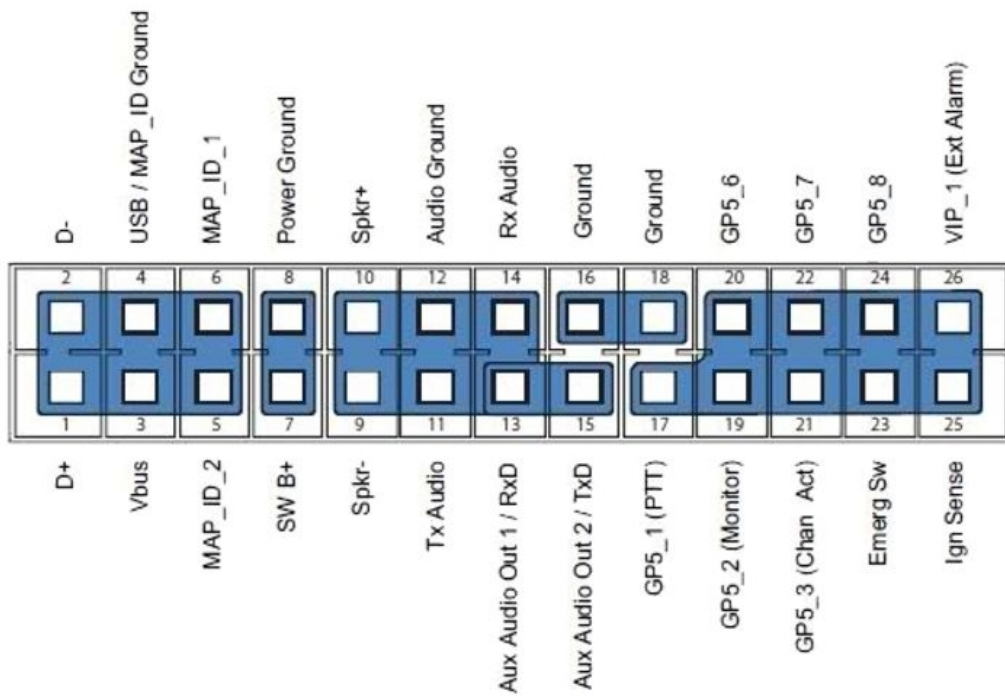- PLMN5072 Rear Accessory Connector pinout

Figure 2 – PLMN5072 Rear Accessory Connector Pinout
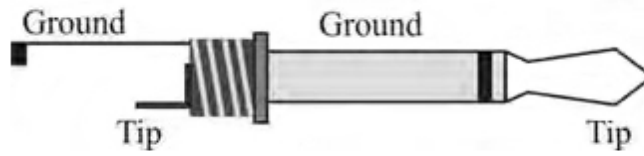
- 3.5 mm mono jack plug pinout

Figure 3 – 3.5 mm Mono Jack Plug Pinout
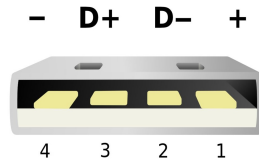
- USB Male connector pinout

Figure 4 – USB Male Connector Pinout
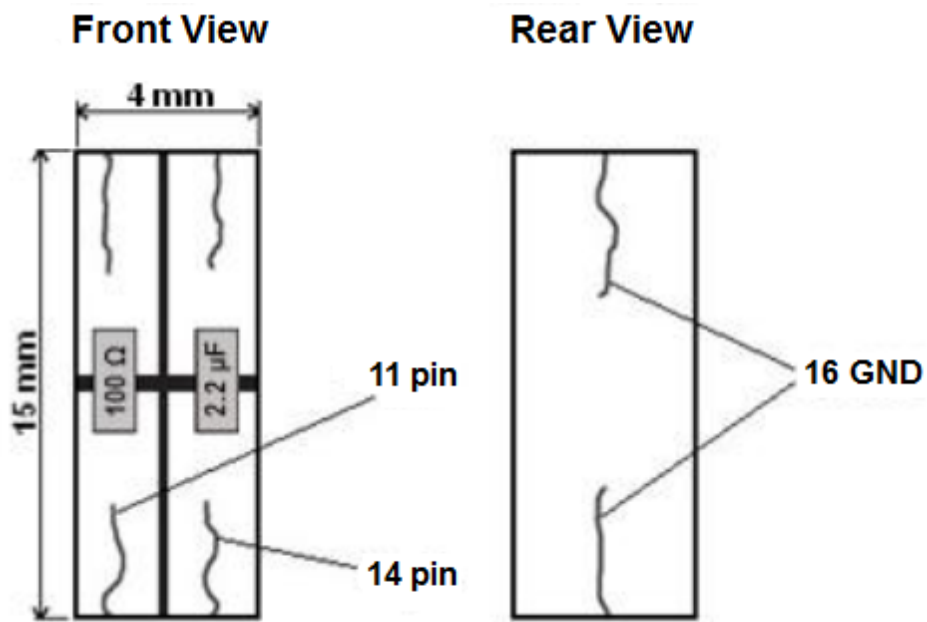
- Ready printed circuit board schematic

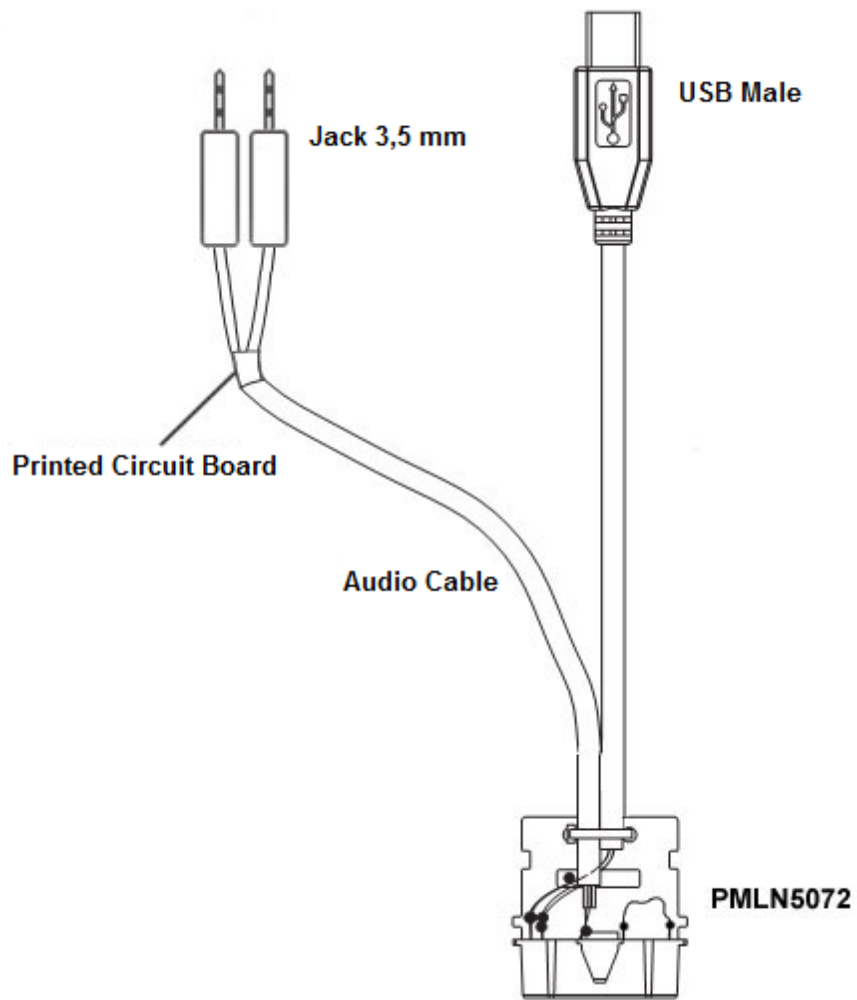Figure 5 – Ready Printed Circuit Board

- Ready cable schematic

Figure 6 – Ready Radio Cable

- Radio cable wiring diagram

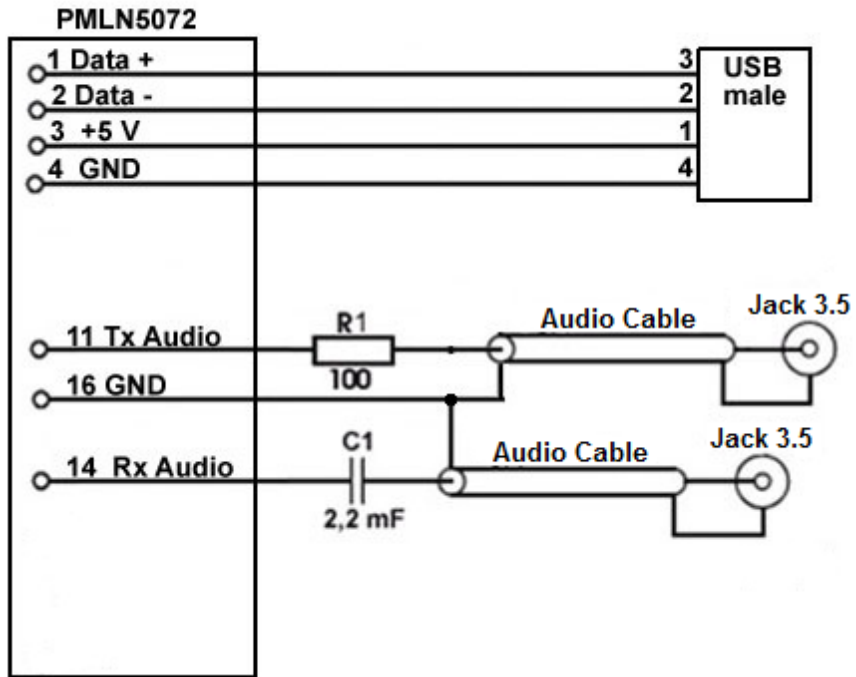Figure 7 – Radio Cable Wiring Diagram

4. Making Radio Cable

1. Mark the blank printed circuit board as in Figure 5. There must be 4 metallized areas that are galvanically isolated from each other. The rear of the board must be fully metallized.

2. Solder planar resistor and capacitor to the board as in Figure 5.

3. Cut 140 cm of the audio cable.

4. Split it in two at both ends (each should have approximately 12 mm length) and twist the wire braids.

5. Crimp one cable end (both central wires and twisted wire braids) using branded connectors for MOTOTRBO PMLN5072 Rear Accessory Connector.

6. Put the black PVC shrink tube on the cable if needed.

7. Fix the cable in PMLN5072 Rear Accessory Connector as in Figure 7:

    a   Braid wires to contact 16 of PMLN5072 Rear Accessory Connector.

    b   One core wire to contact 11 of PMLN5072 Rear Accessory Connector.

    c   Another core wire to contact 14 of PMLN5072 Rear Accessory Connector.

8. Solder the other cable end to the board in the following way:

    a   Corresponding central wires to the front area.

    b   Twisted wire braids to the rear area.

9. Take the remaining piece of audio cable.

10. Solder the Jack to the one cable end in the following way:

    a   Central wire to the first channel connector output.

    b   Wire braids to the ground of the connector.

11. Prepare 2 pieces of black PVC shrink tube (5 mm diameter and 4 cm length). Then put them on the cable for later shrinking on the board.

12. Solder the small piece of cable to the board in the following way:

    a   Central wires to the front of the board.

    b   The wire braids to the rear of the board.

13. Shrink both pieces of the PVC shrink tube on the board in two layers to fix it and wires connection spots mechanically.

14. Use green PVC shrink tube to mark the Jack connected to contact 11.

15. Use red PVC shrink tube to mark the Jack connected to contact 14.

16. Cut 160 cm of 4-wire cable with the USB male connector on the end.

17. Crimp the other cable end using connectors for PMLN5072 Rear Accessory Connector.

18. Put black PVC shrink tube (5 mm diameter) on the cable.

19. Connect the cable to PMLN5072 Rear Accessory Connector as in Figure 7 with respect to the wiring between USB and PMLN5072 connectors.

20. Shrink PVC shrink tube on the cable. For better reliability do it as close as possible to PMLN5072 Rear Accessory Connector.

21. Use the plastic mounting clip to fix both cables (audio cable and USB cable) to the PMLN5072 Rear Accessory Connector housing.

22. Crimp a single-core copper fluoroplastic-insulated cable (3 cm) at both ends and connect it to connectors 24 and 17 of PMLN5072 Rear Accessory Connector to make a jumper between them. You can use the other similar cable for this purpose.

5. Checking Radio Cable

Preliminary cable check is performed using a multimeter:

1. Check for absence of short circuits between the braid and the core of each audio cable.

2. Measure full resistance of the central wire of the cable (the whole length of the cable) connected to contact 11 of PMLN5072 Rear Accessory Connector. It must not exceed 110 Ω.

3. Check for electrical connection on contact 14 of PMLN5072 Rear Accessory Connector. Set multimeter to the maximum resistance and measure the resistance the whole length of the cable. The resistance must increase as the charge of the capacitor increases.

4. Check that all branded MOTOTRBO connectors are reliably fixed in PMLN5072 Rear Accessory Connector.

Final cable check is performed on the MOTOTRBO test bench.

Contact Information

The document describes the product developed by Elcomplus LLC. The official product website is www.smartptt.com.

For contact information of Elcomplus LLC representatives, see www.smartptt.com/contacts.

Technical Support

Customer support is provided by SmartPTT Technical Support Center. The official website of the Center is support.smartptt.com.

To contact a support engineer, perform one of the following actions:

- Fill in and submit a support request on the website.

- Email a support request to support@smartptt.com.

In America, customer support is also provided by Elcomplus, Inc. To contact support engineers, use the following contact information:

- Phone: +1 786-362-5525

- Email: miami@smartptt.com

- Mailbox: 290 NW 165th St, Ste P-200, 3rd Flr
  Miami, FL, 33169, USA

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Customer Documentation

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