**poly-planar**®
WATERPROOF MARINE AUDIO SYSTEMS

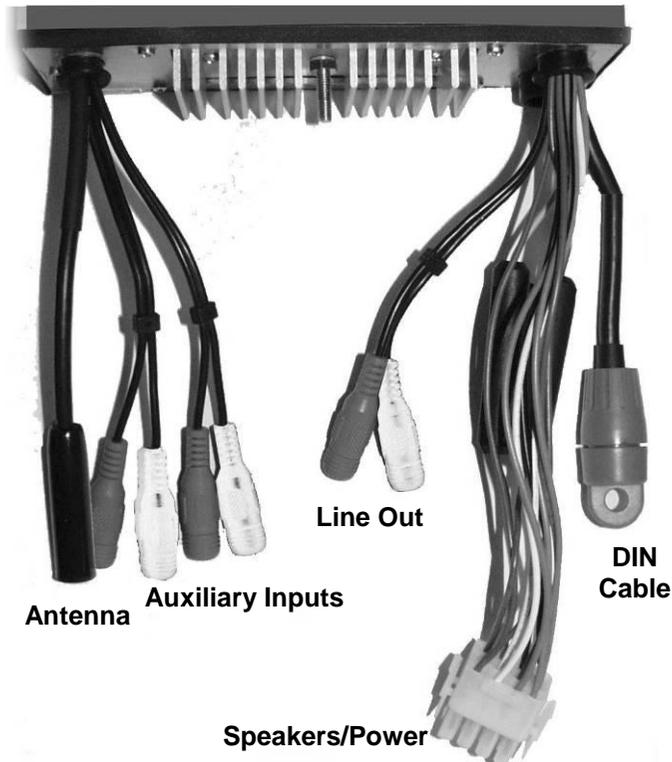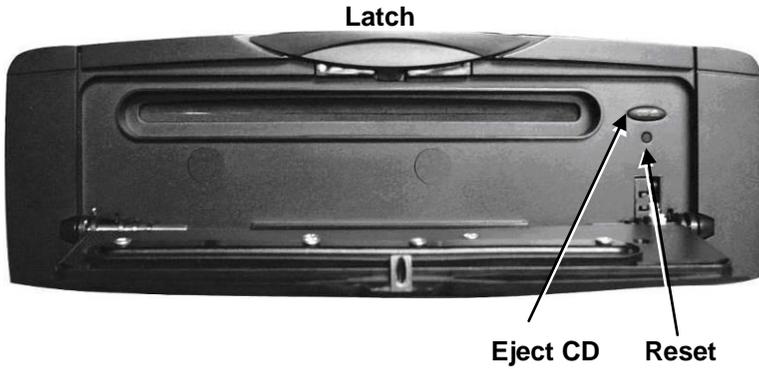# MRD-70 Radio CD/MP3 Player

Rev 2.0

**Introduction:**

The MRD-70 is water-resistant radio, CD/MP3 player that also functions as a network audio source with Poly-Planar's other audio network products.
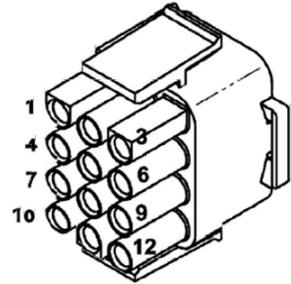


**Features:**

- AM/FM/CD/CD-R/CD-RW/MP3 Source Unit
- Sealed chassis optimized for wet environments
- Anti-skip memory
- 180W maximum power output (45W x 4)
- Automatic distortion control
- Functions using the RD-44 Control Panel
- Two sets of Auxiliary Inputs and one Auxiliary Output
- Controls optional CD Changer

## Controls and Connections

**Latch**

**Eject CD**    **Reset**

**Line Out**

**DIN Cable**

**Antenna**    **Auxiliary Inputs**

**Speakers/Power**

# Wiring Details

| Wire Color | Function |
|---|---|
| Red | 1 ACC+12VDC |
| Green w/stripe | 2 Rear Left Speaker- |
| Green | 3 Rear Left Speaker+ |
| Yellow | 4 Memory +12VDC |
| White w/stripe | 5 Front Left Speaker- |
| White | 6 Front Left Speaker+ |
| Blue | 7 Remote/Antenna Trigger |
| Gray w/stripe | 8 Front Right Speaker- |
| Gray | 9 Front Right Speaker+ |
| Black | 10 Ground (Neg) |
| Violet w/stripe | 11 Rear Right Speaker- |
| Violet | 12 Rear Right Speaker+ |

## Power Wire Specifications
**Red Wire**
Connect this wire to a switched +12V source such as an ignition or accessory switch. This connection must be able to supply 7amps of current.
**Yellow Wire**
Connect this wire to a constant +12V source. This retains the system memory.
**Black Wire**
Connect this wire the negative battery terminal or other good power ground.
**Blue Wire**
This wire outputs a 12V signal when the MRD-70 turns on. It is used to remotely turn on external amplifiers.

**Notes:**
- Use the included plug/wire bundle to connect to the power source and speakers.
- The Red and Black power wires should be 14AWG or larger.
  The speaker wires should be 16AWG or larger.
- Use quality crimp connectors to connect wires together. Seal the connection well with electrical tape.

## Connecting the System DIN Cable

The DIN cable is "Keyed" to prevent misalignment and all connections are gender specific

Leave the end caps on when routing to prevent damage or contamination to the leads. The cap is designed for pulling through wire conduits.
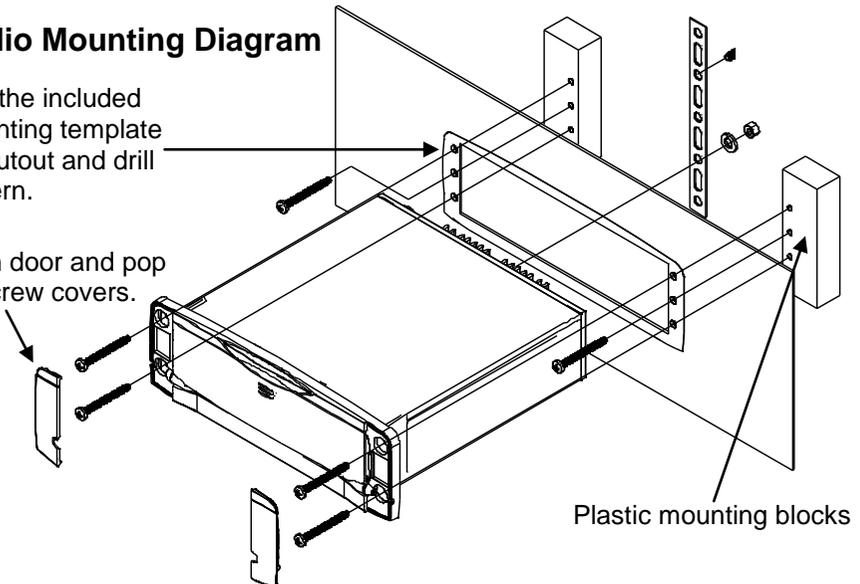
(Connector cap ends removed)

The blue connector cap ends can be discarded if a smaller diameter is required such as a Pod mount. Use shrink tube to seal the connections.

**Before drilling holes for cable runs be sure there is sufficient room behind the area. Always disconnect power before drilling around electrical connections.**

## Radio Mounting Diagram

Use the included mounting template for cutout and drill pattern.
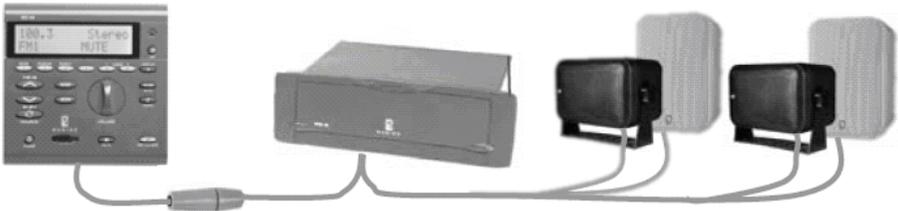
Open door and pop off screw covers.

Plastic mounting blocks

## Using the RD-44 with the MRD-70



| | |
|---|---|
| **1 Microphone** | **10 Menu/Category/Preset Scan** |
| **2 Intercom Switch** | **11 Audio Controls** |
| **3 Presets (1-6)** | **12 Audio Source Select** |
| **4 Display Options** | **13 Power On/Off** |
| **5 Tune/Track Up** | **14 Mute** |
| **6 Tune/Track Down** | **15 Amplifier Source Select** |
| **7 AM/FM Band/Preset Bank** | **16 Network Cable** |
| **8 Scan Channels** | **17 Infrared Port, Ambient** |
| **9  Volume Control** | **   light sensor** |

## Audio Network Connections

See RD-44 manual for operation details.



**The Basic System** consists of the MRD-70 and a control panel such as the Poly-Planar RD-44 shown.

## Control Functions

1    **Microphone:** Waterproof intercom microphone.

2    **Intercom Switch:** Hold down to talk. Release to hear. The intercom will override the music in the other zones. It will also override a muted RD-44 in another zone while the switch is pressed.

   The volume for each zone with an RD-44 is adjustable. While holding the "Mic" button (# 2) down , use the Volume knob (9) to toggle the intercom volume up or down. **(See Volume, # 9).** The Master zone intercom volume is set using a potentiometer on the RT-20 Router (**See RT-20 Instructions**)

3    **Presets:** Tune to a desired AM, FM, or Satellite Radio (optional) station and hold the desired preset button for at least 2 seconds. The display will change to show which preset was programmed.

4    **Display:** Allows setting of display modes. Times out after 4-6 seconds*. Displays available information from digital song formats. Pressing the button advances the display functions.

   **In MP3/WMA  Mode:** x1 = Artist  x2 = Album  x3 = Folder  x4 Track /Time.
   *Track/Time will remain on until Display key is pressed again or if there is  a program change.*

   **In Satellite Radio Mode:**  x1 = Artist  x2 = Song  x3 = Category

5    **Up:** Tunes Radio frequencies or changes tracks higher. Press and hold to manually tune or fast forward a CD track.

**6**   **Down:** Tunes Radio frequencies and changes tracks lower. Press and hold to manually tune or fast forward a CD track.

**7**   **Band/Bank Select:** Choose between FM, AM and optional XM bands as well as multiple banks of presets for each band. Each bank has six presets. The banks are FM1, FM2, FM3, AM1, AM2 and XM1, XM2 and XM3 if installed.

**8**   **Scan:** AM/FM/XM mode. Tunes and stops at available stations for a few seconds. Press scan a second time or one of the tune buttons to stop scanning.

**9**   **Volume:** Adjusts volume by toggling the knob right or left.  Turn to the left and hold to decrease volume or right and hold to increase volume.  This knob is self-centering.

**10**   **Menu/Category/Preset Scan:** Menu options for peripheral devices or Categories for satellite radio programming. When an AM/FM tuner is the source, press once to scan through the preset stations and press again to stop the scan. Press and hold to automatically assign presets to the current bank starting with the next station found.

**11**   **Audio Controls:** Pressing this button will cycle through the audio functions of the radio. Use the Volume knob (9) to adjust the function up , down or "C" center. The functions vary slightly between products. After waiting 3 seconds, the radio will exit the menu.

**12**   **Source:** Selects a source from those available on the audio network such as Radio bands, CD/MP3, AUX1, AUX2 and other optional sources.

**13**   **Power:** Powers on and off the RD44 display, Radios, Amplifiers and peripherals.

**14**   **Mute:** Mutes the audio in the **local zone**.

**15**   **Zone Amplifier Source:** Source select for the MZ series amplifiers.  When used with an MZ amplifier, this button will select between the RCA input on the amplifier and the network audio sources. (see  the MZ amplifier manual for details).

**16**   **Network Cable:** Connects Poly-Planar audio components.

**17**   **Infrared Port & Light Sensor:** Receiver for the remote control and ambient light sensor to automatically adjust backlighting.

# Radio Operation

**Selecting band & storing presets:**
Pressing BAND (7) will toggle through the radio modes as follows FM1 -> FM2 -> FM3 -> AM1 -> AM2. Each band stores up to 6 independent presets for a total of 18 FM and 12 AM presets. To program a preset, tune in the desired station. Push and hold the desired PRESET button for at least 2 seconds.

**Automatically setting the presets:**
To automatically set the presets to the next higher stations, press the preset button (1-6) from which to start programming. Hold the MENU button (10) for at least 2 seconds. The current preset and additional preset memories up to P6 will be programmed with the next tunable stations. All 18 FM and 12 AM presets can be set sequentially by selecting the next band and continuing the operation during auto programming.

**Seek & manual tune:**
Press the TUNE/SEEK-UP button (5) once to automatically tune to the next higher station. Press the TUNE/SEEK-DOWN button (6) once to automatically tune to the next lower station. To manually tune to a frequency, press and hold either TUNE/SEEK button for at least 2 seconds. Holding the button down will increase or decrease the frequency manually. When the desired frequency is reached, release the button. The unit remains in manual tune for 3 seconds after the button is released, so you can still fine tune with additional button presses. After 3 seconds the seek mode is re-enabled.

**Scan function:**
Select either AM, FM1 or FM2 mode and press SCAN (8) to listen to a few seconds of each radio station. SCAN will be displayed in the panel lights. The radio will automatically SCAN to the next higher station, play that station for a few seconds, then SCAN to the next higher station. To stop scanning and continue listening to the current station, press SCAN (8) again. The radio remains in SCAN mode until the SCAN button is pressed a second time or one of the tune buttons is pressed.

**Preset scan function:**
Press MENU (10) to enter preset scan mode. The next higher preset station will be selected and auditioned for 3 seconds while the display flashes. If you wish to remain on this station, press SCAN (8) a second time. If you do not press the scan button within 3 seconds, the next higher preset scan station will be selected. The radio remains in Preset Scan mode until MENU (10) is pressed a second time or one of the preset buttons is pressed.

**Changing the tuner frequency from US to Euro:**
Your unit it factory-set to US tuning frequency steps. To switch to Euro tuning steps, use the switch on the bottom of the unit. With the unit disconnected from the power source, peel back the sticker on the bottom of the radio and use a screwdriver to slide

the switch to the desired position. (Power must be removed from the radio, or the reset switch must be pressed before the new frequency mode is activated.)

# Special Controls for CD Operation

**Intro scan, random, repeat:**
Press the 'INTRO' (preset 1) to enter intro-scan mode. 'SCN' will appear at the left of the display. The first 10 seconds of each track on the CD will play continuously until you press the INTRO button a second time or the TUNE/SEEK UP or DOWN button. Press and hold "INTRO" to scan Albums on an MP3 disc. Unit will display "DCN".

Press the 'RANDOM' (preset 2) to play the tracks of the CD in random order. 'RDM' will appear at the left of the display.
Press and hold 'RANDOM' to play MP3 tracks and albums in random order. Unit will display "DDM".

Press the 'REPEAT' (preset 3) to repeat the current track. 'RPT' will appear at the left of the display.
Press and hold ' REPEAT ' to repeat the current album. Unit will display "DPT".

Press ►‖ (preset 4 ) to alternately  pause and play the CD.

Press Album +/- (presets 5 & 6) to change Album/Folders on MP3 & WMA CD-ROM discs.

# Using the Optional CD Changer

**Playing a CD:**
Press the SOURCE button to select the CD Changer. 'CDC' will appear at the left of the display. The main display will indicate 'CD-X' where X is 1 to 6, the currently playing CD.

If no magazine is inserted in the player then the word 'eject' will appear in the display If no CDs are in the magazine, then 'NO DISC' will appear in the display
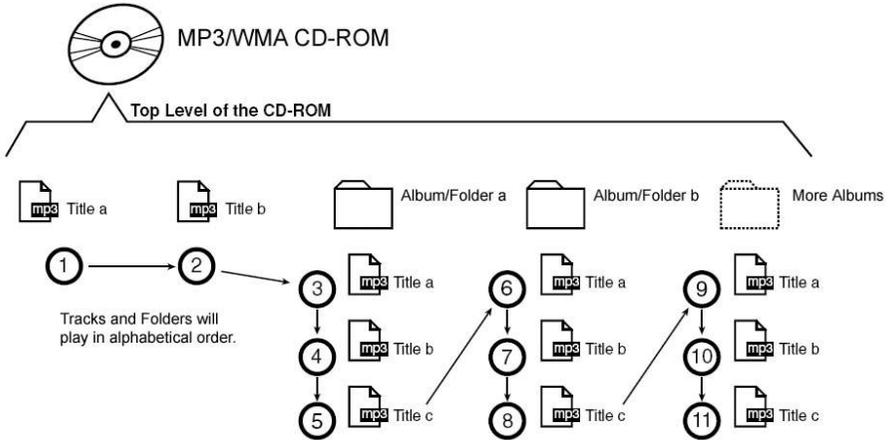
# CD-ROM Play Sequence

The MRD-70 will play MP3 and WMA audio files. The MRD-70 will ignore files that do not end in ".mp3" or ".wma".
Also, all folders will be assigned a number in order of play. If a folder does not have music files in it, it's number will be skipped when pressing the Album +/- keys.

The order of play is as follows:
The top level songs will be played first in alphabetical order and "Album 00" will be displayed as the Album/Folder. The contents of the folders/albums will be played in alphabetical order as shown in the chart shown on next page.

MP3/WMA CD-ROM

Top Level of the CD-ROM

mp3 Title a    mp3 Title b    Album/Folder a    Album/Folder b    More Albums

Tracks and Folders will
play in alphabetical order.

## Display Descriptions on the RD-44 Control Panel

### AM/FM Tuner Screen

Frequency

```
100.3      Stereo
FM1  P1    Vol 15
```

Band/
Preset Bank

Preset #

Stereo Signal Present

Volume Level

### CD Player Screen

Track #

```
Trk 07     4m 49s
CD         Vol 15
```

Elapsed Time

Volume Level

### MP3/WMA CD Screen

Track Info

```
Song Title
MP3        Vol 15
```

Encoding

also, Album & Artist

Volume Level

### Auxiliary Input Screen

```
Aux Input 1
           Vol 15
```

Volume Level

**Troubleshooting:**

**No Audio, Inside door LED off**
1. Make sure the control panel is on.
2. Make sure the Blue remote wired is switched to 12 volts.
3. Make sure the inline fuse is not blown. (Red wire)
4. Check that power wires are getting 12 volts from battery.

**No Audio, Inside door LED on**
1. Make sure the control panel is not in MUTE mode.
2. Make sure the volume is up.
3. Check that speaker outputs are not shorted to ground.
4. Make sure speakers are connected

**Distorted Audio / Audio Cycles on & Off**
1. Make sure speaker wires are not shorted together.
2. Power voltage too low or too high.
3. Input signal level too high. Turn down.
4. Power wire gauge too small. Use at least 14AWG wire.

**Low Bass Output**
> Speakers are wired out of phase. Check polarity of wires to the speakers.
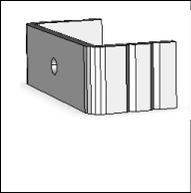
**Radio Keeps Blowing Fuse**
1. Battery + and – reversed at power leads.
2. Incorrect or shorted wiring.
3. Too many speakers or shorted speaker voice coil.

**Whining Noise**
1. Bad ground connection. Confirm that the black wire returns to battery ground with at least a 14AWG wire.
2. Do not share grounds or power connections with other power electronic equipment such as motors, pumps, and VHF radios.
3. Be careful to route all radio wires away from other high current equipment wires.
4. Add a noise filter or ground-loop isolator if all else fails.

**Radio Unresponsive**
> Open the door and press the reset button located under the EJECT button.

## Specifications

Number of Channels …………………………..   4
Speaker Impedance …………………………   4 – 8 ohm
Output Power (4 ohm load) …………………   25W RMS per channel
Maximum Power Output ……………………… 45W x 4 (180W)
Frequency Response ………………………   20 Hz – 20 kHz
Operating Voltage  …………………..   ………13.8V (10V – 16V) DC
Idle Current (no signal) ………………………   10 mA
Maximum current draw (full power) ………..   7 A
Remote wire current …………………………   4 mA


WARRANTY
Poly-Planar marine audio systems are warranted to be free of defects in materials and workmanship for a period of two years. Warranty is subject to proper installation and operation within published specifications. Poly-Planar will repair or replace, at its discretion, any unit returned prepaid to its factory and determined to be defective. Poly-Planar Inc. is not liable for consequential damages.

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