DIGITAL DESIGNS

TRUE TO THE SOURCE

M80
M1a
M1b
M2a
M3a
M4
M4a

Owner's Manual

MONOBLOCK SUBWOOFER AMPLIFIER

Thanks you for purchasing Digital Designs amplifiers for your car audio systems and competitions.
The M-Class amps are monoblock amplifiers engineered for low frequency applications.
The M-Class amps are made to be the soul of your audio system, bass pumping machines. so powerful that your face could be ripped from your head in a momentary lapse of reason.
Well, maybe that's a bit of a stretch, but these amps offer strong power, logical controls and efficient design.
The M-Class amps are single purpose designs with the sole goal of being the best tool for the job. No cutbacks and No wimps
The M-Class amplifiers feature two distinct approaches
The M-Class are designed for the highest possible efficiency and highest total output.
The M-Class make good amounts of power from the stock electrical systems
it is designed to make the most sound quality bass amplifier
The high efficiency comes from paying close attention to every stage through the amplifiers' circuit. High speed controller chipsets, efficient power devices,precise thermal management and best engineerings are the key to the M-Class.

INDEX

1. FEATURES

Digital Monoblock 1 ohm stable Amplifier	
Frequency Response	: 20Hz ~ 250Hz
Signal to Noise Ratio	: 100dB
Low Pass Crossover	: 24dB / Oct
Low Pass Crossover Range	: 20Hz ~ 200Hz
Subsonic Crossover Range	: 10Hz ~ 50Hz
Bass Boost	: 0 ~ 6dB
Input Sensitivity	: 5V ~ 0.15V
Output Master / Input Slave	: YES
Working Voltage	: 8.5V ~ 15V
Efficiency at 4 ohm	: 84%
Damping Factor	: 150<

All features are subject to change in the continuing effort to improve the products without notice

M-Class Output Power

	Power @ 1ohm 12V	Fuse Rating
M80	600W x 1	30A x 3 (Linked : 180A)
M1a	860W x 1	40A x 3 (Linked 240A)
M1b	1190W x 1	40A x 4 (Linked : 320A)
M2a	1600W x 1	200A external (Linked : 400A)
M3a	2050W x 1	250A external (Linked : 500A)
M4	3500W x 1	400A external (Linked : 800A)
M4a	5200W x 1	700A external (Linked : 1400A)

2. DESIGN FEATURES

1) The M-Class amplifiers are working fully stable down to 4/2/1 ohm as single unit. Daisy Chain connection makes it fully stable down to 2 ohm.

2) The M-Class amplifiers have the possible highest efficiency and sufficient amount of the parts to maximize the performance at especially 12V application.

3) The M-Class amplifiers have 4 ways of acurate protection circuit, as speaker short, DC offset, voltage, thermal protection which are the most safe-guard.

4) The M-Class amplifiers are designed in double sided board and use high current mosfet swtiching devices.

5) The M-Class amplifiers have 24dB/Oct slope of crossover, Low Pass Filter and Subsonic Filter as fully adjustable.

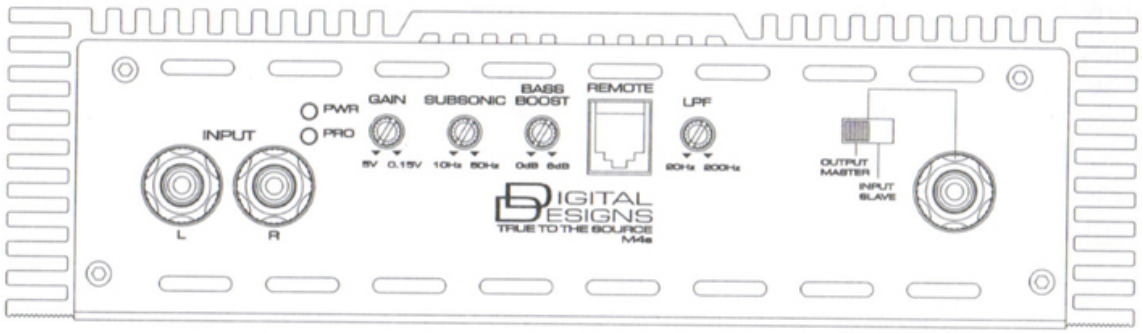
6) The M-Class amplifiers have bass boost control from 0dB to 6dB

7) The M-Class amplifiers have dash mount remote level control which allows convenient level control from the driver's seat

8) The M-Class amplifiers have daisy chain connection which makes 2 units of M-Class amplifiers linked into 2 ohm and produce the highest output power.

3. CONTROL & CONNECTION

3-1. CONTROL & CONNECTION



INPUT
Connect preamp signal cables from headunit to The M-Class amplifier to RCA Input.

POWER & PROTECTION INDICATOR
Power LED, Green-lit shows correct operation of The M-Class Amplifiers.
Protect LED, RED-lits shows general malfunction, faulty connection and thermal protection

GAIN
Matching the output voltage of the headunit's RCA line-outs to The M-Class amplifiers' input section. Its range is 5V to 0.15V.

SUBSONIC CROSSOVER FREQUENCY
Control the high Pass point for the speaker outputs to eliminate extreme low frequencies.
Its range is 10~ 50 Hz @ 24dB/Oct slope

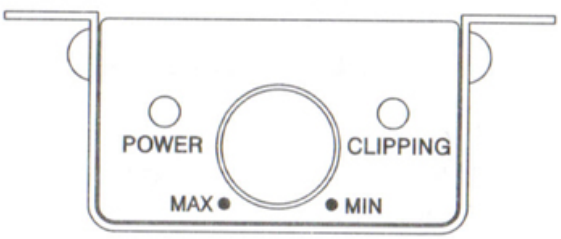
BASS BOOST
It boosts the Bass from 0 ~ 6dB

REMOTE LEVEL CONTROL PORT
This port is for connecting turn-down remote level control. Remote level control adjusts the level

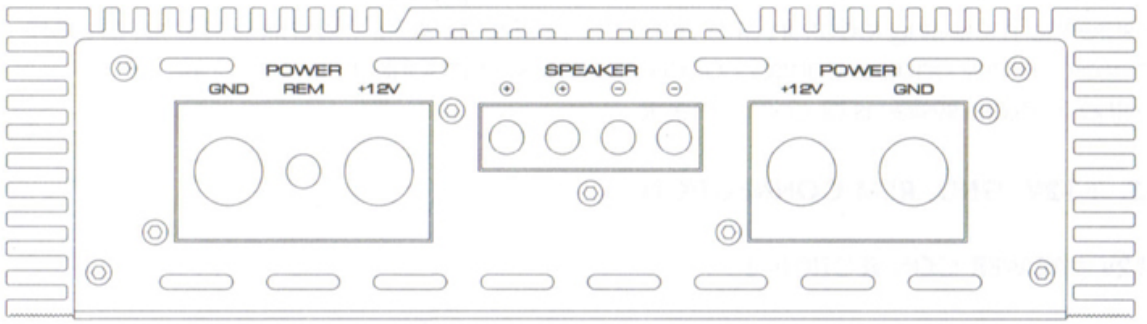
LPF CROSSOVER FREQUENCY
Controls the low pass point for the speaker outputs.
The crossover range is 20~200Hz @ 24dB/Oct Slope

OUTPUT MASTER / INPUT SLAVE
OUTPUT MASTER / INPUT SLAVE connection makes same M-Class models as daisy chain connection to 2 ohm.
Minimum working impedance in the use of daisy chain connect is 2 ohm.

REMOTE
Remote level control is Level turn down function.
If you turn knob to clock-wise (Min), it reduces Level.
If you turn knob to counter clock-wise (Max), it is maximum level position.
Clipping LED shows the clipping point of The M-Class amplifiers.
When The M-Class amplifiers are close to clipping point, Clipping LED is starting to clip.
when Clipping LED is clipping faster, it is better to turn level down.
If Clipping LED is lit on, Amplifier is protected.
The M-Class amplifiers will be on in few minutes later.



3-2. CONTROL & CONNECTION



GND (GROUND CONNECTION)
It is connected to the Negative or ground cables of the Vehicle.
Recommended cable is 0 gauge for M2a,M3a, M4 & M4a and 4 gauge for M80, M1a & M1b

+12V (POWER CONNECTION)
This must be connected to the fuse positive terminal (+12V) of the battery.
Recommended wire is 0 gauge for M2a, M3a, M4 & M4a and 4 gauge for M80, M1a & M1b

REM (REMOTE)
It is connected to switched +12V with a Trigger cable coming from the head unit

SPEAKER OUTPUTS
it connects amplifier to speakers.
Minimum speaker cable is 12 gauge.
Minimum impedance for single unit is 1 ohm.
Minimum impedance in linked use is 2 ohm.

4. INSTALLATION

In case you install The M-Class amplifiers by yourself, please read owner's manual and follow your installation steps very carefully.
Before you start your installation, please take all steps into consideration.
or, you can have Digital Designs authorized distritutors to check installation and turn in your car audio systems

4-1. MOUNTING PREPARATION

Disconnect the negative (–) battery cable before mounting The M-Class amplifiers or making any connections. Check the battery and alternator ground (–) connections. Make sure they are properly connected and Free of corrosion
Before selecting a mounting location for The M-Class amplifiers, Pls take some concerns into consideration with cooling efficiency and safety.

4-2. MOUNTING PREPARATION

The M-Class amplifiers use heavy-duty and good heat radiation heatsink design for avoiding excessive heat from amplifiers' circuitry.
But for better heat radiation performance, It is good to find the mounting location where you can install The M-Class amplifiers vertically with the heatsink fins and better air flow around The M-Class amplifiers.

For the safety, you have to find dry and well ventilated location and make sure any cables and car equipment are not interfaced with mounting location.
Be sure the mounting location and drilling of pilot cables for mounting will not present a hazard to any cables, control cables, fuel lines, Fuel tanks,hydraulic lines or other vehicle systems or components

4-3. +12V, GND, REM CONNECTION

+12V (POWER CONNECTION)

Before mounting The M-Class amplifiers, disconnect the negative (–) wire from battery to protect any accidential damage to amplifier and audio system.
The M-Class amplifiers are designed to use 0 gauge or 4 gauge power and ground connection.
Connect the power cables to power terminal labeled as + 12V
M80, M1a and M1b are equipped with Fuses but M2a, M3a, M4 & M4a are not equipped with fuses.
so you have to install the ex ternal fuses on the power cable for M2a, M3a, M4 & M4a.
Connect one end of fuse holder to the power cable and the other end of fuse holder to positive battery within 20 cm of the same cable.
This fuse location will protect the system and the vehicle against the possibility of a short circuit in the power cable.
Be sure to use fuses and fuse holder adequate for the application

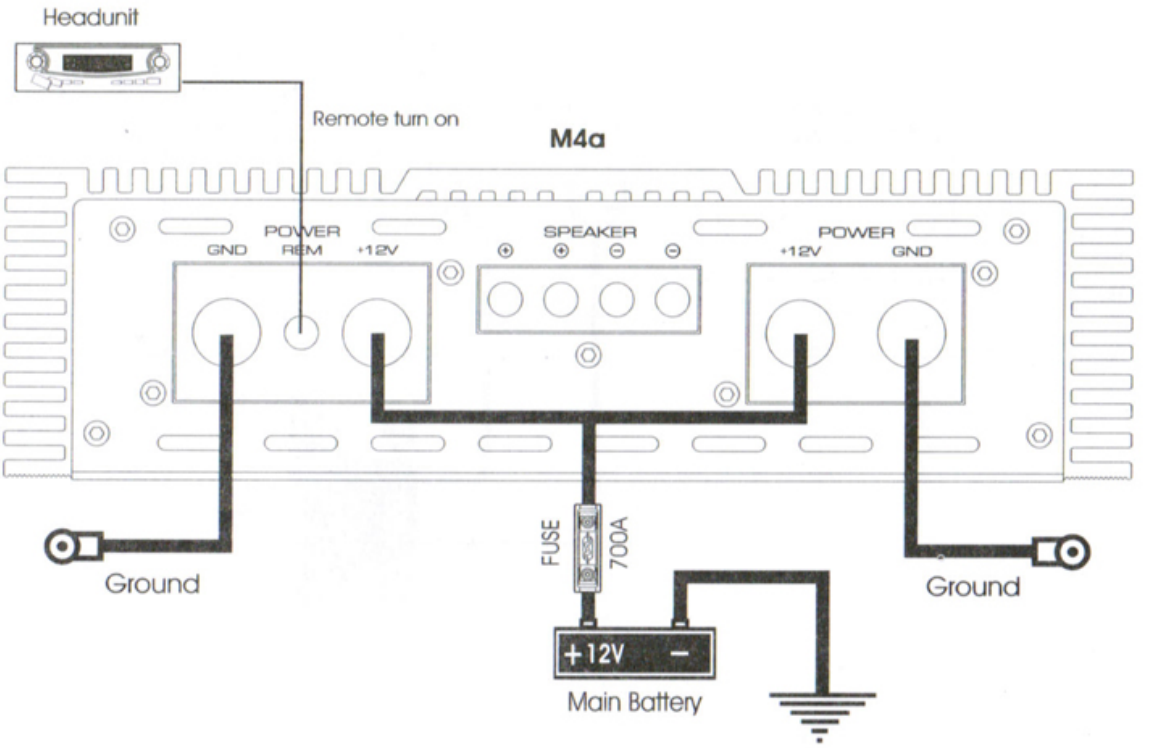
GND (GROUND CONNECTION)

Locate a secure grounding connection as close to amplifier as possible.
Make sure the location is clean and provides a direct electrical connection to the frame of the vehicle.
Connect one end of a short piece of the same size cable as the power cable to the grounding point.
Run the one end of the cable to the grounding point.
Run the other end of the cable to the mounting location
Connect the ground cable to the screw terminal labeled as GND.

REM (REMOTE CONNECTION)

Run a remote turn on cable from the switched + 12V source .
you will be using to turn on the system components.
This may be a toggle switch, a relay, or your source unit's remote trigger cables, or power antenna trigger cable
Connect the remote turn on cable to the power terminal labeled as REM.

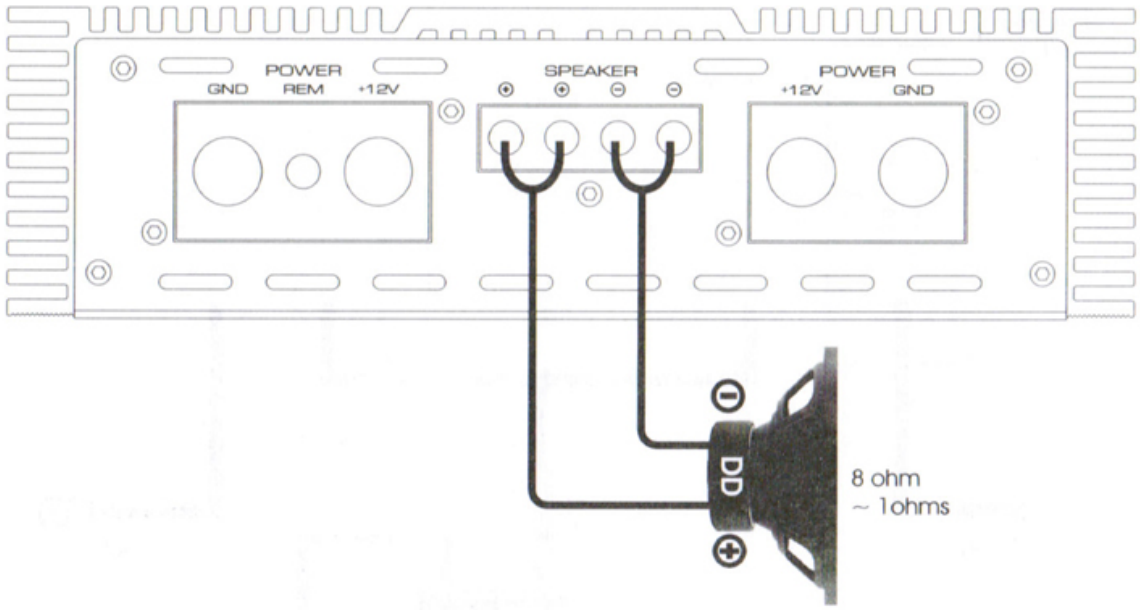
+12V, GND, REM CONNECTION DIAGRAM

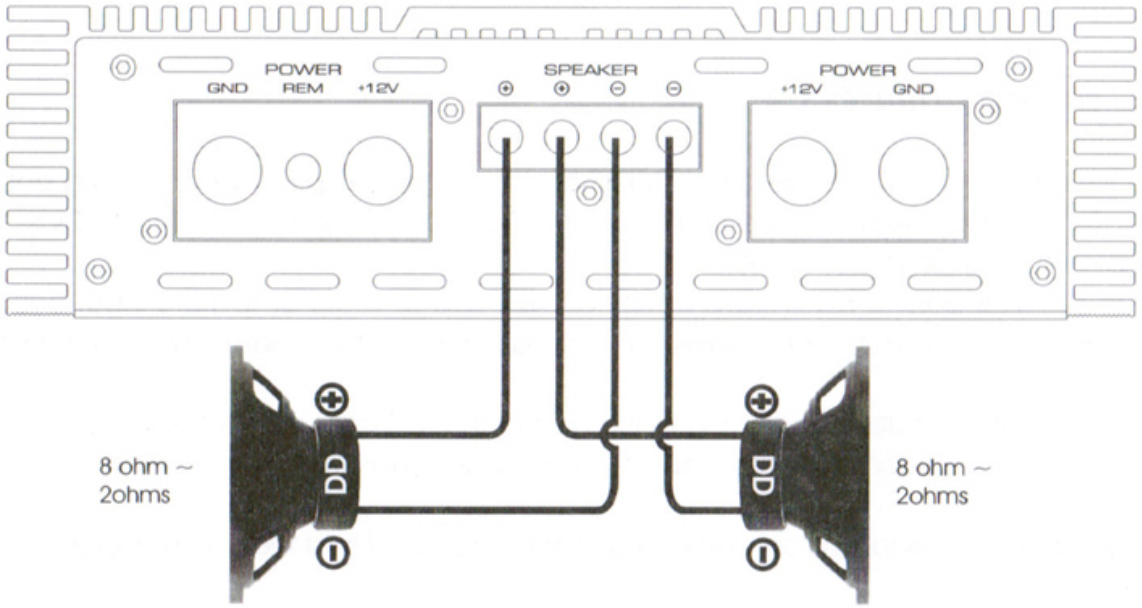


4-4. SPEAKER CONNECTION

The M-Class amplifiers are recommended to use 12 gauge speaker connecting cables.
Run 12 gauge speaker connecting cables from your speakers to The M-Class amplifiers' mounting location.
Keep speaker cables away from power cables and M-Class amplifier's input cables.
Use grommets anywhere the cables have to pass through the holes in the metal frame or sheet metal.
Connect to the speakers according to the type of the terminals on each speaker.
Strip 3/8" of insulation from the end of each cable and twist the cables strands together tightly.
Make sure there insulation from the end of each cable and twist the cables together tightly.
Make sure there are no stray strands that might touch other cables or terminals and cause a short circuit.
Crimp spade lugs over the cable ends or tin the ends with solder to provide a secure termination
Connect the cable ends to The M-Class amplifiers as speaker system diagram

SPEAKER CONNECTION DIAGRAM





⚠ CAUTION

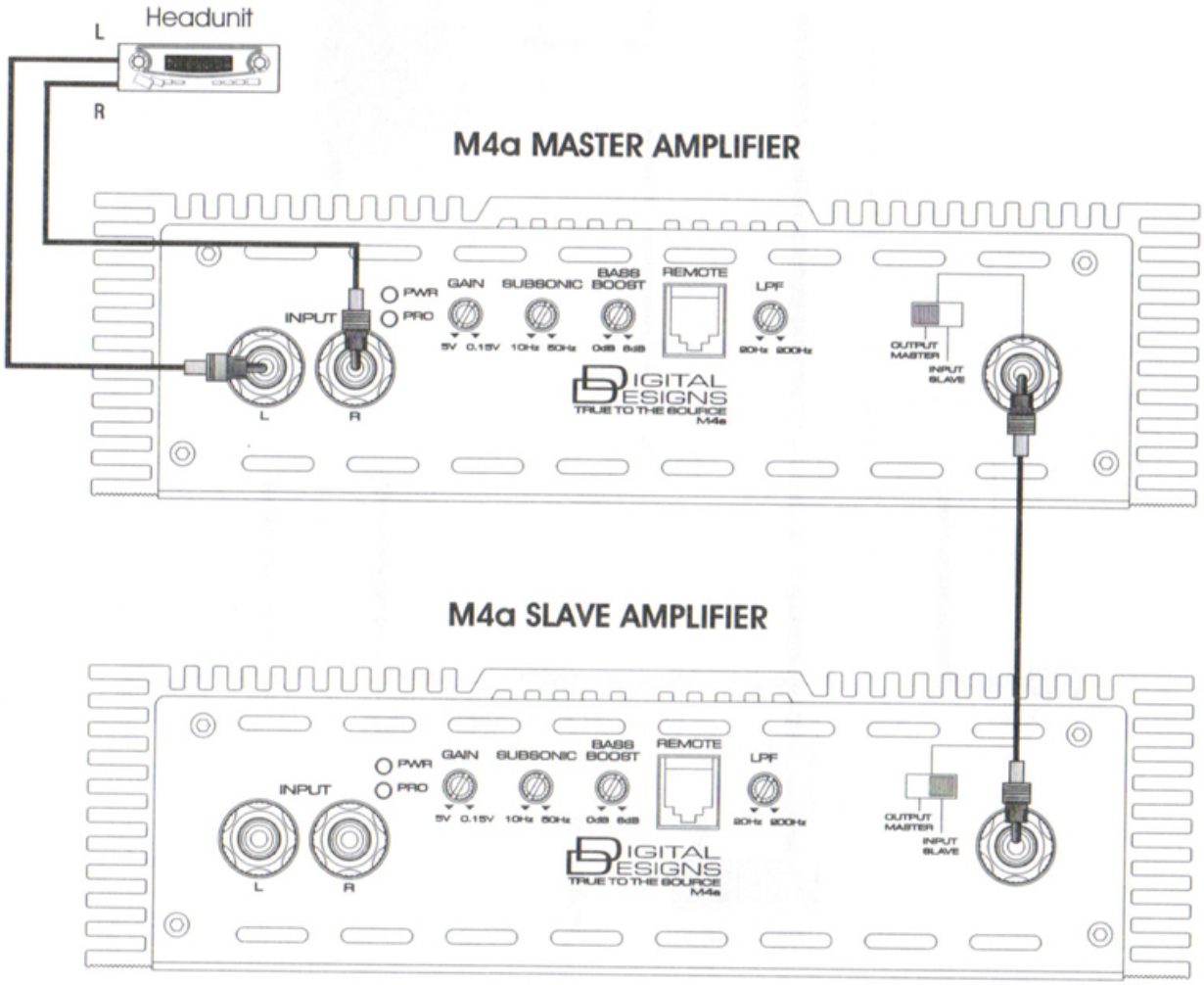
All The M-Class amplifiers minimum impedance is 1 ohm.
or
Linked minimum impedance is 2 ohm

4-5. DAISY CHAIN CONNECTION

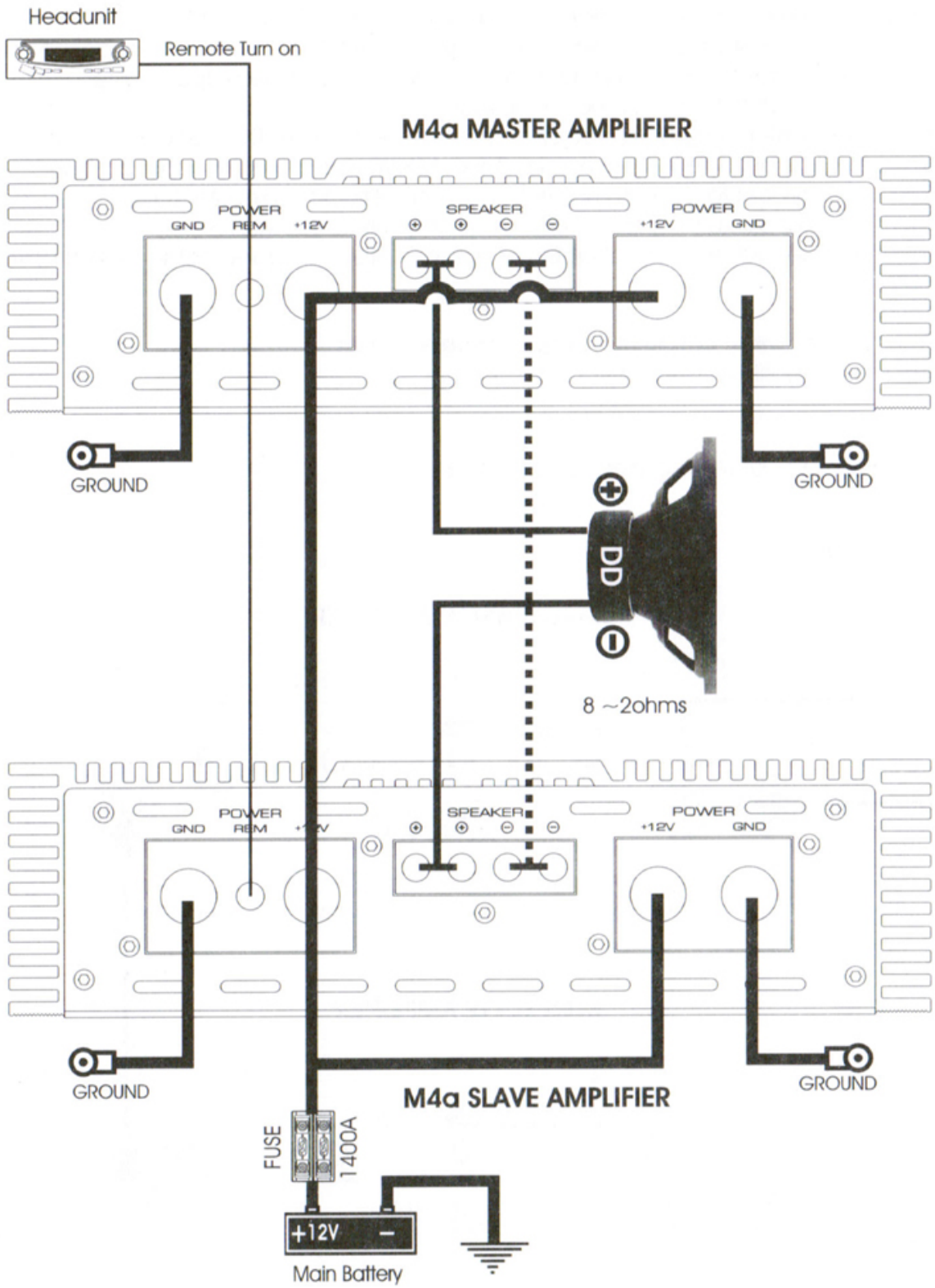
Daisy chain connection makes 2pcs of same M-Class amplifiers linkable .
Please read the following connection and diagram carefully to make correct connection.
Connect the master M-Class amplifier to the head-unit and set its output master and input slave switch to output master position.
Connect the master and slave M-Class amplifier as daisy chain Rca jack as diagram.
Set slave M-Class amplifier output master & input slave switch to slave input position.
Connect speaker cable (+) on master M-Class amplifier to subwoofer (+)
Connect speaker cable (+) on slave M-Class amplifier to subwoofer (–)
Connect speaker cable (–) on master M-Class amplifier to speaker cable (–) on slave amplifier

Minimum daisy chain connection impedance is 2 ohm
Do not use daisy chain connection as 1 ohm

DAISY CHAIN INPUT / OUTPUT CONNECTION DIAGRAM I.



DAISY CHAIN INPUT / OUTPUT CONNECTION DIAGRAM. II



5. TROUBLE SHOOTING TIPS

NO SOUND (NO OUTPUT)

@ Pls check all connections, cables' rounting, short, voltage at The M-Class and headunit
@ Pls check fuses ,If it is blown, pls replace with new one.
@ Pls check whether speakers work well, you can test speakers by connecting to another amplifier

PROTECTION

@ Pls check overload, overheat (thermal), short and voltage. DC offset
@ Minimum working impedance is 1 ohm for single The M-Class amplifiers and 2 ohm for linked operation.
@ If The M-Class amplifiers are shut down due to overheat, they will be on some minutes later.
Pls make better airflow and no obstruction around The M-Class for thermal protection
@ The M-Class have Low and high voltage protection. Working Voltage is 8.5V~15V. so Voltage is lower than 8.5V or higher than 15V, they will be protected.
@ When over 4V DC comes into the M-Class amplifiers, then, they will be DC protected.
Check whether The M-Class amplifiers work after removing RCA-Input
If The M-Class amplifiers work, then check DC by checking RCA-input L and R
When DC is over 4V at input, try by replacing headunit or source unit

DISTORTION

@ Readjust input level and check the speaker quality at another amplifier
Replace poor quality speakers with good quality ones

POOR BASS RESPONSE

@ Pls check speaker cables and reverse polarity of one channel

BUZZING SOUND

@ Check The M-Class amplifiers and headunit ground contact.
@ Check Rca Jack and repalce with new one or rerout Rca Jack.

WHINING NOISE

@ Engine noise is caused by poor grounding of The M-Class amplifiers, headunit, other components, battery or alternator, so pls check all grounding connection.

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