



**M.80b**

**M1d**

**M2c**

**SS2b**

**SS6**

**SS4a**

## **Owner's Manual**

**High Performance Digital Amplifier**

Thanks you for purchasing Digital Designs amplifiers for your car audio systems and competitions. The M-Class amplifiers are digital monoblock and SS-Class amplifiers are full range digital multi-channels which are engineered for low frequency applications and full range car audio systems in compact dimensions.

The M-Class amplifiers 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.

SS-Class amps are high power full range but can be installed in small space in any locations, small but very powerful to drive full range and mid bass speaker system. Well, maybe that's a bit of a stretch, but these amplifiers offer strong power, logical controls and efficient design.

The M and SS-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 & SS-Class amplifiers feature three distinct approaches

The M & SS-Class are designed for the highest possible efficiency and highest total output.

THE M & SS-Class are very compact size which can be easily install in small space.

The M & SS-Class make good amounts of power from the stock electrical systems

it is designed to make the most sound quality bass and full range 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 engineering are the key to the M & SS-Class.

## 1. FEATURES

	M.80b	M1d	M2c	SS2b	SS6	SS4a
Frequency Response	15 - 270Hz	15 - 270Hz	15 - 270Hz	20 - 20KHz	20 - 20KHz	20 - 20KHz
Signal to Noise Ratio	100dB	100dB	100dB	105dB	105dB	105dB
Low Pass Filter	20 - 200Hz	20 - 200Hz	20 - 200Hz	50 - 5KHz	50 - 5KHz	50 - 5KHz
Subsonic Filter	10 - 50Hz	10 - 50Hz	10 - 50Hz	na	na	na
High Pass Filter	na	na	na	20 - 5KHz	20 - 5KHz	20 - 5KHz
X-over	na	na	na	ON - OFF	ON - OFF	ON - OFF
Input Sensitivity	8V - 0.2V					
Strappable Connection	Yes	Yes	Yes	na	na	na
Remote Control	Yes	Yes	Yes	Yes	Yes	Yes
Damping Factor	150 <	150 <	150 <	200 <	200 <	200 <
Dimensions ( Inches )	11.023	13.779	19.685	6.69	14.173	11.023
( 6.889W x 2.067H )						

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

### Digital Monoblock Output Power

	Power @ 1ohm	Fuse Rating
M.80b	940W x 1	100A ( Linked : 200A )
M1d	1650W x 1	150A ( Linked : 300A )
M2c	2300W x 1	200A ( Linked : 400A )

### Full Range Digital Multi-Channels Output Power

	Power @ 2 ohm	Fuse Rating
SS2b	210W x 2ch	30A
SS6	750W x 2ch	120A
SS4a	230W x 4ch	70A

## 2. DESIGN FEATURES

### M-Class Design Features

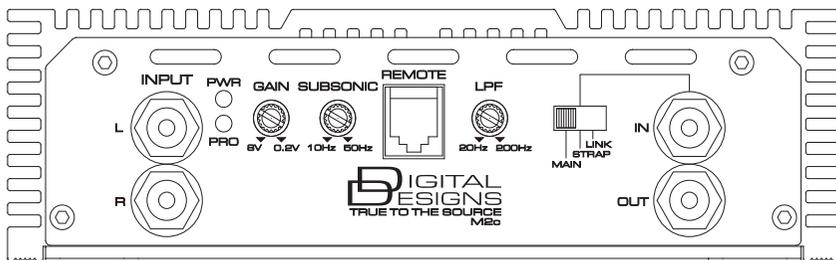
- 1) The M-Class amplifiers are working fully stable down to 4/2/1 ohm as single unit. Daisy Chain connection makes it fully stable down to 2 ohm.
- 2) The M-Class has the possible highest efficiency and sufficient amount of the parts to maximize the performance at especially 12V application.
- 3) The M-Class has 4 ways of accurate protection circuit, as speaker short, DC offset, voltage, thermal protection which are the most safe-guard.
- 4) The M-Class are designed in double sided board and use high current mosfet switching devices.
- 5) The M-Class has 24dB/Oct slope of crossover, Low Pass Filter and Subsonic Filter as fully adjustable.
- 6) The M-Class has dash mount remote level control which allows convenient level control and check the battery voltage as well as clipping indicator from the driver's seat.

### SS-Class Design Features

- 1) SS2b, SS6 & SS4a are working fully 2ohm stereo or 4ohm mono stable.
- 2) The SS-Class has the possible highest efficiency and sufficient amount of the parts to maximize the performance at especially 12V application.
- 3) The SS-Class has 4 ways of accurate protection circuit, as speaker short, DC offset, voltage, thermal protection which are the most safe-guard.
- 4) The SS-Class are designed in double sided board and use high current mosfet switching devices.
- 5) The SS-Class, SS2b, SS6 & SS4a are full range digital circuitry.
- 6) The SS-Class is very compact size which can be mounted for small space car.
- 7) The SS-Class has dash mount remote level control which allows convenient level control from the driver's seat
- 8) SS6 and SS4a are high purity 4 layer printed circuit board.

## 3. CONTROL & CONNECTION

### 3-1. CONTROL & CONNECTION FOR MONOBLOCK



#### 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 8V to 0.2V.

#### 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

**REMOTE LEVEL CONTROL PORT**

This port is for connecting remote level control.  
Remote level control adjusts the level

**LPF CROSSOVER FREQUENCY**

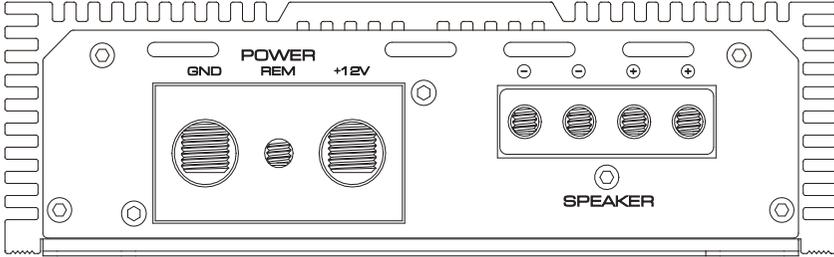
Controls the low pass point for the speaker outputs.  
The crossover range is 20 ~ 200Hz @ 24dB/Oct Slope

**MAIN/STRAP/LINK**

MAIN/STRAP is the strappable function of 2 M-Class amplifier.  
Strappable connection minimum working impedance is 2 ohm.  
MAIN/LINK is the multiple connection with same signal input.

**REMOTE CONTROL**

Remote gain control has voltmeter and clipping indicator.  
When remote control is powered on, then white color LED lights up DD logo. Voltmeter shows the battery voltage, so check carefully whether battery is full enough to drive the amplifier.  
Clipping LED shows the clipping point of M-Class amplifiers.  
When 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 RED, amplifier is protected.  
M-Class amplifiers will be on in few minutes later.



**GND (GROUND CONNECTION)**

It is connected to the Negative or ground cables of the Vehicle.  
Recommended cable is 0 ga for M.80, M1c and M2b

**REM (REMOTE)**

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

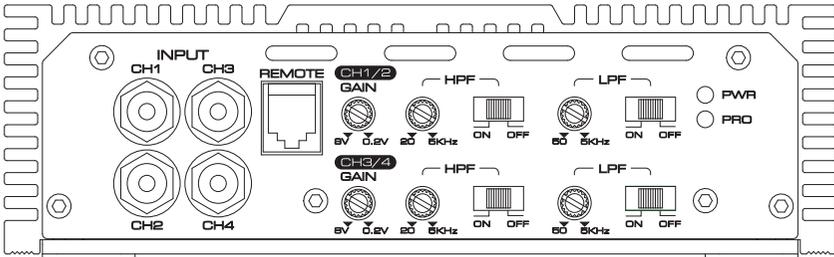
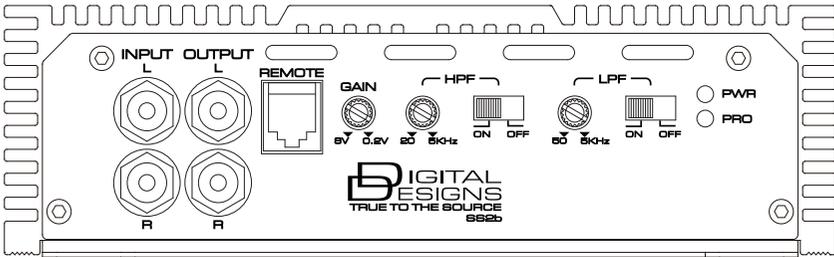
**+12V (POWER CONNECTION)**

This must be connected to the fuse positive terminal (+12V) of the battery.  
Recommended wire is 0 ga for M.80, M1c and M2b

**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.

**3-2. CONTROL & CONNECTION FOR FULL RANGE DIGITAL MULTI-CHANNELS**



**INPUT**

Connect preamp signal cables from the headunit to RCA Input of SS4a.

**OUTPUT**

Connect Output RCA Jack to another amplifier's input.

**GAIN ( 8V - 0.2V )**

Matching the output voltage of the headunit's RCA line-outs to SS4a input section.

**HIGH PASS FILTER ( 20Hz - 5KHz )**

Controls the high pass point for the speaker outputs.

**HPF CROSSOVER SELECTOR**

High Pass Filter selector determines whether SS2b/SS6/SS4a will operate in high pass or full range mode.

in on position, it will play the frequency set on High Pass.

in off position, the High pass will have no effect

**LOW PASS FILTER ( 50Hz - 5KHz )**

Controls the low pass point for the speaker outputs.

**LPF CROSSOVER SELECTOR**

Low Pass Filter selector determines whether SS2b/SS6/SS4a will operate in Low pass or full range mode.

in on position, it will play the frequency set on Low Pass.

in off position, the Low pass will have no effect

**POWER & PROTECTION INDICATOR**

Power LED, Green-lit shows correct operation of The SS-Class amplifiers.

Protect LED, RED-lit shows general malfunction, faulty connection and thermal protection

## 4. INSTALLATION

In case you install the M & S-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 distributors to check installation and turn in your car audio systems

### 4.1. MOUNTING PREPARATION

Disconnect the negative (–) battery cable before mounting the M & S-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 & S-Class amplifiers, Pls take some concerns into consideration with cooling efficiency and safety.

### 4.2. MOUNTING PREPARATION

The M & S-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 & S-Class amplifiers vertically with the heatsink fins and better air flow around the M & S-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 & S-Class amplifiers, disconnect the negative (–) wire from battery to protect any accidental damage to amplifier and audio system.

The M & S-Class amplifiers are designed to use 0 gauge or 4 gauge power and ground connection.

Connect the power cables to power terminal + 12V.

All M & S-Class amplifiers are not equipped with fuses so you have to install the external fuses on the power cable.

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

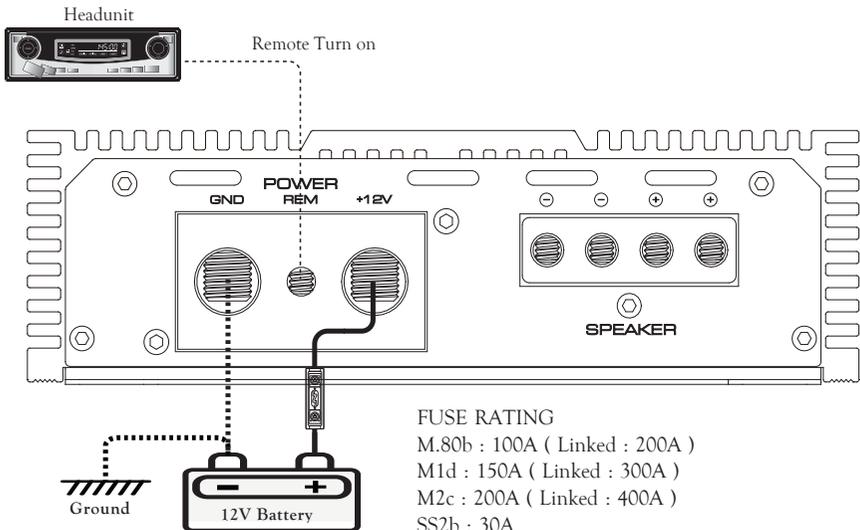
Connect the ground cable to the screw terminal GND.

**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 REM.



**FUSE RATING**

M.80b : 100A ( Linked : 200A )

M1d : 150A ( Linked : 300A )

M2c : 200A ( Linked : 400A )

SS2b : 30A

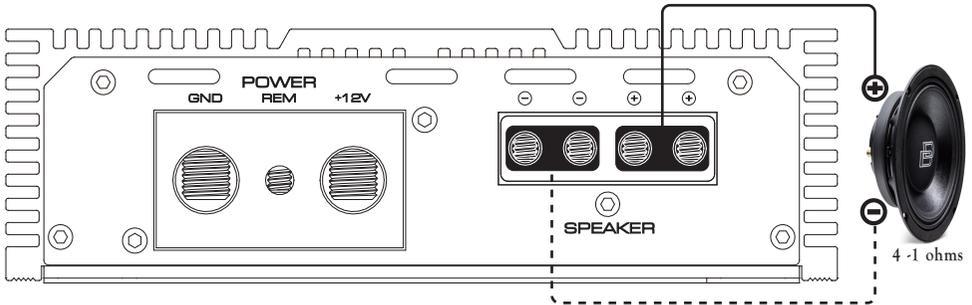
SS4a : 70A

SS6 : 120A

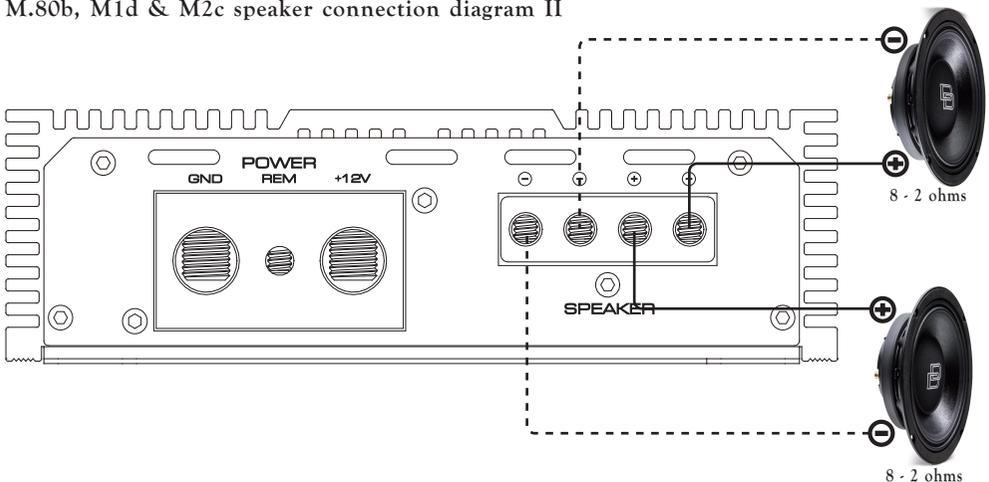
#### 4.4. SPEAKER CONNECTION

The M & S-Class amplifiers are recommended to use 12 gauge speaker connecting cables. Run 12 gauge speaker connecting cables from your speakers to the M & S-Class amplifiers' mounting location. Keep speaker cables away from power cables and M & S-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 the 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 & S-Class amplifiers as speaker system diagram

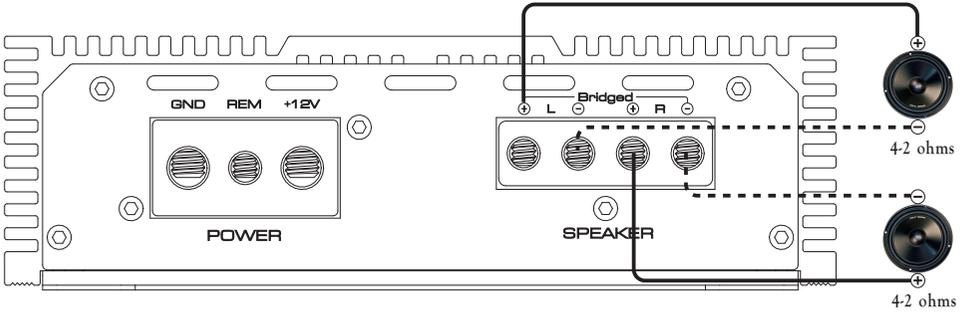
M.80b, M1d & M2c speaker connection diagram I



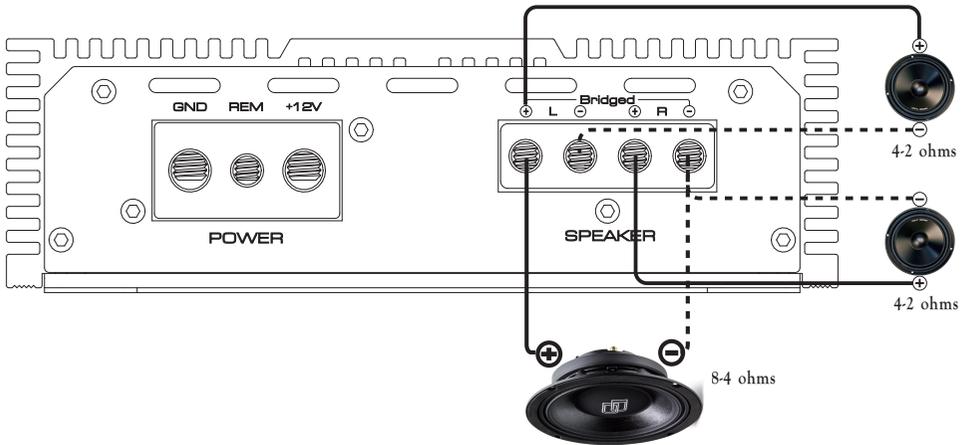
M.80b, M1d & M2c speaker connection diagram II



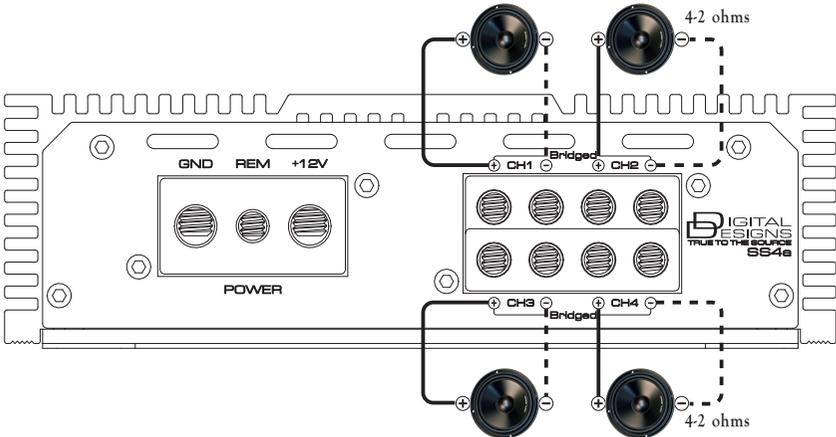
SS2b & SS6 Speaker connection diagram I



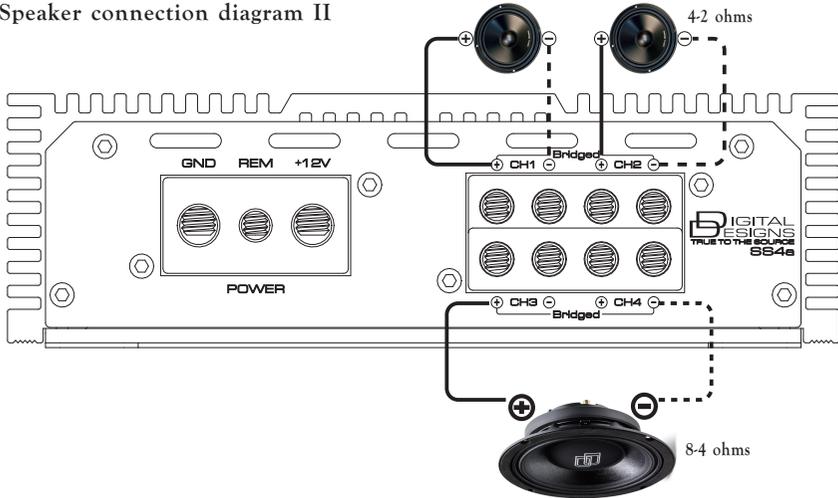
SS2b & SS6 Speaker connection diagram II



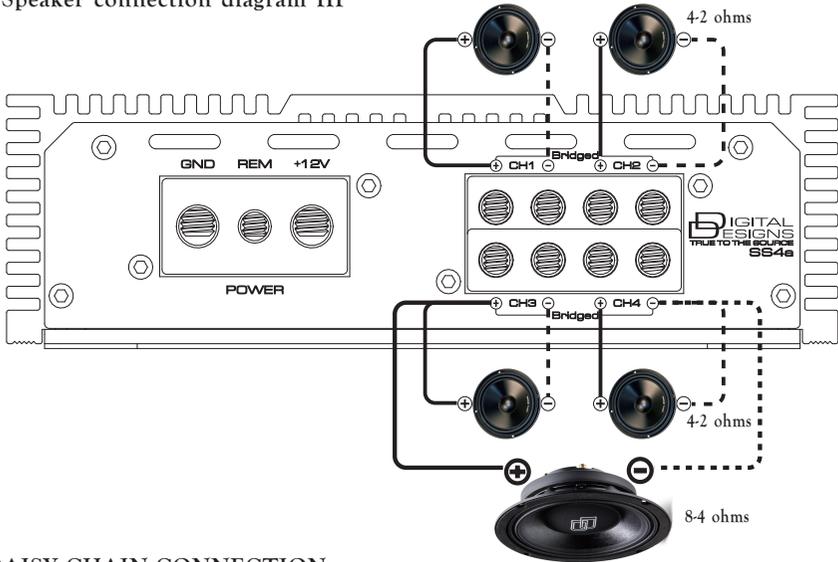
SS4a Speaker connection diagram I



SS4a Speaker connection diagram II



SS4a Speaker connection diagram III



4-5. DAISY CHAIN CONNECTION

Daisy chain connection makes 2pcs of same M.80b, M1d and M2c amplifiers linkable . Please read the following connection and diagram carefully to make correct connection. Connect the main amplifier to the head-unit and set its MAIN / STRAP / LINK switch to MAIN position.

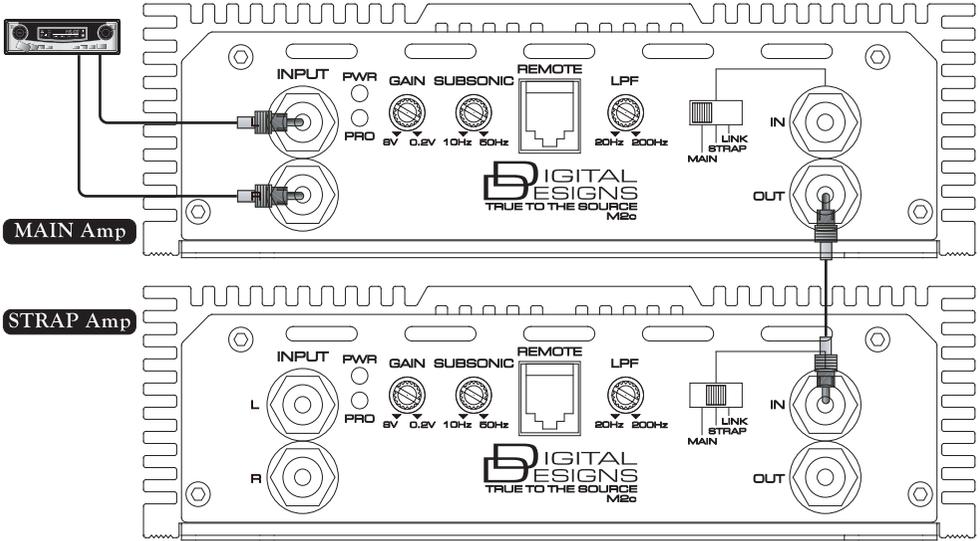
Connect the main and strap amplifier as daisy chain Rca jack as diagram.

Set strap amplifier's main / strap / link switch to strap position.

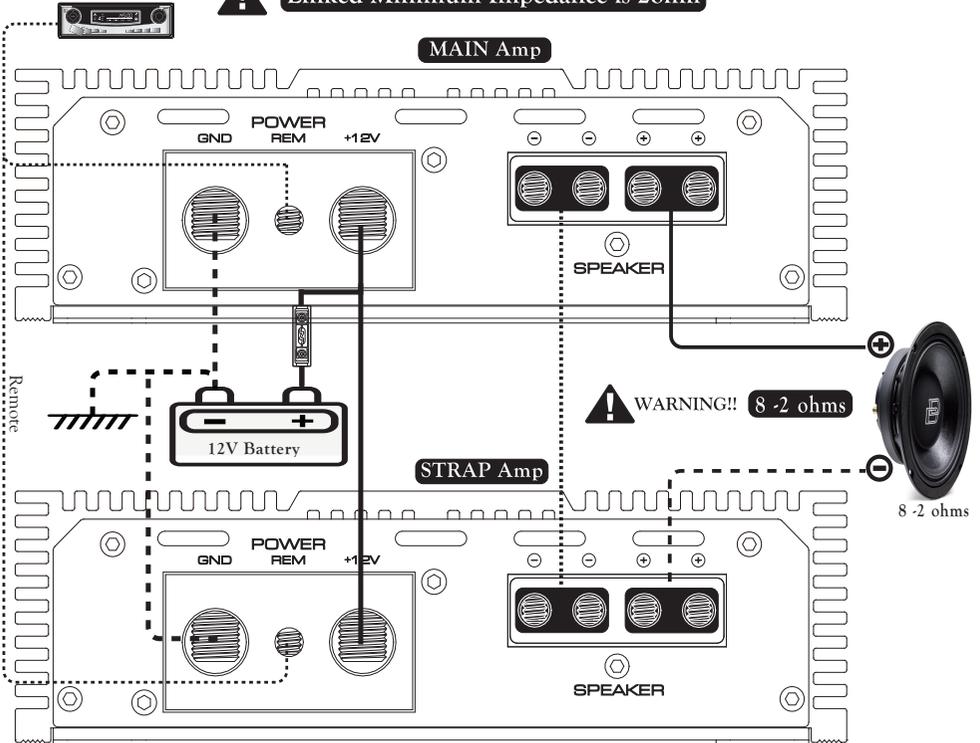
Connect speaker cable (+) on main amplifier to subwoofer (+) terminal.

Connect speaker cable (+) on strap amplifier to subwoofer (-) terminal.

Connect speaker cable (-) on main amplifier to speaker cable (-) on strap amplifier



**! Linked Minimum Impedance is 2ohm**

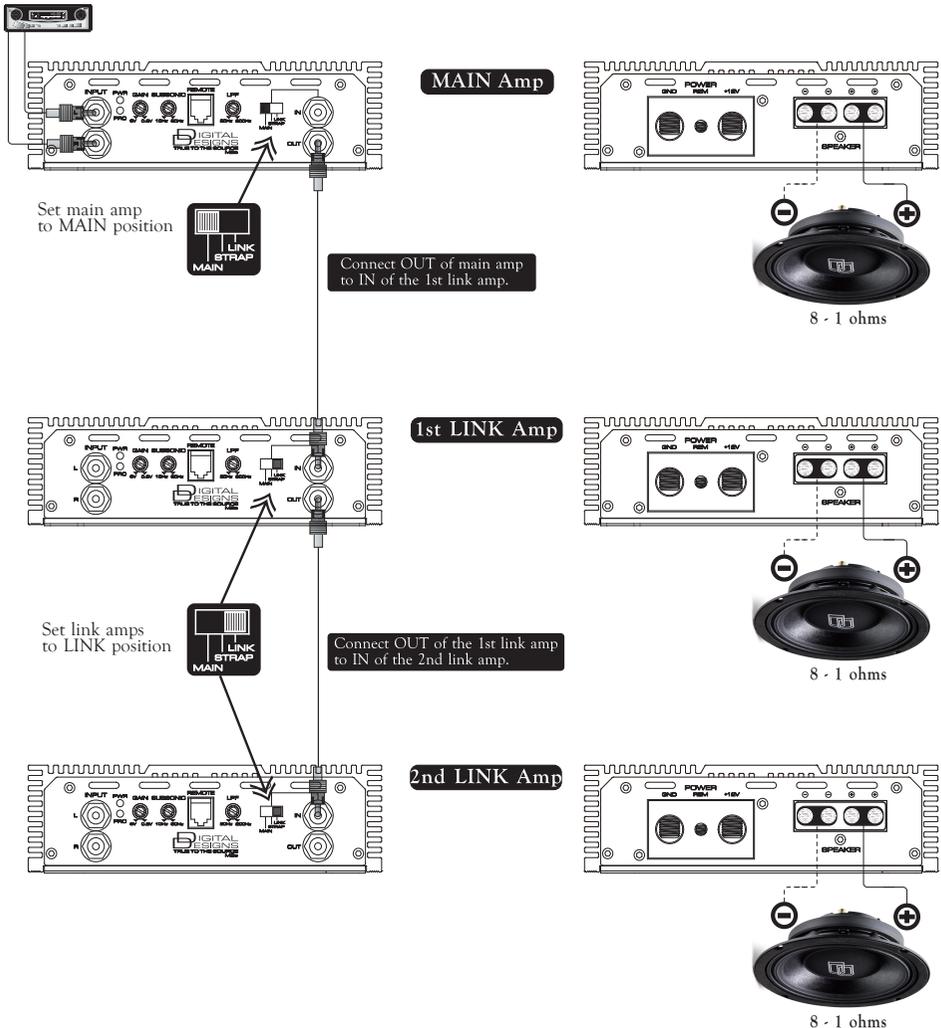


## 4-6. MULTIPLE CONNECTION ( MAIN / LINK MODE )

In MAIN / LINK mode

The Entire pre-amp section of link amps is bypassed and feed directly from main amplifier's pre-amp with MAIN / LINK cable which gives the exact and perfect gain and crossover matching across all amplifiers. The phase of all link amplifiers is not reversed, so all subwoofers will be in phase and each amplifier will be independent in function other than signal.

Set MAIN / LINK switch on each amplifier as shown on the diagram below, you will have one main and unlimited link amplifiers in this configuration.



## 5. TROUBLE SHOOTING TIPS

### NO SOUND ( NO OUTPUT )

- @ Pls check all connections, cables' rounting, short, voltage at the M / SS-Class and headunit
- @ Pls check fuses ,If they are blown or burnt , 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, voltage and DC offset.
- @ M.80b, M1d and M2c minimum working impedance is 1 ohm for single and 2 ohm for linked operation.
- SS2b, SS4a and SS6 minimum working impedance is 2ohm stereo or 4ohm mono.
- @ If the M & SS-Class amplifiers shut down due to overheat, they will be on some minutes later. Pls make better airflow and no obstruction around the M & SS-Class for thermal protection.
- @ The M.80b, M1d, M2c, SS2b, SS4a and SS6 have low and high voltage protection. Working voltage is 8.5V - 16V. When voltage is lower than 8.5V or higher than 16V, they will be protected.
- @ When over 4V DC comes into the M & SS-Class amplifiers, then, they will be DC protected. Check whether the M & SS-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. If there is still problem, 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 & SS-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 & SS-Class amplifiers, headunit, other components, battery or alternator, so pls check all grounding connection.