



THUNDER

LOW FREQUENCY AMPLIFIER

655-0010-01-01

INSTALLATION MANUAL

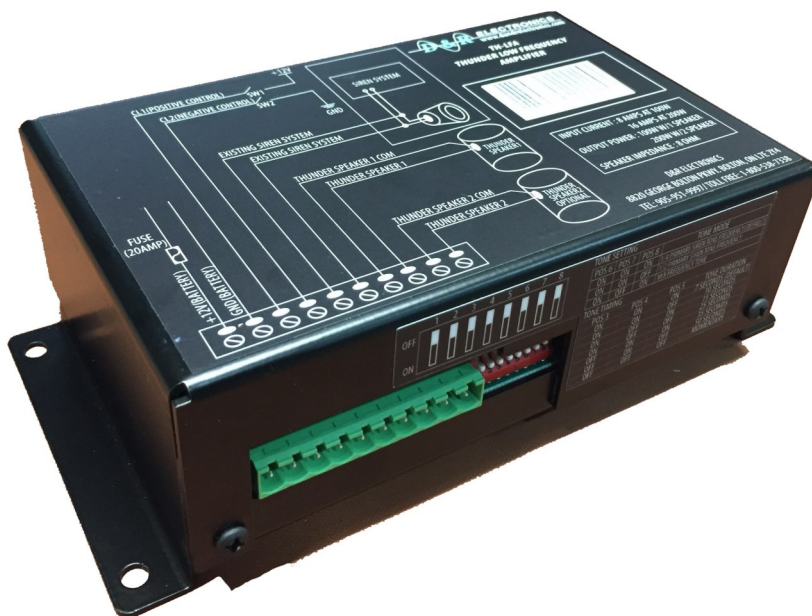


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General Description

The Thunder works with any standard vehicle's existing siren, creating a new tone half a quarter or a combination of the original tones. This low frequency tones drives one or two special designed low frequency speaker which mounted in front of the vehicle.

In normal condition, the Thunder is mute. It can be activated only if a siren tone is Present. It is useful in high-risk areas such as an intersection. This low frequency tone is able to penetrate other vehicles.

User can select one of the three pre-programmed tones from the dipswitch see table 1, the duration can be set from the dipswitch as follow momentary, 7, 10, 15, 25, 35, 50 seconds. See table 1, It is important to set minimum operation time base on safe exposure time in Noise and Hearing Conservation which is defined in regulation documents of The Occupational Safety & health Administration.

Technical specification

Amplifier

Input voltage :..... 9 Vdc to 15 Vdc
Input current :..... 8 Amps at 100w, 16 Amps at 200w
Operating temperature :..... 30c to +65c
Frequency range :.....170 to 600 HZ
Output power :..... 1 speaker 100W 2 speaker 200W

Speaker

Impedance :..... 8 ohms
Power :..... 100 Watts
Frequency range :..... 95HZ to 4000 HZ
Weight:..... 7.20 lb.
Dimension:..... Diameter - 6.5" Height - 7.5"

General Warning

1. The use of emergency warning devices does not ensure the safety of the operator. The operator is responsible to ensure safe operation of the vehicle regardless of whether the warning device is in operation or not
2. The effectiveness of this or any warning device is highly dependent on proper installation and maintenance. ***Read the manufactures instructions before installing and follow all recommendations.***
3. When in use the operator must ensure that the warning signal is visible and not obstructed by vehicle components (i.e. open trunk lid), people or other obstructions
4. This device is intended for use by authorized personnel only The user is responsibility to ensure that all local, state/provincial and federal laws are being complied with. D&R assumes no liability for any loss resulting from the use of this device.
5. The device must be installed so as not to reduce the output performance of vehicle systems
6. Placement of control switches must be so as to provide convenient reach for the operator without loosing eye contact with the road.
7. Emergency warning devices require high electrical voltages and/or currents. Properly connect and ground all circuits. Shorting or improper grounding of this device may caused personal injuring, vehicle damage or both
8. Use ear protection while installing siren system or speaker, activation of siren may damage unprotected ears.
9. ***All operators should be properly trained in the operation of this device to ensure both their and public safety***

Installation and Mounting

Warning

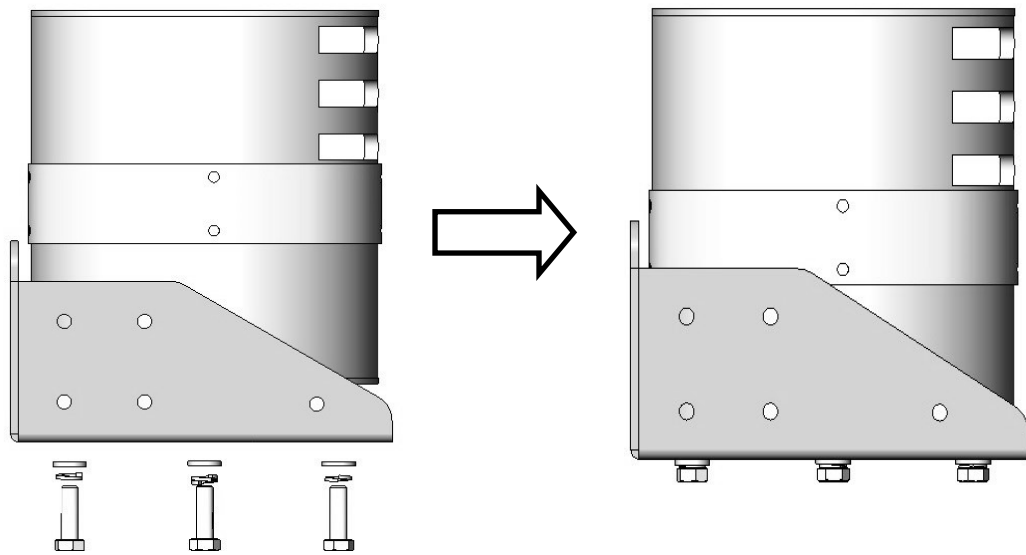
1. Any device used inside a vehicle, may cause severe personal injury if not properly mounted and secured. Objects used in the vehicle may become airborne during a collision or other sudden changes in vehicle speed or direction, such as braking, acceleration or turns.
2. Be sure to mount unit through the steel of the vehicle. Avoid mounting through plastic or other non-structural materials.
3. **POINT OF INSTALLATION MUST NOT INTERFERE WITH DEPLOYMENT OF VEHICLE AIR BAGS.**
4. DO NOT mount the system in a location that will obstruct the driver's view. Ease of operation should be the PRIME consideration in mounting the ARROWBOARD electronic system.
5. DO NOT mount the CONTROLLER in a location that will interfere with the airbags. (For safe equipment mounting zones in your vehicle, consult your vehicle manufacturer's recommended guidelines).
6. **D&R Electronics recommends this or any of our products be installed by qualified professionals.**

Mechanical Installation

Speaker Installation

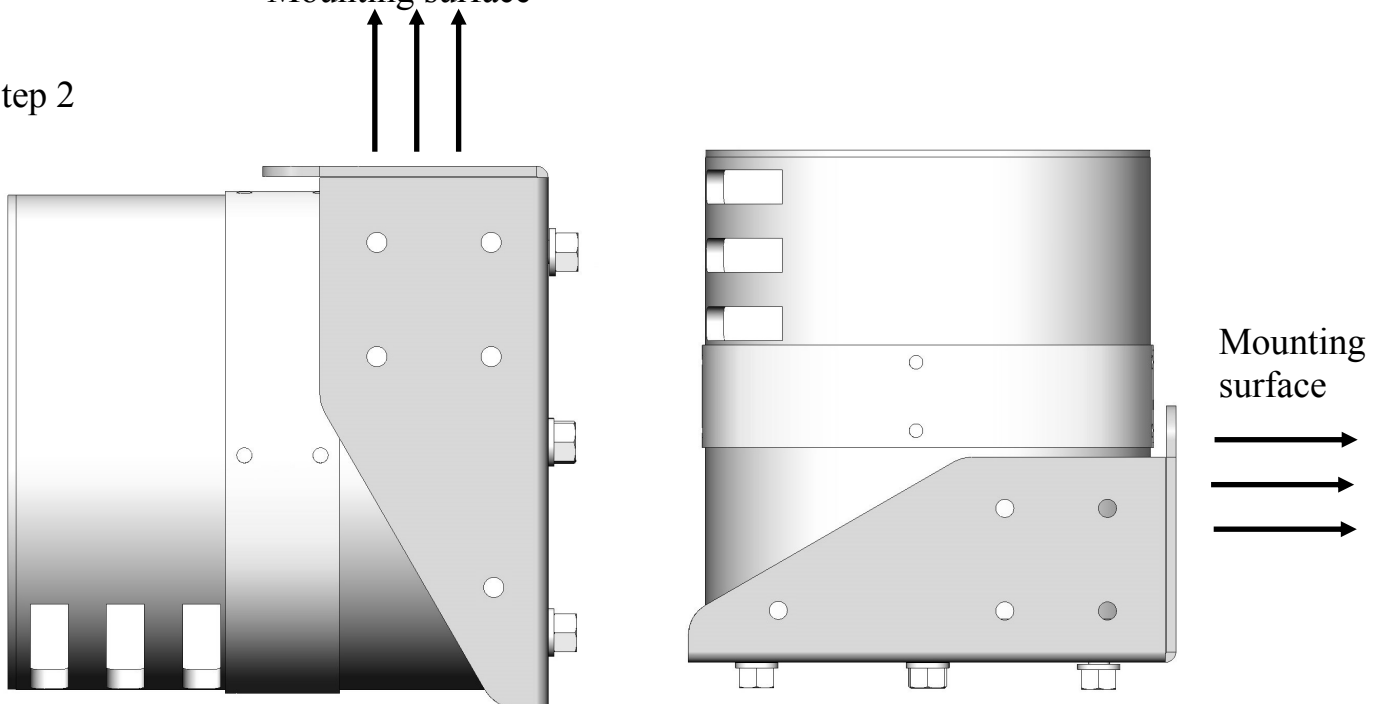
1. Mounting bracket for speaker can be mount in several position depending on your vehicle.
2. Decide the mounting location, mark and drill six mounting holes.
3. Secure the bracket to the vehicle with supplied hardware.
4. Mount the siren speaker to the bracket in the desired location.
5. Connect the power source to the control box .

Step 1



Mounting surface

Step 2



Mounting surface

FIGURE 1 MOUNTING LOCATIONS

Electrical installation

Wiring diagram

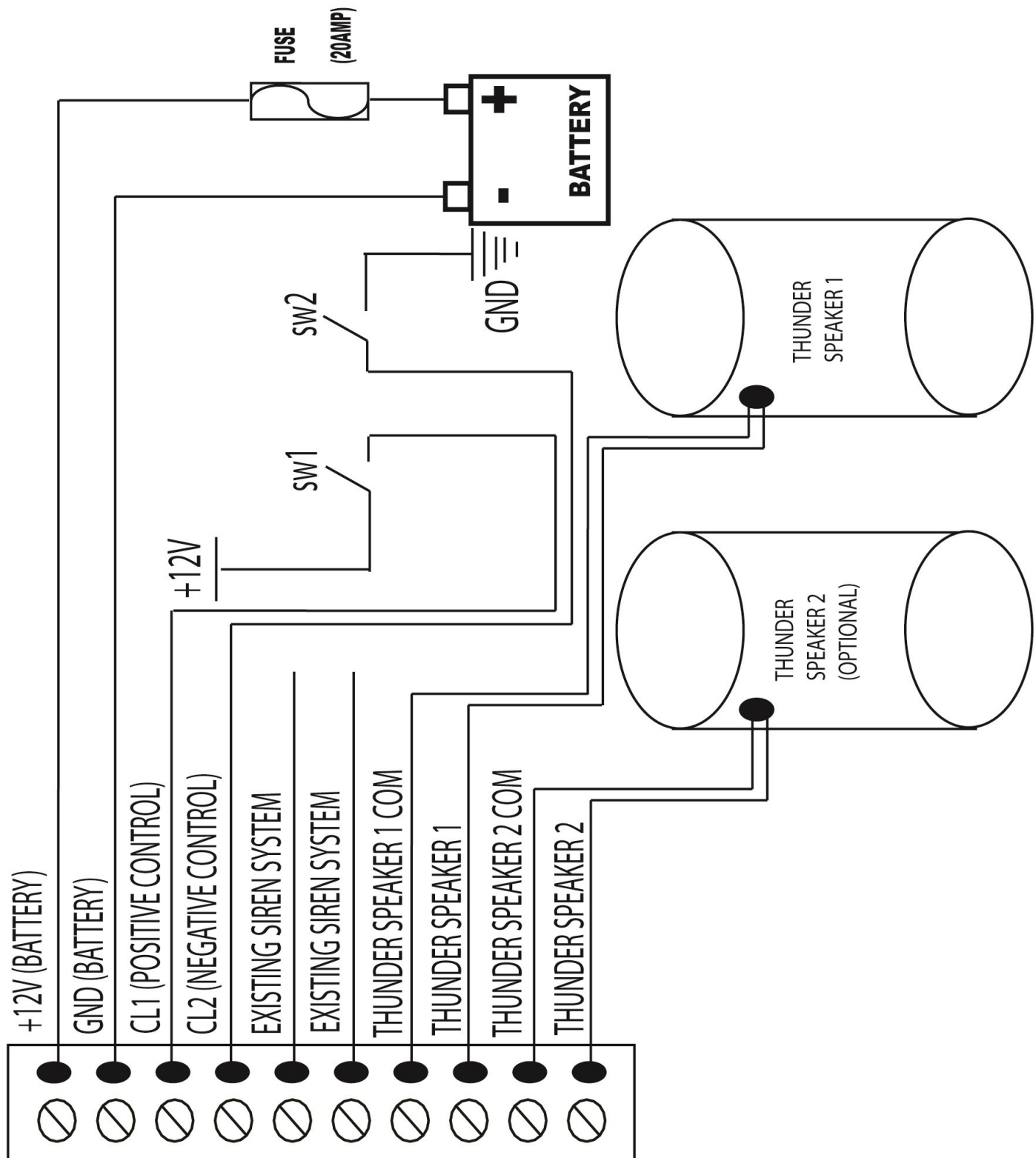


FIGURE 2 WIRING DIAGRAM

Connection Description

Pin 1	Connect to +12V of battery
Pin 2	Connect to ground of battery
Pin 3	Connect to SPST momentary switch (positive activation)
Pin 4	Connect to SPST momentary switch (ground activation)
Pin 5	Connect to the vehicle siren speaker
Pin 6	Connect to the vehicle siren speaker
Pin 7	Connect to thunder speaker 1
Pin 8	Connect to thunder speaker 1 common
Pin 9	Connect to thunder speaker 2
Pin 10	Connect to thunder speaker 2 common

Dip Switch Setting

Configure Tone Duration

To select tone duration, set dip switch position 3, 4 and 5 to the position base on the table below:



FIGURE 4 Dip switch sw3,4&5 configuration

SWITCH 3	SWITCH 4	SWITCH 5	TONE DURATION
ON	ON	ON	7 seconds (default)
ON	ON	OFF	10 seconds
ON	OFF	ON	15 seconds
ON	OFF	OFF	25 seconds
OFF	ON	ON	35 seconds
OFF	ON	OFF	50 seconds
OFF	OFF	OFF	Momentary

Configure Tone Mode

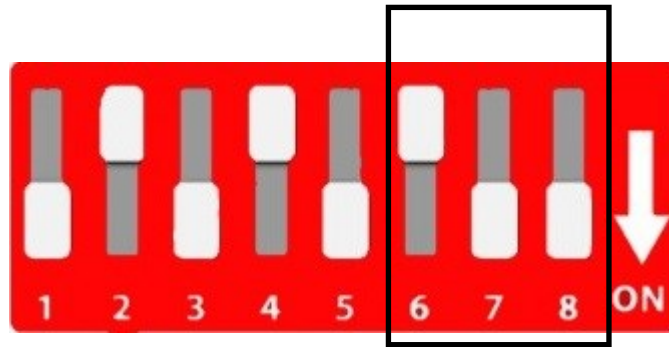


FIGURE 5 Dip switch sw6,7&8 configuration

To select tone mode, set dip switch position 6, 7 and 8 to the position base on the table below:

SWITCH 6	SWITCH 7	SWITCH 8	TONE MODE
ON	ON	ON	1/4 primary siren tone frequency (default)
ON	ON	OFF	1/2 primary siren tone frequency
ON	OFF	ON	Mix Frequency tones

System Operation

1. The positive input control (PIN 3) will activates the thunder as per the pre-set time
2. The ground input control (PIN 4) will activates the thunder as per the pre-set time

PACKAGE LIST

PART NUMBER	DISCRIPTION	QTY
212-0100	MANUAL AND INSTALLATION PROCEDURE FOR THUNDER LFA SIREN BOX	1
SEE TABLE BELOW	VEHICLE SPECIFIC MOUNTING BRACKET	1
189-0200	THUNDER SPEAKER	1 (OR 2)
655-0010-01-01	THUNDER - LOW FREQUENCY AMPLIFIER SIREN BOX - REV 0	1

VEHICLE SPECIFIC BRACKET LIST

PART NUMBER	DESCRIPTION
935-0082A	Explorer2013+ Thunder Speak Mount Brkt
835-0029A	Thunder Speaker Bracket (Universal)

HARDWARE LIST

PART NUMBER	DISCRIPTION	QTY
7411-0021	Bolt - 5/16-18X1-1/4", Hex,S.S	4
413-0006	Washer 5/16-18 Lock S.S	4
413-0005	Washer 5/16 Flat S.S	4

NOTE : Hardware list mention above is only for universal mounting bracket.

Notes:

Notes:

WARRANTY

D & R Electronics warrants its new products to be free from defects in material and workmanship, under normal use and service for a period of one year on parts replacement. This warranty applies only to original purchasers acquiring the product directly from D&R Electronics, or its authorized dealers. Warranty will not be recognized without proof of purchase or bill of sale.

This warranty is not transferable. The warranty begins on the date of delivery to the first user/purchaser. This warranty shall not apply to products which must be repaired due to normal wear and tear, negligence, improper installation, abuse, misuse, or which have been altered or modified at a facility other than D & R Electronics, or its authorized depot centers. Units proved to be defective within the warranty period, based on an examination by D&R Electronics, will be replaced or repaired at D & R Electronics' option. This warranty does not cover travel expenses or labor charges for removal or installation. Lamps, flash tubes, batteries or other items considered consumables are not covered under warranty.

This warranty is in lieu of all other express warranties. D&R Electronics makes no warranties, expressed or implied, other than the express warranties contained herein.

Any electronic device may create or be affected by electromagnetic interference. After installation of any electronics device operate all equipment simultaneously to insure that operation is free of interference. Never power emergency warning equipment from the same circuit or share the same grounding circuit with radio communication equipment.

PROPER INSTALLATION COMBINED WITH OPERATION TRAINING IN THE PROPER USE OF EMERGENCY WARNING DEVICES IS ESSENTIAL TO INSURE THE SAFETY OF EMERGENCY PERSONNEL AND THE PUBLIC.

PRODUCT RETURN POLICY

In order to provide you with faster service, product returns for repair or replacement, must have a **Return Goods Authorization Number (RGA number)**. Please contact our company to obtain a RGA number before you return the product to D & R ELECTRONICS. Write the RGA number clearly on the package. Be sure you use sufficient packing materials to avoid damage to the product being returned while in transit. D & R ELECTRONICS assumes no responsibility or liability for expenses incurred for the removal and/or the installation of products requiring service and/or repair. Repairing or replacing product is at the discretion of D & R ELECTRONICS Co. LTD.

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