

SP204RV2

Programmable Siren Amplifier System & 19-Button w/ Slide Panel Controller

— Installation & Operation Manual —

Firmware Ver. A/C



NOTICE TO INSTALLER

Before installation and operation — read all instructions and warnings.
Deliver this manual to the end user of this product.

TABLE OF CONTENTS

WARNING	1
CONTENTS	2
SPECIFICATIONS	2
WIRING	3
DEFAULT HAND-CONTROLLER OPERATION	6
PC PROGRAMMING	8
INSTALLATION	9
DIAGNOSTIC LEDS	11

WARNING

1. Proper installation of the product requires the installer to have a good understanding of automotive electronics, systems and procedures. It is essential to install the unit properly to ensure safe and reliable operation.
2. Please read through all instructions thoroughly and carefully before installing the unit.
3. Failure to follow these instructions could result in serious damage to the unit or vehicle and may void warranties.
4. The correct mounting and wiring is the key to the effectiveness of SDN212.
5. Installers must read and follow instructions and warnings in the manual from the original manufacturer.
6. The operator should verify the siren system is fastened to the vehicle securely and is functioning properly. Failure to follow all safety precautions and instructions may cause property damage, injury, or death.
7. Ensure that any switch control panel is located in an area that allows both the vehicle and the control panel to be operated safely in any driving condition.

WARNING



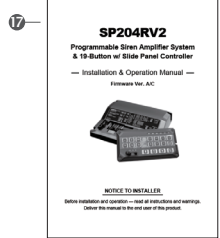
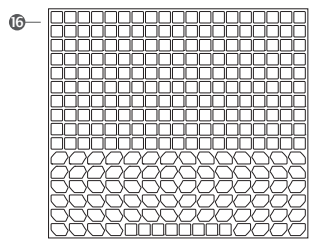
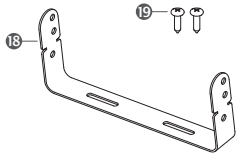
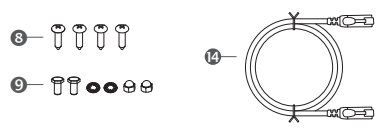
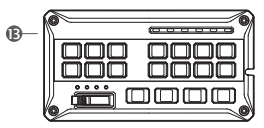
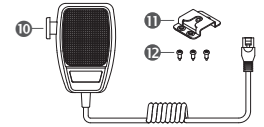
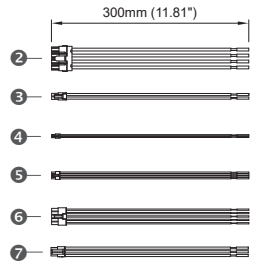
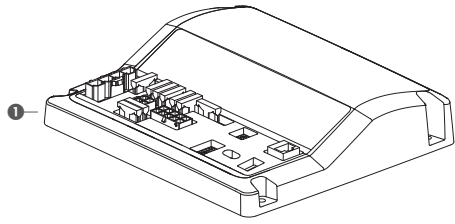
Sound Hazard - Sound level from a siren speaker (109dB at 2M) may cause hearing damage.

Do not operate the siren without adequate hearing protection for you and anyone in immediate vicinity.

(Ref. OSHA 1910.95 for occupational noise exposure guidelines)

CONTENTS

- ❶ Siren amplifier x 1 pc
- ❷ 4-PIN power harness x 1 pc
- ❸ 4-PIN high current relay outputs harness x 1 pc
- ❹ 4-PIN speaker harness x 1 pc
- ❺ 8-PIN inputs harness x 1 pc
- ❻ 10-PIN mid/low current relay outputs harness x 1 pc
- ❼ 3-PIN CAN_COMM harness x 1 pc
- ❽ Sheet metal screw (ø4 x 16mm) x 4 pcs
- ❾ Bolt & Nut set x 6 pcs
- ❿ Microphone x 1 pc
- ⓫ Microphone clip x 1 pc
- ⓬ Sheet metal screw (ø3.5 x 10mm) x 1 set
- ⓭ 19-Btn w/ Slide Panel Controller x 1 pc
- ⓮ RJ45 cable (6m) x 1 pc
- ⓯ RJ45 coupler x 1 pc
- ⓰ Decal x 1 pc
- ⓱ Manual x 1 pc
- ⓲ Bail Mount bracket x 1 pc
- ⓳ Sheet metal screw (ø4x 16mm) x 2 pcs



SPECIFICATIONS

- Input Voltage:** 12~24VDC
- Siren Output Power:** 200W (100W x2)
- Siren Output Load:** 100W-ACR 11Ω
- Siren Frequency:** 759Hz - 1592Hz (may varies depending on setting)
- Max. Current (Siren only):**
20A @ 12VDC / 10A @ 24VDC (w/o light control outputs)
- Standby Current (w/ Panel Controller):**
(Sleep Mode) <2mA @ 12V / <2mA @ 24V
(Operation Mode) <0.55A @ 12V / <0.32A @ 24V
- Operating Temperature Range:** -22°F~149°F (-30°C~65°C)
- Light Controls Output:** 15A x3, 10A x3, 2A x2, 0.25A x4
- Fuse Rating:**
Blade Fuse: 30A x1, 15A x3, 10A x3, 2A x2
Resettable Fuse: 0.25A x4

TONES	CYCLE RATES
HORN	Composite (Constant)
WAIL	12CPM
YELP	155CPM
PHASER (PIERCER)	882CPM
HI/LO	40CPM

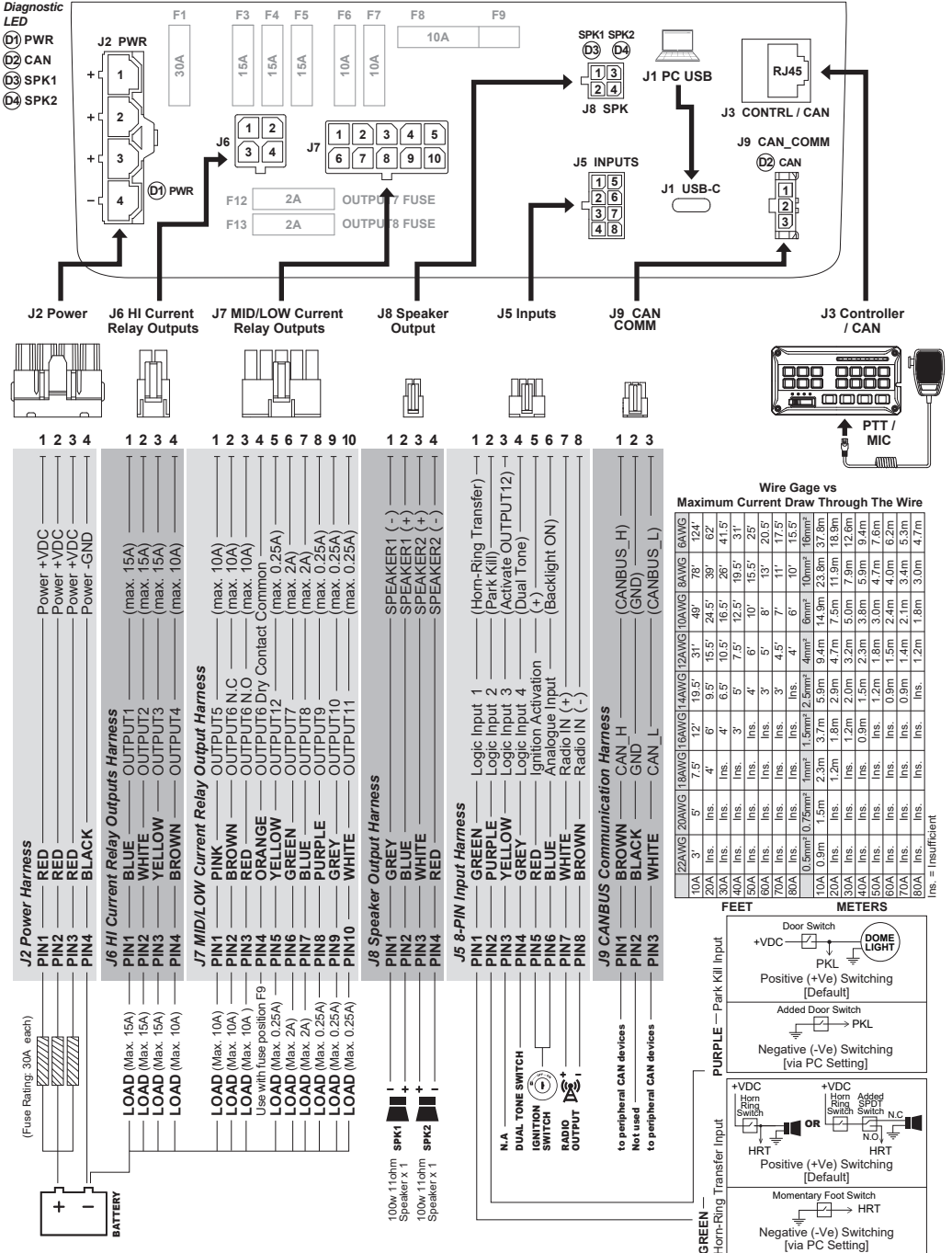
(may vary based on customization / PC Setting)

Dimensions [WxLxH] (amplifier): 7.48" x 8.54" x 1.79" (190mm x 217mm x 45.6mm)

Dimensions [WxLxH] (controller): 6.93" x 3.66" x 1.21" (176mm x 93mm x 30.8mm)

WIRING

• Wiring diagram:



ins. = insufficient

(J2 Connector) 4-PIN POWER Harness

- **Power +VDC & -GND (J2-PIN1~PIN3 & J2-PIN4)**

1. Connect three **RED** wires to the positive (+) battery terminal. Fuse each wire independently @30 Amps (user-supplied). DO NOT install these fuses until the wiring for the entire system has been completed.
2. Connect **BLACK** wire to the vehicle's chassis ground (typically adjacent to the battery).
3. Plug the Connector into the siren amplifier unit.

(J6 Connector) 4-PIN SPEAKER Harness

- **Speaker 1 Out (J8-PIN1~PIN2)**

Connect the **GREY** (SPK1-) and **BLUE** (SPK1+) wires to one 100W 11-ohm impedance speaker.

- **Speaker 2 Out (J8-PIN3~PIN4)**

Connect the **WHITE** (SPK2+) and **RED** (SPK2-) wires to one 100W 11-ohm impedance speaker.

NOTE: Do not attempt to connect two speakers in parallel or series on any one pair of Speaker outlets.

(J5 Connector) 8-PIN INPUT Harness

- **Ignition Enable Input (J5-PIN5)**

This wire serves as the power switch for the unit. Connect this wire to a positive circuit controlled by the vehicle ignition switch, and use the ignition to act as the ON/OFF switch (power up /power down). If the unit is in Normal Operation Mode, disconnect this input from **+VDC** to enter the Sleep Mode. While in Sleep Mode, all function is ceased and unable to operate until the unit is turned back onto the Normal Operation Mode. To exit the Sleep Mode for normal operation, while in Sleep Mode, connect this input to **+VDC**.

- **Programmable Logic Inputs (J5-PIN1~PIN4)**

These four inputs may be PC-programmed to activate other buttons, inputs, outputs, sirens, etc. via positive or negative switching. By default, they function as Horn-Ring, Park Kill and Dual Tone inputs:

- **Horn-Ring Transfer Input (J5-PIN1)**

Connect this input to the vehicle horn ring circuit; apply +VDC continuously to **GREEN** wire for Air Horn Tone. This tone will temporarily override all other Siren Tones and Radio Rebroadcast while it is activated. If Hands-Free mode is active, momentarily apply +VDC to start the Siren, tap again to change tone and double tap to end the Siren. This input also activate OUTPUT7 while it is active.

- **Park Kill Input (J5-PIN2)**

Connect this input to the vehicle Park Shift circuit; apply +VDC continuously to **PURPLE** wire for temporarily mute of all other Siren Tones and Radio Rebroadcast while it is activated. Once released, all siren tone and Radio Rebroadcast will resume (if applicable).

- **Logic Input 3 (J5-PIN3)**

No function preset. Function to be programmed via PC software.

- **Dual Tone Input (J5-PIN4)**

While a siren tone is active, apply +VDC continuously to **GREY** wire to activate SPK2's dual tone function for a multi-speaker fanfare effect. This function is not available in a single speaker set-up.

- **Programmable Analogue Input (J5-PIN6)**

This analogue input can be programmed to activate other buttons, inputs, outputs, sirens, etc. depending on the input voltage (1VDC ~ 32VDC). By default, this input function is BACKLIGHT POWER ON:

- **Backlight ON Input (J5-PIN6)**

Apply +VDC continuously to **BLUE** wire to activate backlight on the controller.

- **Radio Re-broadcast Input (J5-PIN7~PIN8)**

Connect **WHITE** and **BROWN** wires to the speaker output of a radio console.

(J6 Connector) 4-PIN HIGH CURRENT RELAY OUTPUT Harness

- **OUTPUT1~3 (J6-PIN1~PIN3)**

Connect to auxiliary devices power up to 15 Amps max.

- **OUTPUT4 (J6-PIN4)**

Connect to auxiliary devices power up to 10 Amps max.

(J7 Connector) 10-PIN MID/LOW CURRENT RELAY OUTPUT Harness

- **OUTPUT5 (J7-PIN1)**

Connect to auxiliary devices power up to 10 Amps max.

- **OUTPUT6 (J7-PIN2&PIN3) & OUTPUT6 Dry Contact (J7-PIN4)**

PIN2 is a N.O (Normally Open) contact while PIN3 is a N.C (Normally Closed) contact. OUTPUT6 may function in one of the two scenarios below based on its Fuse Position:

- **FUSE Position 1 - General Purpose Output (Factory Default)**

Connect PIN2&3 to auxiliary devices power up to 10 Amps max.

- **FUSE Position 2 - Dry Contact Relay**

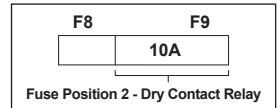
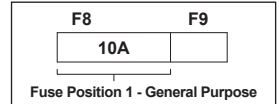
Connect PIN4 to output that will be contacted to PIN2&3 when OUTPUT6 is dis-activated / activated respectively.

- **OUTPUT7~8 (J7-PIN6~PIN7)**

Connect to auxiliary devices power up to 2 Amps max. or use as Lightbar function activation switch.

- **OUTPUT9~12 (J7-PIN8~PIN10, PIN5)**

Connect to auxiliary devices power up to 0.25 Amps max. or use as Lightbar function activation switch.



(J9 Connector) 3-PIN CANBUS Communication Harness

- **CAN_H (J9-PIN1)**

Connect to CAN_H of applicable peripheral CAN devices.

- **CAN_L (J9-PIN3)**

Connect to CAN_L of applicable peripheral CAN devices.

DEFAULT OUTPUT WIRING

Unless otherwise re-programmed via PC software. By default, these Output wires function as Follow:

- **(J6-PIN1~PIN3) CODE1~CODE3 Slide & BTN11~BTN13 Output**

Connect each of the three outputs to power devices that will be turned ON and OFF with CODE1/BTN11, CODE2/BTN12 and CODE3/BTN13 buttons respectively.

- **(J6-PIN4 & J7-PIN1~PIN3, PIN6~7) BTN14~BTN18 Output**

Connect each of the outputs to power devices that will be turned ON and OFF with BTN14~BTN18 respectively. Notes that J7-PIN2 and J7-PIN3 are N.C and N.O contact of BTN16.

- **(J7-PIN4) N.A.** This port is not used by default.

- **(J7-PIN5) Gunlock Trigger Output**

Connect this output to power devices that will be turned ON and OFF with BTN19 that deactivates after a 5 second countdown

- **(J7-PIN8~PIN10) Traffic Arrow Outputs**

Connect these outputs to activation wires of a Traffic Arrow device that will be turned ON and OFF with TA button. (i.e. J7-PIN8 to Left Arrow activation; J7-PIN9 to Right Arrow activation; J7-PIN10 to TA Warning activation)

DEFAULT CONTROLLER OPERATION

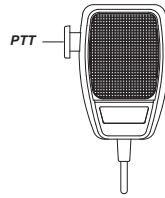
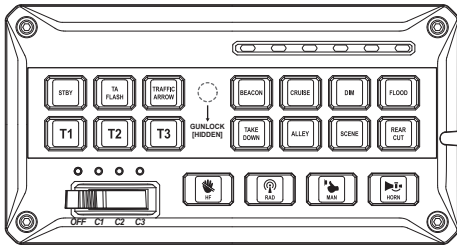


fig. 1 - Default Button Function

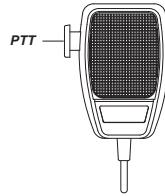
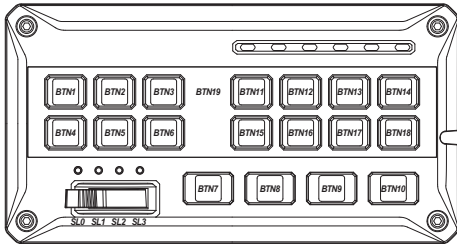


fig. 2 - Button Number

- **(PTT) PTT - PA Broadcast**

This button is available on attached RJ45 microphone. Press and hold to activate Microphone for PA Broadcast through the siren speaker. This Button overrides all other acoustic functions (i.e. Air Horn, Siren Tone and Radio Rebroadcast) while it is activated.

- **(SL0) C0 - OFF**

Slide to deactivate all tones.

- **(SL1) C1 - CODE1 (SL1)**

Slide to activate OUTPUT1.

- **(SL2) C2 - CODE2 (SL2)**

Slide to activate OUTPUT2 and OUTPUT1.

- **(SL3) C3 - CODE3 (SL3)**

Slide to activate OUTPUT3, OUTPUT2, OUTPUT1 and [T1].

- **(BTN1) POWER BUTTON (Sleep Mode)**

This button allows unit to enter and exit the Sleep Mode. While in Sleep Mode, all function is ceased and unable to operate until the unit is turned back onto the Normal Operation Mode. To enter the Sleep Mode, while in Normal Operation Mode, long press on the Power Button. To exit the Sleep Mode for normal operation, while in Sleep Mode, short press on the Power Button.

- **(BTN2) TA - TRAFFIC ARROW WARNING**

Press once to activate or deactivate OUTPUT11 - LED indicator display will mimic a warning pattern.

- **(BTN3) TA - TRAFFIC ARROW LEFT/RIGHT (BTN3)**

Press once to activate OUTPUT9 - LED indicator display goes left; press again to activate OUTPUT10 - LED indicator display goes right; press again to activate OUTPUT9, OUTPUT10 - LED indicator display shows center-out; press again to OFF.

- **(BTN4) T1 - WAIL**

Press once to activate or deactivate WAIL tone. While in WAIL tone, press [MAN] once to change Primary Siren Tone to Override Tone in YELP; press [MAN] again to revert back to WAIL tone. Upon activation, this Button will deactivate the [HF], [T2], [T3] and [RAD].

● **(BTN5) T2 - YELP**

Press once to activate or deactivate YELP tone. While in YELP tone, press [MAN] once to change Primary Siren Tone to Override Tone in PHASER (a.k.a PIERCER); press [MAN] again to revert back to YELP tone. Upon activation, this Button will deactivate the [HF], [T1], [T3] and [RAD].

● **(BTN6) T3 - PHASER/PIERCER**

Press once to activate or deactivate PHASER tone (a.k.a PIERCER). While in PHASER tone, press [MAN] once to change Primary Siren Tone to Override Tone in HILO; press [MAN] again to revert back to PHASER tone. Upon activation, this Button will deactivate the [HF], [T1], [T2] and [RAD].

● **(BTN7) HF - HANDS-FREE**

Press [HF] once to enter HF Mode Standby; while in standby, press [MAN] button or [Horn-Ring Transfer] Input (J5-PIN1) once to start Siren Tone; press again to cycle through all HF Tones; double press to end Siren Tone.

Default HF Tone List: WAIL > YELP > PHASER > HILO > ...

While [HF] is active (in standby or in siren tone), press [HF] again to exit HF Mode.

Upon activation, this Button will deactivate the [T1], [T2], [T3] and [RAD].

● **(BTN8) RAD - RADIO REBROADCAST**

Press once to activate or deactivate Radio Rebroadcast tone. Upon activation, this Button will deactivate the [HF], [T1], [T2] and [T3].

● **(BTN9) MAN**

- **When Siren Tone is not active:**

Activates momentary MAN WAIL tone when pressed. This tone will ramp up to sustain a specific pitch until released (stops immediately).

- **When Siren Tone is active:**

Press once to change Primary Siren Tone to Override Tone (Based on the current active tone, Override Tone may differ); press again to revert back to Primary Siren Tone.

- **When HF Mode (Hands-Free) is active:**

Press once to start Siren Tone; press again to cycle through all HF Tones; double press to end Siren Tone.

Default HF Tone List: WAIL > YELP > PHASER > HILO > ...

● **(BTN10) AH - AIR HORN**

Momentarily activates the AIR HORN tone when it is pressed. While activated, this tone will override all other active siren tones and / or radio rebroadcast.

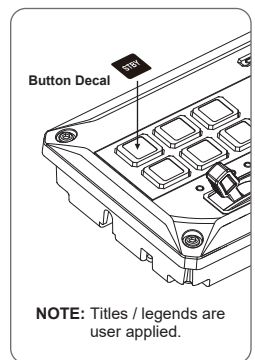
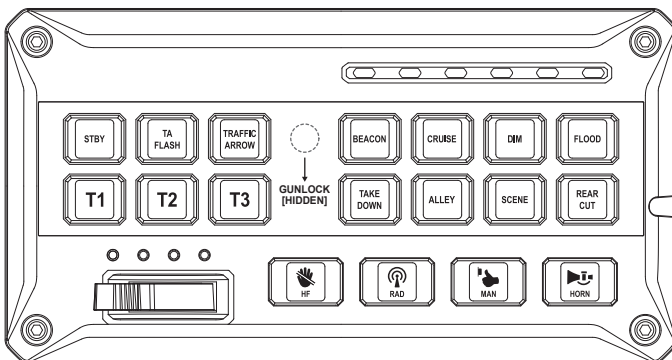
● **(BTN11~18) BTN11~18**

Press once to activate or deactivate OUTPUT1~OUTPUT8 respectively.

● **(BTN19) GUNLOCK**

Press once to activate OUTPUT12 and beeper; deactivates after a 5-second countdown.

● **QUICK REFERENCE**



ID	Default Function	Description
PPT	PTT	Push-To-Talk (Microphone/PA).
SL0	C0	Deactivate all Tones.
SL1	C1	Activates OUTPUT1.
SL2	C2	Activates OUTPUT2, CODE1.
SL3	C3	Activates OUTPUT3, CODE2, CODE1 & TONE1.
BTN1	STBY	Long press for Sleep Mode.
BTN2	TA-W	Traffic Arrow Warning (Output 11)
BTN3	TA-L/R	Cycles through Traffic Arrow, Left (OUTPUT9) > Right (OUTPUT10) > Split (OUTPUT9&10) > Off
BTN4	TONE1	Broadcasts WAIL tone; press MAN button for YELP.
BTN5	TONE2	Broadcasts YELP tone; press MAN button for PHASER (PIERCER).
BTN6	TONE3	Broadcasts PHASER (PIERCER) tone; press MAN button for HILO.
BTN7	HANDS-FREE	Enter HF Mode; press MAN button to cycle through HF Tone List.
BTN8	RADIO	Activates Radio Rebroadcast through the siren speaker.
BTN9	MAN	Activates MANUAL tone; or Override Tone; or Change HF Tone.
BTN10	AIR HORN	Activates AIRHORN tone.
BTN11-18	Switches	Activates OUTPUT1~8.
BTN19	Gunlock	Activates OUTPUT12 with 5 sec count-down timer.

PC PROGRAMMING

All control buttons and function wires may be customized and re-programmed to user's preference for

Activation / Deactivation of,

- Each button / input / output / buzzer / tone / TA indicator / backlight

Button modes,

- General / MAN / HRT / HF / Dual Tone / Record-n-Play / Volume Button

Button backlight brightness,

Function precedence (priority),

Low voltage protection mode,

Shut Down delay

Shut Down Save Status,

Switch types,

- Press ON, Release OFF / Press ON, Press OFF / Press ON, Double Press OFF / Press ON, Hold OFF / Press ON, Timer OFF / Double Press ON, Timer OFF

Tone Settings,

- Primary Tone / Override Tone / Dual Tone
- HF Tone List
- Finish style

Volume,

Voltage trip point for analogue input, and etc.

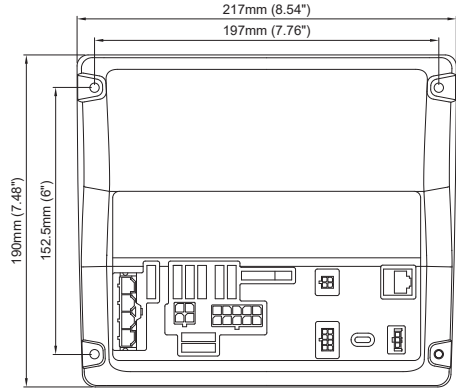
For more information about PC programming and Software, please refer to Software Manual or contact your sales representative.

INSTALLATION

Mounting

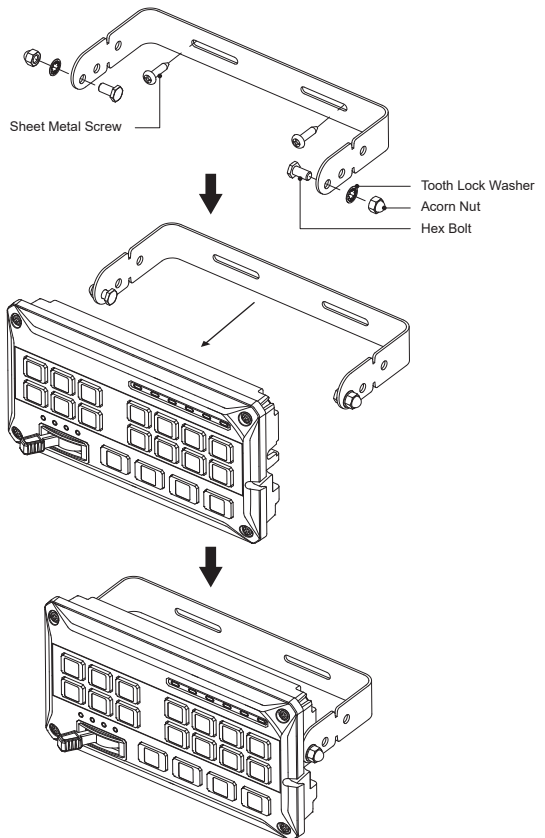
• Siren amplifier

1. Select a location that is not exposed directly to weather elements, (driver compartment, under seat, trunk, cargo area, equipment tray, etc.), while also avoiding airbag deployment areas.
2. Using the siren amplifier as a template, mark four mounting holes to be drilled.
3. Drill four mounting holes for sheet metal screws.
4. Install the siren amplifier with provided sheet metal screws.

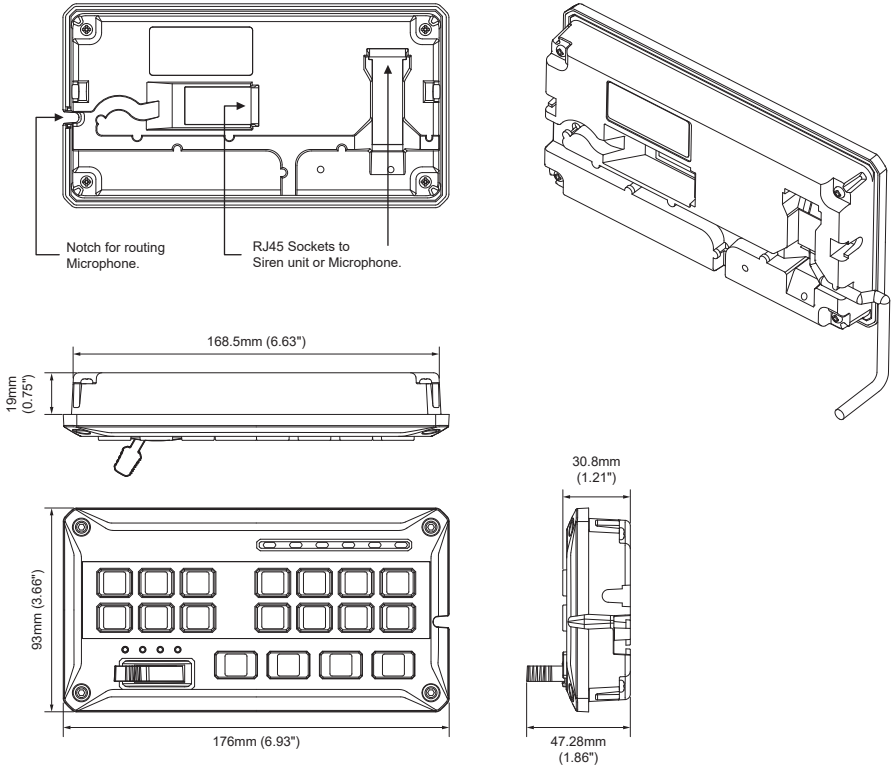


• U-bracket (Bail bracket)

1. Select a location that is convenient to the operator; avoid any interference of air bag deployment.
2. Position the U-bracket in the selected mounting location and mark holes for later drilling.
3. Drill mounting holes for sheet metal screws ($\varnothing 4 \times 16\text{mm}$).
4. Use the provided screws and secure the U-bracket to the location.
5. With the bracket in position, insert the hex head bolt into the assembly hole from the inner side of the bracket as shown.

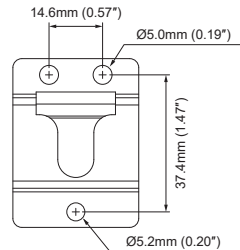


- Place the internal-tooth lock washer and the acorn nut on the protruding bolt on the outer side of the bail bracket. Loosely secure the acorn nut to the hex head bolt.
- Once ready, slide the panel controller onto the bolt head. Adjust controller to the desired angle then tighten the acorn nuts until the unit is firmly secured.
- Plug the provided RJ45 cable to the appropriate RJ45 socket on the rear of the panel, with the other end plugging into the siren unit. Manage / contain the cable using the recessed grooves in the back of the panel.
- Plug the microphone into the other RJ45 socket; route the microphone cord up and out the side of the panel using the side notch.



• Microphone Clip

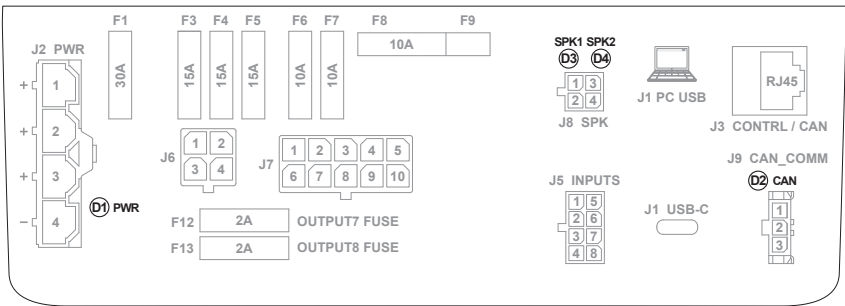
- Select a location that is convenient to the operator, avoiding any interference of air bag deployment.
- Using the mounting clip as a template, mark the three holes to be drilled.
- Drill three mounting holes for sheet metal screws.
- Install the microphone clip with provided sheet metal screws.



Diagnostic LEDs

Diagnostic LED

- (D1) PWR
- (D2) CAN
- (D3) SPK1
- (D4) SPK2



• (D1) Power Indicator

- Steady ON - Console powered normally.
- Single Flash - Low voltage protection in action; please check battery power.
Input voltage should be above 11.25VDC.
- Double Flash - Over temperature protection in action, speaker is turned OFF for system safety;
Please check check compartment ventilation. System should operate normally under 149°F (65°C).
- OFF - System power OFF or in Sleep Mode. Press BTN1 or activate IGN wire to power ON.

• (D2) CAN Indicator

- Steady ON - CAN communication normal; Controller signal normal.
- Single Flash - Controller abnormal; please check controller connection or setting.
- Double Flash - No CAN signal.
- OFF - System power OFF or in Sleep Mode.

• (D3) SPK1 Indicator

- Steady ON - Speaker channel normal.
This status is checked during boot-up or each activation of a siren tone.
- Single Flash - Speaker channel in low-power protection. Please check battery power.
Input voltage should be above 11.25VDC.
- Double Flash - N.A.
- OFF - System power OFF or in Sleep Mode.
- No speaker is connected.
- Speaker shorted (possible shorted voice coil); please check and replace the speaker.

• (D3) SPK1 Indicator

- Steady ON - Speaker channel normal.
This status is checked during boot-up or each activation of a siren tone.
- Single Flash - Speaker channel in low-power protection. Please check battery power.
Input voltage should be above 11.25VDC.
- Double Flash - N.A.
- OFF - System power OFF or in Sleep Mode.
- No speaker is connected.
- Speaker shorted (possible shorted voice coil); please check and replace the speaker.