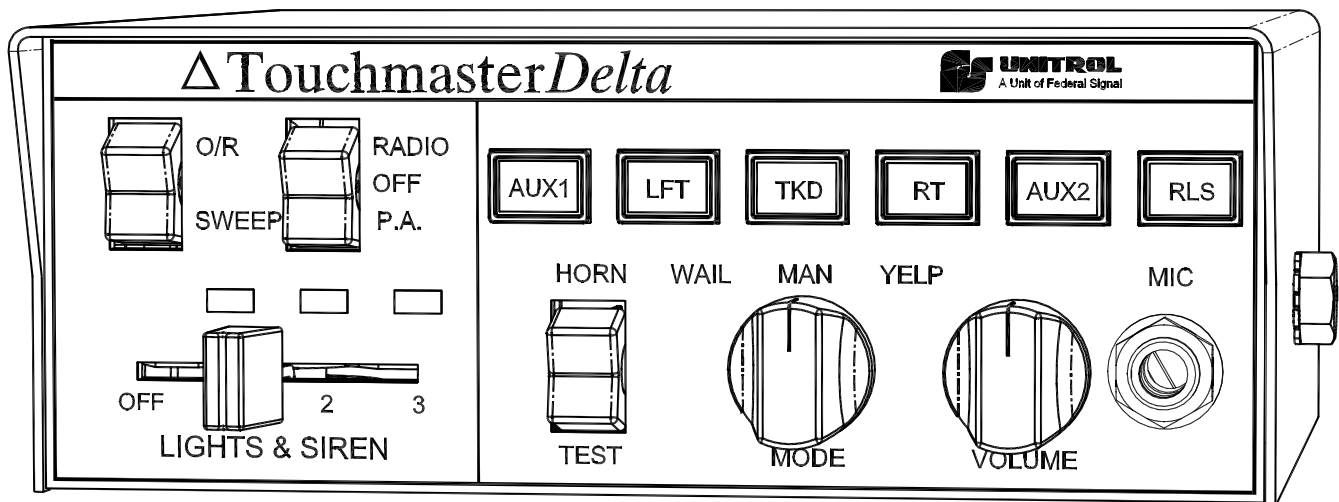


INSTALLATION MANUAL

TOUCHMASTER *DELTA*™ SIREN/PA SYSTEM

**UTMD
UTMD-MB
UTMD-AL**





UNITROL

A Unit of Federal Signal

LIMITED WARRANTY

FS UNITROL, a unit of Federal Signal Corporation, warrants each new product to be free from defects in material and workmanship under normal use and service for a period of five year on parts replacements and one year labor from the date of purchase.

During this warranty period, the obligation of **UNITROL** is limited to repairing or replacing, as **UNITROL** may elect, any part or parts of such products which, after examination by Unitrol, is found to be defective in material and/or workmanship.

UNITROL will warrant any unit that is delivered, prepaid, to the **UNITROL** factory or designated authorized warranty service center for examination within the warranty period. If such examination reveals a defect in material and/or workmanship, **UNITROL** will complete the necessary repairs under warranty.

This warranty does not cover travel expenses, the cost of specialized equipment for gaining access to the product, or labor charges for removal and re-installation of the product. Lamps, flash tubes or batteries are not covered under warranty.

Warranty will not be extended to any unit that has been subjected to abuse, misuse, improper installation, or to one that has been inadequately maintained. Warranty does not apply to units that have problems relating to service or modification at any facility other than the **UNITROL factory or authorized warranty service centers.**

THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL UNITROL BE LIABLE FOR ANY

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SECTION I GENERAL INFORMATION

STANDARD SIREN SOUNDS

The **TM DELTA** is shipped with (5) operational siren sounds:

MAN: manual **WAIL**

WAIL: **WAIL** plus 5-second **YELP**, or

WAIL/YELP/Ultra HI-LO, (sweep), all by pressing the horn ring once.

YELP: **YELP** plus 5-second **FUTURA**, or

YELP/FUTURA/Ultra HI-LO (sweep), All by pressing the horn ring once.

STANDARD SIREN SWEEP SOUNDS

When horn ring is activated and the mode switch is in:

WAIL: **WAIL/YELP/ULTRA HI-LO**

YELP: **YELP/FUTURA/ULTRA HI-LO**

SECTION II SPECIFICATIONS

Height		Width		Depth		Ship Weight		Input Voltage	Operating Current	Standby Current
In.	Cm.	In.	Cm.	In.	Cm.	Lbs.	Kg.			
2.4	6.2	6.5	16.5	6.0	15.2	5.0	2.3	11 – 16VCD	0-205 amps	0 amps

Input voltage_____ 11-16VDC

Standby current_____ 0 amps

Operating current (amplifier)_____ 7.5 amps (one 100 watt speaker)

14 amps (two 100 watt speakers)

Operating temperature range_____ -30°C to 65°C

Frequency range_____ 500Hz to 1650 Hz

Nominal cycle range

Wail_____ 11 cycles per minute

Yelp_____ 240 cycles per minute

Nominal voltage output_____ 64V peak-to-peak (siren tones)

Audio frequency response_____ 300 Hz to 3,000 Hz (± 3 dB)

Input Impedance_____ 4,000 ohms (nominal)

Current ratings:

Slide bar outputs (progressive):

Position 1_____ 20 amps

Position 2_____ 20 amps

Position 3_____ 20 amps

Progressive total_____ 60 amps

Push-button switches_____ 20 amps each

SECTION III

SAFETY MESSAGE TO INSTALLERS OF UNITROL SYSTEMS

WARNING

The lives of people depend on your safe installation and servicing of UNITROL products. It is important to read and follow all instructions shipped with the products. In addition, listed below are some other important safety instructions and precautions you should follow:

Before Installation

Qualifications

- To properly install an electronic siren you must have a good understanding of automotive electrical procedures and systems, along with proficiency in the installation and service of safety warning equipment.

Sound Hazards

- Your hearing and the hearing of others, in or close to your emergency vehicle, could be damaged by loud sounds. This can occur from short exposures to moderately loud sounds. For hearing conservation guidance, refer to federal, state, or local recommendations. OSHA Standard 1910.95 offers guidance on “Permissible Noise Exposure.”
- All effective sirens and horns produce loud sounds, which may, in certain situations, cause permanent hearing loss. You should minimize your exposure times and wear suitable hearing protection.

During Installation

- **DO NOT** connect this system to the vehicle battery until ALL other electrical connections are made, mounting of all components is complete, and you have verified that no shorts exist.
- Be sure the siren amplifier and speaker(s) in your installation have compatible wattage ratings.
- Wire size range from 10 ga (largest) to 20 ga. (smallest). Do not use wire that is smaller than any vehicle wire being cut apart. Always use a size that can safely carry the load to be operated.
- If Slide Switch outputs may possibly exceed 20 amps per position, utilize a circuit breaker or relay on EACH of the Slide Switch outputs (Terminal 15, 16 and 17)

- Connect all power (not ignition) and ground wires directly to battery. Implementing an in-line switch will cause all accessory outputs to energize momentarily. Devices such as gunlocks, trunk release etc. will be activated upon power being provided by such a switch.
 - Sound output will be severely reduced if any objects are in front of this speaker. If maximum sound output is required for your application, you should ensure that the front of the speaker is clear of any obstruction.
 - Install the speaker(s) in a location that provides maximum signaling effectiveness and minimizes the sound reaching the vehicle’s occupants.
1. **DO NOT** install equipment or route wiring or cord in the deployment path of an air bag.
- Locate the siren so the vehicle controls can be operated safely.
 - In order for this electronic siren to function properly, the ground connection must be made to the NEGATIVE battery terminal.
 - When drilling into a vehicle structure, be sure that both sides of the surface are clear of anything that could be damaged.
 - If wiring is shorted to vehicle frame, high current conductors can cause hazardous sparks resulting in electrical fires or flying molten metal.

After Installation

- After installation, test the electronic siren and speaker system to ensure that it is operating properly.
- Test all vehicle functions, including horn operation and vehicle light systems, to ensure proper operation.
- After testing is complete, provide a copy of these instructions to the instructional staff and all operating personnel.
- File these instructions in a safe place and refer to them when maintaining and/or reinstalling the product.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death to you or others.

SECTION IV INSTALLATION SIREN / P.A. CONNECTIONS

ALARM

Applying a ground (-) to the ALARM terminal triggers the siren to a distinctive 2KHz sound. This function may be used as a burglar alarm or a high-temperature alarm for K-9 carriers. A motion-detector or switches at the trunk, doors, etc. may be used for burglar alarms. A temperature switch (Part # UTAS) is available at an extra cost for a temperature alarm. A key switch or concealed On/Off switch must be installed in-line with the ALARM terminal.

FOOTSWITCH

A foot switch or any manual switch may be used in lieu of, or in addition to, the horn ring. If the switch is used alone, connect one switch terminal to ground (-), and connect the other terminal to the RNG terminal. If a switch is used in conjunction with the horn ring connections, connect one terminal to RNG, and the other to (-) or (+) to match the horn ring polarity.

HORN RING CONNECTIONS

Optional – Cut the vehicle horn circuit and connect the leads to the HRN and RNG terminals on the back of the Touchmaster

PANEL LIGHTING

For satisfactory lighting, it is recommended that the panel lights (terminal #1) be connected to the vehicle light circuit as shown.

SIREN DEACTIVATION

The park kill feature of the Touchmaster *Delta*™ uses the Neutral Safety Switch to stop all siren sounds except P.A., Alarm, and Radio Rebroadcast. The Neutral Safety Switch must be hooked up to the Park Kill input using Terminal #14. A Park Kill Module must be installed as an interface between the vehicle and the Touchmaster *Delta*™. (The Park Kill Module is available at an extra cost). The Park Kill Module will protect both the vehicle and the Touchmaster *Delta*™ from damage caused by transient voltages. **See Digital Circuitry Warning.**

NOTE: The only wire connected to Terminal #14 should be the GRAY wire of the UPKM-2. When testing this feature, put the emergency brake on and verify siren sounds in Reverse and Drive and that there is no sound in Park or Neutral.

MODEL IDENTIFICATION

- UTMD Contain the Siren only
- UTMD-MB Contains the Siren, Mounting Bracket and Microphone
- UTMD-AL Same as UTMD-AL with push buttons configured for latching.

DIGITAL CIRCUITRY WARNING

Some auto manufacturers have converted to Digital Park/Neutral reference signal.

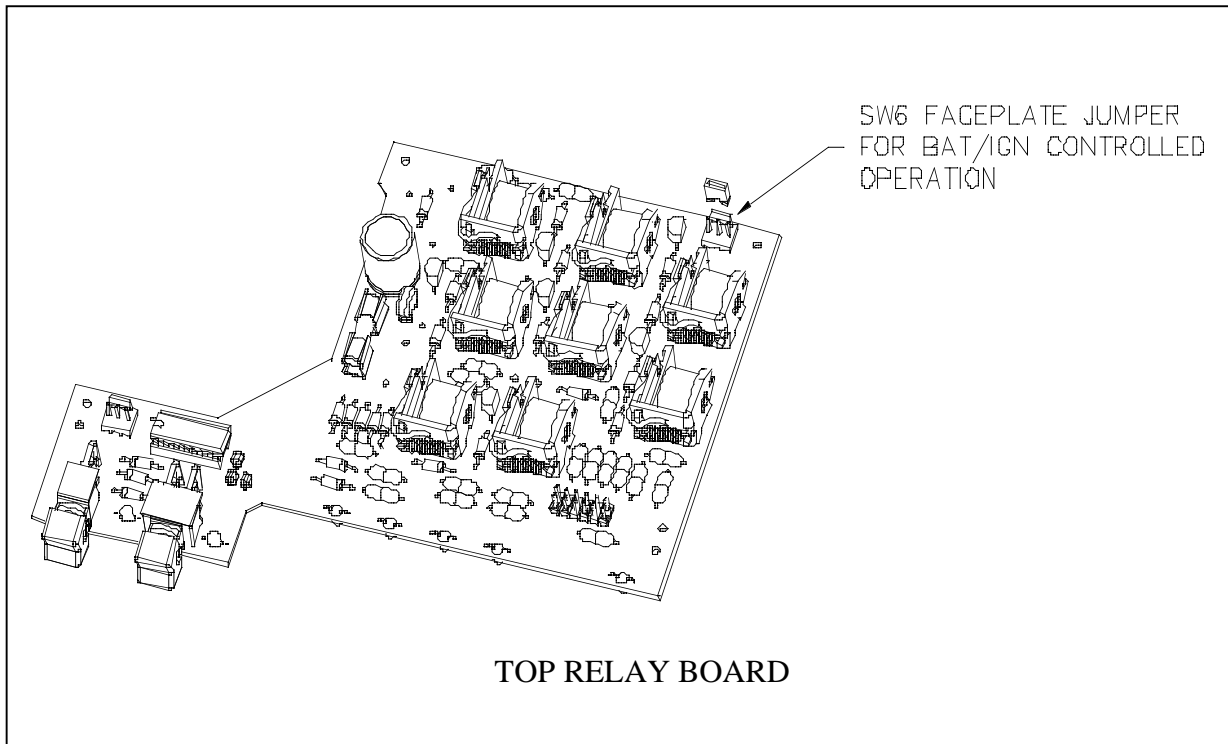
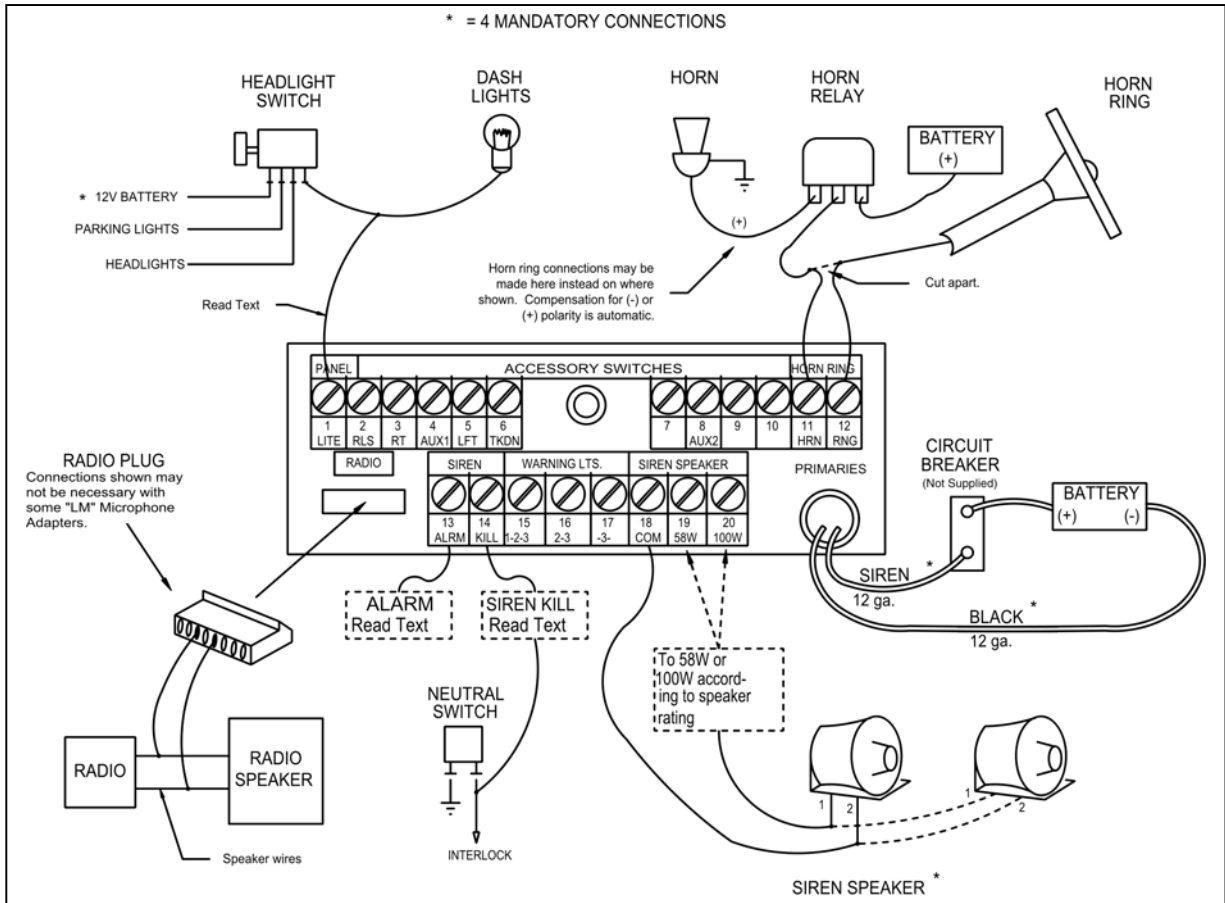
Refer to Federal Signal Corporation Service Bulletin No 9.; Dated 11/03/04.

On these vehicles, the Park/Neutral position can only be monitored with a 5-volt reference signal.

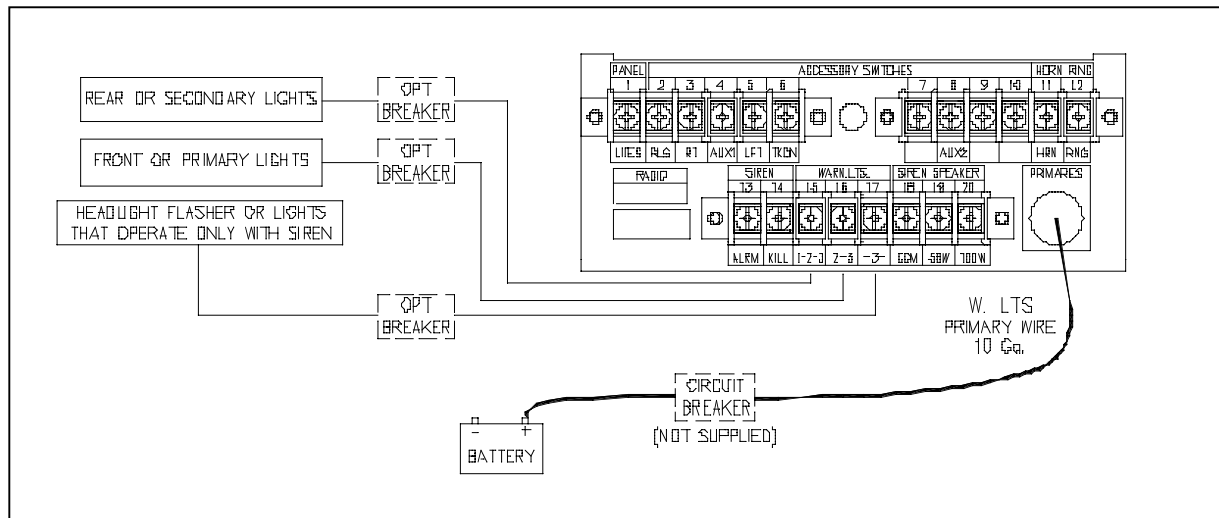
Automobile manufacturers state that a 12 Volt or ground signal will result in damage to the vehicle starting system.

If installation of a UPKM-1 is to be utilized, please check with Unitrol regarding compatibility issues.

Federal Signal / Unitrol UPKM-2 is compliant with both digital and 12-volt systems.



WARNING LIGHT CONNECTIONS



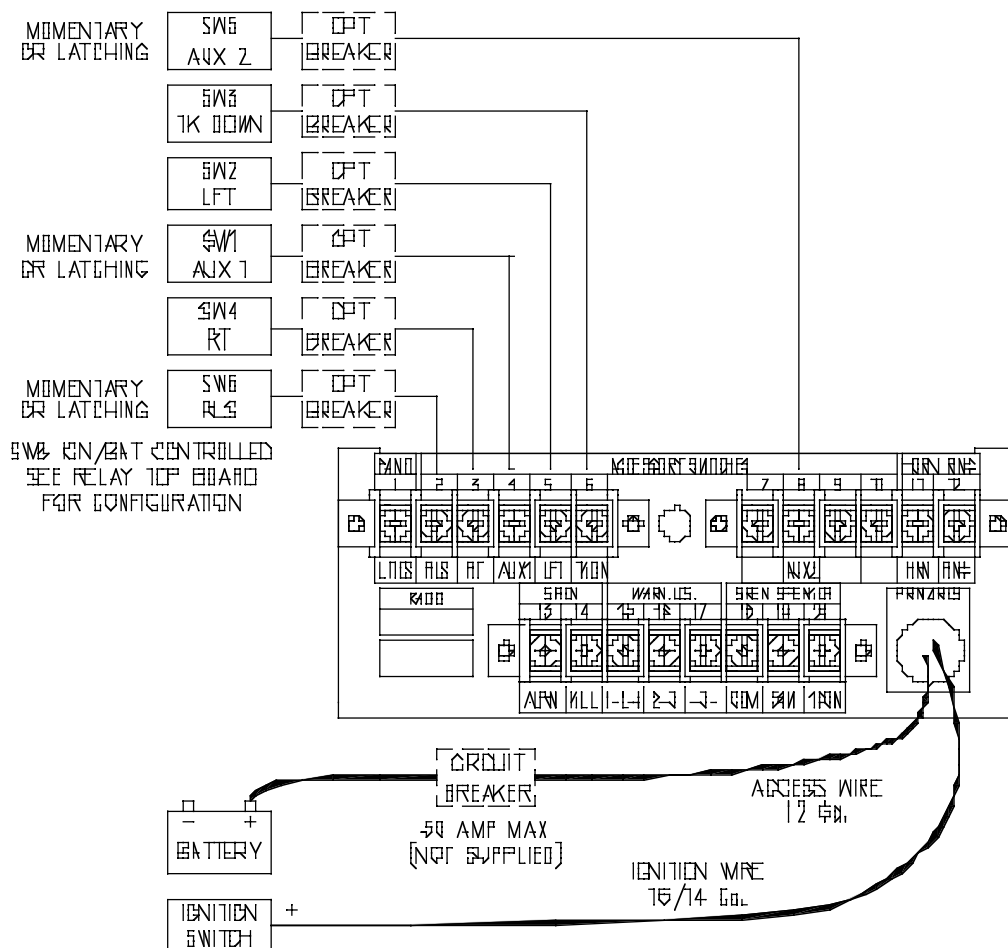
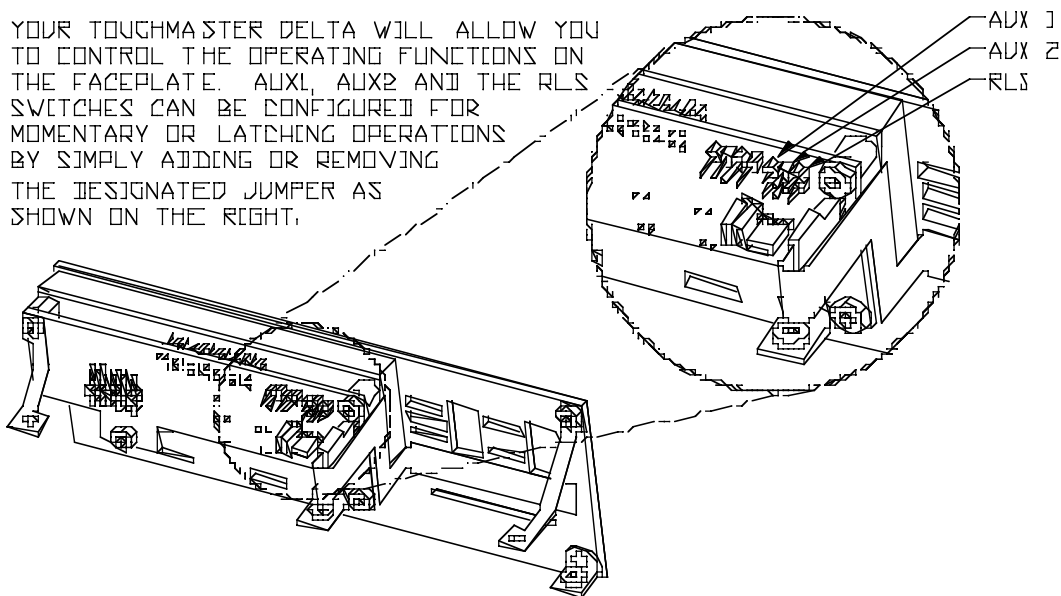
Terminals #15, 16 and 17 are identified by numbers indicating positions of the slide-bar switch that make terminals functional. All terminals emit + 12V. The UNITROL slide switch is a progressive switch in that it allows only 20 amperes per position, with a total capacity of 60 amperes. If your lighting device requires more current than the slide switch is rated for you **MUST** use an external relay, such as a solenoid, to provide higher current to the device. Use the slide switch to activate the relay. The slide switch will activate the siren when moved to position 3 if the red power wire, labeled SIREN also has power applied and the MODE switch is in a siren position (WAIL or YELP).

SECTION V FACEPLATE OPERATION / CONFIGURATION



Accessory switch connections provide a 12-volt output. Hook the power connection of the auxiliary device to the terminal that corresponds to the switch output terminal that operator would like to activate. (See illustration on next page). Switches 1,5 and 6 can be configured as a momentary or latching switch with a 12-volt output. Switch 6 can be set for either ignition or battery controlled. (See Top Relay Board illustration for jumper configuration) Connect the red 12ga. wire (marked ACCESS) to battery via a circuit breaker. This wire supplies power for the auxiliary output device circuit. Connect the yellow 16ga. wire to an ignition-powered circuit.

YOUR TOUCHMASTER DELTA WILL ALLOW YOU TO CONTROL THE OPERATING FUNCTIONS ON THE FACEPLATE. AUX1, AUX2 AND THE RLS SWITCHES CAN BE CONFIGURED FOR MOMENTARY OR LATCHING OPERATIONS BY SIMPLY ADDING OR REMOVING THE DESIGNATED JUMPER AS SHOWN ON THE RIGHT.



SECTION VI

SAFETY MESSAGE TO OPERATORS OF UNITROL SYSTEMS

WARNING

The lives of people depend on your safe operation of Unitrol products. It is important to read and follow all instructions shipped with the products. In addition, listed below are some other important safety instructions and precautions you should follow:

Qualification

- ◆ To properly use a light system you must have a good understanding of general vehicle operation, a high proficiency in the use of safety warning equipment and thorough knowledge of State and Federal Uniform Traffic Codes.

Sound Hazards

- ◆ Your hearing and the hearing of others in or close to your emergency vehicle could be damaged by loud sounds. This can occur from short exposures to moderately loud sounds. For hearing conservation guidance, refer to Federal, State or local recommendations. OSHA Standard 1910.95 offers guidance on “Permissible Noise Exposure”.
- ◆ All effective sirens and horns produce loud sounds, which may, in certain situations, cause permanent hearing loss. You should minimize your exposure times and wear suitable hearing protection.

Sound Limitations

- ◆ Maximum sound output will be severely reduced if any objects are in front of the speaker. If your installation has obstructions in front of the speaker, drive even more cautiously. Frequently inspect the speaker to ensure that it is clear of any obstruction, such as mud or snow, which will reduce maximum sound output.

Signaling Limitations

Be aware that the use of your visual and audible signaling devices does not give you the right to force your way through traffic. Your emergency lights, siren and actions are REQUESTING the right-of-way.

- ◆ Although your warning system is operating properly, it may not alert everyone. People may not hear, see or heed your warning signal. You must recognize this fact and continue driving cautiously.
- ◆ Situations may occur which obstruct your warning signal when natural or man-made objects are between your vehicle and others, such as when you raise your hood or trunk lid. If these situations occur, be especially careful.
- ◆ The control head’s LED display simulates the light pattern(s) being executed by the warning systems. The display is intended ONLY as a guide and NOT as an indication of proper warning system. Before using the warning system, its operation should be observed from outside the vehicle.

Driving Limitations

- ◆ At the start of your shift, you should ensure that the warning system is securely attached to the vehicle and operating properly.
- ◆ If the unique combination of emergency vehicle equipment installed in your vehicle has resulted in the light/siren controls being installed in a position that does not allow you to operate them by touch only, **OPERATE CONTROLS ONLY WHILE YOUR VEHICLE IS STOPPED.**
- ◆ If driving conditions require your full attention, you should avoid operating the light/siren controls while the vehicle is in motion.

Continuing Education

- ◆ File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to new recruits and trainees.

Failure to follow these safety precautions may result in property damage, serious injury, or death to you, to passengers or to others.

SECTION VII SERVICE AND MAINTENANCE ADJUSTMENTS & TROUBLE-SHOOTING

ADJUSTING P.A. VOLUME

MICROPHONE P.A. and RADIO REBROADCAST

The Volume Control knob, located on the front panel, adjusts the outgoing volume of both the P.A. and Radio Rebroadcast signals. Adjust for clear sound.

1. Sit inside car: Make test count while slowly rotating control until desired sound output is attained.

NO SIREN SOUNDS

If SIREN KILL feature has been connected, shift car out of Park or Neutral before testing.

1. W. LTS 10 Ga. Wire not hook to 12Vdc.
2. Check siren speaker or its wiring for a short circuit.
3. Repairing the short in the circuit will automatically restore siren operations. No damage to electronic components can result from speaker or speaker wiring problems.
4. Remove speaker wires. Turn siren on and listen for siren sound from Touchmaster *Delta*TM cabinet. If sound can be heard, speaker or speaker wiring is "open" (not connected).

NO HORN RING SIREN CONTROL

1. (-) or (+) polarity may be connected to the RNG terminal. Compensation is automatic.
2. Verify that cut ends of horn ring wire have been correctly connected to HRN (HORN) and RNG (RING) terminals. Reversed connections may result in a malfunction.
3. A relay is used in all models to transfer horn ring circuitry (Relay #K2 at top left of top circuit board). Remove cabinet cover and verify contact integrity.

NO MICROPHONE P.A.

1. Plug a known good microphone fully into the microphone jack in the front faceplate.
2. If using an LM Radio Microphone Adapter, verify that correct model has been installed for radio being used. If model is correct, interchange adapter with another known to be operational.
3. If above procedures are followed without results, audio input or drive circuitry is defective.

WARNING LIGHT SWITCHING

1. Control terminals: emit +12V. Use test light or a voltmeter to check voltage at related terminals. Connect one probe to ground.
2. If no voltage is present at tested terminals, check the input voltage at the "WLT" wire.
3. If the input voltage is correct the warning light control circuit is defective.

ACCESSORY SWITCHING

1. Accessory connections can be made only as shown on Page 9.
2. TAKEDOWN, LEFT, RIGHT and AUX1 and AUX2 light terminals do not become functional until the ACCESS primary wire is connected.
3. RELEASE terminal becomes functional only when the ignition wire has been connected.

ASSISTANCE

Technical help is available by phone 7:00 AM to 3:30 PM Pacific Standard Time, Monday through Friday, except holidays.

(800) 854-3375 is toll free within the United States and Canada. Phone (714) 871-3336 from other areas.

If it is necessary to return a unit, please observe this procedure:

- a) Call for RMA number.
- b) Pack to prevent damage in transit.
- c) Include brief description of problem and RMA No.
- d) Include name and phone number of a person who can be contacted in the event the bench test does not reveal problem experienced with vehicle.