SpectrAlert Ceiling Mount Series
Strobes and Horn/Strobes

For use with the following models:

**Strobes:**

**Horn/Strobes:**
- 24 volt: PC2415W, PC241575W, PC2430W, PC2475W, PC2495W, PC24115W, PC24177W

Remove suffix "W" for red models.

Add suffix "P" for models with plain housing.

The Products to which this manual applies may be covered by one or more of the following U.S. Patent numbers:
- 5,914,665
- 5,850,178
- 5,598,139
- 6,049,446
- 6,057,778
- D424465
- 5,931,569
- 6,623,143

**Specifications**

**Mechanical**
- Input Terminals: 12 to 18 AWG
- Overall Dimensions: 6.8” diameter (173 mm)
- Operating Temperature: 32°F to 120°F (0°C to 49°C)

**Electrical**
- Voltage: Regulated 24 DC/FWR
- Operational Voltage Range: 16–33 Volts

**Synchronous Applications with MDL Module:**
- 17–33 Volts

**NOTE:** Horn units will operate on walk tests with on-time durations of .25 sec. or greater.

**Flash Rate:**
- 1 Flash Per Second

**Light Output:**
- Models with 15 only in the model number are listed at 15 candela.
- Models with 1575 in the model number are listed at 15 candela per UL 1971 but will provide 75 candela on axis (straight down).
- Models with 30, 75, 95, 115, 177 are for that candela.

**Sound Output:**
- Sound output levels are established at Underwriters Laboratories in their reverberant room.
- Always use the sound output specified as UL Reverberant Room when comparing products.

**Listings:**
- UL SS512 Strobe, UL S4011 (Combo)

**General Description**

The SpectrAlert ceiling mount series notification appliances are designed to meet the requirements of most agencies governing these devices, including: NFPA, The National Fire Alarm Code, UL, FM, CSFM, MEA. Also, check with your local Authority Having Jurisdiction for other codes or standards that may apply.

The SpectrAlert ceiling mount series can be installed in systems using 24-volt panels having DC or full-wave rectified (FWR) power supplies. The series can also be installed in systems requiring synchronization (module MDL required) or systems that do not require synchronization (no module required).

**NOTICE:** This manual shall be left with the owner/user of this equipment.

**Fire Alarm System Considerations**

**Temporal and Non-Temporal Coded Signals:**

The American National Standards Institute and the National Fire Alarm Code require that all horns used for building evacuation installed after July 1, 1996, must produce Temporal Coded Signals. Signals other than those used for evacuation purposes do not have to produce the Temporal Coded Signal. Temporal coding is accomplished by interrupting a steady sound in the following manner:

Power Supply Considerations

Panels typically supply DC filtered voltage or FWR (full-wave rectified) voltage. The system design engineer must calculate the number of units used in a zone based on the type of panel supply. Be certain the sum of all the device currents do not exceed the current capability of the panel. Calculations are based on using the device current found in the subsequent charts and must be the current specified for the type of panel power supply used.
Wire Sizes
The designer must be sure that the last device on the circuit has sufficient voltage to operate the device within its rated voltage. When calculating the voltage available to the last device, it is necessary to consider the voltage drop due to the resistance of the wire. The thicker the wire, the less the voltage drop. Generally, for purposes of determining the wire size necessary for the system, it is best to consider all of the devices as “lumped” on the end of the supply circuit (simulates “worst case”).

Typical wire size resistance:
18 AWG solid: Approximately 8 ohms/1,000 ft.
16 AWG solid: Approximately 5 ohms/1,000 ft.
14 AWG solid: Approximately 3 ohms/1,000 ft.
12 AWG solid: Approximately 2 ohms/1,000 ft.

Example: Assume you have 10 devices on a zone and each requires 50 mA average and 2000 Ft. of 14 AWG wiring (total length = outgoing + return). The voltage at the end of the loop is 0.050 amps per device x 10 devices x 3 ohms/1,000 ft x 2000 ft = 3 volts drop.

The same number of devices using 12 AWG wire will produce only 2 volts drop. The same devices using 18 AWG wire will produce 8 volts drop. Consult your panel manufacturer’s specifications, as well as SpectrAlert’s operating voltage range to determine acceptable voltage drop.

NOTE: If class “A” wiring is installed, the wire length may be up to 4 times the single wire length in this calculation.

Figure 1A: Current Draw Measurements (RMS)
NOTE: All SC and PC strobes were only tested at the 16-33 Volt-FWR/DC limits. This does not include the 80% low end or 110% high end voltage limits.

<table>
<thead>
<tr>
<th>Candela</th>
<th>FWR Max. Operating Current – Strobe (mA RMS)</th>
<th>DC Max. Operating Current – Strobe (mA RMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>68</td>
<td>64</td>
</tr>
<tr>
<td>15/75</td>
<td>77</td>
<td>78</td>
</tr>
<tr>
<td>30</td>
<td>107</td>
<td>113</td>
</tr>
<tr>
<td>75</td>
<td>197</td>
<td>205</td>
</tr>
<tr>
<td>95</td>
<td>239</td>
<td>274</td>
</tr>
<tr>
<td>115</td>
<td>298</td>
<td>325</td>
</tr>
<tr>
<td>177</td>
<td>399</td>
<td>489</td>
</tr>
</tbody>
</table>

Figure 1B: Horn Sound Measurements (dBA)

<table>
<thead>
<tr>
<th>Selectable Horn Tones</th>
<th>16-33V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporal Low Volume</td>
<td>Electromechanical 75</td>
</tr>
<tr>
<td></td>
<td>Electromechanical  3000 Hz Interrupted  75</td>
</tr>
<tr>
<td>High Volume</td>
<td>Electromechanical 80</td>
</tr>
<tr>
<td></td>
<td>Electromechanical 3000 Hz Interrupted 81</td>
</tr>
<tr>
<td>Non-Temporal Low Volume</td>
<td>Electromechanical 79</td>
</tr>
<tr>
<td></td>
<td>Electromechanical 3000 Hz Interrupted 79</td>
</tr>
<tr>
<td>High Volume</td>
<td>Electromechanical 84</td>
</tr>
<tr>
<td></td>
<td>Electromechanical 3000 Hz Interrupted 86</td>
</tr>
</tbody>
</table>

Figure 1C: Horn Current Draw Measurements (RMS)

<table>
<thead>
<tr>
<th>Selectable Horn Tones</th>
<th>16-33 (VDC)</th>
<th>16-33 (V FWR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporal Low Volume</td>
<td>Electromechanical 23</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electromechanical 3000 Hz Interrupted 33</td>
<td></td>
</tr>
<tr>
<td>High Volume</td>
<td>Electromechanical 53</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electromechanical 3000 Hz Interrupted 57</td>
<td></td>
</tr>
<tr>
<td>Non-Temporal Low Volume</td>
<td>Electromechanical 37</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electromechanical 3000 Hz Interrupted 32</td>
<td></td>
</tr>
<tr>
<td>High Volume</td>
<td>Electromechanical 49</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electromechanical 3000 Hz Interrupted 56</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Regulated 24 VDC, max operating current 57.0 mA
24 V FWR, max operating current 57.5 mA

NOTE: 24VDC 2-wire horn/strobe current is shown in Figure 1D. Current draw for other horn/strobe power supplies can be calculated by adding the strobe current draw (Figure 1A) for chosen candela setting to the horn current draw (Figure 1C) for chosen setting.

Figure 1D: 24V DC Horn/Strobe Current Draw Measurements (mA RMS)

<table>
<thead>
<tr>
<th>Candela Setting</th>
<th>Temporal Low Volume</th>
<th>Temporal High Volume</th>
<th>Non-Temporal Low Volume</th>
<th>Non-Temporal High Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Electromechanical</td>
<td>3000 Hz</td>
<td>Electromechanical</td>
<td>3000 Hz</td>
</tr>
<tr>
<td>15</td>
<td>73</td>
<td>73</td>
<td>76</td>
<td>78</td>
</tr>
<tr>
<td>15/75</td>
<td>89</td>
<td>89</td>
<td>91</td>
<td>92</td>
</tr>
<tr>
<td>30</td>
<td>126</td>
<td>125</td>
<td>128</td>
<td>128</td>
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<tr>
<td>75</td>
<td>225</td>
<td>222</td>
<td>222</td>
<td>222</td>
</tr>
<tr>
<td>95</td>
<td>272</td>
<td>270</td>
<td>271</td>
<td>271</td>
</tr>
<tr>
<td>115</td>
<td>297</td>
<td>297</td>
<td>296</td>
<td>296</td>
</tr>
<tr>
<td>177</td>
<td>512</td>
<td>504</td>
<td>501</td>
<td>496</td>
</tr>
</tbody>
</table>
**Horn Selections**

The horns on SpectrAlert horn/strobe combo units are factory set for high volume, temporal code, and electromechanical tone.

**Tones:**
Electromechanical or 3kHz tones may be field-selected using the DIP switch selector (See Figs. 2B and 3B for DIP switch location).

**NOTE:** When powered from FWR supply, tones will be modulated (turned on and off) by 120Hz causing the tones to sound different from DC power.

**Temp/Non-Temp:**
Temporal coding or Non-Temporal coding can also be field-selected using the DIP switch.

**High/Low Volume:**
High or low volume may also be field-selected using the DIP switch.

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**System Operation: Non-Synchronized Devices**

**Figure 2A:** Any combination of models powered by a 2-wire circuit

**NOTE:** Supply power must be continuous for proper operation.

**Figure 3A:** Any combination of models powered by a 4-wire circuit to provide independent horn and strobe operation (Remove factory installed jumpers, see Figure 3B)

**NOTE:** Strobes must be powered continuously for horn operation.

**Figure 2B:** Horns and strobes powered in tandem

**NOTE:** Supply power must be continuous for proper operation.

**Figure 3B:** Horns and strobes powered independently (Horn operated on coded power supply)

**NOTE:** Strobes must be powered continuously for horn operation.
**Strobe or Horn/Strobe with universal mounting plate:**
1. Mount adapter plate to back box with screws B.
2. Complete field wiring.
3. Secure unit to skirt with screws A.

**Three-Year Limited Warranty**

System Sensor warrants its enclosed horn, strobe, or horn/strobe to be free from defects in materials and workmanship under normal use and service for a period of three years from date of manufacture. System Sensor makes no other express warranty for this horn, strobe, or horn/strobe. No agent, representative, dealer, or employee of the Company has the authority to increase or alter the obligations or limitations of this Warranty. The Company’s obligation of this Warranty shall be limited to the repair or replacement of any part of the horn, strobe, or horn/strobe which is found to be defective in materials or workmanship under normal use and service during the three year period commencing with the date of manufacture. After phoning System Sensor’s toll free number 800-SENSOR2 (736-7672) for a Return Authorization number, send defective units postage prepaid to: System Sensor, Returns Department, RA __________, 3825 Ohio Avenue, St. Charles, IL 60174. Please include a note describing the malfunction and suspected cause of failure. The Company shall not be obligated to repair or replace units which are found to be defective because of damage, unreasonable use, modifications, or alterations occurring after the date of manufacture. In no case shall the Company be liable for any consequential or incidental damages for breach of this or any other Warranty, expressed or implied whatsoever, even if the loss or damage is caused by the Company’s negligence or fault. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Warranty gives you specific legal rights, and you may have other rights which vary from state to state.

**FCC Statement**

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.