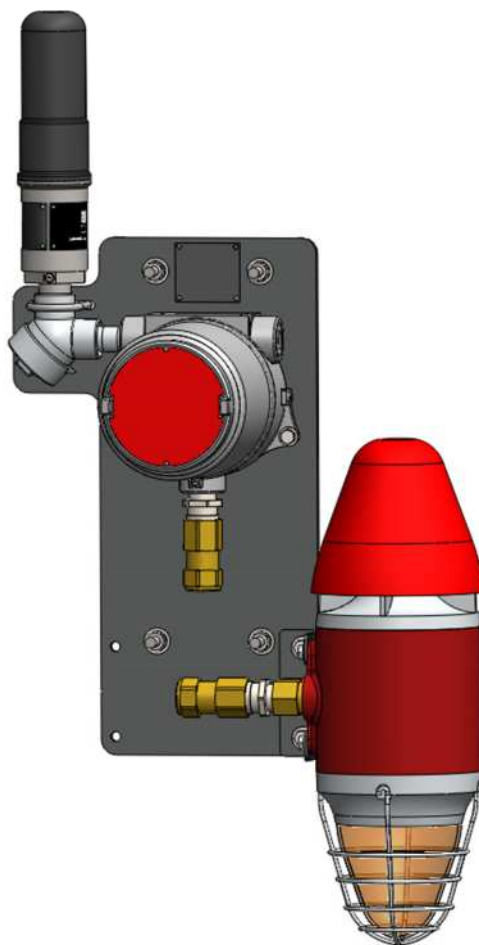




# DETCON MODEL SW-AV1-DV1

## Hazardous Duty Class I. Div 1, Multi-tone Alarm Station



### Operator's Installation and Instruction Manual

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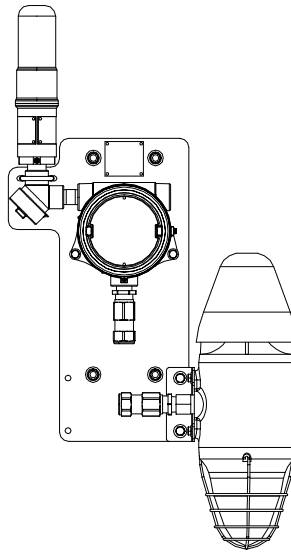
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# 1.0 Description

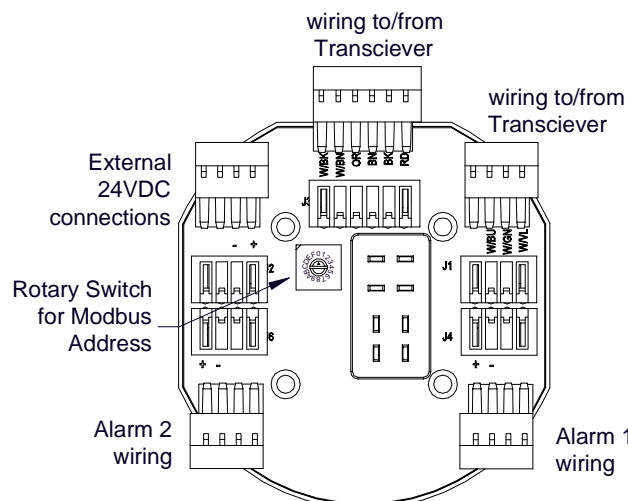
The Detcon SW-AV1-DV1 Alarm Stations are wireless, battery powered alarm stations with a 5 Joule Strobe and an 110Db @ 1mtr Horn. The SW-AV1-DV1 uses a Horn/Strobe Combo Alarm. The units are designed for installation and use in hazardous duty, corrosive work environments rated at Class 1, Division 1, Groups C and D.



**Figure 1** Basic C1D1 Wireless Alarm Stations

The alarm station can be positioned almost anywhere, since the wireless ability of the unit means that there is no need for running conduit or cables. The alarm station is powered by an internal 12V battery pack. Communication is performed via the Detcon RXT-300 or RXT-320 series of transceivers. Access to the unit is only necessary for battery maintenance or exchange. With the addition of a solar panel, access can be kept to periodic functional tests and checks.

Internal wiring between components runs through the Wireless Alarm Interconnect PCA. This PCA controls the state of the alarms via communication with the Wireless Transceiver. When an alarm is triggered, the wireless transceiver will provide the interconnect PCA with the signal(s) necessary to activate the proper alarm(s).

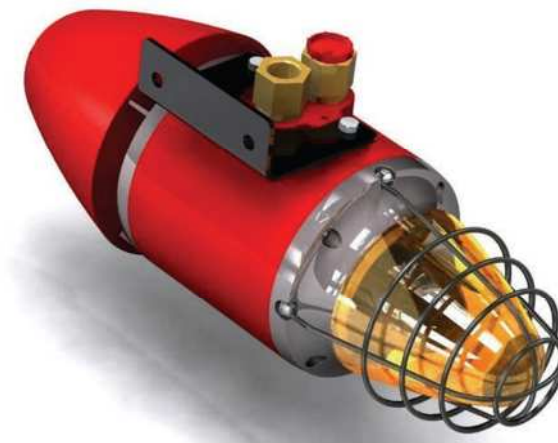


**Figure 2** Wireless Interconnect PCA

If the unit uses the RXT-320 Transceiver, the rotary switch on the Wireless Alarm Interconnect PCA is used to set the Modbus Address of the alarm unit. If more than one alarm station used in the system, each alarm station must have a unique address for the alarm station to be recognized on the network properly. This switch is not used with the RXT-300 Transceivers.

## 1.1 Strobe/Horn Alarm

Several variations of Smart Wireless alarm stations are available. The strobe-horn combination is used with the wireless SW1-AV1-DV1 Alarm Station. Two single-strobe units are used with the V2-DV1 Alarm Station. The Smart Wireless alarm station is also available with a single horn in the SW-A1-DV1 model. All units are UL listed and CSA certified for Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F, and G.



**Figure 3** Strobe/Horn Combo

The horn in the alarm stations has 32 possible combinations of sounds that are selectable by switch settings inside the alarm. Horn only units provided a dual horn capability. Horn one and horn two can be set to different tones via the switch settings; SW1 is used for horn 1 and SW2 for horn two settings. These horns can be initiated individually, but if both horns are active, horn two has priority. Refer to Section 3.0 for a list of the available switch settings.

## 1.2 Smart Battery Pack

The Wireless Alarm Station assembly also comes with a battery pack that allows the assembly to be remotely mounted without the need for any cables because of its wireless operation. The battery pack provided is Detcon's plug-in Smart Battery Pack which provides an output of 12VDC (See Figure 4). The battery pack consists of rechargeable Lithium-Ion batteries and is equipped with integrated safety electronics that include fuel gauge, voltage, current and temperature monitoring circuits. This "smart" circuitry continuously monitors the battery's condition and reports critical status information to the wireless transceiver. The battery pack is designed to plug onto an 8-pin Beau connector on the terminal board and should not be exposed to outside elements without being housed and protected. Only Detcon products specifically designed to utilize these battery packs should be used. Operating periods before recharge can be as long as 2-3 months and battery life can be up to 5 years before battery pack replacement is required. Improper use of the battery pack may be hazardous to personnel or the environment and will void the warranty.



**Figure 4** Smart Battery Pack

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**NOTE:** The Wireless Alarm Station can also be powered by a customer provided external DC power source. Refer to section 2 for more details.

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### 1.3 Quad Battery Charger (Optional)

Detcon's Smart Battery Pack can be charged as needed using Detcon's optional Quad Battery Charger which can charge up to four battery packs at one time. The Quad Battery Charger comes with a plug-in AC/DC adapter that plugs into a standard 120VAC outlet for power. The DC end of the adapter plugs into the DC power jack of the charger providing 24VDC. The Quad Battery Charger has four charging ports, each with 8-pin Beau connectors for battery pack connection. The ports and connectors are keyed to prevent incorrect positioning and connection. Each port has its own "FAULT" LED indicator and "CHARGE" LED indicator and will display either a red light or green light depending on the status of each battery being charged. Charging times will vary depending on the charge state of each battery pack, but a full charge of a depleted battery pack can take up to 24 hours.



**Figure 5** Quad Battery Charger

When first powered on and with no battery packs connected to the charger, all the LED indicators on the Quad Charger should be green. When a battery pack is seated into a charging port, the “CHARGE” LED will go from green to red indicating the battery pack is not sufficiently charged. Once fully charged, the LED will go from red to green and the battery pack is ready to be used.

The “Fault” LED should remain green indicating that there are no problems with the battery pack or charging port. If the “Fault” LED turns red with the battery pack connected, then there is a problem or issue with the battery pack and it should not be used and be removed immediately. If the “Fault” LED turns red without a battery pack connected to the charge port, then there is a problem or issue with the port and that port should no longer be used.

Battery packs can remain connected to the charger even after a full charge indication (Green “Charge” LED) is shown due to the protection circuitry of the batter pack which prevents any overcharging issues.

## 1.4 RXT Series Wireless Transceivers

The wireless function of the alarm station is made possible by Detcon’s RXT series wireless transceivers. These transceivers transmit signal data such as analog 4-20mA DC or serial Modbus™ and can support up to 32 devices. They operate at 2.4GHz and conform to non-licensed radio frequency appliance usage around the world. Wireless network integrity and security is accomplished using direct sequence spread spectrum wireless mesh technology. Wireless applications can be as simple as a single field device communicating with a host controller or any number of field devices forming a network of subscribers. Every device in the network is capable of functioning as a router and repeater for all other devices in the network. This means that subscribers can “hop” through neighboring devices to communicate with each other thereby widening network access points. This unique and innovative technology is designed to create a robust network that automatically routes around congestion and line-of-sight obstacles while improving throughput as subscriber device density increases.

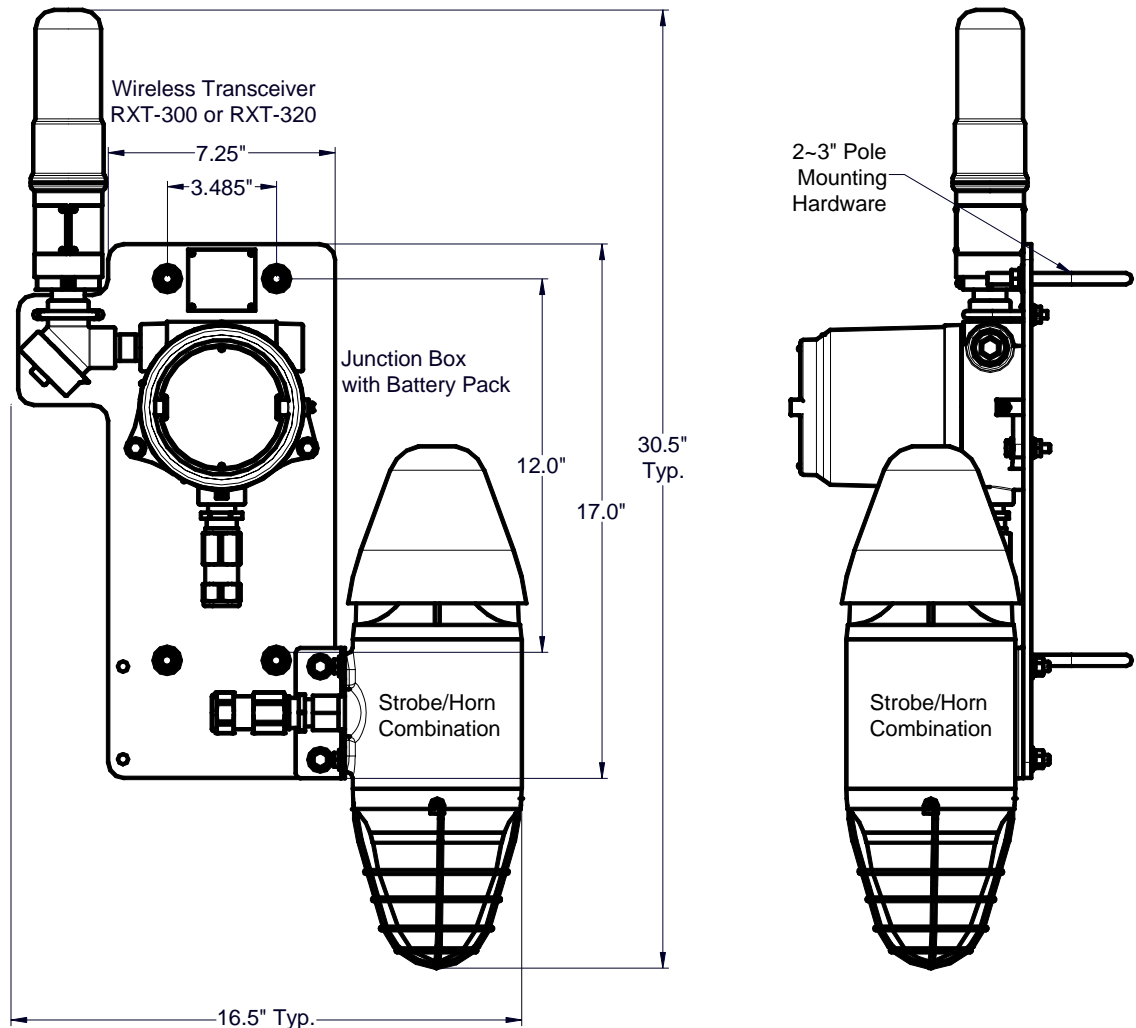
Detcon offers two models of the wireless transceiver, Model RXT-300 and Model RXT-320. Both models are functionally similar with one major difference: the RXT-300 provides a network wide control processing capability, whereas the RXT-320 does not. Refer to each models instruction manual for more detailed information.



## 2.0 Installation

**NOTE:** The wireless alarm station is a precision instrument and care should be taken when handling it.

The Wireless AV1-DV1 Alarm Station is made to be mounted on a 2" or 3" diameter pipe. Two 3" U-bolts with hardware are provided for mounting. The location for mounting the wireless alarm station should be carefully selected. Occasional access to the unit will be necessary for battery replacement and maintenance.



**Figure 6** Alarm Dimensional

No outside wiring is necessary for these units. Once the unit has been mounted, install the battery pack and the unit will begin normal operation.

If the unit is equipped with the RXT-320 Transceiver, the Address Switch on the Wireless Interconnect PCA should be set to the correct address for the alarm station. This switch is normally set at the factory. If there is more than one alarm station, each station should have a unique address for proper operation. For more information refer to the RXT-320 manual. Units equipped with RXT-300 Transceiver do not use this switch.

To install the battery pack, insure that the area is de-classified. Remove the cover from the junction box. Release the battery catch, and install the battery. The battery can only be installed one way, and orientation is mandated by the battery supports and the connector. Ensure that the battery is completely seated, and close the retaining lever over the battery until it latches. The unit will power up, and begin normal operation. Replace

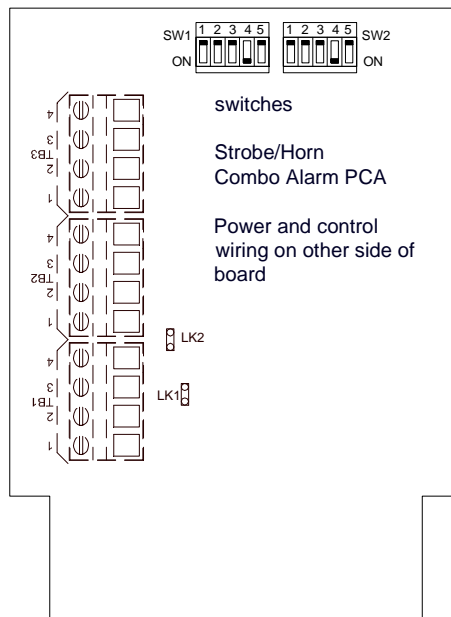
the cover on the junction Box, and ensure that the cover is completely screwed down and secured by the cap-head screw.

Battery operation can be supplemented by the addition of an external 24VDC power source. The unit should not need the addition of an external 24VDC power source, but if an external 24VDC is to be added, J6 is provided for connection to the 24Volt input (refer to Figure 2). This voltage will be used to charge the battery pack as well as aid in operation of the alarm station.

### 3.0 Operation

The Wireless C1D1 Alarm Stations provide a strobe and a horn, two strobes, or a single horn. The wireless alarm station is set to respond to alarms from the controlling unit. The controller has independent control over the strobe and the Horn, and they will be activated when the appropriate alarm is activated.

All strobes have a flash rate of 1 Hz, one flash per second. The horn has up to 32 possible settings, for use in different configurations. The default settings of the horn are factory set. The default setting for the Horn is 21 (SW1 and SW2 set to 01000). To change the setting of the horn, remove the horn side of the alarm enclosure, and set the dip-switches according to the Sound Signals Table. SW1 and SW2 are used to set the horn sound signal. SW1 and SW2 should be set the same, to insure the correct sound signal.



**Figure 7** Alarm switch location

To gain access to the switches remove the shroud over the horn by removing the three Philips head screws. Remove the 4 Allen screws from the horn side of the enclosure, and carefully slide the horn out of the enclosure. Set the switches as desired and reverse the process to re-assemble the horn.

**Table 1** Sound Signals

	Sound Signal	Frequency	Repetition Rate	Switches SW1, SW2	Special Applications
1	Alternate two-tone	800-1000	0.5	1 1 1 1 1	Fire Alarms
2	Alternate two-tone	2500-3100	0.5	0 1 1 1 1	Security Alarms
3	Alternate fast two-tone	800-1000	0.25	1 0 1 1 1	Increased Urgency
4	Alternate fast two-tone	2500-3100	0.25	0 0 1 1 1	Security Deterrent
5	Alternate two-tone	440-554	0.4/0.1	1 1 0 1 1	Evacuation Alarm, France
6	Alternate two-tone	430-470	1.0	0 1 0 1 1	
7	Alternate v.fast two-tone	800-1000	0.13	1 0 0 1 1	
8	Alternate v.fast two-tone	2500-3200	0.07	0 0 0 1 1	
9	Alternate two-tone	440-554	2.0	1 1 1 0 1	Turn-out, SWEDEN
10	Continuous note	700	-	0 1 1 0 1	All Clear, SWEDEN
11	Continuous note	1000	-	1 0 1 0 1	
12	Continuous note	1000	-	0 0 1 0 1	

	Sound Signal	Frequency	Repetition Rate	Switches SW1, SW2	Special Applications
13	Continuous note	2300	-	1 1 0 0 1	
14	Continuous note	440	-	0 1 0 0 1	
15	Interrupted tone	1000	2.0	1 0 0 0 1	
16	Interrupted tone	420	1.25	0 0 0 0 1	
17	Interrupted tone	1000	0.5	1 1 1 1 0	
18	Interrupted tone	2500	0.25	0 1 1 1 0	
19	Interrupted tone	2500	0.5	1 0 1 1 0	
20	Interrupted tone	700	6/12	0 0 1 1 0	Pre-vital Message, SWEDEN
21	Interrupted tone	1000	1.0	1 1 0 1 0	
22	Interrupted tone	700	4.0	0 1 0 1 0	Air-raid Alarm, SWEDEN
23	Interrupted tone	700	0.25	1 0 0 1 0	Local Warning, SWEDEN
24	Interrupted tone	720	0.7/0.3	0 0 0 1 0	Industrial Alarm, GERMANY
25	Int,fast,rising volume	1400	0.25	1 1 1 0 0	
26	Fast siren	250-1200	0.085	0 1 1 0 0	
27	Rising constant,fall	1000	10/40/10	1 0 1 0 0	Industrial Alarm, GERMANY
28	ISO 8201 Evacuation	800-1000	as std	0 0 1 0 0	International Evacuation Alarm
29	Fast whoop	500-1000	0.15	1 1 0 0 0	
30	Slow whoop	500-1200	4.5	0 1 0 0 0	Evacuation Alarm, Netherlands
31	Reverse sweep	1200-500	1	1 0 0 0 0	Evacuation Alarm, GERMANY
32	Siren	500-1200	3.0	0 0 0 0 0	

## 4.0 Parts List

Detcon Part #	Description
355-YL66x4-024	Combo Strobe Horn (where x = 2-Red, 4-Amber, 5-Green, 6-Blue, 9-Clear)
356-YA6624-024	Horn alarm only
500-005146-000	24V Wireless Alarm Interconnect PCA
976-000300-000	RXT-300 Wireless Transceiver
976-000320-000	RXT-320 Wireless Transceiver
976-0BP303-290	12VDC, 2900mAh Battery Pack

## 5.0 Specifications

Voltage	24VDC
Operating Current	590mA @ 24VDC; 350mA Horn Typical 220mA Strobe Typical
Dome Colors	Amber / Blue / Clear / Green / Red / Opal / Yellow
Dome Guard	Included
Strobe Output	5Joules
Flash Rate	1 per second
Horn Output	110db(A) @ 1 meter
Horn Tone	Selectable
Operating Temperature Minimum	-20C
Operating Temperature Maximum	+60C
Enclosure Rating	CID1, Gas Group CD; CIID1, Gas Group EFG
Dimensions	30"H X 16.5"W X 8"D AV1 - Strobe/Horn Combo

## 6.0 Warranty

Detcon Inc., as manufacturer, warrants under intended normal use each new SW-AV1-DV1, SW-V2-DV1, and SW-A1-DV1 Alarm station to be free from defects in material and workmanship for a period of one year. The warranty period begins from the date of shipment to the original purchaser and ends one year thereafter. All warranties and service policies are FOB the Detcon Inc. facility located in The Woodlands, Texas.

## 7.0 Revision Log

Revision	Date	Changes made	Approval
0.0	02/21/11	Initial Release	LBU
1.0	11/30/11	Updated Mounting Plate, Specifications and Spare Parts List	LBU
1.1	03/11/14	Updated Specifications and Detcon address	LBU