

ALTRONIC®, INC.  
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**ALTRONIC DIGITAL ANNUNCIATOR DA-16A, DA-32A      INSTALLATION INSTRUCTIONS ADA-A II 7-88**

NOTE: The DA annunciator system is CSA certified and Factory Mutual Research approved for Class I, Group D hazardous locations when installed in accordance with these instructions.

**WARNING: READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING OR OPERATING THE DA ANNUNCIATOR SYSTEM. AN IMPROPERLY INSTALLED OR OPERATING SHUTDOWN SYSTEM MAY NOT PROTECT EQUIPMENT TO WHICH IT IS APPLIED, WHICH CONSEQUENTLY MAY POSE THE THREAT OF PERSONAL INJURY TO ITS OPERATOR. THE SENSOR LEADS FROM THIS SYSTEM OPERATE AT VERY LOW VOLTAGE AND POWER LEVELS AND MUST NOT CONTACT ANY EXTERNAL VOLTAGE SOURCE. DAMAGE TO THE SYSTEM WILL RESULT FROM CONNECTION BETWEEN THE SENSOR LEADS AND THE IGNITION SYSTEM OR ANY AC OR DC POWER SOURCE.**

**1.0 DESCRIPTION**

1.1 The Altronic DA-A digital annunciator is an electronic, 16 or 32-point monitor, alarm and shutdown device. Power requirement is extremely low - 1.0 watt maximum at 12-24 VDC. The DA-A system consists of these components:

1. Annunciator Unit - DA-A series
2. Power Supply Box - 690 series
3. Cable Assembly - 693 series

For reliable operation the following installation instructions must be adhered to strictly.

**2.0 MOUNTING**

2.1 Mount the Annunciator Unit inside a control panel or to a suitable flat surface so that the display is at convenient viewing height. A drilling template is provided. Be sure the panel door enclosure does not hit the three push button switches. The annunciator unit box must be grounded.

NOTE: Avoid mounting with display facing direct sunlight. Temperature range is -40°F. to +175°F.

2.2 Mount the Power Supply unit using the two 1/4" tapped holes in the bottom of the box. DO NOT drill these holes any deeper into the box. The explosion-proof box has no gasket seal; therefore, it should be protected from direct exposure to weather.

### 3.0 WIRING (SEE WIRING DIAGRAMS)

3.1 The Cable Assembly provided plugs into the 4-pin connector of the Power Supply box, the 37-pin connector of the Annunciator Unit and has terminated sensor leads for connection to a suitable terminal strip. These leads are as follows:

	<u>DA-16A</u>	<u>DA-32A-1</u>	<u>DA-32A-2</u>	<u>DA-32A-3</u>
Alarm points disarmed by start-up timer	14-16	14-17 24-27	14-17	14-17 24-27 34-37
Alarm points not disarmed by start-up timer	10-13	10-13 20-23	10-13	10-13 20-23 30-33
Shutdown points disarmed by start-up timer	24-27	34-37 44-47	24-27 34-37 44-47	44-47
Shutdown points not disarmed by start-up timer	20-23 40	30-33 40-43	20-23 30-33 40-43	40-43
Common for Normally-Closed Models	C	C	C	C

NOTE: If it is desired to have a sensor activate both alarm AND shutdown outputs, connect to Annunciator leads having a common units digit. Example: 11 and 21 or 15 and 45. The higher (shutdown) number will display.

Wires from the terminal strip to the various engine sensors should be in good condition or replaced with new wiring. At the terminal strip end, termination should be made with a suitable terminal and crimping tool or by soldering. There is no requirement for explosion-proof conduit or Class I enclosures; however, suitable physical protection should be provided.

#### CAUTION:

a.) TO MEET THE REQUIREMENTS OF INTRINSIC SAFETY (see NFPA standard No. 493): Sensor wires within the panel enclosure must be kept at least two (2) inches from other wiring. Use a separate junction box for ignition and fuel valve wires. Run sensor leads leaving the panel in a conduit separate from all other wiring and keep separate throughout the installation.

Wiring to the sensors must have a grade of insulation capable of withstanding an AC voltage of 500 V rms. Sensor leads may be connected to any passive device using contacts such as standard switch gauges or level switches. DO NOT connect sensor leads to relay contacts or to any voltage producing element.

b.) Sensors will be exposed to much lower voltages and currents than with the standard Murphy or similar type system. In the case of a field conversion where sensors have previously been used with Murphy tattletales, it is recommended that the sensors be checked frequently (see test procedure under OPERATION) when the DA system is first put into use. Sensor contacts may be burned or pitted from past exposure to ignition system primary voltage. It is advisable to replace such sensors.

c.) If it becomes necessary to check sensor to terminal-strip wiring with an ohmmeter or other checker, first DISCONNECT the 37-pin connector from the back of the Annunciator unit. Applying voltage to the Annunciator through the sensor leads may damage the device. In addition, the area should be tested as non-hazardous before such testing commences.

3.2 The wiring from the DC power source and to the relay connections enters through the 1/2-14 NPT hole at one end of the Power Supply box. The conduit hook-up to the box must conform with the applicable Electrical Code for the particular area classification. See the Wiring Diagram for details.

3.3 The 690 104 Power Supply contains one alarm relay and one shutdown relay, each with independent N/O and N/C contacts. The relays are energized during normal operation, de-energized on fault. A solid wire jumper (see diagram) is installed in the Power Supply as shipped. With the jumper in place, there will be an immediate reaction to a shutdown fault signal. If it is desired to delay the shutdown relay, cut the jumper at both terminals and completely remove the wire from the box. There will then be a delay of 3-5 seconds between a fault signal and shutdown relay de-energization.

NOTE: There is no battery in the 690 104 power supply. Power must be maintained to retain the shutdown fault number. For remote controlled reset, the DC power may be removed for 5 seconds and then re-applied; this will reset the start-up timer.

## 4.0 OPERATION

### 4.1 OPERATING SEQUENCE

DISPLAY	FUNCTION
[ 00 ]	Annunciator reset, all class A sensors clear, internal timer disarming all class B points.
[ 01 ]	All points being monitored.
[ 09 ]	TEST button pushed, timed period for testing sensors without causing either Alarm or Shutdown output signals.
[ 14 ]	Alarm on point 14; alarm relay de-energizes. Push RESET button momentarily to acknowledge. Relay resets and display reverts to [ 01 ] only if alarm fault has cleared. If two alarm points fault at the same time, both numbers can be displayed by momentarily pushing the RESET button more than once. The Annunciator continues to scan all points in case of a higher priority (shutdown) fault.
[ 46 ]	Shutdown on point 46 (first-out); shutdown relay de-energizes. Relay resets and display reverts to [ 01 ] only if the shutdown fault has been cleared and the RESET button pushed. A "shutdown" number overrides a prior "alarm" number on the display. After a shutdown output signal, subsequent alarm faults are locked out by the annunciator.
STOP BUTTON	- Activates Shutdown output regardless of annunciator operating mode.
RESET BUTTON	- Momentary push acts as "acknowledge"; holding down about four seconds resets the start-up timer ([ 00 ] on the display).
TEST BUTTON	- See [ 09 ] above.

NOTE:

- a) TEST cannot be used until the start-up timer interval ends (display reads [ 01 ]).
- b) A display reading of [ 09 ] means the system outputs will not trip (unless the STOP button is pushed).
- c) Do not leave a sensor number on the display after the last test since an alarm or shutdown will occur when the test timer runs out. After the last test, push the TEST button ([ 09 ] on the display) and wait 1.5 minutes for [ 01 ] to display.
- d) For a complete system test, allow the test timer interval to expire (display changes from [ 09 ] to [ 01 ]). Then cause one alarm sensor to fault followed by faulting one shutdown sensor. This will test the entire DA-A system for correct operation upon a fault with minimal downtime.

4.2 START-UP TIMER - Controlled by small potentiometer adjustment on the back of the Annunciator unit.

TO INCREASE TIME INTERVAL, TURN CW (approximately 15 minutes maximum)  
TO DECREASE TIME INTERVAL, TURN CCW (approximately 10 seconds minimum)

The timer cycle begins as soon as the DC power is applied or the RESET button is released.

4.3 STOP - Depressing the STOP button initiates the shutdown sequence regardless of the annunciator operating mode. The display will retain the number indicated when the STOP button was depressed. The STOP button may also be used to maintain the system in the shutdown mode for maintenance.

## 5.0 CABLE ASSEMBLY - 693 102, 693 103

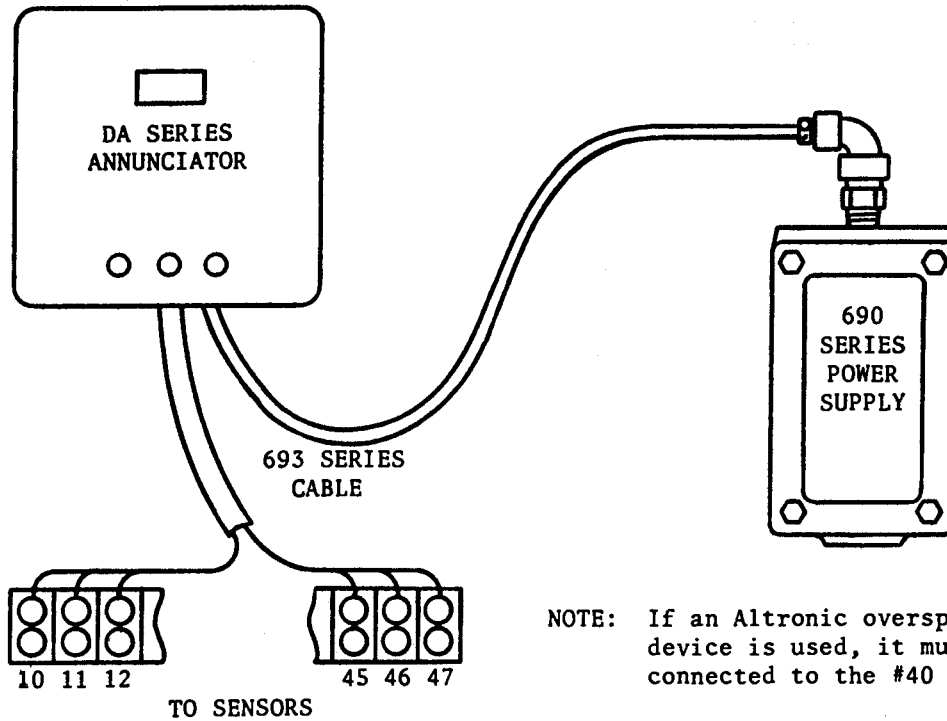
### 5.1 CONNECTOR PIN DESIGNATION:

<u>Connector Pin</u>	<u>Lead or Display No.</u>	<u>W I R E C O L O R C O D E</u>		
		<u>Base Color</u>	<u>Wide Stripe</u>	<u>Thin Stripe</u>
1	43	White	Red	Black
2	40	Red	Yellow	
3	45	White	Red	Green
4	47	White	Red	Blue
5	41	White	Red	Brown
6	42	White	Red	Red
7	46	White	Red	
8	44	White	Red	Violet
9	33	White	Black	Black
10	30	White	Black	Yellow
11	35	White	Black	Green
12	37	White	Black	Blue
13	31	White	Black	Brown
14	32	White	Black	Orange
15	36	White	Black	Gray
16	34	White	Black	Violet
17	23	White	Black	
18	20	White	Yellow	
19	25	White	Green	
20	27	White	Blue	
21	21	White	Brown	
22	22	White	Orange	
23	26	White	Gray	
24	24	White	Violet	
25	13	Black		
26	10	Yellow		
27	15	Green		
28	17	Blue		
29	11	Brown		
30	12	Orange		
31	16	Gray		
32	14	Violet		
33	C*	White		
34	D - pin			
35	A - pin			
36	B - pin			
37	C - pin			

\*Common lead for N/C sensors.

NOTE: 693 102 series 16-point harnesses do not have leads 17, 30-37, 41-47.

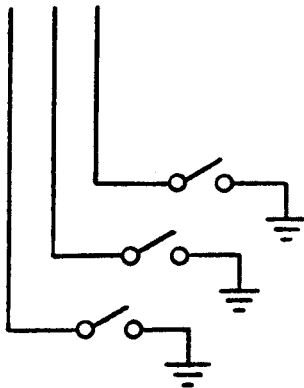
GENERAL HOOK-UP



NOTE: If an Altronic overspeed device is used, it must be connected to the #40 sensor lead.

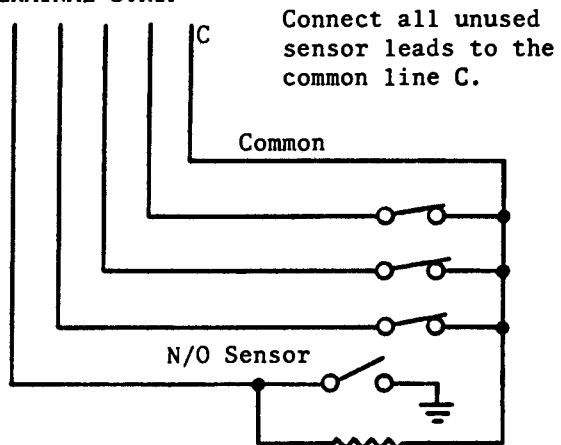
NORMALLY OPEN SENSORS

TERMINAL STRIP



NORMALLY CLOSED SENSORS

TERMINAL STRIP



Add 18,000 ohm, 1/2 watt resistor as shown for each normally open sensor that is used with an otherwise normally closed system.

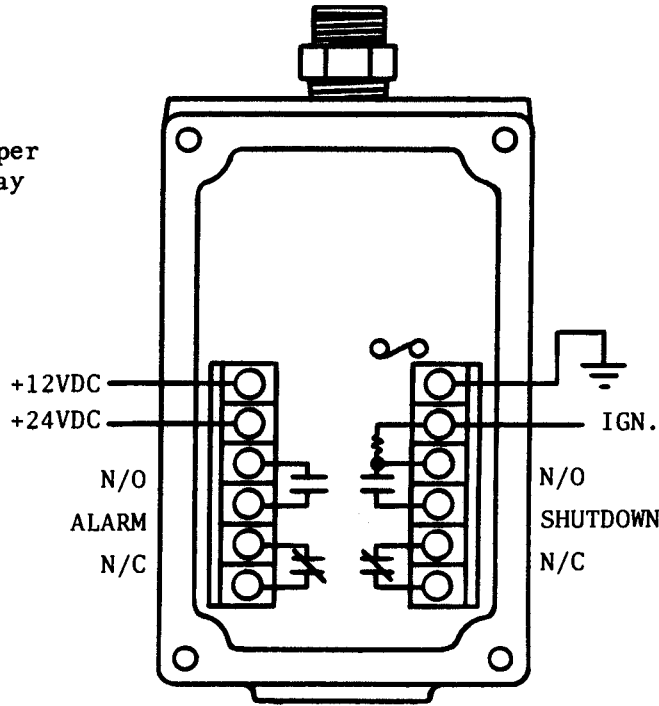
**WARNING:** Sensor leads from the annunciator MUST NOT CONTACT any external voltage source. Damage to the system will result from connection between the sensor leads and the ignition system or any AC or DC power source.

**WIRING DIAGRAM**

**690 104 POWER SUPPLY 12-24 VDC**

**GENERAL HOOK-UP**

Cut and remove jumper for 3-5 second delay on relay #2



Relay contacts are shown in the normal run condition. Contact state is opposite on fault signal or on loss of 12-24 VDC power. Fault signal causes relay #1 to change state immediately. Relay #2 switches simultaneously (jumper left in place) or with a 3-5 second delay (jumper cut and removed).

**SPECIFICATIONS:**

- VOLTAGE INPUT            12VDC or 24VDC
- CURRENT INPUT            0.040 amp - Normal operation (relays energized)  
                              0.002 amp - After shutdown (relays de-energized)
- OUTPUT RELAY            ALARM     - 1 N/O and 1 N/C  
                              SHUTDOWN - 1 N/O and 1 N/C  
                              Contact rating - 4 amps, 24VDC; 4 amp, 220VAC