

ALTRONIC®, INC.  
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GIRARD, OHIO 44420

**ALTRONIC DIGITAL ANNUNCIATOR DA-16N, DA-32N    INSTALLATION INSTRUCTIONS ADA-N II 3-86**

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 digital annunciator is an electronic, 16 or 32-point monitor and shutdown device. Power requirement is extremely low allowing operation from capacitor-discharge ignition systems or 12-24 VDC with approximately 1.0 watt draw. The DA system consists of these components:

1. Annunciator Unit - DA-N 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-16N</u>	<u>DA-32N</u>	<u>Function</u>
10-16	10-17	Monitored points disarmed by start-up timer.
20-27	20-27	
40	30-37	Monitored points not disarmed by start-up timer.
	40-47	
C	C	Common for normally closed sensors.

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 power source enters through the  $\frac{1}{2}$ -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 attached Wiring Diagrams for details of each particular Power Supply.

## 4.0 OPERATION

### 4.1 OPERATING SEQUENCE

<u>DISPLAY</u>	<u>EQUIPMENT</u>	<u>FUNCTION</u>	<u>DESCRIPTION</u>
10-47	Down	Shutdown	Equipment shutdown caused by the number indicated. Number will remain until the fault is corrected and RESET button depressed.
00	Down	Reset	Before starting equipment, momentarily push the RESET button. A display reading of 00 indicates all sensors 20-47 are clear and the system is ready for start-up. Any number 20-47 indicates a faulted sensor that must be cleared before start-up.
80	Down	Battery Test	TEST button held depressed - indicates satisfactory battery voltage.
00	Down	Engine Purge	To purge engine without ignition firing, depress the STOP button, roll the engine to purge, then push RESET button. Engine can then be started provided display reads 00.
00	Running	Start-up	Start-up timer has points 10-17 disarmed. Points 20-47 are being monitored. Pushing the RESET button re-cycles the start-up timer. To cancel the start-up timer, hold RESET button in until 01 appears on the display (5-8 seconds).
01	Running	Normal Operation	All points 10-47 are being monitored. Transition from 00 to 01 indicates the end of the start-up timer interval.
89	Running	Voltage Test	TEST button held depressed - indicates satisfactory operating voltage.
09	Running	Sensor Test	TEST button released - a timed test period initiated for approximately 1.5 minutes. As a sensor is faulted, its number is latched on the display (but the output signal is not activated). To move to the next point, first clear the sensor, then push the TEST button again. The display reverts to 09 until the next sensor is faulted. After the last test, push and hold RESET button in until 01 appears on the display (5-8 seconds).
01	Running	Normal Operation	Test period has ended; points 10-47 being monitored. DO NOT LEAVE ENGINE UNLESS DISPLAY READS 01.

**CAUTION:** Do not depend on faulting a sensor prior to rolling engine to prevent ignition. The proper procedure is given above under "Engine Purge". An engine that attempts to start unexpectedly can pose the risk of personal injury.

NOTE:

- a.) TEST cannot be used until the start-up timer interval ends (01 on the display).
- b.) A display reading of 09 means the system output will not activate (unless STOP button is pushed).
- c.) Do not leave a sensor number on the display after the last test; push the TEST button (09 on the display), then push and hold RESET button in until 01 appears on the display (5-8 seconds).
- d.) For a complete system test, allow the test timer interval to expire (display changes from 09 to 01). Then cause one sensor to fault and allow the system output to activate. This will test the entire DA 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 annunciator is powered.

4.3 STOP - Depressing the STOP button initiates the output sequence regardless of annunciator operating mode. The display will retain the number indicated when the STOP button was depressed. STOP button may also be used to purge engine before start-up - see fourth item in 4.1 OPERATING SEQUENCE.

4.4 BATTERY - The 690 101, 690 110 and 690 112 series Power Supplies contain a special 5-year life battery. This should not be removed. When the monitored equipment is not operating, current draw from the battery is only 15 microamp (.000015 amp). When the annunciator is powered, there is no drain from the battery. If the equipment is to remain out of service for a prolonged period of time, disconnect the 4-pin connector from the Power Supply box.

**5.0 CABLE ASSEMBLY - 693 102, 693 103**

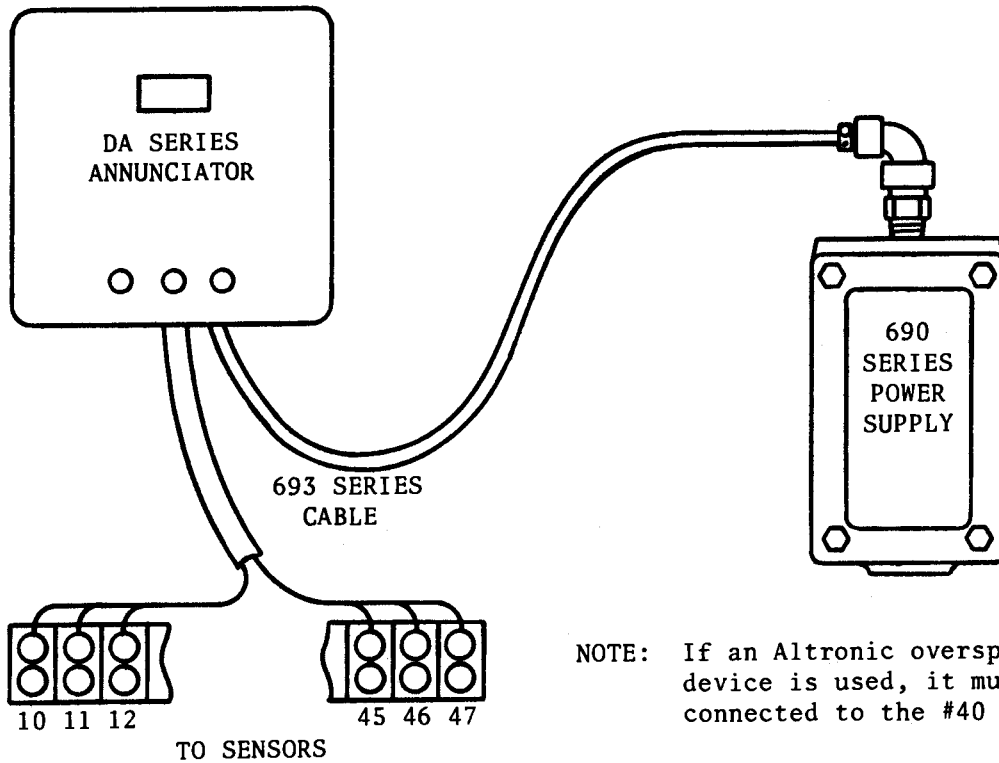
**5.1 CONNECTOR PIN DESIGNATION:**

<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.

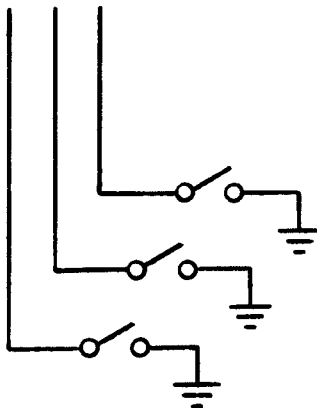
**GENERAL HOOK-UP**



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

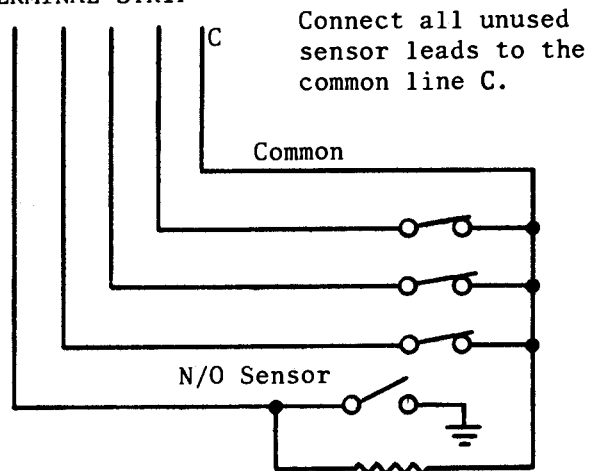
**NORMALLY OPEN SENSORS**

TERMINAL STRIP



**NORMALLY CLOSED SENSORS**

TERMINAL STRIP

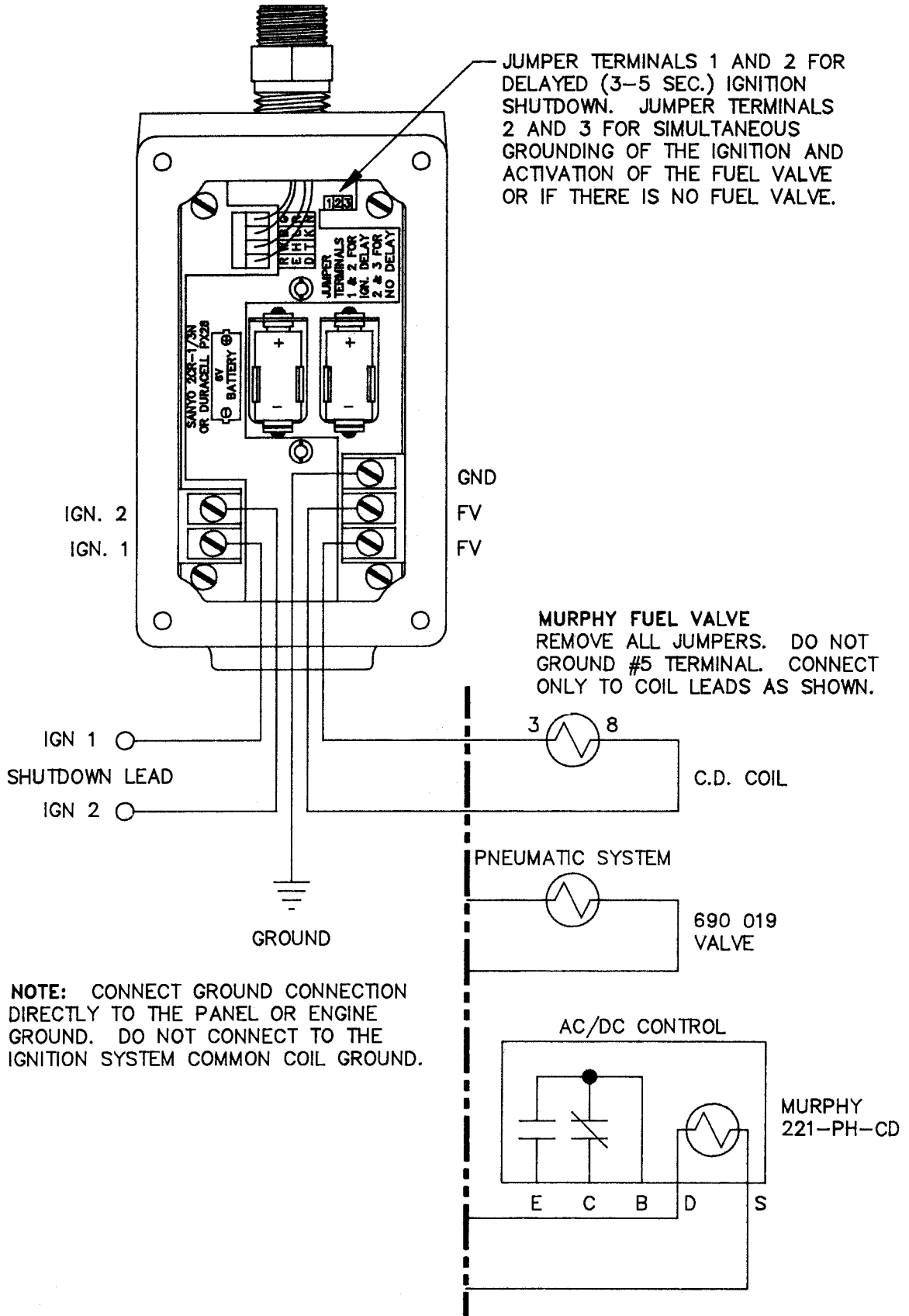


Add 18,000 ohm, 1/2 watt resistor as shown for each normally open sensor that is used with an otherwise normally closed system.

**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

690 101-3 POWER SUPPLY 100-350V  
NEGATIVE GROUND C.D. IGNITION ONLY

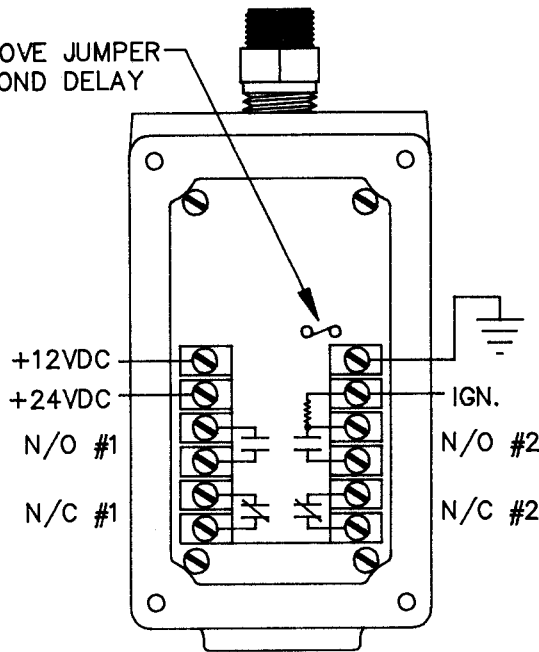


**WIRING DIAGRAM**

**690 105 POWER SUPPLY 12-24 VDC**

**GENERAL HOOK-UP**

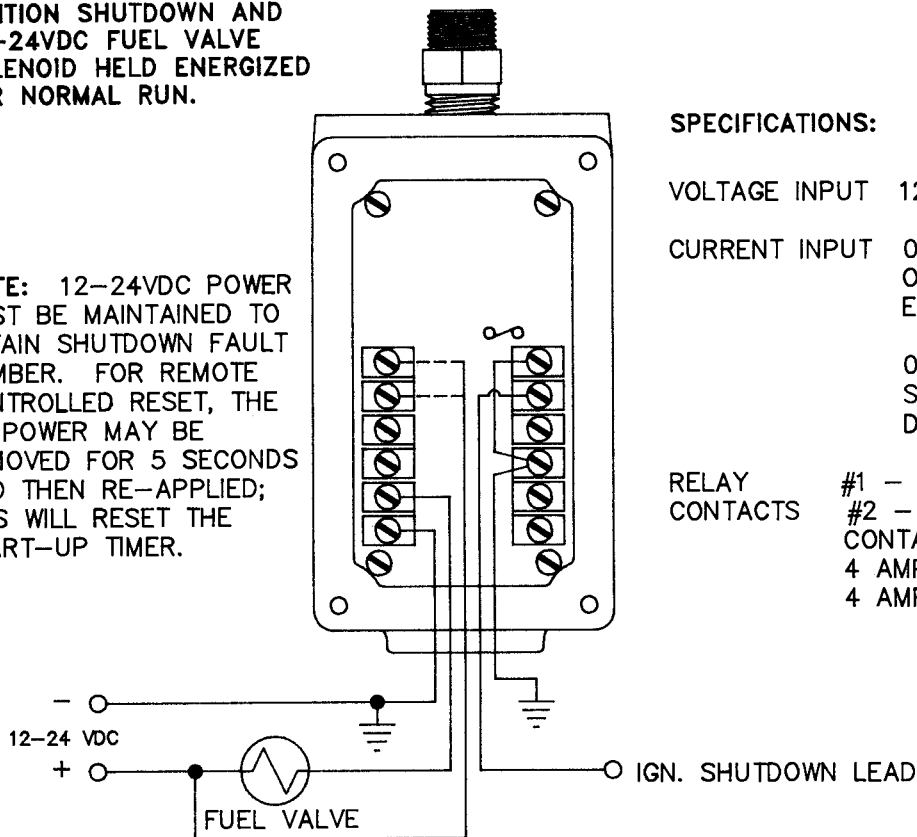
CUT AND REMOVE JUMPER FOR 3-5 SECOND DELAY ON RELAY #2.



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 SEC. DELAY (JUMPER CUT AND REMOVED).

**IGNITION SHUTDOWN AND 12-24VDC FUEL VALVE SOLENOID HELD ENERGIZED FOR NORMAL RUN.**

**NOTE:** 12-24VDC POWER MUST BE MAINTAINED TO RETAIN 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.



**SPECIFICATIONS:**

VOLTAGE INPUT 12VDC OR 24VDC

CURRENT INPUT 0.040 AMP - NORMAL OPERATION (RELAYS ENERGIZED)

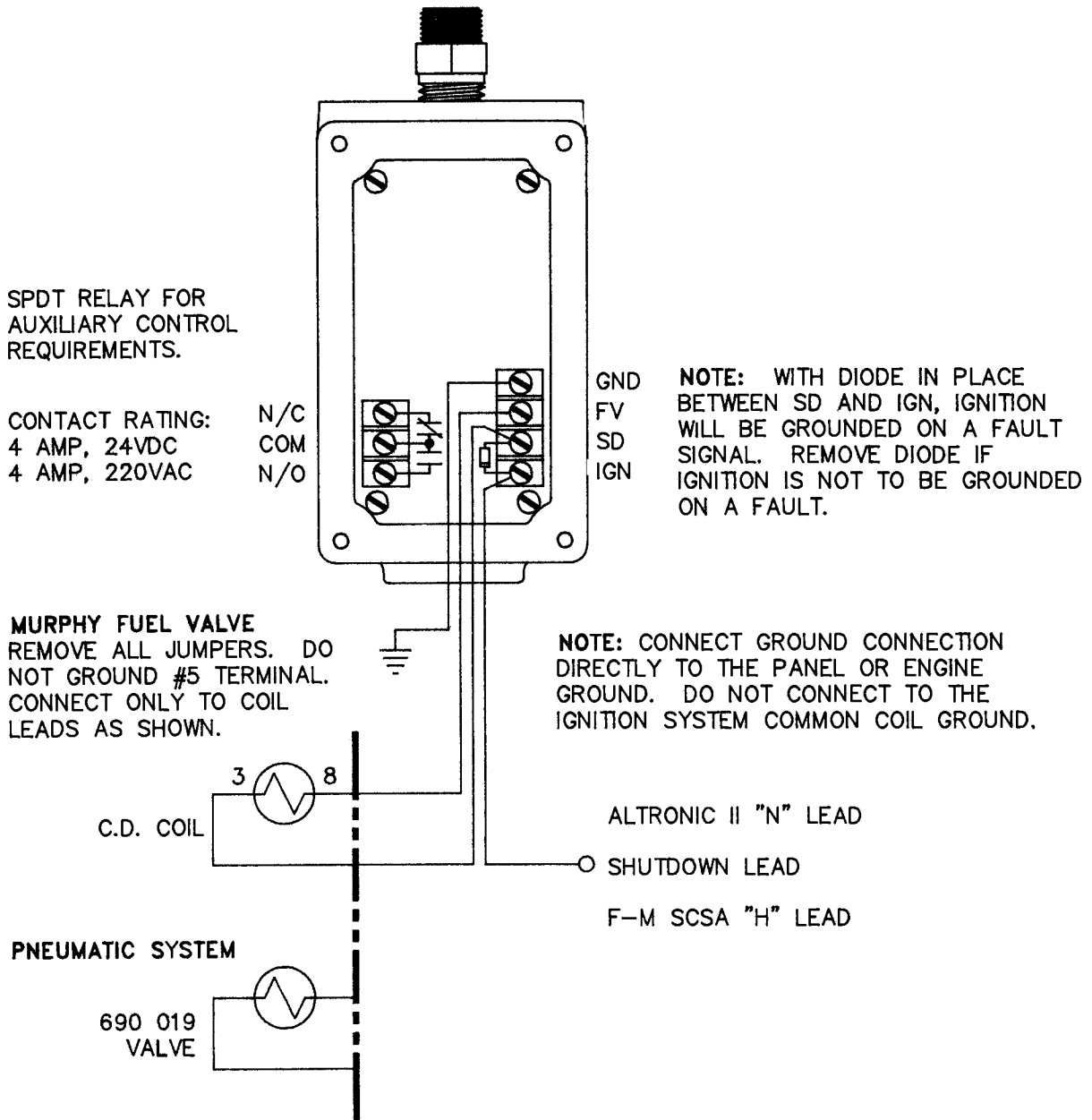
0.002 AMP - AFTER SHUTDOWN (RELAYS DE-ENERGIZED)

RELAY CONTACTS #1 - 1 N/O AND 1 N/C  
#2 - 1 N/O AND 1 N/C  
CONTACT RATING -  
4 AMP, 24VDC;  
4 AMP, 220VAC



**WIRING DIAGRAM**

**690 110 POWER SUPPLY 150-350V  
POSITIVE GROUND C.D. IGNITION ONLY**

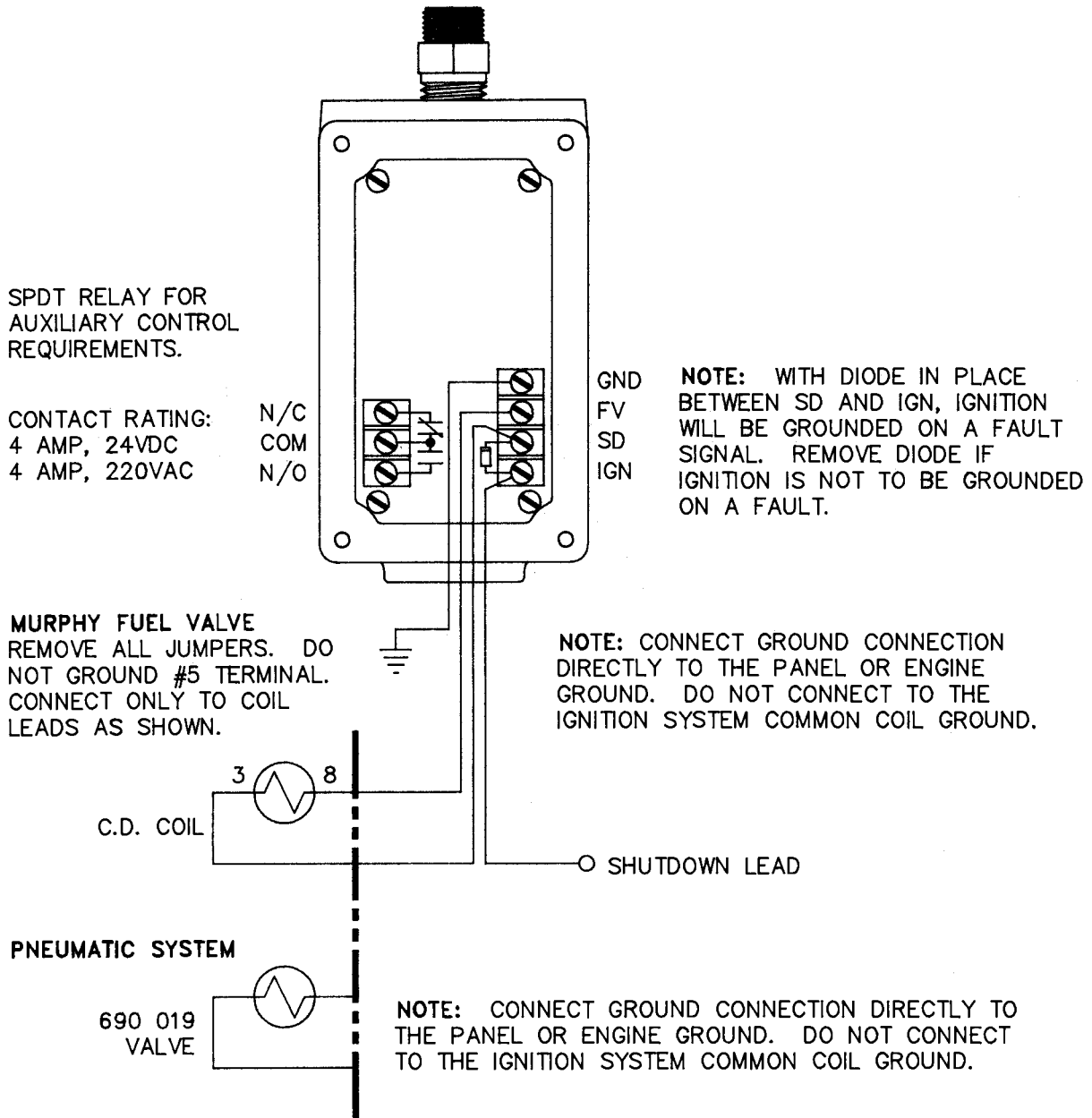


**INITIAL START-UP:** AFTER INSTALLING AN ANNUNCIATOR SYSTEM USING THE 691 110 POWER SUPPLY OR AFTER TROUBLESHOOTING PROCEDURE WHEN COMPONENTS HAVE BEEN CHANGED, PRESS THE STOP BUTTON ON THE ANNUNCIATOR LOGIC UNIT TO INITIALIZE THE LATCHING RELAY IN THE POWER SUPPLY. ONCE THE RELAY AND LOGIC UNIT ARE SYNCHRONIZED, THE SYSTEM CAN BE RESET FOR START-UP BY PUSHING THE RESET BUTTON. FAILURE TO PRESS THE STOP BUTTON WILL LEAVE THE SYSTEM LATCHED IN THE STOP MODE REGARDLESS OF HOW MANY TIMES THE RESET BUTTON IS PUSHED.

**WIRING DIAGRAM**

**690 112 POWER SUPPLY 150-350V  
NEGATIVE GROUND C.D. IGNITION ONLY**

**NOTE:** THE 690 112 POWER SUPPLY CANNOT BE USED WITH ALTRONIC I OR ALTRONIC V IGNITION SYSTEMS.



**INITIAL START-UP:** AFTER INSTALLING AN ANNUNCIATOR SYSTEM USING THE 690 112 POWER SUPPLY OR AFTER TROUBLESHOOTING PROCEDURE WHEN COMPONENTS HAVE BEEN CHANGED, PRESS THE STOP BUTTON ON THE ANNUNCIATOR LOGIC UNIT TO INITIALIZE THE LATCHING RELAY IN THE POWER SUPPLY. ONCE THE RELAY AND LOGIC UNIT ARE SYNCHRONIZED, THE SYSTEM CAN BE RESET FOR START-UP BY PUSHING THE RESET BUTTON. FAILURE TO PRESS THE STOP BUTTON WILL LEAVE THE SYSTEM LATCHED IN THE STOP MODE REGARDLESS OF HOW MANY TIMES THE RESET BUTTON IS PUSHED.