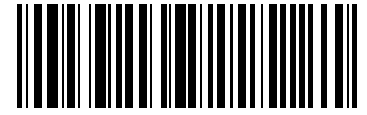


VON DUPRIN®

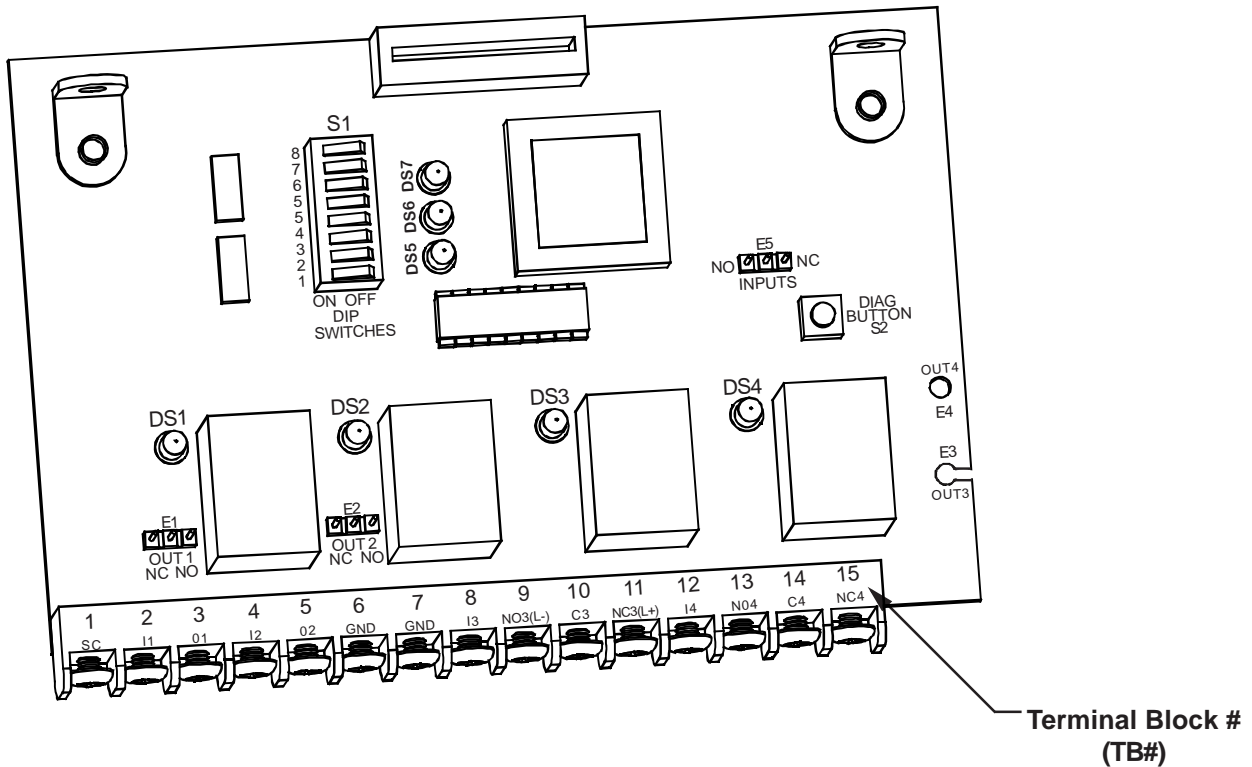
Installation Instructions



941355-00

873-DE

Delayed Egress Option Board



Read All Warnings
Before Starting Installation!

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SPECIFICATIONS

Power Requirements: PS873 Power Supply. (Refer to Von Duprin Instructions 941352 for information on PS873 and 873-BB.)

Inputs: **I1 (TB2), I2 (TB4), I3 (TB8), I4 (TB12)**

- All inputs require Listed Normally Closed (NC) isolated contacts.
- Maximum input current for each input is 50 mA at 24 VDC.
- Field wiring for each input must be less than 100 ohms. (Example: 4000 ft of 24 AWG wire.)

Outputs: **O1 (TB3), O2 (TB5)**

- Used for powering locking devices.
- Maximum rating: 2 A at 24 V. (See Notes 1 and 2 below.)
- Output voltage: 12 VDC or 24 VDC (determined by PS873 setting).
- Field wiring: Up to 500 ft of 18 AWG wire.

L+(TB11), L-(TB9)

- L+ and L- terminals are for connecting a visual indicator.
- Maximum rating: 15 mA at 24 VDC or 8 mA at 12 VDC.

NO4 (TB13), C4 (TB14), NC4 (TB15)

- Used as an alarm signal.
- Maximum rating: 1 A at 24 V. (See Notes 1 and 2 below.)
- Can be configured as isolated Form C contacts.

Notes:

1. Sum of output currents must not exceed 2 A DC.
2. During battery backup (873-BB required), output voltage rating is 10.8 to 12.0 VDC or 22 to 24 VDC.

WARNINGS

Read all warnings before starting installation!



DANGER

*To avoid risk of electric shock,
remove AC power from PS873
before installing or wiring 873-DE.*



CAUTION

**If using 873-BB Battery Backup option,
unplug all four wires from battery
terminals before installing
or wiring 873-DE.**

OPERATION SUMMARY

During Normal operation, the 873-DE is in **ARMED MODE** and the controlled door is locked. When an unauthorized user attempts to exit, the 873-DE enters **RELEASE DELAY MODE** and the door is kept locked for 15 seconds while a horn sounds. After 15 seconds, the 873-DE enters **ALARM MODE** and the door unlocks to allow egress but the alarm continues to sound.

At any time, the 873-DE can be forced into **INHIBIT MODE** by an authorized user who sends an external inhibit signal using, for example, a KS920 keyswitch. In the **INHIBIT MODE**, (1) the door unlocks, (2) the horn is disabled, and (3) all other modes are deactivated. When the external inhibit signal is removed, the door remains unlocked during a user defined **REARM** time delay of 0 to 30 seconds and then the 873-DE returns to **ARMED MODE**.

If the door position switch (optional) becomes active during **ARMED MODE**, or if the door position switch remains active after the **REARM MODE** time delay expires, the 873-DE enters **ALARM MODE**.

If the lock monitor switch (optional) becomes active during **ARMED MODE**, or if the lock monitor switch remains active after the **REARM MODE** time delay expires, then the 873-DE enters **ALARM MODE**.

An active **FIRE ALARM** input immediately unlocks the door regardless of the 873-DE's mode.

Summary of 873-DE Modes				
Mode	Lock Status	Visual Indicator ¹	Alarm Signal	Duration
Armed	Locked	Slow Flash	Off	Continuous
Release Delay	Locked	Fast Flash	On	15 seconds ²
Alarm	Unlocked	Fast Flash	On	Continuous ³
Inhibit	Unlocked	Off	Off	Continous
Rearm	Unlocked	On Solid	Off	0-30 second ⁴
Fire Alarm	Unlocked	Fast Flash	Off	Continous

- Notes:**
1. The visual indicator connects between the "NC3(L+)" and "NO3(L-)" terminals (terminals 9 and 11) on the 873-DE logic board.
 2. Other release delay times are available. Consult factory.
 3. 1993 BOCA National Building Code 1017.4.1.2 automatic reset option is available. Consult factory.
 4. The user selects the **REARM MODE** time delay by setting DIP switches. An End Rearm option may override the **REARM MODE** time delay.

PARTS LIST

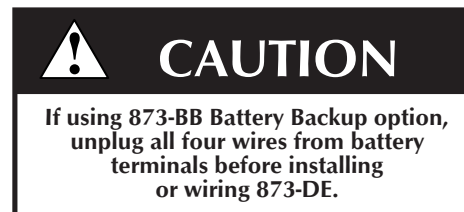
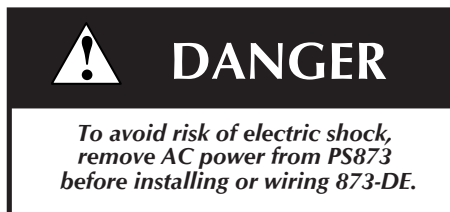
The following Von Duprin products are required for a UL Listed Delayed Egress system:

- PS873 Power Supply
- 873-FA Fire Alarm Option Board
- 873-DE Delayed Egress Option Board (one or two per PS873 Power Supply)
- Locking Device (Locknetics 320, 350 or 390 Series Electromagnetic Locks)
- RX 22/33/99 Series Device
- External Inhibit (7000 Series Card Reader, 7300 Series Keypad, KS920NL, or KS921)
- Alarm Signal (1910 Horn or KS921)
- Electrical Power Transfer (EPT2, EPT10, or by others)
- UL Listed Smoke Detector

Optional components not required by UL:

- Door Position Switch
- Lock Position Switch
- 873-BB Battery Backup

INSTALLATION



873-DE and 873-FA boards normally are factory installed on the PS873 Power Supply. Refer to Figure 1 for locations. To add or replace an 873-DE or 873-FA board, follow the procedures below. Otherwise, go to “Configuration and Wiring.”

- A.** Disconnect AC power from the PS873. (Refer to Von Duprin Instructions 941352 for information on the PS873.)
- B.** If using 873-BB Battery Backup, unplug all four wires from the batteries. (Refer to Von Duprin Instructions 941352 for information on the 873-BB).
- C.** To add or replace 873-FA board
 1. Refer to Von Duprin instructions 941352 for installation and wiring steps.

To add or replace 873-DE board

1. Connect the 873-DE as shown in Figure 1. Connect to either the left or right board edge connector.
2. Secure the 873-DE with two screws.

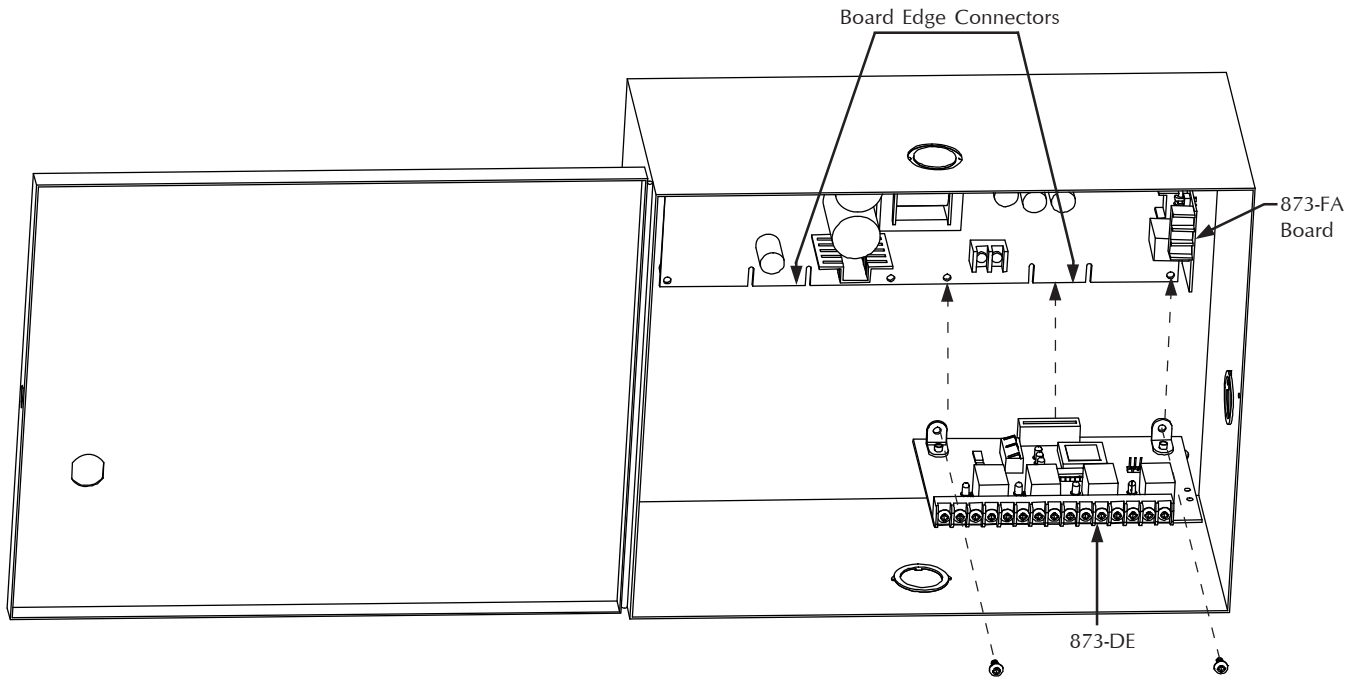


Figure 1. Installing the 873-DE.

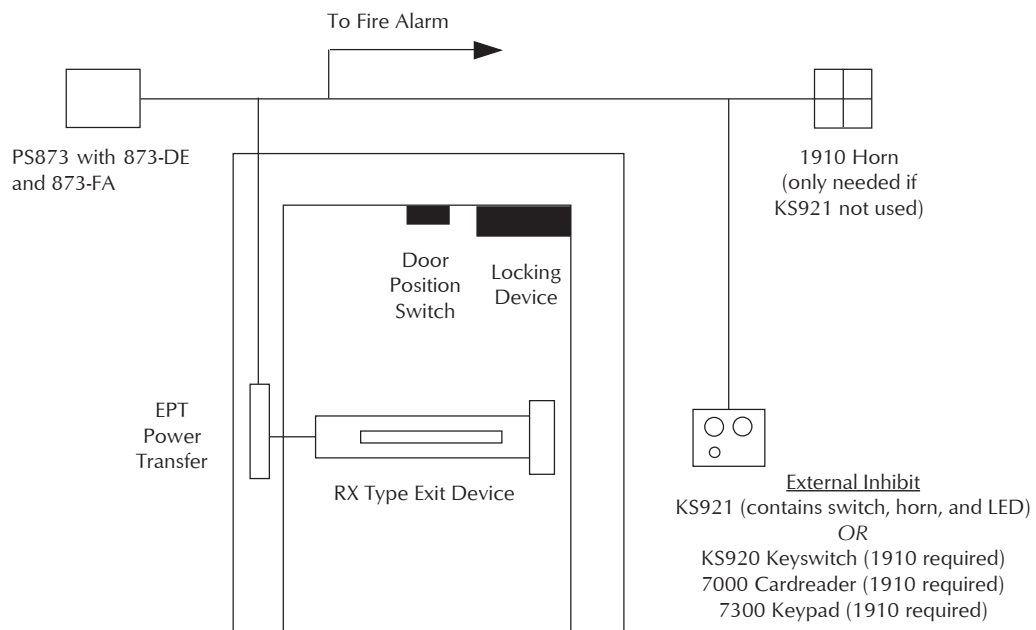


Figure 2. Approximate locations of system components.

CONFIGURATION AND WIRING



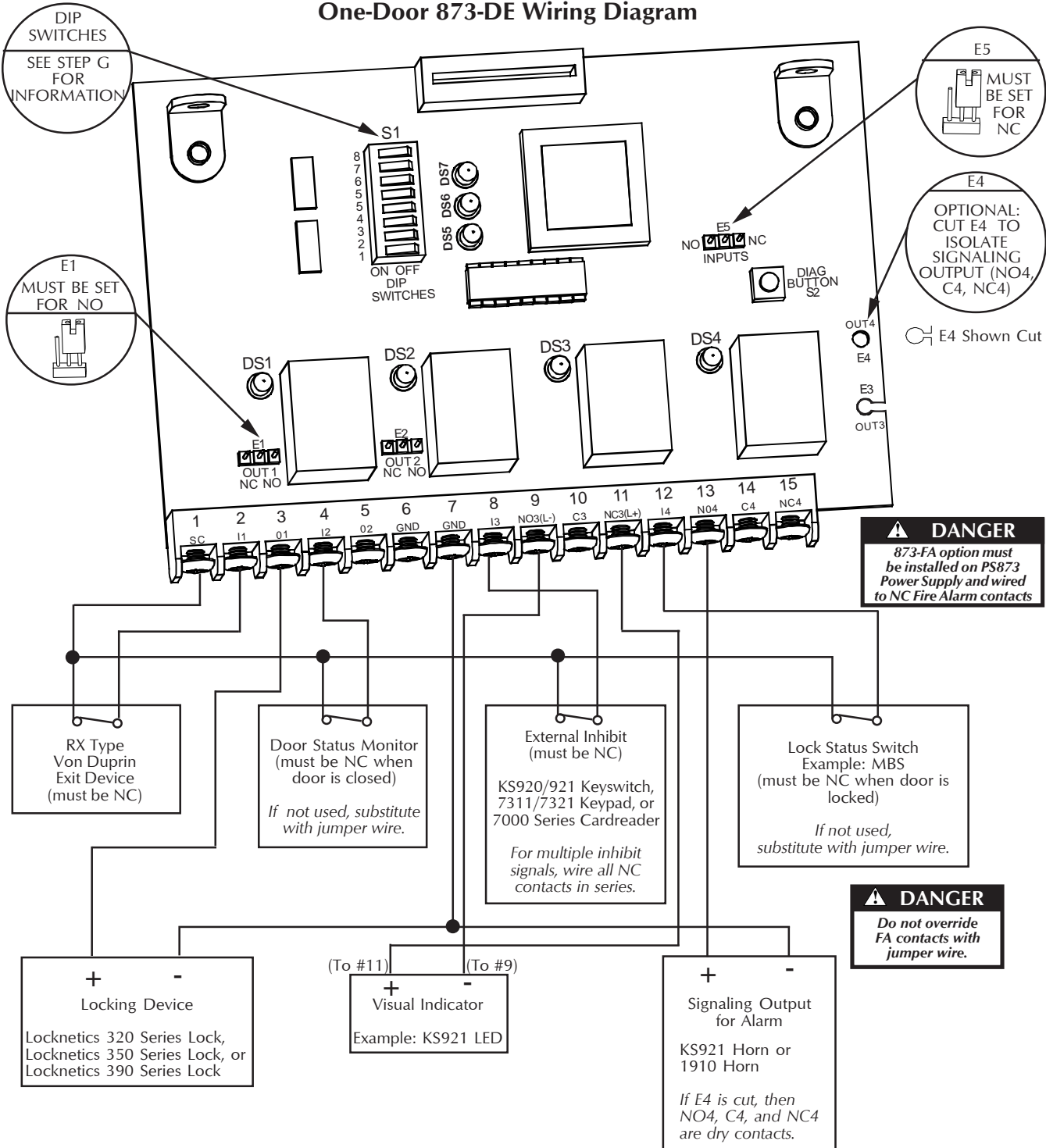
For one-door applications, go to A below.
For two-door applications, go to D next page.

⚠ DANGER

To avoid risk of electric shock, remove AC power from PS873 before configuring and wiring 873-DE.

- A. Configure jumpers E1, E4, and E5. See diagram below.
- B. Wire all input and output devices. (NO = Normally Open and NC = Normally Closed.)
- C. One door wiring complete. Go to G to set DIP switches.

One-Door 873-DE Wiring Diagram

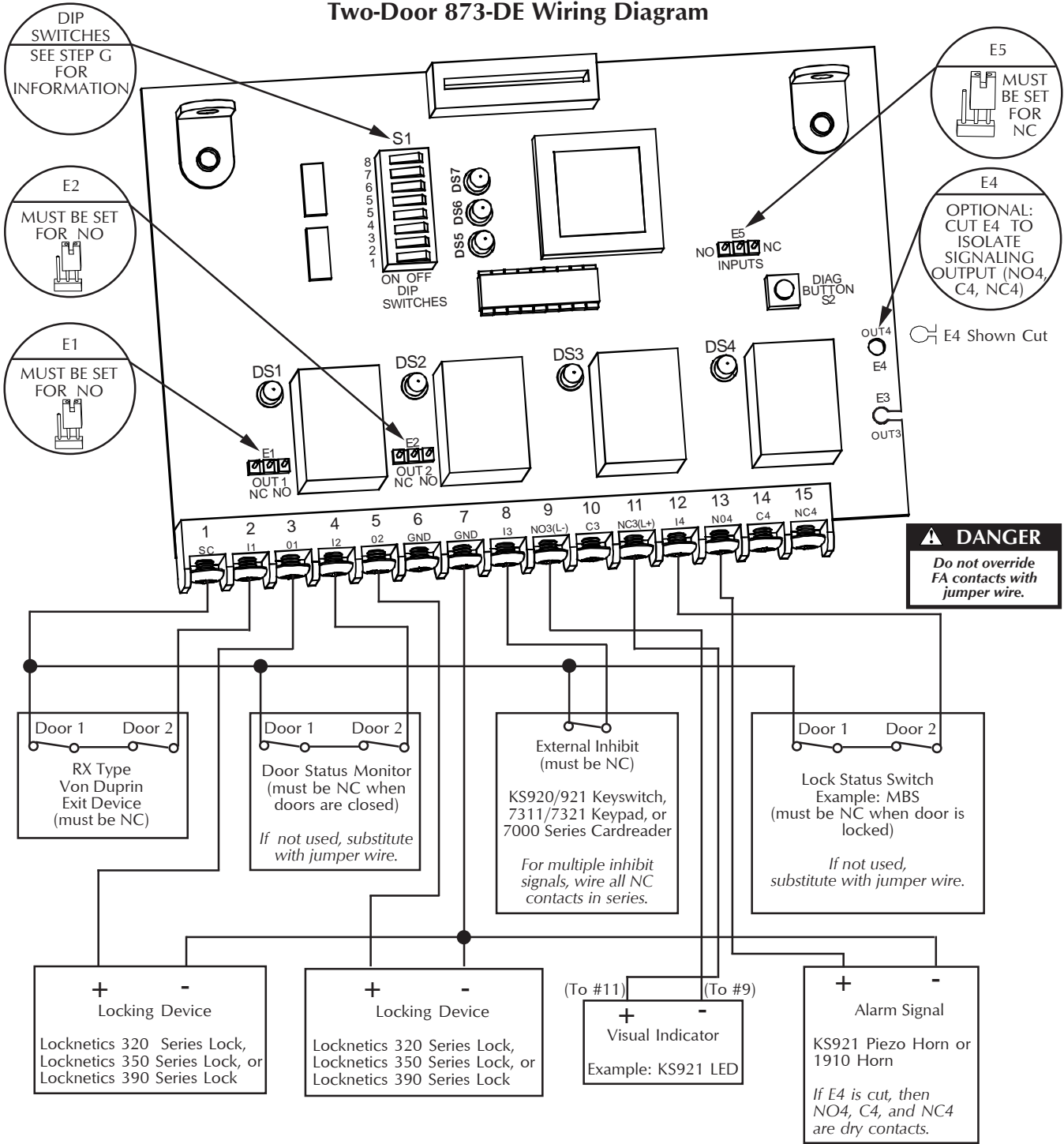


⚠ DANGER
 873-FA option must be installed on PS873 Power Supply and wired to NC Fire Alarm contacts.

⚠ DANGER
 To avoid risk of electric shock, remove AC power from PS873 before configuring and wiring 873-DE.

- D. Configure jumpers E1, E2, E4, and E5. See diagram below.
- E. Wire all input and output devices. (NO = Normally Open and NC = Normally Closed.)
- F. Two door wiring complete. Go to G to set DIP switches.

Two-Door 873-DE Wiring Diagram



G. Set the 873-DE DIP switches as needed (see table below).

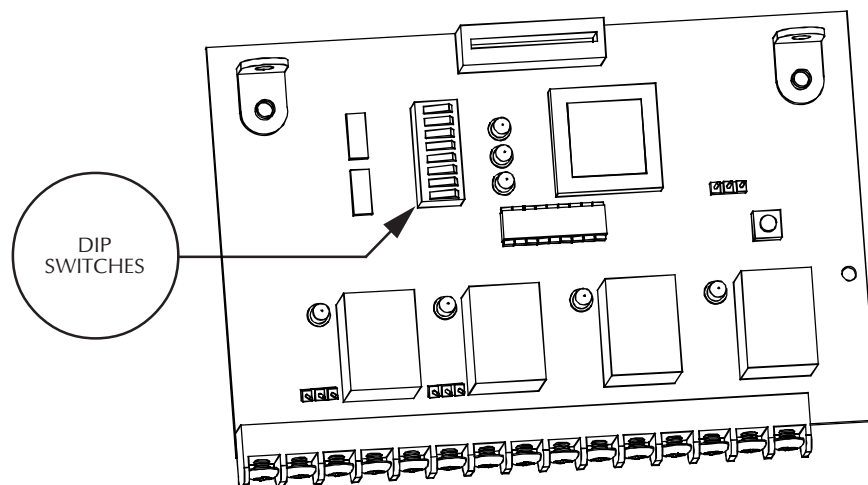
873-DE DIP Switch Definitions		
Function	DIP Switch	Description
Rearm Time 0 to 30 seconds	8	ON = Add 16 seconds to rearm time
	7	ON = Add 8 seconds to rearm time
	6	ON = Add 4 seconds to rearm time
	5	ON = Add 2 seconds to rearm time
Nuisance Time Delay	4	ON = 1 second nuisance delay, OFF = 2 second nuisance delay
End Rearm	3	ON = Enable end rearm option (requires door position switch)
Nuisance Audible	2	ON = Enable nuisance audible
Nuisance Delay Enable	1	ON = Enable nuisance delay

Rearm Time: This is the time delay that follows the release of a valid external inhibit input. Doors are unlocked during Rearm Time and lock when Rearm Time expires. (Example: Assume Rearm Time is 10 seconds and a momentary keyswitch is the external inhibit. When the keyswitch is activated, the doors unlock. The doors lock 10 seconds after the keyswitch is released.)

End Rearm: If the door opens and closes during Rearm Time, it will automatically relock 2.5 seconds after closing. (Door position switch required.)

Nuisance Delay: This option requires that a Request to Exit signal be present for greater than 1 or 2 seconds (set by DIP switch #4) before Release Delay Mode is entered. An alarm may or may not sound during the Nuisance Delay depending on the Nuisance Audible setting.

Nuisance Audible: If selected, this option will turn on output 4 during the Nuisance Delay. (DIP switch 2 must be "ON" to use this option.)



INSTALLATION TESTING

- A. Close door prior to testing.
- B. Apply AC voltage to Terminal Block TB2 on PS873. If using 873-BB Battery Backup option, reconnect wires to battery terminals. (Green LED on PS873 will be illuminated.)

C. Test 873-DE operation by performing steps 1-7 below.



1. Activate then deactivate the External Inhibit device. 873-DE will be in **REARM MODE** for up to 30 seconds (based on DIP switches 5-8). Compare with row 1 in table.
2. After rearm time expires, 873-DE enters **ARMED MODE**. Compare with row 2 in table.
3. Depress RX device (2 seconds maximum if Nuisance Delay is enabled) then release. 873-DE will be in **RELEASE DELAY MODE** for 15 seconds. Compare with row 3 in table.
4. After the Release Delay expires, 873-DE enters **ALARM MODE**. Compare with row 4 in table.
5. Hold the External Inhibit device active. 873-DE will enter **INHIBIT MODE**. Compare with row 5 in table.
6. Deactivate External Inhibit and wait (0 - 30 seconds) for doors to relock.
7. Open Fire Alarm contacts to enter **FIRE ALARM MODE**. Compare with row 6 in table. Clear fire contacts and toggle External Inhibit to clear **FIRE ALARM MODE**.

Summary of 873-DE Modes												
Door System Status						873-DE LED Status (FL = flash)						
Row	Mode	Lock Status	Visual Indicator ¹	Alarm Signal	Duration (seconds)	DS1	DS2	DS3	DS4	DS5 ²	DS6	DS7
1	Rearm	Unlocked	On Solid	Off	0-30	Off	Off	Off	Off	Off	FL	FL
2	Armed	Locked	Slow Flash	Off	Continuous	On	On	Off	Off	Off	Off	FL
3	Release Delay	Locked	Fast Flash	On	15	On	On	Off	On	Off	FL	FL
4	Alarm	Unlocked	Fast Flash	On	Continuous	Off	Off	Off	On	Off	Off	FL
5	Inhibit	Unlocked	Off	Off	Continuous	Off	Off	Off	Off	On	Off	FL
6	Fire Alarm	Unlocked	Fast Flash	Off	Continuous	Off	Off	Off	Off	Off	On	FL

- Notes:**
1. The visual indicator connects between the 873-DE's ""NC3(L+)"" and ""NO3(L-)"" terminals.
 2. If using a door position switch, DS5 turns on when door is open. If using an HFS, DS5 turns on when lock is not powered or when door is open.

LED DESCRIPTIONS

LED #	Color	Operation
DS1	Red	ON when output 1 is closed (powered)
DS2	Red	ON when output 2 is closed (powered)
DS3	Red	Not used on 873-DE board.
DS4	Red	ON when output 4 is closed (powered)
DS5	Green	ON when at least one input is active
DS6	Red	Flashes during time delay countdown; ON solid during active Fire Alarm condition
DS7	Yellow	One flash per second indicates proper operation; three flashes per second indicate factory mode (turn AC power OFF, then ON, to clear factory mode)

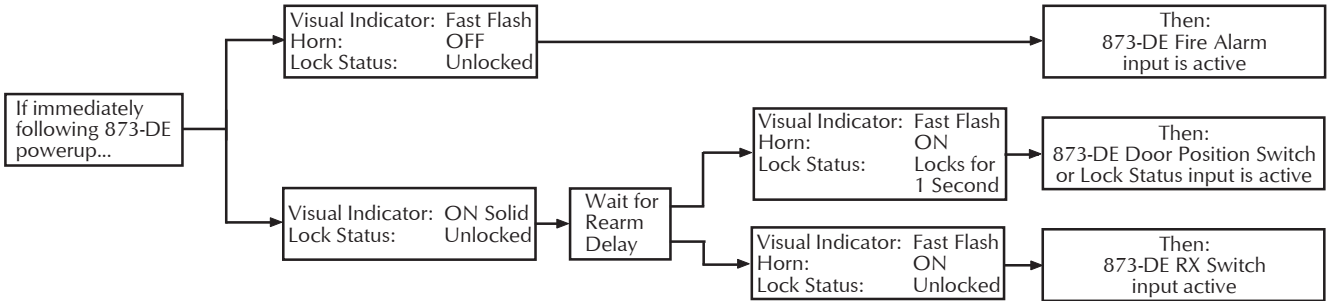
QUICK TROUBLESHOOTING

DANGER

*To avoid risk of electric shock,
remove AC power from PS873
(and disconnect 873-BB if applicable)
before correcting wiring problems.*

DANGER

*If troubleshooting is unsuccessful,
remove AC power from 873-DE
(and disconnect 873-BB if applicable)
and consult factory.*



DETAILED TROUBLESHOOTING



DANGER

To avoid risk of electric shock, remove AC power from PS873 (and disconnect 873-BB if applicable) before correcting wiring problems.



DANGER

If troubleshooting is unsuccessful, remove AC power from 873-DE (and disconnect 873-BB if applicable) and consult factory.

Symptom	Problem	Solution (apply and return to "Installation Testing")
DS7 yellow LED not flashing	873-DE does not have power	Apply AC voltage to PS873. Green LED on PS873 should illuminate.
Outputs not responding to inputs and DS6 red LED on	Fire alarm contacts open	Verify fire alarm contacts are closed and wired between the FA terminal and the COM terminal on the 873-FA board, then toggle inhibit switch.
Outputs not responding to inputs and: DS5 green LED off, DS6 red LED off	Incorrect input switch wiring	Each input switch must be wired between Signal Common (terminal 1) and the correct input terminal (either 2, 4, 8, or 12). All switches must be NC.
	Incorrect output wiring	One-door applications require a lock wired between O1 (terminal 3) and GND. If a second lock is used, it must be wired between O2 (terminal 5) and GND (see "Configuration and Wiring").
Outputs not responding to inputs and: DS5 green LED on, DS6 red LED off	DS5 green LED on means one input is already active	Use voltmeter to measure voltage at input terminals 2, 4, 8, and 12 with respect to GND (terminal 6 or 7). If an input measures 0 VDC, it is active.
	Door position switch and/or lock status switch not used	If a door position switch is not used, connect wire jumper between SC (terminal 1) and I2 (terminal 4). If a lock monitor switch is not used, connect wire jumper between SC (terminal 1) and I4 (terminal 12).
Outputs not responding to inputs and: DS5 green LED off DS6 red LED flashing	A time delay is active (873-DE is in REARM MODE or RELEASE DELAY MODE)	Wait for time delay to expire (less than 1 minute).
Outputs not responding properly to inputs or time delays not correct	Wiring problem	Check all wiring (see "Configuration and Wiring").
	Incorrect jumper setting	Refer to "Configuration and Wiring" and verify that E1 and E2 are set for NO and that E5 is set for NC.
	Incorrect DIP switch setting	Verify DIP switches correctly set (see "Configuration and Wiring" step G).