



MANUAL RESET ALARM RELEASE BOX

Firefly[®] BB

Model AR-D2

(v4)

With Battery Backup

(For 100~240VAC or 24VAC or 24VDC)

INSTRUCTION MANUAL

WARNING

1. CAUTION: Review all installation instructions, procedures, cautions and warnings contained within this manual prior to installing and/or servicing this product. As with all releasing device systems, maximum fire protection is provided when installed in accordance with factory specifications.
2. Installation and testing to factory specifications shall be performed by factory authorized personnel for proper operation in accordance with all of the latest National fire Protection Association (NFPA), Underwriters Laboratories (UL), National electrical Code (NEC), local, state, county, district and/or other applicable building and fire standards, guidelines, regulations and codes including, but not limited to, all appendices and amendments and the requirements of the local authority having jurisdiction (AHJ).
3. To be performed by factory authorized personnel only.
4. Clear fire door opening and prohibit all traffic through door opening during testing of system!

Installation Tip: Try out this unit before installing onto a fire door system. Test and learn the release mechanism before connecting to a fire door.

INTRODUCTION

The releasing device is a failsafe constantly energized solenoid mechanism. It is designed for use on rolling doors, single-slide and center-parting level and inclined track doors, which use gravity or spring tension to close during alarm release. Inside the mechanism, contact relays receive the alarm signal from the fire alarm control panel. When the unit receives the signal, the power to the solenoid is cut, releasing the fire door mechanism and hence close the fire door. The alarm signal can be Form C dry contact. Any interruption of power will release the solenoid mechanism. The release has a 10 second delay upon power failure and alarm, closed door detection capabilities, Form C relay outputs for the status of release box and 24VDC power output for door close warning.

SPECIFICATION

Input Power Rating:	100-240VAC, 0.5A; 24VAC, 1.0A; 24VDC, 0.6A
Alarm Dry Contact Rating:	12.2 ohms max line impedance
Lower Limit Microswitch Rating:	12.2 ohms max line impedance
Door Close Warning Power:	24VDC @Max. 0.5A
Status Dry Contact:	Rating: 24VDC/VAC, 0.5A Max. Resistive Load
Frequency:	50Hz or 60Hz
Release Pull:	50 lbs (22.7kgs)
Fuse:	F1 & F2: 2A@250V, Fast-Act Type
Battery Rating:	12VDC, Max. 12AH Sealed Lead Acid Rechargeable Battery, Maximum charge current 0.55A
Battery Standby Time:	168 Hours

Input voltage [standby/full load current]: 100~240VAC [0.15~0.1A/0.5~0.25A], 24VAC [0.5/1.0A] or 24VDC [0.2/0.6A]

*Full load current only required for optional warning device(s).

- 24V input power can be 24VDC or 24VAC from power supply listed for fire, with regulated outputs.
- 18-gauge wire recommended.
- For “Indoor Dry” location use only.
- Close warning power is provided from when alarm occurs until door reaches close limit. Any fire Listed audible device may be used. And not for connection to strobes or any other type of device that requires synchronization.
- **Note: Door Close Warning Output is only functional when the box has input power or sufficient battery back up power during battery standby time.**

INSTALLATION



Disconnect power supply before servicing.

- For “Indoor Dry” location use only. All wiring must satisfy the most current version of NFPA72 – National Fire Alarm Code and the National Electric Code.
- 18-gauge wire is recommended.

INSTRUCTION & DRAWING

1. Actual configuration may differ. Must pull straight cable minimum 18 inches before turning (This unit may be rotated 90 degrees CW for a vertical pull.). See door manufacturer recommendations and NFPA 80 for use of this product with specific door. Must connect to fire alarm control panel or local smoke detector.
2. To be performed by factory authorized personnel only.
3. The release device shall be mounted on a vertical surface with chain end link exiting side of enclosure as illustrated on figure 1. The unit may be rotated 90 degrees CW for a direct vertical pull.

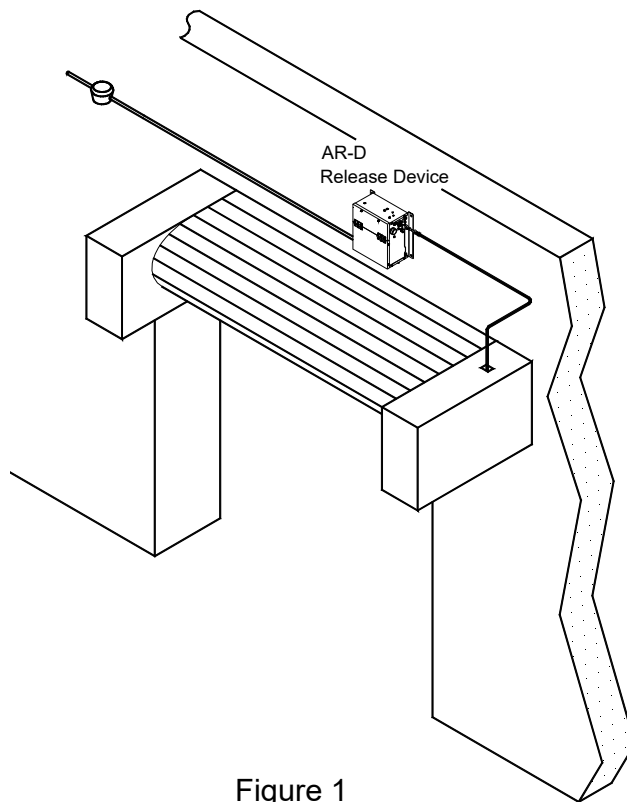


Figure 1

4. Release device and associated hardware (if required) [sash chain or 1/16 cable, eyebolts, fusible links, turnbuckles] shall be installed as per door manufacturers recommendations (figure 1 typical installation configuration). Note should be taken that the end link direction of pull is perpendicular to the enclosure side. An eyebolt installed at a distance of 18 to 24 inches from the release device should adequately redirect sash chain pull as illustrated in figure 1. Please also see figure 2 for illustration.

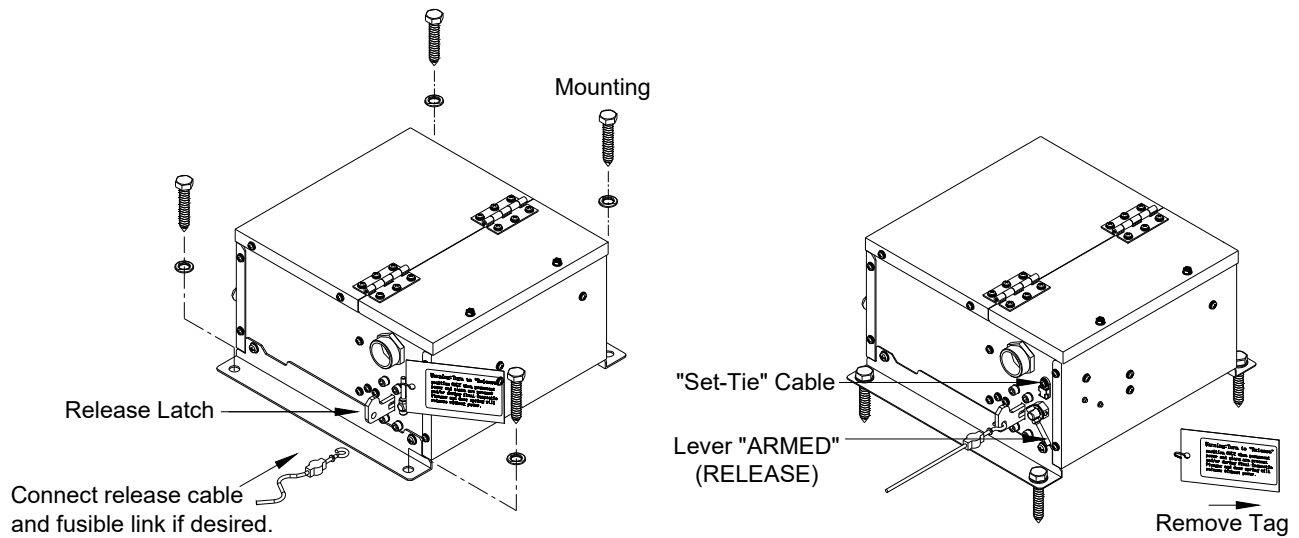


Figure 2



Disconnect power supply before servicing.

5. ELECTRICAL CONNECTIONS

Installation of all wiring and connections shall be performed in accordance with, but not limited to, the latest NFPA, U.L. and N.E.C. standards. In addition, all installations subject to Canadian standards shall be performed in accordance with the Canadian Electrical Code, Part I, with respect to wiring material, wiring gauge related to power capacity requirements and circuit length and wiring methods.

6. Verify voltage rating of release device to power source being utilized.
7. Connect release cable and fusible link (if desired) as shown in Figure 2.
8. Connect power and alarm connection to the unit.
9. Remove the “Set-Tie” cable after power and alarm connection.

“Set-Tie” cable mechanically secures release latch and must be removed to allow proper emergency operation of release device after installation is completed.

NOTE: A trouble sounder will be activated if power is present, the latch is engaged, but the “Set-Tie” has not been removed and/or the lever is in the “DIS-ARMED” position.

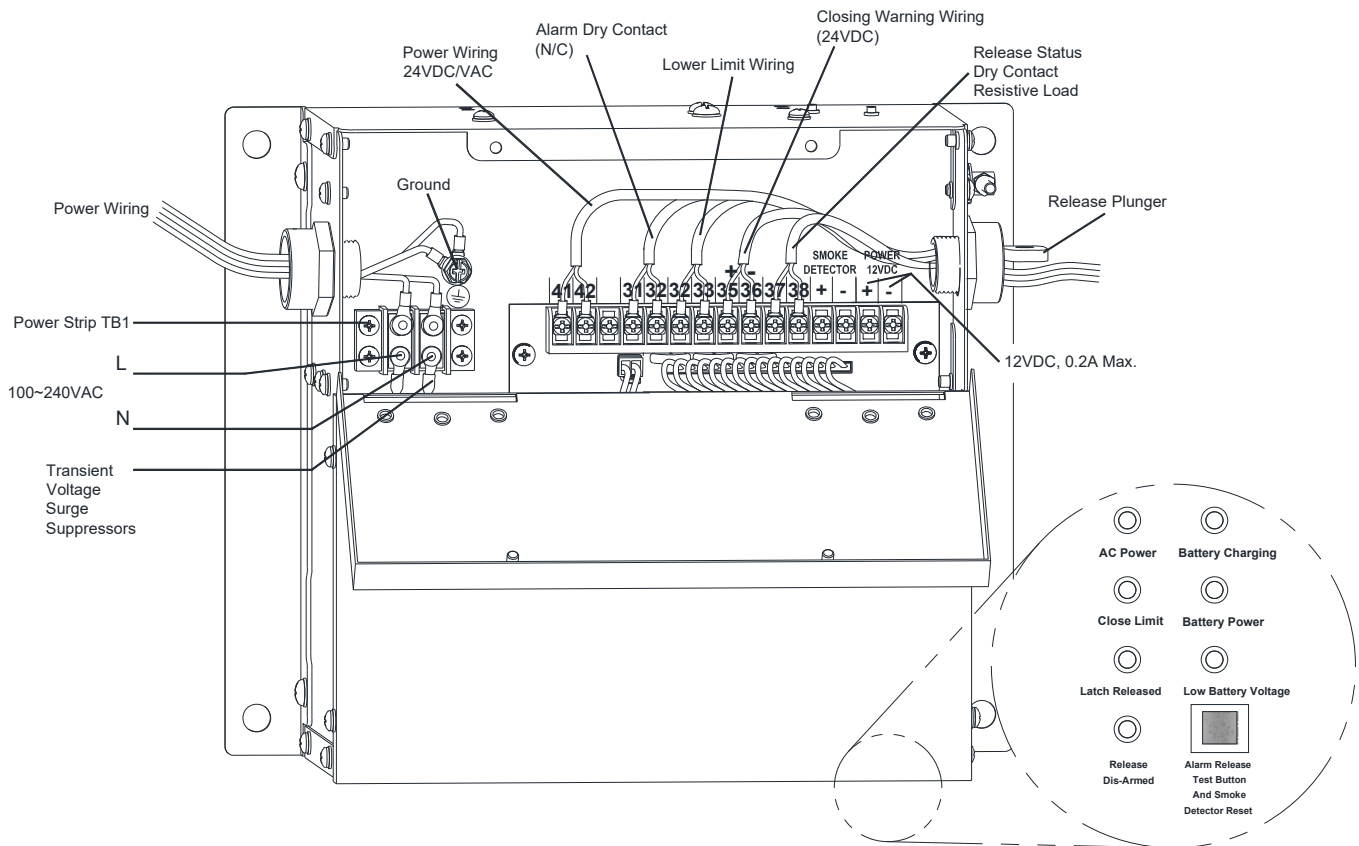
WIRING



Disconnect power supply before servicing.

WIRE ROUTING

AR-D2



Note: Non-supervised.

TERMINAL CONNECTIONS



Disconnect power supply before servicing.

TB1

L	N
Input power 100-240VAC*	

See **Note 7**

CN2

41	42	31	32	33	35 (+)	36 (-)	37	38	Smoke Detector		Power 12VDC	
									+	-	+	-
Input 24VDC/VAC *Note 7		Alarm Dry Contact (N/C) Max. Short circuit current 6mA, 14.7VDC *Note 1			Door closing warning 24VDC, 0.5A Max. Regulated *Note 3		Release dry contact *Note 4		Smoke detector connection 12VDC/24VDC, 1.85mA Max. Power-limited, Special application (See Page 11 for connection details) Compatibility ID: SD2W-1 *Note 5		12VDC output power, 0.2A Max. Special Application (See Page 12 for connection details) Compatibility ID: SD4W-1 *Note 6	
			Lower Limit Microswitch (N/C) 3mA, 14.7VDC *Note 2									

* Wirings on CN2 (35,36), Smoke Detector (+, -) and Power 12VDC (+, -) are limited to be connected within 20 feet in conduit.

*** Notes:**

1. Terminal 31&32

Building fire alarm panel needs to provide dry contact (N/C) connection or connect wiring to (N/C) 4-wire Class B initiating device loop with 12.2 ohms max line impedance.

2. Terminal 32&33

Use this connection to notify release device the status of the door. Field installation of microswitch/proximity sensor on the door or connection to an extra limit switch in the door operator is necessary to use terminal 32&33.

When the door is already in its close position, a closed contact (N/C) can cause the release device not to release (12.2 ohms max line impedance). Power failure will still cause the solenoid to let go, hence resetting is necessary.

3. Terminal 35&36

This connection provides 24VDC, 0.5A power with 18AWG wire for maximum of 20 ft., when release device has been released. This can be used to provide power for warning devices. The warning power is provided from when alarm occurs until door reaches close limit. The wiring connections are enclosed within conduit or equivalently protected against mechanical injury.

4. Terminal 37&38

These terminal connections will provide the status of this release device. When release device is in the standby mode, connection is open (N/O). When release device have been activated or released, connection would be in closed (N/C) state (12.2 ohms max line impedance).

5. Smoke Detector (+, -)

2-wire 12/24VDC smoke detector connection points. In serial connection max. 4 detectors can be connected.

6. Power 12VDC (+, -)

12VDC output power, 0.2A Max. In serial connection max. 4 detectors can be connected.

7. See connection chart for power inputs.

Connection Chart

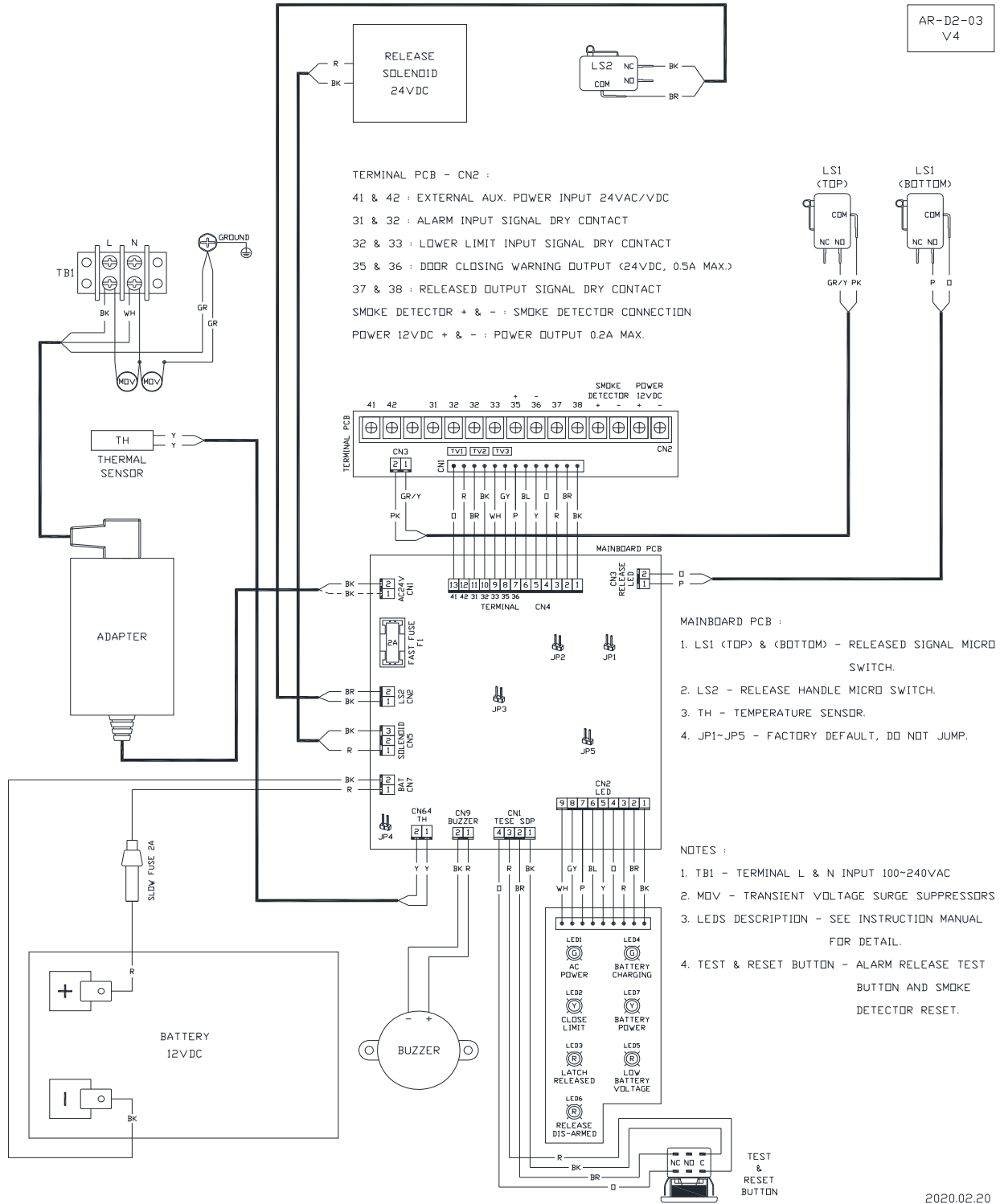
Power Connection Type	AR-D2 Terminals	
	Line In Term: L & N (100-240VAC High Voltage)	Low Voltage Term: 41 & 42 (24VDC or 24VAC)
Alarm Dry Contact Signal	Battery must be good and connected	
	Term: 31&32 Connect FACP* Alarm Dry Contact (12.2 ohms max line impedance)	Term: 31&32 Connect FACP* Alarm Dry Contact (12.2 ohms max line impedance)

*Note: FACP – Fire Alarm Control Panel.

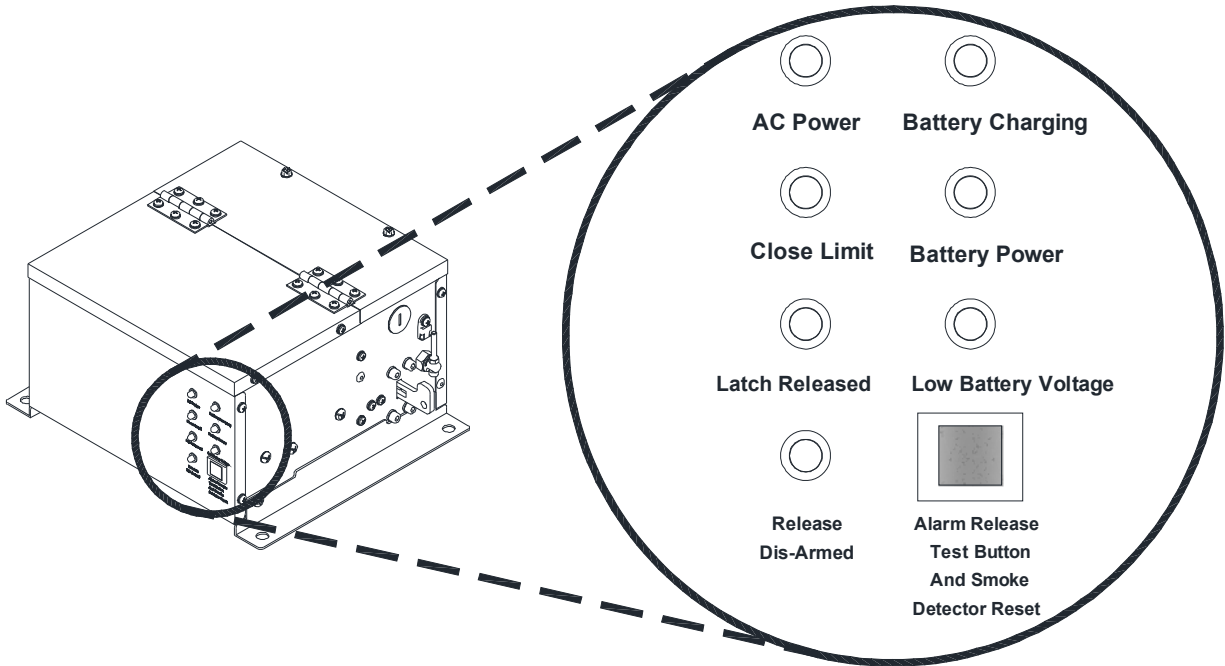
*Power must be removed with an alarm condition in order for unit to release.

WIRING DIAGRAM

AR-D2 WIRING DIAGRAM
(100~240VAC 1 PHASE or 24VAC/VDC)



LIGHTS INDICATION



Release Status	Light	Normal	Abnormal
AC Power	Green LED G	Power on	Power off
Battery Charging	Green LED G	Charging	Not Charging
Close Limit	Yellow LED Y	Door Not at Close Limit	Door at Close Limit
Battery Power	Yellow LED Y	Not Being Used	Being Used
Latch Released	Red LED R	Not Released	Released
Low Battery Voltage	Red LED R	Voltage Normal	Low Battery Voltage
Release Dis-Armed	Red LED R	Armed	Not Armed

BATTERY SPECIFICATION & CONNECTION

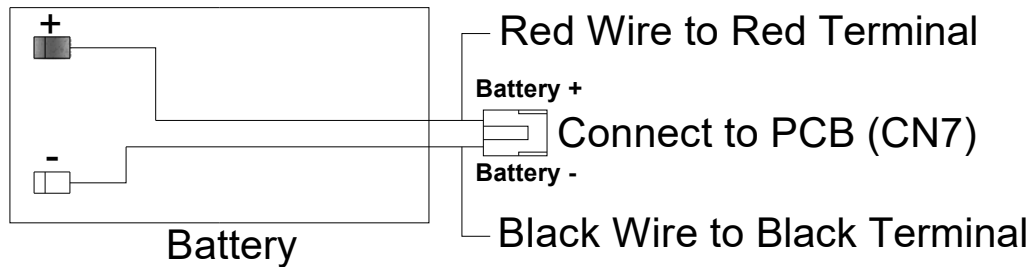
Specification:

Type	Battery Rating	Battery Expected Standby Operating Time(s)
Sealed Lead Acid Rechargeable Battery	One (1) 12VDC, Max. 12AH	168 Hours



This unit has an internal battery that may still be charged and holding the door from releasing even in the event of a loss of line power.

Connection:



Charging Voltage:	14.7VDC
Charging Current:	Max. 0.55A

- Low battery voltage warning light indication is provided when battery voltage drops below 10VDC.

CONNECTIONS OF INITIATING DEVICES AND ACCESSORIES

Normally Open 2-wire Class B initial devices:

A maximum of 4 “2-Wire” smoke detectors may be installed with this device.

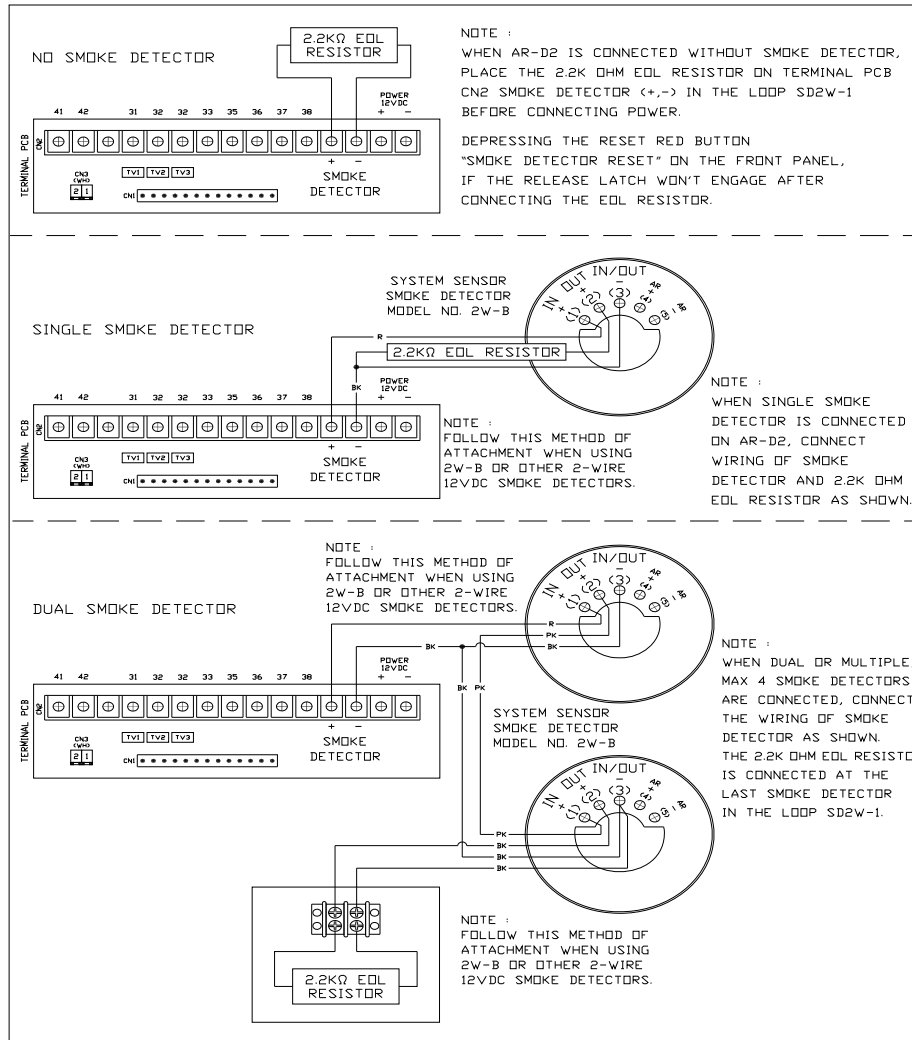
- Field wiring shall consist of 18 AWG wiring.
- Normally open 2-wire Class B initial devices connected on terminal board CN2 smoke detector (+) & (-), Loop SD2W-1.
- The line impedance should be less than 6 Ohm.
- Keep 2.2k Ohm resistor between CN2 (+) & (-) if 2-wire smoke detector is not used.
- The suitable models of smoke detector for connecting to Loop SD2W-1.

Manufacturer	System Sensor
Model	2W-B, 2WT-B, C2W-BA, C2WT-BA, 2151, 2151T, 2151A, 2151TA

- Use one model only for smoke detector circuit connections.

Loop SD2W-1 wiring connections:

AR-D2 SMOKE DETECTOR WIRING DIAGRAM



Normally Close 4-wire Class B initial devices:

A maximum of 4 “4-Wire” smoke detectors may be installed with this device.

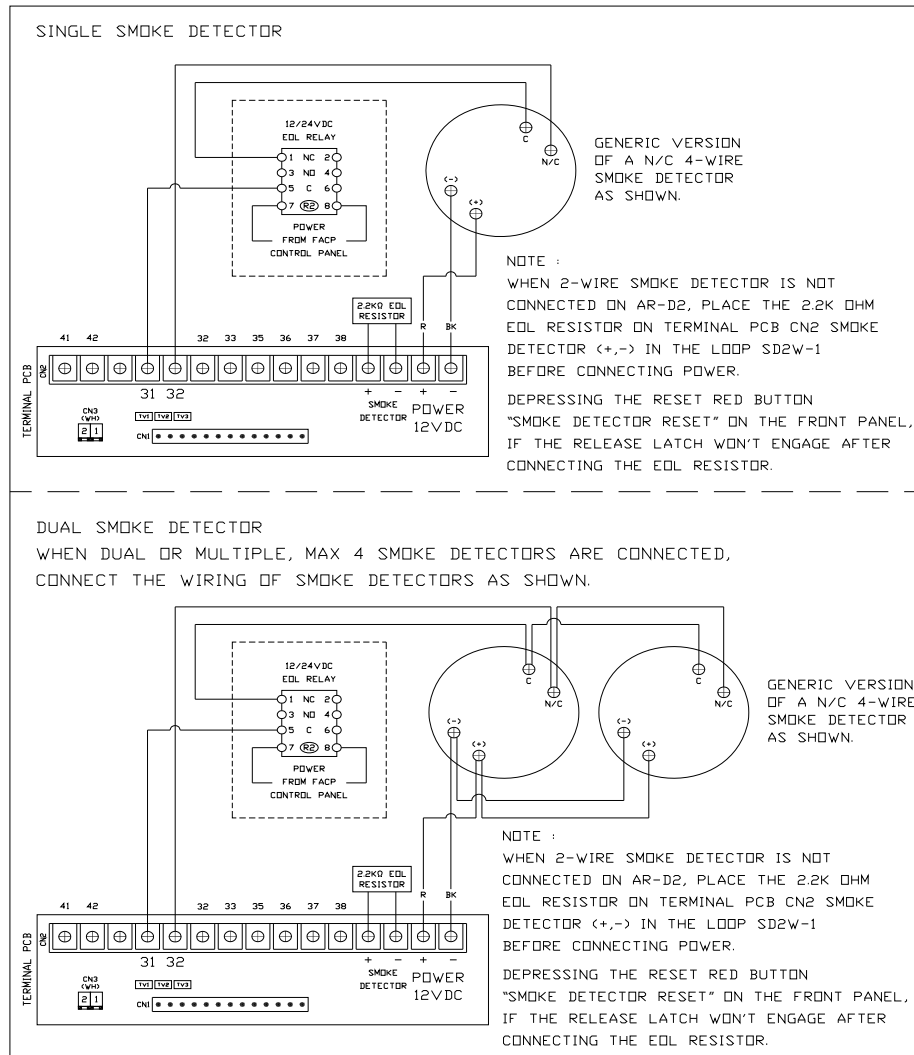
- Field wiring shall consist of 18 AWG wiring.
- When using 4-wire smoke detectors with this device, electrical supervision can be provided by connecting a UL/ULC listed EOL relay.
- Keep 2.2k Ohm resistor between CN2 (+) & (-) if 2-wire smoke detector is not used.
- The suitable models of smoke detector for connecting to Loop SD4W-1.

Manufacturer	System Sensor
Model	4WTR-B, 4WTAR-B, 4WITAR-B, C4WTR-BA, C4WTAR-BA, BEAM1224

- Use one model only for smoke detector circuit connections.

Loop SD4W-1 wiring connections:

NORMALLY CLOSE “ 4-WIRE ” CLASS B INITIATING DEVICE
AR-D2



TESTING

1. Simulate an alarm condition and see if the solenoid disengages and releases the fire door.
2. Reset and simulate power failure to verify solenoid disengages, latch releases and fire door closes.

RESETTING

1. Make sure power and alarm connection is normal.
2. Push the release latch all the way back into the slot.
3. Verify the solenoid is holding.

Note: If the power or the alarm is not normal, solenoid will not hold. Hence the release latch will not stay in the slot.

MAINTENANCE INSTRUCTIONS



Disconnect power supply before servicing.

Check the following items at the intervals listed:

CHECK LIST	DESCRIPTION	EVERY 3 MONTHS	EVERY 6 MONTHS	EVERY 12 MONTHS
Fasteners	Check & tighten as required		●	
Drop-test	Inspect door, drop-test for proper operation and full closure per NFPA-80			●
Battery	Check battery voltage must higher than 11.5VDC		●	

- ❖ Inspect and service whenever a malfunction either door or release device is observed or suspected.
- ❖ Before servicing, always disconnect power supply to the release device.
- ❖ Replace fuses only with those of the same type and rating.
- ❖ Battery changes every 2 years or fail to charge whichever comes first. The change procedure describe in battery specification and connection.
- ❖ All replacement parts must be obtained from the door manufacturer per NFPA-80.

Testing of the release device is independent of, and shall in no way be interpreted as an alternative method of, testing of the fire alarm system, and/or any other system component employed on the fire door or counter fire door installation. TESTING SHALL BE PERFORMED AND WITNESSED FOR PROPER OPERATION.