

D2071A

① 12 VAC, 20 VA, 60 Hz or +24 VDC

② 12 VAC, 20 VA, 60 Hz or -24 VDC

③ EARTH GND

④ BATTERY -

⑤ BATTERY +

⑥ INITIATING A1 -

⑦ INITIATING A2 -

⑧ INITIATING B1 +

⑨ INITIATING B2 +

⑩ SUPERVISORY HI

⑪ SUPERVISORY LO

⑫ SUPERVISORY HI

⑬ TBL RELAY NC

⑭ TBL RELAY COM

⑮ TBL RELAY NO

⑯ ALARM RELAY NC

⑰ ALARM RELAY COM

⑱ ALARM RELAY NO

BOSCH

D2071A

Digital Alarm Communicator Transmitter Listed for Central Station or Remote Station Service.

Slide Cover Back to Access Programming Jack and Relays

Phone Fail LED

Replace battery every 3 to 5 years with model no. **D126** (12 V, 7 Ah) or **D1219** (12 V, 2.5 Ah). Do not use the D1219 for NFPA 72 applications. Maximum charging current 300 mA.

Alarm Initiating Circuit
Connect to alarm initiating devices, or to a dry alarm output of an existing FACP. See the installation manual. Waterflow retard/reset times: 0-90 sec.

Supervisory Circuits
Connect up to 20 supervisory devices per circuit, or to a dry trouble output of an existing FACP. See installation manual for wiring and programming.

Telephone Trouble Relay
Must have D136 relay in socket K5 for optional remote trouble indication.

Alarm Relay for Initiating Circuit
Must have D136 relay in socket K6 for optional remote alarm indication.

This equipment should be installed in accordance with NFPA 72. Printed information describing proper installation, operation, programming, and maintenance is provided for this equipment in the *D2071A Operation and Installation Guide* (PIN: 74-06200-000).

For testing, repair service, and evacuation planning, refer to your Fire Alarm System operation instructions.

Battery capacity for emergency standby:
NFPA 72: At least 24 hours, plus 5 minutes of alarm operation.

Alarm Initiating Circuit (Zn 1) = _____
Supervisory Circuit (Zn 2) = _____
Supervisory Circuit (Zn 3) = _____

All input/output connections are inherently low voltage, power limited. Use UL listed power limited cable only.

Use optional relay Model No. D136 (max. rating 2 A, 30 VDC).

Fire Systems

Operation & Installation Guide
EN Fire Alarm Control Panel

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FCC Notice

The D2071A Fire Alarm Control Panel (FACP) generates, uses, and can radiate radio frequency energy. If this device is not installed according to the manufacturer's instructions, it can cause interference to radio communications. The D2071A was tested and complies with the specifications in Subpart J of Part 15 of Federal Communications Commission (FCC) Rules for Class "B" Computing Devices.

If the D2071A interferes with radio or television reception, determined by turning the radio or television on and off, correct the interference by one or more of the following:

- Reorient the radio or television antenna.
- Connect the AC transformer to a different outlet so the D2071A and radio or television are on different branch circuits.
- Relocate the D2071A with respect to the radio or television.

If necessary, consult an experienced radio and television technician for additional suggestions on correcting interference. You can also send for the FCC's *Interference Handbook* (stock no. 004-000-00450-7) at:

U.S. Government Printing Office
Washington D.C. 20402

The D2071A Control Panel is registered with the FCC under Part 68 for connection to the public telephone network using an RJ31X or RJ38X jack installed by your local telephone company.

FCC Registration Number: AJ9USA-61104-AL-E
Ringer Equivalence: 0.0B (AC); 1.3B (DC)

1.0 Overview

The D2071A Fire Alarm Control Panel (FACP) is a three-zone digital alarm communicator transmitter (DACT) used in limited stand-alone applications or in off-premises monitoring of existing FACP's in slave applications.

Zone 1 is a Class "A" (NFPA Style D) alarm initiating circuit. It can monitor waterflow or other alarm initiating devices in a stand-alone application. Zone 1 can also monitor an alarm output in a slave application.

Zones 2 and 3 are Class "B" (NFPA Style A) supervisory circuits that monitor sprinkler supervision devices such as valve tampers in a stand-alone application or trouble outputs in a slave application.

Primary and alternate telephone outputs allow the D2071A to communicate to the central station or remote station. A built-in telephone line supervision circuit with trouble buzzer, LED, and optional Form "C" Relay provides local telephone line trouble annunciation for both telephone lines. The D2071A also provides an optional Form "C" Relay output for alarm annunciation on the alarm initiating circuit.

The D2071A is housed in a red plastic, nonconductive enclosure that insulates the device from surrounding circuit boards or metal surfaces. You can mount the D2071A in fire alarm control enclosures specified in *Table 1* on page 5.

1.1 Communicator

The D2071A uses a built-in communicator to transmit reports to a digital receiver. Two RJ31X or RJ38X jacks connect to two separate telephone lines for primary and alternate transmissions. The D2071A has full telephone line seizure and complies with FCC regulations for using the public telephone network.

You must program two receiver telephone numbers for the D2071A. Initially, the communicator attempts to transmit reports to the primary telephone number. If it cannot, the communicator switches to the alternate number. Reports are transmitted to the receiver in binary frequency-shift keying (BFSK) format or pulsed fast single round format. The communicator only accepts the 2300 Hz acknowledgment tone. It is compatible with most major digital receivers that accept the BFSK or Pulsed Fast Single Round format, and generates a 2300 Hz acknowledgment tone.

1.2 RFI and Lightning Protection

The D2071A resists radio frequency interference (RFI) and high-voltage surges common to lightning areas. Spark gaps and metal oxide varistors (MOVs) give the D2071A additional electrical protection.

1.3 Materials Included

1.3.1 D2071A

The D2071A is shipped completely assembled and includes:

- Installation literature
- End-user information label
- 15 in. (2.7 cm) double-sided adhesive strips (2)
- Mounting screws and washers (2)
- Strain relief cable tie (1)
- 32 in. (81 cm) dual connector battery leads
- 1.8 k Ω end-of-line (EOL) resistors for Zone 2 and Zone 3 supervision circuits (2)

1.3.2 D2071AC

The D2071AC Kit include the D2071A and:

- Installation literature
- End user information label (1)
- Mounting screws and washers (2)
- Strain relief cable tie (1)
- 32 in. (81 cm) dual connector battery leads
- 1.8 k Ω EOL resistors for Zone 2 and Zone 3 supervision circuits (2)
- D4103R Enclosure (1)*
- D161 Telephone Cords (2)
- Conduit support washers (2)

* The D4103R includes a D2002 Mounting Plate and a Basler Electric Transformer (Model A9115 [P/N: 58-06306-000]) installed in the enclosure. This transformer is Underwriters Laboratories, Inc. (UL) recognized, Class II rated for 20 VA at 12 VAC. It uses pigtailed to hard wire directly to a 110 VAC or 120 VAC power source.

1.4 Required Materials

Table 1 lists additional parts necessary to install the D2071A.

1.5 Listings and Approvals

UL lists the D2071A DACT under UL Standard 864, Control Units Fire Signaling Systems and 1635, Digital Alarm Communicators for NFPA 72 Central Station Signaling Service and NFPA 72 Remote Station Signaling Service. Install the D2071A according to NEC Article 760 of the NFPA 70. Additional approvals are Factory Mutual (FM), California State Fire Marshal (CSFM), and New York City-Material Engineering Association (NYC-MEA).

Table 1: Required Materials

Item	Description
D126 Battery	Use a 12 V, 7 Ah battery for NFPA 72 remote station stand-alone applications. Must provide 60 h of standby plus 5 min of alarm operation. Use only in 12 VAC Mode.
D129 Battery	Only use 12 V, 2.3 Ah battery for NFPA 72 central station applications. Must provide 24 h of standby. Use only in 12 VAC Mode.
D136 Relay 1 or 2 (optional)	Use one relay to enable the Phone Line Trouble Relay (K5) and use the other relay to enable the Initiating Circuit Alarm Relay (K6).
D161* or D162 Phone Cord (2)	Primary and alternate telephone line connections.
D1220 Transformer	Use only in 12 VAC Mode.
D4103R Enclosure ** or D8109 Enclosure (optional)	Use either enclosure or another UL Listed fire enclosure.
D2002 Mounting Plate* (optional)	Use to mount the D2071A in a D4103 Enclosure.
D5100 Programmer or D5200 Programmer	Use either programmer with the 2071 Product Handlers loaded.
D8004 Transformer Enclosure	Required for the D1220 Transformer in commercial fire applications if the D2071A Kit is not used.
* You must use the D8004 Transformer Enclosure or the D2071AC for commercial fire applications.	

1.5.1 Mandatory Connections

To comply with the NFPA 72 Central Station Fire or NFPA 72 Remote Station Signaling Service, connect the D2071A as described in *Table 2*. The Class “A” and Class “B” circuits are mandatory connections for the slave and stand-alone applications. Refer to *Section 2.0 Installation* on page 8 for wiring instructions.

Table 2: Mandatory Connections for the NFPA 72 Central Station and Remote Station

Connection	Terminal Number	Stand-Alone Applications		Slave Applications	
		NFPA 72 Central Station	NFPA 72 Remote Station	NFPA 72 Central Station	NFPA 72 Remote Station
12 VAC Primary Power*	1, 2	OK	OK	OK	OK
24 VDC Primary Power	1,2	NO	NO	OK	OK
D126 Battery Backup (12 VDC, 7Ah)	4, 5	OK	Required	OK	Required
D1219 Battery Backup (12 VDC, 2.3 Ah)	4,5	OK	NO	OK	NO
Class “A”, Style D Circuit	6, 7, 8, 9	Maximum of 5 waterflow switches or up to 100 mechanically activated initiating devices such as heat detectors or manual pull stations. Not suitable for smoke detectors.		Normally open dry alarm output contacts of an existing FACP.	
Retard and Reset Times (waterflow alarm only)	6, 7, 8, 9	Refer to the appropriate standard or as allowed by the AHJ.		N/A	
Class “B”, Style A Circuit (recommended mode)	6, 7, 8, 9	3	3	3	3
	10, 11	Monitors up to 20 valve supervisory switches per circuit.		Normally open dry trouble contacts of an existing FACP.	
	11, 12	Mode 1 is not acceptable. Mode 2 is only acceptable when a valve tamper device, with only a normally closed contact, must be used and only on approval of the AHJ.		Mode 3 is preferred. Modes 1 and 2 are acceptable.	
Earth Ground	3	Yes		No	
* You must use the D8004 Transformer Enclosure or the D2071AC for commercial fire applications.					

1.6 Slave Communicator Applications

To use the D2071A as a slave communicator that only provides signaling connections, connect the D2071A to an existing UL Listed NFPA 72 FACP. Use the D2071A in compliance with NFPA standards to provide:

- NFPA 72 central station connections for an existing FACP when only a summary alarm and up to two trouble signals are required, and
- NFPA 72 remote station signaling connections for an FACP listed for NFPA 72.

1.6.1 Slave Application Power

For slave communicator applications, connect the D2071A to a 24 VDC FACP.



Do not install a battery in this configuration. Do not connect the D2071A to a 12 VDC power supply or a control panel that only provides 12 VDC output.

If the FACP does not provide a 24 VDC auxiliary power output, you must use a D126 Battery, a D1220 Transformer, and a D8004 Transformer Enclosure.

If using the D2071AC, the Basler Electric Model A9115 Transformer (P/N: 58-06306-000) installed in the D4103R Enclosure replaces the D1220 Transformer and the D8004 Transformer Enclosure. This is a UL recognized, Class II transformer rated for 20 VA at 12 VAC. It uses pigtailed to hard wire directly to a 110 VAC or 120 VAC power source.

1.6.2 UL Listed Enclosure

Unless the monitored FACP is specifically listed or approved for use with the D2071A installed in the same enclosure, install the D2071A in a separate UL Listed enclosure. Connect the separate enclosure to the FACP by a conduit that is no more than 20 ft (6 m) long. The D4103R, D8109, and D8108A are all suitable for this purpose. The D2071AC includes a D4103R with a Basler Electric, UL recognized, Class II, hard wire transformer rated for 20 VA at 12 VAC mounted in the enclosure. It uses pigtailed to hard wire directly to a 110 VAC or 120 VAC power source.

1.7 Receiving Equipment

The D2071A must report to compatible, UL Listed receiving equipment that meets the following processing capabilities:

- Fire alarm
- System trouble
- Low battery
- 24-hour test

- System restoral
- 2300 Hz acknowledgment tone
- BFSK or 3 x 1, 40 pulses per second (PPS), single round with parity (superfast)

1.8 D2071A Control Panel Assembly

Table 3: D2071A Dimensions

Table 3: D2071A Dimensions	
Dimensions (H x W x D)	6.8 in. x 4.4 in. x 1.1 in. (17.3 cm x 11.2 cm x 2.8 cm)
Color	Red
Construction	UL94V-O flame-rated, acrylonitrile butadiene styrene (ABS) plastic, non-conductive

1.8.1 Terminal Strip

The terminal strip (*Item 1* in *Figure 1* on page 7) connects system wiring for power, ground, a Class “A” Alarm Initiating Circuit, two Class “B” supervisory circuits, and two Form “C” Relay outputs.

1.8.2 Programmer Connector (J3)

Connect the D5100 or D5200 Programmer to the J3 programmer connector (*Item 2* in *Figure 1*).

1.8.3 D2071A Enclosure Cover

The D2071A Enclosure Cover (*Item 3* in *Figure 1*) slides open approximately 2 in. (5.1 cm) to expose the terminal strip, programming jack, and two Form “C” Relay sockets. You do not need to completely remove the cover during installation or for service.

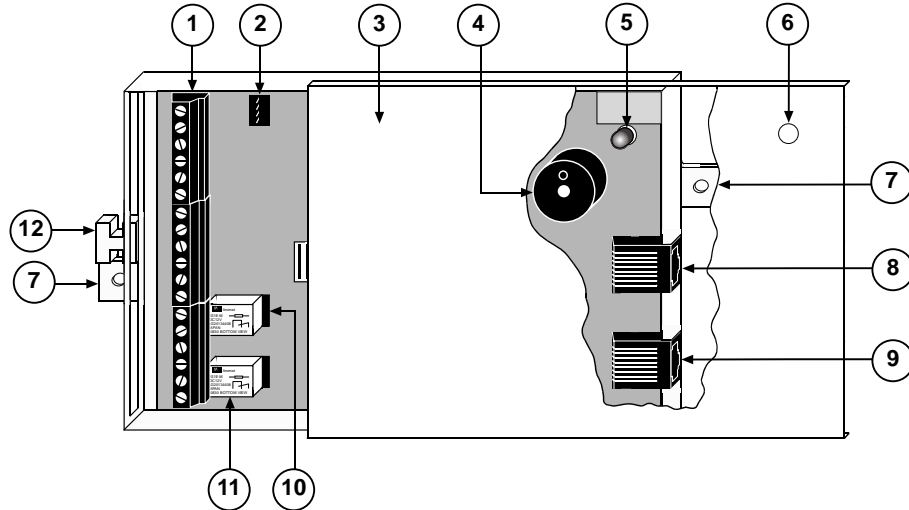
1.8.4 Phone Line Trouble Buzzer

The Phone Line Trouble Buzzer (*Item 4* in *Figure 1*) sounds when either the primary or the alternate telephone line is in a trouble condition, or when communications failure occurs. Ten failed attempts to transmit any report puts the control panel in communications failure. The Phone Line Trouble LED and Phone Line Trouble Relay follow the Phone Line Buzzer.

The buzzer, LED, and relay deactivate after a trouble condition occurs on the telephone line and the receiver acknowledges the Phone Line Trouble Report, or when the line returns to normal. If the D2071A attempts to transmit the Phone Line Trouble Report ten times without acknowledgment from the receiver, communication failure occurs.

If the D2071A is in communication failure, either the primary or alternate telephone line must be detected as normal and a report acknowledged by the receiver before the buzzer deactivates.

Figure 1: D2071A Control Panel



1 - Terminal strip

2 - Programmer connector (J3)

3 - D2071A Enclosure Cover

4 - Phone Line Trouble Buzzer

5 - Phone Line Trouble LED

6 - LED hole

7 - Mounting tab

8 - Alternate modular telephone jack (J2)

9 - Primary modular telephone jack (J1)

10 - Phone Line Trouble Relay socket (K5)

11 - Initiating Circuit Alarm Relay socket (K6)

12 - Strain relief tab

1.8.5 Phone Line Trouble LED

This yellow Phone Line Trouble LED (*Item 5 in Figure 1*) is visible through the top of the enclosure at the upper right corner (*Item 6 in Figure 1*). This LED lights when the control panel detects telephone line trouble on either the primary or secondary telephone line, when there is a communication failure, and briefly on powerup.

1.8.6 Mounting Tabs

Mounting tabs (*Item 7 in Figure 1*) are located on each end of the D2071A to provide a way to mount the D2071A with screws. You can also use the adhesive strips to mount the D2071A.

1.8.7 Alternate Modular Telephone Jack

The alternate telephone jack (*Item 8 in Figure 1*) connects the D2071A to an alternate telephone line for transmitting to the receiver. If the D2071A fails to contact the receiver after two attempts on the primary line, it switches to the alternate line.

1.8.8 Primary Modular Telephone Jack

The primary telephone jack (*Item 9 in Figure 1*) connects the D2071A to the primary telephone line for transmitting to the receiver.

1.8.9 Phone Line Trouble Relay (K5)

Install a D136 Relay in this socket when using the optional Phone Line Trouble Relay (*Item 10 in Figure 1*) for Terminals 13 to 15. This relay activates when telephone line trouble is detected on the primary or secondary telephone line, communication failure occurs, and briefly at powerup.

1.8.10 Initiating Circuit Alarm Relay (K6)

Install a D136 Relay in this socket when using the optional Initiating Circuit Alarm Relay (*Item 11 in Figure 1*) for Terminals 16 to 18. This relay activates when the initiating circuit is in an alarm condition.

1.8.11 Strain Relief Tab

The strain relief tab (*Item 12 in Figure 1*) prevents unnecessary strain on the connections to the D2071A. Use the cable tie (included) to secure all wire running from the D2071A to the tab.

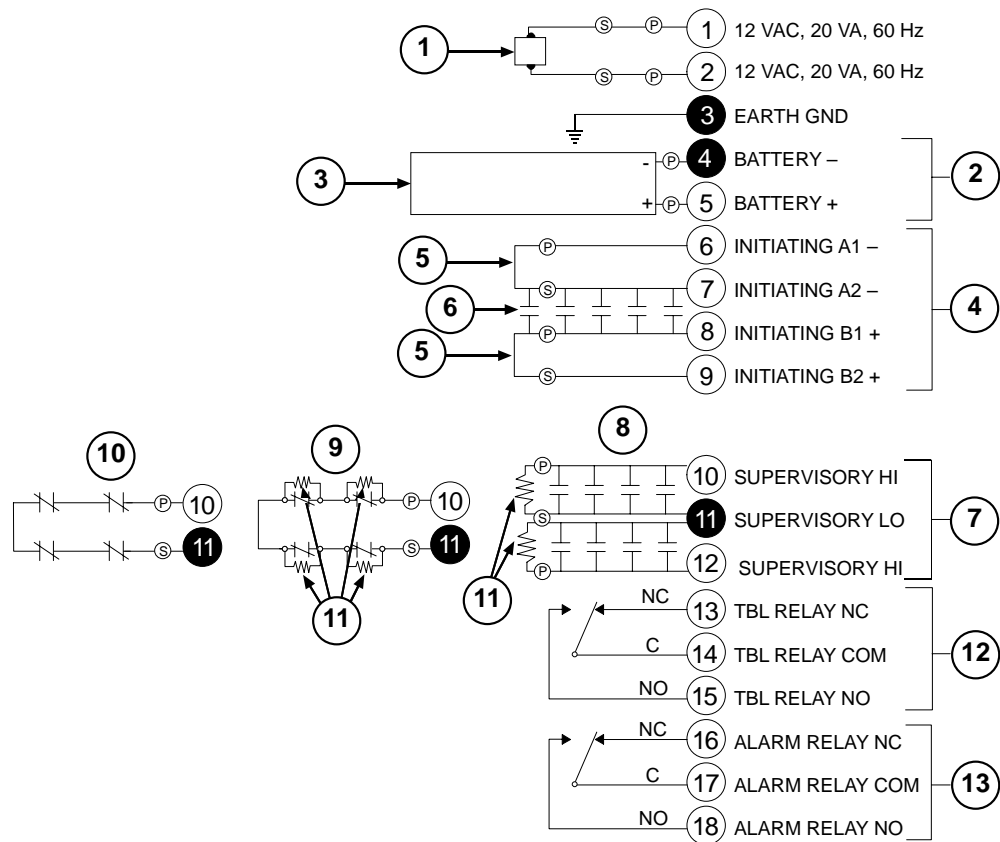
2.0 Installation

Some terminals are wired differently for the stand-alone (*Figure 2*) and slave applications (*Figure 3* on page 9).



When you are using the D2071AC, mount the D4103R Enclosure and have a qualified electrician connect a 110 VAC or 120 VAC power source to the black and white leads on the transformer. Before beginning the D2071A installation, ensure the power source is turned off.

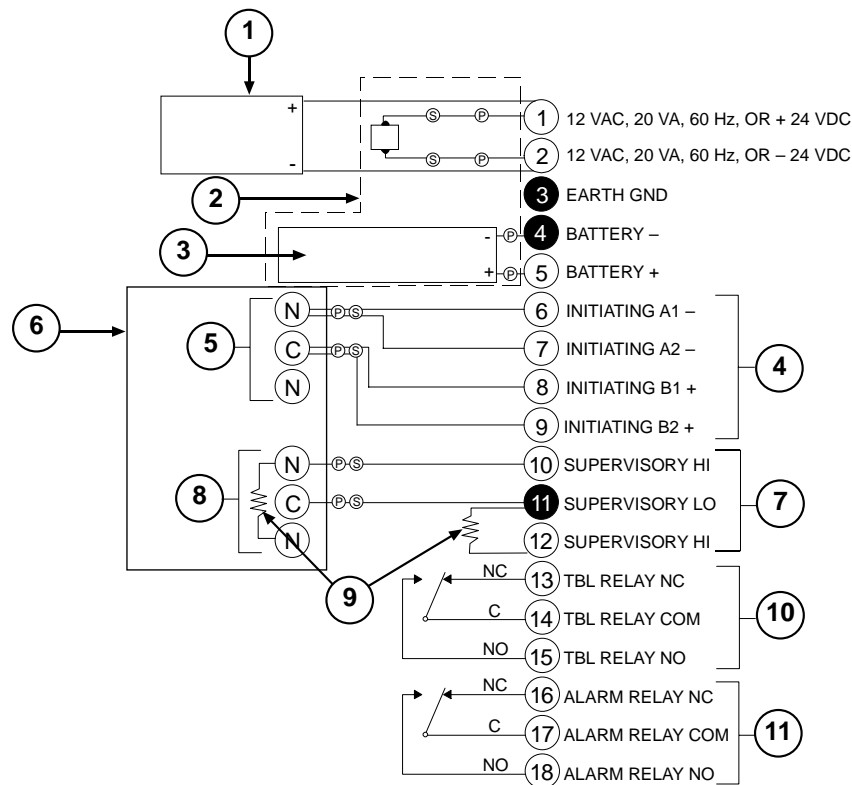
Figure 2: Stand-Alone Installation



- 1 - 12 VAC, 20 VA transformer
- 2 - Maximum charging current 300 mA
- 3 - Battery backup (D126 [12 V, 7 Ah] or D1219 [12 V, 2.3 Ah])
- 4 - Alarm initiating circuit
- 5 - Open = Trouble
- 6 - Short = Alarm
- 7 - Supervisory circuits
- 8 - Mode 3 (Alarm [short] = 0 VDC to 1.7 VDC; Normal [resistive] = 1.9 VDC to 5.8 VDC; Trouble [open] = 6.0 VDC to 10.2 VDC)
- 9 - Mode 2 (Normal = 0 VDC to 1.5 VDC; Alarm [resistive] = 1.8 VDC to 9.0 VDC; Trouble [open] = 9.3 VDC to 13.0 VDC)
- 10 - Mode 1 (Normal = 0 VDC to 1.5 VDC; Alarm [open] = 1.8 VDC to 13.0 VDC)
- 11 - 1.8 kΩ EOL resistor
- 12 - Phone Trouble Relay (maximum rating 2 A at 30 VDC)
- 13 - Initiating Circuit Alarm Relay (maximum rating 2A at 30 VDC)

Note: (P) = Power limited; (S) = Supervised

Figure 3: Slave Communicator Installation



- 1 - Primary power supply (24 VDC supply from UL Listed FACP or 12 VAC, 20 VA transformer)
- 2 - Alternate power supply
- 3 - D126 Battery (12 V, 7 Ah) or D1219 Battery (12 V, 2.3 Ah)
- 4 - Alarm initiating circuit (Trouble = open on Terminals 6, 7, 8, and 9; Alarm = short from Terminals 6 and 7 to Terminals 8 and 9)
- 5 - Dry Closure Alarm Indicator Relay (Form "A" Normally Open)
- 6 - FACP
- 7 - Supervisory circuits: Mode 3 (Alarm [short] = 0 VDC to 1.7 VDC; Normal [resistive] = 1.9 VDC to 5.8 VDC; Trouble [open] = 6.0 VDC to 10.2 VDC)
- 8 - Dry Closure Trouble Indicator Relay (Form "A" Normally Open)
- 9 - 1.8 kΩ EOL resistor
- 10 - Phone Trouble Relay (maximum rating 2 A at 30 VDC)
- 11 - Initiating Circuit Alarm Relay (maximum rating 2A at 30 VDC)

Note: (P) = Power limited; (S) = Supervised



- 1. Do not connect earth ground when connected to a 24 VDC power supply.
- 2. Do not connect a battery when connected to a 24 VDC power supply (maximum charging current of 300 mA).

2.1 Earth Ground Wiring



Only use Terminal 3, not telephone or electrical ground, for earth ground connections.

2.1.1 12 VAC Mode

To prevent damage from electrostatic charges or other transient electrical surges, use 16 AWG (1.5 mm) wire to connect the D2071A to earth ground at Terminal 3 before making other connections to the control panel. A grounding rod or cold water pipe are good earth ground references.

2.1.2 24 VDC Mode



When the D2071A is connected to an FACP 24 VDC output, do not connect Terminal 3 to earth ground. This might cause a continuous ground fault condition on the FACP.

2.2 Zone 1, Alarm Initiating Circuit



Use Terminals 6, 7, 8, and 9 for Zone 1 alarm initiating circuit connections.

Zone 1 is a four-wire, Class “A” initiating circuit. You can connect up to five waterflow alarm switches or up to 100 mechanically operated devices such as heat detectors or manual pull stations to this zone. NFPA 72 requires you to connect a single pull station with waterflow switches. The AHJ might specify the location of this pull station. Other than this exception, do not combine waterflow switches with other types of devices.

Unlike the two-wire Class “B” circuits supervised by EOL resistors, the double loop Class “A” circuit provides alarm response from all initiating devices with a single open or ground fault condition on the circuit. Connect the initiating devices to the D2071A as shown in *Figure 2* on page 8 and *Figure 3* on page 9.

The D2071A has programmable retard (retard time) and reset (reset time) timers for waterflow alarm installations on wet pipe sprinkler systems. These timers compensate for water pressure surges and sprinkler alarm valve fanning conditions.

2.2.1 Class “A” Circuit Parameters

The maximum resistance on the Class “A” circuit sensor loop wiring is 100 Ω per loop (between A1 and A2 100 Ω maximum, between B1 and B2 100 Ω maximum).

To determine the circuit’s electrical condition:

1. Ensure the D2071A is powered up and the loops are in a normal condition.
2. Use a multimeter to measure the voltage across the terminal connections. Connect one lead of the multimeter to a negative (-) terminal (6 or 7). Connect the other lead to a positive (+) terminal (8 or 9).

The measured zone input voltage reading for the electrical condition multimeter is Normal when Terminals 7 and 8 equal 1.0 VDC to 1.9 VDC, and Alarm (shorted) when Terminals 7 and 8 equal 0.0 VDC to 0.3 VDC.

2.2.2 Retard and Reset Times



Only use the Zone 1 retard or reset feature for waterflow switches and controls without their own retard and reset features.

The retard timer prevents false alarms from conditions such as water supply surges in wet pipe sprinkler systems. These surges can occur during a brief activation of a waterflow alarm switch. The value you enter in Retard Time determines the length of time the waterflow switch remains activated before an Alarm Report is initiated. Generally, a 15-sec retard is adequate, but a longer interval might be necessary during extended surge conditions.

Reset Time is the parameter that compensates for sprinkler alarm valve fanning conditions in wet pipe systems with unique hydraulic problems. Fanning occurs when a sprinkler head activates or the inspector’s test valve opens and the waterflow switch does not activate long enough to overcome the retard time, but the waterflow switch cycles between alarm and normal conditions.

The retard and reset timers work together as follows:

- The retard timer tracks the time the alarm initiating circuit is in the alarm condition. It begins counting when the circuit enters the alarm condition.
- The reset timer determines when the retard timer resets to zero. When the alarm initiating circuit enters a non-alarm (restored or trouble) condition after being in the alarm condition, the retard timer stops at its current value and the reset timer begins counting.
- If another alarm condition is detected before the reset timer reaches the value entered in reset time, the retard timer resumes counting from where it stopped and the reset timer is set to zero.

- If the time specified in the retard time accumulates in one or more successive alarm activations, the D2071A transmits an Alarm Zone 1 Report and activates the Alarm Relay.
- The retard timer resets to zero only when the circuit remains in a non-alarm condition (restored or trouble) for the time entered in reset time.
- When the alarm initiating circuit is normal for the time specified in reset time, the D2071A sends a Restoral Zone 1 Report.

Generally, the reset time is set to approximately half the retard time. For example, if retard time is set at 15 sec, reset time is set at 7 or 8 sec.

2.2.3 Wiring

Stand-Alone Applications

Connect the normally-open (NO) contacts of each waterflow switch (a maximum of five) or mechanically activated initiating device to the alarm initiating circuit in parallel as shown in *Figure 2* on page 8.

Slave Communicator Applications

1. Connect the alarm initiating circuit to an alarm indicator output (NO, dry closure) on the FACP (*Figure 3* on page 9).
2. Connect Terminals 6 and 7 to the common (C) contact. Connect Terminals 8 and 9 to the NO contact.
3. Program the retard and reset times to 0 sec when connecting the alarm initiating circuit to an existing FACP.

2.3 Zones 2 and 3 (Supervisory Circuits)



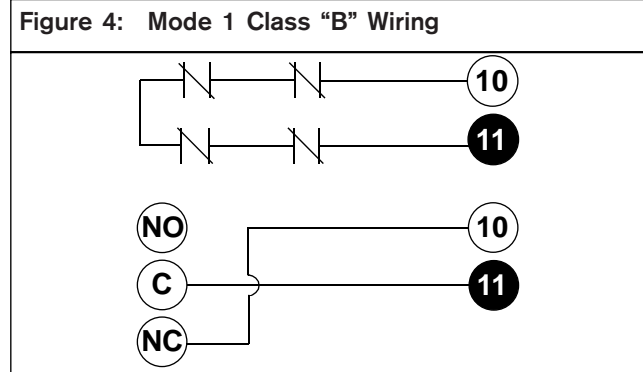
Use Terminals 10, 11, and 12 for supervisory circuit connections.

Zones 2 and 3 are Class “B” circuits that monitor sprinkler supervision devices such as valve tamper (maximum of 20 per circuit) in stand-alone applications. In slave communicator applications, these circuits monitor the trouble outputs of an associated FACP.

1. Wire Class “B” circuits in Modes 1, 2, or 3. Class “B” Mode determines the mode for Zones 2 and 3.
2. Wire both circuits for the same mode configuration.
3. Connect dry contact devices to the supervisory circuits in series (normally-closed [NC]) or in parallel (NO).
4. As necessary, install a 1.8 kΩ EOL resistor at the end of the Class “B” circuits.

2.3.1 Mode 1

In Mode 1 (*Figure 4*) the loops are configured for NC devices only, no EOL resistor is used. The loops are not supervised for troubles. This mode is not acceptable for the stand-alone applications.



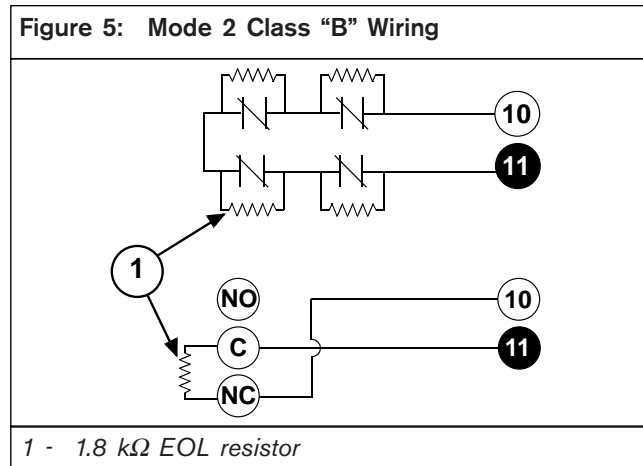
The Mode 1 status conditions are:

Normal: 0.0 VDC to 1.5 VDC

Alarm (Open): 1.8 VDC to 13.0 VDC

2.3.2 Mode 2

Mode 2 (*Figure 5*) uses a 1.8 kΩ EOL resistor across each NC device in the series loops. This mode is acceptable for NFPA 72 central station and remote station stand-alone applications only when an NC valve tamper device must be used and only upon approval of the AHJ.



The Mode 2 status conditions are:

Normal: 0.0 VDC to 1.5 VDC

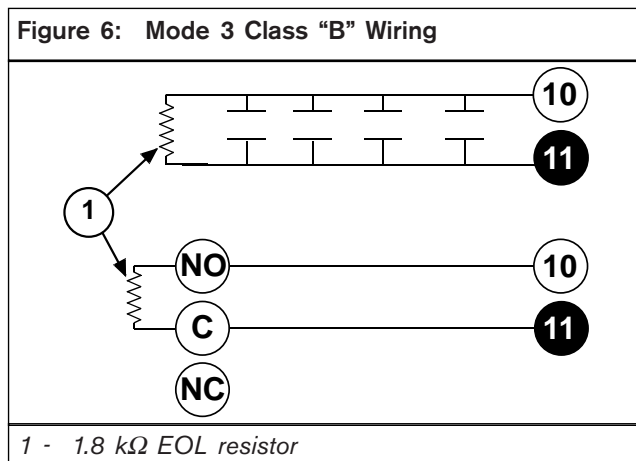
Alarm (Resistance): 1.8 VDC to 9.0 VDC

Trouble (Break): 9.3 VDC to 13.0 VDC

A single off-normal device puts the loops into alarm. A broken circuit or multiple off-normal devices put the loops into trouble, unless the loop was previously in alarm.

2.3.3 Mode 3

Mode 3 (*Figure 6*) uses a 1.8 k Ω EOL resistor at the end of the loops. Trouble Reports are sent on an open circuit. This mode is required for sprinkler supervision in NFPA 72 central station and remote station slave applications or for Trouble Reports from the FACP. Use Mode 3 for 72 central station slave applications.



The Mode 3 status conditions are:

Alarm (Closed): 0.0 VDC to 1.7 VDC

Normal: 1.9 VDC to 5.8 VDC

Trouble (Open): 6.0 VDC to 10.2 VDC

D2071A transmits an Alarm Report for a trouble condition using a Mode 1 or Mode 2 circuit to monitor FACP trouble output or sprinkler valve tamper.

2.3.4 Mode 1 and Mode 2 Restrictions

Use Mode 3, **not** Mode 1, for sprinkler supervision (stand-alone) in NFPA 72 remote station installations. Only use Mode 2 when a NC valve tamper device must be used, and only on AHJ approval.

Refer to *Section 1.5 Listings and Approvals* on page 4 for more information about modes and the NFPA requirements.

2.3.5 Wiring

Stand-alone Applications

1. Connect the supervision devices such as valve tamper switches (up to 20 for each circuit) to Terminals 10 and 11 (Zone 2) or Terminals 11 and 12 (Zone 3) as shown in *Figures 4 through 6* on pages 11 and 12.
2. Program Class "B" Mode for the wiring configuration you use. Use no more than 100 Ω resistance on the sensor loops for the Class "B" circuits.

Slave Communicator Applications

1. When connecting the D2071A to an FACP, use the Mode 3 configuration for the slave communicator applications (*Figures 4 through 6*).
2. Connect Terminals 10 and 11 (Zone 2) or Terminals 11 and 12 (Zone 3) to the trouble outputs (dry closure) on the FACP.
3. Connect Terminal 10 or 12 to the NO contact and connect Terminal 11 to the C contact.
4. Install a 1.8 k Ω resistor between the NO and NC contacts.
5. Program Class "B" Mode for Mode 3.

2.3.6 Class "B" Circuit Parameters

1. Using a voltmeter measure the voltage across the terminal connections to determine the electrical condition of the Class "B" supervisory circuits (refer to *Figures 4 through 6* for loop voltages).
2. Connect the loop and power the D2071A.

2.4 Initiating Circuit Alarm Relay



Use Terminals 16, 17, and 18 for initiating circuit alarm relay connections.

When using the optional Initiating Circuit Alarm Relay, install a D136 Relay in Socket K6. The D136 provides a Form "C" dry contact, rated at 2 A maximum current at 30 VDC (power from an independent supply). The relay activates (reverse state) when the Class "A" Alarm Initiating Circuit (Zone 1) goes into an alarm condition. It deactivates when the circuit restores to normal.

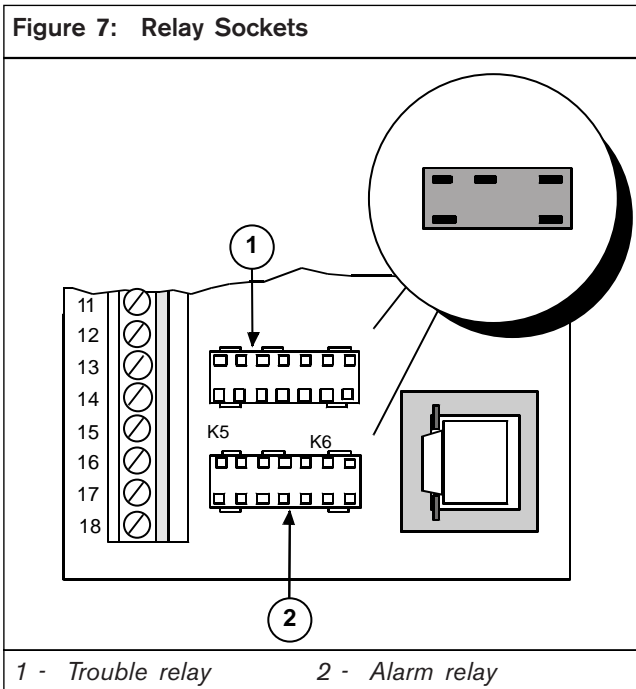
- Terminal 17 is the common (C) terminal.
- Terminal 16 is the normally closed (NC) terminal.
- Terminal 18 is the normally open (NO) terminal.

In a normal state Terminals 16 and 17 have continuity. When activated, Terminals 17 and 18 have continuity.

2.4.1 Installation

To install a D136 Relay into socket K6 (labeled ALARM RELAY):

1. Slide back the D2071A cover to expose the socket (*Figure 7* on page 13).
The D136 Relay has two pins on one side and three pins on the other side.
2. Place the relay into the socket with the pins oriented as shown in *Figure 7*.
3. Attach the relay flush left or flush right.



2.4.2 Wiring

Connect only low voltage power sources and devices to Terminals 16, 17, and 18. Do not use the D2071A Standby Battery to provide a power output for the circuit.

2.5 Phone Line Trouble Relay

Use Terminals 13, 14, and 15 for Phone Line Trouble Relay connections.

To use the optional Phone Line Trouble Relay, install a D136 Relay in socket K5. The D136 has a Form “C” dry contact, rated at 2 A maximum current at 30 VDC (power from independent supply). The relay activates (reverse state) when a faulted condition appears on either the primary or alternate telephone lines, or when a communication failure occurs.

The Phone Line Trouble Relay activates whenever the Phone Line Trouble Buzzer sounds. Refer to *Section 1.8.6 Phone Line Trouble Buzzer* on page 7 for details on relay activation and restoration.

2.5.1 Installation

To install a D136 Relay into the K5 socket (labeled “TROUBLE RELAY”):

1. Slide back the D2071A cover.
2. Place the relay into the socket with the pins oriented as shown in *Item 1* in *Figure 7*.
3. Install the relay flush left or right.

2.5.2 Wiring

- Terminal 14 is the common (C) terminal.
- Terminal 13 is the normally closed (NC) terminal.
- Terminal 15 is the normally open (NO) terminal.

In a normal state, Terminals 13 and 14 have continuity. When activated, Terminals 14 and 15 have continuity.

Only connect the low voltage power sources and devices to Terminals 13, 14, and 15.



Do not use the D2071A standby battery to supply power for the circuit. In some slave communicator applications, the Phone Line Trouble Relay (Terminals 13 to 15) on the D2071A can be connected to a trouble zone input on the FACP.

2.6 Primary Power Supply



Use Terminals 1 and 2 for primary power supply connections.

Power the D2071A Control Panel using a 12 VAC or 20 VA transformer and standby battery. You can also connect the D2071A to the 24 VDC output of an FACP. Use either method for NFPA 72 applications.



Do not connect the D2071A to a 12 VDC power supply of an existing FACP. Use the transformer and battery for 12 VAC Mode.

Parallel Activation on Powerup: The Phone Line Trouble Buzzer, Phone Line Trouble Relay, and Phone Line LED briefly activate on AC or battery powerup to indicate the DACT is operational.

2.6.1 12 VAC Mode


Connect a 12 VAC, 20 VA transformer to Terminals 1 and 2 using 18 AWG (1.2 mm) stranded wire, maximum length 50 ft (15.3 m). Commercial fire applications require the D8004 Transformer Enclosure for the D1220 Transformer or the D2071AmC Kit.



The hardwire transformer mounted in the D4103R Enclosure, included in the D2071AC Kit, replaces the D1220 Transformer. Ensure the 110 VAC or 120 VAC power source is turned off when connecting the black and white transformer leads to the source. Connect the yellow leads from the transformer to Terminals 1 and 2.


Set the 12 V Mode to **YES**. Refer to *Section 2.7.1 Battery* for battery installation instructions.

NFPA 72 applications require 110 VAC or 120 VAC, 60 Hz commercial power for the transformer to be unswitched and from a reliable source. NFPA 72 applications need a dedicated branch circuit to supply the 110 VAC or 120 VAC transformer power. Identify the method of disconnecting the circuit as a fire alarm control circuit. Only authorized personnel can disconnect the circuit.

 Never share the transformer with other equipment. Foreign grounds on the AC input damage the D2071A power circuit.

2.6.2 24 VDC Mode


Connect a 24 VDC, uninterrupted, regulated, auxiliary output from an FACP to Terminals 1 and 2. Set the 12 V Mode to **NO**. Terminals 1 (+) and 2 (-) are polarity protected when the D2071A is programmed for the 24 VDC Mode.

 Do not connect a 12 VDC standby battery and do not connect earth ground to the D2071A when it is in 24 VDC Mode.

The discharge and recharge schedule in *Table 4* shows the voltages at Terminals 1 and 2 used to generate Battery Reports with the D2071A in 24 VDC Mode. If the voltage falls below 11.1 VDC, the D2071A does not operate.

Table 4: 24 VDC Battery Discharge and Recharge Schedule	
Discharge Cycle	
27.6 V	FACP battery float voltage
21.8 V	Battery Trouble Report
11.1 V	(TROUBLE ZN 9) Disable
Recharge Cycle	
AC on	FACP battery recharging begins
24.7 V	Battery Restoral Report (RESTORAL ZN 9)
27.6 V	FACP battery charged
Notes:	
1.	The source supervised is the 24 VDC input from the FACP.
2.	This schedule applies to Terminals 1 and 2 on the D2071A.
3.	The actual voltage can vary $\pm 5\%$.

2.7 Secondary Power Supply and Charging Circuit (12 VAC Mode Only)

 Use Terminals 4 and 5 for secondary power supply and charging circuit connections.

2.7.1 Battery

The D2071A's charging circuit is only calibrated for lead-acid type batteries. Do not connect D2071A to a battery when it is using 24 VDC from an existing FACP. The battery supplies power to the system during interruptions in primary power (AC) while in 12 VAC Mode.

For NFPA 72 applications, use a 12 VDC, 2.3 Ah, sealed, lead-acid, rechargeable battery (Model D1219). You can also use a 12 VDC, 7 Ah, sealed, lead-acid, rechargeable battery (Model D126) that exceeds the standby requirements.


Installation

1. Install the battery in an upright position at the base of the metal enclosure.
2. Use the black lead to connect the negative side (black) to the D2071A Terminal 4.
3. Use the red lead to connect the positive side (red) to the D2071A Terminal 5.

Parallel Activation on Powerup: The Phone Line Trouble Buzzer, Phone Line Trouble Relay, and Phone Line Trouble LED briefly activate on AC or battery powerup to indicate the DACT is operational.

Replacement

Under normal use, replace the battery every 3 to 5 years.

 Do not install the transformer in a power source that is routinely switched off. This does not comply with NFPA standards and causes heavy battery discharges that can result in premature failure.

Supervision

During an AC power loss, the battery supplies all power to the D2071A and slowly discharges. When the battery voltage drops below 11.8 VDC, the D2071A sends a TROUBLE ZN 9 Report to the receiver.

After the AC is restored, the battery begins to charge. At 13.4 V, the D2071A sends a Battery Restoral Report (RESTORAL ZN 9).

Restoral ZN 9 Exceptions: If a battery is not connected to the D2071A when AC power is connected, the control panel sends a RESTORAL ZN 9 Report to the receiver. A RESTORAL ZN 9 is also sent after the programmer disconnects from the D2071A.

Charging Circuit

The D2071A charges the battery with a float charge circuit using a maximum charging current of 300 mA. The battery discharge and recharge schedule (Table 5) shows voltages during the discharge and recharge cycles.

Table 5: 12 VDC Battery Discharge and Recharge Schedule	
Discharge Cycle	
13.8 V	FACP battery float voltage
11.8 V	Battery Trouble Report (TROUBLE ZN 9)
8.5 V	Disables all processing and memory functions. Deep battery discharge can occur below this level.
Recharge Cycle	
AC on	Battery recharging begins
9.0 V	Battery Trouble Report (only if the battery is discharged below 8.5 V)
13.4 V	Battery Restoral Report (RESTORAL ZN 9)
13.8 V	Battery charged
Notes:	
1.	The source supervised is the battery connected to the D2071A.
2.	Actual voltage can vary ±15.

2.7.2 12 VAC Battery Discharge and Recharge Schedule

Refer to Table 5 for the 2 VAC battery discharge and recharge schedule.

2.8 Telephone Connections

2.8.1 Telephone Cord Installation

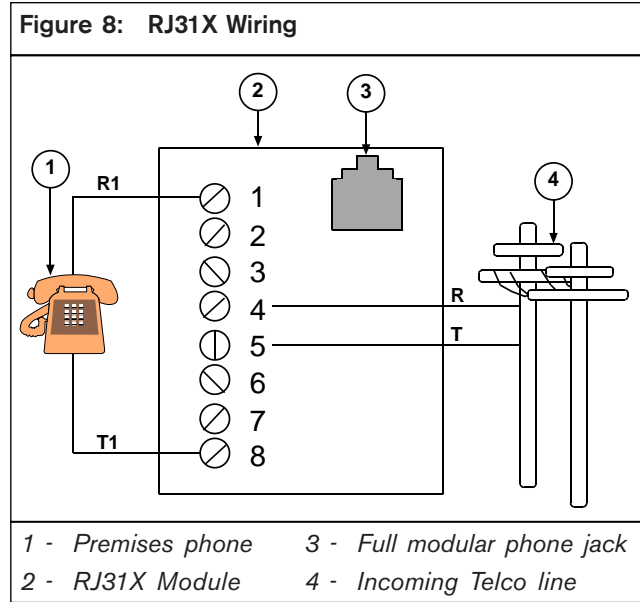
Use a D161 or D162 Phone Cord to connect the primary telephone line to the D2071A Modular Jack (J1). Use a second D161 or D162 Phone Cord to connect the alternate telephone line to the D2071A Modular Jack (J2).

For all applications, you must connect separate primary and alternate telephone lines to the D2071A.

2.8.2 Location

To prevent the jamming of alarm and other reports, wire and locate the RJ31X or RJ38X jack so normal telephone use is temporarily interrupted while the

communicator transmits data (Figure 8). After installation, confirm the D2071A seizes the line, acquires dial tone, and correctly reports to the receiver.



2.8.3 Telephone Line Supervision

The D2071A monitors both the primary and alternate telephone lines while the communicator is idle by sniffing the line for trouble. Telephone line trouble is line voltage below 10 VDC with a current less than 10 mA. If there is a report waiting to be transmitted, the D2071A does not sniff the telephone lines until the report is transmitted or a communication failure occurs. The D2071A reports a faulted condition on the primary telephone line as a TROUBLE ZN B and the alternate telephone line as a TROUBLE ZONE C.

Each line is sniffed once a minute if both lines are good. If a line is determined to be in trouble, the D2071A steps up the test rate and sniffs once every 10 sec. If the trouble still exists after 15 samples (150 sec), the control panel sends a Trouble Report and activates the buzzer, Phone Fail LED, and Phone Line Trouble Relay (if installed). Refer to Section 2.5 Phone Line Trouble Relay on page 13 for installation instructions.

The buzzer, LED, and relay deactivate after a trouble condition on the telephone line when the receiver acknowledges the Phone Line Trouble Report, or when the line returns to normal. If the D2071A attempts to transmit the Phone Line Trouble Report ten times without acknowledgment from the receiver, a communication failure occurs.

If the D2071A is in communication failure, either the primary and alternate telephone lines must be detected as normal and a report acknowledged by the receiver before the buzzer, LED, and relay deactivate.

Refer to *Section 6.0 Troubleshooting* on page 24 for help in determining the cause of telephone line problems.

The buzzer, light, and relay can remain activated for up to 24 h if the communications failure did not result from trouble conditions detected on the telephone lines, and no other report is transmitted before the next scheduled Test Report.

2.8.4 Call Routing

After one failed attempt to transmit a report, the D2071A tries to transmit a TROUBLE ZN E Report in addition to the original report. After two failed attempts to reach the receiver, the D2071A switches from the primary to the alternate telephone line. During the switch, the D2071A tries dialing even if you did not program an alternate telephone number.

The D2071A continues alternating between the primary and alternate lines for a total of ten attempts. If the D2071A cannot make contact with the receiver after ten attempts, it goes into communications failure and activates the Phone Fail LED, Phone Line Trouble Buzzer, and Phone Line Trouble Relay (if installed). The time from the first attempt to the communications failure is up to 10 min.

RESTORAL ZN E is the only report transmitted after a communications failure. Any report in the D2071A buffer before a communications failure is not transmitted. The buffer is cleared.

For all applications, program both a primary and an alternate telephone number using different numbers. *Table 6* lists the call routing assignments.

Attempt	Routing
1	Phone Number 1 Primary Line
2	Phone Number 1 Primary Line
3	Phone Number 2 Alternate Line
4	Phone Number 1 Alternate Line
5	Phone Number 2 Primary Line
6	Phone Number 1 Primary Line
7	Phone Number 2 Alternate Line
8	Phone Number 1 Alternate Line
9	Phone Number 2 Primary Line
10	Phone Number 1 Primary Line

2.8.5 Notification

Do not connect registered equipment to party lines or coin-operated telephones. If the local telephone company requests notification before you connect the D2071A to the telephone network, supply the:

- particular line you are connecting the panel to,
- make, model, and serial number of the device, and
- FCC registration number (AJ9USA-61104-AL-E) and ringer equivalence (0.0B = AC, 1.3B = DC).



If the telephone company makes changes in its communications facilities, equipment, operations, or procedures that can affect communicator performance, the telephone company is obligated to notify the user in writing.

2.9 Cable Tie Installation

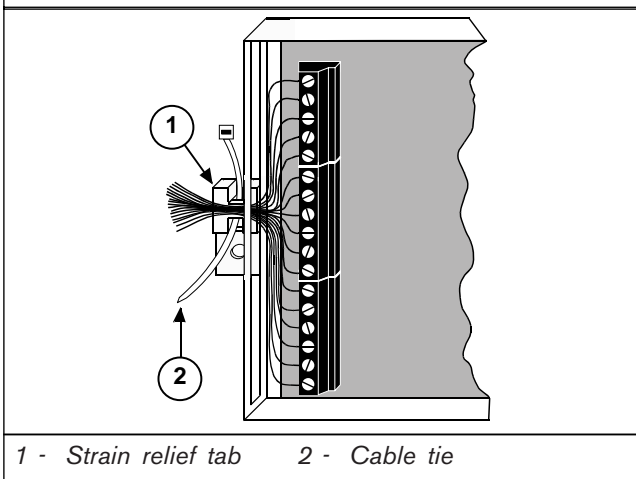
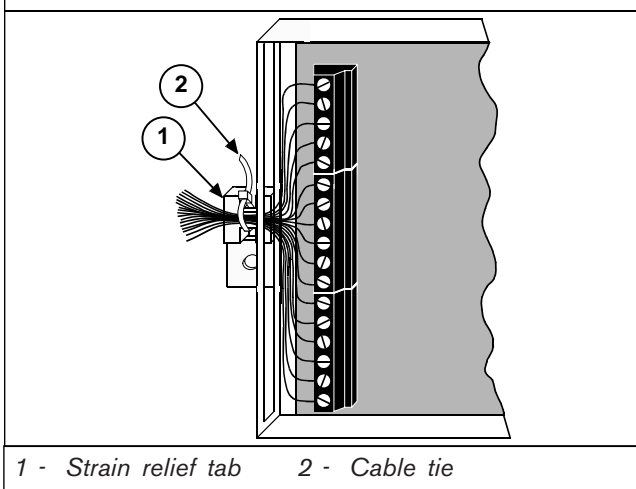
After making the necessary connections, secure all wires from the D2071A to the strain relief tab:

1. String the cable tie through the middle of the H-shaped strain relief tab.
2. Group the wires attached to the D2071A, ensuring no wire is disconnected (*Figure 9* on page 17).
3. Wrap the cable tie around the wires and firmly secure the tie to the strain relief tab (*Figure 10* on page 17).

Mount the D2071A inside a UL Listed fire enclosure of appropriate size or, as the D2071A Enclosure is nonconductive, in the same enclosure with an existing FACP. Unless the monitored FACP is specifically listed or approved for use with the D2071A installed in the same enclosure, install the D2071A in a separate UL Listed enclosure.

If installing the D2071A in the same enclosure with an existing FACP, leave room on the bottom of the enclosure for the battery. Do not mount the D2071A in a location where it restricts the flow of cooling air to the FACP power supply or a similar device.

When mounting the D2071A in a separate UL Listed enclosure such as the D4103R or D8109, connect the enclosure to the FACP by conduit not exceeding 20 ft (6 m). The D2071A can be mounted in the enclosure using any of the procedures described in *Section 2.9.1 Screw Mounting* through *Section 2.9.3 Adhesive Strip Mounting* on page 17.

Figure 9: Inserting Cable Tie**Figure 10: Securing Cable Tie and Wires**

2.9.1 Screw Mounting

1. Select the mounting location in the enclosure.
2. Position the D2071A in the desired location.
3. Use a pencil to mark the mounting tab holes.
4. Drill holes (1/8 in. [3.18 mm]) for the screws provided.
5. Mount the D2071A using the two # 8 screws and washers provided.

2.9.2 D2002 Mounting Plate

Use the D2002 Mounting Plate to mount the D2071A in a D4103R Enclosure provided with the D2071AC Kit.

1. Use the four #6 screws (provided) to secure the plate to the four standoffs in the D4103R Enclosure.
2. Use the two #8 screws (provided) to mount the D2071A to the mounting plate.

2.9.3 Adhesive Strip Mounting

You can use two adhesive strips (provided) to mount the D2071A in the enclosure with the FACP, or in a separate enclosure.

1. Select a location with a smooth, clean, and dry mounting surface.
2. Position the D2071A so the back is facing you.
3. Remove the protective backing from one side of the 5 in. (12.7 cm) adhesive strip.
4. Press the strip firmly to the back of the D2071A near the top edge.
5. Remove the protective backing from the other side of the 5 in. (12.7 cm) adhesive strip.
6. Press the strip firmly to the back of the D2071A near the bottom edge.
7. Bend back or remove any tabs in the enclosure that can prevent the D2071A from being securely mounted.
8. Remove the remaining protective backing from the adhesive strips.
9. Firmly press the D2071A to the location.

2.10 End User Instruction Label

Once the D2071A is connected to an FACP you can use the end user label (included). Because the D2071A does not have end user serviceable parts, the label instructs users to call for service if they cannot silence the D2071A from the FACP. Attach this label in a location that is easily visible such as the front of the FACP enclosure.

3.0 Programming



The information in this section is not intended to be a substitute for the *D5200 Programmer Operation Manual* (P/N: 74-06176-000). Become familiar with the *D5200 Programmer Operation Manual* before programming any Bosch product.

When programming the D2071A DACT with the D5200 Programmer, ensure the programmer has the 2071 Product Handler Program. Refer to the *D5200 Programmer Operation Manual* for the updated D5200 instructions.

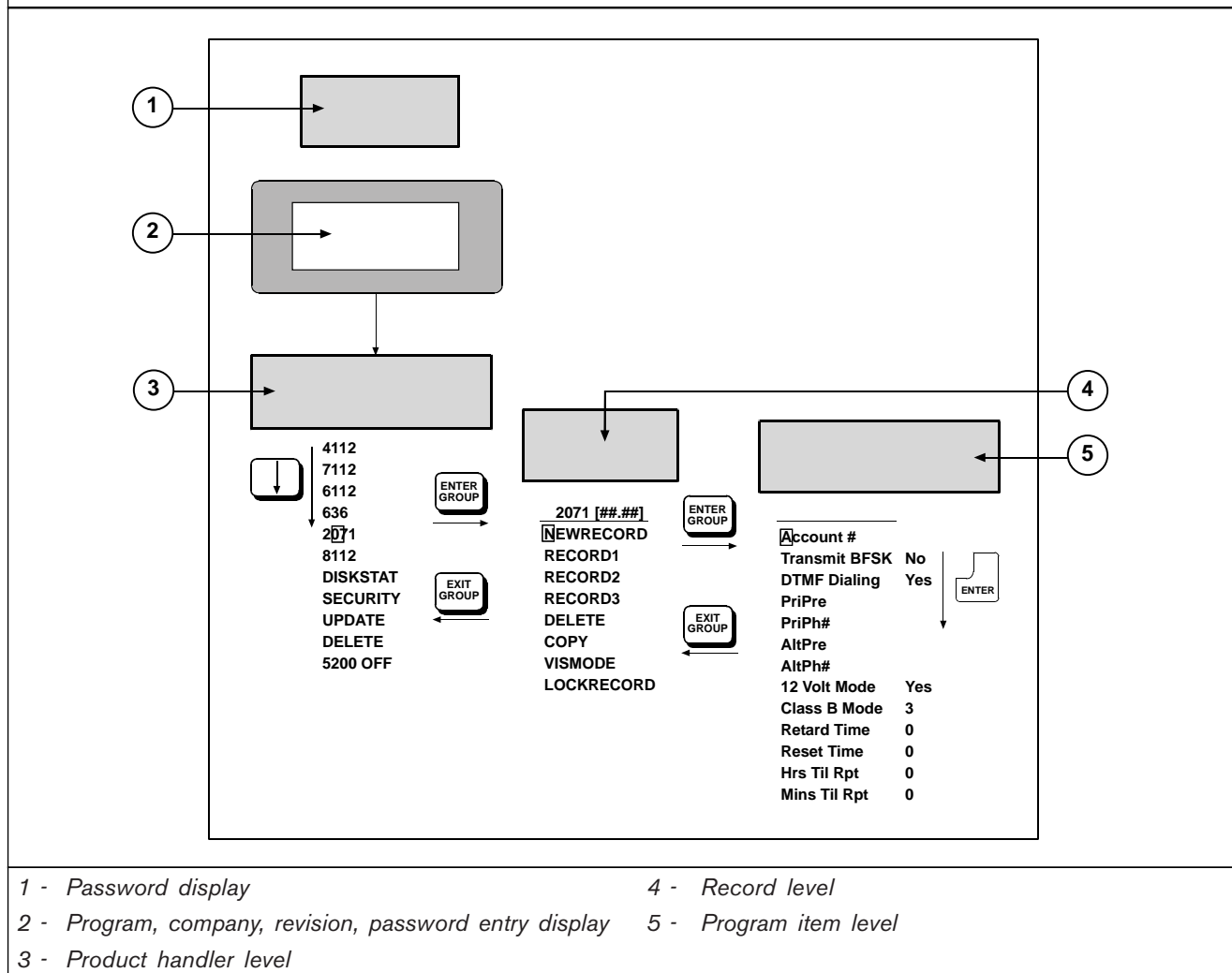
3.1 Navigating Handler and Program Records

Access program items by navigating the programmer groups.

- Use the red [ENTER GROUP] and [EXIT GROUP] keys to move in and out of each group (*Figure 11*).
- Use the red [↑] and [↓] keys to scroll through the list of items at each group. Scroll through a list of available product handlers at the Product Handler Group. See the saved record titles at the Record Group. Program items are at the Program Item Group.
- Use the red [←] and [→] keys to move the cursor horizontally within one line of the LCD.

Figure 11 is an example of using the navigational keys to move through the D2071 Program. Use these keys the same way for all product handlers.

Figure 11: Program 2071 Navigation



3.2 Function Keys

Table 7 identifies the six function keys that simplify using the programmer.

Key	Use
ON	Key switch that turns on the programmer. Does not power down the programmer. Turn off by selecting 5200 OFF in the Product Handlers Menu. Powers down automatically after the programmed Time Out time elapses.
HELP	Switches programmer into Help Mode. Refer to the <i>D5200 Programmer Operation Manual</i> (P/N: 74-06176-000) for more information.
CANCEL	Cancels changed items if you did not press [ENTER] to accept the change.
RECV (COPY)	Moves a copy of the record in the attached product to the D5200 Programmer.
SEND (LOAD)	Moves a copy of the record in the D5200 Programmer to a product being programmed.
CLEAR	Erases an un-entered or entered program item data and replaces it with blank spaces.

Note: All function keys are red.

3.3 Data Keys

Use the white keys on the keyboard for data entry.

3.4 Tones

The D5200 Programmer emits four distinct sounds to notify users of key presses, data acceptance or rejection, and system errors (*Table 8*).

3.5 Editing a Record

1. Scroll to the D2071 Product Handler from the Product Handlers Menu using [↑] or [↓] and press [ENTER GROUP].
2. Scroll to the appropriate record title using [↑] or [↓] and press [ENTER GROUP].
3. Use [↑] or [↓] to scroll to the appropriate program. Edit the entry and press [ENTER] to input the data.
4. Press [EXIT GROUP] to exit the record. The Save display appears if changes were made to any program item entries in the record.

3.6 Programmer Connection

Access the four-pin programmer connector (J3) by sliding back the D2071A's cover. This connector is located next to Terminal 1 (refer to *Figure 1* on page 7). The D2071A is ready for programming after connecting it to the programmer; it is not necessary to reset the D2071A before loading to or copying from the panel.

Sound	Signifies
Click	Short, sharp tone that occurs each time you press a key. The programmer does not click when you press [ON], [CAP LOCK], and [SHIFT].
Pip	Short, single frequency tone sounds when you press [ENTER] and the D5200 accepts the change.
Tweedle	Quick series of pips indicating you pressed an invalid key or made an inappropriate entry.
Buzz	Flat tone indicating a system error. Examples of typical system errors are: <ul style="list-style-type: none"> • A product is not connected to the D5200 when you attempt to copy or load it. • The D5200 notifies you of a low battery condition. • The D5200 announces it will automatically count down and turn off. • You are attempting to delete a record or handler. • You are entering into a product handler containing a Timeout Save Record. The Timeout Save Record was saved by the D5200 when it automatically turned off to save power.



Programming before installing the phone lines might sound the buzzer.

You can program the D2071A before installation. If the D2071A is powered and not connected to a telephone line, the Phone Fail Buzzer sounds after approximately 10 min. Power down the unit to silence the buzzer.

Program the D2071A using the D5200 Programmer with the D2071 Product Handler.



Before programming, read and become familiar with this section of the *Operation and Installation Guide*.

3.7 Entering the 2071 Handler

1. At the Product Handler Level, press [↓] and scroll down to **2071**.
2. Press [ENTER GROUP].
3. When the cursor appears on the NEWRECORD prompt, press [ENTER GROUP].
Account# appears.

3.8 Program Modules

Unlike larger Bosch products, the D2071 Product Handler does not group program items in program modules. When you enter the 2071 program, you are in the Program Item Level.

3.9 Editing the Program Record

Each D2071A DACT programming option is listed as it appears in the Programmer Display. The default, a set of selections, and a description follows.

The selections are the only entries available for a particular program option. For example, `Account #` only uses numbers 0 through 9, letters B through F, or no entry. Do not use unlisted entries.

To edit program options, change the entry and press [ENTER]. If the entry is valid, the programmer moves the cursor to the next prompt. When all program options in the record are edited, the programmer returns to the first program option in the record.

You can exit from any point within the program by pressing [EXIT GROUP] until `PRODUCT HANDLERS` appears on the D5200 Programmer.

4.0 Program Record

The 2071 Program Record selects several functions of the D2071A DACT, including the account number that:

- identifies the location during communication,
- decides how the telephone number is dialed,
- determines how the D2071A is powered, and
- controls the loop response times.

Account #

Default:	Blank
Selections:	0 to 999, BBB to FFF, or Blank

Ensure all entries are right-justified. The blank entry, equaling no account number, sends 000 in pulse that sends nothing in the BFSK format.

Transmit BFSK

Default:	Yes
Selections:	Yes or No
Yes	Transmit in BFSK format with 2300 Hz acknowledgement.
No	Transmit in fast, single-round, expanded pulsed format with a checksum digit and 2300 Hz acknowledgement.

Use to select the reporting format.

DTMF Dialing

Default:	Yes
Selections:	Yes or No
Yes	Dual tone multi-frequency dialing of telephone numbers.
No	Pulse dialing of telephone numbers.

PriPre

Default:	Blank
Selections:	0 to 9, B to F, or Blank
Blank	No prefix or area code. A delay up to 7 sec is automatically inserted in front of the prefix.

Use to select the prefix for the primary receiver telephone number. You can enter up to nine characters. Refer to *Table 9* on page 21 for other dialing character selections.

Table 9: Special Dialing Characters

Selection	Dialing Effect	Description
B	(*) character	Accesses special telephone features.
C	3-sec pause	While dialing, inserts a 3-sec pause between digits.
D	7-sec dial tone wait	Waits up to 7 sec for a dial tone before dialing.
E	(#) character	Accesses special telephone features.
F	Alternates between rotary and DTMF	Used when accessing some long-distance carriers while using rotary-dial phone lines.

PriPh#

Default:	Blank
Selections:	0 to 9, B to F, or Blank

Use to select the primary receiver telephone number. You can enter up to seven characters. Refer to *Table 9* for other dialing character selections.

When programming the primary and alternate telephone numbers, ensure the primary telephone number is different from the alternate telephone number.

AltPri

Default:	Blank
Selections:	0 to 9, B to F, or Blank
Blank	No prefix or area code. A delay of up to 7 sec is automatically inserted in front of the prefix.

Use to select the prefix for the alternate receiver telephone number. You can enter up to nine characters. Refer to *Table 9* for other dialing character selections.

AltPh#

Default:	Blank
Selections:	0 to 9, B to F, or Blank

Use to select the alternate receiver telephone number. You can enter up to seven characters. Refer to *Table 9* for other dialing character selections.

When programming the primary and alternate telephone numbers, ensure the primary telephone number is different from the alternate telephone number.

12 V Mode

Default:	Yes
Selections:	Yes or No
Yes	12 VAC, 20 VA, 60 Hz transformer operation.
No	24 VDC supply from an existing FACP.

Use to enable either the 12 V Mode or 24 V Mode.

Class B Mode

Default:	3
Selections:	1 to 3
1	Mode 1 not acceptable for stand-alone applications.
2	Mode 2 has restricted use for stand-alone applications.
3	Mode 3 is required for most stand-alone applications.

Use to program the operating mode for the Class “B” Supervisory Circuits (Zones 2 and 3).

For detailed mode specifications, refer to *Section 2.3 Zones 2 and 3, Supervisory Circuits* beginning on page 11 for installation instructions.

Retard Time

Default:	0
Selections:	0 to 90

Use to program the retard timer for the Class “A” Alarm Initiating Circuit (Zone 1). Enter the number of seconds you want for the retard time. After an alarm condition is detected on the sensor loops, the retard timer starts. An Alarm Report is not transmitted until the retard timer reaches the value entered in Retard Time. If the faulted condition restores before the retard timer reaches the value entered in Retard Time, the Alarm Report is not transmitted.

Refer to *Section 2.2.2 Retard and Reset Times* on pages 10 and 11 for details. Refer to the appropriate NFPA Standard or the local AHJ for acceptable retard times.

Reset Time**Default:** 0**Selections:** 0 to 90

Use to program the reset timer for the Class “A” Alarm Initiating Circuit (Zone 1). Enter the number of seconds you want for the reset time. Before the retard timer sets to zero, the circuit must be in a non-alarm (restored or trouble) condition for the number of seconds entered in Reset Time.

For a detailed explanation of the reset timer, refer to *Section 2.2.2 Retard and Reset Times* on pages 10 and 11.

Hrs Til Rpt**Default:** 0**Selections:** 0 to 25

Use to program the number of hours until the first Test Report is sent. Program the number of hours from the time the control panel is powered up (or reset with the programmer) to the time the first Test Report is sent.

If both Hrs Til Rpt and Min Til Rpt are defaulted at 0, the first Test Report is sent in 12 h and all subsequent reports are sent at 24-hour intervals thereafter.

Mins Til Rpt**Default:** 0**Selections:** 0 to 59

Use to program the number of minutes until the first Test Report is sent. Program the number of additional minutes you want the first Test Report delayed beyond the hours programmed in Hrs Til Rpt.

Test Timer Default Delay: When the unit is powered up, the first test occurs 12 h later unless you program a delay in Hrs Til Rpt or Mins Til Rpt.

5.0 Receiver Reports

Title	Description
ALARM ZN 1	Closure or short between the two loops of the Class "A" Alarm Initiating Circuit. This report is delayed by the time specified in Retard Time (for waterflow alarm applications only).
ALARM ZN 2	Mode 1: Open on the Class "B" Supervisory Circuit (Terminals 10 and 11). Mode 2: Resistance on the Class "B" Supervisory Circuit (Terminals 10 and 11). Mode 3: Closure or short between terminals or a ground fault on the positive (+) side of the Class "B" Supervisory Circuit (Terminals 10 and 11).
ALARM ZN 3	Mode 1: Open on the Class "B" Supervisory Circuit (Terminals 10 and 11). Mode 2: Resistance on the Class "B" Supervisory Circuit Terminals 10 and 11). Mode 3: Closure or short between terminals or a ground fault on the positive (+) side of the Class "B" Supervisory Circuit (Terminals 10 and 11).
RESTORAL ZN 1	The Class "A" Alarm Initiating Circuit returned to normal from an alarm or trouble condition. This report is delayed by the time specified in Reset Time when the circuit restores from an alarm condition.
RESTORAL ZN 2	All modes: Trouble or alarm condition on Zone 2 cleared.
RESTORAL ZN 3	All modes: Trouble or alarm condition on Zone 3 cleared.
RESTORAL ZN 9	12 VAC Mode: Report is transmitted after AC power is restored, the control panel is programmed, or the battery is changed or recharged. 24 VDC Mode: Report is transmitted when the DC power input is applied, when the DC power input reaches 27.6 VDC after falling below 24.3 VDC, or after programming the control panel.
RESTORAL ZN B	Primary phone line restored.
RESTORAL ZN C	Alternate phone line restored.
RESTORAL ZN E	Normal test timer activation.
TROUBLE ZN 1	Break or ground on either loop of the Class "A" Alarm Initiating Circuit (no retard time applies).
TROUBLE ZN 2	Mode 1: Not available. Mode 2: Class B circuit, Terminals 10 and 11, open. Mode 3: Class B circuit, Terminals 10 and 11, open.
TROUBLE ZN 3	Mode 1: Not available. Mode 2: Class "B" Supervisory Circuit, Terminals 11 and 12, open. Mode 3: Class "B" Supervisory Circuit, Terminals 11 and 12, open.
TROUBLE ZN 9	12 VAC Mode: Low battery 24 VDC Mode: DC power input less than 24.3 V
TROUBLE ZN B	Open or short on primary telephone line.
TROUBLE ZN C	Open or short on alternate telephone line.
TROUBLE ZN E	Communications failure after ten attempts to transmit a report. The reports in the D2071A buffer when a communications failure occurs are not transmitted. The buffer is cleared. or Test timer failed to report on the first attempt. or When received in the same transmission (telephone call) with another report, indicates the other report(s) in the transmission did not get through on the first attempt.

6.0 Troubleshooting

To help prevent problems, read the preceding sections of this guide and confirm the control panel is correctly installed and programmed.

6.1 Phone Line Trouble Buzzer, LED, and Relay Activated

The Phone Line Trouble and Failure to Communicate (communications failure) activate the Phone Line Trouble Buzzer, LED, and Relay.

6.2.1 Phone Line Trouble

If the Phone Line Trouble Buzzer, LED, and Relay activate or a TROUBLE ZN B or TROUBLE ZN C is received:

1. Ensure the cords for both lines are correctly connected to the RJ31X or RJ38X jacks and the D2071A.
2. Ensure the RJ31X or RJ38X jacks are correctly wired. The incoming telephone line must be wired to Terminals 4 and 5. The in-house telephone system must be wired to Terminals 1 and 8.
3. Ensure all telephones are on hook and not on hold. Some telephone company systems automatically drop the voltage and current when telephones are left off hook for extended periods. Generally, placing the telephone on hook restores the telephone line.

If you perform Steps 1 through 3 and the telephone line is still not restored, meter the telephone line's voltage and current. The telephone line should meter a minimum of 20 VDC when the D2071A is idle (on hook). If the voltage is below 20 VDC, meter for current. The telephone line must have a minimum current of 10 mA. If the readings are below the minimum values, contact your telephone company repair service.

6.2.2 Communications Failure

Communications failure occurs after ten unsuccessful attempts to reach the receiver. Follow the procedure described in *Section 6.2.1 Phone Line Trouble* to confirm the telephone lines at the D2071A installation are working properly.

If the telephone lines are working, monitor them (preferably at the receiver) for one of the symptoms listed in *Table 11*.

Table 11: Communications Failures

Symptom	Solution
The line rings but the receiver does not pick up.	<ul style="list-style-type: none"> • Confirm the lines are correctly connected to the receiver. • Confirm the correct prefixes and telephone numbers for the receiver are programmed into the D2071A.
The D2071A reaches a busy signal for all ten attempts to reach the receiver.	<ul style="list-style-type: none"> • Confirm the correct prefixes and telephone numbers for the receiver are programmed into the D2071A. • The receiver's call load might be too great. Additional telephone lines might be needed for the receiver. • Confirm the telephone lines are not shorted between the telephone company's equipment and the receiver. Place a call to the number for the receiver. If you hear the line ring (but the ring detector does not light) or if you hear a busy signal and the green on line (OL) indicator is not lit, call the telephone company for service.
The receiver answers the call and provides an acknowledgment tone, but the communicator does not transmit its reports.	Confirm the receiver is producing a 2300 Hz acknowledgment tone.
The receiver answers the call and provides an initial handshake acknowledgment tone, but does not acknowledge the D2071A Report transmission with a kiss-off acknowledgment tone.	<ul style="list-style-type: none"> • Confirm the receiver is compatible with the format the D2071A is using (either BFSK or Superfast). Refer to the Transmit BFSK function in <i>Section 4.0 Program Record Transmit</i> on page 20. • Noisy telephone lines can interfere with report transmission. Try making a voice call on the line to confirm the noisy condition. You might need to have the telephone company check the lines.

6.3 Trouble Zone E

Refer *Table 10 on page 23* for the causes of the TROUBLE ZN E Report.

If TROUBLE ZN E Reports regularly accompany other reports:

- After two attempts to reach the receiver, a D2071A switches to the alternate phone line for the third attempt. Confirm the primary phone is a DTMF line.
- If the D2071A is programmed for DTMF dialing and you confirm it is connected to DTMF telephone lines, try programming it for pulse dialing. The local telephone company might not be compatible with the D2071A's dialing speed.
- The D2071A might be getting a busy signal at the first dialing attempt. The receiver's call load might be too great. Additional telephone lines might be needed for the receiver.
- Noisy telephone lines might be interfering with report transmission. Try making a voice call on the line to confirm the noisy condition. You might need to have the telephone company check the lines.
- Confirm the Zone 1 Style D initiating circuit is normal. Refer to *Section 2.2 Zone 1, Alarm Initiating Circuit* on page 10.
- Confirm the Zones 2 and 3 Style A supervisory circuits are normal. Refer to *Section 2.3 Zones 2 and 3, Supervisory Circuits* on page 11.
- If using the 24 V Mode, test Terminals 1 and 2 for proper input voltage. Refer to *Section 2.6.2 24 VDC Mode* on page 14.
- If using 12 V Mode, test Terminals 1 and 2 for proper input voltage. Refer to *Section 2.6.1 12 VAC Mode* on page 13.
- If using the 12 V Mode, test the battery for proper float voltage. Refer to *Section 2.7 Secondary Power Supply and Charging Circuit (12 VAC Mode Only)* on pages 14 and 5.
- Ensure the battery leads are connected and not corroded. Refer to *Section 2.7 Secondary Power Supply and Charging Circuit (12 VAC Mode Only)*.

6.4 Programming with the D5200 Programmer

Before programming the D2071A, ensure the D2071 Product Handler is loaded in the programmer. Become familiar with the basic operation of the programmer as described in the *D5200 Operation Manual* (P/N: 74-06255-000).

If you still experience problems, press [SEND LOAD]. Plug in 2071 appears on the programmer.

Confirm the:

1. D5206 Adapter is security plugged into the D2071A.
2. D5203 Programmer Cord is securely plugged into the D5206 Adapter.
3. D5203 Programmer Cord is plugged into the communicator port on the programmer.
4. D2071A is connected to the appropriate power supply.

6.5 Zones Problems

Table 12: Zone Problems	
Zone 1 Alarm Initiating Circuit	
Symptom	Solution
Does not go into alarm.	Maintain a short between Loop "A" (Terminals 6 and 7) and Loop "B" (Terminals 8 and 9) for at least the time programmed in Retard Time.
Does not immediately restore after an alarm.	The circuit must remain normal for at least the time programmed in Reset Time.
Remains in trouble or alarm with all devices connected to the circuit normal.	<p>An open or ground on the circuit causes a Trouble Report.</p> <ul style="list-style-type: none"> Remove the circuit loops from the D2071A and meter them for continuity. There should be no more than 100 Ω resistance between the wires that connect to Terminals 6 and 7 and between the wires that connect to Terminals 8 and 9. With the wires for the circuit loops still removed from the D2071A, meter them for continuity to ground.
Zone 2 or 3 Supervisory Circuit	
Symptom	Solution
Remains in trouble or alarm with all devices connected to the circuit normal.	<ul style="list-style-type: none"> Confirm the circuit is wired for the mode you selected in the Class "B" Mode. Copy the program from the D2071A to confirm the Class "B" Mode is correctly programmed. <p>An open on the circuits causes a Trouble Report for Modes 2 and 3, and an Alarm Report for Mode 1. A ground can cause an Alarm Report for Modes 2 and 3.</p> <ul style="list-style-type: none"> Remove the circuit loops from the D2071A and meter them for continuity. There should be no more than 100 Ω plus the value of the resistors in the circuit between the wires that connect to Terminals 10 and 11, or between the wires that connect to Terminals 11 and 12. With the wires for the circuit loops still removed from the D2071A, meter them for continuity to ground.

6.6 Trouble Zone 9

A TROUBLE ZN 9 Report tells you there is a problem with the battery when the D2071A is in 12 VAC Mode. It also indicates there is a problem with the power supply in the 24 VDC Mode.

6.6.1 12 VAC Mode (Battery and Transformer)

When a TROUBLE ZN 9 Report occurs in 12 VAC Mode:

1. Confirm there is at least 12 VAC on Terminals 1 and 2.
2. Ensure the outlet the transformer is plugged into meters between 110 VAC and 120 VAC.
3. Confirm the output for the transformer connected to Terminals 1 and 2 is rated for 12 VAC and at least 20 VA.
4. Disconnect the transformer from Terminals 1 and 2 and meter the battery at Terminals 3 and 4. A fully charged battery should show 13.8 V.
5. Ensure the battery is a 12 V sealed, lead-acid type. It should be rated at 2.3 Ah or 7 Ah or greater, depending on the NFPA classification of the installation.

6.6.2 24 VDC Mode (Connection to FACP)

When a TROUBLE ZN 9 Report occurs in 24 VDC Mode:

1. Confirm Terminals 1 and 2 have 27.6 VDC.
2. Ensure the earth ground is not connected to Terminal 3.
3. Confirm Terminals 4 and 5 are not connected to a battery.
4. Confirm program item **12 V Mode** is set to **NO**.

7.0 Specifications

Table 13: Specifications			
Power Input	12 VAC, 20 VA with 12 VDC battery 24 VDC		
Operating Current	Specification	12 VAC Mode	24 VAC Mode
	Idle Current	29.5 mA	30.0 mA
	Battery Charging	51.0 mA	N/A
	Alarm with Relay	50.0 mA or 110 mA	61.0 mA or 115 mA
	Alarm without Relay	31.5 mA or 79.0 mA	32.0 mA or 80.0 mA
	Phone Trouble with Relay	82.0 mA or 120.0 mA	84.5 mA or 140 mA
	Phone Trouble without Relay	54.0 mA or 110 mA	55.5 mA or 110 mA
	Alarm and Trouble with Relay	110 mA or 160 mA	140 mA or 170 mA
	Alarm and Trouble without Relay	55.5 mA or 102 mA	58.0 mA or 140 mA
Minimum Panel Operation Voltage	12 V Mode: 8.5 VDC 24 V Mode: 11.1 VDC		
Zone 1 Voltage	Multi-meter in parallel with normal loop Terminals 6 and 7 (-) and normal loop Terminals 8 and 9 (+). Normal: 1.92 VDC Alarm: 0.3 VDC Open: N/A Response Time: 0.2 to 90 sec, depending on the retard or reset time		
Zones 2 and 3 Voltages	Multi-meter in parallel with normal loop Terminals 10 and 11 (ZN 2), 11 and 12 (ZN 3). Mode 1 Normal: 0.0 VDC Alarm (Open): 1.8 VDC Response time: approximately 2 to 4 sec Mode 2 Normal: 0.0 VDC Alarm (Resist): 1.8 VDC Trouble (Break): 9.3 VDC Response time: approximately 2 to 4 sec Mode 3 Normal: 5.8 VDC Alarm (Closed): 1.7 VDC Trouble (Open): 10.3 VDC Response time: approximately 2 to 4 sec		
Phone Voltage	Minimum: 20 VDC Normal: 48 VDC to 52 VDC; 24 VDC to 26 VDC		
Operating Temperature	+32°F to +120°F (0°C to +49°C)		
Enclosure	Color: red Size (L x W): 7.8 in. x 4.4 in. (20.0 cm x 11.2 cm) including mounting tabs Material: non-conductive plastic ABS UL94V-O		
Wire Specifications	Refer to NEC, NFPA 70, Article 760 for wire specifications. D1220 Transformer wiring distances:		
	18 AWG (1.2 mm)	250 ft (76.2 m) maximum	
	16 AWG (1.5 mm)	374 ft (114 m) maximum	
	14 AWG (1.8 mm)	600 ft (182.9 m) maximum	
	12 AWG (2.3 mm)	1000 ft (304.8 m) maximum	

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