Digital Alarm Communicator/Transmitters

411/411UD

Manual

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Fire Alarm & Emergency Communication System Limitations

While a life safety system may lower insurance rates, it is not a substitute for life and property insurance!

An automatic fire alarm system—typically made up of smoke detectors, heat detectors, manual pull stations, audible warning devices, and a fire alarm control panel (FACP) with remote notification capability—can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

An emergency communication system—typically made up of an automatic fire alarm system (as described above) and a life safety communication system that may include an autonomous control unit (ACU), local operating console (LOC), voice communication, and other various interoperable communication methods—can broadcast a mass notification message. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire or life safety event.

The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premises following the recommendations of the current edition of the National Fire Protection Association Standard 72 (NFPA 72), manufacturer's recommendations, State and local codes, and the recommendations contained in the Guide for Proper Use of System Smoke Detectors, which is made available at no charge to all installing dealers. This document can be found at http://www.systemsensor.com/appguides/. A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off in as many as 35% of all fires. While fire alarm systems are designed to provide early warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons:

Smoke detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in or behind walls, on roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second-floor detector, for example, may not sense a first-floor or basement fire.

Particles of combustion or "smoke" from a developing fire may not reach the sensing chambers of smoke detectors because:

- Barriers such as closed or partially closed doors, walls, chimneys, even wet or humid areas may inhibit particle or smoke flow.
- Smoke particles may become "cold," stratify, and not reach the ceiling or upper walls where detectors are located.
- Smoke particles may be blown away from detectors by air outlets, such as air conditioning vents.
- Smoke particles may be drawn into air returns before reaching the detector.

The amount of "smoke" present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alarm at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm.

Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectronic sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast-flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

Smoke detectors cannot be expected to provide adequate warning of fires caused by arson, children playing with matches (especially in bedrooms), smoking in bed, and violent explosions (caused by escaping gas, improper storage of flammable materials, etc.).

Heat detectors do not sense particles of combustion and alarm only when heat on their sensors increases at a predetermined rate or reaches a predetermined level. Rate-of-rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist. Heat detectors are designed to protect property, not life.

IMPORTANT! Smoke detectors must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power. If detectors are not so located, a developing fire may damage the alarm system, compromising its ability to report a fire.

Audible warning devices such as bells, horns, strobes, speakers and displays may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building. Any warning device may fail to alert people with a disability or those who have recently consumed drugs, alcohol, or medication. Please note that:

- An emergency communication system may take priority over a fire alarm system in the event of a life safety emergency.
- Voice messaging systems must be designed to meet intelligibility requirements as defined by NFPA, local codes, and Authorities Having Jurisdiction (AHJ).
- Language and instructional requirements must be clearly disseminated on any local displays.
- Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.
- Studies have shown that certain people, even when they hear a fire alarm signal, do not respond to or comprehend the meaning of the signal. Audible devices, such as horns and bells, can have different tonal patterns and frequencies. It is the property owner's responsibility to conduct fire drills and other training exercises to make people aware of fire alarm signals and instruct them on the proper reaction to alarm signals.
- In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

A life safety system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time and only if the batteries have been properly maintained and replaced regularly.

Equipment used in the system may not be technically compatible with the control panel. It is essential to use only equipment listed for service with your control panel.

Telephone lines needed to transmit alarm signals from a premises to a central monitoring station may be out of service or temporarily disabled. For added protection against telephone line failure, backup radio transmission systems are recommended.

The most common cause of life safety system malfunction is inadequate maintenance. To keep the entire life safety system in excellent working order, ongoing maintenance is required per the manufacturer's recommendations, and UL and NFPA standards. At a minimum, the requirements of NFPA 72 shall be followed. Environments with large amounts of dust, dirt, or high air velocity require more frequent maintenance. A maintenance agreement should be arranged through the local manufacturer's representative. Maintenance should be scheduled monthly or as required by National and/or local fire codes and should be performed by authorized professional life safety system installers only. Adequate written records of all inspections should be kept.

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Installation Precautions

Adherence to the following will aid in problem-free installation with long-term reliability:

WARNING - Several different sources of power can be connected to the fire alarm control panel. Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service, or operate this unit until manuals are read and understood.

CAUTION - System Re-acceptance Test after Software Changes: To ensure proper system operation, this product must be tested in accordance with NFPA 72 after any programming operation or change in site-specific software. Re-acceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring. All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for operation at 0-49º C/32-120º F and at a relative humidity 93% ± 2% RH (non-condensing) at 32°C ± 2°C (90°F ± 3°F). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15-27º C/60-80º F.

Verify that wire sizes are adequate for all initiating and indicating device loops. Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage.

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning induced transients. Although no system is completely immune from lightning transients and interference, proper grounding will reduce susceptibility. Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes. Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, or printed circuit board location.

Do not tighten screw terminals more than 9 in-lbs. Overtightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static suppressive packaging to protect electronic assemblies removed from the unit.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation.

Precau-D1-9-2005

FCC Warning

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause interference to radio communications. It has been tested and found to comply with the limits for class A computing devices pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when devices are operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his or her own expense.

Canadian Requirements

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

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This digital communicator has been designed to comply with standards set forth by the following regulatory agencies:

- Underwriters Laboratories
- NFPA 72 National Fire Alarm

Before proceeding, the installer should be familiar with the following documents.

NFPA Standards

This digital communicator complies with the NFPA 72 National Fire Alarm Code for:

Central Station Signaling Systems Protected Premises Unit (Automatic, Manual and Waterflow)

Local Fire Alarm Systems (Automatic, Manual, Waterflow and Sprinkler Supervisory)

Proprietary Fire Alarm Systems (Protected Premises Unit)

Remote Station Fire Alarm Systems

Installation, Maintenance and Use of Notification Appliances for Fire Alarm Systems

Inspection, Testing and Maintenance for Fire Alarm Systems

Underwriters Laboratories Documents:

UL 217 Smoke Detectors, Single and Multiple Station

UL 268 Smoke Detectors for Fire Protective Signaling Systems

UL 346 Waterflow Indicators for Fire Protective Signaling Systems

UL 464 Audible Signaling Appliances

UL 521 Heat Detectors for Fire Protective Signaling Systems

UL 864 Standard for Control Units for Fire Protective Signaling Systems

UL 1076 Proprietary Burglar Alarm Units and Systems

UL 1481 Power Supplies for Fire Protective Signaling Systems

UL 1635 Digital Alarm Communicator System Units

UL 1638 Visual Signaling Appliances

UL 1971 Signaling Devices for Hearing Impaired

Other:

NEC Article 250 Grounding

NEC Article 300 Wiring Methods

NEC Article 760 Fire Protective Signaling Systems

Applicable Local and State Building Codes

Requirements of the Local Authority Having Jurisdiction (LAHJ)

This product has been certified to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, 9th Edition. Operation of this product with products not tested for UL 864, 9th Edition has not been evaluated. Such operation requires the approval of the local Authority Having Jurisdiction (AHJ).

Section 1: Product Description

The 411 is a three, and the 411UD is a four input/channel, dual line, digital communicator which can be used as a slave communicator with UL listed fire and non-fire control panels. The three or four inputs are compatible with normally open relay contacts, require End-Of-Line (EOL) resistors, and are fully programmable. The 411/411UD interfaces with the public switched telephone network and is compatible with most central station receivers. A total of fifteen popular communications formats are supported, including Ademco Contact ID. *The communicator also contains a unique DACT option that eliminates 'dialer runaway'. It restricts the transmission of any trouble event to 10 attempts in a 24 hour period.* Power supplied must be 12 or 24 volts, filtered and non-resettable. Accessories include the Fire-Watch 411 Series DACT Programmer (Model PRO-411) as well as the PK-411 Windows®- based remote site programming software.

1.1 Product Features

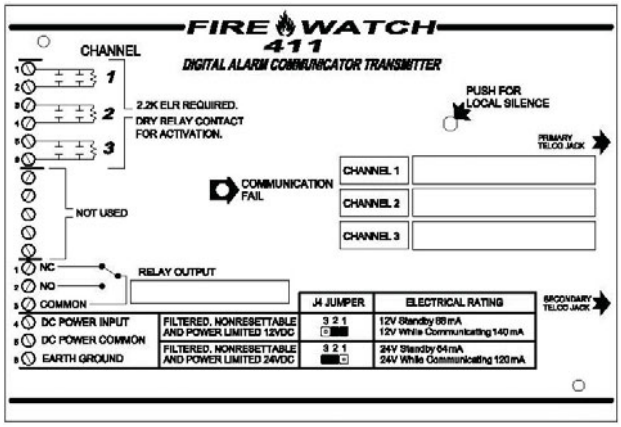


Figure 1.1 411 Digital Communicator



Figure 1.2 411UD Digital Communicator

- Three input channels (411) or four input channels (411UD)
- Dual telephone lines
  - Dual telephone line voltage detect
  - Alternating phone lines for 24 hour test messages
- Program locations for entering up to 20-digit central station and service terminal telephone numbers
- Surface mount technology
- Compact in size
- Separate external keypad and display
  - provides means of programming digital communicator in program mode
  - provides means of testing phone circuits in troubleshoot mode
- 6.841" (17/376 cm) X 4.595" (11.671 cm) X 1.0" (2.54 cm) metal enclosure
- Communicates vital status of monitored control panel:
  - fire alarm
  - host control panel trouble
  - fire supervisory
  - AC (mains) power loss (programmable)
  - other
- Communicates vital status of 411/411UD digital communicator:
  - digital communicator troubles
  - telephone Line 1 and 2 voltage fault

  - Primary Central Station number communication fault
  - Secondary Central Station number communication fault
  - system off-normal (local Program Mode entered)
  - 24 Hour normal test
  - 24 Hour abnormal test (24 hour test message with previously reported alarm or trouble still active)
- Individual LEDs for:
  - Communication Fail (visible with cover on)
  - DACT Trouble (visible with cover on) - *411UD only*
  - Channel Active (visible with cover on) - *411UD only*
  - Primary Phone Line (PH1) active - *411UD only*
  - Secondary Phone Line (PH2) active - *411UD only*
- Piezo sounder
- Local piezo silence switch which silences onboard piezo sounder (accessible without removing cover)
- Real time clock
- Extensive transient protection
- One Form-C relay, fully programmable to activate for the following conditions:
  - fire alarm
  - host control panel trouble
  - fire supervisory
  - total communication failure
  - AC loss
  - DACT trouble (factory default for relay)
- PK-411 Remote Upload/Download Kit - *411UD only*
- 'Dialer runaway' feature
- Trouble Resound - if a trouble is silenced and the cause of the trouble is not cleared, the panel will resound the trouble buzzer every midnight, until the trouble is cleared

1.2 Specifications

Operating Power

The 411/411UD may be powered from UL listed control panels that output nonresettable and power-limited 12 or 24 VDC power. The configuration of Jumper J4 determines whether 12 VDC power is to be supplied directly to the 411/411UD circuit board or 24 VDC power is to be supplied and then internally regulated down internally to 12 VDC.

DC Power - TB1 Terminals 4(+) and 5(-), Terminal 6 is Earth Ground

- J4 Jumper shorted on pins 2 and 3 - Filtered, nonresettable and power-limited 24 VDC (nominal) power must be supplied at TB1 Terminals 4(+) and 5(-). UL-listed operating range is 17 to 28 VDC. Current requirements are 64 mA in standby and 120 mA[1] while communicating.
- J4 Jumper shorted on pins 1 and 2 - Filtered, nonresettable and power-limited 12 VDC (nominal) power must be supplied at TB1 Terminals 4(+) and 5(-). UL-listed operating range is 9.8 to 14 VDC. Current requirements are 88 mA in standby and 140 mA[1] while communicating.

1. A maximum of 200 mA is possible with all input channels shorted, the 411/411UD communicating, the Programmer connected, and Lamp Test active.

Channels/Inputs[1] - TB2 Terminals 1 through 6 (411) or 8 (411UD)

Programmable Channels 1 through 3 (411) or 4 (411UD)
Power-limited circuitry
Operation: All channels NFPA Style B (Class B). Requires Normally Open contact to trigger
Normal Operating Voltage: 12 VDC
Alarm Current: 2.68 mA
End-Of-Line Resistor: 2.2K ohms, ½ watt (P/N 27070)
Short Circuit Current: 3.9 mA per channel/input
Restricted to 20 feet (6 m) in conduit and in the same room

One Form-C Relay - TB1 Terminals 1 through 3

Contact rating: 2.0 amps @ 30 VDC (resistive)
Non-supervised

1.3 Circuits

The 411/411UD circuit board utilizes surface mount technology and contains a MicroController Unit (MCU), dual modular phone line jacks, piezo sounder, piezo silence switch, one programmable relay and two connectors for input, output and power wiring.

1.3.1 Power Requirements

Voltage for the digital communicator may be a power-limited, filtered, nonresettable nominal 12 VDC (must be withing 9.8 to 14 VDC) or nominal 24 VDC (must be within 17 to 28 VDC). Jumper J4 is used to select the power source. For 12VDC power, short pins 1 and 2. For 24 VDC, short pins 2 and 3 as shown below.

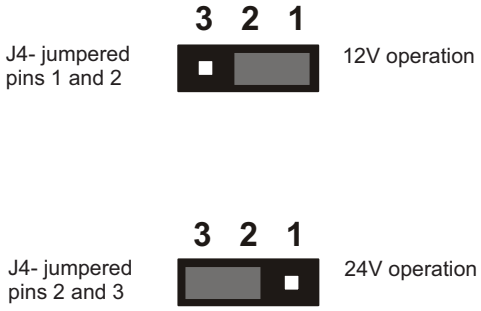


Figure 1.3 J4 Jumper Selection

1.3.2 Channels/Inputs

Three (411) or four (411UD) input channels are provided on the 411/411UD digital communicator which are used for connection to the control panel being monitored. Each input can be programmed to monitor the control panel for:

- fire alarm activation
- trouble activation
- fire supervisory activation
- AC loss activation

Each input channel is configured as a Class B circuit and must be wired to a Normally Open contact.

1. Channels/inputs do not support 2-wire smoke detectors.

1.3.3 Primary and Secondary Phone Lines

Modular jacks are used to interface the primary and secondary phone lines to the public telephone network.

1.3.4 Earth Ground

Connect a separate earth ground wire to TB1 terminal 6 for transient protection.

1.4 Controls and Indicators

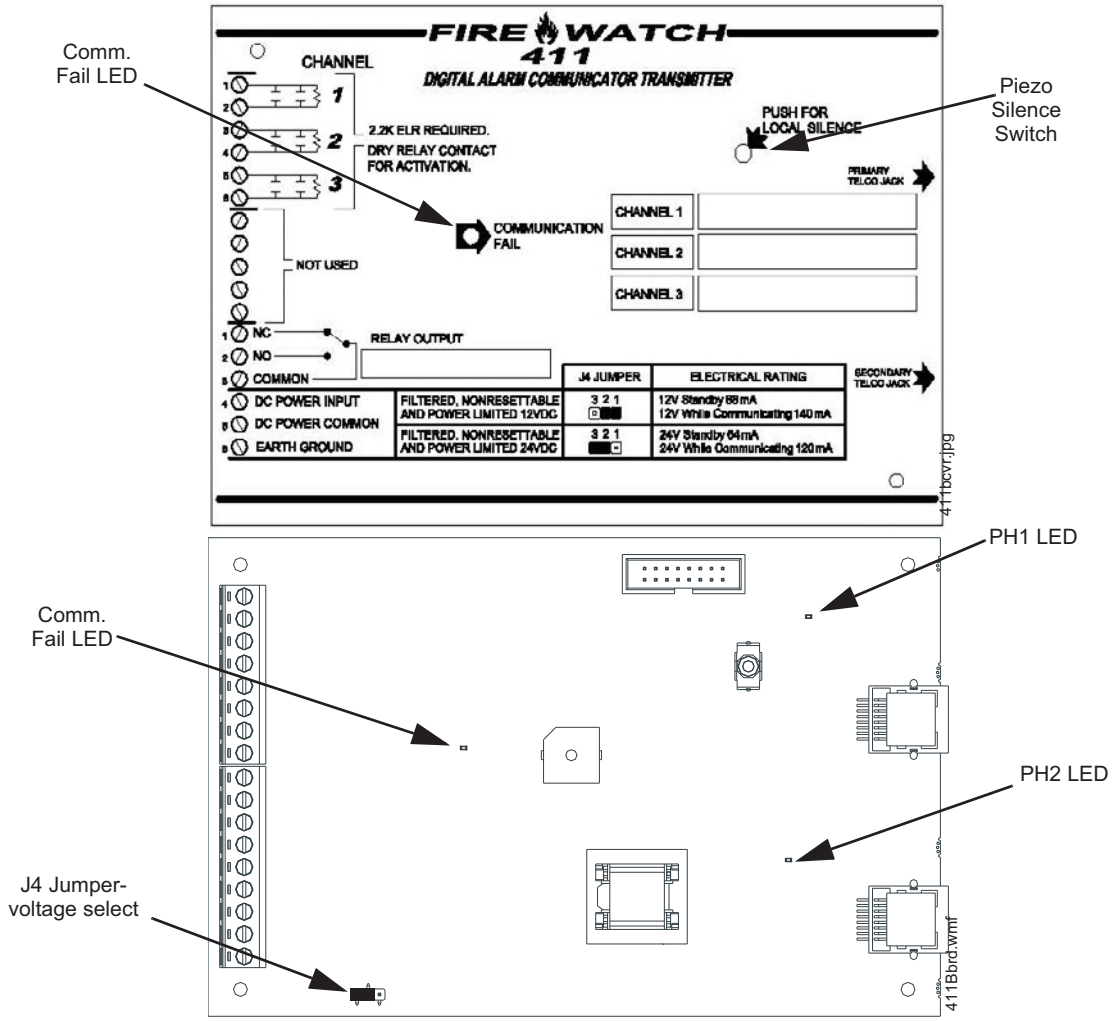


Figure 1.4 411 Controls and Indicators

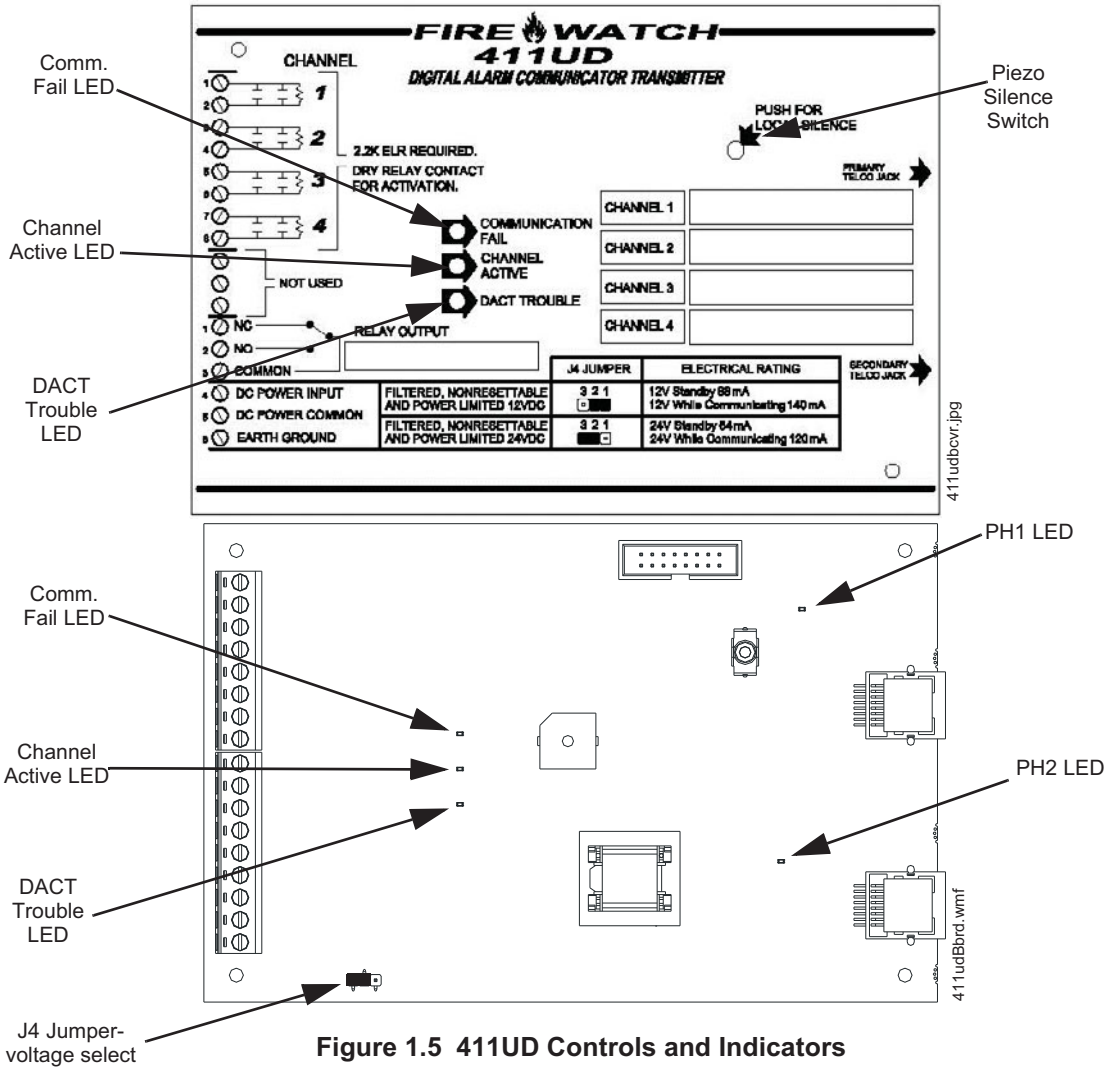


Figure 1.5 411UD Controls and Indicators

Front Panel Switch

Silence Switch - press to silence local 411/411UD piezo sounder

Piezo Sounder

The 411/411UD piezo sounder is used to locally annunciate DACT troubles. DACT troubles include input channel open circuit, phone line 1 or 2 voltage fault, phone number 1 or 2 communication fault, total communication failure and communications disabled.

Front Panel Indicators

- Communication Fail - yellow LED
- DACT Trouble - yellow LED - *411UD only*
- Channel Active - green LED - *411UD only*

Circuit Board Indicators

- Primary Phone Line 1 (PH1) Active - red LED
- Secondary Phone Line 2 (PH2) Active - red LED

1.5 Digital Communicator Operation

The 411/411UD has been designed to be compatible with a wide variety of fire alarm, non-fire and combination control panels. Numerous formats are also available for communication to a central station. Two modular phone jacks allow easy connection to telephone lines. Modular jacks are labeled PH1 and PH2 for the Primary and Secondary phone lines. The digital communicator provides the following functions:

- Line Seizure- takes control of the phone lines, disconnecting any premises phones using the same lines
- Off/On-Hook - perform on and off-hook status to phone lines
- Listen for dial tone - 440 hertz tone typical in most networks
- Dialing the Central Station(s) phone number - default is Touch-Tone®, programmable to rotary
- Discern proper Central Station 'ACK' and 'Kiss-off' tone(s)
- Transmit data to the Central Station(s)
- Verify data has been accepted by the Central Station(s)
- Hang-up and release phone lines
- Communicate in a variety of formats (Table 4.1, “Format Selection Addresses (20 and 50) Programming,” on page 42).

1.6 Telephone Requirements and Warnings

1.6.1 Telephone Circuitry - PH1 & PH2

AC Ringer Equivalence Number (REN) = 0.4B

Complies with FCC Part 68

Mates with RJ31X Male Connector

Supervision Threshold: less than 4.0 volts for 2 minutes

The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to determine the maximum REN for the calling area.

1.6.2 Digital Communicator:

Before connecting the 411/411UD to the public switched telephone network, the installation of two RJ31X jacks is necessary. The following information is provided if required by the local telephone company:

Manufacturer: Fire•Lite Alarms Inc./Notifier
One Fire-Lite Place
Northford, CT 06472

Product Model Number: 411/411UD

FCC Registration Number: **1W6AL04B411UDAC**

AC Ringer Equivalence 0.4B

FCC ID label is located on the inside cover.

Important! The DACT must *not* be used to dial a phone number that is call-forwarded per requirements of UL 864 9th Edition.

1.6.3 Telephone Company Rights and Warnings:

The telephone company, under certain circumstances, may temporarily discontinue services and/or make changes in its facilities, services, equipment or procedures which may affect the operation of this digital communicator. However, the telephone company is required to give advance notice of such changes or interruptions. If the digital communicator causes harm to the telephone network, the telephone company reserves the right to temporarily discontinue service. Advance notification will be provided except in cases when advance notice is not practical. In such cases, notification will be provided as soon as possible. The opportunity will be given to correct any problems and to file a complaint.

DO NOT CONNECT THIS PRODUCT TO COIN TELEPHONE, GROUND START OR PARTY LINE SERVICES.

When the digital communicator activates, premise phones will be disconnected.

Two separate phone lines are required. Do not connect both telephone interfaces to the same telephone line.

The digital communicator must be connected to the public switched telephone network upstream of any private telephone system at the protected premises.

An FCC compliant telephone cord must be used with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible RJ31X male modular plug which is Part 68 compliant.

1.7 Operational Modes

1.7.1 Normal Mode

Normal Mode is the standard mode of operation in which the 411/411UD digital communicator monitors the host control panel status as well as telephone line voltage and other internal circuits. In addition to locally annunciating system trouble, active channel and communication fail, the digital communicator transmits system status information to UL listed central station receivers. Transmitted data includes fire alarm, fire alarm trouble, supervisory alarm and AC loss information. Specific digital communicator troubles are also transmitted.

1.7.2 Real Time Clock Mode

Real Time Clock Mode allows the user to change the digital communicator's internal 24 hour clock. Connecting an external Programmer allows access to the various Modes of operation. While the communicator is in Real Time Clock Mode, it does not monitor channel inputs. Use of this mode requires a valid password.

1.7.3 Program Mode

Program Mode is used to change the programmed functions of the 411/411UD digital communicator. While the communicator is in Program Mode, it does not monitor channel inputs. Use of this mode requires a valid password.

1.7.4 Troubleshoot Mode

Troubleshoot Mode may be used for testing the telephone line interconnect wiring. Connection from the 411/411UD's modular jacks, through the RJ31X jacks and into the telephone network may be easily checked. In this mode, the Programmer keypad acts similar to a telephone touchpad. While the communicator is in Troubleshoot Mode, it does not monitor channel inputs.

1.7.5 Default Mode

Default Mode may be used to return all 411/411UD programming back to the factory default settings.

Section 2: Installation

2.1 Mounting Options

The 411/411UD may be mounted in any metal enclosure UL-listed for fire protective use. Mounting tabs are provided for ease of mounting. No other devices are to be installed in the enclosure.

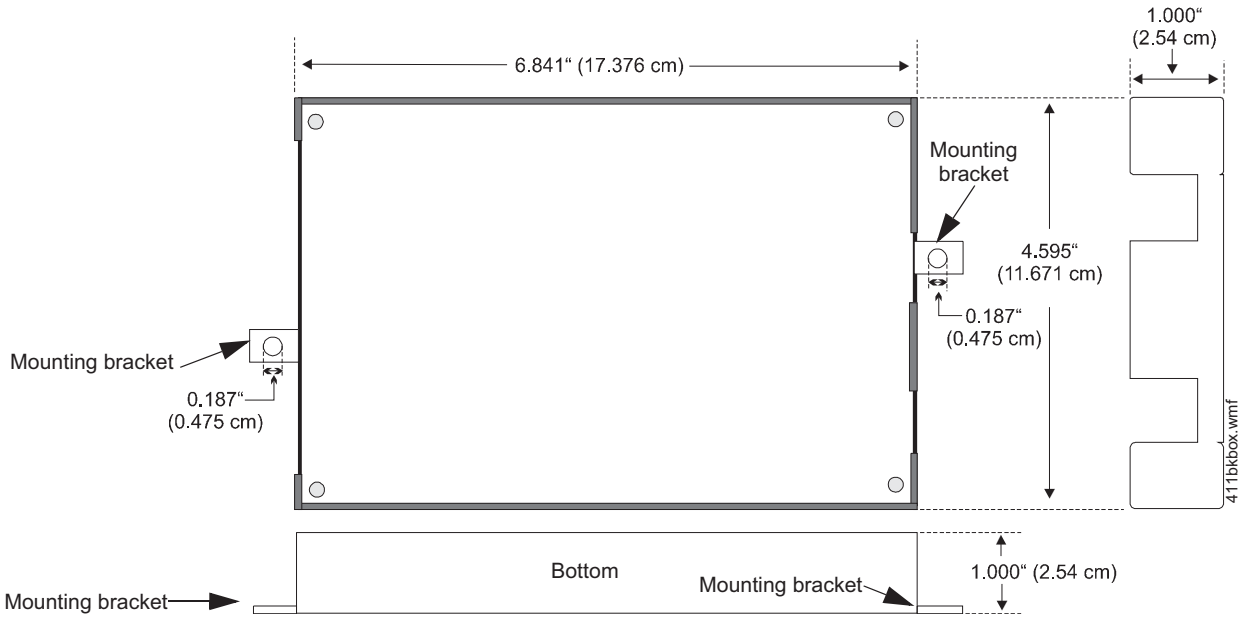


Figure 2.1 411/411UD Enclosure

2.2 Operating Power

CAUTION: DISCONNECT ALL SOURCES OF POWER
DISCONNECT ALL POWER BEFORE SERVICING THE 411/411UD. THE DIGITAL COMMUNICATOR MAY BE DAMAGED BY REMOVING AND/OR INSERTING COMPONENTS OR INTERCONNECTING CABLES WHILE THE UNIT IS ENERGIZED.

12VDC or 24VDC nominal power connections are made to TB1 on the 411/411UD circuit board. When jumper J4 is shorted across pins 1 and 2, the 411/411UD is set for 12 VDC nominal operating voltage. Power-limited, filtered, nonresettable 12 VDC nominal operating power can be supplied directly to the 411/411UD by a UL listed 12 VDC power supply listed for fire protection or by a nonresettable 12 VDC output from a control panel. Alternatively, shorting J4 Jumper on pins 2 and 3 allows the 411/411UD to be supplied by a power-limited, nonresettable, UL listed 24 VDC power supply, which, in order to comply with UL 864 must be listed for Fire Protective Signaling Systems or by a nonresettable 24 VDC output from a control panel. This nominal 24 VDC power is then internally regulated by the digital communicator to 12 VDC operating power. Refer to Figure 1.3 on page 11 for more information on J4 and pin locations.

Note that upon power-up, the 411/411UD will immediately annunciate a DACT trouble since the communicator is factory defaulted to 'communicator disabled' at program location 64.

2.3 Input Channels

The 411/411UD digital communicator has three (411) or four (411UD) channel inputs. Each channel is a Style B (Class B) Initiating Device Circuit designed to accept any normally-open contact device. Since channels do not latch, a reset switch is not provided by the 411/411UD. The communicator transmissions to a central station track the state of the inputs. Refer to Figure 2.2, "Style B Channel Connections" on page 18 for information on wiring Style B circuits.

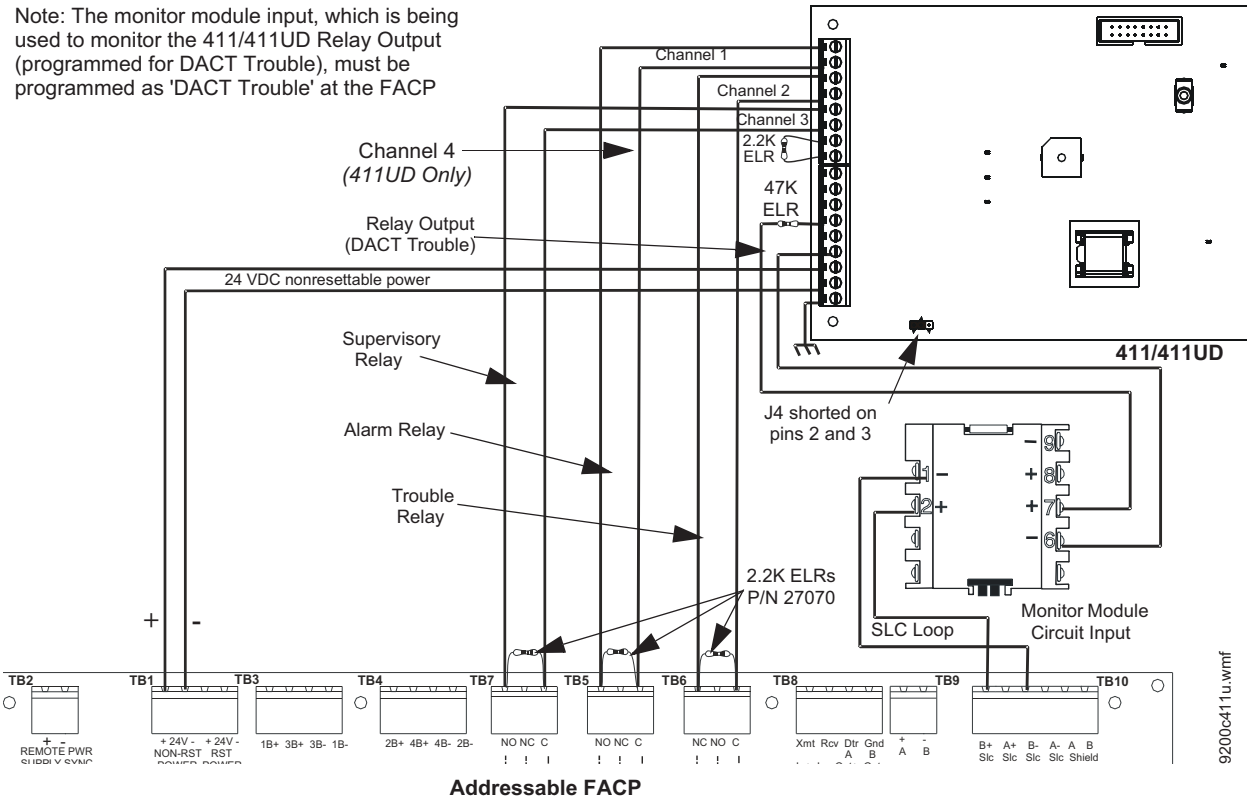


Figure 2.1 Typical FACP Connection to 411/411UD

Each input channel monitors a normally open device and may be programmed as follows:

- fire alarm
- host control panel trouble
- fire supervisory
- AC Loss

Programming the input channel automatically programs the transmitted event code, however, the event code can be changed since it is fully programmable. Event code transmissions can be tailored to the specific application and requirements of the Central Station.

AC Loss Reporting - *411*: Any channel programmed for AC Loss, will transmit a specific AC loss signal only if the assigned Normally Open contact provides this function. Some panels provide an option that will automatically delay the trigger of their system trouble relays upon loss of AC. If this is provided by the host panel, program no additional delay in the 411. Be certain to verify the method employed by the host panel to be monitored.

AC Loss Reporting - *411UD*: Channel 4 which is defaulted to AC Loss on the 411UD, or any channel programmed for AC Loss, will transmit a specific AC loss signal only if the assigned Normally Open contact provides this function. Some panels provide an option that will automatically delay the trigger of their system trouble relays upon loss of AC. If this is provided by the host panel, use Channel 2. Be certain to verify the method employed by the host panel to be monitored.

The factory default programming for each channel is as follows:

- Channel 1 - fire alarm
- Channel 2 - host control panel trouble
- Channel 3 - fire supervisory
- Channel 4 (*411UD Only*) - AC Loss

Channel Labels

Note that space is provided for labeling the function of each channel. Write the function that has been programmed for each channel in the white boxes located to the right of the channel designator.

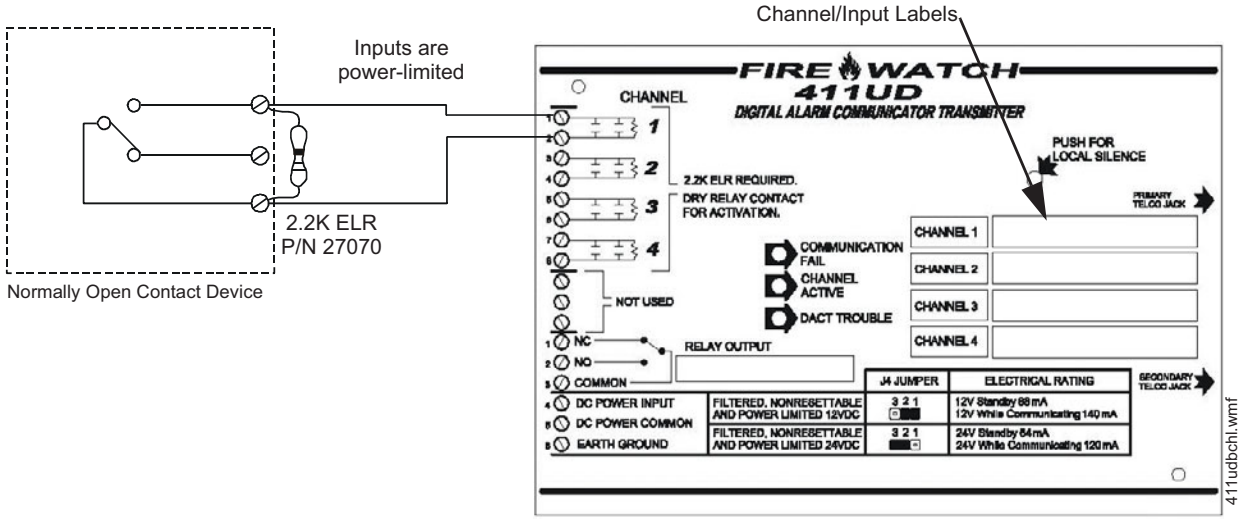


Figure 2.2 Style B Channel Connections

2.4 Output Circuits

Relays

The 411/411UD provides one Form-C relay rated for 2.0 amps @ 30 VDC (resistive). The relay is programmable for activation on fire alarm, host panel trouble, fire supervisory, total communication failure, AC loss and DACT trouble.

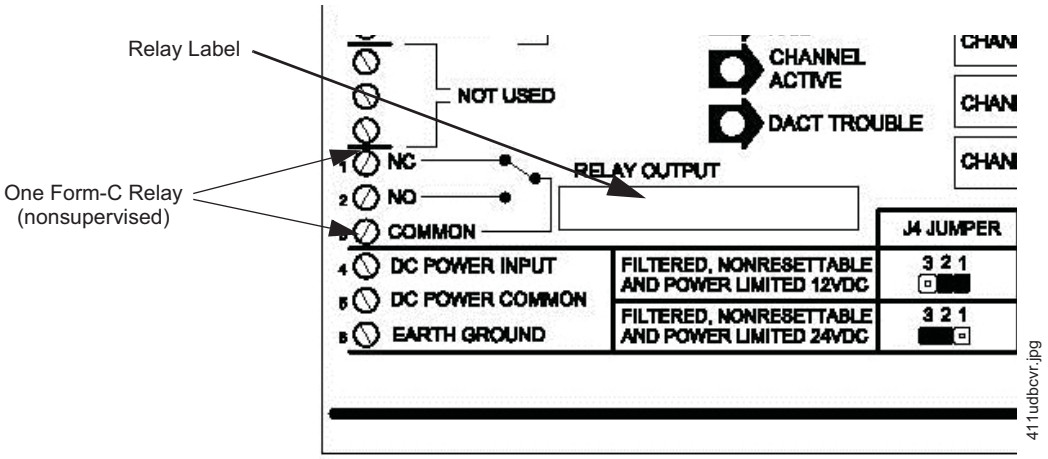


Figure 2.3 Programmable Relay

Relay Label

Note that space is provided for labeling the function of the relay. Write the function that has been programmed for the relay in the white box located below the relay designator.

2.5 Telephone Circuits

Provision to connect two independent telephone lines is available via two telephone jacks labeled PH1 (Primary) and PH2 (Secondary). Telephone line control/command is possible via double line seizure as well as usage of an RJ31X style interconnection. (RJ31X jacks must be ordered separately).

CAUTION: It is critical that the 411/411UD be located as the first device on the incoming telephone circuit to properly function.

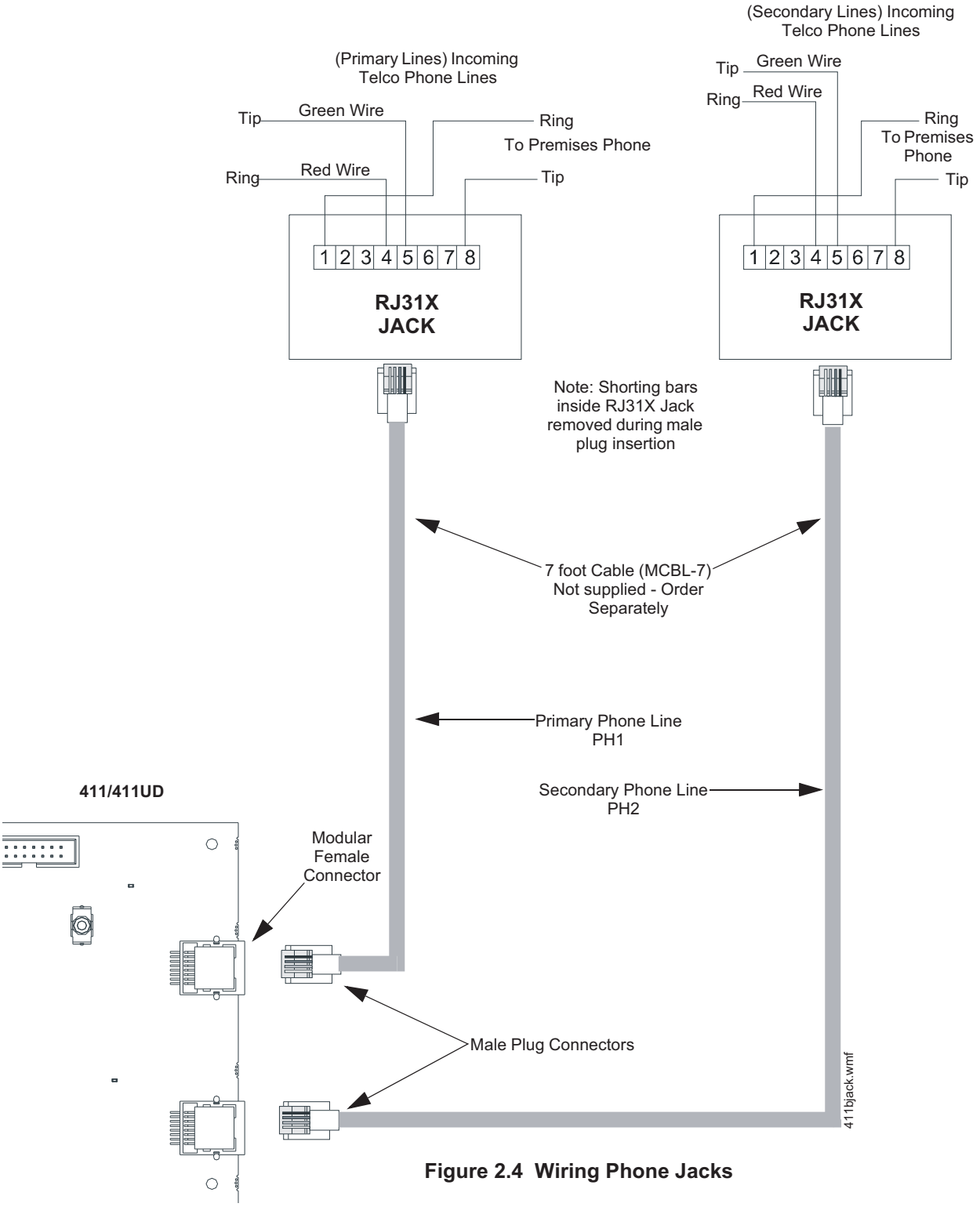


Figure 2.4 Wiring Phone Jacks

2.6 Optional Programmer

The optional Fire-Watch 411 Series DACT Programmer (Model PRO-411) is used to:

- switch between the digital communicator's five Modes of operation
- set the digital communicator's 24 hour internal clock in Real-Time Clock Mode
- program the 411/411UD digital communicator in Program Mode
- test the telephone lines interconnect in Troubleshoot Mode
- return all digital communicator programming to the factory default settings in Default Mode

To use the PRO-411 Programmer:

1. Remove all power from the 411/411UD.
2. Remove the two screws holding the 411/411UD cover in place and remove the cover.
3. Connect the Programmer cable to connector J2 located in the upper right corner of the 411/411UD. Note that the key on the connector must align with the slot in the J2 connector.
4. Reapply power to the 411/411UD.
5. Operate the Programmer by pressing the **MODE** key. Enter the appropriate four digit code and then press the **[ENTER/STORE]** key.

Note that it is not possible to switch from Normal Mode to any other mode if any of the 3 (411) or 4 (411UD) Channels is programmed for fire alarm or fire supervisory, and is active, that is, in alarm (shorted).

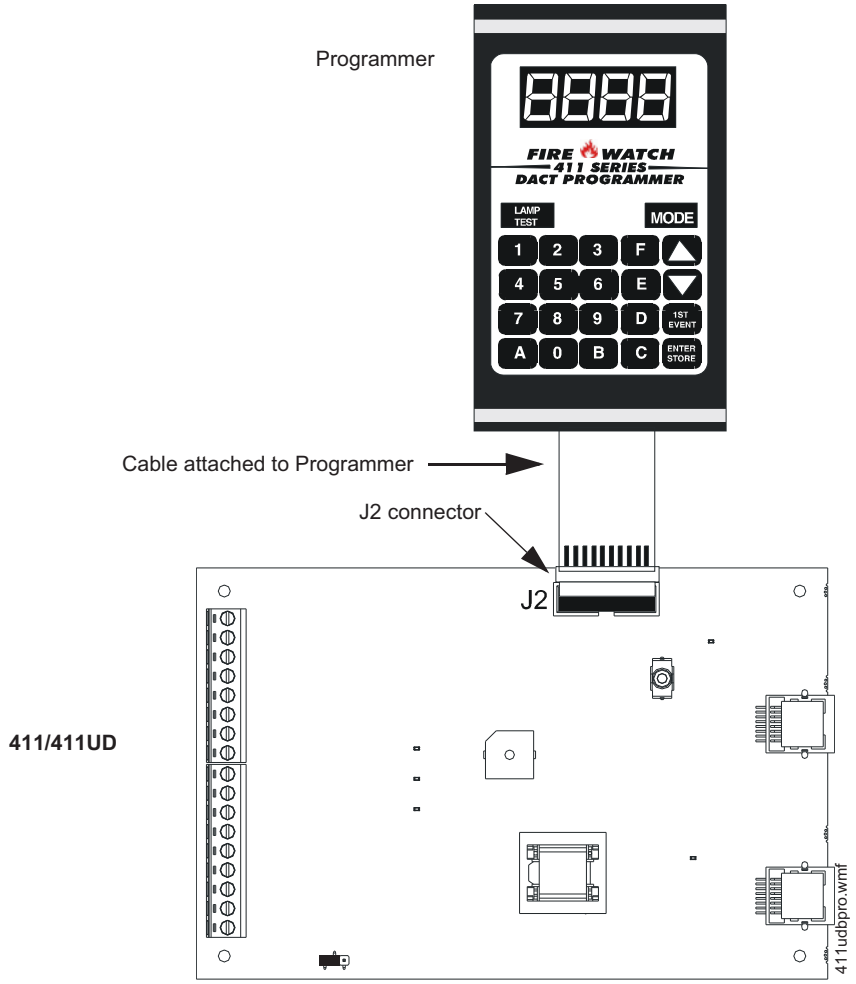


Figure 2.5 Programmer Connection to 411/411UD

2.7 UL Power-limited Wiring Requirements

The three (411) or four (411UD) input channels are power-limited circuits. Power supplied to the 411/411UD must be power-limited 12 or 24 volts, filtered and nonresettable. The relay circuit must be connected to power-limited circuits. *Do not connect nonpower-limited wiring to any circuits on the 411/411UD.*

Section 3: Modes of Operation

The 411/411UD digital communicator has five operational modes:

- Normal Mode
- Real Time Clock Mode (requires valid password)
- Program Mode (requires valid password)
- Troubleshoot Mode
- Default Mode

The operational mode for the digital communicator is Normal Mode. The operator is able to switch between any modes of operation provided no alarm events are active in the system. It should be noted that the digital communicator will not respond to input activations while in any mode except Normal Mode.

Some modes require a valid password. Refer to Section 3.2 on page 24.

Access to any other Mode requires connection of the PRO-411 DACT Programmer which consists of a keypad and display. Refer to Figure 3.1.

3.1 Normal Mode

Normal Mode is the standard (default) mode of operation for the 411/411UD digital communicator. The communicator continuously monitors and reports to a central station, the status of the input channels as well as the status of the digital communicator itself. If no activity is detected on the input channels (no shorts or opens) and the communicator is operating free of internal troubles, the digital communicator will display the following conditions:

- All LED are off
- Onboard piezo sounder is off
- The relay is in its normal deactivated state
- Communicator is not transmitting to the Central Station

The 411/411UD digital communicator transmits system status reports to a central station via the public switched telephone network. Two supervised telephone line connections are made to interface the digital communicator to the telephone lines. Both telephone lines are supervised by the 411/411UD for proper voltage.

The 411/411UD is capable of line seizure on both the primary and secondary telephone line interfaces. *Any time the digital communicator detects the necessity to call the Central Station, line seizure will disconnect any local premises phones sharing the same telephone line. Sharing of phone lines, for fire systems, must be approved by the Local Authority Having Jurisdiction.* All transmissions to the Central Station will be sent over the Primary phone line. In the event of a noisy or faulty phone line, transmissions will be sent over the backup Secondary phone line.

Transmission options exist to:

- send reports to the secondary phone number as backup only
- send reports to both the primary and secondary phone numbers
- send reports to the first available central station phone number

If 10 total attempts to communicate are unsuccessful, the digital communicator will turn on the Communication Fail LED.

The 411/411UD meets NFPA 72 requirements for Remote Station Protective Signaling Service and Central Station Signaling Service reporting requirements for: (a) the type of signal, (b) condition and (c) location of the reporting premises. See Section 4, “Central Station Communications”, for additional information.

The 411/411UD can be switched from Normal Mode to any other Mode, provided no channel programmed for fire alarm or fire supervisory is active, that is, in alarm (shorted). The PRO-411 DACT Programmer, for use with the Fire•Watch 411 Series, must be connected to the 411/411UD in order to change from mode to mode.

3.1.1 Programmer Key Functions

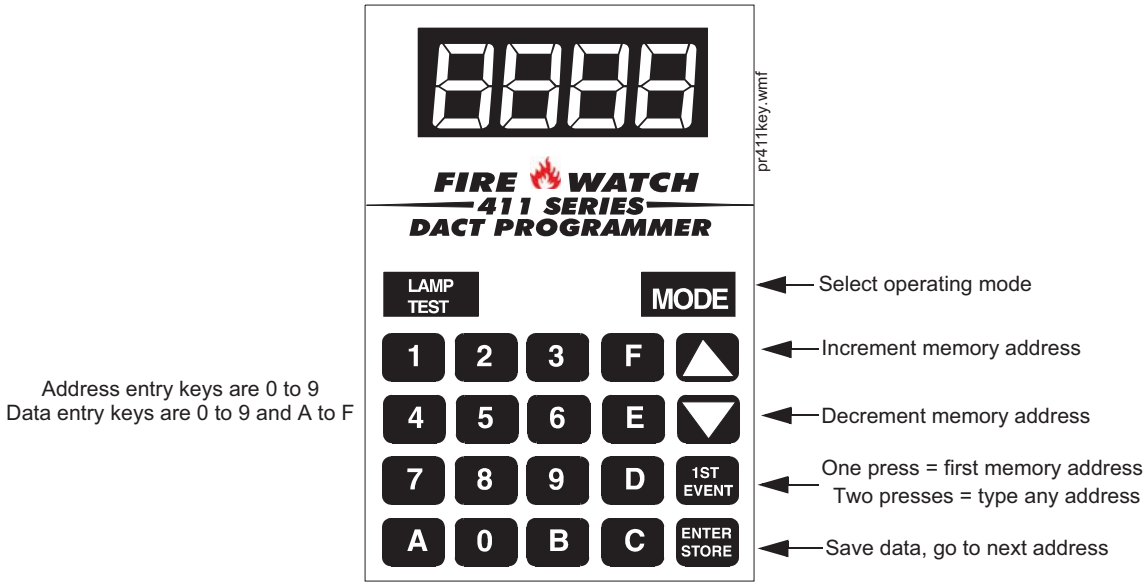


Figure 3.1 Programmer Keypad

MODE KEY

Pressing the **MODE** key followed by a valid 4-digit numerical code and the **[ENTER/STORE]** key selects one of the five modes of operation. To enter Normal Mode from any other mode, press the **MODE** key followed by **6676** and then **[ENTER/STORE]**.

- **6676** spells NORM on a Touch-Tone® phone.

If an incorrect key is entered, reenter the proper 4-digit code *before* pressing the **[ENTER/STORE]** key. Note that as information is entered into the 411/411UD, the digits will scroll across the Programmer display from right to left.

___6
__66
_667
6676

A pause of up to 10 seconds between each number is allowed while entering the code.

LAMP TEST KEY

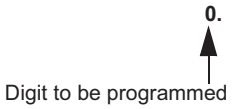
Pressing the Lamp Test key on the Programmer, while the digital communicator is in Normal Mode, will cause the front panel LEDs and all segments of the four 7-segment display on the 411/411UD to light. Lamp Test works only in Normal Mode. *Note that LED located on the circuit board (Phone Line active LED) will not light (411UD).*

1st EVENT KEY

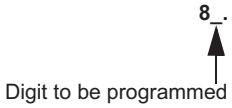
This key, along with the **UP** and **DOWN** arrow keys, are used only in Program Mode. Press the **1st EVENT** key at any time to display the first program memory address and its content. The following may be displayed on the Programmer:

00_F
(address)(data)

If the **1st EVENT** key is pressed a second time, the following will be displayed on the Programmer display:



The contents of any address can be viewed by entering the digits of the desired address. For example, to view the contents of address 86, press the '8' key on the keypad. '8' will appear as the first digit in the display, a blank will appear in the position of the second digit and the decimal point will move one position to the right, indicating that the next digit can now be entered.



Press the '6' key on the keypad. '6' will appear as the second digit on the display and the decimal point will move one position to the right. Press the **[ENTER/STORE]** to view the contents of address 86.

86_.

DOWN ARROW

Use the **DOWN** arrow key to decrement the memory address and view its content.

UP ARROW

Use the **UP** arrow key to increment the memory address and view its content.

[ENTER/STORE]

Stores entry into nonvolatile E^2 memory located on the 411/411UD printed circuit board, then increments to the next higher address.

3.1.2 Programmer Display

Four 7-segment red LED characters provide visual display of information in the various modes of operation.

3.2 Password Creation and Entry

In order to access the Default Mode or Programming Mode, a valid password must be entered.

1. Press the **MODE** key followed by the 4-digit entry code (**3337** for Default Mode or **7764** for Program Mode).

2. Press the **[ENTER/STORE]** key. The display will read **LinP** indicating that a valid password is required to continue.
3. For the initial power-up of the 411UDAC or for the first power-up after a manually defaulted password, key in the default password **0000** and press **[ENTER/STORE]**. The display will then read **dC_P**.
4. Press **d** to continue with the default password or press **C** to change to a new password.
5. If **d** is entered in step 4, the display goes directly to the programming/default modes.
6. If **C** is entered in step 4, the display will read **En_P** prompting for a new password.
   - Key in a new 4-digit password. Valid passwords are any four digit code from 0001-9999.
   - The display will then read **rEnP**. Key in the new password again for verification.
   - Once the new password has been verified, the programming/default modes will be accessed.

If at any time a password was entered incorrectly, the display will read **AErr** indicating an invalid entry was made.

3.3 Real Time Clock Mode

Real Time Clock Mode is entered by pressing the **MODE** key followed by the 4-digit entry code **2525** and pressing the **[ENTER/STORE]** key. Accessing this mode requires authentication. Refer to Section 3.2.

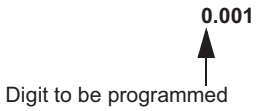
- **2525** spells CLCK on a Touch-Tone® phone.

If an incorrect key is entered, reenter the proper 4-digit code *before* pressing the **[ENTER/STORE]** key. Note that as information is entered into the 411/411UD, the digits will scroll across the Programmer display from right to left.

___2
__25
_252
2525

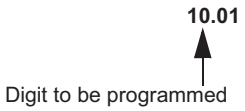
A pause of up to 10 seconds between each number is allowed while entering the code. After pressing the **[ENTER/STORE]** key, the digital communicator will be in Real Time Clock Mode. A maximum of 10 minutes idle time is allowed at this point before beginning program entries and between each key stroke, otherwise, the digital communicator will return to Normal Mode. Note that the time is not stored until the fourth and final digit is selected and the **[ENTER/STORE]** key is pressed. If the 411/411UD returns to Normal Mode prior to entering the fourth digit, no changes will be stored and the original time is retained.

On entering Real Time Clock Mode, **0.001** will appear on the Programmer display:

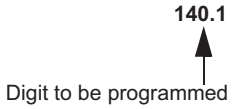


The time is displayed in military time. Note the position of the decimal point in the display. This indicates that the first digit to be programmed is the one to the left of the decimal point. To program the first hour digit, press the corresponding number on the Programmer keypad and then press the **[ENTER/STORE]** key. For example, to program 2:00 PM (**1400** in military time), press '1' on

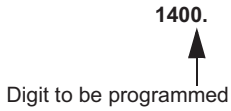
the keypad and then the **[ENTER/STORE]** key. The number '1' will appear as the far left digit and the decimal point will move one position to the right indicating that the second digit from the left is now ready for programming.



Enter the second hour digit (4 in this example) and press the **[ENTER/STORE]** key. The number '4' will appear as the digit second from the left and the decimal point will move one position to the right indicating that the third digit from the left is now ready for programming.



Enter the first minute digit (0 in this example) and press the **[ENTER/STORE]** key. The number '0' will appear as the digit third from the left and the decimal point will move one position to the right indicating that the fourth digit from the left is now ready for programming.



Enter the second minute digit (0 in this example) and press the **[ENTER/STORE]** key. The number '0' will appear as the digit fourth from the left. Following the entry of the fourth and final digit, the operating mode will immediately switch to Normal Mode, indicating that programming of the time is now completed.

To exit Real Time Clock Mode before completing clock programming, press the **MODE** key, followed by the 4-digit code for an alternate mode and then the **[ENTER/STORE]** key. During Real Time Clock Mode, if no key is pressed within 10 minutes, the communicator will revert to Normal Mode.

Note that upon power-up, the internal clock starts running at 00:00 midnight. It must be changed so that the 411/411UD can accurately call in test signals to the Central Station. Upon power loss, the clock reverts to 00:00 midnight and must be reset.

3.4 Program Mode

NOTICE TO USERS, INSTALLERS, AUTHORITIES HAVING JURISDICTION AND OTHER INVOLVED PARTIES			
This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below:			
Program feature or option	**Permitted in UL 864? (Y/N)**	**Possible settings**	**Settings permitted in UL 864**
AC Loss Delay	Y	AC Loss Delay = 0, 1, 2 (factory default), 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, or 18 hours Refer to "AC Loss Reporting Delay (60)" on page 36.	AC Loss Delay = 1 or 2 hours
Trouble Call Limit	N	Program Address 89 = 0 (factory default): unlimited calling to Central Station for any trouble condition Program Address 89 = 1: limits call for each unique trouble to 10 within a 24 hour period	Program Address 89 = 0 for unlimited Central Station trouble calls

All programming selections made during Program Mode are stored in nonvolatile Electrically-Erasable Programmable Read-Only Memory (EEPROM). This ensures that the 411/411UD will retain all entries made in Programming Mode even if power is removed.

The user must program the primary and secondary phone numbers, account numbers, 24-hour test report times and verify event codes for each Central Station account. The 411/411UD is shipped with the program options/features already factory programmed. Alternative options/features may be programmed if desired. If all factory default settings are acceptable, programming is complete.

Program Mode is entered by pressing the **MODE** key followed by the 4-digit program mode entry code **7764** and pressing the **[ENTER/STORE]** key. Accessing this mode requires authentication. Refer to Section 3.2.

- **7764** spells PROG on a Touch-Tone® phone.

If an incorrect key is entered, reenter the proper 4-digit code *before* pressing the **[ENTER/STORE]** key. Note that as information is entered into the 411/411UD, the digits will scroll across the Programmer display from right to left.

___7
__77
_776
7764

A pause of up to 10 seconds between each number is allowed while entering the code. After pressing the **[ENTER/STORE]** key, the digital communicator will be in Program Mode. A maximum of 10 minutes idle time is allowed at this point before beginning program entries and between each key stroke, otherwise, the digital communicator will return to Normal Mode. All entries made prior to the 10 minute time-out are valid and are stored.

Once in Program Mode, the digital communicator will:

- Light the DACT Trouble LED - *411UD Only*
- Activate Relay which is defaulted to DACT trouble
- Ignore all other keys other than those mentioned in this section
- Display 00_F on the Programmer display
- Continue to communicate any events not previously acknowledged at a central station prior to entering Programming Mode

While in Program Mode, the first three locations on the left of the Programmer display represent the memory address and the last location (farthest right) represents the contents of the memory address. The first address displayed is shown below:

00_F
(address)(data)

When desired changes have been completed, exit Programming Mode by pressing the **MODE** key, followed by the 4-digit code for an alternate mode and then the **[ENTER/STORE]** key. During Program Mode, if no key is pressed within 10 minutes, the communicator will revert to Normal Mode.

The Programmer cable should not be removed from the 411/411UD unless the communicator is in Normal Mode. If the Programmer cable is removed while the 411/411UD is in a Mode other than Normal Mode, the communicator will automatically revert to Normal Mode following a 10 minute time-out period. Note that if the Programmer is in Troubleshoot Mode when the cable is removed, the 411/411UD will revert to Normal Mode following a 20 minute time-out period.

3.4.1 DACT Programming

Primary Central Station Phone Number (00 - 19)

The first twenty addresses (**00 - 19**) are factory set to 'F' (**00_F to 19_F**). Programming is done as follows:

- If your phone number is 484-7161, press **4**.
- The display will read **00_4**.
- Press **[ENTER/STORE]** to save the entry to memory and increment to the next address **01_F**.
- Enter the remaining numbers in their respective addresses as shown below:

Entry	4	8	4	7	1	6	1	F	F	F	F	F	F	F	F	F	F	F	F	F
Address	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19

Valid entries for both the primary and secondary phone numbers are 0 to 9 and A to F with the numeric digits as dialed numbers and the hexadecimal digits representing the following functions:

- A = * on a Touch-Tone phone keypad
- B = # on a Touch-Tone phone keypad
- C = look for secondary dial tone for up to two seconds (then dial anyway)
- D = three second pause
- E = five second pause
- F = end of phone number (Note: F must remain in all unused phone number addresses)

New FCC regulations allow extra digits to the carrier ID code, to identify the long distance carrier. The expanded phone number field of 20 digits facilitates this function. Simply enter the digits required by the telephone company if desired.

Primary Central Station Number Communication Format (20)

One location is needed to select the Communication Format to the primary phone number. Address 20 is used for this purpose. The factory default setting for this address is 'E', which is Contact ID Format. You may enter '0' through 'D' in place of the default, then press **[ENTER/STORE]**. Choose from the list of formats below:

0: 4+1 Ademco Express Standard, DTMF, 1400/2300 ACK
1: 4+2 Ademco Express Standard, DTMF, 1400/2300 ACK
2: 3+1 Standard 1800 Hz Carrier, 2300 Hz ACK
3: 3+1 Expanded 1800 Hz Carrier, 2300 Hz ACK
4: 3+1 Standard 1900 Hz Carrier, 1400 Hz ACK
5: 3+1 Expanded 1900 Hz Carrier, 1400 Hz ACK
6: 4+1 Standard 1800 Hz Carrier, 2300 Hz ACK
7: 4+1 Expanded 1800 Hz Carrier, 2300 Hz ACK
8: 4+1 Standard 1900 Hz Carrier, 1400 Hz ACK
9: 4+1 Expanded 1900 Hz Carrier, 1400 Hz ACK
A: 4+2 Standard 1800 Hz Carrier, 2300 Hz ACK
B: 4+2 Expanded 1800 Hz Carrier, 2300 Hz ACK
C: 4+2 Standard 1900 Hz Carrier, 1400 Hz ACK
D: 4+2 Expanded 1900 Hz Carrier, 1400 Hz ACK
E: Contact ID, DTMF, 1400/2300 ACK
F: Future use

Consult the Central Station for proper Format selection. For any Format chosen, all event codes are automatically programmed by the 411/411UD. Refer to Tables 3.1, 3.2, and 3.3.

Event Codes - Setting Entries

The Format selected in address 20 will cause the digital communicator to automatically program addresses 138 - 201 with the factory default settings. Any of the Event Code settings may be altered. Consult your Central Station prior to altering the event code settings. An entry of all zeros for any event code will cause the communicator to NOT transmit the report. *Transmission of reports to either or both Central Station phone numbers may be disabled.*

Upon accessing the first address (address 138) shown in Table 3.2, the following may be displayed on the Programmer 7-Segment Display, if the corresponding Format was selected in address 20.

1381
(address)(data)

The first three locations on the left of the Programmer display represent the memory address **138** of the Format previously selected in address 20. The last location **1** (farthest right) represents the contents of memory address **138** (which is the first digit of the event code).

The following Tables list the data which is automatically programmed for each Format that can be selected in address 20. The addresses shown in each Table contain the Setting data which is automatically programmed by the 411/411UD. To change the value, key in the new digit and then press the **[ENTER/STORE]** key to save the new value. Use the **Up** and **Down Arrow** keys to increment to the next address or decrement to the previous address.

Ademco Contact ID Format Primary Central Station Event Codes

If 'E' is entered for address 20, the following data is automatically programmed for the Primary Central Station phone number event codes. Enter '000' for the Setting to disable the report to the Central Station. The Channel # is not programmable.

Address	Description	Setting	Channel/Input #
138 - 140	Primary # Input Channel 1 Active Event Code	110	001
141 - 143	Primary # Input Channel 2 Active Event Code	373	002
144 - 146	Primary # Input Channel 3 Active Event Code	200	003
147 - 149	Primary # Input Channel 4 Active Event Code - *411UD Only*	301	004
150 - 152	Primary # Input Channel 1 Fault Event Code	380	001
153 - 155	Primary # Input Channel 2 Fault Event Code	380	002
156 - 158	Primary # Input Channel 3 Fault Event Code	380	003
159 - 161	Primary # Input Channel 4 Fault Event Code - *411UD Only*	380	004
162 - 164	Primary # Phone Line 1 Voltage Fault Event Code	351	000
165 - 167	Primary # Phone Line 2 Voltage Fault Event Code	352	000
168 - 170	Primary # Phone Number 1 Comm. Fault Event Code	354	001
171 - 173	Primary # Phone Number 2 Comm. Fault Event Code	354	002
174 - 176	Primary # System Off Normal Fault Code	308	000
177 - 179	Primary # System Test Message	602	000
180 - 182	Primary # System Abnormal Test Message	608	000
183 - 185	Primary # Upload/Download Request Code - *411UD Only*	411	000
186 - 188	Primary # Upload Successful Code - *411UD Only*	416	000
189 - 191	Primary # Download Successful Code - *411UD Only*	412	000
192 - 194	Primary # Upload/Download Failed Code - *411UD Only*	413	000

Table 3.1 Ademco Contact ID Format - Primary

4+2 Standard and 4+2 Express Formats Primary Central Station Event Codes

If 1, A, or C is entered for address 20, the following data is automatically programmed for the Primary Central Station phone number event codes. Enter '00' for the Setting to disable the report to the Central Station.

Address	Description	Setting
138 - 139	Primary # Input Channel 1 Active Event Code	11
140 - 141	Primary # Input Channel 2 Active Event Code	FF
142 - 143	Primary # Input Channel 3 Active Event Code	83
144 - 145	Primary # Input Channel 4 Active Event Code - *411UD Only*	92
146 - 147	Primary # Input Channel 1 Fault Event Code	F1
148 - 149	Primary # Input Channel 2 Fault Event Code	F2
150 - 151	Primary # Input Channel 3 Fault Event Code	F3
152 - 153	Primary # Input Channel 4 Fault Event Code - *411UD Only*	F4
154 - 155	Primary # Phone Line 1 Voltage Fault Event Code	64
156 - 157	Primary # Phone Line 2 Voltage Fault Event Code	65
158 - 159	Primary # Phone Number 1 Comm. Fault Event Code	6A
160 - 161	Primary # Phone Number 2 Comm. Fault Event Code	6B
162 - 163	Primary # System Off Normal Fault Code	6F
164 - 165	Primary # Input Channel 1 Active Restoral Code	E1
166 - 167	Primary # Input Channel 2 Active Restoral Code	E2
168 - 169	Primary # Input Channel 3 Active Restoral Code	E3
170 - 171	Primary # Input Channel 4 Active Restoral Code - *411UD Only*	93
172 - 173	Primary # Input Channel 1 Fault Restoral Code	D1
174 - 175	Primary # Input Channel 2 Fault Restoral Code	D2
176 - 177	Primary # Input Channel 3 Fault Restoral Code	D3
178 - 179	Primary # Input Channel 4 Fault Restoral Code - *411UD Only*	D4

Table 3.2 4+2 Standard and 4+2 Express Formats - Primary

Address	Description	Setting
180 - 181	Primary # Phone Line 1 Restoral Code	A4
182 - 183	Primary # Phone Line 2 Restoral Code	A5
184 - 185	Primary # Phone Number 1 Restoral Code	AA
186 - 187	Primary # Phone Number 2 Restoral Code	AB
188 - 189	Primary # System Off Normal Restoral Code	AF
190 - 191	Primary # System Test Message	99
192 - 193	Primary # System Abnormal Test Message	91
194 - 195	Primary # Upload/Download Request Code - *411UD Only*	71
196 - 197	Primary # Upload Successful Code - *411UD Only*	72
198 - 199	Primary # Download Successful Code - *411UD Only*	73
200 - 201	Primary # Upload/Download Failed Code - *411UD Only*	74

Table 3.2 4+2 Standard and 4+2 Express Formats - Primary

All 3+1, 4+1 and 4+2 Expanded Formats Primary Central Station Event Codes

If 0, 2, 3, 4, 5, 6, 7, 8 ,9, B, or D is entered for address 20, the following data is automatically programmed for the Primary Central Station phone number event codes. Enter '0' for the Setting to disable the report to the Central Station.

Address	Description	Setting
138	Primary # Input Channel 1 Active Event Code	1
139	Primary # Input Channel 2 Active Event Code	F
140	Primary # Input Channel 3 Active Event Code	8
141	Primary # Input Channel 4 Active Event Code - *411UD Only*	9
142	Primary # Input Channel 1 Fault Event Code	F
143	Primary # Input Channel 2 Fault Event Code	F
144	Primary # Input Channel 3 Fault Event Code	F
145	Primary # Input Channel 4 Fault Event Code - *411UD Only*	F
146	Primary # Phone Line 1 Voltage Fault Event Code	6
147	Primary # Phone Line 2 Voltage Fault Event Code	6
148	Primary # Phone Number 1 Comm. Fault Event Code	6
149	Primary # Phone Number 2 Comm. Fault Event Code	6
150	Primary # System Off Normal Fault Code	6
151	Primary # Input Channel 1 Active Restoral Code	E
152	Primary # Input Channel 2 Active Restoral Code	E
153	Primary # Input Channel 3 Active Restoral Code	E
154	Primary # Input Channel 4 Active Restoral Code - *411UD Only*	9
155	Primary # Input Channel 1 Fault Restoral Code	D
156	Primary # Input Channel 2 Fault Restoral Code	D
157	Primary # Input Channel 3 Fault Restoral Code	D
158	Primary # Input Channel 4 Fault Restoral Code - *411UD Only*	D
159	Primary # Phone Line 1 Restoral Code	A
160	Primary # Phone Line 2 Restoral Code	A
161	Primary # Phone Number 1 Restoral Code	A
162	Primary # Phone Number 2 Restoral Code	A
163	Primary # System Off Normal Restoral Code	A
164	Primary # System Test Message	9
165	Primary # System Abnormal Test Message	F
166	Primary # Upload/Download Request Code - *411UD Only*	7
167	Primary # Upload Successful Code - *411UD Only*	7
168	Primary # Download Successful Code - *411UD Only*	7
169	Primary # Upload/Download Failed Code - *411UD Only*	7

Table 3.3 All 3+1, 4+1 and 4+2 Expanded Formats - Primary

Primary Central Station Number Account Code (21 - 24)

The four locations at addresses 21 - 24 default to all '0's. Valid entries are 0 - 9 and A - F. The number of digits entered must match the format selection. If programming '2, 3, 4, or 5' into address 20, enter three digits (one digit each in locations 21, 22 and 23 - location 24 is ignored). If programming '0, 1, 6, 7, 8, 9, A, B, C, D, or E' into address 20, enter four digits (one each in locations 21, 22, 23, and 24).

Primary Central Station Number 24 Hour Test Time (25 - 28)

Use military time when entering the 24 hour 'test' time. The 24 hour test report to phone number 1 takes up four locations, from addresses 25 - 28. The default is 00:00 (12:00 midnight). The limits for each location are as follows (do not use values of A - F as entries).

25: enter 0, 1, or 2
26: enter 0 - 9
27: enter 0 - 5
28: enter 0 - 9

Primary Central Station Number 24/12/8/6 Hour Test Time Interval (29)

The test report sent to the Primary phone number may be sent every 6, 8, 12, or 24 hours. If the message is to be sent every 24 hours, leave the factory default entry of '0'. If other test report times are needed, enter 1 = 12 hour, 2 = 8 hour, or 3 = 6 hour.

Secondary Central Station Phone Number (30 - 49)

Addresses **30 - 49** are factory set to 'F' (**30_F to 49_F**). Programming is typically done as follows:

- If your phone number is 484-7161, press **4**.
- The display will read **30_4**.
- Press **[ENTER/STORE]** to save the entry to memory and increment to the next address **31_F**.
- Enter the remaining numbers in their respective addresses as shown below:

Entry	4	8	4	7	1	6	1	F	F	F	F	F	F	F	F	F	F	F	F	F
Address	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49

Valid entries for both the primary and secondary phone numbers are 0 to 9 and A to F with the numeric digits as dialed numbers and the hexadecimal digits representing the following functions:

- A = * on a Touch-Tone phone keypad
- B = # on a Touch-Tone phone keypad
- C = look for secondary dial tone for up to two seconds (then dial anyway)
- D = three second pause
- E = five second pause
- F = end of phone number (Note: F must remain in all unused phone number addresses)

Secondary Central Station Number Communication Format (50)

One location is needed to select the Communication Format to the secondary phone number. Address 50 is used for this purpose. The factory default setting for this address is 'E', which is Contact ID Format. You may enter '0' through 'D' in place of the default, then press **[ENTER/STORE]**. Choose from the list of formats below:

0: 4+1 Ademco Express Standard, DTMF, 1400/2300 ACK
1: 4+2 Ademco Express Standard, DTMF, 1400/2300 ACK
2: 3+1 Standard 1800 Hz Carrier, 2300 Hz ACK
3: 3+1 Expanded 1800 Hz Carrier, 2300 Hz ACK
4: 3+1 Standard 1900 Hz Carrier, 1400 Hz ACK

5: 3+1 Expanded 1900 Hz Carrier, 1400 Hz ACK
6: 4+1 Standard 1800 Hz Carrier, 2300 Hz ACK
7: 4+1 Expanded 1800 Hz Carrier, 2300 Hz ACK
8: 4+1 Standard 1900 Hz Carrier, 1400 Hz ACK
9: 4+1 Expanded 1900 Hz Carrier, 1400 Hz ACK
A: 4+2 Standard 1800 Hz Carrier, 2300 Hz ACK
B: 4+2 Expanded 1800 Hz Carrier, 2300 Hz ACK
C: 4+2 Standard 1900 Hz Carrier, 1400 Hz ACK
D: 4+2 Expanded 1900 Hz Carrier, 1400 Hz ACK
E: Contact ID, DTMF, 1400/2300 ACK
F: Future use

The Format selected in address 50 will cause the digital communicator to automatically program addresses 202 - 265 with the factory default settings. Any of the Event Code settings may be altered. Consult your Central Station prior to altering the event code settings. An entry of all zeros for any event code will cause the communicator to NOT transmit the report. *Transmission of reports to either or both Central Station phone numbers may be disabled.*

Refer to Section 4, "Central Station Communications" for information on Format reporting.

Upon accessing the first address which is 202 (Table 3.5), the following may be displayed on the Programmer's 7-Segment Display, if the corresponding Format was selected in address 50.

2021
(address)(data)

The first three locations on the left of the Programmer's display represent the memory address **202**. The last location **1** (farthest right) represents the contents of memory address **202** which is the first digit of the event code.

The following Tables list the data which is automatically programmed for each Format that can be selected in address 50. The addresses shown in each Table contain the event code Setting data which is automatically programmed by the 411/411UD. To change the value, key in the new digits and then press the **[ENTER/STORE]** key to save the new value. Use the **Up** and **Down Arrow** keys to increment to the next address or decrement to the previous address.

Ademco Contact ID Format Secondary Central Station Event Codes

If E is entered for address 50, the following data is automatically programmed for the Secondary Central Station phone number event codes. Enter '000' for the Setting to disable the report to the Central Station.

Address	Description	Setting	Channel/Input #
202 - 204	Secondary # Input Channel 1 Active Event Code	110	001
205 - 207	Secondary # Input Channel 2 Active Event Code	373	002
208 - 210	Secondary # Input Channel 3 Active Event Code	200	003
211 - 213	Secondary # Input Channel 4 Active Event Code - *411UD Only*	301	004
214 - 216	Secondary # Input Channel 1 Fault Event Code	380	001
217 - 219	Secondary # Input Channel 2 Fault Event Code	380	002
220 - 222	Secondary # Input Channel 3 Fault Event Code	380	003
223 - 225	Secondary # Input Channel 4 Fault Event Code - *411UD Only*	380	004
226 - 228	Secondary # Phone Line 1 Voltage Fault Event Code	351	000
229 - 231	Secondary # Phone Line 2 Voltage Fault Event Code	352	000
232 - 234	Secondary # Phone Number 1 Comm. Fault Event Code	354	001
235 - 237	Secondary # Phone Number 2 Comm. Fault Event Code	354	002
238 - 240	Secondary # System Off Normal Fault Code	308	000
241 - 243	Secondary # System Test Message	602	000

Table 3.4 Ademco Contact ID Format - Secondary

Address	Description	Setting	Channel/Input #
244 - 246	Secondary # System Abnormal Test Message	608	000
247 - 249	Secondary # Upload/Download Request Code - *411UD Only*	411	000
250 - 252	Secondary # Upload Successful Code - *411UD Only*	416	000
253 - 255	Secondary # Download Successful Code - *411UD Only*	412	000
256 - 258	Secondary # Upload/Download Failed Code - *411UD Only*	413	000

Table 3.4 Ademco Contact ID Format - Secondary

4+2 Standard and 4+2 Express Formats Secondary Central Station Event Codes

If 1, A, or C is entered for address 50, the following data is automatically programmed for the Secondary Central Station phone number event codes. Enter '00' for the Setting to disable the report to the Central Station.

Address	Description	Setting
202 - 203	Secondary # Input Channel 1 Active Event Code	11
204 - 205	Secondary # Input Channel 2 Active Event Code	FF
206 - 207	Secondary # Input Channel 3 Active Event Code	83
208 - 209	Secondary # Input Channel 4 Active Event Code - *411UD Only*	92
210 - 211	Secondary # Input Channel 1 Fault Event Code	F1
212 - 213	Secondary # Input Channel 2 Fault Event Code	F2
214 - 215	Secondary # Input Channel 3 Fault Event Code	F3
216 - 217	Secondary # Input Channel 4 Fault Event Code - *411UD Only*	F4
218 - 219	Secondary # Phone Line 1 Voltage Fault Event Code	64
220 - 221	Secondary # Phone Line 2 Voltage Fault Event Code	65
222 - 223	Secondary # Phone Number 1 Comm. Fault Event Code	6A
224 - 225	Secondary # Phone Number 2 Comm. Fault Event Code	6B
226 - 227	Secondary # System Off Normal Fault Code	6F
228 - 229	Secondary # Input Channel 1 Active Restoral Code	E1
230 - 231	Secondary # Input Channel 2 Active Restoral Code	E2
232 - 233	Secondary # Input Channel 3 Active Restoral Code	E3
234 - 235	Secondary # Input Channel 4 Active Restoral Code - *411UD Only*	93
236 - 237	Secondary # Input Channel 1 Fault Restoral Code	D1
238 - 239	Secondary # Input Channel 2 Fault Restoral Code	D2
240 - 241	Secondary # Input Channel 3 Fault Restoral Code	D3
242 - 243	Secondary # Input Channel 4 Fault Restoral Code - *411UD Only*	D4
244 - 245	Secondary # Phone Line 1 Restoral Code	A4
246 - 247	Secondary # Phone Line 2 Restoral Code	A5
248 - 249	Secondary # Phone Number 1 Restoral Code	AA
250 - 251	Secondary # Phone Number 2 Restoral Code	AB
252 - 253	Secondary # System Off Normal Restoral Code	AF
254 - 255	Secondary # System Test Message	99
256 - 257	Secondary # System Abnormal Test Message	91
258 - 259	Secondary # Upload/Download Request Code - *411UD Only*	71
260 - 261	Secondary # Upload Successful Code - *411UD Only*	72
262 - 263	Secondary # Download Successful Code - *411UD Only*	73
264 - 265	Secondary # Upload/Download Failed Code - *411UD Only*	74

Table 3.5 4+2 Standard and 4+2 Express Formats - Secondary

All 3+1, 4+1 and 4+2 Expanded Formats Secondary Central Station Event Codes

If 0, 2, 3, 4, 5, 6, 7, 8 ,9, B, or D is entered for address 50, the following data is automatically programmed for the Secondary Central Station phone number event codes. Enter '0' for the Setting to disable the report to the Central Station.

Address	Description	Setting
202	Secondary # Input Channel 1 Active Event Code	1
203	Secondary # Input Channel 2 Active Event Code	F
204	Secondary # Input Channel 3 Active Event Code	8
205	Secondary # Input Channel 4 Active Event Code - *411UD Only*	9
206	Secondary # Input Channel 1 Fault Event Code	F
207	Secondary # Input Channel 2 Fault Event Code	F
208	Secondary # Input Channel 3 Fault Event Code	F
209	Secondary # Input Channel 4 Fault Event Code - *411UD Only*	F
210	Secondary # Phone Line 1 Voltage Fault Event Code	6
211	Secondary # Phone Line 2 Voltage Fault Event Code	6
212	Secondary # Phone Number 1 Comm.Fault Event Code	6
213	Secondary # Phone Number 2 Comm. Fault Event Code	6
214	Secondary # System Off Normal Fault Code	6
215	Secondary # Input Channel 1 Active Restoral Code	E
216	Secondary # Input Channel 2 Active Restoral Code	E
217	Secondary # Input Channel 3 Active Restoral Code	E
218	Secondary # Input Channel 4 Active Restoral Code - *411UD Only*	9
219	Secondary # Input Channel 1 Fault Restoral Code	D
220	Secondary # Input Channel 2 Fault Restoral Code	D
221	Secondary # Input Channel 3 Fault Restoral Code	D
222	Secondary # Input Channel 4 Fault Restoral Code - *411UD Only*	D
223	Secondary # Phone Line 1 Restoral Code	A
224	Secondary # Phone Line 2 Restoral Code	A
225	Secondary # Phone Number 1 Restoral Code	A
226	Secondary # Phone Number 2 Restoral Code	A
227	Secondary # System Off Normal Restoral Code	A
228	Secondary # System Test Message	9
229	Secondary # System Abnormal Test Message	F
230	Secondary # Upload/Download Request Code - *411UD Only*	7
231	Secondary # Upload Successful Code - *411UD Only*	7
232	Secondary # Download Successful Code - *411UD Only*	7
233	Secondary # Upload/Download Failed Code - *411UD Only*	7

Table 3.6 All 3+1, 4+1 and 4+2 Expanded Formats - Secondary

Secondary Central Station Number Account Code (51 - 54)

The four locations at addresses 51 - 54 default to all '0's. Valid entries are 0 - 9 and A - F. The number of digits entered must match the format selection. If programming '2, 3, 4 or 5' into address 50, enter three digits (one digit each in locations 51, 52, and 53 - location 54 is ignored). If programming '0, 1, 6, 7, 8, 9, A, B, C, D, or E' into address 50, enter four digits (one each in locations 51, 52, 53, and 54).

Secondary Central Station Number 24 Hour Test Time (55 - 58)

Use military time when entering the 24 hour 'test' time. The 24 hour test report to phone number 1 takes up four locations, from addresses 55 - 58. The default is 00:00 (12:00 midnight). The limits for each location are as follows (do not use values of A - F as entries):

55: enter 0, 1 or 2

56: enter 0 - 9

57: enter 0 - 5
58: enter 0 - 9

Secondary Central Station Number 24/12/8/6 Hour Test Time Interval (59)

The test report sent to the Secondary phone number may be sent every 6, 8, 12 or 24 hours. If the message is to be sent every 24 hours, leave the factory default entry of '0'. If other test report times are needed, enter 1 = 12 hour, 2 = 8 hour or 3 = 6 hour.

AC Loss Reporting Delay (60)

Enter a digit of 0 - 9 or A - F corresponding to the number of hours to be delayed in reporting the loss of AC power. The factory default is '2' for 2 hour delay. The valid entries are '0' = no delay; '1' = 1 hours; '2' = 2 hours; '3' = 6 hours; '4' = 7 hours; '5' = 8 hours; '6' = 9 hours; '7' = 10 hours; '8' = 11 hours; '9' = 12 hours; 'A' = 13 hours; 'B' = 14 hours; 'C' = 15 hours; 'D' = 16 hours; 'E' = 17 hours; 'F' = 18 hours.

NOTE: Use when the host panel has a dedicated relay output. Verify the delay period programmed at the host panel. Location 60 is valid for all inputs programmed as AC Loss.

Backup Reporting (61)

Leaving address 61 at '0' means that reports will be transmitted to the secondary Central Station phone number only if attempts to communicate to the primary Central Station phone number are unsuccessful. Programming a '1' causes all reports to be transmitted to both the primary and secondary Central Station phone numbers. Programming a '2' causes reports to go to the first available receiver.

CAUTION: BACKUP REPORTING
DO NOT ALTER THIS ENTRY WHILE THE DIGITAL COMMUNICATOR IS ACTIVE.

Reserved for Future Use (62)

Reserved for Future Use (63)

Communicator Enable/Disable (64)

Leaving address 64 at the factory default setting of '0' prevents the digital communicator from transmitting status information to the Central Station(s). An entry of '1' in this location enables communication to the Central Station(s).

Note that upon power-up, the 411/411UD will immediately annunciate a DACT trouble since the communicator is factory defaulted to 'communicator disabled' at program location 64.

***Input Channel Function Selections** - When selecting Input Channel functions, be certain to match the host panel relay output functions with the Input Channel functions. Test all wiring connections completely. All Input Channels require Normally Open contact closure to trigger. Input Channels do not latch.*

Input Channel 1 Function Selection (65)[1]

Factory default for Channel 1 is '0' for activation on Fire Alarm. Enter '1' for Host Control Panel Trouble; '2' for Fire Supervisory; '4' for AC Loss.

Input Channel 2 Function Selection (66)[1]

Factory default for Channel 2 is '1' for activation on Host Control Panel Trouble. Enter '0' for Fire Alarm; '2' for Fire Supervisory; '4' for AC Loss.

1. Changing the input function will automatically change the corresponding Primary and Secondary event codes to reflect the new input function. The Communication Format should be programmed first, followed by the Input Channel Function.

Input Channel 3 Function Selection (67)[1]

Factory default for Channel 3 is '2' for activation on Fire Supervisory. Enter '0' for Fire Alarm; '1' for Host Control Panel Trouble; '4' for AC Loss.

Input Channel 4 Function Selection (68)[1] - *411UD Only*

Factory default for Channel 4 is '4' for activation on AC Loss. Enter '0' for Fire Alarm; '1' for Host Control Panel Trouble; '2' for Fire Supervisory. Note that the AC Loss function requires a Normally Open contact dedicated to AC loss function. The 411UD transmits a specific AC Loss event code if desired.

Reserved for Future Use (69 - 71)

Reserved for Future Use (72 - 74)

Reserved for Future Use (75 - 77)

Reserved for Future Use (78 - 80)

Touchtone/Rotary Select for Primary Phone (81)

A '0' programmed in this address by the factory, triggers Touchtone dialing over the primary phone line. Select '1' for rotary dialing.

Make/Break Ratio for Primary Phone (82)

This address is used only if a '1' has been programmed for address 81. The Make/Break ratio is factory set to '0' which is 67/33 ratio, but may be changed to '1' which is 62/38 ratio.

Touchtone/Rotary Select for Secondary Phone (83)

A '0' programmed in this address by the factory, triggers Touchtone dialing over the secondary phone line. Select '1' for rotary dialing.

Make/Break Ratio for Secondary Phone (84)

This address is used only if a '1' has been programmed for address 83. The Make/Break ratio is factory set to '0' which is 67/33 ratio, but may be changed to '1' which is 62/38 ratio.

Reserved for Future Use (85)

Reserved for Future Use (86)

Output Relay Enable (87)

The factory default setting for the Output Relay is '1' for enabled. Enter '0' to disable the relay.

Output Relay Function Selections (88)

The Output Relay can be programmed to activate for any one of six conditions. It can be programmed to 0, 1, 2, or 4 to match one of the input channels or it can be programmed to 6 or 7 for DACT functioning. The factory default for address 88 is '7' for activation on DACT trouble. Program a '0' for fire alarm; '1' for host control panel trouble; '2' for fire supervisory: '4' for AC Loss; '6' for total communication failure

Trouble Call Limit (89)

Factory default setting of '0' in address 89, allows the digital communicator to call the Central Station each time any DACT trouble and any active Channel programmed for host panel trouble is detected by the 411/411UD. Programming a '1' in this address enables the Trouble Call Limit feature, which limits the number of 411/411UD and Input Channel Trouble calls to the Central Station to 10 calls for each unique trouble event within a 24 hour period. Separate limit counters keep

1. Changing the input function will automatically change the corresponding Primary and Secondary event codes to reflect the new input function. The Communication Format should be programmed first, followed by the Input Channel Function.

track of each unique type of trouble (i.e. open input channel). To clear the limit counters, disable and then enable this location. Note that the number of phone line (communication) faults called to the Central Station are not limited by this feature.

No subsequent restoral message is sent to the Central Station(s) for a particular trouble whose limit of 10 calls has been reached. Local DACT annunciation will still track the particular trouble and restoral.

Panel Unlock (90)

The communicator must be unlocked to accept a remote upload/download. Leaving the default setting of '0' will require the unlock code **8655** be entered for each data transfer session (30 minute timeout). Enter '1' to keep the communicator in a permanent unlocked state.

Future Use (91 - 93)

Service Terminal 1 Phone Number (94 - 113) - *411UD Only*

Addresses 94 - 113 are reserved for the Service Terminal Number 1 phone number. Factory default is all 'F's. Valid entries are 0 - 9 plus A, B, C, D, and E. Use 'F' to designate the end of the phone number. See Section 5, "Remote Site Upload/Download - 411UD Only" for additional information.

Ring Count on Primary Phone Line (114 - 115) - *411UD Only*

Use this address to designate the number of rings allowed on the primary phone line prior to answering an incoming call from the Service Terminal. Factory default is '3' meaning the communicator will not answer an incoming call until 3 rings are detected. This entry may be programmed up to a maximum o '25' rings. A setting of '00' prevents the communicator from answering incoming calls.

Future Use (116)

Service Terminal 2 Phone Number (117 - 136) - *411UD Only*

Addresses 117 - 136 are reserved for the Service Terminal Number 2 phone number. Factory default is all 'F's. Valid entries are 0 - 9 plus A, B, C, D, and E. Use 'F' to designate the end of the phone number. See Section 5, "Remote Site Upload/Download - 411UD Only" for additional information.

Upload/Download Reports Sent to Secondary Central Station Phone #, Backup or Always (137) - *411UD Only*

Leaving address 137 programmed to the factory default setting of '0' means that reports for request for 'upload/download' and 'failed upload/download' will be sent to the secondary Central Station phone number only if attempts to the primary Central Station phone number are unsuccessful. Programming a '1' causes all reports to be transmitted to both primary and secondary phone numbers. Programming a '2' causes reports to be sent to the first available receiver.

CAUTION: PROPER FUNCTIONALITY
DO NOT ALTER ENTRY WHILE THE COMMUNICATOR IS ACTIVE.

Programming Event Code Settings (138 - 265)

Event Code Settings, corresponding to the Formats selected for the Primary Central Station phone number in address 20 and the Secondary Central Station phone number in address 50, are automatically set to factory default values. Refer to Table 3.1, "Ademco Contact ID Format - Primary", Table 3.2, "4+2 Standard and 4+2 Express Formats - Primary", and Table 3.3, "All 3+1, 4+1 and 4+2 Expanded Formats - Primary" for format designated by address 20. Refer toTable 3.4, "Ademco Contact ID Format - Secondary", Table 3.5, "4+2 Standard and 4+2 Express Formats -

Secondary" and Table 3.6, "All 3+1, 4+1 and 4+2 Expanded Formats - Secondary" for format designated by address 50. The Event Code Settings can be altered. *Consult your Central Station prior to changing the event code settings.*

3.5 Default Mode

To return all program entries to their factory original settings, perform the following steps only when the system is idle (i.e. the communicator is not active) and there are no active fire alarms or fire supervisories in the system:

Press the **MODE** key followed by the 4-digit code **3337** and press the **[ENTER/STORE]** key.

- **3337** spells DEFP (**DEF**ault **P**rogramming) on a Touch-Tone® phone.

If an incorrect key is entered, reenter the proper 4-digit code *before* pressing the **[ENTER/STORE]** key. Within five seconds, repeat this entry by again pressing the **MODE** key followed by the 4-digit code **3337** and pressing the **[ENTER/STORE]** key. The display will read **3337** while the E^2 nonvolatile memory (storage area for all programming options) is being reprogrammed with the original default settings. When reprogramming is complete, the display will be blank.

3.6 Troubleshoot Mode

To access the Troubleshoot Mode, press the **MODE** key followed by the digits 8768 and then the **[ENTER/STORE]** key.

- **8768** spells TROU on a Touch-Tone® phone.

Once in this mode, the 411/411UD will continue to communicate any events not yet acknowledged at a central station *prior* to entering Troubleshoot Mode. The **UP** arrow, **DOWN** arrow, and **1st EVENT** keys do not function in this mode.

Telephone Line Testing

Press **C** for touchtone dialing or **D** for rotary dialing, followed by **[ENTER/STORE]**.

The Programmer keypad may be used as a telephone touchpad for number dialing. Once the first digit is pressed, the display will move the **C** or **D** character one position to the left, while placing the next digit to be dialed on the farthest right display position. Continue to press the phone numbers to be dialed. The dialer stores the digits as they are pressed. Press **1st EVENT** to go off hook and dial the stored digits. Pressing **[ENTER/STORE]** after dialing has started will terminate dialing. Successive depressions of the **1st EVENT** key hangs up and picks up the phone (places the phone on or off the hook).

The secondary phone line may be tested by pressing the **E** key for touchtone dialing or the **F** key for rotary dialing and then following the same procedure used for the primary phone line. A handset may be temporarily connected across transformer T1 of the 411UDAC as indicated in Figure 3.2. The handset, when connected across T1, may be used only as an amplifier/speaker or telephone with the keypad used for number dialing.

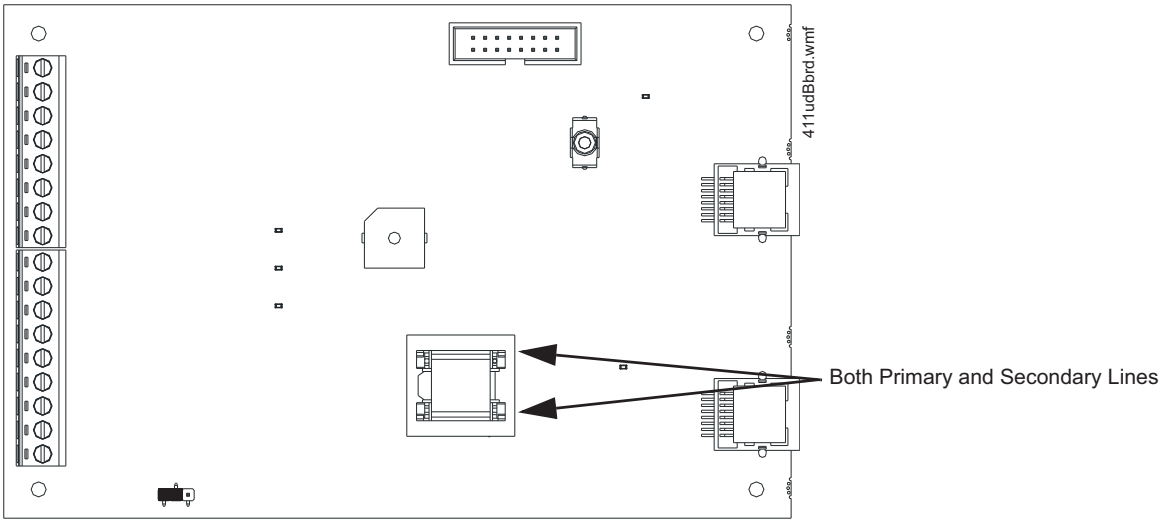


Figure 3.2 Handset/Speaker Connection

Section 4: Central Station Communications

The 411/411UD digital communicator transmits system status reports to Central Stations via the public switched telephone network. Two supervised telephone line connections are made to interface the communicator to the telephone lines. Two 7-foot telephone cords P/N MCBL-7 may be used for this purpose (not supplied - order separately).

The digital communicator supervises both telephone lines for proper voltage. A delay of two minutes will occur before a fault in either phone line connection is reported as a trouble. When a fault is detected, an audible trouble signal will sound, the yellow DACT Trouble LED will turn on *(411UD Only)*, the trouble relay will activate if programmed for DACT trouble and the trouble condition will be reported to a central station over the remaining good phone line.

The digital communicator comes with line seizure capability provided for both the primary and secondary telephone line interfaces. Any time that the DACT needs to make a call to a central station, line seizure will disconnect any local premises phones sharing the same telephone line. All transmissions to central stations will be sent over the Primary Central Station phone line. In the event of noisy phone lines, transmissions will be sent over the backup Secondary phone line.

Two phone numbers must be programmed, the Primary Central Station phone number and the Secondary Central Station phone number. There are three options for transmission to the Central Station:

- All reports are always sent to the Primary Central Station phone number with the Secondary Central Station number for emergency backup purposes only
- All reports are sent to both Central Station phone numbers
- Reports are sent to the first available Central Station phone number only

The digital communicator is capable of reporting detailed messages depending upon the Format in use. Table 4.1 shows the data reporting structure for each of the pulsed formats as well as the Ademco Express Formats. Ademco Express Formats allow a typical data message to be transmitted to the Central Station in under 5 seconds. Pulsed formats typically require 15 to 20 seconds in comparison. Table 4.2 defines each letter code used in Table 4.1. See "Ademco Contact ID Format Event Code Description" on page 44 for a description of the data reporting structure for Ademco Contact ID Format.

	Format # 0, 2, 4, 6, 8	**Format # 3, 5, 7, 9**	**Format # 1, A, C**	**Format # B, D**
Report	3+1/4+1/Standard 4+1 Express	3+1/4+1/Expanded	4+2/Standard 4+2 Express	4+2/Expanded
Fire Alarm	SSS(S) FA	SSS(S) FA FAFAFA(FA) 2	SSSS FAFA2	SSSS FAZ
Fire Alarm Restore	SSS(S) RFA	SSS(S) RFA RFARFARFA (RFA) 2	SSSS RFARFA2	SSSS RFAZ
Channel/Input Trouble (Channel/Input Open)	SSS(S) TZ	SSS(S) TZ TZTZTZ(TZ) Z	SSSS TZTZ2	SSSS TZZ
Channel/Input Trouble Restore	SSS(S) RTZ	SSS(S) RTZ RTZRTZRTZ(RTZ) Z	SSSS RTZRTZ2	SSSS RTZZ
System Trouble	SSS(S) TS	SSS(S) TS TSTSTS(TS) Y	SSSS TSTS2	SSSS TSY
System Trouble Restore	SSS(S) RTS	SSS(S) RTS RTSRTSRTS(RTS) Y	SSSS RTSRTS2	SSSS RTSY
AC Loss	SSS(S) P	SSS(S) P PPP(P) Z	SSSS PP2	SSSS PP2
AC Loss Restore	SSS(S) RP	SSS(S) RP RPRPRP(RP) Z	SSSS RPRP2	SSSS RPRP2
Fire Supervisory Condition	SSS(S) V	SSS(S) V VVV(V) Z	SSSS VV2	SSSS VZ
Fire Supervisory Condition Restore	SSS(S) RV	SSS(S) RV RVRVR(RV) Z	SSSS RVRV2	SSSS RVZ
Test Report	SSS(S) X	SSS(S) X	SSSS XX2	SSSS XX2
Up or Download - *411UD Only*	SSS(S) UD	SSS(S) UD	SSS UDUD2	SSS UDUD2

Table 4.1 Format Selection Addresses (20 and 50) Programming

Where:

SSS or SSSS	= Subscriber ID
FA	= Fire Alarm (1st digit)
FA2	= Fire Alarm (2nd digit)
Z	= Channel/Input Number
RFA	= Fire Alarm Restore (1st digit)
RFA2	= Fire Alarm Restore (2nd digit)
TZ	= Zone Trouble (1st digit)
TZ2	= Zone Trouble (2nd digit)
RTZ	= Zone Trouble Restore (1st digit)
RTZ2	= Zone Trouble Restore (2nd digit)
TS	= System Trouble (1st digit)
TS2	= System Trouble (2nd digit)
RTS	= System Trouble Restore (1st digit)
RTS2	= System Trouble Restore (2nd digit)
P	= AC Loss (1st digit)
P2	= AC Loss (2nd digit)
RP	= AC Loss Restore (1st digit)
RP2	= AC Loss Restore (2nd digit)
V	= Fire Supervisory Condition (1st digit)
V2	= Fire Supervisory Condition (2nd digit)
RV	= Fire Supervisory Condition Restore (1st digit)
RV2	= Fire Supervisory Condition Restore (2nd digit)
X	= Test Report (1st digit)
X2	= Test Report (2nd digit)
Y	= Trouble corresponding to the following:
1	= Not Used
2	= Not Used
3	= Not Used
4	= Telco Primary Line Fault
5	= Telco Secondary Line Fault
6	= Not Used
7	= Not Used
8	= Not Used
9	= Not Used
A	= Communication Failure Primary Number
B	= Communication Failure Secondary Number
C	= Not Used
D	= Not Used
E	= Not Used
F	= System Off Normal
UD	= Upload/Download (1st digit) - *411UD Only*
UD2	= Upload/Download (2nd digit) - *411UD Only*

Table 4.2 Format Selection Address Explanation

Note that for Expanded Reporting, the digital communicator automatically adds the digit corresponding to the Channel/Input number, and the second digit corresponding to any system trouble condition. Only the first digit shown in Table 3.3 and Table 3.6 is programmable.

4.1 Transmittal Priorities

The digital communicator transmits highest priority events first. Events in terms of priority are listed below in descending order:

1. Fire Alarm (highest priority level)
2. Fire Supervisory
3. System Troubles
   - Host Panel Trouble (active input programmed for trouble)
   - AC Fail (after delay)
   - Channel/Input faults
   - Telephone line fault
   - Communication trouble
   - System Off Normal
4. Restoral Reports
   - Fire Alarm
   - Fire Supervisory
   - Host Panel Trouble
   - AC
   - Channel/Input fault
   - Telephone line
   - Communication
   - System Off Normal
5. System Test
6. Upload/Download events (lowest priority) - *411UD Only*

Red LEDs are provided on the digital communicator circuit board *(411UD Only)* to identify which telephone line is active.

4.2 Ademco Contact ID Format Event Code Description

This section describes the various Event Codes and their messages which are available for the Ademco Contact ID Format. The reporting structure for the Ademco Contact ID Format is as follows:

SSSS 18 QXYZ GG CCC

Where:

SSSS = Four digit Subscriber ID Account Code (addresses 21 - 24 and 51 - 54)

18 = Identifies transmission as Contact ID to the receiver at the Central Station

Q = Event Qualifier where 1 = New Event and 3 = New Restore

XYZ = Event code (shown in Tables)

GG = Group number

CCC = Channel/Input number

Notes:

1. **18**, which is used in the reporting structure to identify the transmission as Contact ID, is not printed out in the alarm and trouble report.
2. **Q**, which is the Event Qualifier for the reporting structure, is printed out in the report as an E for New Event or R for New Restore.
3. GG Group Number is fixed at '00' and cannot be changed.
4. CCC Channel/Input Number is transmitted as '001' for Channel/Input 1, '002' for Channel/Input 2, '003' for Channel/Input 3, '004' for Channel/Input 4 *(411UD Only)*.

Ademco Contact ID Reporting Structure

A typical printout from a Central Station receiver (such as the Ademco 685) of alarm and trouble reports in the Ademco Contact ID Reporting Structure follows:

Time	Date	Rcvr/Line ID	SSSS	QXYZ	GG	CCCC
11:28	03/25	11	7777	E110	00	C001 - general fire alarm on Channel/Input 1
11:28	03/25	11	7777	E111	00	C002 - smoke detector alarm on Channel/Input 2
11:28	03/25	11	7777	E380	00	C003 - fault on Channel/Input 3
11:28	03/25	11	7777	R110	00	C001 - Channel/Input 1 alarm restored
11:28	03/25	11	7777	R111	00	C002 - smoke detector Channel/Input 2 restored
11:28	03/25	11	7777	R380	00	C003 - Channel/Input 3 fault restored
11:28	03/25	11	7777	E158	00	C004 - high temperature, Channel/Input 4 - *411UD Only*
11:28	03/25	11	7777	E151	00	C004 - gas detected, Channel/Input 4 - *411UD Only*

The following table contains UL listed receivers compatible with the 411/411UD digital communicator.

Format # (Addresses 20 and 50)		FBI CP220FB (1)	Ademco 685 (2)	Silent Knight 9000 (3)	Silent Knight 9800 (4)	Osborne Hoffman 2000E (5)	Radionics 6600 (6)	Surgard System III (7)	Surguard MLR-2 (8)	Surguard MR-2000 (9)	Ademco MX8000 (10)
0	4+1 Ademco Express	✔	✔		✔	✔	✔	✔	✔	✔	✔
1	4+2 Ademco Express	✔	✔		✔	✔	✔	✔	✔	✔	✔
2	3+1/Standard/1800/2300	✔	✔	✔	✔	✔				✔	✔
3	3+1/Expanded/1800/2300	✔	✔	✔	✔	✔				✔	✔
4	3+1/Standard/1900/1400	✔	✔	✔	✔	✔				✔	✔
5	3+1/Expanded/1900/1400	✔	✔	✔	✔	✔				✔	✔
6	4+1/Standard/1800/2300		✔	✔	✔	✔		✔	✔	✔	✔
7	4+1/Expanded/1800/2300		✔	✔	✔	✔		✔	✔	✔	✔
8	4+1/Standard/1900/1400		✔	✔	✔	✔		✔	✔	✔	✔
9	4+1/Expanded/1900/1400		✔	✔	✔	✔		✔	✔	✔	✔
A	4+2/Standard/1800/2300	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
B	4+2/Expanded/1800/2300	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
C	4+2/Standard/1900/1400	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
D	4+2/Expanded/1900/1400	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
E	Ademco Contact ID	✔	✔		✔	✔	✔	✔	✔	✔	✔

Table 4.3 Compatible UL Listed Receivers

(1) With version 3.9 software.

(2) With 685-8 Line Card with Rev. 4.4d software.

(3) With 9002 Line Card Rev. 9035 software or 9032 Line Card with 9326A software.

(4) With 124077V2.00 Receiver and 126047 Line Card Rev. M.

(5) With V.7301 Receiver S/W.

(6) With 01.01.03 Receiver S/W and Line Card 01.01.03.

(7) Surgard System III software version 1.6.

(8) Surgard MLR-2 software version 1.86.

(9) With DSP4016 and V1.6 Line Card.

(10) With 124060V206B and 124063 Line Card Rev. B

IMPORTANT! *It is the installer's responsibility to ensure that the Digital Alarm Communicator/Transmitter is compatible with the Central Station Receiver, utilized by the monitoring service, prior to installation. The Compatibility Table provides a list of compatible receivers and associated software versions for the receivers. Changes in the hardware and/or software by the receiver manufacturers may affect the receiver compatibility with the DACT. After completing the installation, communication between the DACT and Central Station Receiver must be tested and verified.*

Section 5: Remote Site Upload/Download - *411UD Only*

The 411UD digital communicator may be programmed off site via the public switched telephone network. Any personal computer with Windows® XP or greater, with a 1200 Baud Hayes compatible modem and Upload/Download software P/N PK-411UD (available online or on the PK-CD programming CD) may serve as a Service Terminal. For details on the remote site upload/download software package, refer to the PK-411 Manual. The Upload/Download software allows the following:

- Download of the entire program
- Upload of the entire program
- Upload current status, system voltages or time
- Real-time upload, either continuous or 'snapshot' (one time) of current status or system voltages
- Download new time

CAUTION: PROGRAM DOWNLOAD
CHANGES TO PROGRAM ENTRIES OCCUR AS A RESULT OF THE DOWNLOADING PROCESS. AFTER SUCCESSFUL DOWNLOADING, MAKE CERTAIN TO PERFORM THE FOLLOWING STEPS:

1. Manually view programmed entries and compare to intended program data.
2. Test all affected system operations.
3. Immediately correct any problems found.

5.1 General

Any time that the digital communicator is contacted, a secret code (factory default 0000) is verified between the digital communicator and the Service Terminal. Changing the Secret Code may only be accomplished at the Service Terminal and subsequently loaded into the control panel. Future upload or download requests cause verification of the Secret Code by the communicator before processing of data is allowed. If the Secret Code is not verified, the communicator will terminate the request immediately.

When the 411UD is communicating with the Service Terminal, one of the communicator's green Phone Line active LEDs will remain on steady. Upon termination of communication, the green Phone Line active LED will turn off.

In order to contact the communicator, the following must be true:

✓ The digital communicator may be in any mode of operation including Normal, Program, Real Time Clock, Troubleshoot or Lamp Test. Downloading is not possible if the communicator is active during Central Station communications or while testing the phone lines while in Troubleshoot Mode.

✓ The digital communicator must be unlocked so it can accept a remote upload/download. Entering mode **8655** (UNLK) will unlock the panel for 30 minutes. Refer to “Panel Unlock (90)” on page 38 for other programming options.

✓ There cannot be any active communications ongoing with a Central Station receiver.

✓ All active events must be successfully 'kissed-off' by the Central Station(s). The digital communicator must be in a standby state with no new information waiting to be transmitted to a Central Station.

Two basic communication mechanisms are supported as follows:

- Contact with callback - The Service Terminal calls the digital communicator. The communicator answers the call, confirms the calling party then hangs-up. The Service Terminal then waits for a callback from the communicator. After the digital communicator

calls the Central Station and successfully reports that a request has been received, the communicator calls the Service Terminal back. Upon secret code verification, data transfers occur. When the data transfers are completed and the Service Terminal disconnects from the communicator, the digital communicator calls the Central Station back to confirm either successful or unsuccessful results.

- Contact with callback disabled - The Service Terminal calls the communicator. No hang-up sequence occurs. Data transfers proceed.

Note that Callback enable/disable is controlled by the master user at the Service Terminal on a per call basis.

With program address location 64 set to '1' in Program Mode, anytime a contact with callback is initiated, the communicator will first either contact the primary Central Station or contact both the primary and secondary Central Stations or contact the first available Central Station phone number to report a 'request for upload/download' message (depending upon the program entry in address location 137). Once the request is 'kissed-off' by the Central Station(s), the communicator will then call the appropriate Service Terminal and begin the downloading process.

With program address location 64 set to '1' in Program Mode, anytime a contact with callback disabled is initiated, the communicator and the Service Terminal will communicate and transfer data without first contacting a Central Station. When the data transfers are completed and the communicator disconnects from the Service Terminal, the communicator will call the Central Station and report one of the following:

- Upload/download request received
- Upload and/or download successful
- Upload/download failed

To prevent the 'request for upload/download' message(s) from being reported to the Central Station(s), make certain to leave address 64 = 0 or disable all upload/download reports back to both Central Stations. Refer to Table 3.2 on page 30 through Table 3.4 on page 33 for additional information.

During the downloading process, the input monitoring and 411UD supervision remain active. Should an input activation or system trouble occur, the communicator immediately terminates downloading, processes the trouble or alarm locally and transmits the information to the Central Station(s).

5.1.1 Security Features

Remote site upload and download with the 411UD have been carefully designed to include key security features to ensure proper functionality. The key features are listed and explained below.

Secret Code Verification

A secret code is stored in the communicator by a Service Terminal to prevent unauthorized access. The secret code is created at the Service Terminal by a Master user and cannot be viewed or changed by anyone other than a Master user. Viewing of the secret code is prohibited at the communicator. Prior to allowing an upload or download of data, the communicator will verify the secret code transmitted by the Service Terminal.

Panel Unlock

The communicator must be in an unlocked state to accept a remote upload/download. Entering the 4 digit code will unlock the panel for a period of 30 minutes, unless otherwise programmed.

Time-out at 411UD

Upon answering an incoming call on the primary Central Station phone line, the communicator will listen for a modem connection signal. If this signal is not received within 30 seconds, the communicator will disconnect the call. Upon successful connection (i.e. secret code verified and callback complete if applicable), if no communication occurs within two minutes, the communicator will disconnect the call.

Callback to Service Terminal

Any time that the communicator is remotely requested to allow an upload or download with callback, it will confirm the source of the incoming call, hang-up and call the calling party (Service Terminal phone number) back.

Error Checking

As each block of data is received by the communicator, it is checked for accuracy. If an error is detected, the block is retransmitted until correct, up to a maximum of four times. If the Secret Code is not verified and four errors occur, the call is disconnected and the report that the upload/download was not successful is called to the Central Station(s).

Central Station Acknowledge

There is an option whereby the communicator will report to one or both Central Stations that a request for uploading or downloading has been received prior to processing the call. This is called the 'callback' option. If the Central Station(s) does not acknowledge receipt of this request, uploading or downloading is prohibited. If acknowledged by the Central Station(s), another message is transmitted informing the Central Station(s) that:

- downloading was successful
- uploading was successful
- uploading/downloading was not successful

Data Protection/Integrity

Programming data is completely verified for accuracy prior to reprogramming of the 411/411UD EEPROM. Incomplete or corrupted data packets are ignored or retried.

5.2 Downloading to the Communicator

Before initiating the download procedure, make certain that the communicator is in the standby state; the red Line Seize LED is off.

Once an incoming call is accepted/answered by the communicator, the 411UD will:

1. Establish basic modem connection
2. Verify secret code
3. Verify callback vs. no callback request from the Service Terminal. If callback is requested, perform steps 4 through 10; if no callback is requested, perform steps 9 and 10 only.
4. Identify the Service Terminal location
5. Hang-up/disconnect call
6. Call the Central Station(s) and transmit a request for upload/download message (if programmed to do so). If this message is accepted, the communicator will proceed to the next step
7. Return call to the Service Terminal
8. Verify secret code
9. Begin downloading
10. Upon completion of download, call the Central Station(s) back and report a successful download or failed upload/download status (if programmed to do so).

5.3 Uploading From the Communicator

Items that may be uploaded from the communicator to a Service Terminal are:

- All or portions of programmed data plus the real time clock
- Troubleshoot system voltages in real-time or as a 'snapshot'
- Current system status in real-time continuous or as a 'snapshot'

Uploading is possible at any time provided the following conditions are true:

✓ The communicator may be in any mode of operation. Uploading is not possible if the communicator is active or while testing the phone lines while in Troubleshoot Mode.

✓ There cannot be any active communications ongoing with a Central Station receiver.

✓ All active events must be successfully 'kissed-off' by the Central Station(s). The communicator must be in a standby state with no new information waiting to be transmitted to a Central Station.

Once an incoming call is accepted/answered by the communicator, the 411UD will:

1. Establish basic modem connection
2. Verify secret code
3. Verify callback vs. no callback request from the Service Terminal. If callback is requested, perform steps 4 through 10; if no callback is requested, perform steps 9 and 10 only.
4. Identify the Service Terminal location
5. Hang-up/disconnect call
6. Call the Central Station(s) and transmit a request for upload/download message (if programmed to do so). If this message is accepted, the communicator will proceed to the next step
7. Return call to the Service Terminal
8. Verify secret code
9. Begin downloading
10. Upon completion of download, call the Central Station(s) back and report a successful download or failed upload/download status (if programmed to do so).

During the uploading process, the fire protection remains active. Should a system trouble or alarm condition occur, the communicator immediately terminates uploading and processes the trouble or alarm locally and transmits the information to the Central Station(s).

5.4 Simultaneous Data Transfers

Uploading and downloading may take place on a single telephone call. Control and selection of the data transaction is coordinated at the Service Terminal. This eliminates multiple phone calls, allows instant verification of downloaded data files and simplifies the overall process.

Appendix A: Programming Sheets

A.1 Digital Communicator Options Program Sheets

--To enter Programming Mode, press the **MODE** key, **7764** and then the **[ENTER/STORE]** key.

☐00 ☐01 ☐02 ☐03 ☐04 ☐05 ☐06 ☐07 ☐08 ☐09 ☐10 ☐11 ☐12 ☐13 ☐14 ☐15 ☐16 ☐17 ☐18 ☐19

Addresses 00 to 19 store the Primary Central Station phone number. *Enter 'F' to represent the end of number.*

☐20 Primary Central Station Communication Format: *Valid entries are 0 to 9 and A to E.*

☐21 ☐22 ☐23 ☐24 Primary Central Station Account Code: *Valid entries are 0 to 9 and A to F.*

☐25 ☐26 ☐27 ☐28 Primary Central Station 24-hour Test Time: *Use military time (i.e. 1400 for 2:00 PM).*

☐29 Primary Number Test Time Interval. Enter '0' for 24-hour; '1' for 12-hour; '2' for 8-hour; '3' for 6-hour.

☐30 ☐31 ☐32 ☐33 ☐34 ☐35 ☐36 ☐37 ☐38 ☐39 ☐40 ☐41 ☐42 ☐43 ☐44 ☐45 ☐46 ☐47 ☐48 ☐49

Addresses 30 to 49 store the Secondary Central Station phone number. *Enter 'F' to represent the end of number.*

☐50 Secondary Central Station Communication Format: *Valid entries are 0 to 9 and A to E.*

☐51 ☐52 ☐53 ☐54 Secondary Central Station Account Code: *Valid entries are 0 to 9 and A to F.*

☐55 ☐56 ☐57 ☐58 Secondary Central Station 24-hour Test Time: *Use military time (i.e. 1400 for 2:00 PM).*

☐59 Secondary Number Test Time Interval. Enter '0' for 24-hour; '1' for 12-hour; '2' for 8-hour; '3' for 6-hour.

☐60 AC Loss Reporting Delay. Enter '0' for no delay; '1' for 1 hours; '2' for 2 hours; '3' for 6 hours; '4' for 7 hours; '5' for 8 hours; '6' for 9 hours; '7' for 10 hours; '8' for 11 hours; '9' for 12 hours; 'A' for 13 hours; 'B' for 14 hours; 'C' for 15 hours; 'D' for 16 hours; 'E' for 17 hours; 'F' for 18 hours.

☐61 Backup Reporting. Enter '0' to report to Secondary phone number as backup only; '1' to report to both Primary and Secondary phone number for all reports/messages; '2' reports go to first available receiver.

☐62 Reserved for Future Use.

☐63 Reserved for Future Use.

☐64 Communicator Enable/Disable. Enter '0' to disable communication to Central Station; '1' to enable. Default entry of '0' causes the 411/411UD to annunciate a DACT trouble immediately on power-up.

☐65 Input Channel 1 Function Selection. Enter '0' for fire alarm; '1' for host control panel trouble; '2' for fire supervisory; '4' for AC loss.

☐66 Input Channel 2 Function Selection. Enter '0' for fire alarm; '1' for host control panel trouble; '2' for fire supervisory; '4' for AC loss.

☐67 Input Channel 3 Function Selection. Enter '0' for fire alarm; '1' for host control panel trouble; '2' for fire supervisory; '4' for AC loss.

☐68 Input Channel 4 Function Selection. Enter '0' for fire alarm; '1' for host control panel trouble; '2' for fire supervisory; '4' for AC loss - *411UD Only*

☐69 ☐70 ☐71 Future Use

☐72 ☐73 ☐74 Future Use

☐75 ☐76 ☐77 Future Use

☐78 ☐79 ☐80 Future Use

☐81 Touchtone/Rotary Select for Primary Phone. Enter '0' for touchtone dialing; '1' for rotary dialing.

☐82 Make/Break Ratio for Primary Phone. Enter '0' for 67/33 ratio; '1' for 62/38 ratio.

☐83 Touchtone/Rotary Select for Secondary Phone. Enter '0' for touchtone dialing; '1' for rotary dialing.

☐84 Make/Break Ratio for Secondary Phone. Enter '0' for 67/33 ratio; '1' for 62/38 ratio.

☐85 Future Use.

☐86 Future Use.

☐87 Output Relay Enable. Enter '0' to disable relay; '1' to enable relay.

☐88 Output Relay Function Selection. Enter '0' for activation on fire alarm; '1' for host control panel trouble; '2' for fire supervisory; '4' for AC loss; '6' for communication failure; '7' for DACT trouble.

☐89 Trouble Call Limit. Enter a '0' to disable this feature; '1' to enable Trouble Call Limit. Factory default is '0' for disabled.

☐90 Panel Unlock. Enter ‘0’ for password unlock, ‘1’ for permanent unlock.

☐91 ☐92 ☐93 Future Use.

☐94 ☐95 ☐96 ☐97 ☐98 ☐99 ☐100 ☐101 ☐102 ☐103 ☐104 ☐105 ☐106 ☐107 ☐108 ☐109 ☐110 ☐111
☐112 ☐113 Addresses 94 to 113 store the Service Terminal 1 Phone Number. *Valid entries are 0 - 9 and A - E. 'F' designates the end of the phone number. - 411UD Only*

☐114 ☐115 Ring Count on Primary Phone Line. Enter number of rings prior to panel answering call. *Valid entries are 00 to 25 (00 = no answer). Factory default is 03. - 411UD Only*

☐116 Future Use.

☐117 ☐118 ☐119 ☐120 ☐121 ☐122 ☐123 ☐124 ☐125 ☐126 ☐127 ☐128 ☐129 ☐130 ☐131 ☐132 ☐133
☐134 ☐135 ☐136 Addresses 117 to 136 store the Service Terminal 2 Phone Number. *Valid entries are 0-9 and A-E. 'F' designates the end of the phone number. - 411UD Only*

☐137 Upload/Download Backup Reporting. Enter '0' for Upload/Download reports to go to the Secondary Central Station Phone Number on backup only; '1' for Upload/Download reports to always go to the Secondary; '2' for Upload/Download reports to go to the first available Central Station phone number - *411UD Only.*

A.2 Digital Communicator Options Program Sheet (Factory Defaults)

--To enter Programming Mode, press the **MODE** key, **7764** and then the **[ENTER/STORE]** key.

F$_{00}$ **F**$_{01}$ **F**$_{02}$ **F**$_{03}$ **F**$_{04}$ **F**$_{05}$ **F**$_{06}$ **F**$_{07}$ **F**$_{08}$ **F**$_{09}$ **F**$_{10}$ **F**$_{11}$ **F**$_{12}$ **F**$_{13}$ **F**$_{14}$ **F**$_{15}$ **F**$_{16}$ **F**$_{17}$ **F**$_{18}$ **F**$_{19}$

Addresses 00 to 19 store the Primary Central Station phone number. *Enter 'F' to represent the end of number.*

E$_{20}$ Primary Central Station Communication Format: *'E' for Ademco Contact ID Format.*

0$_{21}$ **0**$_{22}$ **0**$_{23}$ **0**$_{24}$ Primary Central Station Account Code.

0$_{25}$ **0**$_{26}$ **0**$_{27}$ **0**$_{28}$ Primary Central Station 24-hour Test Time. *'0000' = 12:00 midnight.*

0$_{29}$ Primary Number Test Time Interval. *'0' for 24 hours.*

F$_{30}$ **F**$_{31}$ **F**$_{32}$ **F**$_{33}$ **F**$_{34}$ **F**$_{35}$ **F**$_{36}$ **F**$_{37}$ **F**$_{38}$ **F**$_{39}$ **F**$_{40}$ **F**$_{41}$ **F**$_{42}$ **F**$_{43}$ **F**$_{44}$ **F**$_{45}$ **F**$_{46}$ **F**$_{47}$ **F**$_{48}$ **F**$_{49}$

Addresses 30 to 49 store the Secondary Central Station phone number. *Enter 'F' to represent the end of number.*

E$_{50}$ Secondary Central Station Communication Format. '*E' for Ademco Contact ID Format.*

0$_{51}$ **0**$_{52}$ **0**$_{53}$ **0**$_{54}$ Secondary Central Station Account Code.

0$_{55}$ **0**$_{56}$ **0**$_{57}$ **0**$_{58}$ Secondary Central Station 24-hour Test Time: *'0000' = 12:00 midnight.*

0$_{59}$ Secondary Number Test Time Interval. *'0' for 24 hours.*

2$_{60}$ AC Loss Reporting Delay. *'2' for 2 hour delay.*

0$_{61}$ Backup Reporting. *'0' to report to Secondary Central Station phone number as backup only.*

1$_{62}$ Future Use.

0$_{63}$ Future Use.

0$_{64}$ Communicator Enable/Disable. *'0' disables communication to Central Station.*

0$_{65}$ Input Channel 1 Function Selection. *'0' for fire alarm.*

1$_{66}$ Input Channel 2 Function Selection. *'1' for host control panel trouble.*

2$_{67}$ Input Channel 3 Function Selection. *'2' for fire supervisory.*

4$_{68}$ Input Channel 4 Function Selection. *'4' for AC loss - 411UD Only.*

0$_{69}$ **0**$_{70}$ **0**$_{71}$ Future Use

0$_{72}$ **0**$_{73}$ **0**$_{74}$ Future Use

0$_{75}$ **0**$_{76}$ **0**$_{77}$ Future Use

0$_{78}$ **0**$_{79}$ **0**$_{80}$ Future Use

0$_{81}$ Touchtone/Rotary Select for Primary Phone. *'0' for touchtone dialing.*

0$_{82}$ Make/Break Ratio for Primary Phone. *'0' for 67/33 ratio.*

0$_{83}$ Touchtone/Rotary Select for Secondary Phone. *'0' for touchtone dialing.*

0$_{84}$ Make/Break Ratio for Secondary Phone. *'0' for 67/33 ratio.*

0$_{85}$ Future Use.

0$_{86}$ Future Use.

1$_{87}$ Output Relay Enable. *'1' to enable relay.*

7$_{88}$ Output Relay Function Selection. *'7' for activation on DACT trouble.*

0$_{89}$ Trouble Call Limit. *'0' for disabled feature.*

0$_{90}$ Panel Unlock. *'0' for password unlock.*

0$_{91}$ **0**$_{92}$ **0**$_{93}$ Future Use.

F$_{94}$ **F**$_{95}$ **F**$_{96}$ **F**$_{97}$ **F**$_{98}$ **F**$_{99}$ **F**$_{100}$ **F**$_{101}$ **F**$_{102}$ **F**$_{103}$ **F**$_{104}$ **F**$_{105}$ **F**$_{106}$ **F**$_{107}$ **F**$_{108}$ **F**$_{109}$ **F**$_{110}$ **F**$_{111}$

F$_{112}$ **F**$_{113}$ Addresses 94 to 113 store the Service Terminal 1 Phone Number. *Valid entries are 0 - 9 and A - E. 'F' designates the end of the phone number - 411UD Only.*

0$_{114}$ **3**$_{115}$ Ring Count on Primary Phone Line. *'03' for number of rings before answering call - 411UD Only.*

0$_{116}$ Future Use.

F$_{117}$ **F**$_{118}$ **F**$_{119}$ **F**$_{120}$ **F**$_{121}$ **F**$_{122}$ **F**$_{123}$ **F**$_{124}$ **F**$_{125}$ **F**$_{126}$ **F**$_{127}$ **F**$_{128}$ **F**$_{129}$ **F**$_{130}$ **F**$_{131}$ **F**$_{132}$ **F**$_{133}$

F$_{134}$ **F**$_{135}$ **F**$_{136}$ Addresses 117 to 137 store the Service Terminal 2 Phone Number. *Valid entries are 0-9 and A-E. 'F' designates the end of the phone number - 411UD Only.*

0$_{137}$ Upload/Download Backup Reporting. *'0' for Upload/Download reports to go to the Secondary Central Station Phone Number on backup only - 411UD Only.*

Appendix B: Event Codes/Transmission Format Programming Sheets

--To enter Programming Mode, press the **MODE** key, **7764** and then the **[ENTER/STORE]** key.

B.1 4+2 Standard & 4+2 Express Formats <u>Primary</u> Central Station

☐138 ☐139 ☐140 ☐141 ☐142 ☐143 ☐144 ☐145 ☐146 ☐147 ☐148 ☐149 ☐150 ☐151 ☐152 ☐153

☐154 ☐155 ☐156 ☐157 ☐158 ☐159 ☐160 ☐161 ☐162 ☐163 ☐164 ☐165 ☐166 ☐167 ☐168 ☐169

☐170 ☐171 ☐172 ☐173 ☐174 ☐175 ☐176 ☐177 ☐178 ☐179 ☐180 ☐181 ☐182 ☐183 ☐184 ☐185

☐186 ☐187 ☐188 ☐189 ☐190 ☐191 ☐192 ☐193 ☐194 ☐195 ☐196 ☐197 ☐198 ☐199 ☐200 ☐201

B.2 4+2 Standard & 4+2 Express Formats <u>Secondary</u> Central Station

☐202 ☐203 ☐204 ☐205 ☐206 ☐207 ☐208 ☐209 ☐210 ☐211 ☐212 ☐213 ☐214 ☐215 ☐216 ☐217

☐218 ☐219 ☐220 ☐221 ☐222 ☐223 ☐224 ☐225 ☐226 ☐227 ☐228 ☐229 ☐230 ☐231 ☐232 ☐233

☐234 ☐235 ☐236 ☐237 ☐238 ☐239 ☐240 ☐241 ☐242 ☐243 ☐244 ☐245 ☐246 ☐247 ☐248 ☐249

☐250 ☐251 ☐252 ☐253 ☐254 ☐255 ☐256 ☐257 ☐258 ☐259 ☐260 ☐261 ☐262 ☐263 ☐264 ☐265

--To enter Programming Mode, press the **MODE** key, **7764** and then the **[ENTER/STORE]** key.

B.3 4+2 Standard & 4+2 Express Formats Primary Central Station

1	138	1	139	F	140	F	141	8	142	3	143	9	144	2	145	F	146	1	147	F	148	2	149	F	150	3	151	F	152	4	153
6	154	4	155	6	156	5	157	6	158	A	159	6	160	B	161	6	162	F	163	E	164	1	165	E	166	2	167	E	168	3	169
9	170	3	171	D	172	1	173	D	174	2	175	D	176	3	177	D	178	4	179	A	180	4	181	A	182	5	183	A	184	A	185
A	186	B	187	A	188	F	189	9	190	9	191	9	192	1	193	7	194	1	195	7	196	2	197	7	198	3	199	7	200	4	201

B.4 4+2 Standard & 4+2 Express Formats Secondary Central Station

1	202	1	203	F	204	F	205	8	206	3	207	9	208	2	209	F	210	1	211	F	212	2	213	F	214	3	215	F	216	4	217
6	218	4	219	6	220	5	221	6	222	A	223	6	224	B	225	6	226	F	227	E	228	1	229	E	230	2	231	E	232	3	233
9	234	3	235	D	236	1	237	D	238	2	239	D	240	3	241	D	242	4	243	A	244	4	245	A	246	5	247	A	248	A	249
A	250	B	251	A	252	F	253	9	254	9	255	9	256	1	257	7	258	1	259	7	260	2	261	7	262	3	263	7	264	4	265

--To enter Programming Mode, press the **MODE** key, **7764** and then the **[ENTER/STORE]** key.

B.5 All 3+1, All 4+1 and 4+2 Expanded Formats for Primary Central Station

☐138 ☐139 ☐140 ☐141 ☐142 ☐143 ☐144 ☐145 ☐146 ☐147 ☐148 ☐149 ☐150 ☐151 ☐152 ☐153

☐154 ☐155 ☐156 ☐157 ☐158 ☐159 ☐160 ☐161 ☐162 ☐163 ☐164 ☐165 ☐166 ☐167 ☐168 ☐169

B.6 All 3+1, All 4+1 and 4+2 Expanded Formats for Secondary Central Station

☐202 ☐203 ☐204 ☐205 ☐206 ☐207 ☐208 ☐209 ☐210 ☐211 ☐212 ☐213 ☐214 ☐215 ☐216 ☐217

☐218 ☐219 ☐220 ☐221 ☐222 ☐223 ☐224 ☐225 ☐226 ☐227 ☐228 ☐229 ☐230 ☐231 ☐232 ☐233

B.7 All 3+1, All 4+1 and 4+2 Expanded Formats for Primary Central Station (Factory Defaults)

1138 F139 8140 9141 F142 F143 F144 F145 6146 6147 6148 6149 6150 E151 E152 E153

9154 D155 D156 D157 D158 A159 A160 A161 A162 A163 9164 F165 7166 7167 7168 7169

B.8 All 3+1, All 4+1 and 4+2 Expanded Formats for Secondary Central Station (Factory Defaults)

1202 F203 8204 9205 F206 F207 F208 F209 6210 6211 6212 6213 6214 E215 E216 E217

9218 D219 D220 D221 D222 A223 A224 A225 A226 A227 9228 F229 7230 7231 7232 7233

--To enter Programming Mode, press the **MODE** key, **7764** and then the **[ENTER/STORE]** key.

B.9 Ademco Contact ID Format Primary Central Station

☐138 ☐139 ☐140 ☐141 ☐142 ☐143 ☐144 ☐145 ☐146 ☐147 ☐148 ☐149 ☐150 ☐151 ☐152 ☐153

☐154 ☐155 ☐156 ☐157 ☐158 ☐159 ☐160 ☐161 ☐162 ☐163 ☐164 ☐165 ☐166 ☐167 ☐168 ☐169

☐170 ☐171 ☐172 ☐173 ☐174 ☐175 ☐176 ☐177 ☐178 ☐179 ☐180 ☐181 ☐182 ☐183 ☐184 ☐185

☐186 ☐187 ☐188 ☐189 ☐190 ☐191 ☐192 ☐193 ☐194

B.10 Ademco Contact ID Format Secondary Central Station

☐202 ☐203 ☐204 ☐205 ☐206 ☐207 ☐208 ☐209 ☐210 ☐211 ☐212 ☐213 ☐214 ☐215 ☐216 ☐217

☐218 ☐219 ☐220 ☐221 ☐222 ☐223 ☐224 ☐225 ☐226 ☐227 ☐228 ☐229 ☐230 ☐231 ☐232 ☐233

☐234 ☐235 ☐236 ☐237 ☐238 ☐239 ☐240 ☐241 ☐242 ☐243 ☐244 ☐245 ☐246 ☐247 ☐248 ☐249

☐250 ☐251 ☐252 ☐253 ☐254 ☐255 ☐256 ☐257 ☐258

B.11 Ademco Contact ID Format Primary Central Station (Factory Defaults)

1138 1139 0140 3141 7142 3143 2144 0145 0146 3147 0148 1149 3150 8151 0152 3153

8154 0155 3156 8157 0158 3159 8160 0161 3162 5163 1164 3165 5166 2167 3168 5169

4170 3171 5172 4173 3174 0175 8176 6177 0178 2179 6180 0181 8182 4183 1184 1185

4186 1187 6188 4189 1190 2191 4192 1193 3194

B.12 Ademco Contact ID Format Secondary Central Station (Factory Defaults)

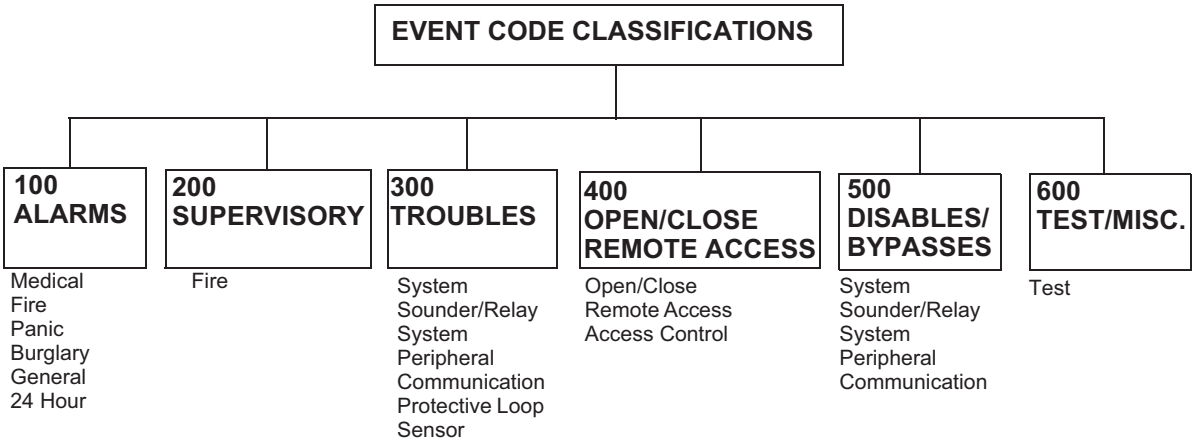
1202 1203 0204 3205 7206 3207 2208 0209 0210 3211 0212 1213 3214 8215 0216 3217

8218 0219 3220 8221 0222 3223 8224 0225 3226 5227 1228 3229 5230 2231 3232 5233

4234 3235 5236 4237 3238 0239 8240 6241 0242 2243 6244 0245 8246 4247 1248 1249

4250 1251 6252 4253 1254 2255 4256 1257 3258

Appendix C: Ademco Contact ID Format Event Code Description



EVENT	MESSAGE
Medical Alarms - 100	
100 Medical	EMERG - Personal Emergency - #
101 Pendant Transmitter	EMERG - Personal Emergency - #
102 Fail to report in	EMERG - Fail to Check-in - #
Fire Alarms - 110	
110 Fire Alarm	FIRE - Fire Alarm - #
111 Smoke	FIRE - Smoke Detector - #
112 Combustion	FIRE - Combustion - #
113 Waterflow	FIRE - Waterflow - #
114 Heat	FIRE - Heat Sensor - #
115 Pull Station	FIRE - Pull Station - #
116 Duct	FIRE - Duct Sensor - #
117 Flame	FIRE - Flame Sensor - #
118 Near Alarm	FIRE - Near Alarm - #
Panic Alarms - 120	
120 Panic Alarm	PANIC - Panic - #
121 Duress	PANIC - Duress
122 Silent	PANIC - Silent Panic - #
123 Audible	PANIC - Audible Panic - #
Burglar Alarms - 130	
130 Burglary	BURG - Burglary - #
131 Perimeter	BURG - Perimeter - #
132 Interior	BURG - Interior - #
133 24-Hour	BURG - 24-Hour
134 Entry/Exit	BURG - Entry/Exit - #
135 Day/Night	BURG - Day/Night - #
136 Outdoor	BURG - Outdoor - #

EVENT	MESSAGE
137 Tamper	BURG - Tamper - #
138 Near Alarm	BURG - Near Alarm - #
General Alarms - 140	
140 General Alarm	ALARM - General Alarm - #
141 Polling loop open	ALARM - Polling Loop Open - #
142 Polling loop short	ALARM - Polling Loop Short - #
143 Expansion module tamper	ALARM - Exp. Module Fail - #
144 Sensor tamper	ALARM - Sensor Tamper - #
145 Expansion module tamper	ALARM - Exp. Module Tamper - #
24 Hour Non-Burglary - 150 and 160	
150 24-Hour Non-Burg	ALARM - 24-Hr. Non-Burg - #
151 Gas detected	ALARM - Gas Detected - #
152 Refrigeration	ALARM - Refrigeration - #
153 Loss of heat	ALARM - Heating System - #
154 Water leakage	ALARM - Water Leakage - #
155 Foil break	ALARM - Foil Break - #
156 Day trouble	ALARM - Day Zone - #
157 Low bottled gas level	ALARM - Low Gas Level - #
158 High temp	ALARM - High Temperature - #
159 Low temp	ALARM - Low Temperature - #
161 Loss of air flow	ALARM - Air Flow - #
Fire Supervisory - 200 and 210	
200 Fire supervisory	SUPER. - Fire Supervisory - #
201 Low water pressure	SUPER. - Low Water Pressure - #
202 Low CO2	SUPER. - Low CO2
203 Gate valve sensor	SUPER. - Gate Valve - #
204 Low water level	SUPER. - Low Water Level - #
205 Pump activated	SUPER. - Pump Activation - #
206 Pump failure	SUPER. - Pump Failure - #
System Troubles - 300 and 310	
300 System trouble	TROUBLE - System Trouble
301 AC loss	TROUBLE - AC Power
302 Low system battery	TROUBLE - System Low Battery
303 RAM checksum bad	TROUBLE - Bad RAM Checksum (Restore not applicable)
304 ROM checksum bad	TROUBLE - Bad ROM Checksum (Restore not applicable)
305 System reset	TROUBLE - System Reset (Restore not applicable)
306 Panel program changed	TROUBLE - Programming Changed (Restore not applicable)
307 Self-test failure	TROUBLE - Self Test Failure
308 System shutdown	TROUBLE - System Shutdown
309 Battery test failure	TROUBLE - Battery Test Failure
310 Ground Fault	TROUBLE - Ground Fault - #
311 No battery	TROUBLE - No Battery
Sounder/Relay Troubles - 320	
320 Sounder/Relay	TROUBLE - Sounder/Relay - #
321 Bell 1	TROUBLE - Bell/Siren #1
322 Bell 2	TROUBLE - Bell/Siren #2
323 Alarm relay	TROUBLE - Alarm Relay

EVENT	MESSAGE
324 Trouble relay	TROUBLE - Trouble Relay
325 Reversing	TROUBLE - Reversing Relay
326 Bell 3	TROUBLE - Bell/Siren #3
327 Bell 4	TROUBLE - Bell/Siren #4

System/Peripheral Troubles - 330 and 340

330 System peripheral	TROUBLE - Sys. Peripheral - #
331 Polling loop open	TROUBLE - Polling Loop Open
332 Polling loop short	TROUBLE - Polling Loop Short
333 Expansion module failure	TROUBLE - Exp. Module Fail. - #
334 Repeater failure	TROUBLE - Repeater Failure - #
335 Local printer paper out	TROUBLE - Printer Paper Out
336 Local printer failure	TROUBLE - Local Printer

Communication Troubles - 350 and 360

350 Communication	TROUBLE - Communication Trouble
351 Telco 1 fault	TROUBLE - Phone Line #1
352 Telco 2 fault	TROUBLE - Phone Line #2‘
353 Long range radio xmitter fault	TROUBLE - Radio Transmitter
354 Fail to communicate	TROUBLE - Fail to Communicate
355 Loss of radio supervision	TROUBLE - Radio Supervision
356 Loss of central polling	TROUBLE - Central Radio Polling

Protection Loop Troubles - 370

370 Protection loop	TROUBLE - Protection Loop - #
371 Protection loop open	TROUBLE - Protection Loop Open - #
372 Protection loop short	TROUBLE - Protection Loop Short - #
373 Fire Trouble	TROUBLE - Fire Loop - #

Sensor Troubles - 380

380 Sensor Trouble	TROUBLE - Sensor Trouble - #
381 Loss of supervision - RF	TROUBLE - RF Sensor Supervision - #
382 Loss of supervision - RPM	TROUBLE - RPM Sensor Supervision - #
383 Sensor tamper	TROUBLE - Sensor Tamper - #
384 RF transmitter low battery	TROUBLE - RF Sensor Batt. - #

Open/Close - 400

400 Open/Close	OPENING	CLOSING
401 Open/close by user	OPENING - User #	CLOSING - User #
402 Group Open/Close	OPENING - Group User #	CLOSING - Group User #
403 Automatic Open/Close	OPENING - Automatic	CLOSING - Automatic
404 Late Open/Close	OPENING - Late	CLOSING - Late
405 Deferred Open/Close	Opening not used	Closing not used
406 Cancel	OPENING - Cancel	Closing not used
407 Remote arm/disarm	OPENING - Remote	CLOSING - Remote
408 Quick arm	Opening not applicable	CLOSING - Quick Arm
409 Keyswitch Open/Close	OPENING - Keyswitch	CLOSING - Keyswitch

Remote Access - 410

411 Callback request made	REMOTE - Callback Requested	Restore not applicable
412 Success - download/access	REMOTE - Successful Access	Restore not applicable

EVENT	MESSAGE	
413 Unsuccessful access	REMOTE - Unsuccessful Access	Restore not applicable
414 System shutdown	REMOTE - System Shutdown	
415 Dialer Shutdown	REMOTE - Dialer Shutdown	
416 Success - upload/access	REMOTE - Successful Access	Restore not applicable
Access Control - 420		
421 Access denied	ACCESS- Access Denied - User #	Restore not used
422 Access report by user	ACCESS - Access Gained - User #	Restore not used
System Disables - 500 and 510		
Sounder/Relay Disables - 520		
520 Sounder/Relay disable	DISABLE - Sounder/Relay - #	
521 Bell 1 disable	DISABLE - Bell/Siren - #1	
522 Bell 2 disable	DISABLE - Bell/Siren - #2	
523 Alarm relay disable	DISABLE - Alarm Relay	
524 Trouble relay disable	DISABLE - Alarm Relay	
525 Reversing relay disable	DISABLE - Reversing Relay	
526 Bell 3 disable	DISABLE - Bell/Siren - #3	
527 Bell 4 disable	DISABLE - Bell/Siren - #4	
System Peripheral Disables - 530 and 540		
Communication Disables - 550 and 560		
551 Dialer disabled	DISABLE - Dialer Disable	
552 Radio transmitter disabled	DISABLE - Radio Disable	
Bypass - 570		
570 Zone bypass	BYPASS - Zone Bypass - #	
571 Fire bypass	BYPASS - Fire Bypass - #	
572 24-Hour zone bypass	BYPASS - 24-Hour Bypass - #	
573 Burglar bypass	BYPASS - Burg. Bypass - #	
574 Group bypass	BYPASS - Group Bypass - #	
Test Misc. - 600		
601 Manual trigger test	TEST - Manually Triggered	Restore not applicable
602 Periodic test report	TEST - Periodic	Restore not applicable
603 Periodic RF transmission	TEST - Periodic Radio	Restore not applicable
604 Fire test	TEST - Fire Test	Restore not used
605 Status report to follow	STATUS - Status Follows	Restore not applicable
606 Listen-in to follow	LISTEN - Listen-in Active	Restore not applicable
607 Walk test mode	TEST - Walk Test Mode	
608 System abnormal test	TEST - System Abnormal Test	

Appendix D: Wire Requirements

It is important to use the correct type of wire, wire gauge and wire run length per each 411/411UD circuit. Reference the following table to specify wire requirements and limitations for each digital communicator.

CIRCUIT CONNECTIONS		WIRE REQUIREMENTS		
CIRCUIT TYPE	**CIRCUIT FUNCTION**	**WIRE TYPE AND LIMITATIONS**	**RECOMMENDED MAX. DISTANCE FEET (METERS)**	**WIRE GUAGE**
Channels/Inputs	Connects to normally open contact triggers DACT	Untwisted, unshielded wire (Do not exceed 100 ohms.)	10,000 (3,000m) 8,000 (2,400m) 4,875 (1,450m) 3,225 (980m)	12 AWG (3.25 mm^2) Signal 88202 Belden 9583 WPW999 14 AWG (2.00 mm^2) Signal 88402 Belden 9581 WPW995 16 AWG (1.30 mm^2) Signal 88602 Belden 9575 WPW991 18 AWG (0.75 mm^2) Signal 88802 Belden 9574 WPW975
Output Relay must connect to power-limited circuit	Programmable	30 volts maximum	not applicable	12 - 18 AWG (3.25 mm^2 - 0.75 mm^2)
Power Input Nominal 12VDC or 24 VDC	Powers 411/411UD	Voltage limits: 12 VDC or 24 VDC	not applicable	12 - 18 AWG (3.25 mm^2 - 0.75 mm^2)

Table D.1 Wire Specifications

Appendix E: Operational Modes

CODE	ACTIVITY	NOTES
6676 (NORM)	Returns to normal operation	Fire protection is on.
2525 (CLCK)	Enters Real-Time Clock Mode	Program digital communicator time. Fire protection is off.
7764 (PROG)	Enters Program Mode	Allows programming of digital communicator Fire protection is off.
3337 (DEFP)	Returns digital communicator to factory default program settings	Fire protection is off during Default Mode.
8768 (TROU)	Allows testing of both telephone lines	Fire protection is off during Troubleshoot Mode.

Table E.1 Operational Modes

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411UD
  Location **19**
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