

No. 4180-12/4180EC Control/Communicator

MARGIN LINES INDICATE PRINCIPAL CHANGES IN THIS ISSUE

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GENERAL INFORMATION

The Nos. 4180-12 and 4180EC Control Communicators are microcomputer based products which conveniently combine the control panel and digital communicator into one unit. The Nos. 4180-12 and 4180EC are both 12 volt commercial-residential systems that provide every important feature required for an effective household fire/burglary alarm or commercial burglary system. Although the two units are identical in most respects, it should be noted that the No. 4180-12 C-COM is a UL Listed system designed for use in a UL certified household fire/burglary alarm or commercial (Grade A Local Mercantile) burglary installation, whereas the No. 4180EC is only UL Listed for household fire/burglary. Any special installation requirements or procedures in this manual that are indicated as being necessary for a commercial UL installation are therefore applicable only to the No. 4180-12, and need not be followed when installing the No. 4180EC.

A typical system installation includes a No. 4180-12 or No. 4180EC C-COM, an optional No. 4165 Plug-In Siren Driver, one or two No. 5322 Security Consoles, and one or more No. 5314 Remote Keypads. For maximum number of consoles/keypads that may be used, refer to the table in the General Specifications (Section IX).

The No. 4180-12 or No. 4180EC C-COM will monitor all inputs and generate appropriate output signals for interior and exterior audible warning as well as for remote communication to a central alarm monitoring service.

The No. 4165 Siren Driver is an optional plug-in module that provides the capability to drive an 8 ohm siren speaker with up to 25 watts of sound power with separate sound outputs for fire and burglary/emergency.

The No. 5322 Security Console(s) provide full system and individual zone status indication as well as system control. With the No. 5322, the

system may be completely armed or just perimeter armed or disarmed. The entry delay may be turned off, zones may be shunted, and user security codes may be changed. Three types of emergency alarms may be triggered. A built-in speaker provides audible alarm, trouble, and annunciator functions. The keypad is illuminated for nighttime convenience.

The (optional) No. 5314 Remote Keypad(s) permit most of the keypad functions of the No. 5322 to be performed except for emergency alarm triggering, as well as providing limited display and audible annunciation for modes, trouble, alarms, and bypasses (shunts).

The (optional) No. 4178 24 Hour Test Module enables the system to report a test message to the central station at 24 hour intervals (required for UL Standard 811 Listed installation).

The (optional) No. 4178 Remote Phone Arming Module permits the arming of the system from any TouchTone® phone. The system may also be force armed from remote phone if one or more sensors is faulted.

Note: The No. 4180-12 (not the 4180EC) can qualify for high security UL Grade AA Central Station use if provided with a supplementary direct wire telephone line connection to a MiniModularm or Modularm type system in conjunction with a No. 445 Grade AA Line Security Transmitter, as shown in Diagram 11. UL Grade A Central Station use is possible with a No. 346 Reversing Relay Module connected as shown in Diagram 12. In either case, the "Lites On" feature (described later) must be enabled during programming for all burglary and panic zones. Its output is used to trip the No. 445/346 during an alarm condition and thus trigger polarity reversal on the supplementary direct wire connection to the monitoring agency.

I. INTRODUCTION

A. SYSTEM CHARACTERISTICS

1. Eight independent zones which may be configured in a variety of ways for fire, night burglary, day/night burglary, and panic.
2. Console digital numeric display of the zone identification for alarms, alarm memory, and trouble conditions.
3. Eight Keypad arm/disarm codes - master code PROM selectable and seven secondary codes user changeable from keypad (each uniquely reported to central station with open/close reports).
4. Individual Zone bypass from the keypad.
5. Chime mode, duress code, forced arming - additional keypad functions.
6. PROM variable entry/exit and alarm sounder activation (not usable when used in a listed UL 609/611 commercial burglary installation) delay, alarm sounder timeout, and delayed AC supervision reporting.
7. Independently controlled alarm relay and optional plug-in siren driver outputs for audible alarms.
8. Arming status output with programmable polarity for control of motion detectors.
9. AC Power LED at the Security Console to indicate that AC power is available and the battery is being charged.
10. Test Modes to check the burglary and fire system functions.
11. Multi format communicator [Ademco Low Speed, Ademco High Speed, SESCOA, Radionics (Standard), Radionics "Superfast" and Radionics "BFSK"].
12. TouchTone or pulse dial call placement and data transmission.
13. Dual phone number calling with separate independent subscriber ID and with format selectable by phone number.
14. Double transmission verification or single transmission with checksum verification.
15. All reporting by zone for alarms, troubles, restores, bypasses.
16. Low battery and AC power fail reporting.
17. Optional remote arming (from a TouchTone phone) capability.

B. ZONE INPUTS

All 8 zones are completely flexible as to function.

C. SYSTEM OPTIONS

The system can be configured in a number of ways. This allows the user to customize the system for his own particular needs. Before actually making the choices which affect how the system operates (See Section IV: PROM Programming), it is important to understand the options. The discussion that follows broadly divides those options into two categories: control options and communicator options.

Control Options:

1. Entry Delay, Exit Delay

The entry delay is the time between entering the premises and when the system must be disarmed to avoid activating an alarm. The exit delay is the time between arming the system and when the premises must be exited to avoid activating an alarm. The entry and exit delays may be independently PROM selected to be between 0 and 135 seconds in 15 second increments (**45 seconds maximum for entry delay and 60 seconds maximum for exit delay** in a listed UL 1023 household burglary installation and **60 seconds maximum for entry delay** in a listed UL 609/611 commercial burglary installation).

2. Exterior Sounder/Primary Communicator Delay

Use of this feature is recommended to reduce false alarms due to operator errors.

The system may be set up to delay the activation of the exterior bell (not usable, delay must be zero, in a listed UL 609/611 commercial burglary installation) and/or siren (optional plug-in 4185 siren driver module required) and the triggering of the communicator.

The delay may be set in PROM between 0 and 135 seconds in 15 second increments, but applies only to those zones that have the delay feature enabled (see CONTROL OPTION 24). See COMMUNICATOR OPTION 2 on page 4 for delay only to communicator triggering.

3. Bell/Siren Timeout

Bell/Siren audible indication may be PROM selected to last between 0 and 36 minutes (**4 minutes minimum** in a listed UL 1023 household burglary installation and **15 minutes minimum** in a listed UL 609/611 commercial burglary installation) in 4 minute increments, after which it "Times-out".

4. AC Power Loss Timer

To eliminate nuisance power failure central station and local audible reports, the system may be PROM programmed to ignore short duration outages. This delay in reporting an AC loss condition may be set between 0 and 36 minutes in 4 minute increments. (As an example, if a timeout period of 16 minutes was selected, power outages of less than 16 minutes will be ignored - the POWER LED will extinguish immediately, however).

5. Entry/Exit Zone Selection

The system allows a choice of zones that may be set up with entry/exit delay. Any combination of zones may be set up in PROM as entry/exit zones (For example, if the interior zone was set up with space protection, choosing an entry/exit delay on this zone would allow space protection devices to include the entry door in their area of protection which is to say, they could be held off during the normal entry/exit period).

6. Fast Response Zone Selection

Fast (15 msec) response is used for certain devices (such as glass break detectors and vibration sensors) that cannot be used with a normal (250 msec) response zone. Fast response can be PROM designated for zones 5, 6, 7 and 8, individually or in any combination.

7. 24 Hour Zone Selection

Choosing this option would allow any zone to be active during both armed and disarmed states, such as for fire zones and panic zones.

The system allows any zone to be individually, or in any combination, selected for 24 hour operation.

8. Trouble on Open Selection

The system allows for any zone to activate a trouble signal when it is opened (e.g. fire and day/night zones). Troubles can be activated during armed and disarmed periods only for zones that are selected as 24 hour zones. For controlled zones, troubles will only be activated during the disarmed state. Each zone can be individually, or in any combination, PROM selected for the above function.

9. Trouble on Short Selection

The system allows for any zone to activate a trouble signal when it is shorted. Troubles can be activated during armed and disarmed periods only for zones that are selected as 24 hour zones. For controlled zones, troubles will only be activated during the disarmed state. Each zone can be individually, or in any combination, PROM selected for the above function.

10. Fire Selection

The system allows for any zone(s) to be selected as a FIRE zone. PROM selecting a zone as a FIRE zone results in pulsed audible signals and a visual fire display at the No. 5322 console. A typical fire zone would be PROM selected to operate as a 24 hour, trouble on open, no signaling delay, fire sounding/display zone.

11. Interior Zone Selection

The system allows the choice of any zone(s) to be selected as an interior zone. Interior zones are automatically bypassed when the system is armed in the "STAY" mode. This allows the user to conveniently disarm interior devices that are set up for space protection. Exiting from the "STAY" mode automatically removes the bypasses on all zones selected as interior.

12. External Sounder Inhibit

This option may be used for creating panic zones, silent burglary zones, or interior sounding only zones.

Zones are individually, or in combination, PROM selectable for external sounder inhibit during alarm. This selection takes priority over any other external sounder qualification selection.

13. Console Inhibit on Alarm

Primarily used to create silent alarms in conjunction with option 12 above, each zone is individually, or in any combination, PROM selectable for console inhibit during alarm. This selection inhibits both the audible and the visual displays at the Nos. 5322 console and 5314 keypad during alarms.

NOTE: Selection of this option does not disable the console during trouble sounding/reporting.

14. Relay on Burglary/Audible Emergency, Relay on Fire

The external relay provided can be PROM programmed to respond to burglary/audible emergency alarms, fire alarms, or both. As shipped, the relay is disabled for both.

15. Siren on Burglary/Audible Emergency, Siren on Fire

The siren (4165 option) can be PROM programmed to respond to burglary/audible emergency alarms, fire alarms, or both. As shipped, the siren is disabled for both. If selected for siren on fire, the siren will be a two tone interrupted signal. If selected for siren on burglary/audible emergency, the sounding will be a two tone continuous signal. Options 12 and 13 above inhibit specific zones from sounding if desired.

16. No Timeout for Fire

When this PROM option is selected, the siren and/or relay will remain pulsing until the system is next disarmed.

This option disables the "timeout" of any sounding device selected to sound during fire alarm. Option must be set for household fire UL 965 approved installations.

17. Latched Relay at Timeout

With this PROM option selected, any alarm selected to trigger the relay will latch it on after timeout.

An application of this option would be to drive a strobe light from the relay and have the siren as the only external audible. The siren will sound, then time out after an alarm (provided siren selected for this type alarm) but the strobe (provided relay selected for this type alarm) will continue until the system is disarmed. This provides an indication to anybody approaching the premises that an alarm has sounded and they should not enter the premises.

18. "Lites On" Function

Each zone can be individually, or in any combination, PROM selected to turn on the "lights on" output when the zone is placed in alarm. The "LITES ON" LED on the No. 5322 console will also be turned on at the same time the output goes on. Both will remain on until the system is next disarmed.

NOTE: Assigning a zone silent characteristics will not disable the above function. Care must be taken not to select the "lites on" option for zones desired to be silent.

19. Miscellaneous PROM Selectable Control Options

a. Alarm Sounder "Ding" Confirmation of Arming

When PROM selected, this option will cause a 1/2 second "Ding" of the exterior bell and/or siren at the end of the arming sequence when the exit delay period has expired. This option must be selected for commercial burglary UL 609/611 approved installations.

b. Arming Status Polarity

The system has an output at TB1-1 that may be used to indicate the arm/disarm status of the system to other devices (for example, space protection). As shipped, the system will give the following output:

- 0 volts when armed
- +12 volts when disarmed

Optionally, the polarity can be PROM reversed to give:

- +12 volts when armed
- 0 volts when disarmed

c. Power-Up Mode Selection

A situation can occur where AC power may be lost for a long time, during which the system standby battery may be depleted to a level at which the system cannot function. A PROM option is provided so that the installer can select the mode into which the system will go when AC power is restored - ARMED or DISARMED. The former provides maximum security for an unoccupied premises whereas the latter provides protection against false alarms for an occupied premises. If selection of ARMED is made, the following conditional statements apply:

- 1) The system will initially come up disarmed and will only go into the armed mode after a 9-minute period. The interval is used to permit motion detectors that are interfaced to this system to stabilize their performance (from their power-up) as earlier arming could result in false alarms from these detectors.
- 2) The transition from disarmed to armed will not be made if any zones that are PROM selected as non-bypassable are faulted or if a 24-hour zone alarm or memory of alarm is present when the 9-minute interval ends.
- 3) When this power-up mode is invoked, the only usable security code remaining in the system is the PROM master security code. All other codes have been erased and must be re-entered.
- 4) The "closing" message sent when the system is "power-up armed" identifies the user as User #1 (the PROM master code user).

20. Security Code

This 4 digit code restricts the use of the system to only those who know the code. Any digits, including repetitions, may be chosen. There are eight such codes. The master code is PROM programmed at installation and the seven secondary codes are user changeable from a keypad at anytime, using the master code or the first secondary code to enable the change. A PROM option exists that permits usage of the master code to be inhibited once the first secondary code is entered. This option is intended for those of your customers that object to the installer knowing their security code.

21. Duress Digit

The duress digit is an increase of 1 to the last digit of the security code. Its purpose is to allow someone to initiate a silent panic condition but still give the impression that the control is working normally. For example, if the security code is 1234, the duress digit is 5. Entering 1234 + OFF will cause the system to disarm, but entering 1235 + OFF (assuming one is in a hostage situation) will cause the system to disarm, but will also trigger the communicator to send a silent panic message.

NOTES: 1) If the last digit of the security code is 9, there is no duress capability for that code.

- 2) The user must make certain to avoid assigning secondary codes that could be equivalent to another code (secondary or master) modified by its duress digit so as to not transmit false alarms to the central monitoring service. A simple caution to the user is to always have at least a numeric difference of 2 between security codes used.

22. Bypass and Forced Arming Enable

Zones in the system may be individually bypassed from the Security Console or Remote Keypad during the disarmed period or after arming. This option allows the user to bypass zones that should be ignored, whether or not they are faulted at arming time. (In this manner, "Swingers" may be ignored or a loading dock door that must be later opened can be left unsecured.) Forced arming allows a user to arm the system even though certain zones are in a faulted condition. Such faulted zones will be bypassed (shunted) by depressing BYPASS to override the fail safe arming during the arming. For a given zone, a single PROM bit is set to enable both of these features. (With critical zones, such as safes for instance, arming of the system should be prevented when a faulted condition exists.)

23. Zone Restore Enable

Zones that are PROM selected as restore zones will allow the bell/siren to sound more than once if the zone returns to normal and faults again after the bell/siren has timed out.

As shipped, the system has all zones set up as non-restore zones. Non-restore means that once a zone has gone into alarm during the armed period, subsequent faults of that zone will not trigger a new alarm. The zone is effectively "locked-out", preventing multiple false alarms in the event of a "Swinger".

24. Alarm Sounder/Primary Communicator Delay Enable

The "Exterior Sounder/Primary Communicator Delay" was explained as option #2 previously. This PROM option is simply the choice of burglary zones for which exterior sounder and primary communicator delay is desired.

Communicator Options:

1. Communicator Enables

The system may be PROM programmed to transmit any combination of the following messages:

a. Open/Close Reports

A closing report, if enabled, will be sent whenever the system is put in the AWAY* mode. The STAY mode will not generate a closing report.

*NOTE: If the system is armed in the AWAY mode and the user opens and closes an entry/exit zone and then keys security code plus AWAY (keying error), the system will remain in the AWAY mode, but will not transmit either an opening or a closing report.

b. Zone Bypass Reports

If PROM enabled, the system will report all bypassed zones to the central station. These bypass reports will take place at the following times.

- 1) Whenever a 24 hour zone is bypassed.
- 2) Controlled zones will report bypassing at the time of arming unless they are bypassed after arming, for which an immediate bypass report is produced.
- 3) When the zone bypass is removed, a bypass restore message will be sent for 24 hour zones (controlled zones will not send bypass restore reports as an open report automatically signifies bypass restore for these zones).

c. Trouble Reports

The system will transmit a trouble report, if PROM enabled, whenever a trouble condition is sensed in a zone selected for trouble. When the trouble condition has restored, a restore message will be sent. The delay in sending the trouble and restore messages is 0 or 16 seconds, dependent upon whether that zone was selected for dialer delay.

2. 16 Second Secondary Communicator Delay

A 16 second delay may be added prior to the communicator triggering to reduce the possibility of false alarms. This timing begins after any delay already provided by the Exterior Sounder/Primary Communicator Delay option (described previously). The trigger delay option might be chosen, for example, on zones not utilizing the exterior sounder delay. In other words, selected zones can have the exterior sounder and communicator delayed, and others can have just the communicator delayed, with instant sounding. In addition to zones 1-8, trigger delays are available for closing reports.

3. Report to Secondary Phone Number Only

The system allows for the various communicator reports to be divided between two central stations (or two receivers). This option is chosen in some situations, where, for example, all alarms may be routed to a primary alarm receiver while non-critical items, such as troubles or open and closing reports, might be routed to a secondary receiver.

4. Miscellaneous Communicator Options

a. All Messages On One Call

As shipped, the system is set up with a feature that gives alarm messages priority over trouble messages and other non-alarm messages, when sending in a format other than Ademco High Speed.

For example, if an alarm message for the primary receiver occurs while the communicator is reporting bypass conditions to the secondary receiver, the communicator will abort the bypass reports.

It will then call the primary receiver to report an alarm. After the alarm has been reported, the communicator will resume reporting the bypasses.

Optionally, the system may be made to finish all messages to the active phone number before switching to the other phone number.

b. Duress Message to Second Phone Number

When PROM selected, this option routes duress messages to the secondary receiver.

c. AC Fail/Test/Low Battery to Second Phone Number

When PROM selected, this option routes AC Failure and Restore, Low Battery, and Test reports to the secondary receiver.

d. Low Battery Report Format Select

As shipped, when using Ademco High Speed Format, the system will report Low Battery messages as follows:

ACCT 5555 5555 8 Low Battery

A PROM option is available that enables battery failure reporting in a different manner (See Section on High Speed Format). This format also allows battery restore reports to be transmitted.

e. Dual Report

When PROM selected, this option causes all communicator messages to be sent to both a primary receiver and a secondary receiver.

f. ALT by 2's (Alternate by Pairs)

This option, when PROM selected, will cause the communicator to alternate between the primary receiver and the secondary receiver while it is attempting to get through. It will first make two attempts to the primary receiver, then two attempts to the secondary receiver, and so on (for an unlimited number of attempts) until it receives a kiss-off signal from one receiver.

5. Communicator Restore Report Enable

If it is desired to communicate zone restore, the reporting can be PROM enabled for any such zone or zones.

6. Communicator Channel Assignment

Each alarm zone may be assigned a communicator channel. How the zones are assigned to channels affects the types of reports that will be sent. As an example, each zone could be given a different communicator code for unique zone reporting. Or the zones could be grouped by function with the fire zone as Channel (or Code) 1, the silent panic zones as Channel (or Code) 2, and the burglary zones as Channel (or Code) 3 (this would allow the system to be compatible with an existing central station alarm code scheme).

NOTE: Assigning a zone to report as Channel (or Code) 0 disables that zone from making any calls.

7. Communicator Format

Individually selectable for primary and secondary telephone numbers - Ademco Low Speed and/or Ademco High Speed, SESCOA, Radionics, Radionics "Superfast" and Radionics "BFSK".

8. Subscriber ID Length

3 or 4 digit length selectable for various low speed formats.

II. FUNCTIONAL DESCRIPTION

A. FUNCTIONAL DESCRIPTION, No. 4165 SIREN-DRIVER (See Diagram 5)

Controls:

PITCH ADJUSTMENT: The small potentiometer permits the adjustment of the pitch of the sound produced by the siren driver. Clockwise adjustment (as viewed from the right side of the cabinet) increases the pitch and the counterclockwise adjustment decreases the pitch.

B. FUNCTIONAL DESCRIPTION, No. 5322 SECURITY CONSOLE (See Diagram 6)

1. Keypad, LEDs and Message Displays

Note: While entries are being made via the keypad, if more than two seconds elapse between successive key entries, all prior entered information will be erased, thus requiring the entry sequence to be started anew.

Keys 0-9: These are used to enter the security code and the duress code.

OFF Key and LED (Green): When depressed subsequent to entry of the security code, silences alarms, memory and trouble audibles and disarms the system. The OFF LED is lit when the system's burglary protection is turned off.

AWAY Key and LED (Red): When depressed subsequent to entry of the security code, arms the entire burglary system if there are no faulted zones. The AWAY LED is lit when the system is armed in this mode.

STAY Key and LED (Red): When depressed subsequent to entry of the security code, arms all of the burglary zones except zones selected as interior protection if there are no faulted zones (other than selected interior zones). The STAY LED is lit when the system is armed in this mode.

POWER LED (Green): This LED indicates the presence of AC power to operate the system. This LED will turn off immediately when AC power is lost.

BYPASS KEY and LED (Yellow): When depressed subsequent to entry of the security code (either before or after arming) and followed by one or more zone numbers (1 to 8), will individually bypass the zone(s) designated [assuming that the programming of the system permits the bypassing of the particular zone(s)].

Following the entry of the last zone to be bypassed, all bypassed zones will be displayed once at the console for 2 seconds. When the bypassed zone appears, the console beeps. Any time the security code is followed by depressing BYPASS key, the bypassed zones will be displayed even if no new zones are bypassed.

When depressed subsequent to entry of the security code and either the AWAY or STAY keys, the burglary system will arm with any faulted zones bypassed [assuming that the programming of the system permits bypassing of the particular zone(s)]. Arming in this manner does not cause the numbers of the bypassed zones to be displayed.

The BYPASS LED is lit when one or more zones is bypassed either by force arming or by individual shunt selection. All bypasses are automatically removed when the system is turned off.

INSTANT Key and LED (Yellow): When depressed subsequent to entry of the security code and either the AWAY or STAY keys, the burglary system will arm with the entry delay disabled on any zones designated as entry/exit zones, making them instant alarm zones for subsequent entry. The INSTANT LED is lit when the system is in this mode. The entry delay for these zones is restored subsequent to the system being turned off.

CODE Key: When depressed subsequent to entry of the master security code, will permit the entry of a secondary code designator (2-8) followed by a user changeable 4 digit secondary security code. Secondary codes 3-8 permit the performance of all of the functions permitted by the PROM programmed master code and secondary code 2 except change of themselves to a new code or creation of new secondary codes. Repeating digits are permitted in code entries. If a secondary code entered happens to be

similar to the master code (or another secondary code) except for the last digit being 1 higher, the duress silent panic capability will be triggered, causing a needless false alarm to be reported to the central alarm monitoring service.

CHIME Key and LED (Yellow): When depressed subsequent to entry of the security code during the disarmed state, will cause entry to a mode where any fault in a zone PROM selected for chime enable will cause a brief loud tone to be heard at each security console and remote keypad. The mode can be turned off by subsequent reentry of the code and redepression of the CHIME key. The CHIME LED is lit whenever the CHIME mode is in effect. The CHIME mode is never in effect during the armed state.

READY Key and LED (Green): When depressed at any time, permits the Zone Identification Display to identify any presently faulted zones. Subsequent depression of code + OFF turns off the zone displays. The READY LED is lit whenever all zones are intact (ready for arming) during the disarmed state. It is off at other times.

ENTER Key: When depressed subsequent to security code and function or mode entry, eliminates the 2 second keying entry delay that exists prior to acting on the function or mode request (an optional entry).

FIRE and FIRE Keys: Simultaneous depression of both keys causes manual activation of a PROM selectable zone. The resulting alarm will behave as if the zone was initiated externally via a wired zone.

POLICE and POLICE Keys: Simultaneous depression of both keys causes manual activation of a PROM selectable zone. The resulting alarm will behave as if the zone was initiated externally via a wired zone.

EMERG and EMERG Keys: Simultaneous depression of both keys causes manual activation of a PROM selectable zone. The resulting alarm will behave as if the zone was initiated externally via a wired zone.

For each of the three above pairs of keys, it is the installer's responsibility to program the keys for use with a zone having the characteristics desired.

LIGHTS and LIGHTS Keys and LED (Red): Simultaneous depression of both keys causes manual activation of the "Lites On" output and the red LITES LED. The LITES LED also goes on under program control. It remains lit until the system is disarmed.

ZONE IDENTIFICATION DISPLAY (Red): This one digit display provides the zone identification for each zone programmed as a burglary zone during the disarmed and armed states, for both current faults and memory of alarm.

ALARM LED (Red): This LED is lit subsequent to activation of one of the armed zones not defined as fire and remains, along with the Zone I.D. Display, as a memory of alarm after the alarm condition is removed.

TROUBLE LED (Red): This LED is lit subsequent to a trouble condition being detected in a zone selected for trouble announcement and in the proper armed state as defined in the controlled options. The trouble indication will be removed only after all troubled zones are corrected.

FIRE LED (Red): This LED is lit subsequent to activation of a fire and remains, along with the Zone I.D. Display, as a memory of alarm after the alarm condition is removed.

DIAL LED (Yellow): This LED lights steadily while any phone transmission (except a silent alarm where the system is programmed for console inhibit) of an alarm, trouble, open/close, cancel, or restore is in process. When the central alarm monitoring service receiver acknowledges the transmission with a kiss-off, the message will flash for 30 seconds.

NO DIAL LED (Red): This LED lights steadily until the system is next armed if the maximum number of attempts to get the message through have been tried unsuccessfully.

TEST Key:

a. Fire Test

Entry of the security code followed by depression of the TEST key will initiate a test of the sensing circuitry by shorting all zones. The siren will sound from battery power for 3 seconds and "8" will be displayed at the console if all the sensing circuitry is operating and as a test of all of the lightable segments of the display. In addition, the system may momentarily exhibit FIRE TROUBLE and will interrupt smoke detector DC power for 10 seconds.

b. Test Report and Installation Test

15 seconds following the fire test, the system will automatically enter the installation test mode provided the user did not enter the security code followed by depression of the OFF key.

When in the installation test mode, the console will beep every 15 seconds to remind the user that the system is not active. A test report to the central station is initiated when entering this mode. Activation of any zone causes a brief 1/2 second sounding from the exterior alarm sounder(s), as well as visual zone annunciation on the console's zone identification display. The installation test mode will not time-out. It must be ended manually by keying the security code followed by depression of the OFF key.

2. Audible Signals

Fire Alarm: Interrupted, rapidly alternating two-tone sound accompanied by lighting of the FIRE LED.

Other

Audible Alarms: Continuous rapidly alternating two-tone sound accompanied by lighting of ALARM LED.

System Turned OFF or Failure to Arm: Single brief tone

System Armed AWAY: Two brief tones

System Armed STAY: Three brief tones

Note: Confirmation of arming tones will not be produced when the system is directly armed from the AWAY mode into the STAY mode and vice versa.

Trouble: Rapidly pulsing tones for a trouble or for a loss of AC power beyond the programmed time period.

Prolonged AC Power Outage: After a prolonged AC power outage beyond the programmed time period the Control/Communicator may eventually go into a shutdown condition. The console will emit a low tone and its Zone I.D. Display will indicate a "C". The tone can be silenced by depressing a 4 on the keypad.

Entry Warning: Slowly pulsing tones activated during the entry delay period.

Note: If the system is armed (e.g. AWAY) and the user opens the entry/exit door and enters (code) + STAY with the door still open, the system will correctly not arm in the STAY mode (it disarms). However, the entry warning tone will continue until (code) + OFF is keyed.

Chime Annunciation: Single tone each time a chime annunciation enabled zone is faulted when in this mode.

Memory of Alarm: Rapidly pulsing tones activated during the entry delay period subsequent to an alarm or after disarming subsequent to an alarm that has timed out.

Key Depression Feedback: Brief buzz tone for each key depressed.

Note: Keying of the first digit of the security code will immediately silence any pulsating tones or alarm sounds that the Console may be emitting (any alarms from external sounders will continue, however). This will allow the confirmation tone emitted by the Console to be heard as each key on the keypad is depressed. However, this will also cause the confirmation of arming/disarming tones to be suppressed. If the entire security code, plus OFF, are not keyed within 10 seconds, the pulsating tones or alarm sounds will resume at the Console.

C. FUNCTIONAL DESCRIPTION, No 5314 REMOTE KEYPAD (See Diagram 7)

1. Keypad and LEDs:

Note: While entries are being made via the keypad, if more than two seconds elapse between successive key entries, all prior entered information will be erased, thus requiring the entry sequence to be started anew.

Keys 0-9: These are used to enter the security code and the duress code.

OFF Key: When depressed subsequent to entry of the security code, silences alarms, memory, and trouble audibles and disarms the system.

AWAY Key and LED (Red): When depressed subsequent to entry of the security code, arms the entire burglary system if there are no faulted zones. The AWAY LED is lit when the system is armed in this mode.

STAY Key and LED (Red): When depressed subsequent to entry of the security code, arms all of the non-interior burglary zones if there are no faulted zones. The STAY LED is lit when the system is armed in this mode.

CHK.BYP LED (Yellow): This LED lights steadily if a zone has been bypassed by either force arming or individual zone bypassing. It flashes if a trouble condition has been detected. The latter condition overrides the bypass indication if both are present simultaneously.

BYPASS Key: When depressed subsequent to entry of the security code (either before or after arming) and followed by one or more zone numbers (1 to 8), will individually bypass the zone(s) designated [assuming that the programming of the system permits the bypassing of the particular zone(s)].

When depressed subsequent to entry of the security code and either the AWAY or STAY keys, the burglary system will arm with any faulted zones bypassed [assuming that the programming of the system permits the bypassing of the particular zone(s)].

INSTANT Key: When depressed subsequent to entry of the security code and either the AWAY or STAY keys, the burglary system will arm with the entry delay disabled on any zones designated as entry/exit zones making them instant alarm zones for subsequent entry. The entry delay is restored subsequent to the system being turned off.

CODE Key: When depressed subsequent to entry of the security code, will permit the immediate (within 5 seconds) entry of 1 of 7 different secondary user changeable 4 digit security codes. The access codes are entered by first entering a digit 2-8 followed by the 4 digit security code. Secondary codes 3-8 permit the performance of all of the functions permitted by the PROM programmed master code and secondary code 2, except change of themselves to a new code or creation of new secondary codes. Repeating digits are permitted in code entries.

CHIME Key: When depressed subsequent to entry of the security code during the disarmed state, will cause entry to a mode where any fault in a zone PROM selected for chime enable will cause a brief loud tone to be heard at each security console and remote keypad. The mode can be turned off by subsequent reentry of the code and redepression of the CHIME key.

READY LED (Green): This LED is lit whenever all zones are intact (ready for arming) during the disarmed state. It is off at other times.

ENTER Key: When depressed subsequent to security code and function or mode entry, eliminates the 2 second keying entry delay that exists prior to acting on the function or mode request (an optional entry).

2. Audible Signals

System Turned OFF or Failure to Arm: Single brief buzz

System Armed AWAY: Two brief buzzes

System Armed STAY: Three brief buzzes

Trouble: Rapidly pulsing buzz for a trouble or for a loss of AC power beyond the programmed time period.

Entry Warning: Slowly pulsing buzz activated during the entry delay period.

- Chime Annunciation:** Single buzz each time a chime annunciation enabled zone is faulted when in this mode.
- Memory of Alarm:** Rapidly pulsing buzz activated during the entry delay period subsequent to an alarm or after disarming subsequent to an alarm that has timed out.
- Key Depression Feedback:** Brief buzz for each key depressed.
- Audible Alarm:** Same as Trouble Sounding.

III. COMMUNICATOR OPERATION

The communications capability of the system links it with a central monitoring station using the telephone switched network. When alarm, trouble, or status information is to be communicated, it is translated into a message appropriate to the format selected via the various PROM options described below. The system then seizes the phone line.

A. LINE SEIZURE

A Double Pole Double Throw relay disconnects all extension phones on this telephone line so that the communicator cannot be blocked by outgoing calls or by a phone left off hook. The system then executes a short 1.6 second hang-up, to insure a disconnect in case an outgoing call was being made, and attempts to establish a communication link. At this time the DIAL LED on the console will light for alarms not programmed to inhibit this action. If the system is unsuccessful in establishing the link, an anti-jam procedure is executed if the telco network used features "called party disconnect."

B. ANTI-JAM (NOTE: Only if PROM selected.)

Many U.S. telephone networks will automatically disconnect the calling party if the called party hangs up for a period of time. The system automatically executes a 30 second anti-jam (hang up) AFTER the first call attempt and each successive call to prevent any incoming calls from blocking transmission.

The communication link is established in the following manner. The system checks for a dial tone.

C. DIAL TONE DETECTION

In order to reduce response time, the system senses both local (PABX) and external (telco) dial tones. If a dial tone is detected, the system dials using the PROM selected TouchTone® or rotary dial format. If local (PABX) dial tone is not detected within 4 seconds or if external (telco) dial tone is not detected within a PROM programmed waiting period, the system will dial anyway, as it assumes that a good connection has been made and that the dial tone is not clear.

The PROM selectable waiting periods for external dial tone are:

- 5 seconds - for quick disconnect Telco systems
- 11 seconds - for normal Telco systems
- 30 seconds - for slow response Telco systems

The system dials up to two separate 16 digit telephone numbers. It may be programmed to do this in a number of ways.

D. PROM CALLING OPTIONS

- **Alternate by Pairs** - Call the second number upon failing to receive KISSOFF after two attempts to the primary number, then alternate every two calls between the primary and second number until KISSOFF is received from one.
- **Dual Report** - Always call the second number even after KISSOFF from or having reached the maximum number of attempts to the first number.
- **Second Number Only** - Selected alarm code/channels report only to the second number (e.g. open/close reports)

Successful connections are verified when the system receives an acknowledgment tone from the central station receiver. If this tone is not received within a PROM selected waiting period, the system will disconnect from the line and execute the 30 second anti-jam, if PROM enabled, before trying again. The calling procedure will be repeated in varying combinations, as programmed, until a successful link is established or until the maximum number of attempts is reached (not applicable to Alternate by Pairs).

E. ACKNOWLEDGE WAIT PROM OPTIONS

- 30 seconds - standard
- 60 seconds - slow response telephone switching systems

Message transmission will begin when the acknowledgment is received. The system will transmit in the Ademco LOW or HIGH SPEED formats depending upon which acknowledgment tone has been received from the central station. The latter is not true for SESCOA or Radionics Standard, Superfast and "BFSK" formats which are specifically programmed for proper response to their acknowledge and acknowledge-hold receiver signals.

F. TRANSMISSION FORMAT PROM OPTIONS

- Ademco High Speed Only (DTMF)
- Ademco High or Low Speed (10 pps) (depends upon C.S. receiver tone received)
- SESCOA (20 pps)
- Radionics (20 pps)
- Radionics "Superfast" (40 pps)
- Radionics "BFSK"

NOTE: Extended reporting from Ademco Low Speed, SESCOA, Radionics, Radionics "Superfast", and Radionics "BFSK" formats is separately PROM selectable.

To ensure proper transmission, each message is sent up to four times. As soon as the central station receiver verifies the message, it sends a "KISSOFF" tone to the system. This causes the DIAL LED on the console to flash for 30 seconds.

G. MESSAGE VERIFICATION PROM OPTIONS

- Two successive identical messages - Ademco No. 673 and 685 receivers as well as Adcor, Franklin, Radionics, SESCOA, Silent Knight, and Vertex receivers.
- Single message transmission with checksum verification - Ademco High Speed, Radionics and Radionics "Superfast" formats.
- Single message transmission with checksum verification - Ademco Low Speed format.

If the system does not receive the "KISSOFF" tone, it will disconnect and dial again. It will make as many attempts to obtain KISSOFF via the primary and secondary phone numbers as is PROM programmed.

- NOTES:**
1. Use single message transmission with checksum verification only if the receiver used can accommodate it.
 2. Radionics "BFSK" format automatically uses single message transmission with verification independent of any PROM selection.

H. ADEMCO LOW SPEED REPORTING FORMAT

This message consists of 3 or 4 digits of the subscriber identification number and a single digit alarm code, PROM assigned to that alarm/trouble/status report. Use 4 digit subscriber ID only if the receiver used can accommodate it.

NOTE ON DURESS ALARM REPORTING: Tripping a duress (silent panic) alarm from the console will cause the transmission of the following message. (Subscriber account = 890)

Message Sent = 890 D

Where D = Alarm code/channel # PROM selected

If more than one alarm is triggered, the alarms will report in priority order (i.e. low alarm code first) unless the subsequent alarms trigger while one or more alarm messages have **already commenced** transmission. Duress alarm has highest priority even if it doesn't have lowest alarm code. Each message must receive "kiss-off" before the next is sent.

Example: If codes 3 and 6 of Subscriber 1890 are to be reported, the system will respond as follows:

890 3
 890 3*
 "Kissoff"
 890 6
 890 6*
 Final "Kissoff" (system hang-up)

*Assumes, in this example, that two identical messages verification and three digit subscriber identification numbers are used.

Expanded Reporting Optional Capabilities

For alarm reporting purposes, each zone within the C-COM can be assigned its own channel code, or multiple zones can be grouped on a common code, installer choice. The channel code can be identified in other types of reports by using extended reporting, as indicated in the following examples:

Alarm Restoral

Message Sent = 890 R₁
 R₁R₁R₁ Z

Where: R₁ = Numeric alarm restoral code selected (can be hexadecimal if accommodated by receiver)
 Z = Channel code assigned to the zone
 890 = Sample Subscriber Account Number

Trouble Report

Message Sent = 890 T
 TTT Z

Where: T = Numeric trouble code selected (can be hexadecimal if accommodated by receiver)
 Z = Channel code assigned to the zone

Trouble Restoral

Message Sent = 890 R₂
 R₂R₂R₂ Z

Where: R₂ = Numeric trouble restoral code selected (can be hexadecimal if accommodated by receiver)
 Z = Channel code assigned to the zone

Bypass Report

Message Sent = 890 S
 SSS Z

Where: S = Numeric bypass code selected (can be hexadecimal if accommodated by receiver)
 Z = Channel code assigned to the zone bypassed

Bypass Restoral

Message Sent = 890 R₃
 R₃R₃R₃ Z

Where: R₃ = Numeric bypass restoral code selected (can be hexadecimal if accommodated by receiver)
 Z = Channel code assigned to the zone for which bypass was removed

User Identification at Open/Close

Message Sent = 890 C
 CCC U

Where: C = Numeric closing code selected (can be hexadecimal if accommodated by receiver)
 U = User ID number, 1-8 (or F for off premises arming)

- NOTES:** 1. Similar for Opening, except that Closing Code is replaced by Opening Code.
 2. If the same security code is erroneously assigned to more than one code designator (e.g. #3 and #7), the user ID that is the lowest code designator for the multiple assignment (e.g., #3) will be transmitted with the opening and closing reports.

Low Battery Restoral

Message Sent = 890 B
 BBB R₁

Where: B = Low battery report code selected
 R₁ = Alarm restoral code selected

Loss of AC Restoral

Message Sent = 890 A
 Message Sent = AAA R₁

Where: A = AC loss report code selected
 R₁ = Alarm restoral code selected

I. ADEMCO HIGH SPEED REPORTING FORMAT

NOTE: In certain telco networks (e.g., General Telephone), the telco central offices may use TouchTone® converters that convert TouchTone from the premises phone into pulses for dialing because their network is still a pulse dial network. Ademco High Speed transmission has difficulty with these networks because the message transmissions get converted to pulse dialing. In order to shut down the Telco TouchTone-to-dial pulse converters during message transmission so that Ademco's High Speed Format can be transmitted, it is necessary to program an 11 into the communicator PROM at the end of the primary (and secondary, if used) telephone number. This is accomplished by keying an 8 on the first pass through that PROM Data Group and then by keying a 3 in that same location on a second pass (repeating the keying of the telco number) through the same PROM Data Group.

Receipt by the system of a high speed acknowledgment tone from a Receiver will result in HIGH SPEED FORMAT transmissions, each containing 13 digits as follows: 4 digit subscriber identification number, 8 digits defining the status of each of the event reporting channels, and 1 digit defining the status of the ninth auxiliary channel and what kind of event is being received in the other 8 channels.

NOTE: If the system is programmed for Ademco format (that is, neither the Ademco High Speed only, the SESCOA nor the Radionics system programming option described under PROGRAMMING OPTIONS has been selected), it will automatically respond at HIGH SPEED to a high speed acknowledgment tone and at LOW SPEED to a low speed (or standard) acknowledgment tone. No special reprogramming of the PROM chip is required for HIGH SPEED. If 3 digit low speed subs ID format has been selected, only the last 3 digits of the 4 digit subscriber identification code will be sent at LOW SPEED; therefore, to ensure the same identification at HIGH SPEED as at LOW SPEED, program the first digit as a "0".

NOTE: For telco message routing provided by orbiting satellite transmission, (e.g., 800/WATS network, long distance), it is required that an extended kissoff wait option be selected when Ademco High Speed format is used. The standard kissoff wait period is 0.5 seconds, whereas the extended kissoff wait period is 1.26 seconds. Check with your local central station before selecting this option. If Ademco's 685 receiver equipment is used, it must be equipped with software REV. 3.7 or later. If another manufacturer's receiver is used, have your central station check with the manufacturer about kissoff wait period compatibility.

As the number of subscribers calling into the central monitoring station increases beyond 1000 (subscriber identification number 999), the No. 685-2 or 685-8 Line Cards can easily be modified to send only the high speed acknowledgment tone. Subsequently connected systems may then be programmed with subscriber numbers 1000 through 9999.

For the eight event reporting channels

(digits 5 through 12), the channel status codes are as follows:

Code	Meaning
1	NEW EVENT (previously unreported)
3	NEW RESTORE (previously unreported)
5	NORMAL (no event since previously reported RESTORE)
6	PREVIOUSLY REPORTED EVENT STILL IN EFFECT

For the ninth channel (digit 13), the following channel status codes are used:

1	DURESS REPORT in channel 1
2	OPENING REPORT in the previous 7 channels with user ID in channel 1
3	BYPASS REPORT in the previous 8 channels
4	CLOSING REPORT in the previous 7 channels with user ID in channel 1
5	TROUBLE REPORT in the previous 8 channels
6	SYSTEM TROUBLE REPORTS in the previous 8 channels
7	NORMAL - alarms are reported in previous 8 channels
8	NEW LOW BATTERY (will not re-report on subsequent calls and will not send restore) - old high speed format method for reporting system low battery - alarm status is reported in the previous 8 channels
9	TEST REPORT - alarm status is reported in the previous 8 channels

NOTE: Only NEW events: ALARM, OPENING, RESTORE, CLOSING or TROUBLE on any channel or 24 hour zone BYPASSES or TEST will trigger transmission, at which time all 9 channels will report.

Examples (HIGH SPEED format):

1. At subscriber #2890, channels 1 through 8 are normal and a low battery (channel 9) initiates a call. The following message will be sent:

Subscriber Identification	Channel Number
1 2 3 4 5 6 7 8 9	
Message: 2 8 9 0	5 5 5 5 5 5 5 5 8
Channel 9: NEW LOW BATTERY	

2. At subscriber #5890, channels 2 and 5 go into alarm (and initiate a call) and channel 6, which has previously reported an alarm is still triggered.

Subscriber Identification	Channel Number
1 2 3 4 5 6 7 8 9	
Message: 5 8 9 0	5 1 5 5 1 6 5 5 7
Channel 2: NEW ALARM	
Channel 5: NEW ALARM	
Channel 6: PREVIOUSLY REPORTED ALARM (still in effect)	

3. Still at subscriber #5890, following the events of example 2 above, channel 2 restores (initiating the call) and channels 5 and 6 remain in alarm:

Subscriber Identification	Channel Number
1 2 3 4 5 6 7 8 9	
Message: 5 8 9 0	5 3 5 5 6 6 5 5 7
Channel 2: NEW RESTORE	
Channels 5,6: PREVIOUSLY REPORTED ALARMS (still in effect)	

4. Subscriber #0135 sends an opening:

Subscriber Identification	Channel Number
1 2 3 4 5 6 7 8 9	
Message: 0 1 3 5	1 2 2 2 2 2 2 2 2
Channel 1: USER ID - User #1 opened	
Channels 2-9: OPENING REPORT TRANSMITTED	

If the same security code is erroneously assigned to more than one code designator (e.g. #3 and #7), the user ID that is the lowest code designator for the multiple assignment (e.g., #3) will be transmitted with the opening and closing reports.

5. After transmission of Example 4, subscriber #0135 sends a closing:

Subscriber Identification	Channel Number
1 2 3 4 5 6 7 8 9	
Message: 0 1 3 5	1 4 4 4 4 4 4 4 4
Channel 1: USER ID - User #1 closed	
Channels 2-9: CLOSING REPORT TRANSMITTED	

6. Subscriber #0135 sends a duress message:

Subscriber Identification	Channel Number
1 2 3 4 5 6 7 8 9	
Message: 0 1 3 5	1 5 5 5 5 5 5 5 1
Channels 1-9: Duress report transmitted	

7. Subscriber #0135, User #1 force arms the system, causing faulted zone 2 to be bypassed (for the sake of this example, Zone 2 = Channel 3, not a requisite).

Subscriber Identification	Channel Number
1 2 3 4 5 6 7 8 9	
Message: 0 1 3 5	1 4 4 4 4 4 4 4 4 (Closing Report)
0 1 3 5	5 5 1 5 5 5 5 5 3 (Bypass Report)

NOTE: Bypass reports always accompany closing reports when burglary zones are bypassed. If individual zone bypassing had been performed prior to arming, the bypass reports would be sent later when the system was armed and the closing report sent. If a 24 hour zone (e.g. fire, panic) were to be individually bypassed (if permitted by installer PROM option), the bypass report depicted below would be transmitted immediately. The example below shows a bypass report for Zone 5 reporting in Channel 5.

Subscriber Identification	Channel Number
1 2 3 4 5 6 7 8 9	
Message: 0 1 3 5	5 5 5 5 1 5 5 5 3

Bypass restorals are not transmitted for controlled zones as these zones are known to have been restored when the system is disarmed and the opening report is transmitted. Bypass restorals are transmitted for 24 hour zones, however, when the restoral takes place.

5 8 9 0	5 3 5 5 5 5 5 5 3
---------	-------------------

8. If a trouble condition occurs in Zone 4 for subscriber #5890 and Zone 4 was programmed to report a Code 2, a trouble report is transmitted.

Subscriber Identification	Channel Number
1 2 3 4 5 6 7 8 9	
Message: 5 8 9 0	5 1 5 5 5 5 5 5 5
Trouble restoral is transmitted as soon as it occurs.	
5 8 9 0	5 3 5 5 5 5 5 5 5

9. If a system trouble condition occurs, a separate trouble message format exists.

Subscriber Identification	Channel Number
1 2 3 4 5 6 7 8 9	
For Loss of AC Reporting (Channel 1 is used)	
Message: 0 1 3 5	1 5 5 5 5 5 5 5 6

For AC Restoral

Message: 0 1 3 5	3 5 5 5 5 5 5 5 6
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If the "Low Battery Report in New Format" option has been selected, the battery condition will be reported as follows:

For Low Battery Reporting (Channel 2 is used)

Message: 0 1 3 5	5 1 5 5 5 5 5 5 6
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For Low Battery Restoral

Message: 0 1 3 5	5 3 5 5 5 5 5 5 6
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J. SESCOA/RADIONICS REPORTING FORMATS

Like the Ademco Low Speed format, each alarm/trouble/status message reported in SESCOA, Radionics, Radionics "Superfast" and Radionics "BFSK" formats contains an alarm code digit which is PROM assigned to that message. Any digit from the full hexadecimal code set (0-9, B-F) can be used as an alarm code for each of these formats.

NOTE: The full hexadecimal code set can also be used with the Ademco low speed format provided that the central station receiver used can decode and display the resulting messages. The Ademco No. 660/673 receiver can only accommodate the code set 1-9.

The Radionics central station receiver can be flagged to print the word "Fire" when it receives an alarm report, in "BFSK" format, for any zone designated as a fire zone. Fire zone designation for "BFSK" alarm reporting purposes is made in the communicator PROM.

It should be further noted that the following reporting code assignments are required for the Radionics, Radionics "Superfast" and Radionics "BFSK" formats in order to attain the appropriate English language printout and display at the Radionics No. 6000/6500 receiver. They apply as well to the Ademco Low Speed, Radionics, Radionics "Superfast" and Radionics "BFSK" formats for English language printout at the Ademco No. 685 Receiver.

- B = Open
- C = Close
- D = Cancel (If Openings/Closings are not programmed)
- E = Restore
- F = Trouble

IV. INSTALLER PROM PROGRAMMING

The system employs two PROM integrated circuits for selection of system options, one primarily for control characteristics and one totally for communicator characteristics. These PROMs are ordered separately, Ademco No. 691 if blank and will be programmed by the installer or No. 691P7 (control) and No. 691P8 (communicator) if the programming is done by Ademco to customer order. In either case the following feature charts need to be completed as a record of the system configuration.

ZONE ASSIGNMENTS for No. 4180-12/4180EC CONTROL COMMUNICATOR

This chart should be completed before information is entered on the Control PROM and Communications PROM Programming Charts.

- Determine the type of zone configuration (fire, panic, etc.) to be assigned to each of the C-COM's 8 zones and note them (F, SP, AP, B, etc.) below the appropriate zone numbers on the chart below. Unused zones should be left blank.
- Select the zone characteristics desired for each of the zones and check the appropriate spaces in the chart below. Enter the basic requirements (as indicated in the chart to the left) plus any other optional choices.
- Proceed with filling out the Control PROM and Communications PROM charts.

TYPES OF ZONE CONFIGURATIONS		F:	SP:	AP:	B:	24:	D/N:	E/E:	INT:	ZONE ASSIGNMENTS								
		FIRE	SILENT PANIC	AUDIBLE PANIC	BURGLARY (NIGHT ALARM)	24 HR. BURGLARY	DAY (TROUBLE)/NIGHT (ALARM)	ENTRY/EXIT	INTERIOR (BYPASSED W/STAY)	ZONE:	1	2	3	4	5	6	7	8
BASIC ZONE REQUIREMENTS										ZONE RESTORE ENABLE								
										FAST RESPONSE ENABLE (ZONES 5-8)								
	C						C			TROUBLE ON OPEN								
	M	M	M		M					24 HOUR ZONE								
	M									FIRE ZONE								
								M		ENTRY EXIT ZONE								
										CHIME ENABLE								
										EXT. SOUNDER PRIMARY COM. DELAY ENABLE								
								M		INTERIOR ZONE								
										BYPASS ENABLE								
										16 SEC. DIALER DELAY ENABLE								
										DIALER TO CALL SECOND NO. ONLY								
										COMMUNICATOR RESTORE REPORT ENABLE								
										"LITES ON" ENABLE								
	M									EXTERNAL SOUNDER INHIBIT ON ALARM								
	M									CONSOLE SOUNDER DISPLAY INHIBIT ON ALARM								
									TROUBLE ON SHORT ENABLE									

M: MANDATORY
 C: CUSTOMARY
 □: OPTIONAL
 ■: NOT APPLICABLE

- ⊘: DO NOT PROGRAM FOR UL 609 611 COMMERCIAL BURGLARY INSTALLATION.
- ⊙: DO NOT PROGRAM FOR FIRE ZONE FOR UL 985 HOUSEHOLD FIRE INSTALLATION.
- ⊚: DO NOT PROGRAM FOR ZONES DESIRED TO BE SILENT.

CHECK (✓) APPROPRIATE SPACES

PROGRAMMED TIMING (PER PROM)	
ENTRY DELAY	sec.
EXIT DELAY	sec.
EXTERNAL ALARM SOUNDER	
PRIMARY COMM. DELAY	sec.
ALARM SOUNDER TIMEOUT	min.
AC POWER FAIL REACTION DELAY	min.

NOTE: Program the numbers that you write into the boxes.

A. CONTROL PROM

Control PROM Data Group 1

To program, set Phone No. Selector Switch to "Secondary" and Rotary Switch to Position 2 (Main Phone No.) on No. 690 PROM Programmer.

- ENTRY DELAY* (1)(4) (Select 0 thru 9) x 15 secs = _____
- EXIT DELAY* (2) (Select 0 thru 9) x 15 secs = _____
- EXTERIOR ALARM SOUNDER/PRIMARY COMMUNICATOR DELAY* (5) (Select 0 thru 9) x 15 secs = _____
- ALARM SOUNDER TIMEOUT* (3)(6) (Select 0 thru 9) x 4 mins = _____
- AC POWER FAIL REACTION DELAY (Select 0 thru 9) x 4 mins = _____

6. POWER-UP MODE SELECTION

If DISARMED, place a 1 here
 If ARMED, place a 0 here _____

INHIBIT USE OF PROM MASTER SECURITY CODE? (ONCE SECONDARY CODES ARE ENTERED)

If YES, place a 2 here
 If NO, place a 0 here _____

ARE THE ANSWERS TO THE ABOVE QUESTIONS "ARMED" AND "NO"?

If ARMED and NO, place an 8 here
 If DISARMED or YES, place a 0 here _____

Add up all numbers and place the result in the box. Program the value in the box.

*See notes at top of next page.

* **NOTES:** In a listed UL 1023 household burglary installation:
 (1) A maximum of 45 seconds may be used for entry delay.
 (2) A maximum of 60 seconds may be used for exit delay.
 (3) A minimum of 4 minutes must be used for alarm sounder timeout.

In a listed UL 609/611 commercial burglary installation:
 (4) A maximum of 60 seconds may be used for entry delay.
 (5) "Zero" Exterior sounder delay must be used.
 (6) A minimum of 15 minutes must be used for alarm sounder timeout.

For the following, add together the numbers next to the desired features to get the value to be programmed.

7. TROUBLE REPORTING TO SECOND PHONE NUMBER ONLY?
 If YES, place a 1 here
 If NO, place a 0 here

OPEN/CLOSE AND BYPASS REPORTS TO SECOND PHONE NUMBER ONLY?
 If YES, place a 2 here
 If NO, place a 0 here

IS A 16 SECOND DELAY ON REPORTING CLOSINGS DESIRED?
 If YES, place a 4 here
 If NO, place a 0 here

ARE ALL THE ANSWERS TO THE ABOVE QUESTIONS "NO"?
 If ALL NO, place an 8 here
 If NOT ALL NO, place a 0 here

Add up all the numbers and place the result in the box.
 Program the value in the box.

8. INHIBIT THE EXTERNAL SOUNDER IF TELCO LINE FAULTS?
 If YES, place a 1 here
 If NO, place a 0 here

CONFIRMATION OF ARMING "DING" AT ARMING?
 If YES, place a 2 here
 If NO, place a 0 here

NOTE: Mandatory selection for listed UL 609/611 commercial burglary installations.

ARMING STATUS OUTPUT "HIGH" WHEN ARMED?
 If YES, place a 4 here
 If NO, place a 0 here

ARE ALL THE ANSWERS TO THE ABOVE QUESTIONS "NO"?
 If ALL NO, place an 8 here
 If NOT ALL NO, place a 0 here

Add up all the numbers and place the result in the box.
 Program the value in the box.

9. ALL DIALER REPORTS TO A GIVEN NUMBER IN ONE CALL?
 If YES, place a 1 here
 If NO, place a 0 here

DURESS CODE TO REPORT TO SECOND NUMBER ONLY?
 If YES, place a 2 here
 If NO, place a 0 here

AC LOSS, TEST AND LOW BATTERY REPORT TO SECOND NUMBER ONLY?
 If YES, place a 4 here
 If NO, place a 0 here

ARE ALL THE ANSWERS TO THE ABOVE QUESTIONS "NO"?
 If ALL NO, place an 8 here
 If NOT ALL NO, place a 0 here

Add up all the numbers and place the result in the box.
 Program the value in the box.

10. ENABLE THE REPORTING OF OPENINGS AND CLOSINGS?
 If YES, place a 1 here
 If NO, place a 0 here

ENABLE THE REPORTING OF BYPASSES?
 If YES, place a 2 here
 If NO, place a 0 here

ENABLE THE REPORTING OF TROUBLES?
 If YES, place a 4 here
 If NO, place a 0 here

ARE ALL THE ANSWERS TO THE PREVIOUS QUESTIONS "NO"?
 If ALL NO, place an 8 here
 If NOT ALL NO, place a 0 here

Add up all the numbers and place the result in the box.
 Program the value in the box.

11. ENABLE THE ALARM RELAY TO ACTIVATE DURING BURGLARY ALARMS?
 If YES, place a 1 here
 If NO, place a 0 here

ENABLE THE EXTERNAL SIREN TO SOUND DURING BURGLARY ALARMS?
 If YES, place a 2 here
 If NO, place a 0 here

SHOULD THE EXTERNAL SOUNDERS REMAIN "ON" FOR A FIRE ALARM (UNTIL NEXT DISARMING) AFTER TIMEOUT?
 If YES, place a 4 here
 If NO, place a 0 here

NOTE: Mandatory selection for listed UL985 residential fire installations.

ARE ALL THE ANSWERS TO THE ABOVE QUESTIONS "NO"?
 If ALL NO, place an 8 here
 If NOT ALL NO, place a 0 here

Add up all the numbers and place the result in the box.
 Program the value in the box.

12. ZONE RESTORE ENABLE (Zones 1-4)
 If none of the below is desired, DO NOT program this location
 For Zone Restore Enable, the user has the capability of programming any combination of zones described below (for zones 5-8, see item 12, PROM Data Group 2 on page 12).

ZONE 1	PROGRAM A 1
ZONE 2	PROGRAM A 2
ZONE 3	PROGRAM A 4
ZONE 4	PROGRAM AN 8
ZONES 1 AND 2	PROGRAM A 3
ZONES 1 AND 3	PROGRAM A 5
ZONES 1 AND 4	PROGRAM A 9
ZONES 1, 2 AND 3	PROGRAM A 7
ZONES 2 AND 3	PROGRAM A 6

If it is desired to program a combination not given above, a two pass programming procedure will be required. On the first pass, program the earlier entries of this group plus the first pass entry for this item. On the second pass (which should be done after the entire PROM Data Group has been programmed), repeat the prior entries of this group and then program the second pass entry for this item.

	FIRST PASS	SECOND PASS
ZONES 2 AND 4	PROGRAM A 2	PROGRAM AN 8
ZONES 1, 2 AND 4	PROGRAM A 3	PROGRAM AN 8
ZONES 3 AND 4	PROGRAM A 4	PROGRAM AN 8
ZONES 1, 3 AND 4	PROGRAM A 5	PROGRAM AN 8
ZONES 2, 3 AND 4	PROGRAM A 6	PROGRAM AN 8
ZONES 1, 2, 3 AND 4	PROGRAM A 7	PROGRAM AN 8

Control PROM Data Group 2
 To program, set Phone No. Selector Switch to "Primary" and Rotary Switch to Position 2 (Main Phone No.) on No 690 PROM Programmer.

1. COMMUNICATOR ALARM CODE/CHANNEL* ASSIGNED TO ZONE 1:
2. COMMUNICATOR ALARM CODE/CHANNEL* ASSIGNED TO ZONE 2:
3. COMMUNICATOR ALARM CODE/CHANNEL* ASSIGNED TO ZONE 3:
4. COMMUNICATOR ALARM CODE/CHANNEL* ASSIGNED TO ZONE 4:
5. COMMUNICATOR ALARM CODE/CHANNEL* ASSIGNED TO ZONE 5:
6. COMMUNICATOR ALARM CODE/CHANNEL* ASSIGNED TO ZONE 6:
7. COMMUNICATOR ALARM CODE/CHANNEL* ASSIGNED TO ZONE 7:
8. COMMUNICATOR ALARM CODE/CHANNEL* ASSIGNED TO ZONE 8:

*See notes at top of next page.

- *NOTES:** 1. Select 1 thru 8 for communicator alarm reports. Select 0 if communicator report not desired for a zone.
2. Note that there is no assignment of an alarm code/channel here for duress reporting. If any format other than Ademco High Speed is utilized, that assignment is made in the Communication PROM, PROM Data Group 9 (see page 15). However, if Ademco High Speed Format is used, duress is automatically present. The only way to suppress the duress capability for that format is for the user of the system to always employ user codes ending in "9".

- | | |
|------------------|--------------|
| ZONE 5 | PROGRAM A 1 |
| ZONE 6 | PROGRAM A 2 |
| ZONE 7 | PROGRAM A 4 |
| ZONE 8 | PROGRAM AN 8 |
| ZONES 5 AND 6 | PROGRAM A 3 |
| ZONES 5 AND 7 | PROGRAM A 5 |
| ZONES 5 AND 8 | PROGRAM A 9 |
| ZONES 5, 6 AND 7 | PROGRAM A 7 |
| ZONES 6 AND 7 | PROGRAM A 6 |

If it is desired to program a combination not given above, a two pass programming procedure will be required. On the first pass, program the earlier entries of this group plus the first pass entry for this item. On the second pass (which should be done after the entire PROM Data Group has been programmed), repeat the prior entries of this group and then program the second pass entry for this item.

9. ENABLE LOW BATTERY REPORTING IN ADEMCO HIGH SPEED OR RADIONICS "BFSK" FORMAT?

If YES, place a 1 here
 If NO, place a 0 here

ENABLE THE COMMUNICATOR TO DUAL REPORT?

If YES, place a 2 here
 If NO, place a 0 here

ENABLE THE COMMUNICATOR TO ALTERNATE CALLS BY TWO'S?

If YES, place a 4 here
 If NO, place a 0 here

ARE ALL THE ANSWERS TO THE PREVIOUS QUESTIONS "NO"?

If ALL NO, place an 8 here
 If NOT ALL NO, place a 0 here

Add up all the numbers and place the result in the box.
 Program the value in the box.

10. ENABLE THE REPORTING OF AC POWER FAIL AND LOW BATTERY REPORTS?

If YES, place a 1 here
 If NO, place a 0 here

ENABLE A UL609 (GRADE "A") REQUIRED SOUNDING OF AN ALARM AFTER A SUSTAINED AC LOSS?

If YES, place a 4 here
 If NO, place a 0 here

ARE ALL THE ANSWERS TO THE ABOVE QUESTIONS "NO"?

If ALL NO, place an 8 here
 If NOT ALL NO, place a 0 here

Add up all the numbers and place the result in the box.
 Program the value in the box.

11. ENABLE THE ALARM RELAY TO ACTIVATE DURING FIRE ALARMS?

If YES, place a 1 here
 If NO, place a 0 here

ENABLE THE EXTERNAL SIREN TO SOUND DURING FIRE ALARMS?

If YES, place a 2 here
 If NO, place a 0 here

***NOTE:** One of these two selections must be YES if fire protection is provided by the system.

LATCH THE ALARM RELAY AFTER TIMEOUT UNTIL NEXT DISARMED?

If YES, place a 4 here
 If NO, place a 0 here

NOTE: In order for this capability to function, the first item of Entry 11 in PROM Data Group 1 or 2 or both must have a YES answer.

ARE ALL THE ANSWERS TO THE ABOVE QUESTIONS "NO"?

If ALL NO, place an 8 here
 If NOT ALL NO, place a 0 here

Add up all the numbers and place the result in the box.
 Program the value in the box.

12. ZONE RESTORE ENABLE (Zones 5-8)

If none of the below is desired, DO NOT program this location.

For Zone Restore Enable, the user has the capability of programming any combination of zones described below (for zones 1-4 see Item 12, PROM Data Group 1 on page 11).

- | FIRST PASS | | SECOND PASS | |
|---------------------|-------------|--------------------------|--------------|
| ZONES 6 AND 8 | PROGRAM A 2 | | PROGRAM AN 8 |
| ZONES 5, 6 AND 8 | PROGRAM A 3 | | PROGRAM AN 8 |
| ZONES 7 AND 8 | PROGRAM A 4 | | PROGRAM AN 8 |
| ZONES 5, 7 AND 8 | PROGRAM A 5 | <input type="checkbox"/> | PROGRAM AN 8 |
| ZONES 6, 7 AND 8 | PROGRAM A 6 | <input type="checkbox"/> | PROGRAM AN 8 |
| ZONES 5, 6, 7 AND 8 | PROGRAM A 7 | <input type="checkbox"/> | PROGRAM AN 8 |

Control PROM Data Group 3

To program, set Phone No. Selector Switch to "Primary" and Rotary Switch to Position 3 (Subs ID #) on No. 690 PROM Programmer.

MASTER SECURITY CODE (Select from 0 thru 9 digit set, repeating digits permitted):

Control PROM Data Group 4

To program, set Phone No. Selector Switch to "Secondary" and Rotary Switch to Position 3 (Subs ID #) on No. 690 PROM Programmer.

NOTE: For the next 3 functions, enter zones 1-8 to enable the console key pair or enter 0 to disable the console key pair.

1. CONSOLE "FIRE" KEYS ASSIGNED TO ZONE

2. CONSOLE "POLICE" KEYS ASSIGNED TO ZONE

3. CONSOLE "EMERG" KEYS ASSIGNED TO ZONE

4. FAST RESPONSE ENABLE

If none of the below is desired, DO NOT program this location.

For Zone Fast Response Enable, the user has the capability of programming any combination of zones described below.

- | | |
|------------------|--------------|
| ZONE 5 | PROGRAM A 1 |
| ZONE 6 | PROGRAM A 2 |
| ZONE 7 | PROGRAM A 4 |
| ZONE 8 | PROGRAM AN 8 |
| ZONES 5 AND 6 | PROGRAM A 3 |
| ZONES 5 AND 7 | PROGRAM A 5 |
| ZONES 5 AND 8 | PROGRAM A 9 |
| ZONES 5, 6 AND 7 | PROGRAM A 7 |
| ZONES 6 AND 7 | PROGRAM A 6 |

For a combination not given above, follow the two pass procedure of Item 12, PROM Data Group 2 on this page.

FIRST PASS: SECOND PASS:

Control PROM Data Group 5

To program, set Rotary Switch to Position 5 (Sys Option) on No. 690 PROM Programmer and raise switches for checked box(es).

TROUBLE ON OPEN SELECT (e.g., fire, day/night burglary, etc.) (check as many as desired)

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
<input type="checkbox"/>							

Control PROM Data Group 6

To program, set Rotary Switch to Position 4 ("Not Used") on No. 690 PROM Programmer and raise switches for checked box(es).

24 HOUR ZONE SELECT (e.g., fire, panic, etc.)
(check as many as desired)

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
<input type="checkbox"/>							

Control PROM Data Group 7

To program, set Rotary Switch to Position 13 ("Not Used") on No. 690 PROM Programmer and raise switches for checked box(es).

FIRE ZONE SELECT (Pulsing Siren Sound and FIRE LED indication)
(check as many as desired)

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
<input type="checkbox"/>							

Control PROM Data Group 8

To program, set Rotary Switch to Position 14 ("Not Used") on No. 690 PROM Programmer and raise switches for checked box(es).

ENTRY/EXIT ZONE SELECT
(check as many as desired)

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
<input type="checkbox"/>							

Control PROM Data Group 9

To program, set Rotary Switch to Position 11 ("Not Used") on No. 690 PROM Programmer and raise switches for checked box(es).

CHIME ENABLE
(check as many as desired)

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
<input type="checkbox"/>							

Control PROM Data Group 10

To program, set Rotary Switch to Position 12 ("Not Used") on No. 690 PROM Programmer and raise switches for checked box(es).

EXTERIOR ALARM SOUNDER/PRIMARY COMMUNICATOR DELAY ENABLE
(check as many as desired)

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
<input type="checkbox"/>							

NOTE: Delay time is programmed in Data Group 1, Item 3.

Control PROM Data Group 11

To program, set Rotary Switch to Position 6 (Inverted) on No. 690 PROM Programmer and raise switches for checked box(es).

INTERIOR ZONE SELECT
(check as many as desired)

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
<input type="checkbox"/>							

Control PROM Data Group 12

To program, set Rotary Switch to Position 7 (16 second) on No. 690 PROM Programmer and raise switches for checked box(es).

BYPASS ENABLE
(check as many as desired)

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
<input type="checkbox"/>							

NOTE: In a Listed UL 985 Household Fire Installation, bypass must not be enabled for any selected fire zones.

Control PROM Data Group 13

To program, set Rotary Switch to Position 8 (Second #) on No. 690 PROM Programmer and raise switches for checked box(es).

16 SECOND DIALER DELAY ENABLE
(check as many as desired)

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
<input type="checkbox"/>							

Control PROM Data Group 14

To program, set Rotary Switch to Position 9 (Open/Close) on No. 690 PROM Programmer and raise switches for checked box(es).

DIALER TO CALL SECOND NUMBER ONLY
(check as many as desired)

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
<input type="checkbox"/>							

Control PROM Data Group 15

To program, set Rotary Switch to Position 10 (Restore) on No. 690 PROM Programmer and raise switches for checked box(es).

COMMUNICATOR RESTORE REPORT ENABLE
(check as many as desired)

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
<input type="checkbox"/>							

Control PROM Data Group 16

To program, set Phone No. Selector Switch to "SECONDARY" and Rotary Switch to Position 1 (Access #) on No. 690 PROM Programmer.

1. **"LITES ON" ENABLE** (Activated by alarms in Zones 1-4)

If none of the below is desired, DO NOT program anything. Skip to the next entry by holding down the VIEW key for one flash of the displayed dot.

"Lites On" Enable can be programmed in any of the following combinations for use if optional add-on No. 477 AC Line Carrier Transmitter module is used (for cases where "Lites On" is activated by alarms in Zones 5-8, see Item 1, PROM Data Group 17 on page 14).

ZONE 1	PROGRAM A 1
ZONE 2	PROGRAM A 2
ZONE 3	PROGRAM A 4
ZONE 4	PROGRAM AN 8
ZONES 1 AND 2	PROGRAM A 3
ZONES 1 AND 3	PROGRAM A 5
ZONES 1 AND 4	PROGRAM A 9
ZONES 1, 2 AND 3	PROGRAM A 7
ZONES 2 AND 3	PROGRAM A 6

For a combination not given above, follow the two pass procedure of Item 12 of PROM Data Group 1 on page 11.

FIRST PASS:

SECOND PASS:

NOTE: Care must be taken not to program a Console Sounder/Display Inhibit Zone for "Lites On".

2. EXTERNAL SOUNDER INHIBIT ON ALARM (Zones 1-4)

NOTE: If more than one panic zone is programmed for silent operation, activation of the first such zone results in a silent alarm, whereas activation of a second silent panic zone during the same armed period results in an audible alarm. **Do not program multiple panic zones for silent alarm operation.**

If none of the below is desired, **DO NOT** program anything. Skip to the next entry by holding down the VIEW key for two flashes of the displayed dot.

External Sounder Inhibit can be programmed in any of the following combinations (for Zones 5-8, see Item 2, PROM Data Group 17 on this page).

ZONE 1	PROGRAM A 1
ZONE 2	PROGRAM A 2
ZONE 3	PROGRAM A 4
ZONE 4	PROGRAM AN 8
ZONES 1 AND 2	PROGRAM A 3
ZONES 1 AND 3	PROGRAM A 5
ZONES 1 AND 4	PROGRAM A 9
ZONES 1, 2 AND 3	PROGRAM A 7
ZONES 2 AND 3	PROGRAM A 6

For a combination not given above, follow the two pass procedure of Item 12 of PROM Data Group 1 on page 11.

FIRST PASS:

SECOND PASS:

3. CONSOLE SOUNDER/DISPLAY INHIBIT ON ALARM (Zones 1-4)

If none of the below is desired, **DO NOT** program anything. Skip to the next entry by holding down the VIEW key for three flashes of the displayed dot.

Console Sounder/Display Inhibit can be programmed in any of the following combinations (for Zones 5-8 see Item 3, PROM Data Group 17 on this page).

ZONE 1	PROGRAM A 1
ZONE 2	PROGRAM A 2
ZONE 3	PROGRAM A 4
ZONE 4	PROGRAM AN 8
ZONES 1 AND 2	PROGRAM A 3
ZONES 1 AND 3	PROGRAM A 5
ZONES 1 AND 4	PROGRAM A 9
ZONES 1, 2 AND 3	PROGRAM A 7
ZONES 2 AND 3	PROGRAM A 6

For a combination not given above, follow the two pass procedure of Item 12 of PROM Data Group 1 on page 11.

FIRST PASS:

SECOND PASS:

4. TROUBLE ON SHORT ENABLE (Zones 1-4)

If none of the below is desired, **DO NOT** program anything. Skip to data group #17 by holding down the VIEW Key until a beep tone is heard.

Trouble On Short Enable can be programmed in any of the following combinations (for Zones 5-8, see Item 4, PROM Data Group 17 on page 15).

ZONE 1	PROGRAM A 1
ZONE 2	PROGRAM A 2
ZONE 3	PROGRAM A 4
ZONE 4	PROGRAM AN 8
ZONES 1 AND 2	PROGRAM A 3
ZONES 1 AND 3	PROGRAM A 5
ZONES 1 AND 4	PROGRAM A 9
ZONES 1, 2 AND 3	PROGRAM A 7
ZONES 2 AND 3	PROGRAM A 6

For a combination not given above, follow the two pass procedure of Item 12 of PROM Data Group 1 on page 11.

FIRST PASS:

SECOND PASS:

Control PROM Data Group 17

To program, set Phone No. Selector Switch to "PRIMARY" and Rotary Switch to Position 1 (Access #) on No. 690 PROM Programmer.

1. "LITES ON" ENABLE (Activated by alarms in Zones 5-8)

If none of the below is desired, **DO NOT** program anything. Skip to the next entry by holding down the VIEW key for one flash of the displayed dot.

"Lites On" Enable can be programmed in any of the following combinations for use if optional add-on No. 477 AC Line Carrier Transmitter module is used (for Zones 1-4, see Item 1, PROM Data Group 16 on page 13).

ZONE 5	PROGRAM A 1
ZONE 6	PROGRAM A 2
ZONE 7	PROGRAM A 4
ZONE 8	PROGRAM AN 8
ZONES 5 AND 6	PROGRAM A 3
ZONES 5 AND 7	PROGRAM A 5
ZONES 5 AND 8	PROGRAM A 9
ZONES 5, 6 AND 7	PROGRAM A 7
ZONES 6 AND 7	PROGRAM A 6

For a combination not given above, follow the two pass procedure of Item 12 of PROM Data Group 2 on page 12.

FIRST PASS:

SECOND PASS:

NOTE: Care must be taken not to program a Console Sounder/Display Inhibit Zone for "Lites On".

2. EXTERNAL SOUNDER INHIBIT ON ALARM (Zones 5-8)

NOTE: Do not program multiple panic zones for silent alarm operation (See Note under Item 2, Control PROM Data Group 16 on this page)

If none of the below is desired, **DO NOT** program anything. Hold down the VIEW key for two flashes of the displayed dot.

External Sounder Inhibit can be programmed in any of the following combinations (for Zones 1-4 see Item 2, PROM Data Group 16 on this page).

ZONE 5	PROGRAM A 1
ZONE 6	PROGRAM A 2
ZONE 7	PROGRAM A 4
ZONE 8	PROGRAM AN 8
ZONES 5 AND 6	PROGRAM A 3
ZONES 5 AND 7	PROGRAM A 5
ZONES 5 AND 8	PROGRAM A 9
ZONES 5, 6 AND 7	PROGRAM A 7
ZONES 6 AND 7	PROGRAM A 6

For a combination not given above, follow the two pass procedure of Item 12 of PROM Data Group 2 on page 12.

FIRST PASS:

SECOND PASS:

3. CONSOLE SOUNDER/DISPLAY INHIBIT ON ALARM (Zones 5-8)

If none of the below is desired, **DO NOT** program anything. Hold down the VIEW key for three flashes of the displayed dot.

Console Sounder/Display Inhibit can be programmed in any of the following combinations (for Zones 1-4, see Item 3, PROM Data Group 16 on this page).

ZONE 5	PROGRAM A 1
ZONE 6	PROGRAM A 2
ZONE 7	PROGRAM A 4
ZONE 8	PROGRAM AN 8
ZONES 5 AND 6	PROGRAM A 3
ZONES 5 AND 7	PROGRAM A 5
ZONES 5 AND 8	PROGRAM A 9
ZONES 5, 6 AND 7	PROGRAM A 7
ZONES 6 AND 7	PROGRAM A 6

For a combination not given above, follow the two pass procedure of Item 12 of PROM Data Group 2 on page 12.

FIRST PASS:

SECOND PASS:

4. TROUBLE ON SHORT ENABLE (Zones 5-8)

If none of the below is desired, DO NOT program anything. You are now finished programming the Control PROM.

Trouble On Short Enable can be programmed in any of the following combinations (for Zones 1-4, see Item 4, PROM Data Group 16 on page 14).

- | | |
|------------------|--------------|
| ZONE 5 | PROGRAM A 1 |
| ZONE 6 | PROGRAM A 2 |
| ZONE 7 | PROGRAM A 4 |
| ZONE 8 | PROGRAM AN 8 |
| ZONES 5 AND 6 | PROGRAM A 3 |
| ZONES 5 AND 7 | PROGRAM A 5 |
| ZONES 5 AND 8 | PROGRAM A 9 |
| ZONES 5, 6 AND 7 | PROGRAM A 7 |
| ZONES 6 AND 7 | PROGRAM A 6 |

For a combination not given above, follow the two pass procedure of Item 12 of PROM Data Group 2 on page 12.

FIRST PASS:

SECOND PASS:

B. COMMUNICATION PROM

Communication PROM Data Group 1

To program, set Phone No. Selector Switch to "Primary" and Rotary Switch to Position 1 (Access #) on No. 690 PROM Programmer

Primary PABX Access Number* (Select from 0 thru 9, Up to 4 digits):

(e.g., 9)

NOTE: This field should be programmed with a *70 (if TouchTone® dialing is used) or 1170 (if rotary [pulse] dialing is used) in installations where a call waiting service is present on the phone line used. This code can prevent call waiting from interrupting the outbound communication on such lines, if the service inhibit option is present.

Communication PROM Data Group 2

To program, set Phone No. Selector Switch to "Secondary" and Rotary Switch to Position 1 (Access #) on No. 690 PROM Programmer.

Secondary PABX Access Number* (Select from 0 thru 9, up to 4 digits):

NOTE: (See note under Primary PABX Access Number)

Communication PROM Data Group 3

To program, set Phone No. Selector Switch to "Primary" and Rotary Switch to Position 2 (Main Phone No.) on No. 690 PROM Programmer.

Primary Telco Number* (Select from 0 thru 9, up to 12 digits):

[e.g., Out of Area Access digit (1), Area Code, Exchange, Line Number]

Communication PROM Data Group 4

To program, set Phone No. Selector Switch to "Secondary" and Rotary Switch to Position 2 (Main Phone No.) on No. 690 PROM Programmer.

Secondary Telco Number* (Select from 0 thru 9, up to 12 digits):

- *NOTES:** 1. Trailing blanks are permissible for entries less than the maximum number of digits but leading or intermediate blanks are NOT allowed.
 2. In certain Telco networks, it may be necessary to program an 11 in the position immediately following the last digit of the Telco Number. See Note on Page 8 for details.

Communication PROM Data Group 5

To program, set Phone No. Selector Switch to "Primary" and Rotary Switch to Position 3 (Subs ID#) on No. 690 PROM Programmer.

Primary Subscriber ID** (Select from 0 thru 9):

****NOTE:** All 4 digits must be filled in. The leading digit is not transmitted for Ademco Low Speed, SESCOA, and Radionics unless PROM Data Group 12, Bit 1 is set.

Communication PROM Data Group 6

To program, set Phone No. Selector Switch to "Secondary" and Rotary Switch to Position 3 (Subs ID#) on No. 690 Programmer.

Secondary Subscriber ID** (Select from 0 thru 9):

****NOTE:** All 4 digits must be filled in. The leading digit is not transmitted for Ademco Low Speed, SESCOA, and Radionics unless PROM Data Group 12, Bit 1 is set.

Communication PROM Data Group 7

To program, set Rotary Switch to Position 4 ("Not Used") and raise switches for checked boxes representing bits set within the hexadecimal code.

Ademco Low Speed/SESCO/Radionics Reporting Codes for Trouble and Trouble Restore (Select from 0 thru 9, B thru F)

Trouble*				Trouble Restore*			
SWITCHES							
1	2	3	4	5	6	7	8
<input type="checkbox"/>							

1 2 4 8 1 2 4 8
 Bit Weights
 (e.g., 7 = 1 + 2 + 4, B = 1 + 2 + 8, C = 4 + 8, D = 1 + 4 + 8, see page 18)

Communication PROM Data Group 8

To program, set Rotary Switch to Position 5 ("Sys Options") and raise switches for checked boxes representing bits set within the hexadecimal code.

Ademco Low Speed/SESCO/Radionics Reporting Codes for Opening and Closing (Select from 0 thru 9, B thru F)

Opening*				Closing*			
SWITCHES							
1	2	3	4	5	6	7	8
<input type="checkbox"/>							

1 2 4 8 1 2 4 8
 Bit Weights

***NOTE:** The code assignments shown on page 9 are required if English language printout is desired at the Ademco No. 685 or Radionics No. 6000/6500 Receivers for the Ademco Low Speed, Radionics "Superfast" and Radionics "BFSK" formats.

Communication PROM Data Group 9

To program, set Rotary Switch to Position 6 ("Inverted") and raise switches for checked boxes representing bits set within the hexadecimal code.

Maximum Number of Attempts to Dial (Select from 1 thru 15, defaults to 8 if not programmed) and **Ademco Low Speed/SESCO/Radionics Reporting Code for Duress** (Select from 0 thru 9, B thru F)

Number of Attempts				Duress Code			
SWITCHES							
1	2	3	4	5	6	7	8
<input type="checkbox"/>							

1 2 4 8 1 2 4 8
 Bit Weights

Communication PROM Data Group 10

To program, set Rotary Switch to Position 7 ("16 sec Delay") and set switches for checked boxes as indicated.

Acknowledge Characteristics and Reporting Formats for Communication to PRIMARY Telco Number (Check as desired):

SWITCHES	1	2	3	4	5	6	7	8
	ACK WAIT	FORMAT SELECTION FOR ACKNOWLEDGE	DATA FREQUENCY FOR LOW SPEED ONLY **/**	DIGIT TIME **/**	DATA SPEED		CHECK-SUM VERIFICATION (Ademco High Speed Radionics Radionics Superfast) *	LOW SPEED FORMAT SELECTION ** / ***
BIT SET (RAISE SWITCH)	EXTENDED 60 SECS	ADEMCO HIGH SPEED TRANS. MISSION ONLY	ADEMCO	SESCOA	ADEMCO, SESCOA, RADIONICS	ADEMCO RADIONICS "BFSK"	SINGLE MESSAGE w/CHECK-SUM VERIFICATION	EXTENDED DATA REPORTING RADIONICS "BFSK"
BIT NOT SET (SWITCH DOWN)	STANDARD 30 SECS	ADEMCO HIGH OR LOW SPEED TRANS. MISSION	SESCOA, RADIONICS, "SUPERFAST"	ADEMCO, RADIONICS, "SUPERFAST"	RADIONICS "SUPERFAST" RADIONICS "BFSK"	SESCOA, RADIONICS "SUPERFAST"	STANDARD 2 MESSAGE VERIFICATION	STANDARD

*The state of these PROM bits will have no effect on Radionics "BFSK" transmissions if "DATA SPEED" is set to the BFSK option.

***This bit must be set in order to get "BFSK" restore reports for loss of AC or Low Battery. Failure to select this bit will cause retransmission of the event condition when it restores.

**The state of these PROM bits will have no effect on Ademco High Speed transmissions if Bit 2 is set.

Communication PROM Data Group 11

To program, set Rotary Switch to Position 8 ("Secondary # Only") and set switches for checked boxes as indicated.

Acknowledge Characteristics and Reporting Formats for Communication to SECONDARY Telco Number (Check as desired):

SWITCHES	1	2	3	4	5	6	7	8
	ACK WAIT	FORMAT SELECTION FOR ACKNOWLEDGE	DATA FREQUENCY FOR LOW SPEED ONLY **/**	DIGIT TIME **/**	DATA SPEED		CHECK-SUM VERIFICATION (Ademco High Speed Radionics Radionics Superfast) *	LOW SPEED FORMAT SELECTION ** / ***
BIT SET (RAISE SWITCH)	EXTENDED 60 SECS	ADEMCO HIGH SPEED TRANS. MISSION ONLY	ADEMCO	SESCOA	ADEMCO, SESCOA, RADIONICS	ADEMCO RADIONICS "BFSK"	SINGLE MESSAGE w/CHECK-SUM VERIFICATION	EXTENDED DATA REPORTING RADIONICS "BFSK"
BIT NOT SET (SWITCH DOWN)	STANDARD 30 SECS	ADEMCO HIGH OR LOW SPEED TRANS. MISSION	SESCOA, RADIONICS, "SUPERFAST"	ADEMCO, RADIONICS, "SUPERFAST"	RADIONICS "SUPERFAST" RADIONICS "BFSK"	SESCOA, RADIONICS "SUPERFAST"	STANDARD 2 MESSAGE VERIFICATION	STANDARD

*The state of these PROM bits will have no effect on Radionics "BFSK" transmissions if "DATA SPEED" is set to the BFSK option

***This bit must be set in order to get "BFSK" restore reports for loss of AC or Low Battery. Failure to select this bit will cause retransmission of the event condition when it restores.

**The state of these PROM bits will have no effect on Ademco High Speed transmissions if Bit 2 is set.

Communication PROM Data Group 12

To program, set Rotary Switch to Position 9 ("Open/Close") and set switches for checked boxes as indicated

Dialing and Reporting Characteristics Selection (Check as desired):

SWITCHES	1	2	3	4	5	6	7	8
	LOW SPEED FORMAT SUB'S ID LENGTH	CHECK SUM VERIFY (LO SPEED)	ADEMCO HI SPEED KISSOFF DELAY **	30 SECOND ANTI-JAIL *	DIAL PULSE RATIO	TYPE OF DIALING	EXTENDED DIAL TONE WAIT	NOT USED
BIT SET (RAISE SWITCH)	ENABLE 4 DIGIT SUBS ID	YES	126 SECS (800 NETWORK, LONG DLY)	YES	FOREIGN (67/33)	TOUCH TONE	30 SECS	
BIT NOT SET (SWITCH DOWN)	ENABLE 3 DIGIT SUBS ID	NO	500 MSEC (LOCAL LINES)	NO	US / CANADA (60/40)	PULSE DIAL	USE SW 8 SETTING IN GROUP 13	✓

*** See top of next page.

*Should be enabled on all telco networks which have called party disconnect (hanging up the phone for a period of time will cause disconnect of an incoming call)

**The extended delay should only be used when orbiting satellites are used to relay telco transmissions and an Ademco 685 Receiver. Software Revision 3.7 or higher is used. When other receivers are used, consult with the manufacturer.

Communication PROM Data Group 18

To program, set Rotary Switch to Position 10 ("Restore") and set switches for checked boxes as indicated.

Dialing and Reporting Characteristics Selection (Check as desired):

	SWITCHES							
	1	2	3	4	5	6	7	8
	DATA TONE FREQUENCY	INTERDIGIT TIME	2ND SUBSCRIBER ID TO 2ND TELCO NO	UNLIMITED ATTEMPTS TO REACH CS	NOT USED			NORMAL DIAL TONE WAITS
BIT SET (RAISE SWITCH)	1890HZ FOREIGN	OTHER (840 MSEC)	YES	YES				★ 5 SECS
BIT NOT SET (SWITCH DOWN)	1900HZ U.S. (STANDARD)	U.S. (640 MSEC)	NO	NO USE NUMBER SET PREVIOUSLY	✓	✓	✓	11 SECS

*Only effective if Switch 7 in PROM Data Group 12 was down when that Data Group was programmed.

Communication PROM Data Group 14

To program, set Rotary Switch to Position 11 ("Not Used") and raise switches for checked boxes representing bits set within the hexadecimal code.

Ademco Low Speed/BESCOA/Radionics Reporting Codes for Loss of A.C. and Alarm Restore (Select from 0 thru 9, B thru F)

*Loss of AC				*Alarm Restore			
SWITCHES							
1	2	3	4	5	6	7	8

Bit Weights
1 2 4 8 1 2 4 8

*NOTES: 1. An entry is mandatory for these two codes (e.g., 9) in the indicated formats, even if there is no interest in receiving these reports.

2. Regarding Alarm Restore, see note under PROM Data Group 8 on page 15.

Communication PROM Data Group 15

To program, set Rotary switch to Position 12 ("Not Used") and raise switches for checked boxes.

Fire Zone Designation for "BFSK" alarm reporting (check zones for which desired)

SWITCHES							
1	2	3	4	5	6	7	8
Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8

NOTE: The 24 hour, trouble on open and pulsed sounder attributes of fire zones are separately Control PROM programmed.

Communication PROM Data Group 16

To program, set Rotary Switch to Position 13 ("Not Used") and raise switches for checked boxes representing bits set within the hexadecimal code.

Ademco Low Speed/BESCOA/Radionics Reporting Codes for Zone Bypass and Bypass Restore (Select from 0 thru 9, B thru F)

*Zone Bypass				*Bypass Restore			
SWITCHES							
1	2	3	4	5	6	7	8

Bit Weights
1 2 4 8 1 2 4 8

*NOTE: An entry is mandatory for these two codes (e.g., 9) in the indicated formats even if there is no interest in receiving these reports.

Communication PROM Data Group 17

To program, set Rotary Switch to Position 14 ("Not Used") and raise switches for checked boxes representing bits set within the hexadecimal code.

Ademco Low Speed/BESCOA/Radionics Reporting Codes for Test and Low Battery (Select from 0 thru 9, B thru F)

*Test				*Low Battery			
SWITCHES							
1	2	3	4	5	6	7	8

Bit Weights
1 2 4 8 1 2 4 8

*NOTE: An entry is mandatory for these two codes (e.g., 9) in the indicated formats, even if there is no interest in receiving these reports.

Hexadecimal Coding Chart

Code	Bit Weight			
	1	2	4	8
0(10)		✓		✓
1	✓			
2		✓		
3	✓	✓		
4			✓	
5	✓		✓	
6		✓	✓	
7	✓	✓	✓	

Code	Bit Weight			
	1	2	4	8
8				✓
9	✓			✓
B(11)	✓	✓		✓
C(12)			✓	✓
D(13)	✓		✓	✓
E(14)		✓	✓	✓
F(15)	✓	✓	✓	✓

CAUTION: Throughout these reporting selections, the ability to select full Hexadecimal reporting codes is indicated. Make sure that the receiver, into which your signals are being reported, is capable of accommodating such reporting. For example, the Ademco No 660/673 is only capable of accepting 1-9 for all reporting codes.

V. INSTALLATION AND WIRING

A. INSTALLATION AND WIRING, No. 4180-12/4180EC C-COM

To ensure that the battery is fully charged when the system is put into operation, the battery should be placed on charge while the field wiring is being installed and run to the control. **Failure to install a fully charged battery may result in improper alarm operation.**

To charge the battery, proceed as follows:

Connect the battery by connecting the FAST-ONS at the end of the BLACK (-) and RED (+) wires coming from the C-COM circuit board (see Diagram 9) to the corresponding color coded mate tabs on the selected battery (see chart in SPECIFICATIONS for appropriate battery). If two 6V batteries are used, connect them in series, as follows: (a) Connect the Black wire from C-COM to the Black tab on battery #1. (b) Connect the Red wire from C-COM to the Red tab on battery #2. (c) Connect the Red tab on battery #1 to the Black tab on battery #2. **Be sure to observe proper polarity when making battery connections.**

When using 6V batteries (Nos. 465-654 or 465-627), an **ORANGE jumper should be cut** (see Diagram 9 for location). To reach the jumper, remove three screws holding the right side of the insulating cover over the C-COM's board, and fold cover back.

Connect the output terminals of the transformer to TB3 terminals 1 and 2. Then plug the transformer into a 120 volt AC outlet that is ON 24 hours a day. Battery charging will now commence.

Do not make any other connections to the control without first disconnecting the battery and unplugging the transformer.

When all field wiring has been installed and wires are ready for connection to the control, disconnect battery and unplug the transformer.

Use of twisted wire is recommended for all runs for greater immunity to unwanted induced voltages.

1. TERMINALS (See Summary of Connections Diagram)

TB1 Terminals

1 System Arming Status Output: This terminal provides an output that can be used to control space protection devices such as those in the 650 series (Passive Infrared). See the individual instructions accompanying these devices.

It may also be used to control the arming of Ademco's No. 1034-12 Zone Expander. See the individual instructions accompanying it.

The polarity of this output is settable in PROM (LO=ARM, HI=DISARM or HI=ARM, LOW=DISARM).

- 2 Lites On Input:** This input provides a convenient method of turning on the LITES ON OUTPUT, and the LITES ON CONSOLE DISPLAY. When the input is brought momentarily HI(+6 volts), the output latches on. This result is independent of any PROM selections.
- 3 External Loop Status Input:** This terminal provides an input for status from an external zone expander. When input is LO (0 volts), the system is unable to arm and zone "zero" is displayed at the console. See individual instructions accompanying these devices.
- 4 24 Hour Test Input:** Terminal is provided as an input from optional (No. 4179) 24 hour timer. When input goes HI (+6 volts), the system sends a test report to central station. See individual instructions accompanying this device.
- 5 Telephone Line Fault Input:** Terminal is provided for an optional Telephone Line Fault Module. When input goes HI (+6volts), the system indicates the line fault by sounding a trouble signal (disarmed mode) and sounding an alarm (armed mode). An "F" is latched at the console until the system is next disarmed. See individual instructions accompanying this device.
- 6(-), 7(+) DC Power for Smoke or Combustion Detectors:** Interruptible by disarming the system. **OBSERVE POLARITY.** Use wire sizes in accordance with the following tabulation and connect the power terminals of the detectors in parallel:

SMOKE OR COMBUSTION DETECTOR POWER WIRING

MAXIMUM DISTANCE TO FARTHEST DETECTOR	NUMBER OF No. BK-2812, BK-2812TH, AND/OR BK-1812 DETECTORS		
	1 OR 2	3 TO 6	7 TO 10
100 FEET	#22	#22	#20
200	#22	#20	#18
300	#22	#18	#16
500	#20	#16	.

*Use separate power runs for up to 6 detectors each.

NOTE: Do not exceed the auxiliary total output current limitations described under SPECIFICATIONS.

- 8 Lites On Output:** Output capable of 10mA when turned ON. The output is in the high impedance state when OFF. Used to turn on XT-BA284 AC line carrier transmitter which, in turn, controls BSR X-10 line carrier receiver modules.

TB2 Terminals

- 1, 3 Incoming Telco Line Pair:** Connect TB2-1 to the GREEN lead and TB2-3 to the RED lead on the No. 620 Direct Connect Cord. DO NOT CONNECT the latter cord to the RJ31X jack until all wiring in the system has been completed.
- 2 Earth Ground (-):** Connect this terminal to a good earth ground as shown in Diagram 8 (metallic cold water pipe or electrical box ground is frequently satisfactory for this usage, but in some locales is not). This connection is critical to enhancing the immunity of the system to unwanted induced voltages. In a UL commercial installation (No. 4180-12 only), this ground is supervised.
- 4,5 Internal Handsets:** Connect TB2-4 to the BROWN lead and TB2-5 to the GRAY lead in the No. 620 RJ31X Direct Connect Cord.
- 6, 7 ZONE 1 (Supply - 6, Return - 7)**
7, 8 ZONE 2 (Supply - 8, Return - 7)
9, 10 ZONE 3 (Supply - 9, Return - 10)
10, 11 ZONE 4 (Supply - 11, Return - 10)
12, 13 ZONE 5 (Supply - 12, Return - 13)
13, 14 ZONE 6 (Supply - 14, Return - 13)
15, 16 ZONE 7 (Supply - 15, Return - 16)
16, 17 ZONE 8 (Supply - 17, Return - 16)

Protection Zones

For each zone, run a pair of wires from that zone's terminals to all protection points in the zone and terminate with a 1000 ohm End-of-Line Resistor (supplied). Each loop has a 250 msec response to open and closed circuit devices such as mats, magnetic contacts, foil, etc. Zones 5-8 may be PROM selected for fast (15 msec) response. **If a zone is not to be used, connect a 1000 ohm "End-of-Line" Resistor directly across its terminals.**

Each zone can be individually, and in any combination, programmed to behave in any desired manner described in the Control Options section of this manual.

For a zone used for fire protection, run the supervised fire detection loop from the zone's two terminals to all U.L. Listed thermostats, smoke detectors, combustion detectors or other detection devices to be used. Runs of up to 500 feet may be made with #22 wire. Run one continuous loop (no branches) through all devices, connecting any trouble relay contacts in series with the loop and normally open alarm contacts across the loop's two wires. At the last device, terminate the loop with the furnished 1000 ohm End-of-Line Resistor and a No. BK-A7771601 Supervisory Module, as shown in the instructions for the smoke detector. The fire zone will detect trouble for an open in the zone and alarm for a short across the zone. A separate console LED annunciates a FIRE alarm.

NOTE: Low current smoke and/or combustion detectors such as the Nos. BK-2812, BK-2812TH or BK-1812 should be used. NFPA Standard No. 74 requires the use of at least one smoke or combustion detector in every residential installation.

The maximum permissible resistance in each zone is 600 ohms (plus 1000 ohm End-of-Line Resistor).

- 18 Console/Keypad Data Input:** This terminal is one of the four wire connection points (GREEN) for remote keypads and security consoles. Data entered from the keypads on these units is fed into the C-COM at this terminal.
- 19 Console/Keypad Data Out:** This terminal is one of the four wire connection points (YELLOW) for remote keypads and security consoles. Data from the C-COM to activate displays and audible sounding is fed to the keypads and consoles from this terminal.
- 20 6.5 Volt Continuous Power (+) for Powering Remote Keypads, Security Consoles, and a Telco Line Fault Monitor (e.g., No. 659EN). Note:** Do not exceed the total output current limitations described under SPECIFICATIONS.

TB3 Terminals

- 1, 2 Power Input from Transformer, 18 VAC:** Connect these terminals to the secondary output terminals of the No. 1349 transformer.
DO NOT PLUG IN TRANSFORMER OR RECONNECT BATTERY YET.
- 3 Power Return (-) for Bell and Auxiliary Power**
- 4 12 Volt Continuous Auxiliary Power for Accessories:** This terminal provides power for accessories such as space protection devices, photoelectrics, etc. The combined total current drain from this terminal and the smoke detector power terminal (TB1-7) and the console power terminal (TB2-20) must not exceed 650 mA for UL Commercial installations or 1 amp for non-UL Listed usage (see Specifications).
- 5 Alarm Bell Voltage:** This terminal provides 12V DC, at a drain of up to 2 amps, during an audible alarm that is selected to activate the relay (see Control Options) The output is steady for burglary/audible emergency alarms and pulses for fire.

For a UL Commercial installation per UL Std 609, (No. 4180-12 only) use No. AB12 Bell in Box, as shown in Diagram 9. Connect Box input terminals 1 and 2 to TB3 terminals 3 and 5 respectively. Box protection terminals must be connected in supply and return legs of same zone loop selected for tamper switches and ground leads must be connected as indicated in Diagram 9 (see TB3 terminal 6 - "Tamper" also). All wiring between the Control and No. AB12 Bell in Box must be in conduit. The zone loop must be programmed as a day/night zone.

- 6 Tamper (No. 4180-12 only):** This terminal allows for any one zone loop to be set up as a tamper loop. Connecting the supply leg of the selected zone to this terminal allows that loop to have the front and back cabinet tamper switches (normally closed) wired in series with it (e.g. if Zone 2 is selected, connect the supply leg to TB3 terminal 6 instead of its usual TB2 terminal 8). In addition, the tamper switches' BLUE lead must be cut free from the PC board (if so-attached) and extended to the supply terminal of the selected zone (e.g. TB2-8 for Zone 2). See Diagram 9.

For a UL Commercial installation (per UL Std 609), connect tamper switches in a day/night zone loop as indicated above. Also, connect earth ground, as shown in Diagram 9.

- 7, 8 External Siren Speakers (optional):** Nos. 705-820, 737-20BR, 737-20WH, 738-20WH, 713 speakers, or other like speakers that are 8 ohms, 20 watts or higher may be used. This output is active only if the optional plug-in No. 4165 Siren Driver is added. Up to 25 watts of power can be delivered to the siren speakers. Speakers may be connected (A) singly, (B) in series, for reduced sound intensity but spread over a wider area, with each speaker receiving half voltage, or (C) in parallel/series, for even wider dispersion of sound at full output voltage. See Diagram 1 for allowable speaker configurations while staying within the siren driver's power limitations.

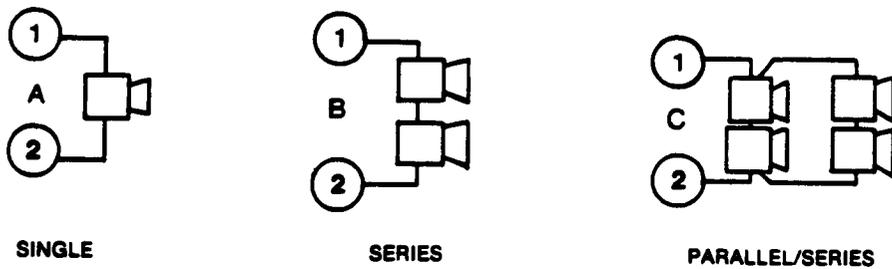


Diagram 1: ALLOWABLE SIREN SPEAKER CONFIGURATIONS

2. ADDITIONAL CONNECTION POINTS (See Diagram 9)

These points are provided to permit the connection of accessory devices (such as the No. 674 Select-A-Line and the No. 675 Ground Start Module) that require special signals.

GROUND START OUTPUT POST: An output point to provide a momentary input (until dial tone is obtained) to a No. 675 Ground Start Module which causes its relay to momentarily ground the incoming phone line for the purpose of obtaining a dial tone out-board of a PABX.

ALTERNATE TELCO LINE OUTPUT POST: An output point that only provides an alternate line selection request to a No. 674 Select-A-Line if there is a failure to receive "Kissoff" from the primary telco line receiver. If there is a failure to receive "Kissoff" on the first attempt, this output will request service from the alternate phone line. If there is a failure to receive "Kissoff" on the alternate phone line, this output will switch back to primary line selection. If a No. 659EN Telco Line Fault Monitor is used and detects a line cut, it will override the alternate line selection described here and maintain transmission on the intact line.

REMOTE PHONE ARMING MODULE INTERFACE CONNECTOR: Provides input signals to and receives output signals from the No. 4178 Remote Phone Arming Module. This module must be plugged into the system if the user intends to utilize the capability of remote arming the system from a TouchTone® phone.

LONG RANGE RADIO INTERFACE CONNECTOR: Provides input signals to the No. 7621SE Long Range RF transmitter. With this module plugged into the system, messages transmitted via the switched telco line will also be transmitted via the Long Range RF link. The No. 7621SE is UL Listed and therefore may be used in a UL 611 Grade A Central Station installation.

B. INSTALLATION AND WIRING, NO. 5322 SECURITY CONSOLE(S)

1. Select a location for the console that will be convenient for the entering of system commands and the receiving of the various visual and audible system signals.

2. Run wiring for connection of the console to the Control/Communicator. Use a 4 wire run (See Diagram 2). Additional consoles (if used) may be connected in parallel with the first, as indicated in Diagram 2, with a separate wiring run from the Control/Communicator.

For runs of less than 100 feet, 4 #22 conductors may be used. For longer runs, the wire size to be used depends upon the distance from the C-COM. Use the following table to determine the correct wire size.

DISTANCE TO C-COM	WIRE SIZE
To 100'	#22
100' to 200'	#20
200' to 300'	#18

Twisted pairs are recommended, for greater immunity to unwanted induced voltages.

3. Mount the console as follows: Snap off the front cover of the console, after pushing in the lower tab. Move up the keypad retaining tab above the keypad illumination bulb to free the keypad and PC board assembly. Remove the assembly. Disconnect the speaker cable by unplugging the brown conductor from the PC board. Slide out the information drawer to expose one of the mounting holes and use the back of the console as a template to locate the 3 screw mounting holes (2 keyslot) and the wiring access hole. Drill the necessary holes, route the wiring in the wall through the access hole and mount the back of the console. Splice the wire run to the console's wires and plug in the speaker cable. Push the interface wiring back into the wall and snap in the keypad and PC board assembly. Snap on the front cover.

Alternatively, if mounting with only two screws via the keyslot holes on the back of the unit is acceptable, the mounting template supplied with the unit may be used to locate the two holes and the wiring access hole. In this case, the PC board need not be removed.

*NOTE: An alternative wire access hole away from the edge of the console is provided by a square knockout in the center of the back of the console.

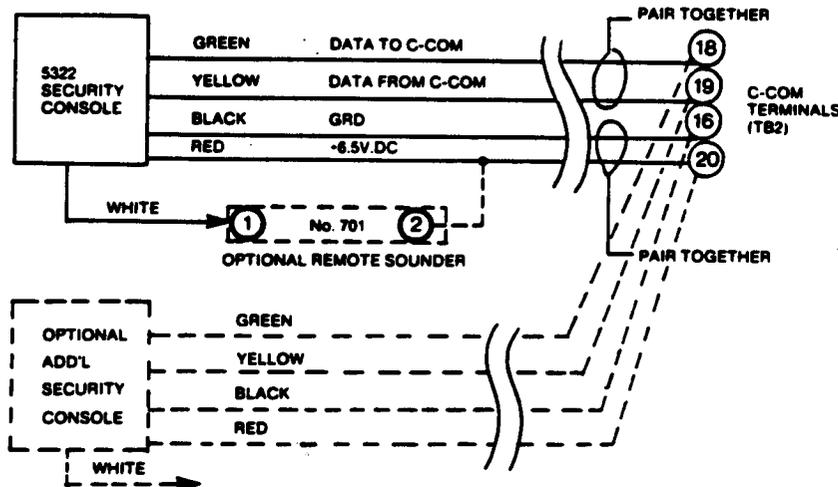


Diagram 2: CONSOLE CONNECTIONS

C. INSTALLATION AND WIRING, NO. 5314 REMOTE KEYPAD(S)

1. Select the locations for the remote keypads that will be convenient for the entering of system commands and the receiving of the various visual and audible system signals.
2. Remove the front cover of the keypad by squeezing its sides near the top or bottom and pulling outward.
3. Remove the PC board by spreading the two plastic retaining tabs located near the center of the board's side edges.
4. Use the back of the case as a template to mark the mounting holes and the cable access slot.
5. Drill the necessary holes in the wall, including one within the marked location for the cable access slot, for wiring from the Control/Communicator.
6. Mount the back of the case to the wall.
7. Bring the wires through the access slot and splice the remote keypad's 4-wire cable to the control/communicator wiring in accordance with Diagram 3. The control/communicator is assumed to be already connected and capable of supplying power, but not yet powered.

Unlike the security consoles, the remote keypads can be daisy chained together. Their wire run should be separate from the run to a security console.

For runs of less than 100 feet, 4 #22 conductors may be used. For longer runs, the wire size to be used depends upon the distance from the C-COM. Use the table on page 20 to determine the correct wire size.

8. Remount the PC board by snapping it into its retaining tabs. Push any excess cable back into the wall.
9. Snap the front cover onto the back of the unit.

D. INSTALLATION, NO. 4165 SIREN DRIVER

1. Remove the three screws holding down the right side of the insulating cover shielding the C-COM's PC board from electrostatic discharge.
2. Fold back the right side of the cover.
3. Plug the Siren Driver board into the connector on the C-COM board with the component side down and the connector at the bottom.
4. Align the Siren Driver board's three (3) mounting holes with the holes on the three (3) mounting posts affixed to the C-COM's PC board.
5. Replace the right side of the cover.
6. Fasten the cover and the Siren Driver to the C-COM using the three (3) screws previously removed.

E. INSTALLATION, NO. 4178 REMOTE PHONE ARMING MODULE

1. Lift the lower left corner of the P.C. board insulator.
2. Plug the Remote Phone Arming Module into the connector on the C-COM board with the component side down and the connector at the left.

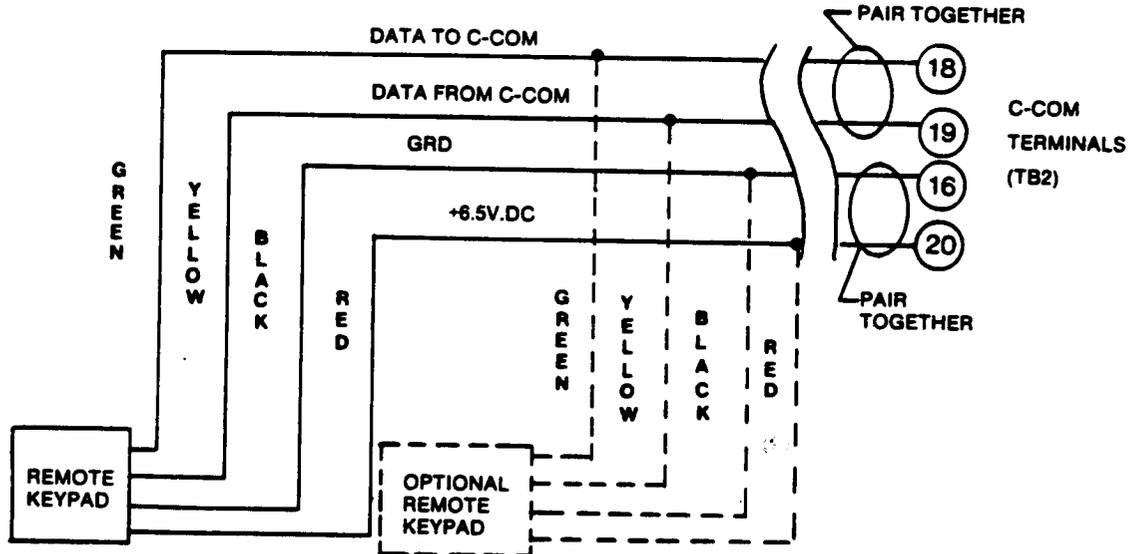


Diagram 3: KEYPAD CONNECTIONS

VI. SYSTEM CHECKOUT

A typical set of zone configurations is shown below. The examples are NOT the only possible combinations but rather a representative group. Each loop is completely flexible and CAN be configured in any manner to meet the needs of any installation. See the Zone Assignment chart on page 10.

It may be helpful to connect a spare console temporarily to the control to facilitate system check out, depending upon the locations of the installed units.

ZONE CHARACTERISTICS (partial list)

	"LITES ON" ENABLE	TROUBLE ON SHORT ENABLE	EXTERIOR SOUNDER/PRIMARY COM. DELAY ENABLE	ZONE RESTORE ENABLE	TROUBLE ON OPEN	24 HOUR ZONE	FIRE ZONE	E/E ZONE	EXTERNAL SOUNDER INHIBIT	CONSOLE SOUNDER/DISPLAY INHIBIT	INTERIOR ZONE	BYPASS ENABLE	16 SEC. DIALER DELAY ENABLE	ZONES			
X	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	BURGLARY	
X	0	0	0	X	X	X	0	0	0	0	0	0	0	0	0	0	FIRE
0	0	0	0	0	X	0	0	X	X	0	X	0	X	0	X	0	SILENT PANIC
X	0	0	0	X	0	0	0	0	0	0	0	0	0	X	X	0	*DAY/NIGHT
X	0	0	0	0	0	0	0	X	0	0	0	0	0	X	X	0	ENTRY/EXIT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	X	X	INTERIOR
0	0	0	0	0	X	0	0	0	0	0	0	0	0	X	0	0	24 HOUR

*Day/Night Zone - Trouble by day, alarm by night

X = Programmed in this example

0 = Not programmed in this example

- b. Short each of the burglary zones momentarily, one at a time. The appropriate zone number should appear on the Security Console Zone I.D. Display.

NOTE: If a Zone has been set up as a Day/Night Zone (trouble by day, alarm by night), the above actions will also cause the TROUBLE LED to light on the Security Console and the CHK.BYP LED on any Remote Keypad (if used) to light. In addition, the Security Console and the Remote Keypad will produce a rapidly pulsing sound.

7. If a zone has been set up as a fire zone, do the following:

- a. Observe the FIRE and TROUBLE display on the Security Console or the CHK.BYP LED on any Remote Keypad. They should be off if the protective loop and detector power circuits are properly wired.

- b. Disconnect one wire of the fire zone. The FIRE and TROUBLE display on the Security Console should light and the CHK.BYP LED on any Remote Keypad should flash. A rapidly pulsing tone should be heard from the Security Console's speaker and a rapidly pulsing buzz should be heard from the Remote Keypad's buzzer.

- c. Silence the trouble sounding by keying the security code and depressing OFF at a console or keypad. The sound should stop but the visual LED indications should continue.

- d. Reconnect the fire zone wire. All visual fire trouble indications should go out.

- e. Momentarily short the fire zone. A fire alarm should be triggered, accompanied by a loud pulsed rapidly alternating two-tone siren sound from both the console and any other interior or exterior speakers used (or by a pulsed bell output). In addition, the FIRE display on the Security Console will light.

Silence the alarm by entering the security code followed by OFF at a console or keypad.

NOTE: The battery may not be fully charged. If this test is tried with a low battery, there will not be enough power for exterior alarm sounding. Let the battery charge (transformer plugged in) for at least one-half hour if the battery is low.

8. Test a panic circuit by momentarily shorting its zone terminals or by operating an external zone connected panic switch. If the zone is programmed for audible alarm, both the console and exterior speakers should sound (rapidly alternating two-tone). If bells are used, a steady bell sound will be produced. These conditions continue after the short is removed. A message will be transmitted to the central station. Reset the system by entering the security code at a console or keypad.

If the zone is programmed for silent operation, none of the above mentioned sounds will be heard.

9. Bypass any zone(s) (permitted by installer programming) from a console or a keypad by entering the security code followed by BYPASS depression and the number(s) of the zone(s) to be bypassed. The BYPASS LED on the console will light, the CHK.BYP LED on any remote keypad will light steady and the console will display each bypassed zone for two seconds. A beep at the console will accompany each zone displayed.

Activate that zone to see if a fault is indicated by the Zone I.D. display at the console or by the READY LED going out at a console or a keypad. None of the above cited displays should indicate the presence of the zone fault.

Turn the system OFF.

10. Force arm the system, automatically bypassing any purposely faulted zone (permitted by installer programming), from a console or a keypad by entering the security code followed by the arming command (AWAY or STAY) and the depression of BYPASS. The BYPASS LED on the console will light and the CHK.BYP LED on any remote keypad will light steady. For an indication of what zones have been bypassed, enter the security code followed by BYPASS key depression. The console will display each bypassed zone once.

Turn the system OFF.

11. Arm the system from a console or keypad and immediately follow the arming sequence of security code entry plus arming command (AWAY or STAY) by depression of the INSTANT key. The INSTANT LED on the console should light. After allowing for the exit delay to expire, any fault introduced in the entry/exit zone will cause an immediate alarm. Disarm the system and note that the INSTANT LED will go out.
12. Turn on the Chime Mode by entering the security code followed by depression of the CHIME key during the disarmed state. Open and close any contact in a zone selected for chime enable and a single tone will be produced at any console or keypad for each fault, announcing the entry of someone. Remove the Chime Mode by reentering the security code followed by depression of the CHIME key.
13. Conduct a burglary test by entering the security code followed by depression of the TEST key. This will initiate a test of the sensing circuitry by shorting all zones. The alarm sounder will sound from battery power for 3 seconds and 8 will be displayed at the console if all the sensing circuitry is operating and as a test of all of the lightable segments of the display. 15 seconds later, the system will automatically enter the installation test mode provided the user did not disarm the system. When in the installation test mode, the console will beep every 15 seconds to remind the user that the system is not active. A test report to the central station is initiated when entering this mode. Activation of any zone causes a brief 1/2 second sounding from the exterior alarm sounder(s), as well as visual zone annunciation on the console's zone identification display.

14. All the zone contacts may now be checked by disturbing each contact in each zone and listening for the short siren and/or bell sound (whichever is used). The installation test mode will not timeout. It must be ended manually by keying the security code followed by depression of the OFF key.
15. Disconnect AC power to the system. The POWER LED on the console should go out within 5 seconds, but the system should remain operable. After an installer PROM programmed AC Loss delay (up to 36 minutes), a rapidly pulsing trouble sound will be produced at consoles and keypads and an AC Loss report will be communicated to the central station. Keying of the security code and OFF is required to silence the trouble sounding.

NOTE: The AC Loss sounding is suppressed while the system is armed. The sound is only produced when the OFF LED (on the console) is lit.

Restore AC power to the system.

16. Arm the system and simulate leaving the premises by following the procedures in the OPERATION Section.
17. Simulate entry of the premises and disarm the system by following the procedure given in the OPERATION Section.

VII. OPERATION

AC POWER LED ON EACH SECURITY CONSOLE SHOULD BE LIT AT ALL TIMES. If out, AC failure is indicated and the system is operating on battery. Check plug-in transformer or for power failure.

TO ARM BURGLARY SYSTEM FROM CONSOLE/REMOTE KEYPADS:

1. Make sure the AC POWER LED is lit.
2. The READY LED on the console or remote keypad should be lit to indicate that no zones are faulted.

If the READY LED is not lit, check the Zone I.D. Display on the console (depress READY key to get display). A faulted zone indication denotes a fault which must be cleared or the zone bypassed (prior to arming by individual zone bypass or during arming by the special automatic bypassing forced arming sequence, in order to arm the system). Make sure that the exit door is closed!
3. Enter the security code at the console or remote keypad.
 - a. If remaining on the premises after arming, immediately (within 2 seconds of code entry) press the STAY key. Interior zone(s) should now be turned OFF and the rest of the burglary zones in the system should now be armed (entry/exit zones after exit delay timeout). This is indicated at consoles and keypads by 3 brief tones and the lighting of the STAY LED.
 - b. If leaving the premises after arming, immediately (within 2 seconds of code entry) press the AWAY key. All burglary zones should now be armed (entry/exit zones after exit delay timeout). This is indicated at consoles and keypads by 2 brief tones and the lighting of the AWAY LED. Depart before the exit delay period ends, via an entry/exit door.

NOTE: Failure to arm is indicated by a single tone at consoles and keypads and by failure to turn off the OFF LED (at consoles) and turn on either the AWAY or STAY LED.

TO ARM BURGLARY SYSTEM FROM TOUCHTONE® PHONE:

NOTE: This feature can only be used on systems equipped with a No. 4178 Remote Phone Arming Module.

1. Dial the system's telephone number.
2. The system will pick-up after 10 rings and will send a brief acknowledgment ("I'm listening") tone.
3. When the acknowledgment tone ends, the user will have 10 seconds to return an arming tone. The arming tone is TouchTone® digit "2" and this digit must be pressed for at least 0.25 seconds (to be certain, count: one one-thousand, two one-thousand).

4. If the system detects the arming tone, it will then make an attempt to force arm itself. After a brief pause it will respond with either one or two beeps.
 - a. A single beep indicates that the system cannot be armed because one or more zones not enabled for bypass are faulted.
 - b. Two beeps indicate that the attempt to arm was successful. A closing report will be sent to the central monitoring station. User I.D. # "F" will appear in Ademco high speed and expanded low speed format closing reports.

If one or more zones enabled for bypass are faulted at arm time, then these are automatically bypassed. A bypass report will be sent to the central station in addition to the closing report.

NOTE: Two beeps can also indicate that the system is already armed at the time that the current attempt to arm is made. No new closing report is sent if this is the case.
5. If the system has not received the arming tone after the 10 second waiting period has elapsed, because of a faulty teico connection for example, then it will simply hang up. The arm/disarm state of the system will not be affected. The user should wait a few seconds before trying again.

TO DISARM BURGLARY SYSTEM:

1. When entering the premises, enter only via an entry/exit door. A slowly pulsing tone will be heard from consoles and keypads during the entry delay period.

NOTE: If a rapidly pulsing tone is heard, it is an indication of the memory of an alarm that took place previously. The user should immediately leave the premises and call the police from a safe location.

If already within premises, go directly to the nearest console or keypad.
2. Before the entry delay period (if any) ends, enter the security code and press OFF.

NOTE: While the system is disarmed, the READY LED will go on and off as the protected zones open and close during normal operation of doors, windows, PIRs, etc....

TO TEST FIRE SYSTEM:

The fire system should be tested at least every week.

IMPORTANT: The test described below does not cause any communication transmission to the central station. If such communication is desired, alert the central station first before conducting the test and short a fire zone to initiate an alarm.

1. Enter the security code followed by depression of the TEST key. This will initiate a test of the sensing circuitry by shorting all zones. The alarm will sound from battery power for 3 seconds and 8 will be displayed at the console if all the sensing circuitry is operating and as a test of all of the lightable segments of the display.
2. Exit the test mode IMMEDIATELY (within 15 seconds) by entering the security code followed by depression of the OFF key.

TO TEST BURGLARY SYSTEM:

The burglary system should be tested as follows every week:

IMPORTANT: The central station should be alerted before conducting the below described test, particularly if the communicator messages are not programmed by the installer for delayed transmission.

1. Arm the system in the AWAY Mode.
2. Open a window or other sensor in a perimeter zone.
3. The console speaker will sound a burglary alarm immediately.
4. Either immediately or delayed (depending upon PROM programming), the exterior alarm sounder will produce the burglary sound.
5. At this time or 16 seconds later (depending upon PROM programming), the communicator will transmit an alarm message to the central station.
6. Disarm the system by code entry and OFF depression.

TO ACTIVATE A 24 HOUR ALARM:

1. Depress a momentary switch connected to a 24 hour zone or a PROM zone assigned console panic switch pair.
2. If the zone is programmed for audible alarm (console inhibit and external sounder inhibit PROM selections NOT set), the alarm sounder will commence immediately, the zone digit and the ALARM LED will light and communicator will transmit a message to the central station (delayed by 16 seconds, if so programmed).
3. If the zone is programmed for silent alarm, the communicator will transmit a message to the central station.
4. To reset, enter the security code at a console or a keypad and depress OFF.

TO ENTER SECONDARY SECURITY CODE:

This action may be done while the system is armed or disarmed.

1. Key master security code (in PROM) or user #2's secondary code (once it is entered) and depress CODE key at a console or keypad.
2. Immediately follow with a digit, 2-8, designating the code to be entered followed by entry of the 4 digit secondary code. The digit 2-8 defines which of the 7 possible secondary codes is to be set.

Secondary codes 3-8 can permit every function that the master security code and secondary code 2 can allow except changing of the secondary security codes.

3. Removal of the secondary codes is accomplished by entering the master security code, by depressing CODE, the code designator, and by entering a new secondary code (or the master code, if no new code is desired).

NOTES: a. A PROM option is available that permits the PROM master security code to be inhibited from use once secondary code 2 is entered and successfully used.

- b. When that PROM selection is made, the first secondary code to be entered must be code 2. As soon as Code 2 is entered, the master code is inhibited.
- c. Code 2 can then be used to assign codes 3-8. Code 2 cannot be changed subsequently unless the system is totally powered down (AC and battery) and repowered.
- d. If a mistake is made and a secondary code other than Code 2 is entered first, the user will not be able to enter more codes or change the code. It will be necessary to totally power down the system (AC and battery) and re-power it if this situation is encountered.

TO ACTIVATE DURESS ALARM:

1. A duress alarm is triggered by entering a duress code from the console or from a remote keypad. The duress code is derived from the master code or from a secondary code by incrementing the last digit in that code by 1.

Example: Key in the code 1-2-3-5 to trigger a duress alarm if 1-2-3-4 has been programmed as master code.

Since the duress alarm is a silent panic alarm, no indication of it is given by the console, by the remote keypads or by the external sounders. The type of message reported to the central monitoring station for a duress alarm will depend upon which transmission format the user has PROM selected. Refer to sections III-H and III-I.

NOTES: a. A duress alarm cannot be triggered by any master or secondary code that ends with the digit "9" (e.g., by the keying of 1-2-3-0 if the code is 1-2-3-9).

- b. Also, the user must take care not to define any secondary code which: 1) is greater by one unit in the last digit position from the master code or from another secondary code (e.g., the secondary code 1-2-3-5 is not allowed if 1-2-3-4 was programmed as master code or as secondary code) or 2) will equal the master or another secondary code if its last digit is increased by one (e.g., the secondary code 1-2-3-3 is not allowed if 1-2-3-4 was programmed as master or secondary code).

2. If the OFF key is depressed subsequent to the entry of the duress code, the system will disarm. A duress message will be reported to the monitoring central station instead of an opening message. This gives the impression at the premises that the system is functioning normally and at the same time alerts the central station to the fact that one is being held hostage.

TO ACTIVATE THE CHIME FEATURE:

This mode may only be entered during the disarmed state.

1. Enter the security code followed by CHIME depression at a console or keypad.
2. Any opening in any zone PROM selected for chime enable will result in a loud single tone being produced at consoles and keypads, annunciating entry.
3. End the mode by entering the security code followed by CHIME depression.

TO QUICKEN THE EXECUTION OF KEYED FUNCTIONS:

Up to a 2 second delay exists from the time that a function key is pressed following security code entry until the function is executed. This delay can be terminated by pressing the ENTER key at the end of any keying sequence (e.g. Security Code Entry, STAY, ENTER).

VIII. TURNING THE SYSTEM OVER TO USER

1. Fully explain the operation of the system to the user by going through each of the features as well as the OWNER'S MANUAL supplied.
2. Describe the operation of each zone. Clarify which contacts or devices are used at night, which are used in the interior, which are day/night (if programmed).
3. Encourage the user to find and remedy zone problems arising when arming the system. Show the user how to individually bypass zones as well as how to force arm the system in the presence of a bad zone.

IX. GENERAL SPECIFICATIONS

A. No. 4180-12/4180EC CONTROL/COMMUNICATOR See Diagrams 4 and 9.

1. **Physical:**

Width: 12-½" (31.8 cm)
Height: 17-¼" (43.8 cm)
Depth: 4-¾" (11.1 cm)
2. **Electrical:**

Voltage: 18 VAC (from No. 1349 40 VA Plug-In Transformer)
Maximum Permissible Resistance (per zone): 600 Ohms (plus end-of-line resistor: 1000 Ohms)
Zone Response: 250 msec (normal), 15 msec (fast)
Bell Relay (Wet) Output: SPST, Maximum Output: 2A @ 12V.DC
12V.DC Regulated Output:
 Continuous Power for Accessories, Smoke Detectors, Consoles and Keypads: 1A max. for non-UL Listed applications
 650 mA max. for UL Listed usage.
Arm/Disarm Status Output: Armed: 0V
 Disarmed: +12V.DC, 10 mA (reversible in PROM)
Fuses: Five fuses -
 No. 90-2: 2A, one for auxiliary current.
 No. 90-17: 4A, one for battery lead reversal protection.
 No. 90-12: 3A, one for optional siren driver (No. 4165) and speaker power and for bell power.
 No. 90-14: 1A, one for consoles/keypads and one for fire detectors.
Standby: 12V Rechargeable Battery
 (see chart below for battery types available, and standby times as a function of current drawn by all external loads)

MAXIMUM STANDBY TIMES WITH VARIOUS AUXILIARY, SMOKE/COMBUSTION DETECTOR, AND ADDITIONAL CONSOLE/KEYPAD CONTINUOUS LOAD [ASSUMES THE USE OF (1) SECURITY CONSOLE PLUS (1) REMOTE KEYPAD]

AUX LOAD (MA)	BATTERY TYPE		
	YA-NP612* 12V 6AH	No. 465-654 6V 5.4AH (X2)**	No. 465-627 6V 2.7AH (X2)**
0	10.7	9.6	4.8
100	8.7	7.8	4.0
200	7.4	6.6	3.3
300	6.4	5.7	2.9
400	5.6	5.0	2.5
500	5.0	4.5	2.3
600	4.6	4.1	2.0
650	4.3	3.9	1.9
700	4.0	3.7	1.8
800	3.8	3.5	1.7
900	3.5	3.2	1.6
1000	3.3	3.0	1.5

MAXIMUM STANDBY TIMES IN HOURS

* Use of 12V 6AH battery is mandatory for UL Commercial installations per UL Std. 609 (No. 4180-12 only); auxiliary load must not exceed 650mA to ensure standby time of at least 4 hours.

** Two batteries required, wired in series for 12 volts. Also, ORANGE jumper on C-COM's PC board (behind insulating cover) must be cut. See Diagram 9 for location.

NOTE: Battery normally need not be replaced for at least 3 years.

3. **Transmission Format:** Low Speed Ademco (and Silent Knight)
 SESCOA
 Radionics
 Radionics "Superfast"
 Ademco High Speed
 Radionics "BFSK"

4. **FCC Registration No.:** AC 398U - 68192 - AL - E
 Ringer Equivalence 0.0B

5. UL Listings:

Nos. 4180-12 and 4180EC:
 Household Fire/Burglary (UL 985/1023)

No. 4180-12 only:

Grade A Local Mercantile Burglary (UL 609) (See Diagram 10).

Grade B Central Station Mercantile Burglary (UL 611) with No. 4179 Test Timer Module.

Grade A Central Station Mercantile Burglary (UL 611)

• with No. 346 Reversing Relay Module, No. 4177 Relay Module and No. 687 Voltage Regulator (see Diagram 12).

• with No. 7620SE Long Range Radio Equipment, No. 4179 Test Timer Module and No. 659EN Line Fault Monitor (see Diagram 13).

Grade AA Central Station Mercantile Burglary (UL 611) with No. 445 Line Security Transmitter, No. 4177 Module and No. 687 Voltage Regulator (see Diagram 11).

B. No. 4165 SIREN DRIVER (OPTIONAL)

See Diagram 5.

1. **Physical:**

Width: 2-¾" (6.6 cm)
Height: 5-¾" (14.2 cm)
Depth: 1" (2.5 cm)

2. **Electrical:**
 See Diagram 8.

Voltage: Operates from 12V.DC

Load Capability: 2A. max. at 12V.DC from C-COM, providing up to 25 watts into an 8 ohm speaker load. Speaker input impedance must not be less than 8 ohms.

Interface: Plug-in connection from front of C-COM P.C. board.

C. No. 5322 SECURITY CONSOLE

See Diagram 6.

1. **Physical:**

Width: 6-½" (17.7 cm) requires additional 3" (7.6cm) clearance at right, if opening of information drawer is desired.
Height: 4-¾" (11.1 cm)
Depth: 1-¾" (3.5 cm)

2. **Electrical:**
Current Drain: 120 mA @ 6.5V.DC from C-COM. (330mA on alarm).
Interface: 4-wire connection to C-COM. See table that follows for maximum number of consoles/keypads that may be used.

D. No. 5314 REMOTE KEYPAD
 See Diagram 7.

1. **Physical:** **Width:** 3-1/2" (8.9 cm)
Height: 5-3/8" (13.7 cm)
Depth: 1-1/4" (3.2 cm)

2. **Electrical:**
Current Drain: 55 mA @ 6.5V.DC from C-COM.
Interface: 4-wire connection to C-COM.

PERMISSIBLE CONSOLE/KEYPAD USAGE									
Number of Consoles (No. 5322)	Number of Keypads (No. 5314)								
	0	1	2	3	4	5	6	7	8
1	X	X	X	X	X	X	X	X	X
2	X	X	X	X	X	X	X	X	X
3	X								

TO THE INSTALLER

Regular maintenance and inspection (at least annually) by the installer and frequent testing by the user are vital to continuous satisfactory operation of any alarm system. The installer should assume the responsibility of developing and offering a regular maintenance program to the user as well as acquainting the user with the proper operation and limitations of the alarm system and its component parts. Recommendations must be included for a specific program of frequent testing (at least weekly) to insure the system's proper operation at all times.

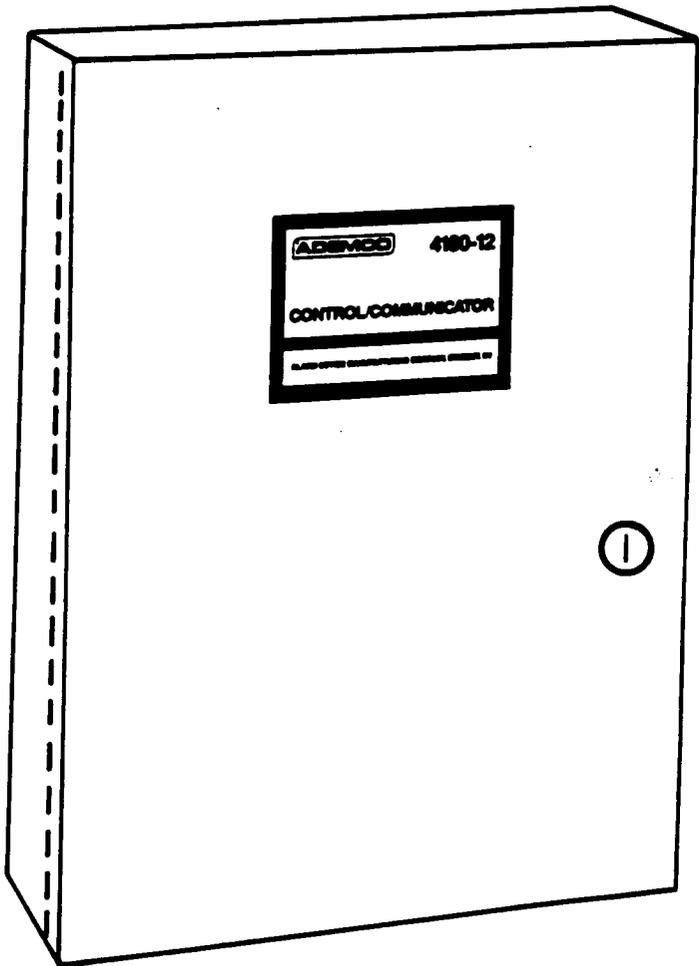
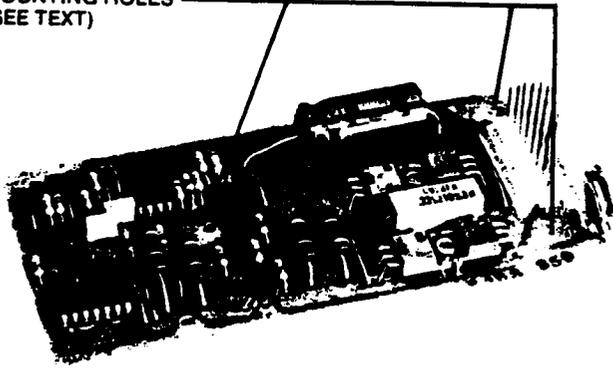


Diagram 4: No. 4180-12 CONTROL/COMMUNICATOR (No. 4180EC SIMILAR)

MOUNTING HOLES
(SEE TEXT)



PITCH
ADJUSTMENT

Diagram 5: No. 4185 SIREN DRIVER

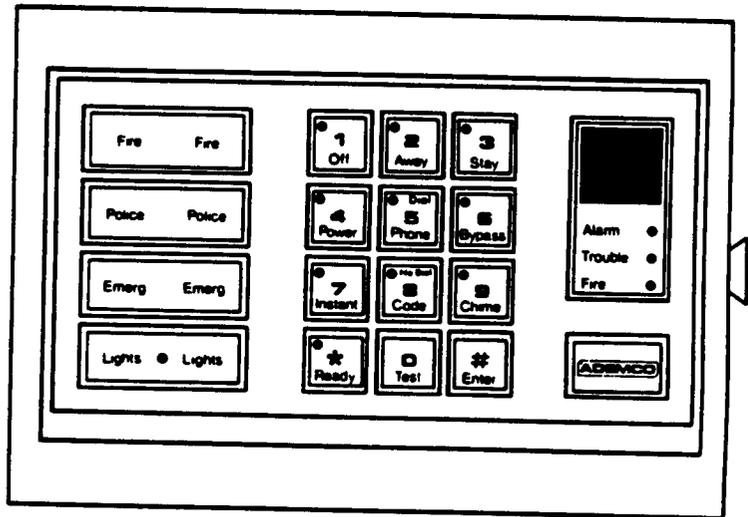


Diagram 6: No. 5322 SECURITY CONSOLE

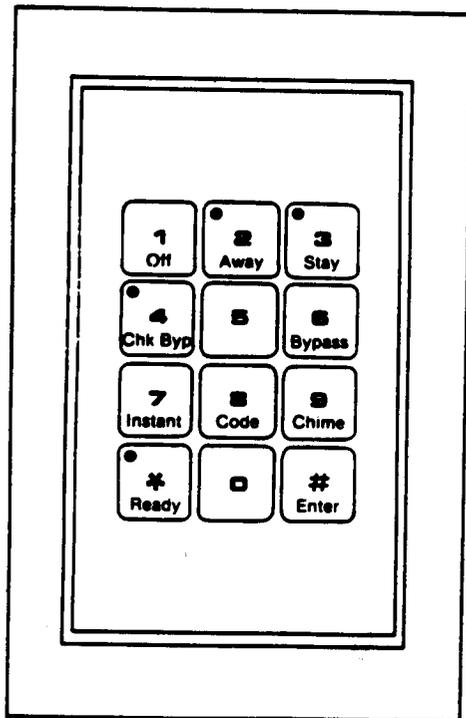


Diagram 7: No. 5314 REMOTE DIGITAL KEYPAD

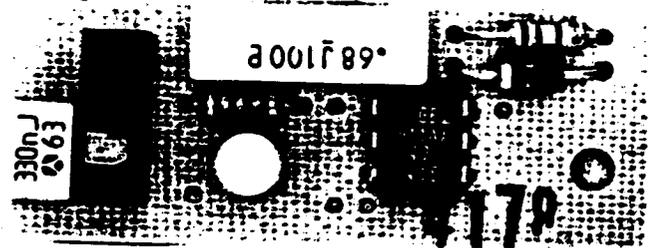


Diagram 8: No. 4178 REMOTE TELEPHONE ARMING MODULE

FOR COMPLETE INFORMATION, SEE INSTALLATION INSTRUCTIONS N1081-12V2 AND USER'S MANUAL N108V1. ALL INTERCONNECTIONS MUST BE MADE USING UL LISTED LIMITED ENERGY CABLE. FIRE PROTECTION INSTALLATION MUST FOLLOW REQUIREMENTS OF NFPA STANDARD NO. 74 (NATIONAL FIRE PROTECTION ASSOCIATION, BATTERYMARCH PARK, QUINCY, MA 02258).

AFTER A SUSTAINED AC POWER OUTAGE, SYSTEM (BATTERY) MAY REQUIRE RECOVERY PERIOD OF UP TO 24 HOURS BEFORE IT IS AGAIN CAPABLE OF SOUNDING AND COMMUNICATING ALARMS.

USE FOR UL COMMERCIAL INSTALLATIONS (PER UL STD 608) NO 4180-12 ONLY

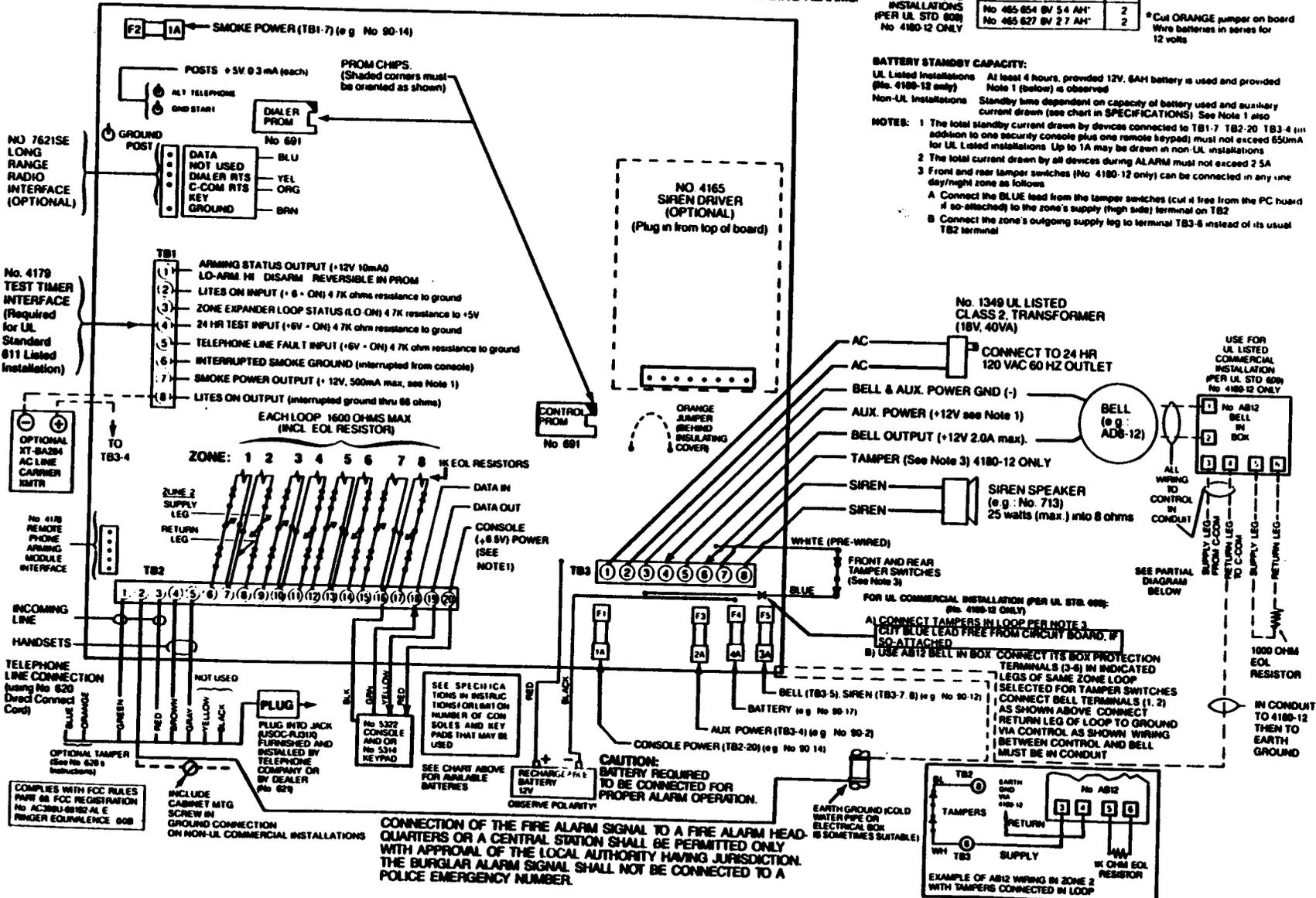
BATTERY USAGE	QTY
No. 1A-NPS12 12V 6 AH	1
No. 485 654 6V 54 AH	2
No. 485 627 6V 27 AH	2

*Cut ORANGE jumper on board Wire batteries in series for 12 volts

BATTERY STANDBY CAPACITY:

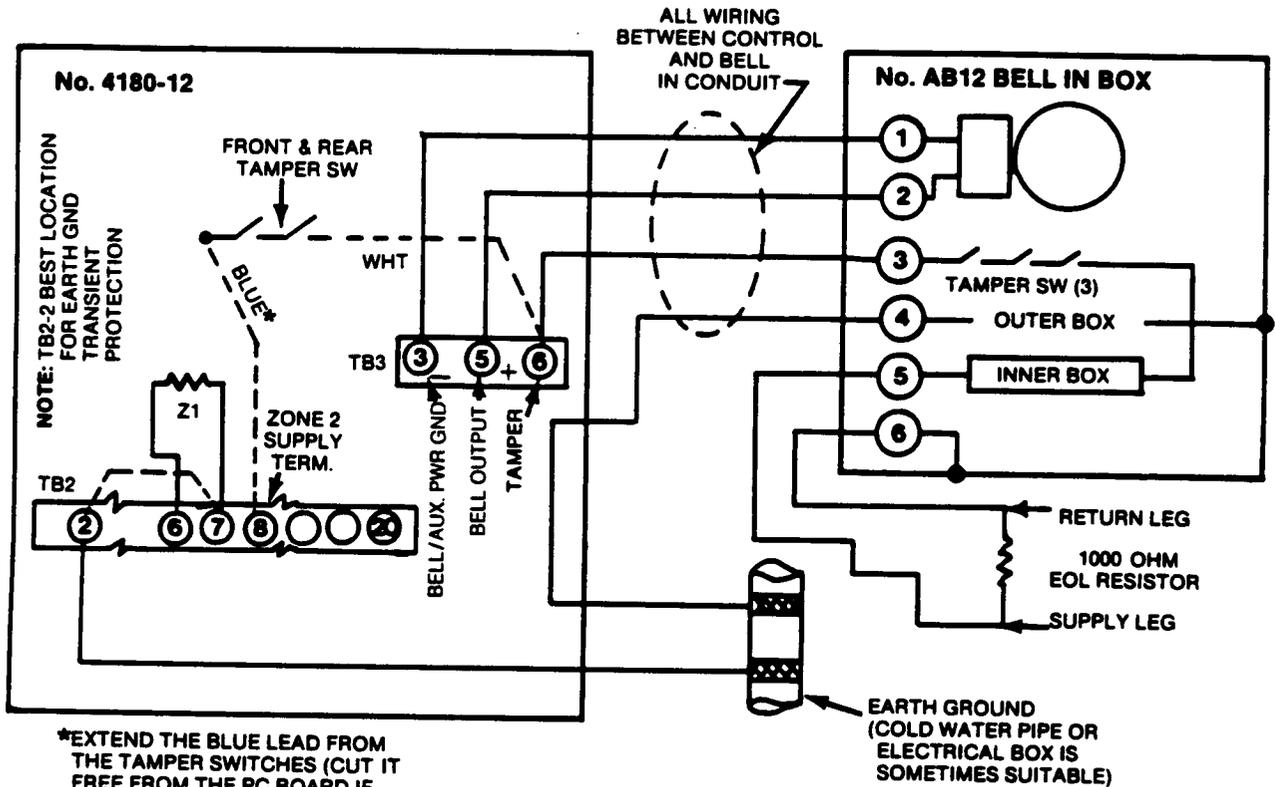
UL Listed installations (Nos. 4180-12 only) At least 4 hours, provided 12V, 6AH battery is used and provided Note 1 (below) is observed
 Non-UL installations Standby time dependent on capacity of battery used and auxiliary current drawn (see chart in SPECIFICATIONS) See Note 1 also

- NOTES:**
- The total standby current drawn by devices connected to TB1-7 TB2-20 TB3-4 (in addition to one security console plus one remote keypad) must not exceed 650mA for UL Listed installations Up to 1A may be drawn in non-UL installations
 - The total current drawn by all devices during ALARM must not exceed 2.5A
- Front and rear tamper switches (No. 4180-12 only) can be connected in any one day/night zone as follows
- Connect the BLUE lead from the tamper switches (cut it free from the PC board if so attached) to the zone's supply (high side) terminal on TB2
 - Connect the zone's outgoing supply leg to terminal TB3-6 instead of its usual TB2 terminal



SEE DIAGRAM 10 FOR ADDITIONAL VIEW OF BELL, TAMPER AND GROUND CONNECTIONS FOR UL COMMERCIAL INSTALLATION

Diagram 9: SUMMARY OF CONNECTIONS



*EXTEND THE BLUE LEAD FROM THE TAMPER SWITCHES (CUT IT FREE FROM THE PC BOARD IF SO-ATTACHED) TO ZONE'S SUPPLY TERMINAL (TB2-8 USED HERE).

- NOTES:**
1. ALL WIRING BETWEEN AB12 AND 4180-12 MUST BE IN CONDUIT.
 2. USE NO. YA-NP612 12V 6AH BATTERY.
 3. MAXIMUM STANDBY CURRENT DRAW FROM 4180-12 is 650 mA (Drawn from AUX PWR TB3-4, FIRE PWR TB1-7, AND CONSOLE PWR TB2-20). SEE TEXT.
 4. CONNECT TAMPERS AND GROUND SUPERVISION CIRCUIT INTO ANY DAY/NIGHT ZONE AS SHOWN ABOVE (ZONE 2 IS USED AS AN EXAMPLE).

Diagram 10: UL GRADE A LOCAL INSTALLATION (No. 4180-12 ONLY) (BELL, TAMPER AND GROUND CONNECTIONS)

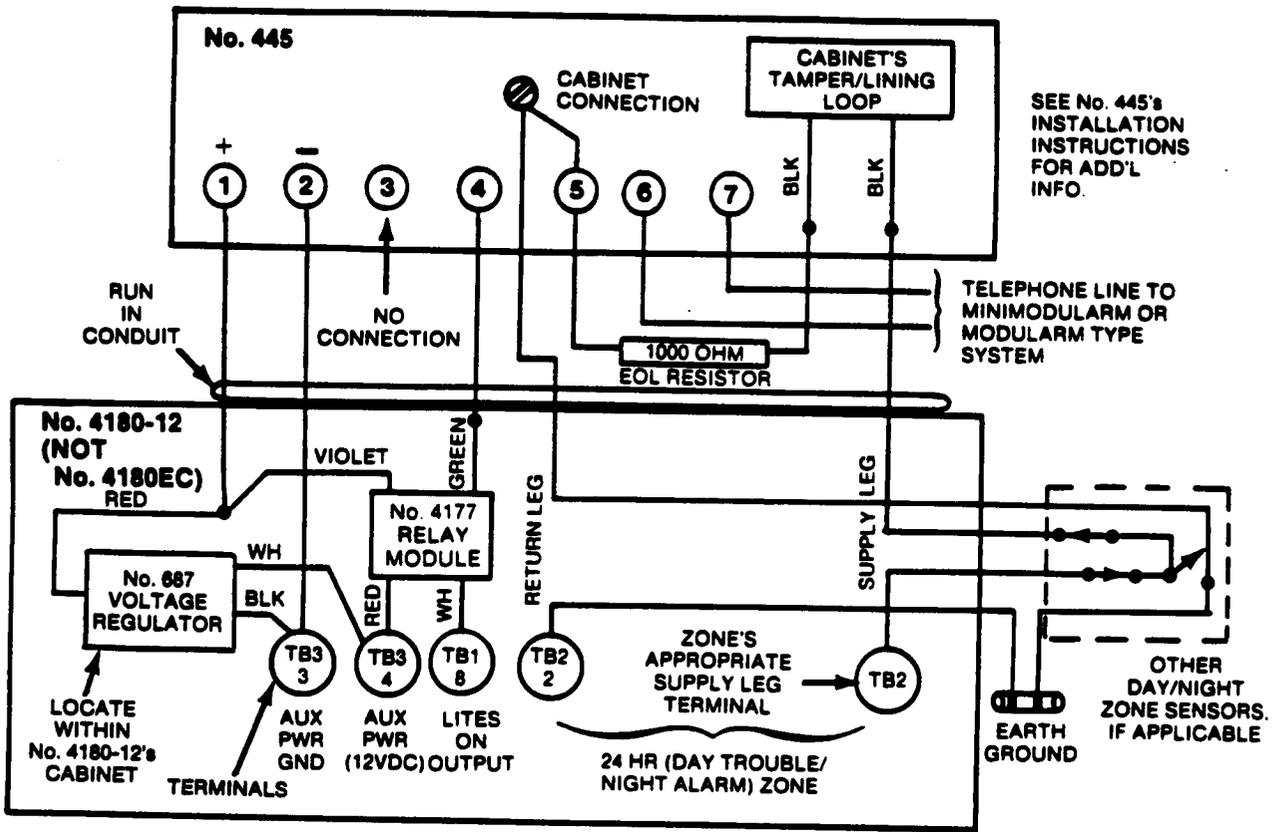


Diagram 11: SUPPLEMENTARY CONNECTIONS FOR GRADE AA CENTRAL STATION UL INSTALLATION (USING No. 445 GRADE AA LINE SECURITY TRANSMITTER)

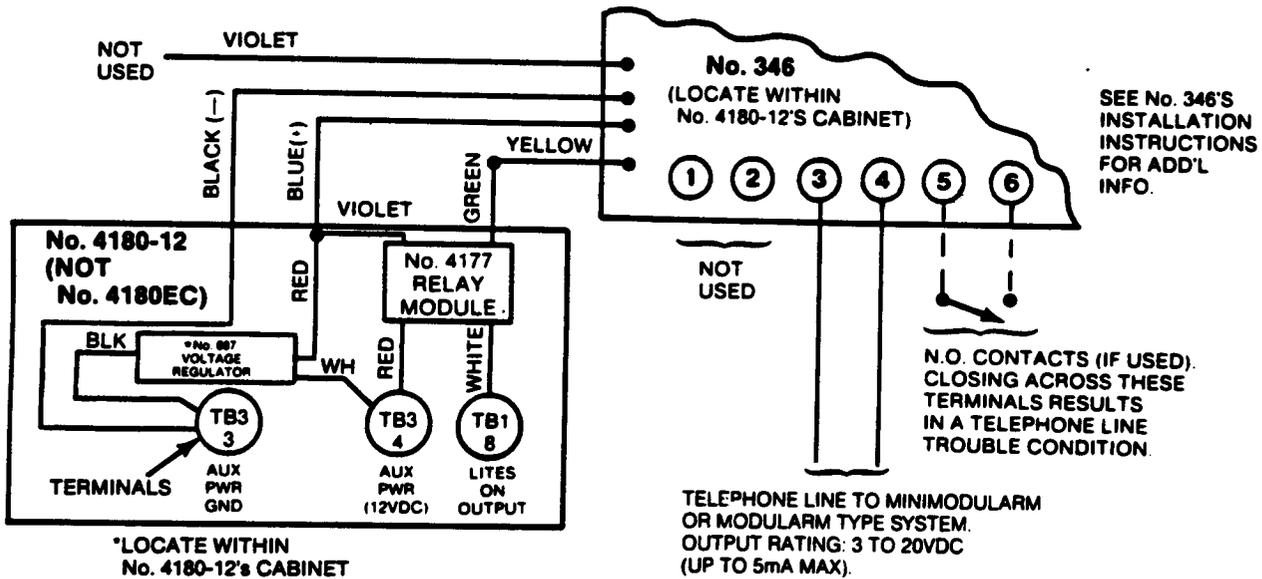


Diagram 12: SUPPLEMENTARY CONNECTIONS FOR GRADE A CENTRAL STATION UL INSTALLATION (USING No. 346 REVERSING RELAY MODULE).

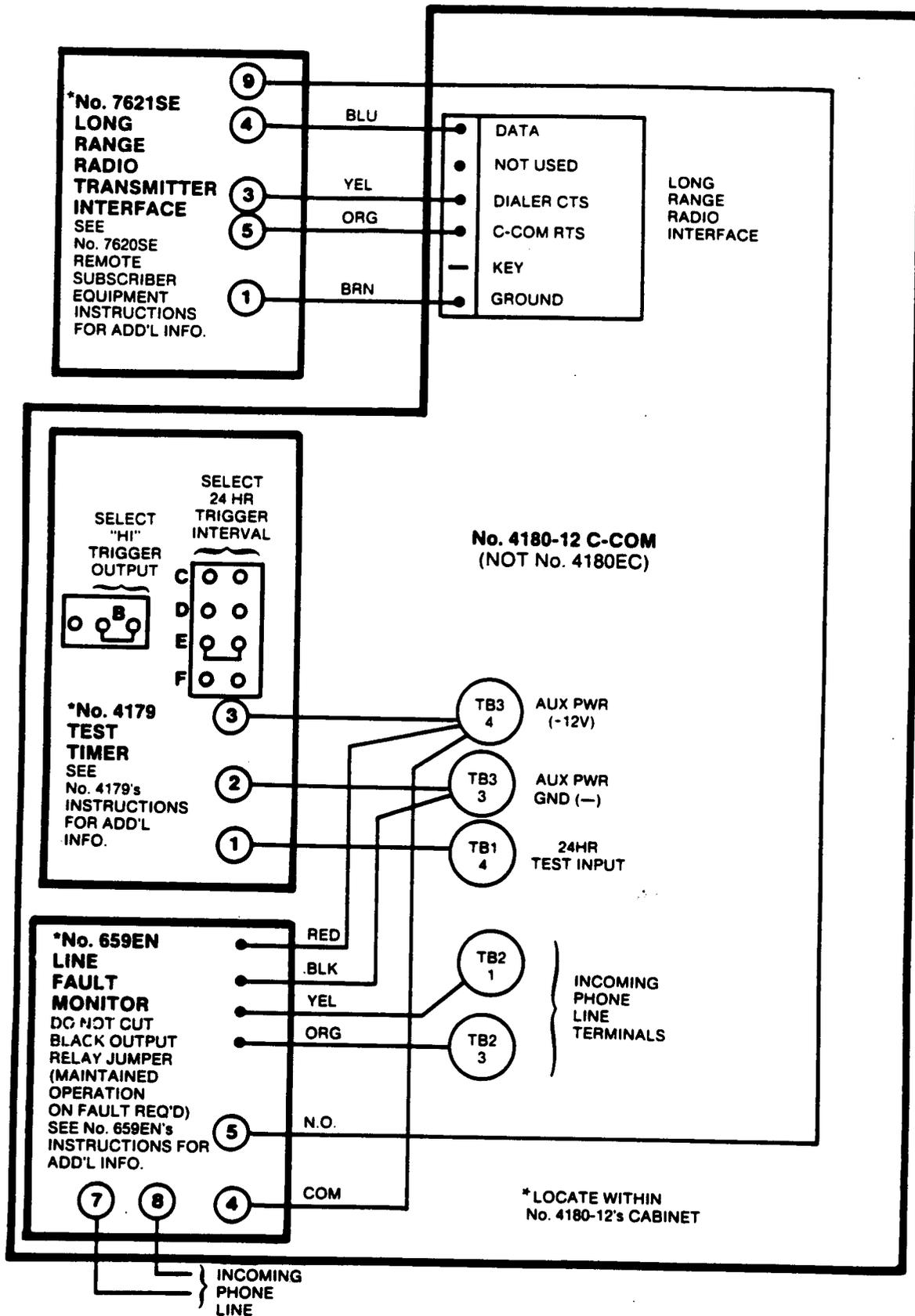


Diagram 13: SUPPLEMENTARY CONNECTIONS FOR GRADE A CENTRAL STATION UL INSTALLATION (USING No. 7621SE LONG RANGE RADIO TRANSMITTER INTERFACE)

TO THE USER

This equipment has been tested to FCC requirements and has been found acceptable for use. The FCC requires the following statement for your information:

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- If using an indoor antenna, have a quality outdoor antenna installed.
- Reorient the receiving antenna until interference is reduced or eliminated.
- Move the receiver away from the control/communicator.
- Plug the control/communicator into a different outlet so that it and the receiver are on different branch circuits.
- Move the antenna leads away from any wire runs for control/communicator.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems."

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4.

In the event of telephone operational problems, disconnect the control/communicator by removing the plug from the RJ31X jack. We recommend your certified installer demonstrate disconnecting the phones on installation of the system. Do not disconnect the phone connection inside the control/communicator. Doing so will result in the loss of your phone lines. If your regular phone works correctly after the control/communicator has been disconnected from the phone lines, the control/communicator has a problem and should be returned for repair. If upon disconnection of the control/communicator, there is still a problem on your line, notify the telephone company that they have a problem and request prompt repair service. The user may not under any circumstances (in or out of warranty) attempt any service or repairs on the system. It must be returned to the factory or an authorized service agency for all repairs.

NOTE: When the system is communicating with the central alarm monitoring service, the phone line is seized and the user phones are disconnected. Under normal circumstances, the phone line seize should only be 1-2 minutes. However line seize could last up to 15 minutes if trouble exists. If this occurs regularly, contact your installer.

WARNING
THE LIMITATIONS OF THIS ALARM SYSTEM

While this system is an advanced design security system, it does not offer guaranteed protection against burglary, fire or other emergency. Any alarm system, whether commercial or residential, is subject to compromise or failure to warn for a variety of reasons. For example:

- Intruders may gain access through unprotected openings or have the technical sophistication to bypass an alarm sensor or disconnect an alarm warning device.
- Intrusion detectors (e.g., passive infrared detectors), smoke detectors, and many other sensing devices will not work without power. Battery operated devices will not work without batteries, with dead batteries, or if the batteries are not put in properly. Devices powered solely by AC will not work if their AC power supply is cut off for any reason, however briefly.
- A user may not be able to reach a panic or emergency button quickly enough.
- While smoke detectors have played a key role in reducing residential fire deaths in the United States, they may not activate or provide early warning for a variety of reasons in as many as 35% of all fires, according to data published by the Federal Emergency Management Agency. Some of the reasons smoke detectors used in conjunction with this System may not work are as follows. Smoke detectors may have been improperly installed and positioned. Smoke detectors may not sense fires that start where smoke cannot reach the detectors, such as in chimneys, in walls, or roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level of a residence or building. A second floor detector, for example, may not sense a first floor or basement fire. Moreover, smoke detectors have sensing limitations. No smoke detector can sense every kind of fire every time. In general, detectors may not always warn about fires caused by carelessness and safety hazards like smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches, or arson. Depending on the nature of the fire and/or the location of the smoke detectors, the detector, even if it operates as anticipated, may not provide sufficient warning to allow all occupants to escape in time to prevent injury or death.
- Alarm warning devices such as sirens, bells or horns may not alert people or wake up sleepers who are located on the other side of closed or partly open doors. If warning devices sound on a different level of the residence from the bedrooms, then they are less likely to waken or alert people inside the bedrooms. Even persons who are awake may not hear the warning if the alarm is muffled by noise from a stereo, radio, air conditioner or other appliances, or by passing traffic. Finally, alarm warning devices, however loud, may not warn hearing-impaired people or waken deep sleepers.
- Telephone lines needed to transmit alarm signals from a premises to a central monitoring station may be out of service or temporarily out of service. Telephone lines are also subject to compromise by sophisticated intruders.
- Even if the system responds to the emergency as intended, however, occupants may have insufficient time to protect themselves from the emergency situation. In the case of a monitored alarm system, authorities may not respond appropriately.
- This equipment, like other electrical devices, is subject to component failure. Even though this equipment is designed to last longer than 10 years, the electronic components could fail at any time.

The most common cause of an alarm system not functioning when an intrusion or fire occurs is inadequate maintenance. This alarm system should be tested weekly to make sure all sensors are working properly.

Installing an alarm system may make one eligible for lower insurance rates, but an alarm system is not a substitute for insurance. Homeowners, property owners and renters should continue to act prudently in protecting themselves and continue to insure their lives and property.

We continue to develop new and improved protection devices. Users of alarm systems owe it to themselves and their loved ones to learn about these developments.

ADEMCO ONE YEAR LIMITED WARRANTY

Alarm Device Manufacturing Company, a Division of Pittway Corporation ("Seller"), 165 Eileen Way, Syosset, New York 11791, warrants its security equipment (the "product") to be free from defects in materials and workmanship for one year from date of original purchase, under normal use and service. Seller's obligation is limited to repairing or replacing, at its option, free of charge for parts, labor, or transportation, any part proven to be defective in materials or workmanship under normal use and service. Seller shall have no obligation under this warranty or otherwise if the product is altered or improperly repaired or serviced by anyone other than the Seller. In case of defect, contact the security professional who installed and maintains your security system or the Seller for product repair.

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ALARM DEVICE MANUFACTURING CO.
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165 Eileen Way, Syosset, New York 11791

N1061-12V2 REV.A 8/88

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