

R A D I O N I C S

Omegalarm D6112 Control/Communicator

Operation and Installation Manual

(including operation and installation instructions, and specifications for the D610, D620, and D630 Command Centers, and the D640 Zone Expansion Center)

Notice

The material and instructions in this manual have been carefully checked for accuracy and are presumed to be reliable. However, Radionics, Inc. assumes no responsibility for inaccuracies and reserves the right to modify and revise this manual without notice.

FCC Notice

This equipment generates and uses radio frequency energy. If not installed in accordance with the manufacturer's instructions, it may cause interference to radio and television reception. It has been type tested and found to comply with the specifications in Subpart J of Part 15 of FCC rules for Class B Computing Devices. If this equipment causes interference to radio or television reception — which can be determined by turning the equipment on and off — the installer is encouraged to correct the interference by one or more of the following measures: 1) Reorient the antenna of the radio/television, 2) Connect the AC transformer to a different outlet so the control panel and radio/television are on different branch circuits, 3) Relocate the control panel with respect to the radio/television.

If necessary, the installer should consult an experienced radio/television technician for additional suggestions, or send for the booklet "How to Identify and Resolve Radio-TV Interference Problems" prepared by the Federal Communications Commission. This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402, stock no. 004-000-00345-4.

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1. General System Description

- 1.1 Control Panel** - The Radionics D6112 Control/Communicator uses eight protective zones to detect and respond to intrusion and other system status conditions. These zones are programmable for a variety of responses, and are compatible with normally-open and/or normally-closed dry contact detection devices. Two zones are two-wire DC powered detection zones: one zone is optimized for glass break detectors and the other zone is optimized for smoke detectors. The two-wire DC powered zones eliminate the need for an interface module between the D6112 and the two-wire detection devices. The two-wire powered zones can also be reset from the command centers. The alarm output of the D6112 can be programmed for steady and pulsed output; individual zones can initiate either response, depending on programming. An auxiliary relay (form C contacts) can be activated during alarm conditions, or the relay can be programmed to activate by entering a combination at a command center.
- 1.2 Communicator** - The Radionics D6112 uses a built-in communicator to transmit reports to a central station receiver. The communicator can be programmed for two different telephone numbers, using two separate reporting formats, and is compatible with most major receivers. The communicator may even be programmed to report two separate account numbers; each account with the ability to report different information using different formats. The D6112 connects to an RJ38X jack for full phone line seizure, and complies with FCC regulations for using the public telephone network.
- 1.3 RFI/Lightning Protection** - The D6112 has been designed and tested to withstand radio frequency interference and high voltage surges common to lightning areas. MOVs protect all input and output connections and several spark gaps provide additional protection.
- 1.4 Programming** - The D6112 is programmed with the Radionics D5100 Bar Code Programmer. The Programmer must contain the 6112:MAIN product handler to enable programming functions for the D6112. (See the *Omegalarm 6112:MAIN Program Entry Guide*.) The D6112 may also be programmed from a central station equipped with the Radionics D9310 Remote Programmer, which permits the central station to reprogram the system, arm the system, request system status, or even troubleshoot the system over the telephone line. Individual zones may be selectively shunted with remote programming, and arm/disarm combinations can be changed without a service call.
- 1.5 Multiple Accounts and Zone Expansion** - With proper programming, the D6112 security system can be divided into two independent security systems: Account #1 and Account #2. Each protective zone in the system is programmed to associate with either Account #1 or Account #2. (NOTE: This function is not suitable for use in UL Certificated burglary alarm systems.) Zones and command centers may be assigned to either account. If a Radionics D6500 Receiver is equipped with the appropriate software compatible with the modem format, a single account can have up to sixteen reporting zones. The combined number of reporting zones is limited to sixteen: if ten zones report to Account #1, only six zones remain to be assigned to Account #2. With a Radionics D6000, sixteen zones can be assigned to a single account, with a maximum of ten reporting zones. The remaining zones must be local zones. Command centers assigned to Account #1 control those zones associated with Account #1, while command centers assigned to Account #2 control those zones associated with Account #2. Account #1 command centers cannot control Account #2 zones, nor can Account #2 command centers control Account #1 zones. Zone expansion devices compatible with the D6112 include the D630 Independent Command Center (three additional zones) and the D640 Zone Expansion Center (six zones).
- 1.6 Command Centers** - The D6112 controlled (burglar) zones are armed and disarmed with Radionics D610 and D620 Command Centers, and the D630 Independent Command Center. Up to four command centers can be installed in one D6112 system. The D620 and D630 are equipped to annunciate up to eight protective zones. Each command center annunciates status for a particular section of the system (depending on which zones are assigned).

2. D6112 Control/Communicator Assembly

- 2.1 Description** - The D6112 is shipped from the factory completely assembled and mounted in its enclosure. The printed circuit assembly (PCA) is mounted in the enclosure with four screws. The transformer, lock, 8 resistors, and battery leads are also included. The D6112 printed circuit assembly may be ordered separately as a **D6112LC**, and can be installed in a **D6103** Enclosure. The **D6112M** includes a mounting skirt for installation in a **D8108A** Attack Resistant Enclosure (available for UL certificated Local, Central Station, and Police Connected burglary alarm applications) or **D8103** Enclosure.

The D6112 is U.L. listed for Central Station Grade A (with a D127 Reversing Relay) Grade B and Grade C Burglary Alarm, Digital Police Connection, Local Grade A Burglary Alarm, Household Fire Alarm, and Household Burglary Alarm applications. At least one D620 or D630 Command Center must be installed with a D6112 for U.L. certification. See "Installation Guide for U.L. Certificated Systems" for more information. The D6112 should be installed in accordance with U.L. 681 Installation and Classification of Mercantile and Bank Burglar Alarm Systems, or U.L.1641 Installation and Classification of Residential Burglar Alarm Systems, and/or NEC 70 article 760 (for fire applications).

2.2 D6112 Enclosure Specifications

Size: 14.25" x 14.25" x 3.00" Color: Light gray.
 Construction: Cold rolled steel. Base 20 gauge. Door 18 gauge.
 Knockouts: Two 1.625" (1 5/8") wiring knockouts in base.
 Eight .875" (7/8") conduit knockouts in sides.
 Knockout for enclosure lock. One keypad knockout on enclosure door.
 Keypads: Flush mount the D610 Command Center or surface mount the D620/D630 Command Center (ordered separately).

Tamper switch (part #D110) ordered separately.

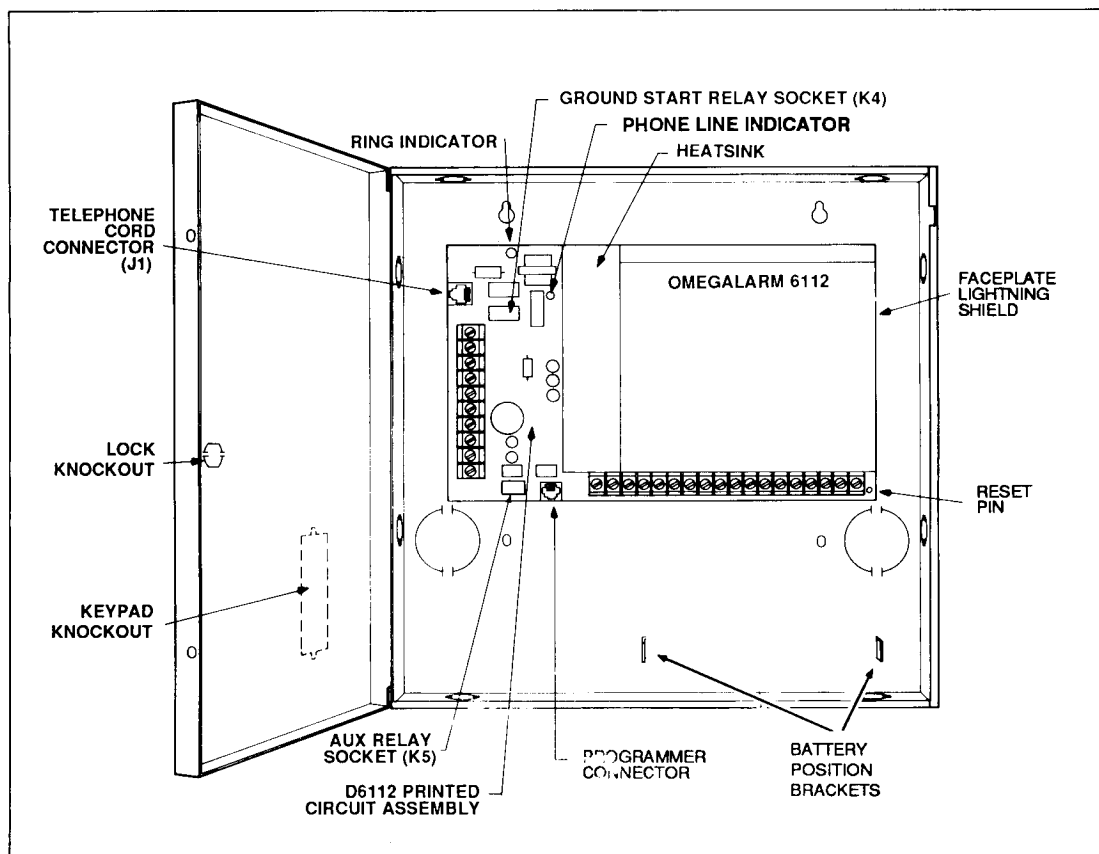


Figure 1: D6112 CONTROL/COMMUNICATOR ASSEMBLY

- 2.3 **Faceplate** - The D6112 faceplate is mounted on the printed circuit board, and contains short descriptions of each terminal. Figure 2 displays a typical installation of the D6112 and accessories.
- 2.4 **Reset Pin** - The D6112 reset pin is located in the lower right hand corner of the printed circuit assembly, to the right of the horizontal terminal strip (see Figure 1). Momentarily connect this pin to terminal 27 to reset the Control/Communicator. NOTE: Some versions of the D6112 contain a *momentary reset button* instead of a reset pin. Press this button to reset the D6112.
- 2.5 **Phone Line Indicator** - The red LED on the printed circuit board remains illuminated during normal operation of the D6112. The LED is off when D6112 is communicating on the phone line or a program is being uploaded from or downloaded to the Control/Communicator from the Radionics D9310 Remote Programmer.
- 2.6 **Ring Indicator** - The neon light on the printed circuit board flickers when the D6112 detects incoming ringing voltage.

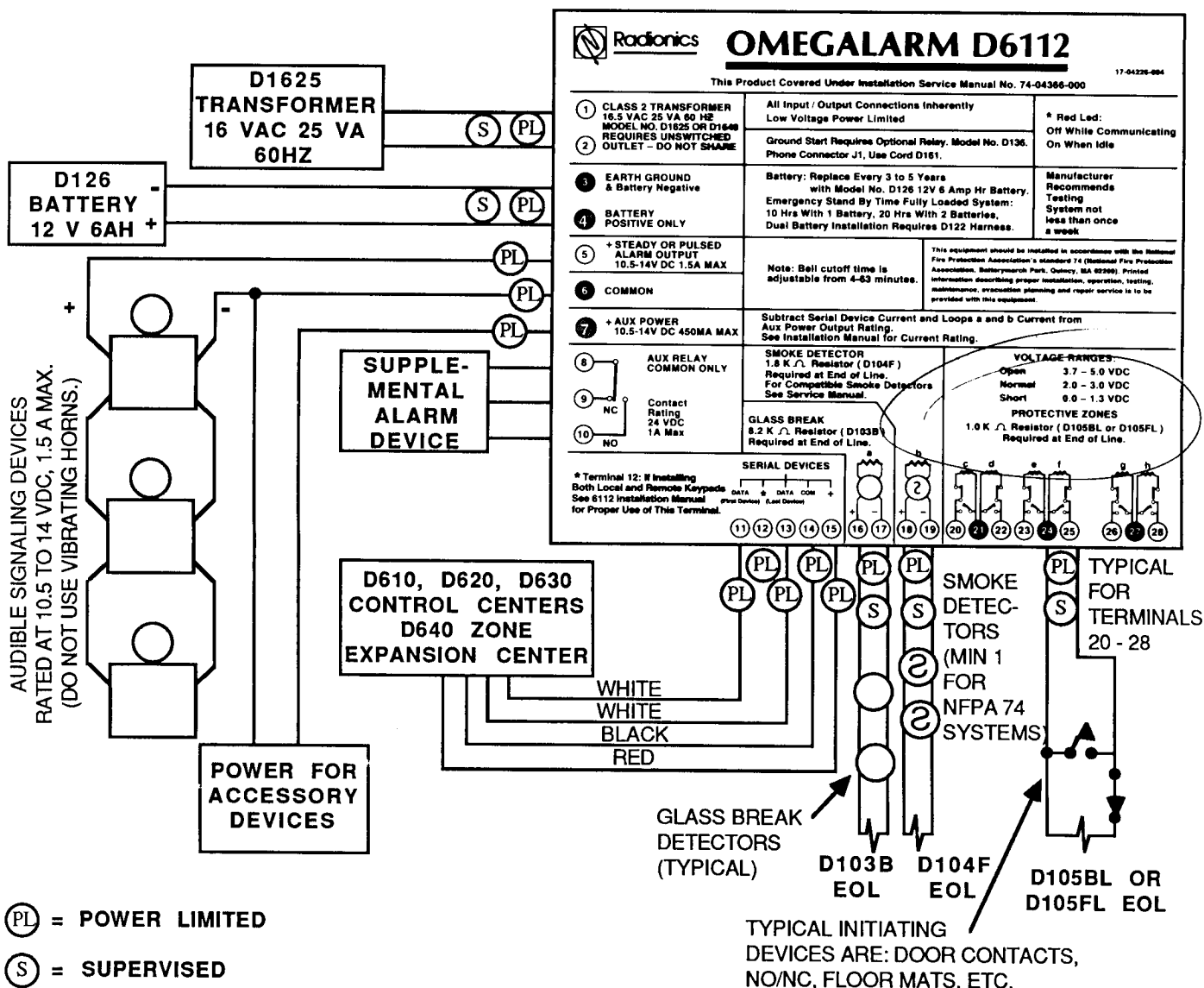


Figure 2: TYPICAL D6112 SYSTEM INSTALLATION

2.5 Installation Checklist - The following steps serve as an outline for installing components in the D6112 security system. For detailed information on each installation procedure, refer to the sections indicated.

- 1 Permanently mount the D6112 within the protected installation site.
- 2 Earth ground the D6112 at terminal 3 (see section 4 "Secondary Power Supply and Charging Circuit").*
- 3 Connect alarm signalling devices to terminals 5 and 6 (see section 5 "Alarm Power Output").
- 4 Connect auxiliary devices to terminals 7 and 6 (see section 6 "Auxiliary Power Supply").
- 5 Connect devices to the auxiliary relay output, terminals 8, 9, and 10. A plug-in relay (#D136) must be obtained to use this option (see section 7 "Auxiliary Relay Connections").
- 6 Install the serial devices (command centers and zone expanders), using terminals 11 through 15. See section 8 "Serial Data Devices", section 14 through 17 for installation instructions.
- 7 Connect protective loops to terminals 16 and 17 (see section 9 "Glass Break Detector Zone Input"), terminals 18 and 19 (see section 10 "Smoke Detector Zone Input"), and terminals 20 through 28 (see section 11 "Protective Zone Inputs"). Install detectors on the protective loops. Install the appropriate end-of-line resistor on the end of each protective loop.
- 8 Connect the transformer to terminals 1 and 2. Plug the transformer into a 110-120 VAC 60 Hz unswitched commercial power outlet (see section 3 "Primary Power Supply").
- 9 Connect a wire from D6112 terminal 3 to the negative (black) terminal of a 12V 6 Amp-hour battery. Connect a wire from D6112 terminal 4 to the positive (red) terminal of the battery (see section 4 "Secondary Power Supply and Charging Circuit").

*NOTE: It may take as long as 12 hours to charge the battery. The battery should be charged prior to installation, or it can be connected at the beginning of installation, so that it can charge while the installation procedure is completed.

3. Primary Power Supply (AC Transformer)

Terminals

① ②

3.1 Transformer - The D6112 Control/Communicator is powered by a 16.5 VAC 25 VA transformer (Radionics model #D1625). The transformer is included with the D6112. Connect the transformer to a 120 VAC 60 Hz commercial power outlet not controlled by a wall switch. Use 18 AWG cable (maximum length 50 ft.) to connect the transformer to the control/communicator.

NOTE: Never share the transformer with other equipment! A foreign ground on the AC input will damage the Omegalarm power circuit.

3.2 Primary Power Circuit - The primary power circuit is protected from voltage surges by MOV's and spark gaps. If primary power (AC) is lost the D6112 switches immediately to secondary power.

4. Secondary Power Supply and Charging Circuit

Terminals

3

4

4.1 Battery - A 12 VDC 6 AH sealed lead-acid rechargeable battery (Radionics model #D126) supplies power for the system during interruptions in primary (AC) power. A second battery can be added to the system (using the D122 Dual Battery Harness) to increase the standby time. *However, if the batteries discharge down to 12V, it may take up to 48 hours to recharge the batteries up to full capacity (13.6V).* DO NOT SUBSTITUTE ANY OTHER TYPE OF BATTERY IN THIS CIRCUIT! The D6112 charging circuit is calibrated only for lead-acid type batteries.

IMPORTANT: The D6112 system must be earth grounded using terminal 3!

4.2 Installation - Install the battery in an upright position at the base of the enclosure (in battery location) and connect the negative side to terminal 3 (black lead), the positive side to terminal 4 (red lead).

4.3 Replacement - Manufacturer recommends BATTERY REPLACEMENT EVERY 3 TO 5 YEARS under normal use. Do not exceed the maximum auxiliary and bell voltage output ratings or install the transformer in an outlet that is routinely switched off. This causes heavy discharges of the battery and will cause premature failure.

4.4 Battery Charging Circuit - The D6112 charges the battery with a trickle charge circuit. Charging voltage is 13.6 VDC at a maximum current of 700mA. (Actual current lower due to auxiliary power draw.)

4.5 Battery Supervision - During an AC power loss, the battery supplies all power to the security system. In doing so the battery slowly discharges. When the battery voltage drops below 12 volts, the Control/Communicator, if programmed, sends a TROUBLE report to the central station receiver(s).

4.6 Bell Disable - During an extended AC power outage, when the battery charge drops below 10.5 volts, the bell output voltage is disabled. This protects the battery from being damaged by deep discharge. When AC power is again restored the bell output voltage is enabled. See battery schedule below. *The Auxiliary power remains enabled during bell disable.*

Battery Discharge/Recharge Schedule

Discharge Cycle	Recharge Cycle
13.6 volts - Battery charged	AC power "on" - Bell output enabled
12.0 volts - Trouble report	10.5 volts - Loop b (terminals 18 & 19) restoral report (if programmed)
10.5 volts- Disable bell output	13.1 volts - Restoral report
10.4 volts - Loop b (terminals 18 & 19) trouble report (if programmed)	13.6 volts - Battery charged

5. Alarm Power Output

Terminals

5

6

5.1 Steady/Pulsed Alarm Output - Terminal 5 supplies positive (+) 10.5 to 14 VDC at 1.5 Amps maximum current for alarm signaling devices. This output may be steady or pulsed voltage depending on the zone code programming. Terminal 6 is the ground (-) reference for the circuit.

The alarm power output circuit is protected against shorts with a self-resetting thermal circuit breaker. To reduce noise problems, avoid installing alarm output cables near D6112 serial data lines or Telco lines. Compatible bells for this output include Radionics models M801, M802, M803, and M806, and Amseco models MSB-6B-PC4, MSB-8B-PC4, MSB-10B-PC4, and MSG-10G-12. Radionics does not recommend the use of vibrating horns with the D6112 Control/Communicator.

6. Auxiliary Power Supply

Terminals

7 6

- 6.1 **Auxiliary Power** - Terminal 7 supplies positive (+) 10.5 to 14 VDC at 450 mA continuous current to power auxiliary devices. Terminal 6 is the ground (-) reference for the circuit. To determine the maximum power available for auxiliary devices, subtract the total keypad current from the auxiliary current (450 mA). Detectors powered from this output must operate over a range of 10 to 14 VDC. A supervised self-resetting thermal circuit breaker protects this circuit and the bell output against shorts. When a sustained short is applied to Aux Power, a TROUBLE ZONE 9 report (if programmed) is sent to the central station.

7. Auxiliary Relay Connections

Terminals

8 9 10

- 7.1 **Auxiliary Relay** - The auxiliary relay output is a form C dry contact relay rated at 1 ampere maximum current at 24 VDC. Terminal 8 is the common of the relay, terminal 9 is normally-closed and terminal 10 is normally-open.

The relay can be activated (reverse state) by an alarm condition (individual zones may be programmed to activate relay) or it may be programmed to momentarily activate by entering a combination at a command center. When activated, terminals 8 and 10 have continuity. When in a normal state, terminals 8 and 9 have continuity. Consult the *D6112:MAIN Program Entry Guide* for programming details.

NOTE: The auxiliary relay is an optional plug-in relay (model #D136), and it is *not* included with the control/communicator. The relay must be installed into socket K5 as shown in Figure 3. The plug-in relay has two legs on one side and three legs on the other side. When inserting the relay, always ensure that the three leg side is facing upwards and the two leg side is facing down.

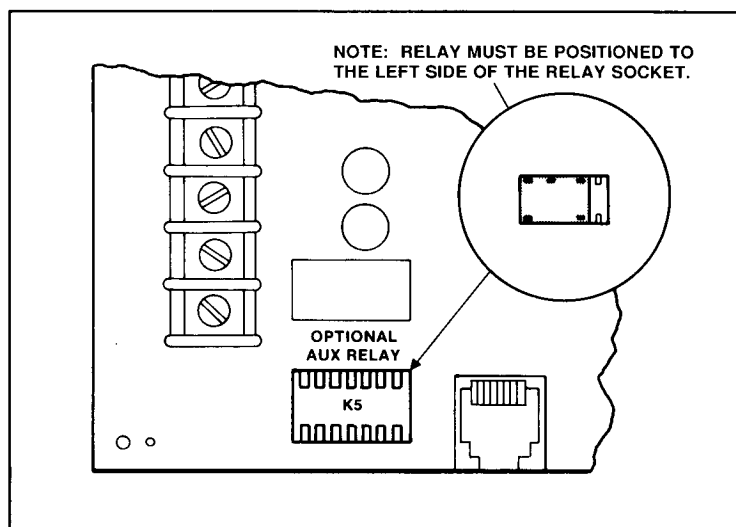


Figure 3: OPTIONAL AUX RELAY INSERTION

8. Serial Data Input

Terminals

11 12 13 14 15

- 8.1 **Serial Data Devices** - Terminals 11 through 15 are the Serial Data terminals which connect command centers and zone expanders to the D6112. The D6112 security system can be enhanced with a maximum of four serial data devices: any combination of the D610 Command Center, the D620 Command Center, the D630 Independent Command Center, and the D640 Zone Expansion Center. A four-conductor cable is used to interface all command centers and zone expansion devices. This cable is connected to the D6112 serial data terminals. Detailed descriptions of each device and system configuration are provided in sections 15, 16, and 17.

9. Glass Break Detector Zone Input

Terminals **16** **17**

- 9.1 Glass Break Zone** - This fully-programmable two-wire powered zone input is optimized for interfacing glass break detectors to the D6112. Other types of detectors can also be connected to these terminals. This zone input is supervised with an 8.2K ohm end-of-line resistor: Radionics model D103B (for UL listed applications - one supplied with the D6112). Terminal 16 supplies positive (+) 10.5 to 14 VDC to the detection devices. Terminal 17, the loop return (-) for the circuit, is isolated from earth ground. *If terminal 17 is erroneously connected to earth ground (terminal 3) or another circuit common (terminals 6,19,21,24,27), the glass break loop will not operate.* The glass break detector zone can be reset (voltage to detectors interrupted) from a command center if the D6112 is programmed for this function. (Consult the *6112:MAIN Program Entry Guide*.)

Up to 10 glass break detectors (IEI model #725L required for U.L. certificated installations) may be connected to the glass break zone input. Other types of detectors connected to this zone must be specified to operate with 10.5 to 14 VDC and an 8.2k ohm end-of-line resistor, and be electrically evaluated for compatibility with the D6112.

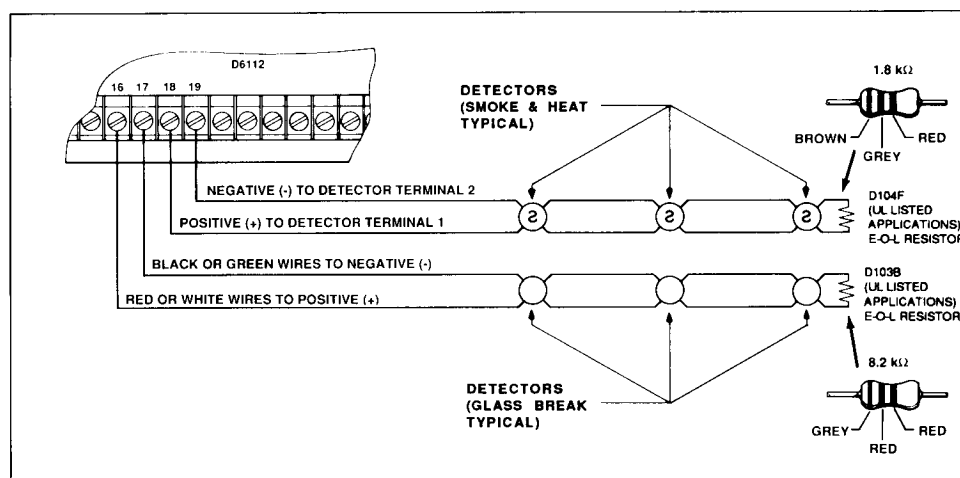


Figure 4: GLASS BREAK AND SMOKE DETECTOR ZONE WIRING

10. Smoke Detector Zone Input

Terminals **18** **19**

- 10.1 Smoke Detector Zone** - This fully-programmable two-wire powered zone input is optimized for interfacing smoke and heat detectors to the D6112. Other types of detectors can be connected to these terminals. This zone input is supervised with a 1.8K ohm end-of-line resistor: Radionics model D104F (for UL listed applications - one supplied with the D6112). Terminal 18 supplies positive (+) 10.5 to 14 VDC to the detection devices. Terminal 19, the loop return (-) for the circuit, is isolated from earth ground. *If terminal 19 is erroneously connected to earth ground (terminal 3) or another circuit common (terminals 6,17,21,24,27) the smoke detector loop will not operate.* The smoke detector zone can be reset (voltage to detectors interrupted) from a command center if the D6112 is programmed for this function. (Consult the *D6112:MAIN Program Entry Guide*.)

Up to 10 smoke and heat detectors (ESL Model #425C or #425CT required for U.L. and NFPA certificated installations) and an unlimited number of heat detectors may be connected to this zone input. Other types of detectors connected to this zone must be specified to operate with 10.5 to 14 VDC and a 1.8k ohm end-of-line resistor, and be electrically evaluated for compatibility with the D6112. NOTE: Smoke and heat detectors cannot be combined with other types of detection devices on this zone.

Zone Supervision - During an AC power loss, the battery supplies all power to the security system. In doing so the battery slowly discharges. When the battery voltage drops below 10.4 volts, the fire alarm circuit is no longer effective, and the Control/Communicator sends a TROUBLE ZONE report (as programmed) to the central station receiver. When the battery voltage rises above 10.5 volts, a RESTORAL ZONE report (as programmed) will be sent to the central station receiver.

11. Protective Zone Inputs

Terminals



11.1 Description - The D6112 has six additional programmable protective zone inputs (loops c,d,e,f,g, and h). Each zone functions independently and does not interfere with the operation of the others. When wiring these zone inputs, a 1000 ohm end-of-line resistor is required at the far end of each loop to provide a reference for supervision. Use Radionics model D105BL (for UL listed burglar applications; six supplied with the D6112) or D105F (for UL listed fire applications). Dry contact sensing devices may be connected to any of these zone inputs in series (normally-closed), in parallel (normally-open), or in a combination of series and parallel.

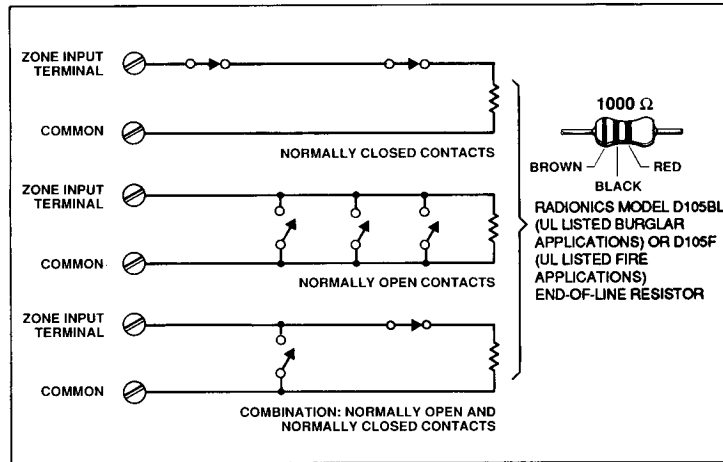


Figure 5: PROTECTIVE ZONE WIRING GUIDE

11.2 Protective Zone Parameters - Each D6112 protective zone is programmed to respond to different electrical conditions (i.e. open, shorted, and normal circuits). To determine the electrical condition of any zone, use a voltmeter to measure the voltage across the zone input terminal connections. The loops must be connected, and the D6112 must be powered up.

Electrical Condition	Voltmeter Reading (measured zone input voltage)
Open	3.7 - 5.0 VDC
Normal	2.0 - 3.0 VDC
Shorted	0.0 - 1.3 VDC

11.3 Loop Response Time - The D6112 checks protective zones every 100 milliseconds. A zone must be in an abnormal condition on two successive checks to be recognized as a faulted zone. (This precaution reduces false alarms.) Loop response time is rated between 100 and 200 milliseconds.

12. Telephone Connections

- 12.1 Registration** - The Radionics D6112 Control/Communicator is registered with the Federal Communications Commission under part 68, for connection to the public telephone network using an RJ38X jack installed by your local telephone company.

FCC Registration Number: AJ996H-15715-AL-E

Ringer Equivalence: 0.1B

- 12.2 Location** - To prevent jamming of alarm and other signals, the RJ38X jack must be wired and located within the system so that normal phone use is temporarily interrupted while the communicator transmits data (see Figure 6). After installation, confirm that the communicator seizes the line, acquires dial tone, and reports correctly to the central station.

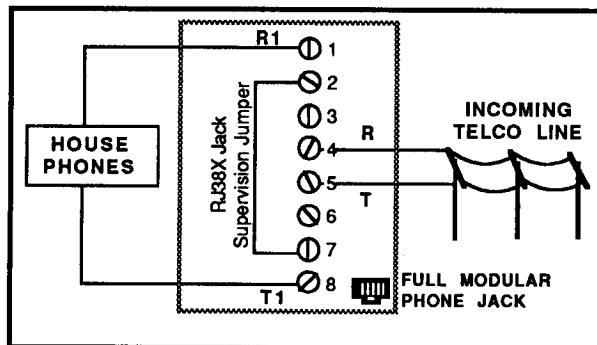


Figure 6: RJ38X WIRING

- 12.3 Notification** - Registered equipment may NOT be connected to party lines or coin operated telephones. If the local telephone company requests notification before the communicator is connected to the telephone network, the following information should be supplied: 1) the particular line to which service is to be connected, 2) the make, model and serial number of the device, and 3) the FCC registration number and ringer equivalence. NOTE: If the telephone company makes changes in its communications facilities, equipment, operations, or procedures which may affect the performance of the communicator, the phone company is obligated to notify the user in writing.
- 12.4 Telephone Cord Connection** - Connect one end of the D161 Telephone Jack Interface Cord to the D6112 TelCo Cord Connector (J1, located on the top left corner of the D6112) and the other end to an RJ38X phone jack. NOTE: To ensure proper operation when using this equipment on ground start telephone lines in Canada, use a Radionics model D163 Telephone Jack Interface Cord.
- 12.5 Ground Start Systems** - Some telephone systems require a momentary ground to initiate dial tone. To interface with a ground start system, a plug-in relay (Radionics model #D136) must be installed into socket K4 as shown in Figure 7. NOTE: The plug-in relay has two legs on one side and three legs on the other side. When inserting the relay, always ensure that the three leg side is facing upwards and the two leg side is facing down.

IMPORTANT: The D6112 Control/Communicator must be connected to an earth ground reference for the ground start system to function correctly. Use terminal 3 of the D6112 for earth ground reference.

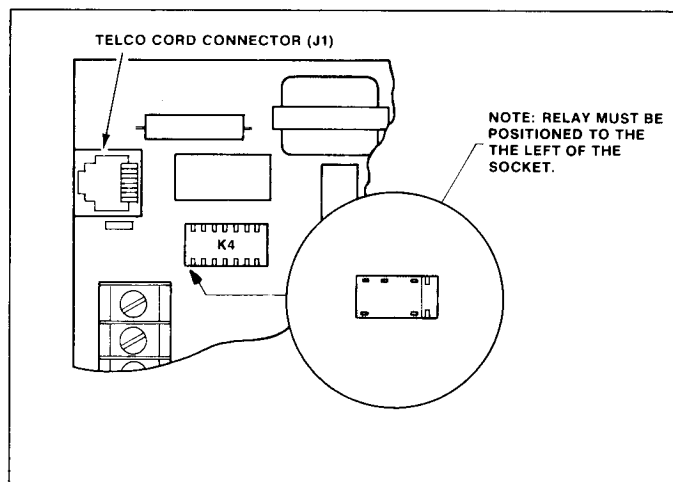


Figure 7: GROUND START RELAY INSERTION

13. Programmer Connector

- 13.1 Programmer Connection** - The Radionics D5100 Bar Code Programmer is connected to the D6112 Control/Communicator for programming the D6112. This connection is made at the Programmer Connector (J2) located on the bottom left corner of the D6112. For more details about programming the D6112 Control/Communicator, consult the *D6112:MAIN Program Entry Guide*. **NOTE:** While the D6112 Control/Communicator is addressing the Programmer, all control, detection and transmitting functions of the system are inoperable.

14. Accessory Serial Devices

- 14.1 Description** - Several *serial devices* are available for the D6112 security system. The D610, D620, and D630 are *Command Centers*, which are used for arming and disarming functions. The D630 also has *zone expansion* capability, which allows the user to supervise three zones in addition to those provided on the D6112. The D640 is a *Zone Expansion Center* for the connection of up to six additional zones. A maximum of four command centers (in any combination), or three command centers and one D640, can be connected to a D6112. A four-conductor cable is used to interface all command centers and zone expansion devices with the D6112.

The D6112 Control/Communicator can be programmed with two accounts, allowing the security system to be split into two independent systems (referred to as Account #1 and Account #2). Each device connected to the serial data cable is assigned, in programming, to one of these accounts (see the *6112:MAIN Program Entry Guide* for details.)

- 14.2 D610/D620/D630 Command Centers** - All command centers have a CMD or COMMAND key, an ENT (ENTER) key, and number keys from 0 to 9. These twelve keys (backlighted on the D620 and D630) are used to enter combinations and command functions into the D6112 Control/Communicator. Each Command Center can hold up to four key entries from its keypad in its storage area (known as a buffer). All key entries stored in the buffer are transmitted to the D6112 every half second for processing. As each key is touched the command center emits a short beep to indicate that the buffer has stored the entry. When a combination is completed, the ENT key must be pressed to enter the combination. If the ENT key is not pressed the combination is ignored by the D6112 Control/Communicator. *The ENT key is not required to enter COMMAND key functions.* The D6112 Control/Communicator has a *time window* for accepting key entries. After one key is pressed, the next key in the combination must be pressed within five seconds. After five seconds have expired from the last key entry, the entire entry is cleared and the combination must be restarted.
- 14.3 The Function Keys** - The D620 and D630 Command Centers have three programmable function keys labeled A, B, and C. Each key can be programmed to perform any command function of the D6112 Control/Communicator. This enables the user to press one button to perform command functions instead of memorizing the command combination. For complete details concerning the programming of the function keys, see the *6112:MAIN Program Entry Guide*.
- 14.4 Response Tones** - All three command centers contain a sounder used to annunciate several system conditions and account conditions. The response tones for each of these stations are as follows:

Entrance Warning - The command center beeps during the entry delay period to remind the user to disarm the security system. This is a programmable function of the D6112.

Keystroke Entry - As each key is touched the command center emits a short beep to indicate that the entry has been stored in the command center buffer.

Faulted Zone Protest - Protective zones may be programmed to sound the account command center buzzer for two seconds *after* an arming command is entered, to indicate that a zone is faulted.

Watch Tone - The command center sounder emits a short beep when a perimeter zone is faulted during the perimeter watch mode.

Service Tone - Some zones may be programmed to sound a service tone when they are faulted. To silence the sounder enter an arm/disarm combination for that account or enter COMMAND 4.

NOTE: Some zones, such as fire zones, may be programmed so that the sounder cannot be silenced until the zone fault is corrected (*see the D6112:MAIN Program Entry Guide*).

Telephone Trouble - When the phone line is disconnected or the system fails to report, the control station beeps until the situation is corrected or a combination or COMMAND 4 is entered.

14.5 **Wiring the Serial Devices** - The cable used to connect the serial devices (command centers and zone expanders) to the D6112 can run no longer than 1000 feet when using 22AWG. The wire run between serial devices can be no more than 300 feet. Figure 8 depicts a typical installation using one D620 Command Center. Figure 9 illustrates an installation with four remote devices using return loop wiring techniques. Figures 10a and 10b illustrate installations with four devices connected to the Control/Communicator. Figure 10a displays one command center installed near the Control/Communicator and three devices installed in remote locations. Figure 10b illustrates an installation with all four devices installed in remote locations.

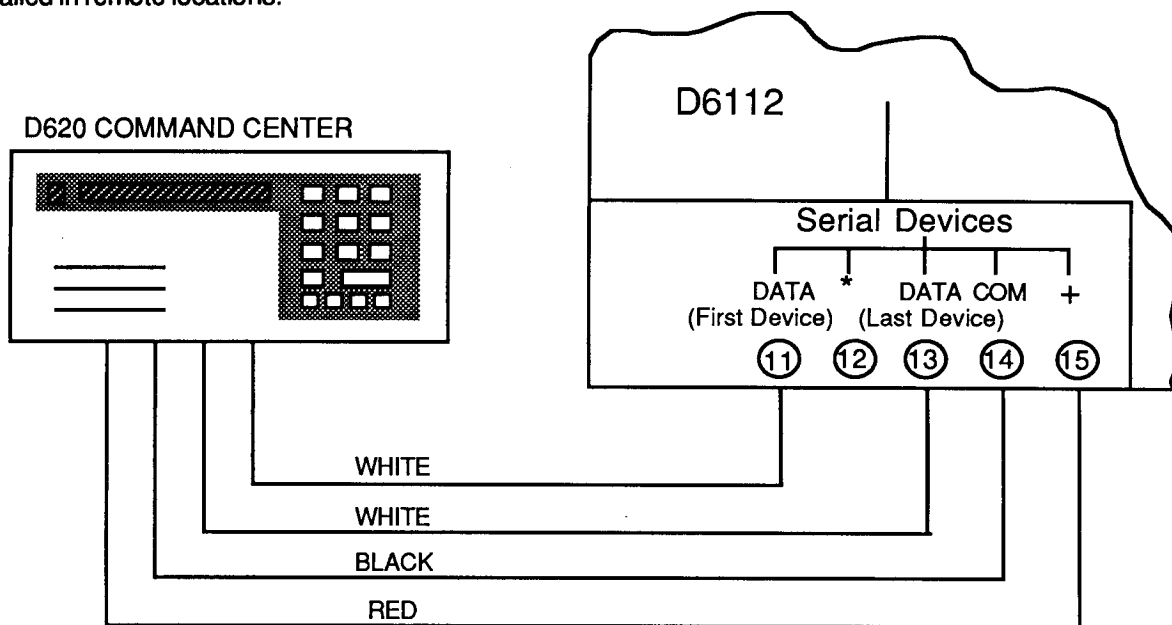


Figure 8: SINGLE DEVICE

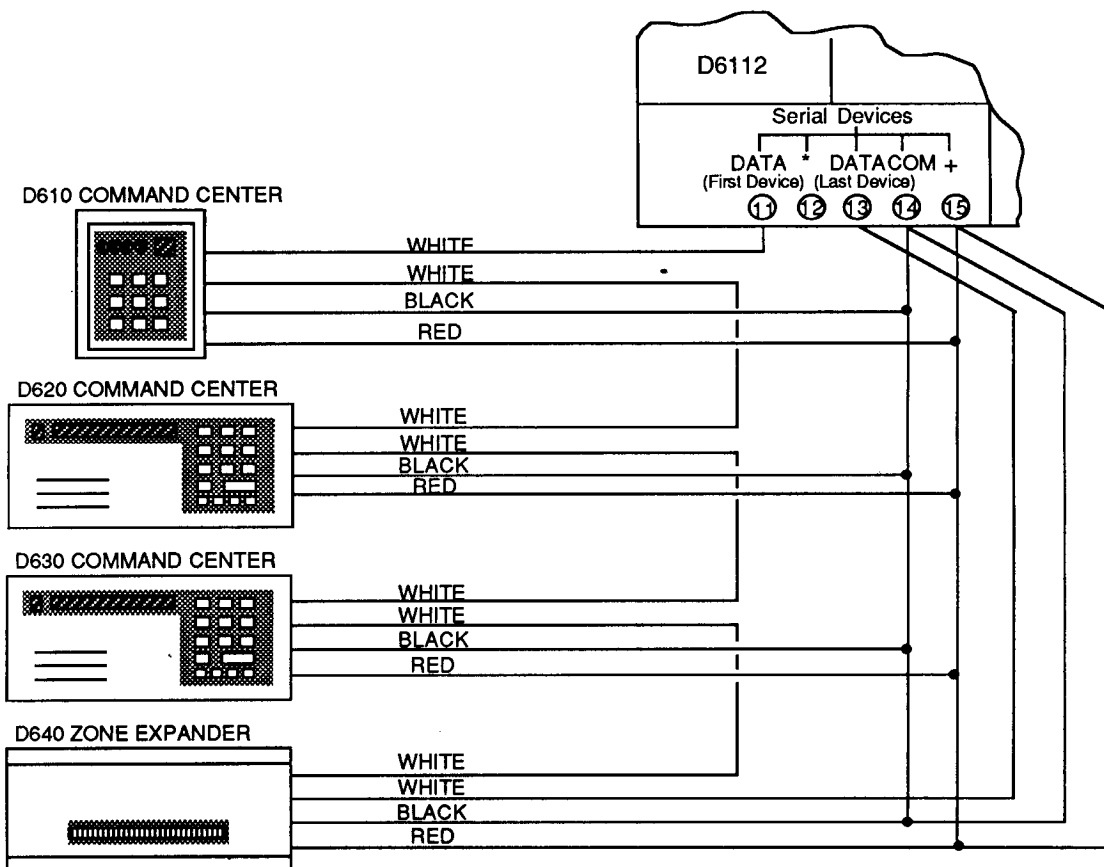


Figure 9: RETURN LOOP WIRING

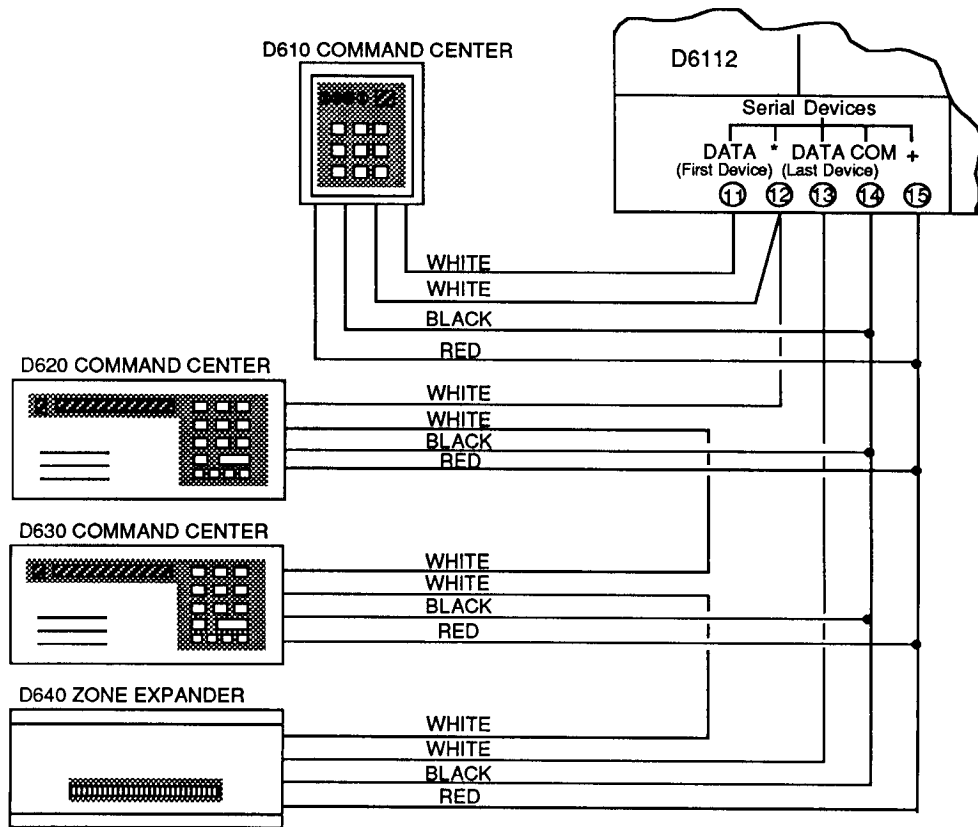


Figure 10a: FOUR DEVICES (ONE LOCAL)

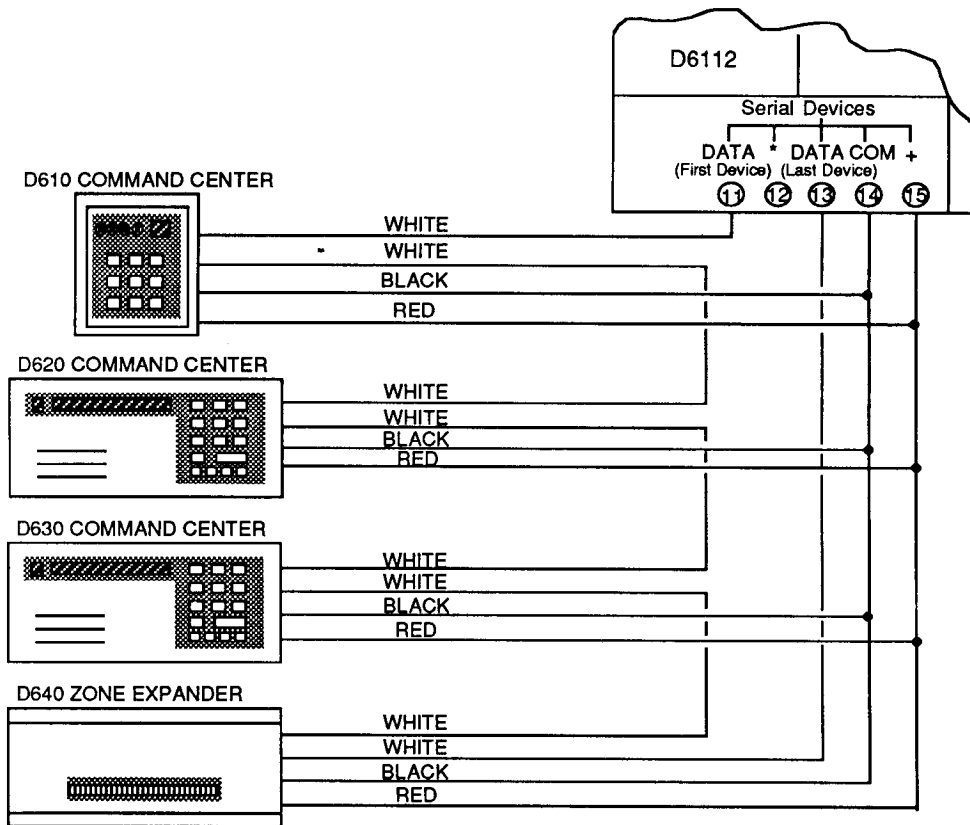


Figure 10b: FOUR DEVICES (ALL REMOTE)

15. The D610 Command Center

The Radionics D610 Command Center is a four-wire, single-gang flushmount arming station for the D6112 Control/Communicator. All power and data required for the D610 operation is provided by a properly programmed Radionics D6112 Control/Communicator.

15.1 The Display Panel - The display panel for the D610 Command Center annunciates two different types of activity: account arm/disarm status and zone status summary.

Account Status: Account status shows the armed condition of the account to which the D610 Command Center has been assigned. (Command centers are assigned to accounts in the 6112:MAIN program.) There are three different indicators to show the account armed status.

Perimeter - When this indicator is lighted the account perimeter zone(s) are armed. During exit delay time, this indicator flashes slowly.

Interior - When this indicator is lighted the account's interior zone(s) are armed. During exit delay time, this indicator flashes slowly.

Instant - When this indicator is lighted the account is armed without entry/exit delay time. When the account is armed and this indicator is *not* lighted, entry/exit delay time is enabled if programmed.

Zone Status Summary: This is a zone status indicator for the account to which the D610 Command Center has been assigned. All the zones assigned to the D610 account are annunciated with the status indicator. If any controlled zones are faulted, the status indicator is not lighted. When all the controlled zones are normal, the status indicator is lighted.

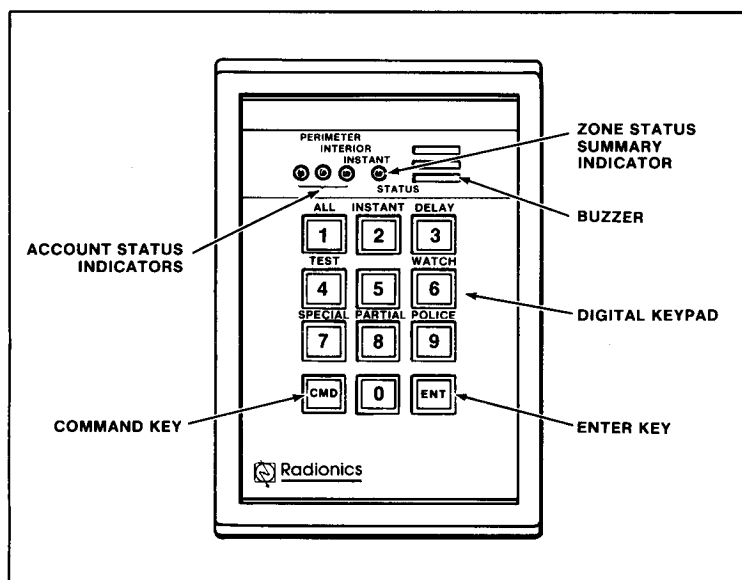


Figure 11: D610 COMMAND CENTER

15.2 Installing the D610 Command Center - The D610 Command Center is shipped with a faceplate, a backbox/ circuit assembly, a four - conductor cable, two mounting screws, two collapsible clips, and two wall mounting plates. The command center can be mounted to the D6112 enclosure, or can be installed flush to the wall surface. The D610 can also be installed into a single-gang wall box, if desired. Follow the mounting directions provided on the next page.

IMPORTANT: Do not mount the D610 in a location exposed to direct sunlight. Direct sunlight will make the display less visible, and may damage the D610 electrical components.

Wall Mounting the D610 Command Center

1. To install the D610 flush with the wall surface, an opening must be made in the wall. The dimensions of the D610 backbox are 1.80" W x 2.75" H x 1.80" D. Make an opening in the wall 2" wide x 3.25" high.
2. Route the four-conductor cable through the wiring opening in the backbox and plug into the four-pin connector on the circuit board. Connect the cable as described in section 14.5 of this manual.
3. If installing the Command Center into a single-gang wall box, see step 3a. If installing without single-gang wall box, see step 3b.
- 3a. Insert the D610 into the wall opening and attach to single-gang wall box with screws provided. Go to step 5.
- 3b. Insert screws (#6 x 2" screws supplied with the unit) into mounting holes. Place wall mounting plate on backbox, aligning with the screw, and slide a collapsible clip over screw. Tighten each screw until firm. Do NOT tighten screws enough to bend collapsible clips.
4. Insert the D610 assembly into the wall opening. Tighten each screw firmly.
5. Position the faceplate over the assembly, hook it over the top and gently push the bottom of the plate until it snaps into place.

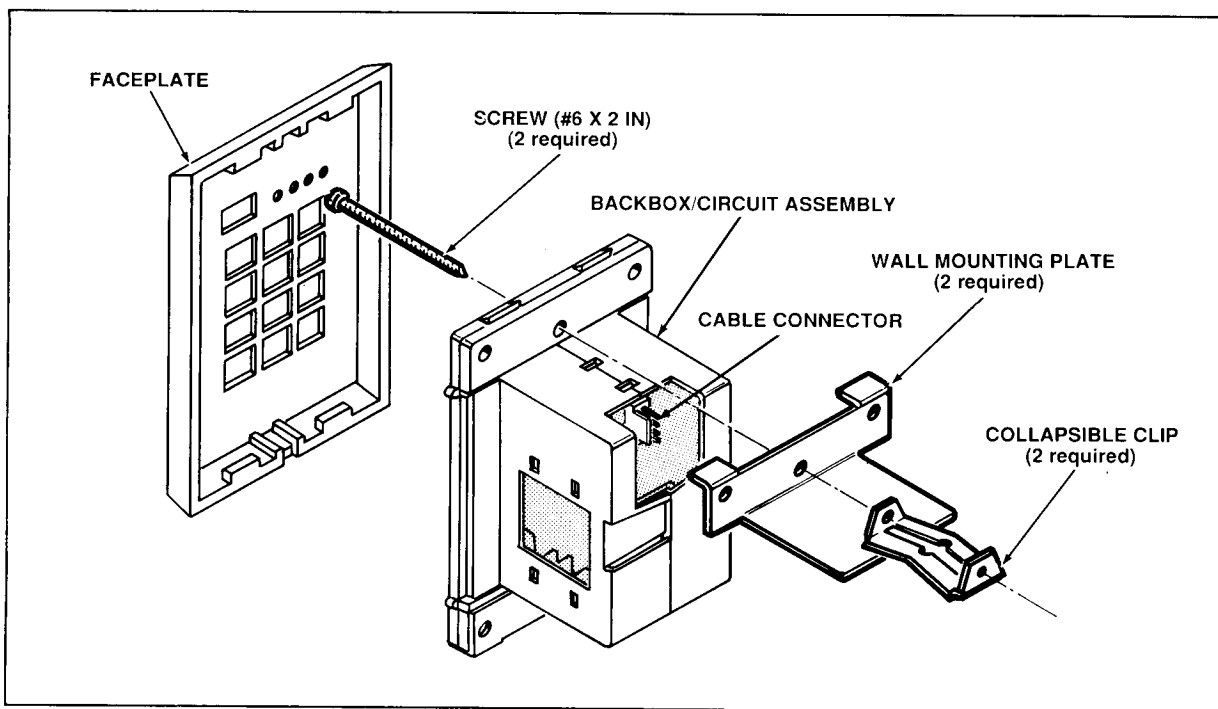


Figure 12: WALL MOUNTING THE D610

Mounting the D610 to the D6112 Enclosure

1. Remove the keypad knockout on the door of the D6112 enclosure. (See figure 1 for knockout location).
2. Mount the D610 Command Center using two #6-32 x 3/8" screws and two #6-32 hex nuts (not included).
3. Position the faceplate over the assembly, hook it over the top and gently push the bottom of the plate until it snaps into place.
4. Route the four color-coded flying leads through the wiring opening in the backbox and plug into the four-pin connector on the circuit board. Connect wiring to flying leads as described in section 14.5 of this manual.
5. Ensure that the battery for the D6112 is properly located before closing the door of the enclosure.

16. The D620 and D630 Command Centers

Both the D620 Command Center and the D630 Independent Command Center are low profile surface mount units which are identical in appearance. Both units are four wire devices; the difference between these two Command Centers is that the D620 is a command center only and the D630 is a command center with a built-in zone expander. This section describes features common to both command centers, while section 16.4 describes the D630 Independent Command Center zone expansion.

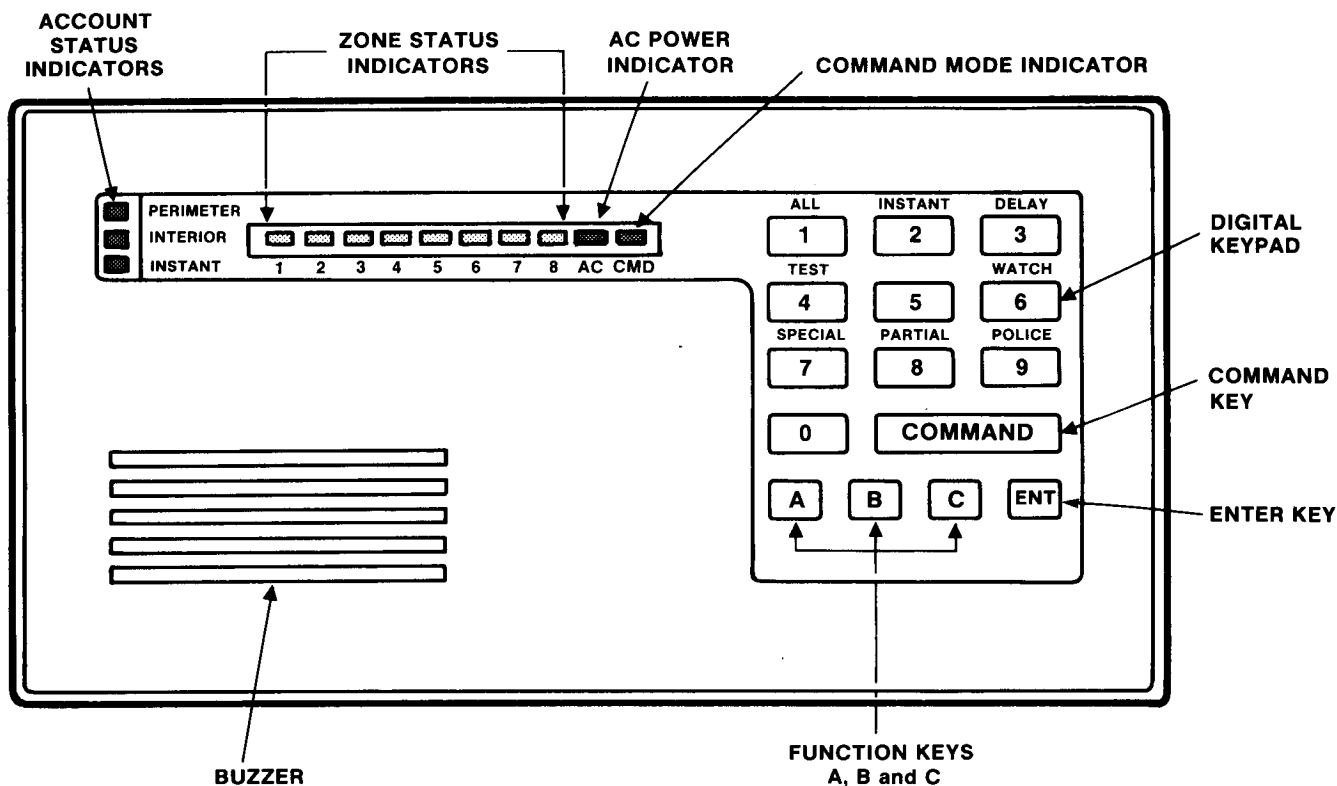


Figure 13: D620/D630 COMMAND CENTERS

16.1 The Display Panel The display panel for the D620/D630 Command Centers announce four different types of status: account, zone, AC power, and command mode.

Account Status: Account status shows the armed condition of the account to which the command center has been assigned. (Command centers are assigned to accounts in the 6112:MAIN program.) There are three different indicators to show the account armed status.

Perimeter - When this indicator is lighted, the account perimeter zone(s) are armed. During exit delay time, this indicator flashes slowly.

Interior - When this indicator is lighted, the account interior zone(s) are armed. During exit delay time, this indicator flashes slowly.

Instant - When this indicator is lighted, the account is armed without entry/exit delay time. When the account is armed and this indicator is *not* lighted, entry/exit delay time is enabled if programmed.

Zone Status: Eight numbered indicator lights are used to announce the condition of the account protective zones.

Zone Fault - While a zone is faulted, its indicator lights steadily. When the zone is restored to normal, the indicator goes "off".

Zone Alarm Memory - A zone alarm memory condition causes the indicator light to flash "on" and "off" *rapidly*. The indicator continues to flash rapidly until the system is next armed or COMMAND 4 is entered.

Shunted Zone - When a zone is shunted, the zone's indicator flashes "on" and "off" *slowly*. The indicator continues to flash slowly until the system is disarmed.

NOTE: The D6112 protective zones may be programmed invisible. When programmed invisible, the status of that zone is not displayed for alarm conditions.

AC Power Indicator: The AC indicator is lighted while the system is operating on AC power. The AC indicator flashes "on" and "off" when the system is NOT operating on AC power.

Command Mode Indicator: When the COMMAND key is pressed, the command mode indicator is lighted approximately 15 seconds or until the command is completed.

16.2 Zone Annunciation Jumper - The D6112 Control/Communicator can supervise up to sixteen protective zones. Both the D620 and D630 Command Centers can annunciate up to eight zones. When more than eight zones are assigned to a single account, two command centers can be used to annunciate all protective zones by assigning both command centers to the same account, and cutting the Zone Annunciation (ZA) jumper on the second command center. With the ZA jumper cut, the second command center now annunciates zones 9 through 16 of the assigned account. When the ZA jumper is not cut, the command center annunciates zones 1 through 8 of the assigned account.

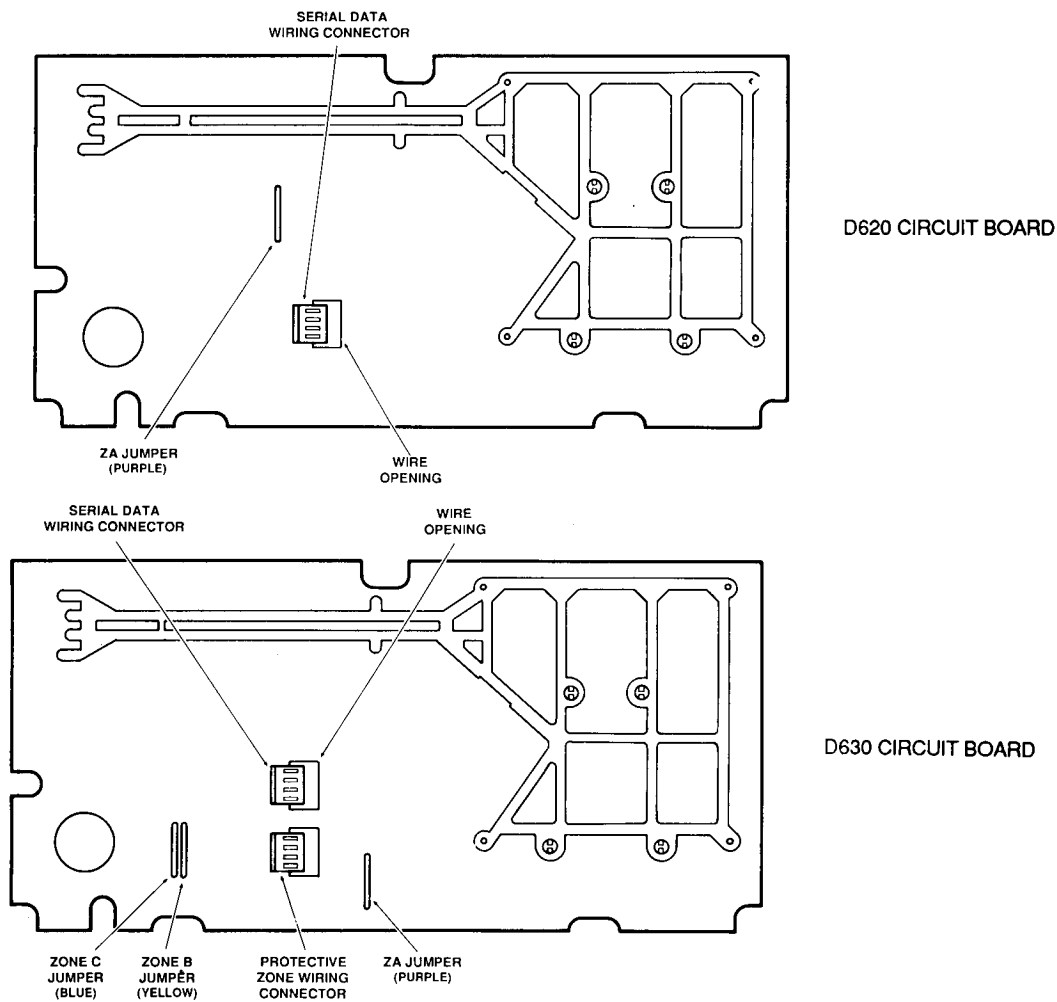


Figure 14: D620/D630 CIRCUIT BOARD REFERENCES

16.3 Installing the D620/D630 Command Center - The D620 and D630 Command Centers are low profile, surface mount units. To mount the unit, the front cover must be removed from the base, exposing the mounting holes. Follow the directions below for mounting.

IMPORTANT: Do not mount the command center in a location exposed to direct sunlight. Direct sunlight makes the display less visible and may also cause damage to the command center electrical components.

1. Remove the front cover from the enclosure base. Use a small flat bladed screwdriver to gently push two *bottom* cover tabs back. As the tabs are pushed back, lift the bottom of the cover away from the base. Remove the cover.
2. Connect wiring as described in section 14.5 of this manual. Route the four color-coded flying leads through the wiring opening in the back of the enclosure base and plug into the serial data wiring connector.
3. Place the enclosure base on the wall in the desired location. Use a center punch or a pencil to mark the locations of the mounting holes. (The enclosure base can be mounted to a single-gang wall box if desired. Two mounting screw holes on the base are positioned for standard single-gang compatibility.) Secure the enclosure base to the wall or gang box.
4. Align the top two tabs of the enclosure cover with the top two tab slots in the enclosure base. Slide the top of the cover into the base. Gently push the bottom of the cover down on the base until it snaps into place.
5. Push each key on the keypad towards the top of the enclosure to ensure proper mating with the openings in the top cover.

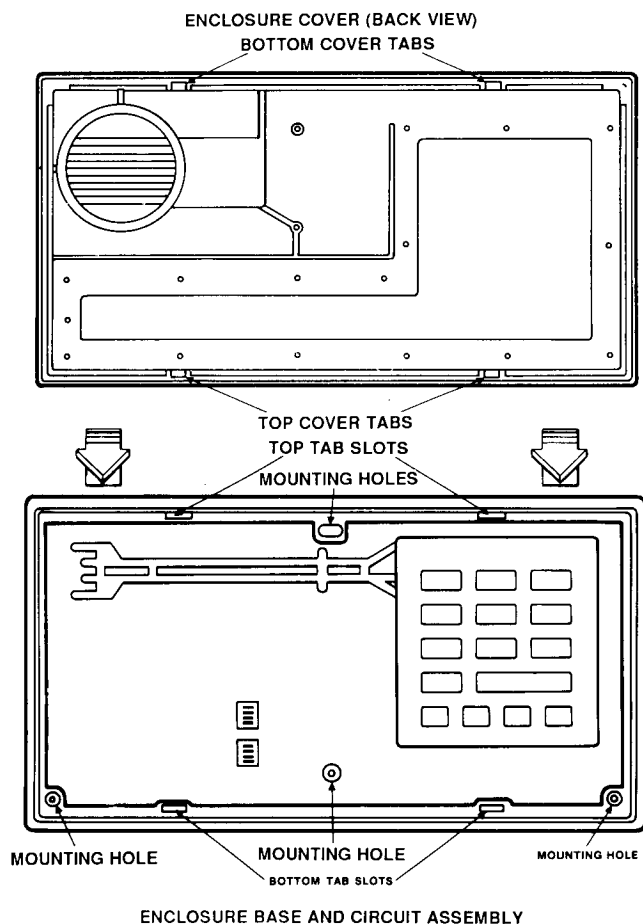


Figure 15: INSTALLING THE D620/D630

16.4 Wiring the D630 Protective Zones - The D630 is a command center which also expands the system with three hardwire protective zone inputs. Each zone functions independently and does not interfere with the operation of the others. Each zone is supervised with a 1000 ohm end-of-line resistor: Radionics D105BL (for UL listed burglary alarm applications; two supplied with the unit) or D105F (for UL listed fire alarm applications; one supplied with the unit). Dry contact sensing devices may be connected in series (normally closed) or in parallel (normally open) to any of these zones. Each zone can detect open circuit, closed circuit, and normal circuit conditions (refer to the table in Section 11.2 "Protective Zone Parameters" for voltmeter readings of specific conditions).

The D6112 Control/Communicator is programmed with a zone code for each protective zone. The zone codes determine how each zone responds to faults and command centers. Consult the *D6112:MAIN Program Entry Guide* for programming details.

The D630 has two sets of four color-coded flying leads attached to connector plugs. The *zone expansion flying leads* are colored black, green, yellow, and blue and this connector plugs into the bottom plug. When wiring zone inputs, the black wire is the zone common and the green, yellow, or blue wire is the zone input (see Figure 16).

NOTE: Protective zones B and C have jumpers that must be cut before wiring zone inputs. If using protective zone B, cut the yellow (W3) jumper. If using protective zone C, cut the blue (W4) jumper (see Figure 14). Do NOT cut these jumpers if the protective zones are not used. Do NOT wire protective zones with end-of-line resistors if the protective zones are not used. Zone A does not have a cuttable jumper, and requires an end-of-line resistor even if the zone is not used.

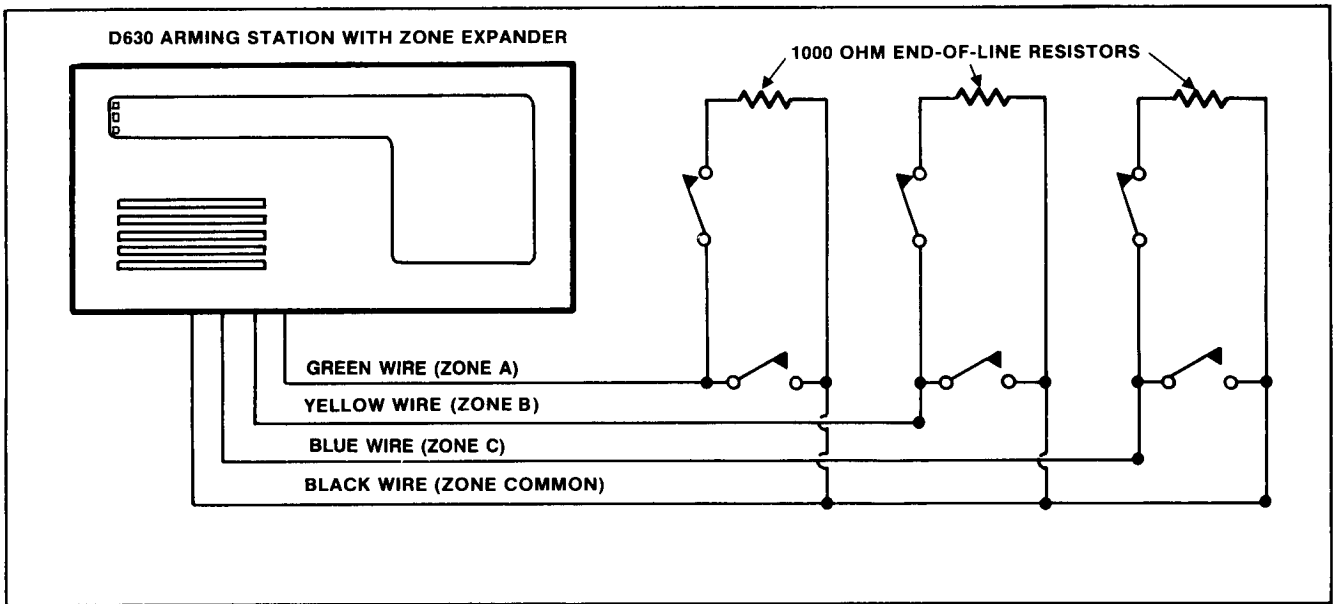


Figure 16: WIRING THE D630 PROTECTIVE ZONES

D630 Protective Zone Wiring Guide

Black Wire	Zone Common	No Jumper	
Green Wire	Zone A Input	No Jumper	
Yellow Wire	Zone B Input	Yellow Jumper	(W3)
Blue Wire	Zone C Input	Blue Jumper	(W4)

17. The D640 Zone Expansion Center

The D640 Zone Expansion Center module adds a maximum of six protective zones to the 6112 security system. Each of these zones is physically connected to the D640 module, however they can be individually assigned to either account number of the D6112. All of the protective zones are programmed at the D6112 for response characteristics and arming parameters.

17.1 Installing the D640 - The D640 Zone Expansion Center can be mounted in the D6112 enclosure or in a customer supplied enclosure. The unit is mounted in a plastic bracket which can be attached to any clean dry surface with double-adhesive tape. See Section 19.4 for dimensions of the unit.

17.2 Wiring the D640 - Connect the D640 Zone Expansion Center to the serial data wiring loop as shown in Section 14.5. The D640 +12VDC (+) and common (COM) terminals are wired in parallel with the serial data loop power and common wires. The data wire from the previous device connects to either D640 DATA terminal. The remaining D640 DATA terminal connects to the data terminal of the next device.

17.3 Wiring the D640 Protective Zones - D640 protective zones function independently, and are similar to loops connected to the D6112 Control/Communicator (see Figure 17 and Section 11 Protective Zone Inputs). Each zone is supervised with a 1000 ohm end-of-line resistor. Six 1000 ohm resistors are supplied with the D640: one Radionics model 105F (for U.L. listed fire applications) and five 105BLs (for U.L. listed burglary alarm applications). Dry contact sensing devices may be connected in series (normally-closed) or in parallel (normally-open) to any of these zones. Each zone can detect open circuit, closed circuit, and normal circuit conditions (refer to the table in Section 11.2 "Protective Zone Parameters" for voltages of specific circuit conditions). The D6112 is programmed with a zone code for each protective zone. The zone code determines how each zone responds to faults and arming stations. Consult the *D6112:MAIN Program Entry Guide* for programming details.

NOTE: If not using a zone, DO NOT program that zone for a response. Wiring an end-of-line resistor to unused zone inputs is recommended.

17.4 Loop Summary LED - The *green* LED on the D640 module is a loop summary status of the D640 Zone Expansion Center detection loops. This LED is not applicable to a particular account, nor does it govern any loops other than those connected directly to the D640 module. The LED is *on* if all D640 loops are normal, and is *off* if one or more loops are open or shorted.

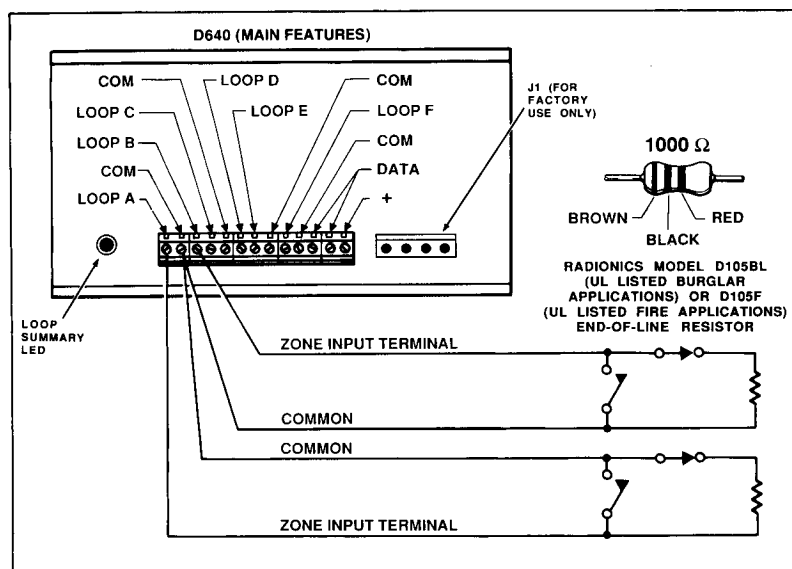


Figure 17: WIRING THE D640 PROTECTIVE ZONES

18. Guide for U.L. Certificated Systems

The D6112 Control/Communicator is U.L. listed for Central Station Grade A, Grade B, and Grade C Burglary Alarm, Digital Police Connection, Local Grade A Burglary Alarm, Household Fire Alarm, and Household Burglary Alarm applications. The D6112 should be installed in accordance with U.L. 681 Installation and Classification of Mercantile and Bank Burglar Alarm Systems, or U.L. 1641 Installation and Classification of Residential Burglar Alarm Systems, and/or NEC 70 article 760 (for fire applications). For U.L. certificated installations, at least one D620 or D630 Command Center must be installed with the D6112, and only Account #1 can be programmed.

Programming Guidelines

U.L. certificated systems which include the D6112 must conform to several programming guidelines. Listed below are required program entries and enclosures for specific applications. Each section includes zone code entries. The specific function of each protective zone must be determined in order to verify that the correct entries have been chosen. Command 47 provides reset capability for smoke detectors and glass break detectors. When these devices are used in the system, set program item 5.12 *Cmd47* to **Yes**. Systems which report to a digital alarm receiver must have a phone number programmed in 2.2 *Ph*. See the *D6112 Program Entry Guide* for specific details on all program entries and zone code functions.

A trained technician representing the installing or servicing company must perform all operations necessary to display the program for verification by inspecting authorities. These operations include connecting the programmer to the D6112 Control/Communicator, copying the program into the D5100 Bar Code Programmer, and using the D5100 Bar Code Programmer to display program items appropriate to the application. The performance of a reporting system must be tested by transmitting appropriate signal(s) to the central station.

18.1 Household Fire Alarm (reporting or non-reporting)

The D6112 can be housed in a D6103 enclosure for this application. At least one smoke detector, and at least one M806 bell (or equivalent) is required. The available emergency battery standby time for this unit is 10 hours plus a 4 minute alarm. The D6112 should be installed in accordance with the requirements of the NEC 70 article 760 and NFPA 74 standards.

Mandatory Program Entries:

1.8 <i>Bell</i>	05 (minimum)	7.3 <i>1Local</i>	Yes (if non-reporting system)
5.11 <i>Cmd44</i>	Yes		No (if reporting system)
5.12 <i>Cmd47</i>	Yes	7.14 <i>1Ring1</i>	No
7.2 <i>1Off</i>	No		

Zone Code:	7.20 <i>1ZnX</i>	Digit One:	0
		Digit Two:	1
		Digit Three:	1 through 6
		Digit Four:	0 through 8
		Digit Five:	4 or 6

18.2 Household Burglary Alarm (reporting or non-reporting)

The D6112 can be housed in a D6103 enclosure for this application. At least one M806 bell (or equivalent) is required. The minimum battery standby time for this application is 4 hours. The D6112 should be installed in accordance with the requirements of the U.L. 1641 standard.

Mandatory Program Entries:

1.8 <i>Bell</i>	05 (minimum)	7.4 <i>1DlyIn</i>	040 (maximum)
5.11 <i>Cmd44</i>	Yes	7.5 <i>1DlyOut</i>	060 (maximum)
7.2 <i>1Off</i>	No	7.14 <i>1Ring1</i>	No
7.3 <i>1Local</i>	Yes (if non-reporting system)		
	No (if reporting system)		

Zone Code:	7.20 <i>1ZnX</i>	Digit One:	0 through 5
		Digit Two:	0 through F
		Digit Three:	0 (if reporting system), 1 through 6
		Digit Four:	0 through 8
		Digit Five:	0 through 7

18.3 Household Fire Alarm and Burglary Alarm Combination (reporting or non-reporting)

Follow the requirements listed for the Household Fire Alarm and Household Burglary Alarm applications above, using the appropriate zone codes specified for each application. The D6112 **must** be programmed to *pulse* the bell (Zone Code Digit Three: 4 or 6) for a fire alarm, and produce a *steady* bell output (Digit Three: 1 or 3; or 2 or 5 if the auxiliary relay is used) for a burglary alarm.

18.4 Local Burglary Alarm

A D6112M (D6112 with mounting skirt) must be housed in a D8108A attack-resistant enclosure for this application. The selected bell must be installed in a U.L. listed bell housing. The minimum battery standby time for this application is 4 hours. The D6112 should be installed in accordance with the requirements of the U.L. 681 standard.

Mandatory Program Entries:

1.8 Bell	30 (minimum)	7.5 1DlyOut	060 (maximum)
7.2 1Off	No	7.14 1Ring1	No
7.3 1Local	Yes	7.15 1TsBell	Yes
7.4 1DlyIn	030 (maximum)		

Zone Code:	7.20 1ZnX	Digit One:	0 through 5
		Digit Two:	0, 4, 8, C
		Digit Three:	1 through 6
		Digit Four:	0
		Digit Five:	0, 2, 4, 6

18.5 Digital Police Connection

A D6112M (D6112 with mounting skirt) must be housed in a D8108A attack-resistant enclosure for this application. The selected bell must be installed in a U.L. listed bell housing. The minimum battery standby time for this application is 4 hours. The D6112 should be installed in accordance with the requirements of the U.L. 681 standard.

Mandatory Program Entries:

1.7 BatSupv	9*	7.5 1DlyOut	060 (maximum)
1.8 Bell	30 (minimum)	7.13 1DlyRes	No
7.2 1Off	No	7.14 1Ring1	No
7.3 1Local	No	7.15 1TsBell	Yes
7.4 1DlyIn	030 (maximum)		

*NOTE: This is the required entry for D6112 Control/Communicators operating with Radionics receivers. This entry may vary if a non-Radionics U.L. listed receiver is used.

Zone Code:	7.20 1ZnX	Digit One:	0 through 5
		Digit Two:	0 through F
		Digit Three:	0 through 6
		Digit Four:	1 through 8
		Digit Five:	0 through 7

9.1 TsPPh	Yes	9.7 TsCode	To provide 24-hour test, either a code
9.3 Days	Yes	9.8 TsE	must be entered in 9.7 TsCode, or
9.4 Intvl	01	9.9 TsDef	9.8 TsE must be Yes .
			No*

* NOTE: 9.9 TsDef can be **Yes** if the signal is received by an automated system which is programmed to expect a signal from the protected premises at least once every 24 hours.

18.6 Central Station Burglar

A D6112M (D6112 with mounting skirt) must be housed in a D8108A attack-resistant enclosure for this application. For Grades A and B, a bell must be installed in a U.L. listed bell housing. Additionally for Grade A, a D127 Reversing Relay must be installed. The minimum battery standby time for this application is 4 hours. The D6112 should be installed in accordance with the requirements of the U.L. 681 standard.

Mandatory Program Entries:

1.3 Open	B 1	7.5 1DlyOut	060 (maximum)
1.4 Close	C 1	7.7 1Op/Cl	Yes
1.7 BatSupv	9 1	7.8 1ReOp	No
1.8 Bell	30 ² (mimimum)	7.9 1ReCl	No
7.2 1Off	No	7.13 1DlyRes	No
7.3 1Local	No	7.14 1Ring1	No
7.4 1DlyIn	030 (maximum)	7.15 1TsBell	Yes ²

- NOTES: 1) This is the required entry for D6112 Control/Communicators operating with Radionics receivers. This entry may vary if a non-Radionics U.L. listed receiver is used.
- 2) Only required for Central Station Grades A and B.

Zone Code:	7.20 1ZnX	Digit One:	0 through 5
		Digit Two:	0 through F
		Digit Three:	0 through 6
		Digit Four:	1 through 8
		Digit Five:	0 through 7

9.1 TsPPh	Yes	9.7 TsCode	To provide 24-hour test, either a code must be entered in 9.7 TsCode, or
9.3 Days	Yes	9.8 TsE	9.8 TsE must be Yes .
9.4 Intvl	01	9.9 TsDef	No*

* NOTE: 9.9 TsDef can be **Yes** if the signal is received by an automated system which is programmed to expect a signal from the protected premises at least once every 24 hours.

19. Specifications

19.1 Radionics D6112 Control/Communicator Specifications

Operating Voltage:

Primary: 16.5 VAC 25 VA class 2
plug-in transformer (supplied with unit).

Secondary: 12 VDC 6 AH sealed
lead-acid type rechargeable battery.

Auxiliary Power Output:

Continuous 450 mA of current at
10.5 to 14 VDC.

Telephone Connection: RJ38X jack

Operating Temperature:

0 to 50 °C (32 to 122 °F)*

Current Requirements:

Idle: 75 mA
Transmitting: 150 mA

Alarm Power Output:

1.5 Amps of current at 10.5 to 14 VDC.
Output programmable for steady or
pulsed voltage supply.

Non-condensing Relative Humidity:

5 to 85% at 30 °C (86 °F)

* NOTE: It is recommended that the D6112 be installed in a temperature-controlled environment to prolong the life of the Control/Communicator, command centers, and batteries.

19.2 D610 Command Center Specifications

Operating Voltage:

Nominal 12 VDC supplied from the
control/communicator auxiliary power supply.

Enclosure Dimensions:

Height 4.56", Length 3.08", Depth 1.80"

Operating Temperature:

0 to 50 °C (32 to 122 °F)

Command Center Wiring:

Four-conductor cable supplies data-in, data-out, positive voltage, and common.

Display:

Account Status Display: Annunciates account armed status by indicating perimeter arm, interior arm, instant arm, and exit delay.

Zone Status Display: Annunciates summary of account zone status.

Current Requirements:

Idle: 40mA keypad lighted
Maximum: 65mA keypad lighted and
warning tone "on."

Color: Warm gray.

Non-condensing Relative Humidity:

5 to 85% at 30 °C (86 °F)

19.3 D620/D630 Command Center Specifications**Operating Voltage:**

Nominal 12 VDC supplied from the control/communicator auxiliary power supply.

D620 Current Requirements:

Idle: 50mA keypad lighted.
Maximum: 80mA keypad lighted and warning tone "on."

D630 Current Requirements:

Idle: 60mA keypad lighted.
Maximum: 90mA keypad lighted and warning tone "on."

D620/D630 Enclosure Dimensions:

Height 4.56", Length 8.15", Depth .816"

Color: Warm gray.

Operating Temperature:

0 to 50 °C (32 to 122 °F)*

Non-condensing Relative Humidity:

5 to 85% at 30 °C (86 °F)

D620/D630 Command Center Wiring:

Four-conductor cable supplies data-in, data-out, positive voltage, and common.

D630 Zone Wiring:

Three two-wire loops with a 1000 ohm end-of-line resistor for zone supervision. Compatible with sensing devices having normally open dry contact output (wired in parallel) and normally closed dry contact output (wired in series).

Display:

Zone Status Display: Account zone status displayed by eight individual indicators.

Account Status Display: Annunciates account armed status by indicating perimeter arm, interior arm, instant arm and exit delay.

AC Power Indicator: Annunciates system power supply; either AC or battery.

Command Key Indicators: Annunciates command mode for command center.

19.4 D640 Zone Expansion Center Specifications**Operating Power:**

Nominal 12VDC supplied from the control/communicator auxiliary power circuit.

Current Requirements:

Idle: 45mA
Maximum: 60mA

Operating Temperature:

0 to 50 °C (32 to 122 °F)*

Non-condensing Relative Humidity:

5 to 85% at 30 °C (86 °F)

Dimensions:

Height 3.15", Length 5.90", Depth 1.10"

Device Wiring:

Four conductor cable supplies data-in, data-out, positive voltage, and common.

D640 Protective Zone Wiring:

Six two-wire loops, each with a 1000 ohm end-of-line resistor for zone supervision. Compatible with sensing devices having normally-open dry contact output (wired in parallel) and normally-closed dry contact output (wired in series).