

INSTALLATION Manual

2.1

Control/Communicator

5-051-092-00 Rev C

C&K
SYSTEMS, INC.

2.xx
Control/Communicator
Installation, Operation, and Service Manual

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1987

5-051-092-00 Rev C

ACCURACY

While C&K Systems has checked this manual for accuracy, we assume no responsibility for inaccuracies nor for actions caused by the use of the information supplied in this manual. C&K Systems reserves the right to modify the 2.XX hardware, software, and the material contained in this manual without notice.

FCC NOTICE

This equipment generates and uses radio frequency energy. If not installed in accordance with the manufacturers' instructions, it may cause interference to radio and television reception. It has been 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) Re-orient 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 following booklet prepared by the Federal Communications Commission.

“How to Identify and Resolve Radio-TV Interference Problems”

This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402, stock # 004-000-00345-4.

LIMITED WARRANTY

This product is warranted against manufacturing defects for 18 months from date of manufacture. The manufacture date is established by the date code of the unit. This limited warranty does not apply to any product which has been altered, abused, or misused (physically or electrically).

Products returned within 5 months of manufacture will be replaced with a new unit. A return authorization number (RMA) must be received from Customer Service before the unit is shipped to us. Complete warranty information is available from your distributor, sales representative, or Customer Service.

DO NOT RETURN COMMUNICATORS IN THEIR METAL BOX. THE METAL BOX INCREASES THE REPAIR TIMES AND INCREASES YOUR SHIPPING COSTS.

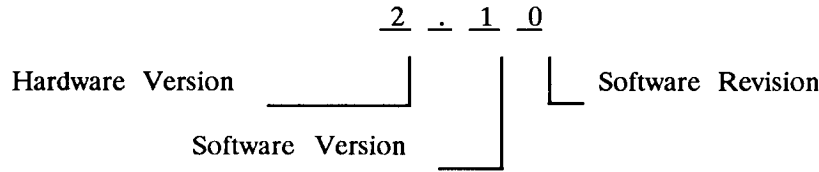
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Section 1. CONVENTIONS USED IN THIS MANUAL

MODEL NUMBERS

The model number is comprised of three parts. The number before the period (.) denotes the circuit board design. The first number after the period denotes the software version. The second number after the period shows the revision level of the software model.



SCOPE OF THIS MANUAL

This manual covers installation and troubleshooting for the 2.XX Control/Communicator. While separate manuals cover the programming options for the different software versions (2.10, 2.20, 2.30), some programming options will be discussed in this manual since programming affects certain hardware features.

This manual is written for the latest hardware version of the 2.XX. Since C&K Systems is constantly improving its products, it is possible that there are slight discrepancies between this manual and the version of the 2.XX that you are installing or servicing. While we try to point out possible changes, it is not always possible to list all of them. Should you have any questions regarding the installation, service, or use of this equipment, please call our Customer Service department.

ICONS

Two Icons are used to alert the reader to marketing points or to warn of precautions which must be taken.



MARKETING. Ideas that will make you money.



WARNINGS. Precautions that will keep you out of trouble.

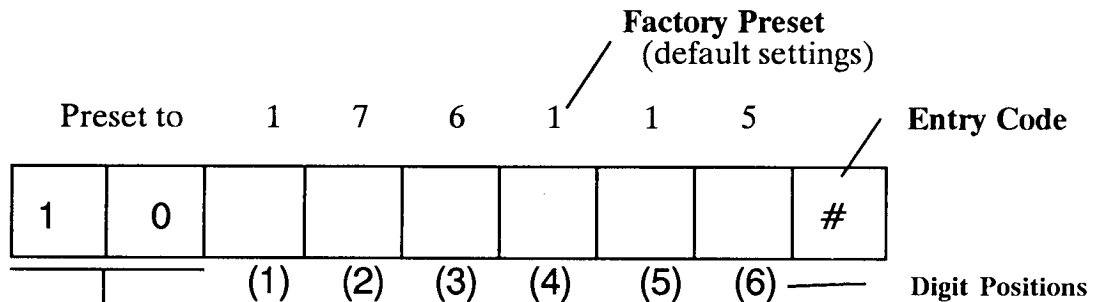
See UL-A Certain suggested applications go beyond the Underwriters Laboratories Inc. investigations of this product.

See UL-B The symbols at the left are used to refer to the three disclaimers in the UL Compliance Verification section

See UL-C of this manual.

A BRIEF INTRODUCTION TO PROGRAMMING

References are made to specific program memory locations. These are shown as:



Memory Location
(address)

where 10 is an example of a Memory location, and the Digit Positions are the locations for specific programming options. The 2.XX Control/Communicator can be programmed from the communicator keypad or remotely, using the COMMANDER interactive software. Please see the appropriate programming manual (2.10, 2.20, 2.30) for additional information on how to program and the programming options.

MEMORY STORAGE

2.XX programming information is stored in EEPROM (Electrically Erasable Programmable Read Only Memory). EEPROM is non-volatile and will retain its memory even with no power supplied.

Section 2. STARTING THE INSTALLATION

While installing the 2.XX Control/Communicator is easy and straight-forward, we would like to point out a few things that will make the installation easier and more trouble free.

MATERIALS SUPPLIED

You should have received the following items with your 2.XX.

- 2.XX circuit board with firmware installed, mounted in the metal cabinet.
- 18 Volt, 40 VA transformer (C&K model 1098-B)

Note: Some models of the 2.XX are shipped without the cabinet or transformer.

- Cabinet label
- EOL Resistors
- Battery leads
- Spare fuses
- Programming Manual
- Installation Manual (what you are reading)
- Cardboard alignment mask

To complete the control/communicator portion of the installation, you will need some additional accessories:

- 12 Volt, 6.5AH battery. C&K model 1265.
- Telephone line cord with double modular plugs. C&K model 9.X PC/P.
or
- Telephone line cord with modular plug on one end and flying leads on the other. C&K model 9.X PC/F.
- Optional relays if K1 (4-Digit Code Output), K2 (SELECT OUT), or K5 (Ground Start) are used. C&K model 9.X RLX.

To comply with applicable UL Standards, a lock and a tamper switch must be installed on the cabinet. All parts and accessories used in an installation must themselves be UL Listed in order for the system to be in compliance.

KNOCKOUTS

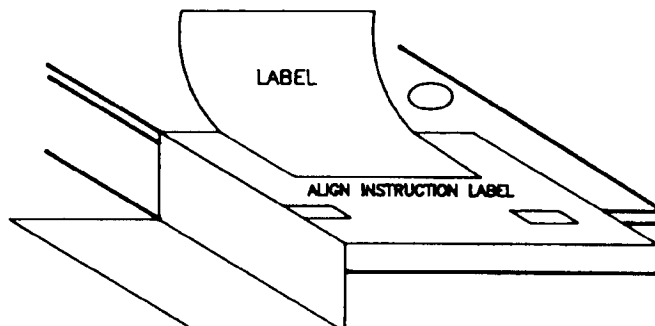
Before mounting the cabinet, punch out the knockouts where the wiring will come into the cabinet. It is not necessary to remove the circuit board if care is taken not to allow tools or the punched knockouts to hit it.

LABELS

Included with the communicator is a label for the front of the cabinet. Besides providing operating instructions, it covers the holes available for mounting the keypad on the cabinet.

We did not put the label on the cabinet since many dealers prefer to use a label custom designed for their company. Labels are also available in languages other than English. For more information about custom labels, contact your distributor or C&K sales representative.

Before applying the label, be sure the cabinet is clean and dry. Place the cardboard alignment mask over the front of the cabinet. Peel the protective cover from the back of the label. Insert the top of the label in the top of the alignment mask. Press down on the top of the label to affix it to the cabinet. Work from the top of the label to the bottom, pressing the label to the cabinet. Be careful not to trap air bubbles under the label.



CONTROL LOCATION

The control panel should be mounted in a cool dry area, central to the wiring to be installed. You will need access to power for the transformer and to the telephone service. The telephone RJ31X or RJ38X jack must be mounted within three feet of the panel. Additional information on connecting to the telephone system will be found in Section 26.

WIRING

A few wiring precautions will make your installation more effective. Use of twisted wire pairs will reduce electrical noise picked up by the wiring run.

DC wiring that is run parallel to AC wiring can pick up induced AC. Induced AC can create erratic arming or disarming, false alarms, errors on data transmissions, or other operational problems. Induced AC cannot be filtered out. It must be prevented from getting into the 2.XX circuits. To prevent induced AC wiring, avoid running DC wiring within 6 inches of AC wiring. If you must cross AC wires, cross as close to 90 degrees as possible. Do not run DC wires in the same raceway as AC wires.

Shielded wire with a ground drain (connected at only one end of the wire) should be used in areas of potential induced AC, in electrically noisy environments, or where radio frequency interference (RFI) could be picked up by the wiring. It should also be used for wiring microphones to the 2.XX listen-in modules to reduce the possibility of AC hum.

Wires should be of sufficient gauge to safely carry the maximum current expected and to minimize voltage drops. The following table gives some commonly used sizes:

burglar	22 AWG
fire	18 AWG
holdup/medical	22 AWG
transformer	16-18 AWG
sounders	14-16 AWG
keypads	22 AWG
AC power	16-18 AWG

CODE REQUIREMENTS

There are varying state, local and insurance requirements regarding the installation and licensing of electrical and electronic protection systems. Information supplied by C&K Systems is not meant to contradict these requirements. If a conflict does arise, those requirements have precedence.

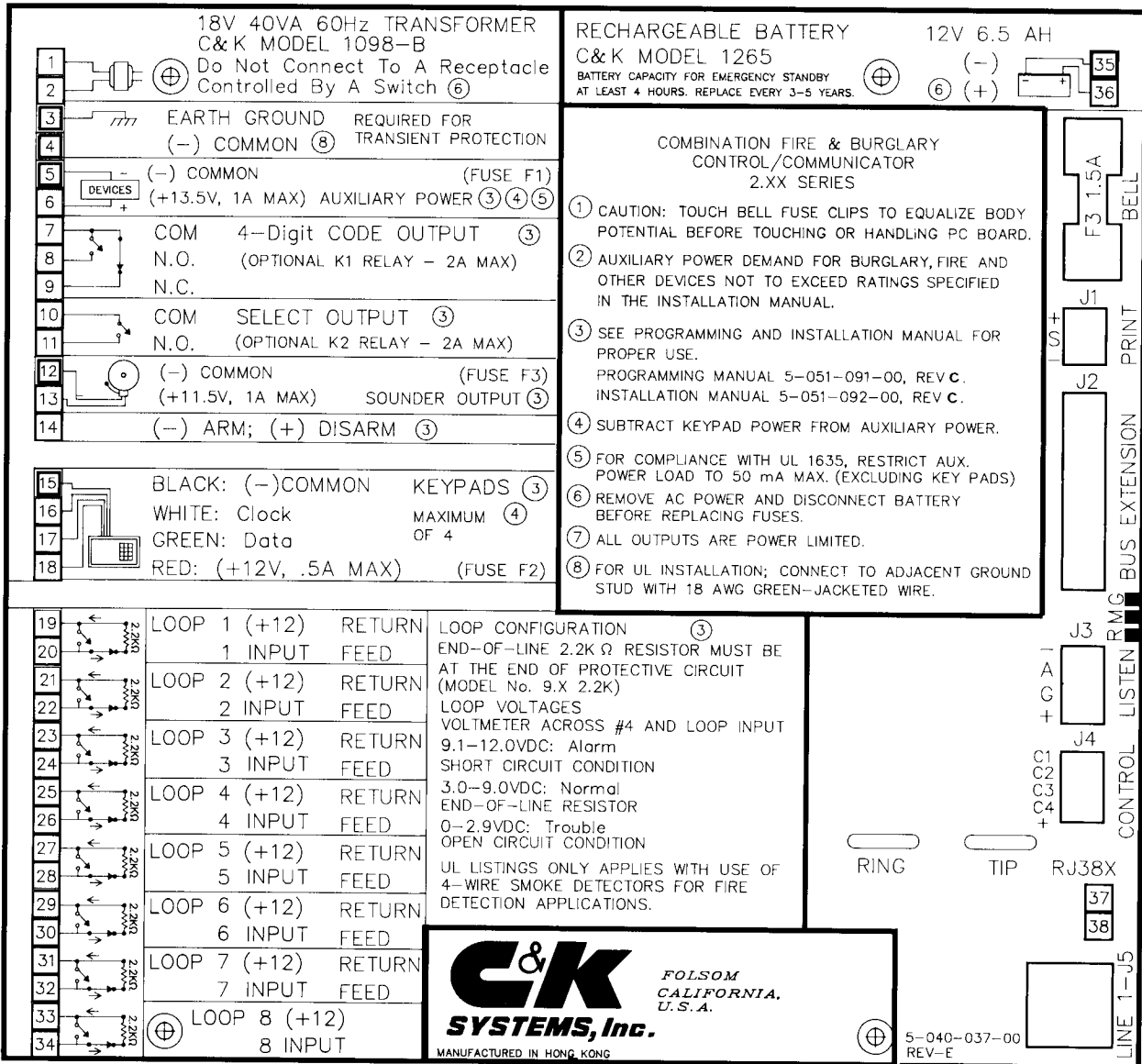
Fire systems come under stringent regulations. The authority who sets and enforces those requirements is referred to as the Authority Having Jurisdiction (AHJ). The AHJ could be the local fire chief, fire marshal, state fire marshal, insurance company, or government legislation. C&K urges you to know and follow the requirements of the AHJs in your areas of operation.

INSTALLATION PROCEDURE

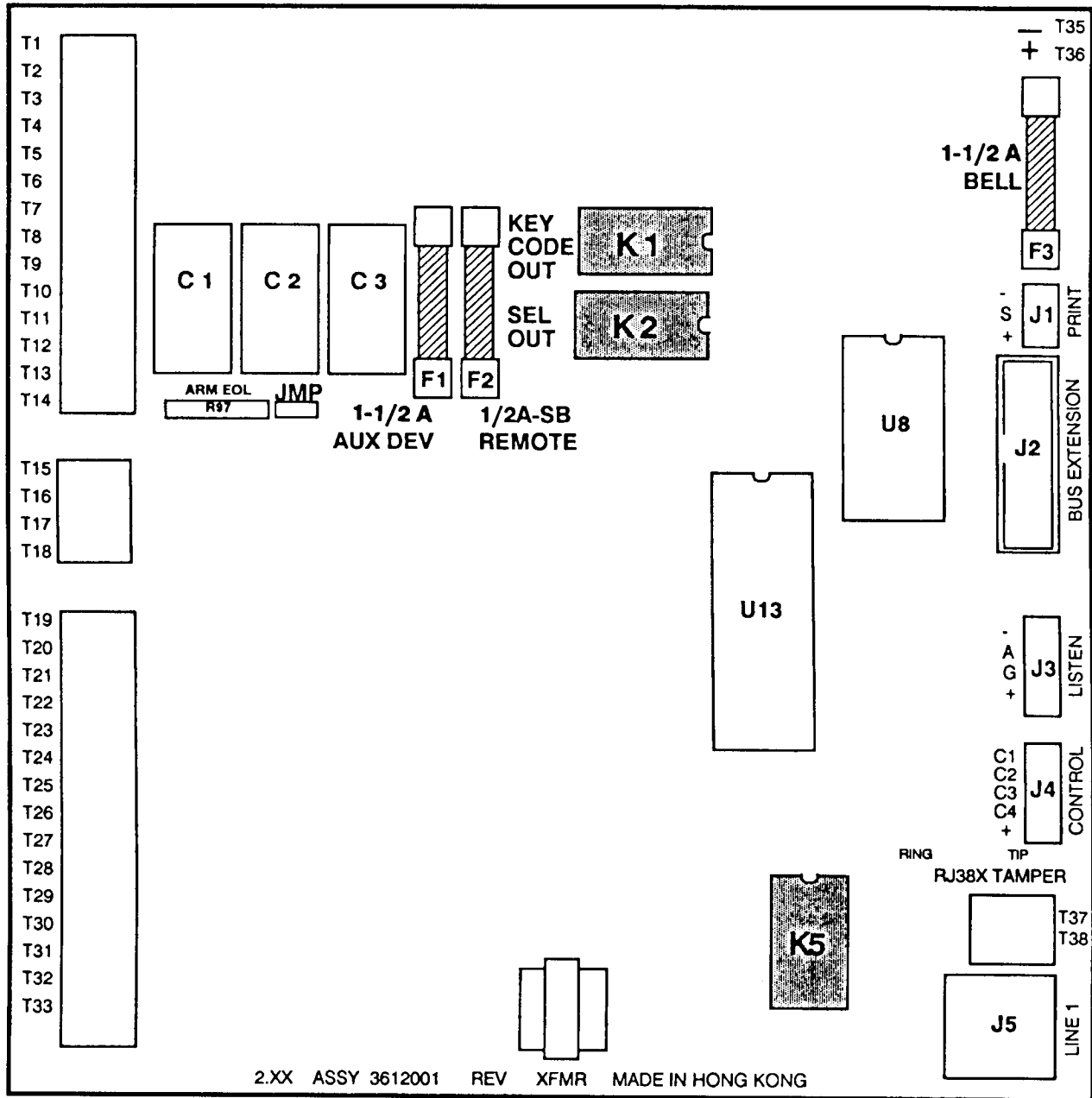
1. Punch out all necessary knockouts. Affix the label to the front of the cabinet. Fasten the cabinet to the wall.
3. Using a voltmeter, check all field connections for short circuit conditions. If short conditions exist, remove the wire from the terminal block and troubleshoot the circuit.
2. Connect all wires to the 2.XX **except the battery and the transformer.**
4. Fill out the data side of the Installation Worksheet supplied with the 2.XX.
5. Connect the Battery, observing polarity. The SERVICE LED should be flashing. Ignore any other visual signals. Connect the transformer and verify that the AC LED lights. Press the 4 and 8 keys simultaneously to clear the flashing SERVICE LED.
6. If the 2.XX is already programmed go to step 9. If not, enter the programming data from the Worksheet using any keypad or the COMMANDER software.
7. If a programming printer is available, connect it and verify that the programming is as shown on the Installation Worksheet. Program the 2.XX if necessary.
8. Exit programming or print mode by entering keys 0 0 #.
9. Test the system and all protective devices for proper operation and communications. Insure that the central station has the proper response information.
10. Retain the Installation Worksheet and the printer report in an appropriate place as a record for the installation.

Section 3. ELECTRONIC LAYOUTS

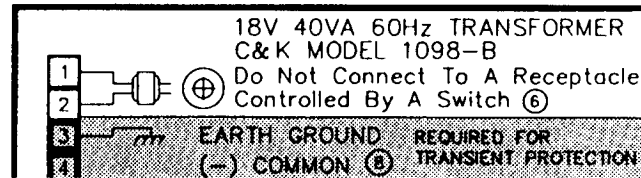
TERMINAL LABEL



COMPONENT LAYOUT



Section 4. PRIMARY POWER Terminals 1 and 2



TRANSFORMER CONNECTION

Connect a C&K model 1098B transformer (18VAC 40VA) to the panel, terminals 1 and 2. Verify that the AC receptacle is un-switched except at the AC service panel. The power wire should be at least 18 AWG to prevent voltage drops. Secure the transformer to the receptacle to prevent accidental unplugging (where AHJ approved).

On start-up (first application of battery or transformer power) the Service LED will be flashing. Clear the Service LED by pressing the 4 and 8 keys simultaneously on any keypad.

Do not share the 2.XX transformer with other devices. A foreign ground can damage the 2.XX power supply, voiding the warranty.

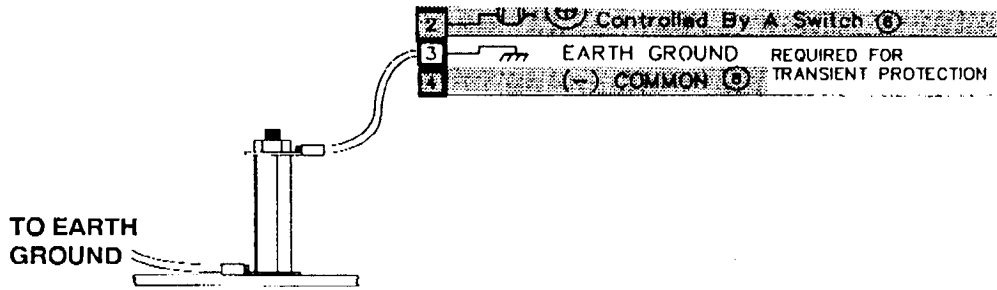
TRANSFORMER RATING

Do not use transformers rated less than 18 VAC or 40 VA. Lower rated transformers will reduce the power available for charging and panel operation. 40 VA transformers are internally fused with a non-replaceable fast acting fuse. Even a momentary short across the secondary AC wiring will destroy this fuse. If this occurs, the transformer is non-reparable and must be thrown away. We recommend that you carry spare 40 VA transformers in your installation and service vehicles.

POWER FAILURE

The Service LED automatically lights after 15 minutes of AC Power failure. Terminals 10 and 11 can be programmed to close when the AC power failure time exceeds 15 minutes. Refer to Section 8 of this manual and the 2.XX programming manual for additional information.

Section 5. EARTH GROUND Terminal 3



GROUND CONNECTION

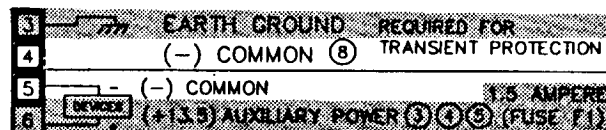
Connect this terminal to earth ground using a minimum wire size of 14 AWG.. To prevent electrical noise interference, do not use an electric service ground. This terminal is internally connected to the panel common (terminals 4, 5, 12, & 15). All 2.XX panels should be grounded to a good earth ground to prevent transient damage.

A GOOD GROUND

To verify that the ground selected is at true earth potential, meter the resistance from your earth ground to any other earth ground. If the resistance is greater than 2 ohms one or both grounds are not at earth potential. Meter the resistance from your earth ground to a different ground. If the resistance is still greater than 2 ohms, the ground you selected is probably not at true earth potential.

When installing your own ground rod, consult your local electrical distributor for the proper grounding rod for your area. Be sure to use the proper size grounding clamp to insure a low resistance connection. When running ground wires, avoid sharp angle bends. Sharp angles reduce the effectiveness of the ground when dissipating high voltage/current transients.

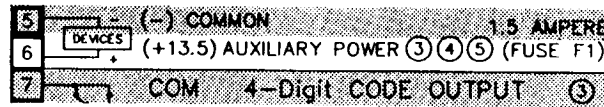
Section 6. POWER COMMONS (-) Terminals 4 and 5



POWER COMMON (-) TERMINALS

Terminals 4 and 5 are two of the circuit common terminals found on the board. They are used as power common (-) terminals for devices requiring 12VDC operating power. Terminals 3, 12, and 15 are also circuit commons.

Section 7. AUXILIARY POWER (+)12VDC Terminal 6



POWER AVAILABLE

Connect the positive input of all auxiliary power devices (motion sensors, smoke detectors, shock sensors, etc.) to this terminal. The total current draw from terminal 5 (AUXILIARY POWER) and terminal 18 (KEYPAD POWER) cannot exceed 1 Ampere (1000mA).

FUSE F1

Fuse F1 protects against overload conditions. If this fuse blows, remove power to the panel then remove the shorted or overload condition. Replace the fuse with a 1.5 amp normal blow fuse before re-powering the control. **DO NOT SUBSTITUTE A HIGHER RATED FUSE!**

STANDBY BATTERY TIME

The following chart will assist you in calculating the standby power time under different load conditions. To double the standby time (and recharge time) you can parallel two model 1265 batteries as shown in Section 14.

FIGURE 3

STANDBY BATTERY TIME (with 1265 Battery)

13.5 Hours	@	250 mA	Auxiliary Load *
7.8 Hours	@	500 mA	Auxiliary Load *
4.7 Hours	@	750 mA	Auxiliary Load *
2.3 Hours	@	1000 mA	Auxiliary Load *

* One Keypad Included

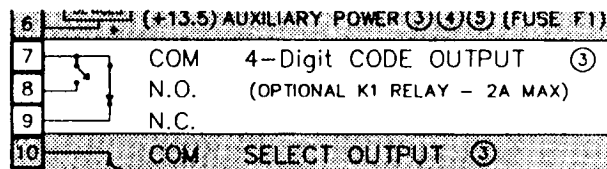
NOTE: Times are approximate, depending on condition of battery.

NOTE: To comply with UL Standards, do not exceed 750 mA load.

POWER CONSUMPTION CALCULATIONS

Auxiliary Devices (term. 5 & 6)	-----	mA (Fuse F1)
Keypads (number of keypads x 20 mA)	-----	mA (Fuse F2)
Listen-In Board	-----	mA
Remote Relay Board	-----	mA
TOTAL Power Consumed	-----	mA
Sounder Power (while sounding)	-----	mA

Section 8. 4-DIGIT CODE OUTPUT Terminals 7, 8, and 9



RELAY K1 INSTALLATION

These terminals are the dry contact outputs of optional relay K1 (KEY CODE OUT). They change state when K1 is energized with a specific keypad combination. The relay may be activated at any time regardless of arm status. Refer to the programming manual for information on programming the four-digit combination. The relay can be programmed to either operate for a 5 second duration or toggle (alternate action). A C&K model 9.X RLX relay must be properly installed in relay socket K1. One end of the relay has an alignment band. The relay must be oriented with the band to the right, away from the fuses, as shown in Figure 4.



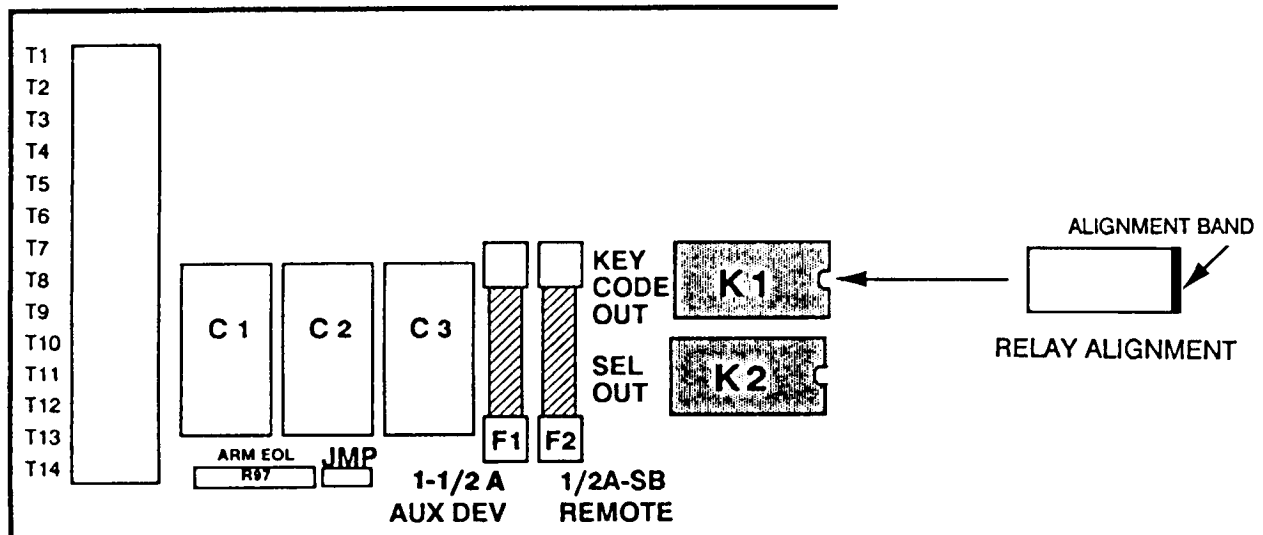
Use only C&K optional relay model 9.X RLX. Other relays may not operate as intended.

PRECAUTIONS



Do not switch voltages greater than 24 volts AC/DC @ 2 amperes. Do not run voltages higher than 24 volts inside the 2.XX metal enclosure. When switching voltages greater than 24 Volts, use an interfacing relay as shown in Figure 7. When switching DC powered relays, be sure to use an EMF suppression diode as shown in Figure 6.

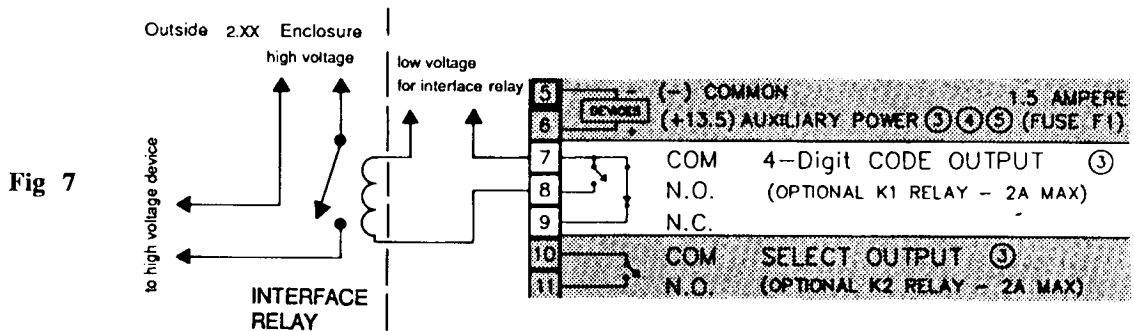
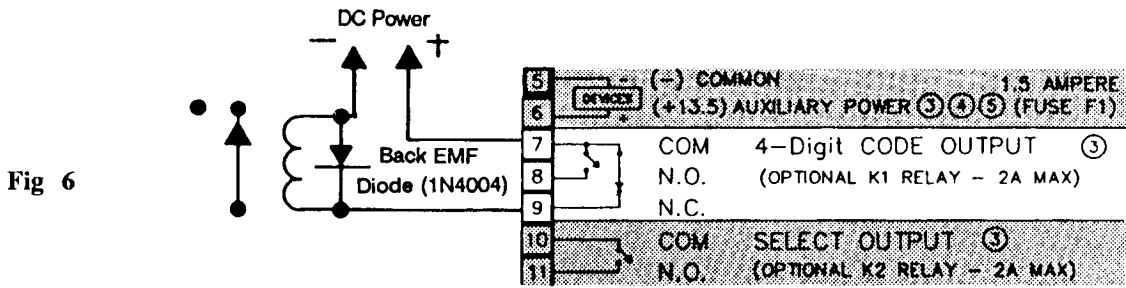
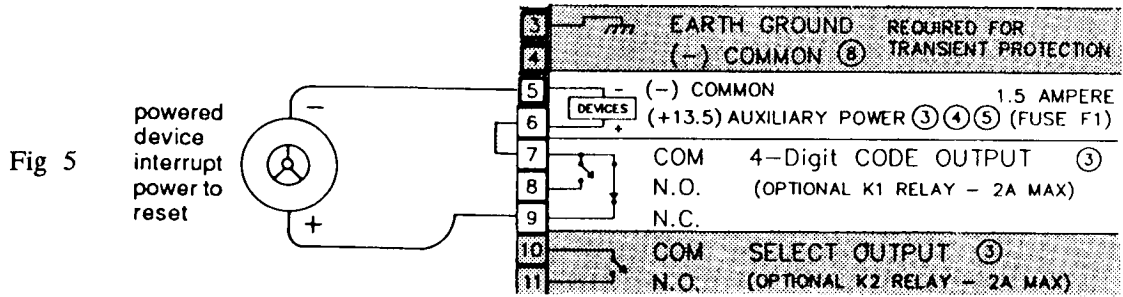
FIGURE 4



RESETTING SENSORS FROM THE KEYPAD

To use optional relay K1 to reset sensor power from the keypad, connect a jumper between terminals 6 and 7. Then connect the positive power input of all self-latching devices (such as smoke detectors and shock sensors) to terminal 9. See Figure 5. Follow instructions in the programming manual to select a combination and a relay duration of 5 seconds. Auto-resetting devices should be connected to terminal 6, not terminal 9.

To reset the devices after an alarm, enter the programmed combination that controls this relay.



SWITCHING AUXILIARY DEVICES

You can also use terminals 7, 8 and 9 to control devices such as lights, electric gates, heating and air conditioning systems, and shunts for high security areas. Connect the power of the device(s) to be controlled to either terminal 7 or 8. Figure 6 shows a relay wired to de-energize when the combination is entered. Figure 7 shows a relay wired to energize when the combination is entered.

See UL-C

ACCESS CONTROL SYSTEM

\$ This relay makes a simple and inexpensive access control system. The Commander Remote Programming software allows you to access this relay from your central station. This eliminates the need for your guards or servicemen to carry premise keys. Also, in an emergency you can allow responding police or fire officials into the building without the delay of waiting for someone with the premise keys to arrive.

See UL-B

Section 9. SELECT OUTPUT Terminals 10 and 11

8		N.O. (OPTIONAL K1 RELAY - 2A MAX)
9		N.C.
10		COM SELECT OUTPUT ③
11		N.O. (OPTIONAL K2 RELAY - 2A MAX)
12		(-) COMMON 1.5 AMPERE
13		(+11.5) SOUNDER OUTPUT ③ (FUSE F3)

RELAY K2 USES

An optional relay in socket SEL OUT (K2) can be programmed to operate when selected loops go into alarm, when any loop alarms (general alarm output), during alarm memory (until 4 and 8 are entered together), when the system is armed, when the system is disarmed, when an AC power loss is longer than 15 minutes, or when service is required. The relay automatically deactivates when the condition clears. See the Programming Manual for programming instructions.

A C&K model 9.X RLX relay must be properly installed in relay socket K2. One end of the relay has an alignment band. The relay must be oriented with the band to the right, away from the fuses.



Use only C&K optional relay model 9.X RLX. Other relays may not operate as intended.

PRECAUTIONS



Do not switch voltages greater than 24 volts AC/DC @ 2 amperes. Do not run voltages higher than 24 volts inside the 2.XX metal enclosure. When switching voltages greater than 24 Volts, use an interfacing relay as shown in Figure 7. When switching DC powered relays, be sure to use an EMF suppression diode as shown in Figure 6.

ACTIVATE RECORDING EQUIPMENT



Figure 8 shows the SEL OUT relay used to activate a video recorder during alarms. Since you can select which alarm zones activate the relay, you can record a specific type of alarm such as a holdup.

FIGURE 8

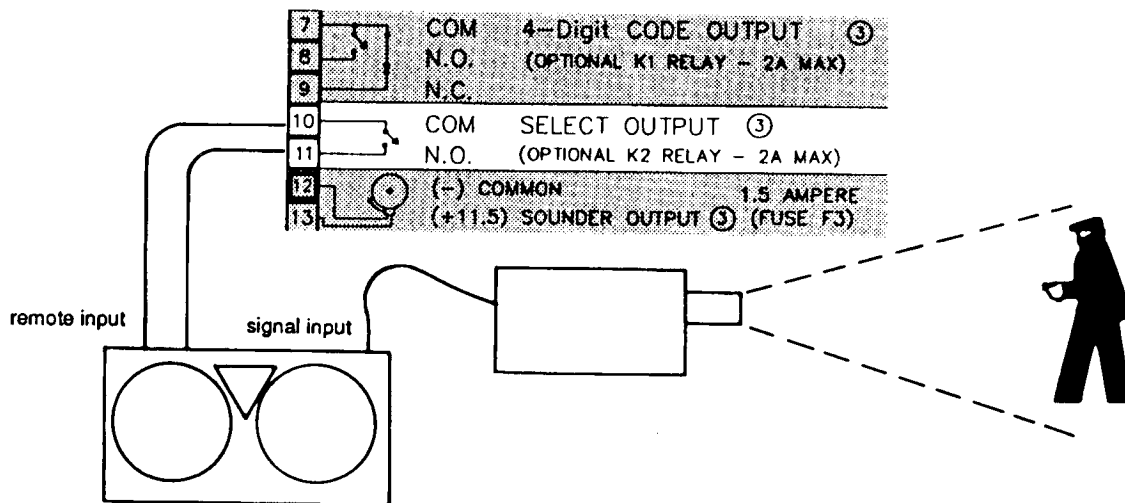
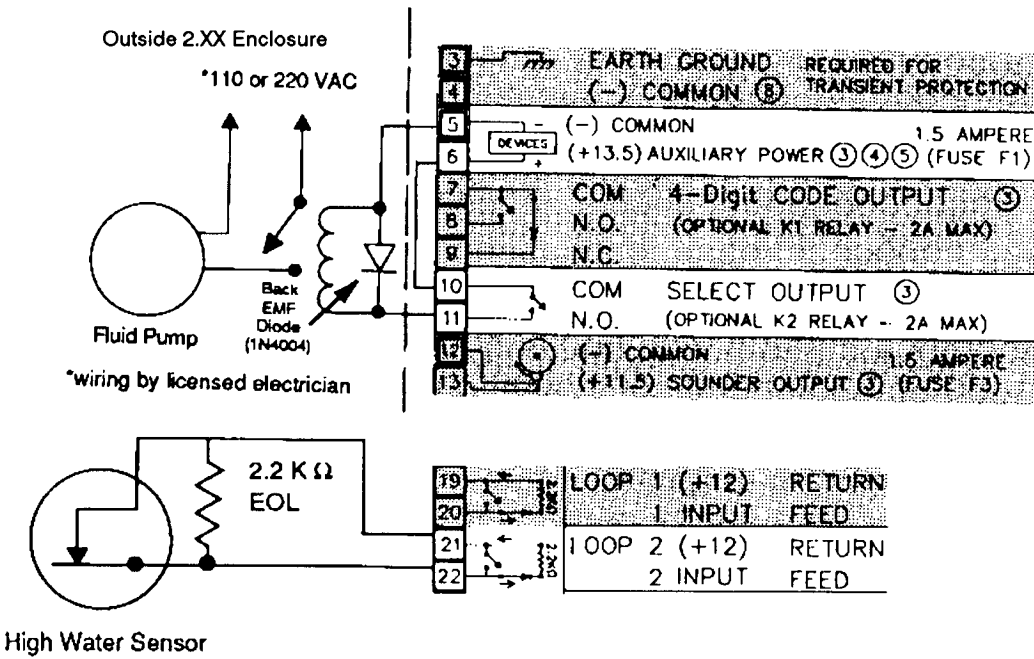


FIGURE 9



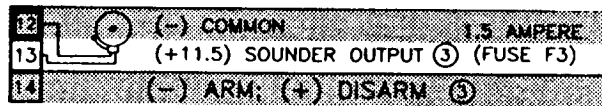
INDUSTRIAL MONITORING AND CONTROL

S While we typically think in terms of burglar and fire alarms, the power of the 2.XX control can also be used for industrial process monitoring and control. SEL OUT can activate heaters, coolers, and pumps in the event of an environmental alarm. Figure 9 shows a high-water alarm and control system. See UL-C

DUAL PATH REPORTING

S SEL OUT can be used to connect the 2.XX to long-range radio or derived-channel transmitters. This allow the features, flexibility, and remote programming capabilities of the 2.XX digital communicator to be combined with alarm reporting of a second transmitter.

Section 10. AUDIBLE OUTPUT Terminals 12 and 13



CHARACTERISTICS

Terminal 13 provides up to 1 ampere of current at 10.5 to 13.6 volts DC to power bells or siren drivers. The type of output (steady, pulsed, chirp, or silent) is determined by the programming of the loop which is in alarm. The voltage duration is programmable from 2.5 minutes to unlimited. See the Programming Manual for additional information.

PRECEDENCE

When multiple zones with different audible outputs are triggered at the same time, the following table shows which takes precedence:

Pulsing
Steady
Chirp
Silent

For example, if a zone programmed as steady is in alarm, and a zone programmed for pulsing output goes into alarm, the pulsing audible sound will override the steady.

FUSE F3

The Audible Output terminal is protected by fuse F3. This is a 3AG 1.5 amp normal blow fuse. If this fuse blows, remove power to the panel, then remove the short or overloaded condition. Replace the fuse with a 1.5 amp normal blow fuse before re-powering the control. **DO NOT SUBSTITUTE A HIGHER RATED FUSE!**

Terminal 12 is another of the Power Common (-) terminals.

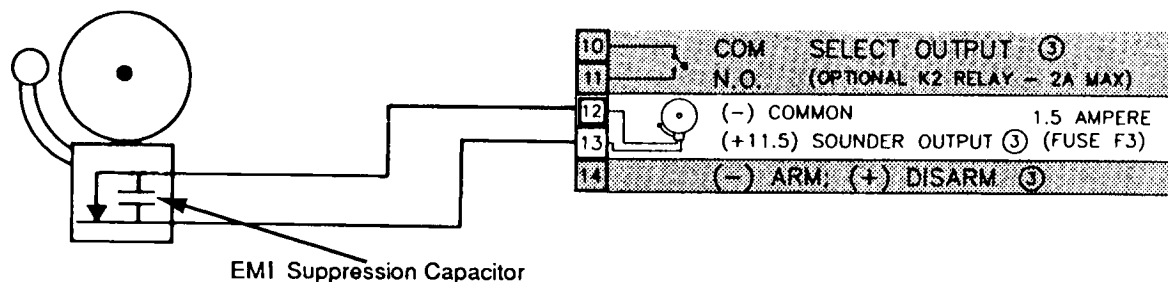
ELECTROMAGNETIC INTERFERENCE (EMI)

Impulse bells and vibrating horns can produce electromagnetic interference (EMI). While EMI does not damage the circuit board, it can produce the following:

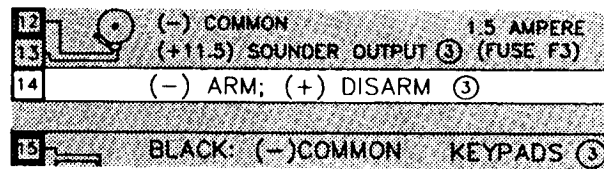
- error reports during data transmission
- incorrect dialing
- erratic keypad operation
- erratic microprocessor operation

To minimize EMI when using bells or vibrating horns, always install a 1000mfd, 25 volt (or greater) capacitor across the sounder power inputs, as shown in Figure 10. This capacitor must be installed on each device and must be physically connected at the device, not in the control panel. Be sure to observe the polarity if the capacitor is polarized.

FIGURE 10



Section 11. KEY SWITCH ARM/DISARM Terminal 14



SWITCH ARM/DISARM (May not be used in UL configuration.)

While most installations will use keypads to enable operation of all the 2.XX many features, the system can also be armed and disarmed using a form C dry contact switch. Switches allow only arming and disarming; all other system functions require the use of a digital arming station. Key switch activity will override any keypad activity occurring simultaneously.

CONNECTIONS

A maintained +12 signal at terminal 14 will cause the system to disarm and send an opening report with user ID "E". If a (-) signal is applied to the input, the system will arm. Figure 10 shows the key switch with unsupervised wiring.

FIGURE 10

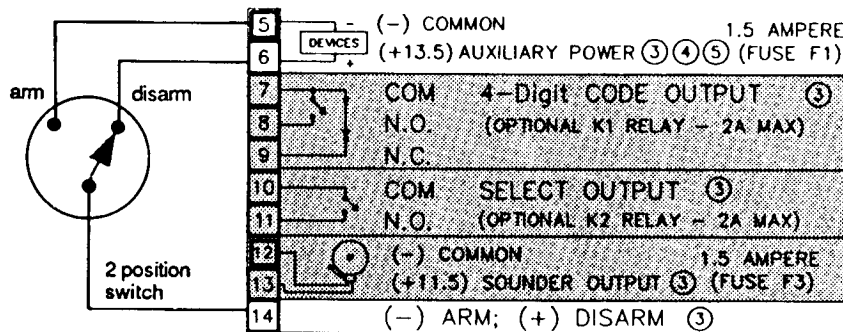
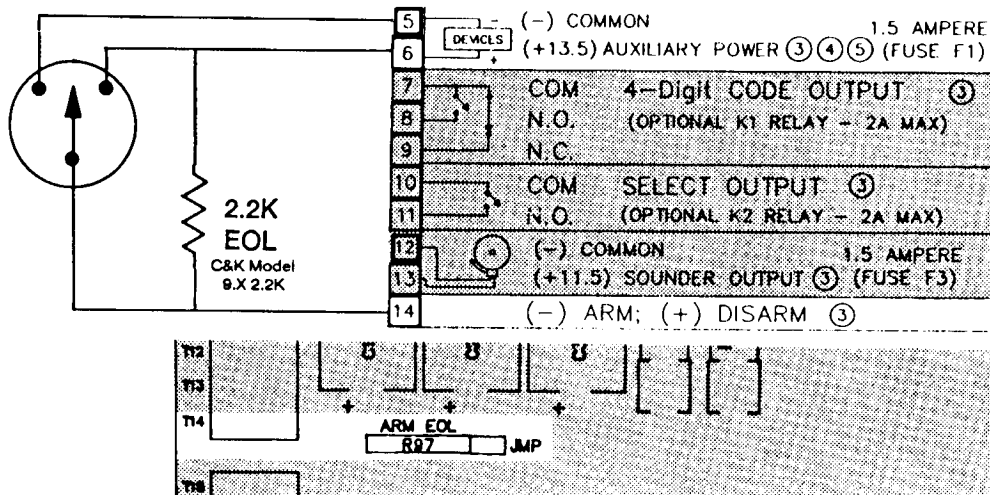


Figure 11 shows how to wire a 2.2K EOL resistor at the key switch for switch wiring supervision. This configuration requires a momentary SPDT center off switch. If you wire it this way, you must remove the internal ARM EOL resistor from the circuit (next to terminal 14 on the board). To do this, move the jumper (next to the resistor) one pin to the right. This will disconnect the resistor and park the jumper where it will be available for future use.

FIGURE 11

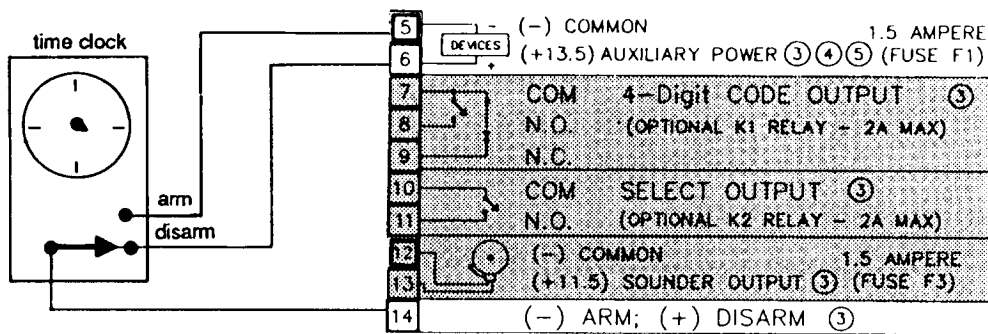




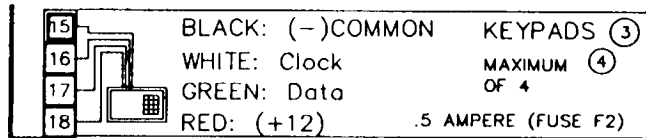
There is a market for automatic arming alarm systems. Fast food restaurants, high security vaults, medical clinics, and other locations with remote management can use a system that automatically arms and disarms seven days a week. Figure 12 shows how to wire an automatic timer to provide this function. Remember that systems installed in areas which use Daylight Saving Time will have to have the timer changed twice a year. See UL-A

TIME CLOCK ARMING/DISARMING

FIGURE 12



Section 12. ARMING STATIONS Terminals 15, 16, 17 and 18



KEYPADS

Up to four 2.XX keypads may be wired to the system. Terminal 15 is common. Terminals 16 and 17 are used for signalling. Terminal 18 provides power for the arming stations. **Do not power any other devices with this terminal.**

FUSE F2

Terminal 18 is protected by fuse F2 (AG3 .5 Amperes). If F2 is blown the arming stations will become inoperative, but the 2.XX will still monitor and report as programmed. **DO NOT SUBSTITUTE A HIGHER RATED FUSE!**

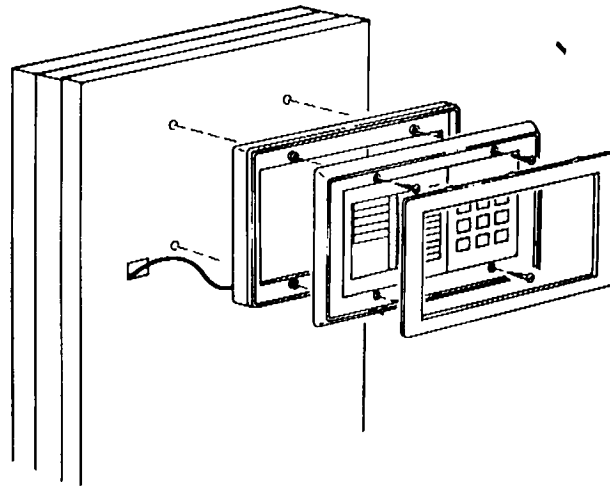
KEYPAD POWER CONSUMPTION

The keypad power consumption with AC and READY LEDs lit is 20 mA. The keypad power consumption with all LEDs lit and piezo sounding (4-8 lamp test) is 125 mA. When calculating keypad power consumption, multiply the number of keypads by 20 mA.

KEYPAD ON CABINET

To mount a keypad on the front of the 2.XX cabinet, cut out the front cabinet label where the wire cutout and screw mounting holes are located. Attach the four-conductor wire to the keypad. Then mount the keypad to the box with the screws provided with the keypad as shown in Figure 13.

FIGURE 13



SYSTEM/KEYPAD TEST

Remote Station LED and piezo-buzzer tests are performed by pressing the 4 and 8 keys simultaneously. This also activates the system self-test routine. It may be performed at any time except during the programming mode.

Figure 14. HOMERUN KEYPAD WIRING

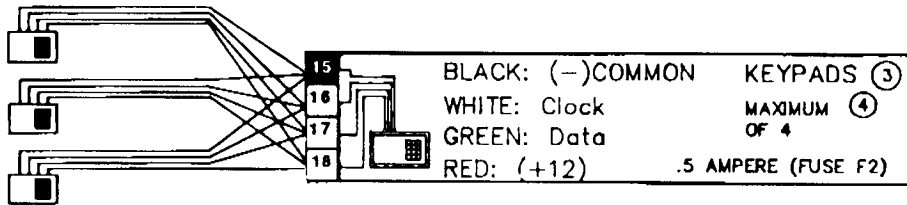


Figure 15. PARALLEL KEYPAD WIRING



SECTION 13. LOOP INPUTS Terminals 19 - 34

19		LOOP 1 (+12)	RETURN	LOOP CONFIGURATION ③ END-OF-LINE 2.2K Ω RESISTOR MUST BE AT THE END OF PROTECTIVE CIRCUIT (MODEL No. 9.X 2.2K) LOOP VOLTAGES VOLTMETER ACROSS #4 AND LOOP INPUT 9.1-12.0VDC: Alarm SHORT CIRCUIT CONDITION 3.0-9.0VDC: Normal END-OF-LINE RESISTOR 0-2.9VDC: Trouble OPEN CIRCUIT CONDITION UL LISTINGS ONLY APPLIES WITH USE OF 4-WIRE SMOKE DETECTORS FOR FIRE DETECTION APPLICATIONS.	RING
20		1 INPUT	FEED		
21		LOOP 2 (+12)	RETURN		
22		2 INPUT	FEED		
23		LOOP 3 (+12)	RETURN		
24		3 INPUT	FEED		
25		LOOP 4 (+12)	RETURN		
26		4 INPUT	FEED		
27		LOOP 5 (+12)	RETURN		
28		5 INPUT	FEED		
29		LOOP 6 (+12)	RETURN		
30		6 INPUT	FEED		
31		LOOP 7 (+12)	RETURN		
32		7 INPUT	FEED		
33		LOOP 8 (+12)	RETURN		
34		8 INPUT	FEED		

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LOOP CONFIGURATION

Each loop is independently configured through programming. See the Programming Manual for complete information. Loops can be wired to use a 2.2K ohm end-of-line (EOL) resistor, open circuit switches, closed circuit switches, or voltage triggers to activate an alarm. EOL loops will be supervised for trouble conditions as well as alarms.

LOOP WIRING

Figures 16 through 20 show the proper wiring of loops for various switch contact options. These figures show one or two devices on a series loop. Figure 20 shows the proper wiring configuration for home-run wiring of multiple devices on the same loop. Notice that it requires 4 conductors to each device if you are to install a properly supervised loop. The EOL resistor is still located electrically at the end of the line even though the actual splice barrier strip might be located in the 2.XX enclosure. If the resistor lead is connected directly to either loop terminal, the loop is NOT properly supervised.

Figure 16

Supervised (w/EOL):

“+” voltages = ALARM
 “0” voltages = TROUBLE

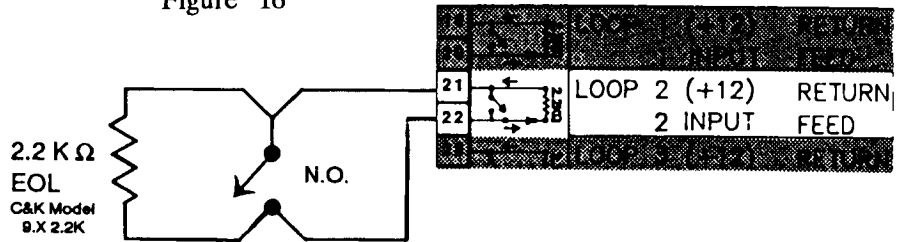


Figure 17

Normally Closed / Normally Open (N.C./N.O.):

“+” voltage = ALARM
 “0” voltage = ALARM
 Burglar loops (non-24-hour) must be configured this way for UL.

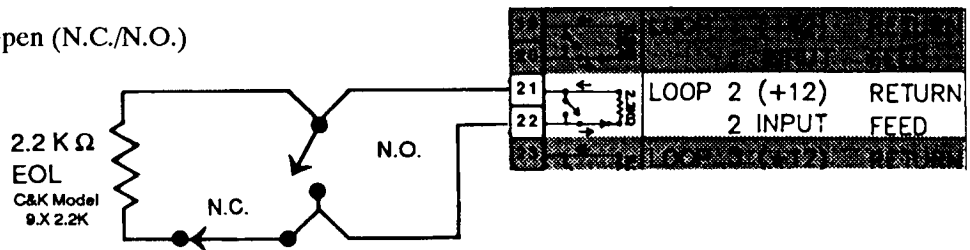


Figure 18

Closed Loop (N.C.)

"0" voltage = ALARM
 "+" voltage is ignored

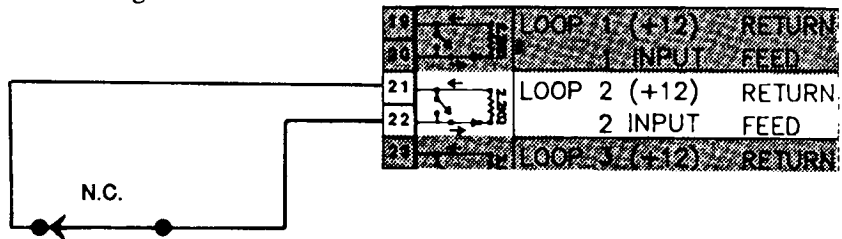


Figure 19

Open Loop (N.O.)

"+" voltage = ALARM
 "0" voltage is ignored

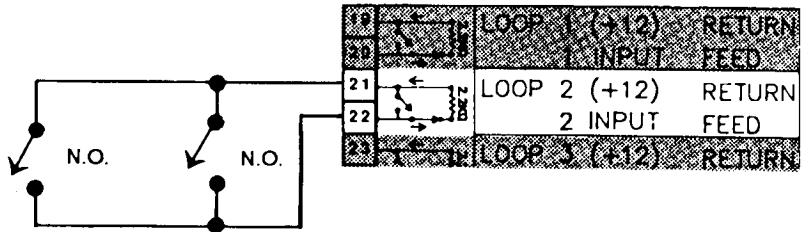
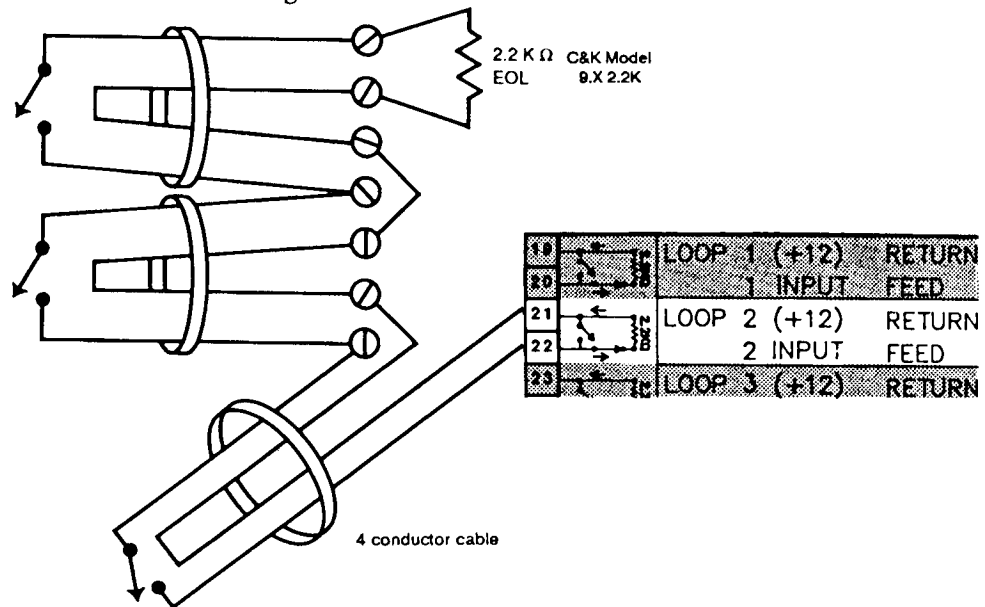


Figure 20



WET CONTACTS

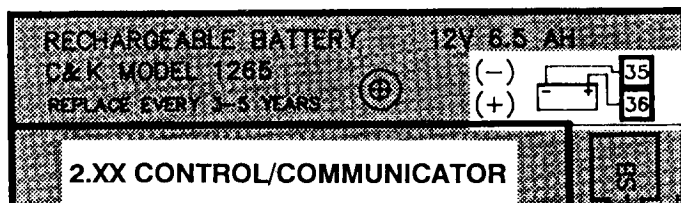
When using wireless receivers or other devices that use a wet contact (switches internal voltage (+) or common (-) during activation), wire the outputs of the device directly to the appropriate loop inputs (Terminals 20, 22, 24, 26, 28, 30, 32, 34). The outputs of these devices are usually internally connected to transistors that short to ground (open collectors) or output +12VDC. The series resistance of transistor drivers may not exceed 100 ohms. All wet contact devices must be 12V devices and must be powered from the 2.XX's power supply. Otherwise, dry contacts must be used for alarm signaling.

A loop may be triggered both by dry and wet contacts. This allows hardwired zone inputs to be shared with a short range wireless receiver.

SLAVE COMMUNICATOR

\$ If the 2.XX is to be used as a "slave" type communicator, it is recommended that either "Supervised" or "NC/NO" loops be configured for the 8 zone inputs. The EOL resistor should be placed at the initiating device. This will allow a failure of the wiring between the 2.XX and the device to be detected.

Section 14. STANDBY BATTERY Terminals 35 & 36



CONNECTING BATTERIES

Connect the battery (-) terminal to panel terminal 35 and the (+) terminal to panel terminal 36. For best results use the C&K Systems battery, model 1265 (12 Volts, 6.5 AH). Do not use non-rechargeable batteries or batteries other than sealed lead-acid. See chart in Section 7.

REVERSED LEADS

If the battery leads are reversed, the 2.XX and the battery will not be damaged. However, the system will not function until the polarity is corrected. The voltage to auxiliary power devices (terminals 5 and 6) will be reversed until the polarity is corrected.

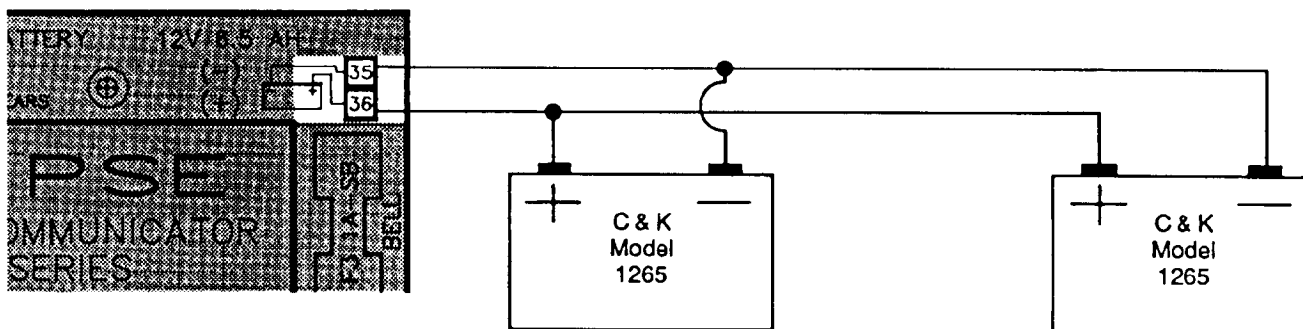
CLEARING THE SERVICE LED

On Start-Up (first application of battery or transformer power) the Service LED will be flashing. Clear the Service LED by pressing the 4 and 8 keys simultaneously on any keypad.

PARALLEL BATTERIES

Two model 1265 batteries may be connected in parallel to double the backup time. Charging time will also double. **TO PREVENT DAMAGE TO THE CHARGING CIRCUIT, DO NOT USE BATTERIES OTHER THAN THE C&K MODEL 1265.**

Figure 21



CHARGING

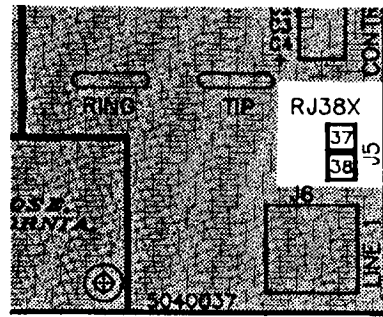
The 2.XX power supply circuit can deliver a total of 1.6 Amperes regulated at 12VDC. The panel power consumption is approximately 200mA and approximately 400mA is reserved to recharge the standby battery. The charger circuit is a floating charger to provide quicker recharging than trickle chargers. It is factory set at 13.65 VDC.

BATTERY TESTS

The Battery-Bell/Siren Test is conducted by simultaneously pressing the 2 and 9 keys on any keypad.

If enabled, when the 2.XX executes its daily battery test, and the battery has failed (or no battery is connected), the microprocessor will reset and the Service LED will flash until acknowledged at the keypad (press 4 and 8 keys simultaneously). This is similar to a complete power reset (disconnecting and reconnecting the transformer and battery). The current arm and shunt states will not be affected. Alarm memories, however, will be cleared. See the Programming Manual for an explanation of the dynamic battery test.

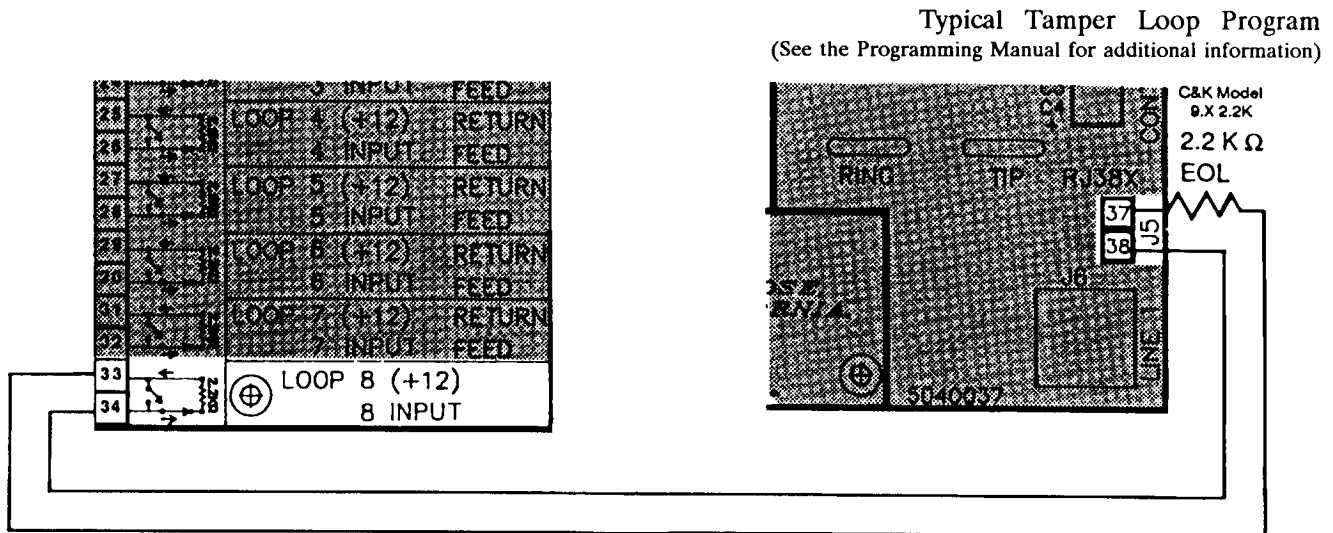
Section 15. RJ38X PHONE JACK TAMPER TERMINALS 37 and 38



TAMPER LOOP

Terminals 37 and 38 (on the right side of the circuit board) are internally connected to the telephone line jack J6. (See Section 22 for proper jack installation.) The telephone line cord, C&K model 9.X PC/P, connects these terminals to terminals 2 and 7 of the JR38X interface jack. By connecting these terminals in series with one of the loops it becomes a tamper loop (Figure 22). When the connector is installed properly, the circuit will open when the cable is removed.

Figure 22



Section 16. FUSES

AUXILIARY POWER FUSE

Fuse F1 protects auxiliary +12VDC (terminal 6) from overload. Be sure to calculate both continuous and intermittent power demands of auxiliary equipment to insure that there is sufficient power and fuse reserves. The +12 power of the accessory pin connectors on the right hand side of board are also protected by this fuse. The proper replacement for this fuse is a 1.5 amp normal blow fuse. **DO NOT SUBSTITUTE A HIGHER RATED FUSE!**

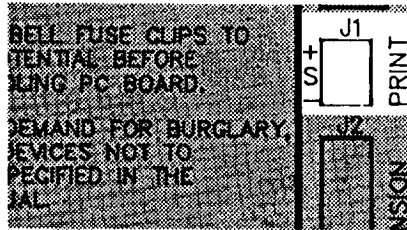
KEYPAD POWER FUSE

Fuse F2 protects +12VDC keypad power supply from overload and short conditions. To prevent the keypads from becoming inoperative, do not exceed 4 arming stations or power other devices from terminal 18. The proper replacement for this fuse is a .5 ampere slow blow fuse. **DO NOT SUBSTITUTE A HIGHER RATED FUSE!**

SOUNDER OUTPUT FUSE

Fuse F3 protects the audible output from damage. The proper replacement for this fuse is a 1.5 amp normal blow fuse. **DO NOT SUBSTITUTE A HIGHER RATED FUSE!**

Section 17. CONNECTOR J1 - PROGRAMMING PRINTER



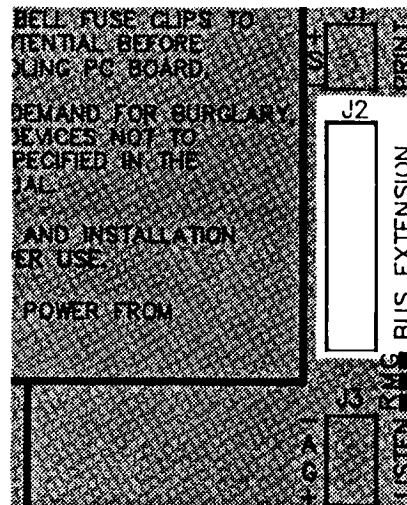
CONNECTING PRINTER

Connector J1 (PRINT) is used to connect the C&K model 9.X PRP programming printer to the 2.XX. Insert the flat printer cable connector onto connector J1. Start the program printout routine as described in the Programming Manual.



Using an unapproved printer may damage the 2.XX circuit board. This damage is not covered under warranty.

Section 18. CONNECTOR J2 - BUS EXTENSION



ACCESSORY CONNECTOR

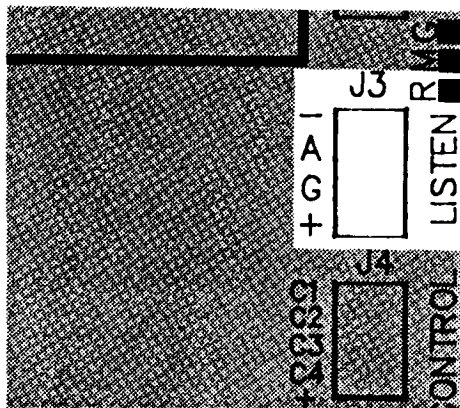
Connector J2 is used to connect specific 2.XX accessories to the parallel data bus. Refer to the accessory's installation sheet for additional information.

PRECAUTIONS



The BUS EXTENSION is connected directly to the 2.XX microprocessor. Since it is designed to be used only within the 2.XX metal cabinet, there are no drivers or protector circuits on this bus. Connecting non-2.XX devices could damage the circuit board or the microprocessor. To prevent electrical interference and possible circuit board damage, do not extend this bus outside the metal cabinet. To prevent induced AC interference, do not run any wiring, especially AC voltages or sounder circuits near this bus.

Section 19. LISTEN-IN - CONNECTOR J3



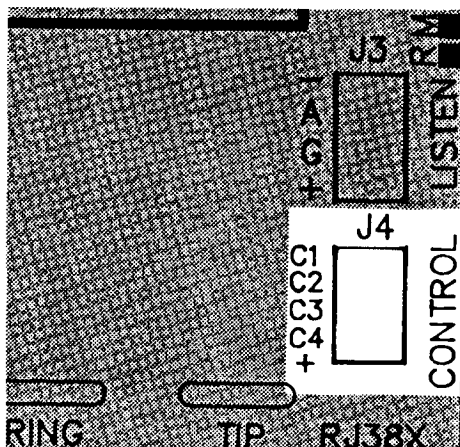
LISTEN-IN ACCESSORIES

This connector is used to connect to the 2.XX listen-in (model 9.XLN) and the two way listen-in (model 9.XVC) amplifiers. Specific installation and programming instructions are provided with these accessories.

LISTEN-IN OPERATION

Listen-In communications, when enabled, will allow the dispatcher to listen-in to the protected premise during alarm conditions. After the alarm conditions have been reported, the 2.XX immediately connects the microphone network to the phone line for the programmed duration. The audible alarms automatically silence during the listen-in period, then resume sounding when listen-in is finished.

Section 20. REMOTELY ACTIVATED RELAYS - CONNECTOR J4



RELAY CIRCUIT BOARD

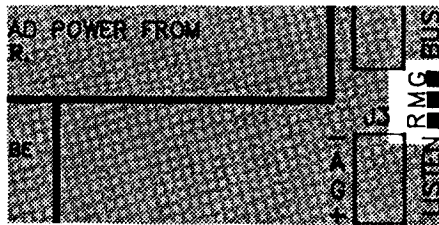
An optional four-relay circuit board can be connected to connector J4 (CONTROL). In 2.XX software version 2.10, these four outputs are controlled interactively from the central monitoring station using COMMANDER software.

In software version 2.20, relay #1 is used to sound an optional piezo buzzer during the entry or exit period. Relays #2 through #4 are controlled interactively from the central monitoring station.



Connecting non-approved relays may damage the 2.XX circuit board. This damage is not covered under warranty.

Section 21. TEST POINTS



R,M,G SQUARE PADS

The three square pads located on the right side of the circuit board, near J2 and J3, are labeled R, M, and G. These pads are used for special reset functions. Use miniature clip leads to connect signals to these inputs. To prevent damage or accidental shorts to circuits underneath, do not clamp your test leads onto the boards. Under no circumstances connect field wiring to these points as they have no lightning/surge protection.

GROUND (G)

This pad is internally connected to (-) COMMON and is placed here for your convenience.

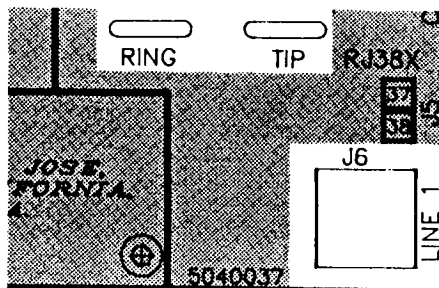
(-) RESET (R)

A momentary ground to this pad will cause the microprocessor to reset (or restart) its program routines after clearing the buffer contents. This does not change any EEPROM data, or current arm/disarm mode or zone shunt state. This procedure will most likely never be necessary. The reset pad can be useful for aborting communications, silencing the bell/horn, or clearing unsent alarm signals.

TELCO

See next section for location and use of telco test points.

Section 22. TELEPHONE INTERFACE - CONNECTOR J6



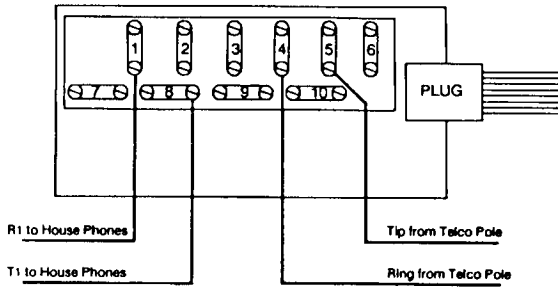
TELCO CONNECTION

Use a double ended RJ31/33X cable (C&K model 9.X PC/P) to connect to a RJ31X or RJ38X telco interface. Check with your state's public utility commission to determine who can install the jacks. The only difference between the RJ31X and the RJ38X jacks is the additional tamper circuit on terminals 2 AND 7 of the RJ38X.

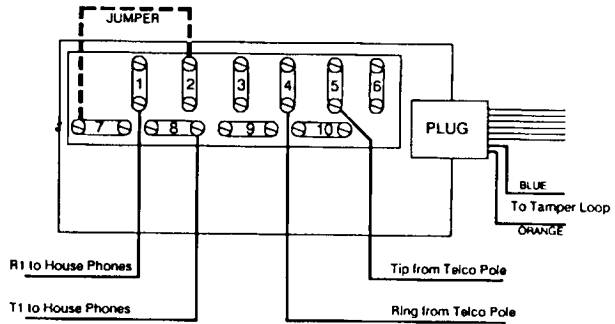
TEST POINTS

To the left of the RJ38X tamper terminals are telco test points RING and TIP to use for handset and meter testing.

**Figure 23
RJ31X JACK**



**Figure 24
RJ38X JACK**



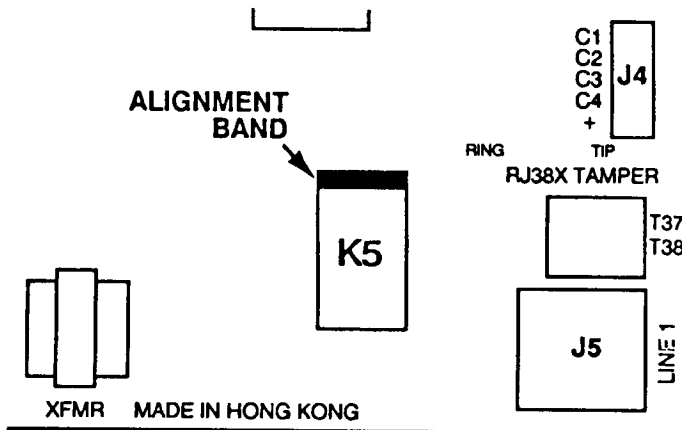
LINE SEIZURE

The 2.XX control/communicator seizes both sides of the phone line when transmitting information. An improperly installed RJ31/38X jack can prevent the communicator from seizing the phone line away from other telephone devices. To verify proper wiring, activate the communicator and verify that all telephone devices connected that phone line not hear the communicator's transmission or interfere with it. Figures 21 and 22 show the proper jack wiring.

GROUND START

The 2.XX is configured at the factory for loop start telephone lines. If the system is to be used on a ground start line, a Ground Start Relay (C&K model 9.X RLX) must be plugged into the GND START relay socket (K5). This relay will momentarily short the telephone circuit to earth ground in order to initiate dial tone. This is typically required if the telephone lines are connected to a PBX system. The 2.XX panel must be properly earth grounded (see Section 4. Earth Ground) for ground start to function.

A C&K model 9.X RLX relay must be properly installed in relay socket K5. One end of the relay has an alignment band. This band must be oriented with the band up, towards the heat sink.



Section 23. TROUBLESHOOTING OVERVIEW

The operation of the 2.XX control/communicator is controlled by the firmware, wiring connections, and the programming options selected. Because they are all interrelated, it is difficult to troubleshoot one without a working knowledge of all three. In the following two sections we will give some simple troubleshooting hints. Additional information will be found in the Programming Manual.

C&K's Customer Service department is available to help you troubleshoot your 2.XX panel. Before calling us you should have already tried the troubleshooting hints in sections 25 and 26. When calling us, troubleshooting will be faster if you have available a VOM, a telephone lineman's handset, manuals, and accurate information regarding the system's program. The Customer Service phone numbers for Europe and Asia are listed in the back of this manual.

Section 24. PROGRAMMING TROUBLESHOOTING

Cannot get into Program Mode:

1. Not entering "*" [MASTER CODE]" correctly or fast enough. (1.5 seconds is the maximum time between key entries.)
2. Incorrect Master Code.

Not Operating Properly. 2.XX does not operate as programmed.

1. Verify that the programmed memory are the same as the values on the Worksheet. Use the printer tape or COMMANDER interactive printout if available.
2. Re-enter the information if necessary or in doubt.

Piezo-buzzer is pulsing continuously during Program Mode: A programming entry error was made.

1. Re-enter the complete memory location line, starting with the 2-digit memory location,
or
2. Key in 0 0 # to exit Programming Mode.

Cannot program functions higher than Memory Location 20 (piezo-buzzer is pulsing):

1. Enter 19 # to gain access to upper (installer) Memory Locations for programming.

Section 25. INSTALLATION TROUBLESHOOTING

No Green Status Light:

1. Ensure that all circuits are "normal" according to how each zone was programmed.
2. Permanently shunt unused zones out of the system.

Keypad piezo-buzzer is sounding continuously and Yellow LED is on:

A zone(s) defined as "Supervised" has a "trouble" condition.

1. Verify that all EOL resistors are in place.
2. Verify that all protective loops are complete and have no foreign grounds or voltages.

System Arms with Violated Zones:

Forced Arm Enable (Auto-Shunt) was selected when the programming options were selected.

1. Reprogram if necessary.

2.XX will not dial:

1. 2.XX is programmed for local operation. Reprogram if necessary.
2. The specific loop is programmed for local. Reprogram if necessary.

2.XX dials but does not break dial tone:

1. The 2.XX is programmed for tone dialing on a pulse dial phone line. Reprogram to impulse dialing.
2. The 2.XX is connected to a ground start phone line. Install a model 9.X RLX relay in socket K5.
3. The RJ31X or RJ38X telco jack is incorrectly wired.

Unit dials but does not Communicate to Central Station:

1. The 2.XX is not dialing the correct phone number. Reprogram telephone number(s)
2. The 2.XX is not dialing the correct phone number. Install EMI suppression capacitors on all bells and vibrating horns, at the sounders.
3. If Central Station is answering, but nothing else happens, verify or reprogram the Reporting and/or Message format.

Bells/Horns don't sound:

1. Loop not programmed for audible. Reprogram if necessary.
2. Fuse F3 is open. Remove overload condition and replace fuse.

Bells/Horns sound weak:

1. Wire gauge is too small for the length of Sounder wiring runs.
2. Sounder baffle plate is obstructed.
3. Battery is low.

AC LED not on:

1. Test for 20VAC nominal across transformer terminals (1 & 2). The transformer voltage should read slightly higher than the transformer's rated voltage.

Zone programmed "Interior" does not trigger alarm:

1. If auto-home was programmed and the delay zone was not faulted during exit delay, all interior loops are automatically shunted until system is disarmed.

Keypad Panic not working:

1. Check panic programming options.

No Auxiliary Power (+12VDC) on terminal 6:

1. Remove external aux power line and test for short or overload condition.
2. Replace fuse F1.

No sound on BATTERY/BELL Test (2 & 9 keys pressed simultaneously):

1. Check for no battery or battery failure.
2. Check fuse F3 (bell fuse).

Arming combination will not arm or disarm:

1. Invalid arm/disarm combination.
2. Digit entries must occur within 1.5 seconds of each other.
3. Selected combination is restricted to arm only or disarm only.
4. If an incorrect key is pressed or more than 1.5 seconds elapse between key depressions during entry of any of the user combinations, the arm/disarm program routine will abort. Wait 1.5 seconds before starting over.
5. Check fuse F2.

Section 26. HOW TO USE THE SYSTEM

WHAT THE KEYPAD LED's MEAN

GREEN "READY"

- OFF when protective loop(s) is in violation.
- FLASHING when arming is possible, but a warning condition exists, such as shunts, AC power loss, Annunciator Memory, or Service Required. When armed, during alarm and alarm memory.
- ON when system is normal and is ready to be armed.

YELLOW "TROUBLE" (also see Fire Alarms.)

- OFF when loop(s) programmed as "Supervisory" (FIRE) are normal.
- FAST FLASH when a Supervised circuit is shunted.
- SLOW FLASH when an alarm condition on a supervised circuit is acknowledged by the user and the alarm condition still exists.
- ON to indicate "trouble".

RED "ARMED"

- OFF when disarmed.
- FLASHING when armed, with delay zones turned to instant.
- ON when protective circuits are armed.

GREEN "AC"

Indicates that AC power is supplied to the unit and the battery charger is operating. Indicator turns off during power interruptions and temporarily during the daily battery test.

YELLOW "REPORT"

- OFF when in normal state.
- ON when the unit is communicating to the monitoring station.
- FLASHING when unit fails to communicate with monitoring station after repeated attempts.

YELLOW "SERVICE"

- OFF when in normal state.
- FLASHING
 - on start-up
 - on self-test failure
 - on phone line failure
 - on daily battery test
- ON when service is required.
 - Low Battery (10.5V or less)
 - Battery Test Failure
 - Blown Fuses
 - AC Power Loss longer than 15 minutes

If the service condition has returned to normal, the SERVICE LED can be cleared by simultaneously pressing the 4 and 8 keys (Lamp Test).

RED "ZONES" (8)

- OFF when zone is normal
 - SLOW FLASH during Alarm and Alarm Memory (memories clear when unit rearms).
Note: In Alarm Memory, zone LED's time out after 5 minutes. Touch any digit to reactivate alarm Memory.
 - FAST FLASH when zone is temporarily bypassed.
 - ON when zone is violated (alarm state, but system is disarmed). Does not steadily on "24-Hours" zones or a supervised zone is in trouble.
- Note: Zones can be programmed to be invisible. Invisible zones will not display ZONE lights or the REPORT light.

WHAT THE KEYPAD SOUNDER MEANS

SHORT TONE:

1. Once every time a zone is violated from a normal state. This beep may not be active, depending on programming.
2. Each time a key is pressed while in Program Mode.
3. When the system is disarmed.

LONG TONE:

1. When you arm the system.

PULSING TONE:

1. On activation of pre-alarm unless pre-alarm is disabled. The pre-alarm pulses once every second to provide real-time counting.

CONTINUOUS TONE:

1. On supervised circuit trouble (fire trouble). Can be silenced only by loop restoral or by shunt sequence. Intermittent "trouble" will cause a four second momentary tone.

USING THE KEYPAD

ARMING the System

When arming the system, the green READY light must be on steady or flashing. If this light is off, it indicates that a protective device is faulted.

With the green READY light on or flashing, enter the six- digit Master Combination or any four-digit Arming Combination at any keypad. The piezo-buzzer at the keypad will sound briefly and the red ARMED light in the keypad will come on. This indicates that the system is armed. Leave immediately, and secure the Entry/Exit door.

ARMED "AWAY"

If the user arms the system and exits during the programmed exit delay time, the system arms in the AWAY mode. In this mode the system will allow a delay time for disarming upon returning through a specified Entry/Exit door.

ARMED "HOME"

If the user arms the system and does not open any Entry/Exit doors during the exit delay time, the system arms in the HOME mode. In this mode, the Entry/Exit doors become Instant when the exit delay expires. This programmable feature is called "Auto Home" and is normally not used in commercial applications.

DISARMING

The same six-digit Master Combination or four-digit Arming Combinations used to arm the system will disarm it.

When re-entering the premises, the system must be disarmed within the programmed entry delay time to prevent an alarm condition. The keypad tone will sound during this time to remind the user to disarm the system. If the green READY light was flashing before disarming, an alarm condition had occurred while the system was armed. The zone memory light will clear when the unit rearms.

FIRE ALARMS

If some of the zones are programmed for fire protection, they remain armed 24 hours a day and are controlled automatically by the 2.XX Control unit. If a fire condition occurs, the audible device sounds and a signal is sent to the central station. This steady audible sound will override a pulsing audible sound if they occur simultaneously.

If a fire alarm occurs, enter any Arming Combination or the Master Combination to silence the audible alarm. If the Fire condition is still present after the combination is entered, the amber SERVICE light will begin to flash. This "Supervisory Bypass" indication shows that the alarm signal was manually acknowledged and bypassed. When the fire condition clears, the amber light will automatically reset (extinguish) to indicate that the fire zone has restored. If the zone restores then re-alarms, the audible alarm will sound again and the communicator will transmit another alarm to the central station.

If a fire alarm is not silenced, the audible alarm will sound for the programmed AUDIBLE ALARM DURATION (Memory Location 52), then silence. The 2.XX will reset to await future alarms.

EMERGENCY/PANIC ALARM.

Pressing the * and # keys simultaneously triggers an emergency alarm. It may be silent (holdup) or audible (panic), depending on the options programmed.

BYPASSING (SHUNTING) ZONES

Zones can be temporarily bypassed (shunted) from the system while other zones remain active. Shunts are cleared when the system is disarmed. To bypass a zone, enter the following 6-key entry:

#, [Any valid Auxiliary Combination], [1 - 9 (desired zone)]

The keys must be pressed within 1.5 seconds of each other. When the system is armed with any zones bypassed, either manually or when force-arming, a report is sent to the central station. The Master Combination cannot be used to bypass zones manually. Automatic bypassing (force-arming) is permitted only if so programmed. If force-arming is programmed, all zones that are violated at time of arming automatically shunt themselves out of the system when any user code arms the system.

Bypassing example: The arming combination is 1234. To bypass zone 3, enter # 1 2 3 4 3

ACKNOWLEDGING ALARMS

To acknowledge an alarm, enter the six-digit Master Combination or a four-digit Arming Combination. The audibles will silence and a Cancel report will be sent to the central station if so programmed.

The system can be programmed to delay before dialing. If a false alarm is acknowledged during this time, no signal will reported to the central station. The audibles will sound, however, as soon as the zone goes into alarm.

Section 27. SUBSCRIBER TESTING

You should teach the alarm subscriber how to recognize normal system operation and how to perform routine tests. We recommended that the subscriber perform a complete test of the system after electrical storms.

You should instruct the subscriber to test the audibles once each week (by pressing the 2 and 9 keys at the same time).

You should also instruct the subscriber to make a test with the central station weekly as described in the User's Manual.

Section 28. CENTRAL STATION SIGNALS

Troubleshooting is easier if you know what signals are supposed to be sent to the central station. It is impossible for us to list all the signals that are sent since there are so many of them, such as loop codes, opening and closing codes, troubles, and restorals are programmed by the alarm company. Also, some receivers decode the information into English translations. these translations can vary from receiver to receiver.

The following is a list of the hard-coded reporting codes. The UNIT CODE Zone Extensions are the codes that will be reported after the code that you have selected in Memory Location 44.

Decimal Code	Hexadecimal Code	Event UNIT CODE Zone Extensions
1	1	Low Battery
2	2	AC Fail
3	3	Bell Fuse Fail
4	4	Phone #1 Fail
5	5	Phone #2 Fail
6	6	Battery Restore
7	7	AC Restore
8	8	Bell Fuse Restore
10	A	Remote Programming attempted or completed
15	F	Guard Failed to Report (Model 2.5)

CLOSING REPORTS are sent as soon as the system is turned on. Thus, transmission occurs during exit delay. Exit is extended until the closing report is received, or until eight dialing attempts have been made. The keypad will beep twice to signify a successful closing. Closing reports (as well as Openings, Cancels, and Duress) always report the User Code following the Report Code.

OPENING/CLOSING and CANCEL Extensions

7	7	DURESS Combination opening/closing
14	E	Key Switch opening/closing
15	F	COMMANDER opening/closing

SHUNT REPORTS, if programmed, will send the shunt code followed by the zones that are shunted. It will be sent at the time of shunting, and again with the close report if the system is not immediately armed after shunting (manual shunt).

TROUBLE REPORTS are sent when loops that are programmed for supervision (Memory Locations 31-38, Digit Position [5]) go to an open condition. They are also sent when a day loop is faulted and the control is disarmed.

24-HOUR TEST REPORTS are sent every 24 hours if Memory Location 49, Position (1) has been programmed with a reporting digit. The first report will be transmitted 24 hours after the control is powered up. The time of the first 24-Hour Test Report can be changed in Memory Location 19.

The armed status of the control will be reported with the test report. The zone extension following the test code will be a "1" if the control is armed and a "2" if it is disarmed.

DURESS. If Memory Location 48, Position (1) has been programmed for a Duress reporting code, the extension reported after the Duress code will be the digit "0". An opening or closing is always sent with the Duress. The O/C will always report user #7.

Section 29. UL COMPLIANCE VERIFICATION

The 2.XX Control/Communicator is in compliance with Underwriters Laboratories, Inc. Standards UL985, UL1023, and UL 1635. As a flexible, programmable system, certain programming options may not be used under these standards. The following are charts of the programming restrictions which must be observed in order to meet the standards.

UL 985

1. The audible alarm must be programmed to sound for at least 4 minutes before silencing.
2. No zone may be programmed as a silent alarm.
3. Fire zones must be programmed for a **pulsing** audible alarm.
4. Burglar zones must be programmed for a **steady** audible alarm.
5. An Arm/Disarm switch may not be used (terminal 14).
6. A lock must be installed on the cabinet.

UL 1023

1. The audible alarm must be programmed to sound for at least 4 minutes before silencing.
2. No zone may be programmed as a silent alarm.
3. No Entry Delay greater than 45 seconds may be programmed.
4. No Exit Delay greater than 60 seconds may be programmed.
5. No Delay Before Dial may be programmed for the communicator.
6. An Arm/Disarm switch may not be used (terminal 14).
7. The unit must not be programmed to dial a police station.

UL 1635

1. The audible alarm must be programmed to sound for at least 4 minutes before silencing.
2. The Unit Status Report must be enabled.
3. The 24-Hour Check-In must be enabled.
4. The Dynamic Battery Test must be enabled.
5. No Entry Delay greater than 45 seconds may be programmed.
6. No Exit Delay greater than 60 seconds may be programmed.
7. Burglar loops (non-24-hour loops) must be programmed for NO/NC.
8. No Delay Before Dial may be programmed for the communicator.
9. An Arm/Disarm switch may not be used (terminal 14).
10. A tamper switch must be installed on the cabinet.

All parts and accessories used in an installation must themselves be UL Listed in order for the system to be in compliance.

ZONE PROGRAMMING

The following loop configurations will meet UL Standards:

Fire Loop:

- No Delay Before Dial
- 24-Hour Arming
- Pulsing Audible
- Supervised - Latched for Heat
- Resettable for Smoke
- Not Shuntable

Burglary Loop:

- No Delay Before Dial
- Steady Audible
- NC/NO with EOL circuit

DISCLAIMERS

- A. This product has not been investigated by Underwriters Laboratories Inc. for UL 609, Local Burglar-Alarm Units and Systems; UL 365, Police Station Connected Burglar-Alarm Units and Systems; UL 1076, Proprietary Burglar-Alarm Units and Systems; or UL 1610, Central-Station Burglar-Alarm Units.
- B. This product has not been investigated by Underwriters Laboratories Inc. for UL 294, Access Control System Units.
- C. This product has not been investigated by Underwriters Laboratories Inc. for UL 508, Industrial Control Equipment, Electric.

Although every effort has been made to validate the materials and specifications herein, C&K Systems makes no representations or warranties with respect to such information and reserves the right to make engineering changes that may affect the operations and specifications listed without obligation to notify any person of such revision. Refer to any corresponding data sheets for additional information.

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 for 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 systems's proper operation at all times.

TELEPHONE LINE PROBLEMS

In the event of telephone operational problems, disconnect the control/communicator by removing the plug from the RJ31X/RJ38X jack. We recommend that your certified installer demonstrates 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.

THE LIMITATIONS OF YOUR ALARM SYSTEM

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

- * 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. Devices powered by AC will not work if their AC power supply is off for any reason and their backup batteries are missing, dead, or not put in properly.
- * Alarm warning devices such as sirens, bells or horns may not alert people or wake up sleepers if they are located on the other side of closed or partly closed doors. If warning devices are on a different level of the residence from the bedrooms, then they are less likely to waken or alert people inside bedrooms.
- * Telephone lines needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily out of service. Telephone lines are also subject to compromise by sophisticated methods of attack.
- * Smoke detectors used in conjunction with the system 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 the residence or building. A second floor detector, for example, may not sense a first floor or basement fire. Finally, smoke detectors have sensing limitations. No smoke detector can sense every kind of fire every time. In general, detectors may not always warn you 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.

The most common cause of an alarm system not functioning properly when an intrusion or fire occurs is inadequate maintenance. Your alarm system should be tested weekly to make sure all sensors are working properly. The master console and remote keypad(s) should be tested as well.

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