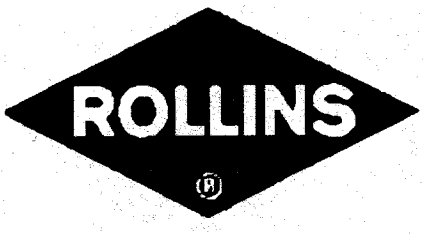
FIFTH DRAFT



SYSTEM VI

SECURITY SYSTEM

REFERENCE and

INSTALLATION Manual

§ January 1994 §

FIFTH DRAFT

SYSTEM VI NOTICE

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This manual is for the Rollins Protective Services SYSTEM VI Security System.

This Technical Manual is specific to the features and functions of the System VI Software, Dated 5/15/92. Subsequent revisions may have changed some operational specifications.

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U.L. LISTED SYSTEMS.

The minimum configurations for the applicable U.L. listed systems are as follows:

- **Basic System**
  - 60-324 System VI Master Control Unit
  - 60-382 Hardwire Operator Terminal and Display
  - 60-248RL Alpha Numeric Touch and Display

- **Household Fire Alarm**
  - 60-352 Smoke Sensor
  - 60-382 Hardwire Operator Terminal and Display

- **Household Burglar Alarm**
  - 60-362 Door/Window Sensor
  - 60-382 Hardwire Operator Terminal and Display

- **Miscellaneous Signaling**
  - 60-136 Hardwire Interior Siren
  - 13-046 Exterior Siren Speaker

- **Additional Equipment**
  - 60-346 MCU Power Supply
  - 34-003 MCU Back-Up Batteries
  - 26-071 MCU Tamper Switch

Additional Equipment NOT U.L. tested.

60-278 Hardwire Interior Siren and Piezo
60-353 Wireless Interior siren
60-349 Wall Mount Wireless Operator Terminal
60-348 Hand Held Wireless Operator Terminal
60-356 Passive Infrared Sensor

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INTRODUCTION

This Installation Manual is designed to give you the information necessary to install and test the SYSTEM VI Security System.

It is assumed that the technicians reading this manual have thoroughly familiarized themselves with the operation of the system. You cannot be expected to understand how to install the System VI unless you already know how to use it.

If you are not yet familiar with how to use the System VI then do the following before proceeding:

(1) Get a *SYSTEM VI DEMONSTRATION KIT* to practice the operation.
(2) Get a copy of the customer's *SYSTEM VI OWNER'S MANUAL* and be sure you understand everything contained in it.
(3) Set up the *DEMO KIT* and all its components and practice all its functions including:
   a. How to arm and disarm to every level of protection
   b. Learn the difference between each arming level
   c. Understand the status sounds for each level.
   d. Practice the *BYPASS* features, direct and indirect.
   e. Try arming with a sensor violated to see & hear what happens
   f. Set a *TEMPORARY ACCESS CODE*
   g. Become familiar with the alarm sounds, *BURGLARY, FIRE & MEDICAL*
   h. Activate the silent *DURESS CODE*
   i. Be sure you understand all display information on the MCU
   j. Try a *SENSOR TEST* (level 9)
   k. Practice changing the *PROGRAMMING* of the MCU
   l. Check the *ALARM MEMORY* feature

PRE-INSTALLATION SET UP RECOMMENDATION

With the SYSTEM VI, you have a unique opportunity to "install" much of the system even before you leave your office.

All systems must be pre-programmed and tested at the office prior to the installation day. Branches that do this have seen a 10% - 20% reduction in the TOTAL time spent. On-site time can be cut by as much as **50%!**

Set up a test bench in your office with all the proper tools and equipment including; a non-switched, grounded 110 volt outlet, and an RJ-31X jack. Power up and program the MCU, Operator Terminals and sensors as if you were at the job site, to include RAMC programming.

Let the complete system burn-in for at least 24 hours prior to installation. This way, you will know that all equipment is functional.

SYSTEM VI FEATURES SUMMARY

ACCESS CODES:	34 Access Codes Total: 2 Primary Access Codes (can select all protection levels), 8 Secondary Access Codes (can select all levels or can be restricted to certain levels), 22 Secondary Access Codes (restricted to certain levels only), 1 Temporary Access Code, and 1 Duress Code. Temporary Access Code, Duress Code and 1 Primary Access Code are field programmable. All codes are Rollins Alarm Monitoring Center (RAMC) programmable. Multiple codes identify openings/closing by user.
ACCOUNT NUMBER:	5 digits, can be alpha-numeric; RAMC programmable only.
AC FAILURE:	Optional feature, Sensor 111 (C11), MCU reports AC failure to CS if no AC for 15 minutes, MCU display shuts off after 15 minutes of failed AC.
ALARM MEMORY:	Alarms which occurred during previous arming period can be reviewed locally; press STATUS, watch MCU display. Memory can be cleared by selecting level 9 or automatically after 6 hours.
ALARM MEMORY: LED	An optional alarm memory LED can be wired and programmed (F07) to provide a visual indication of alarms during the most recent arming period. **WARNING:** By enabling this feature, you will disable all other hardwire functions such as HOM, HIM, and hardwire keypads. **NOTE:** For U.L. Listed systems, this feature shall not be used.
ALARM REPORTING:	Sensors report individually to CS. Multiple sensor alarms report in the order they were tripped. Cancel report sent if protection level changed.
APPROVALS:	Equipment manufactured by Interactive Technologies, Inc. has been tested and is in compliance with FCC Rules, Part 15, Subpart J and E and Part 68 where applicable. Each device carries a label giving the specifics and conditions of compliance.
BATTERY LIFE:	Lithium batteries, 3-5 years; 9 volt Alkaline batteries 12-18 months.
BATTERY TYPE:	MCU - 3.2 amp hour, 6 volt DC Lead Acid, two maximum per MCU. Operator Terminals, PIR and Door/Window sensors use 3.6 volt DC lithium. Smoke sensors use (2) 9 volt alkaline, Wireless Interior Sirens (WIS) use 9 volt alkaline or rechargeable 9 volt NiCad.
BATTERY MONITORING:	Lithium batteries, and 9 volt batteries monitored, tested every 64 minutes; MCU battery - monitored, automatically tested weekly (Saturday or Sunday at midnight, central station time).
BATTERY SAVER ROUTINE (MCU):	MCU displays turn off 15 minutes after AC loss. MCU shuts itself off after 2-3 days to save battery & MCU memory. Battery holds MCU memory for days. Powers up in same level as when shut down.

BUDDY SYSTEM: (PHONE TAMPER) Optional feature, Sensor 100 (A00), which allows a nearby MCU to report alarms for a MCU whose phone connection is unusable. Each MCU can "buddy" with up to 4 other MCU's. Does not report "TROUBLE" or "SUPERVISORY" conditions.

BYPASS SENSORS: Sensors can be bypassed directly or indirectly using a Operator Terminal. They are bypassed automatically if the system is "armed" with sensors left open. (Force Armed Auto).

BYPASS TOGGLE: Optional feature, F17, allows bypassed sensors to be unbypassed by repeating the commands used to direct bypass.

CALL BACK AUTOMATIC: Central Station command that instructs MCU to call back one time after a designated time. (10-2560 minutes, in 10 minute increments)

CARRIER CURRENT SIGNALING: Used by MCU to signal WIS (through MCU power transformer Terminal 3) over AC power lines, FSK format. The X-10 Light Control is also signaled.

CLOCK, REAL TIME: MCU real time clock used to assign times for event buffer. Set by Central Station and updated each time the MCU communicates.

COMMUNICATOR: Built-in to MCU, Bell 103 format, uses RJ-31X, reports special ITI format. By zone: Alarm, Alarm Canceled, Supervisory, Trouble, Sensor Bypassed, Restorals, Trouble conditions, Opening and Closing reports. Pulse dials up to 14 digits, RAMC programmable only.

COMMUNICATOR MODES: Programmed from RAMC only.

PMODE 0 = Dial 1 phone number only - default PMODE.

PMODE 1 = Dial second phone number only after 3 unsuccessful tries to first phone number.

PMODE 2 = Dial first phone number for all alarms and cancels only. Dial second phone number for trouble and supervisory only.

PMODE 3 = Dial first phone number for all alarms and cancels only. Dial second phone number for everything.

PMODE 4 = Dial first phone number for all alarms except opening/closing. Dial second phone number for everything.

COMPATIBILITY: SYSTEM VI equipment is compatible only with other SYSTEM VI equipment.

CONTENTION: Several sensors can transmit to the MCU simultaneously and still be received due to a sophisticated reporting format.

CRYSTAL CONTROL: All transmitters and the MCU receiver are crystal controlled to achieve a very narrow bandwidth (25 KHz). This results in a supersensitive receiver.

DELAY TIMES: Entry/Exit delay times programmable independently from 04 to 60 seconds from Operator Terminal or RAMC. Preset to 32 seconds upon initial power-up.

DIALER ABORT: Optional feature, F06, which aborts call to RAMC if user cancels alarm before dialing to RAMC is complete. Does not function for FIRE or DURESS calls. Must be toggled "OFF" when "SPECIAL" group 02 sensors are used.

DISPLAY (MCU): MCU display shows: current protection level, sensor status, MCU power status. Used to review alarm memory. Viewed during programming to check data. Power LED: flashes, when MCU on battery power; steady when MCU on AC; out, when no power to MCU.

DISPLAY DURING FAILURE: Display shuts off after 15 minutes on standby battery except power LED which flashes. Pressing STATUS momentarily reveals display. Display lights for 5 minutes on alarm.

DURESS CODE: Programmable by RAMC or Operator Terminal. Code used to silently signal the RAMC of Duress situation. First two digits are the same as primary Access Code. Duress Code can be entered at any level to activate.

EVENT BUFFER: 64 event history buffer stores date, time, user ID for last 64 events. Stores alarms, trouble, supervisories, bypassing, arming and disarming, and if used open and closing reports. Call RAMC for viewing the history buffer.

EXTERIOR SIREN: Exterior siren sounds for police and fire alarms only.

EXTERIOR SIREN DELAY: Optional feature, F02, which causes a 15 second delay before activating exterior sirens hardwired to the MCU. Exterior sirens hardwired to the WIS can be delayed by setting a dip switch.

EXTERIOR SIREN TIME OUT: See Siren Time Out.

FAIL TO COMMUNICATE: Activates if MCU cannot report information to RAMC. Sounds trouble beeps every 60 seconds locally if MCU is unsuccessful after 3 attempts. 5 more attempts are made before giving up.

FAST FORWARD/ PROGRAM: Button on MCU which speeds up MCU display in program mode for easier program review.

FORCE ARM: User can force arm the system with a sensor unrestored using the BYPASS button. Optionally the force arming can be reported to RAMC.

FORCE ARM AUTO: MCU will automatically force arm to the level user attempted to select if user attempted to arm with sensor(s) unrestored. Force arming occurs after three minutes. Unrestored sensor(s) will be bypassed. Force Armed Auto is reported to RAMC.

FREQUENCY: Crystal controlled for all RF transmitters and matched to MCU Receiver, factory set, not field tunable.

HARDWIRE INPUT/ OUTPUT: MCU has Hardwire I/O terminals for: Hardwire Input Module, Hardwire Operator Terminal Display, Hardwire Interior Siren, Hardwire Exterior Siren, N/C MCU cabinet tamper circuit, Alarm Memory LED, Alpha Keypad/Display.

HARDWIRE BUSS: A hardwire reporting format or protocol which allows for up to 8 hardwired units to be interfaced to the MCU. Each device is assigned a unit number and is supervised similarly to an RF sensor. CAUTION: Do not exceed current availability of the MCU.

MICROPROCESSOR: The SYSTEM VI is microprocessor based.

OPENING/CLOSING REPORTS: Available as optional sensor numbers 107 (A7) and 108 (A8), identifies particular user by ID number, up to 34 users. (See Access Codes.)

OPTIONAL FEATURE NUMBERS: 18 Optional features can be programmed to customize the installation (F00-F17).

OPTIONAL SENSOR NUMBERS: 20 Optional sensor numbers used to describe various trouble, test, convenience, and alarm options.

PHONE TAMPER: If the MCU cannot report an alarm signal due to no phone line voltage it can optionally activate a transmitter which could be heard by a nearby MCU. The nearby MCU can report the phone tamper condition and identify the MCU which couldn't communicate (see Buddy System).

PHONE LINE TESTING: The SYSTEM VI can optionally be programmed to test the phone line hourly, F14, and/or before communicating, Sensor 118. It can also be programmed to call the RAMC at a programmable interval (from daily to 256 days) This feature, Sensor 114, defaults to every 7 days.

PHONE NUMBER CAPABILITY: Two numbers up to 14 digits long. RAMC can program pauses between digits. Pauses count as digits. See Communicator Modes.

PROTECTION LEVELS: 8 Arming levels, 2 test levels. Secondary Access Codes are restricted from certain levels (protection levels 0, 8, and 9).

RAM TEST: The SYSTEM VI completely tests its RAM memory on power-up. This takes 2 1/2 - 4 minutes. If there is a problem it displays "b ad."

RECEIVER: The MCU contains a crystal controlled superheterodyne receiver with dual antenna spatial diversity.

RECEIVER FAILURE: If the MCU hears no signals for 2 hours, it reports 115 (C5) RECEIVER FAILURE to RAMC.

SENSORS: Devices designed to detect a variety of conditions such as open/close status, fire, smoke, motion etc. and activate a transmitter which will report to the MCU.

SENSOR NUMBERS: 99 installer definable Sensor Numbers (zones) report individually to the RAMC. 20 pre-programmed sensor numbers describe trouble, test or emergency conditions.

SENSOR TAMPER: Switch, integral to the DWS, which causes a tamper signal to transmit when the cover is removed. MCU responds accordingly. Displays "OPEN" in levels 0, 1, and 2.

SENSOR TEST: Protection level 9, allows testing of all sensors with the MCU. MCU will visually and audibly acknowledge successful test.

SIREN DELAY: Feature, F02, which allows 15 second delay before activating exterior sirens directly hardwired to the MCU. (Feature is enabled at power-up upon initial programming.)

SIREN TIMEOUT: RAMC programmable from 1 to 15 minutes, preset to 5 minutes.

SIREN SOUNDS: Burglary, Fire, Medical, Status, Protest, Trouble, Entry pre-alarm, Exit delay, Chime, Sensor Test indications.

SIREN SOUNDS (HIS): An Optional MCU feature, F11, controls whether Hardwire Interior Sirens will sound alarms only, or alarm and status sounds.

SIREN SOUNDS (WIS): A switch in the WIS controls whether the WIS will produce alarm sounds only or alarm and status sounds.

SUPERVISED: Supervised Sensors report to the MCU every 64 minutes. The MCU looks every 10-12 hours for sensor reports. If no reports have been received from a sensor the MCU reports the condition immediately to the RAMC. Trouble beeps will sound locally after approximately 10 hours if the problem is not corrected.

SUPERVISORY PROTESTS: If a sensor has a Trouble (usually a low battery) or Supervisory condition, the MCU will protest (as if a sensor has been left open) when an attempt is made to arm the system to a protection level in which the sensor is active. You can, however, arm to level 0 without getting the protests. The MCU display will show the problem sensor number and light the appropriate condition LED. If all the LED's are flashing, it means the sensor is open or the tamper switch has been activated. The customer must acknowledge the Supervisory or Trouble condition by arming using the Bypass key. This will not bypass the sensor unless it is open.

SUPERVISORY PROGRAMMING: The MCU can be programmed by RAMC for what time of day to report unrepaired supervisories or trouble (low battery) conditions (STIME functions).

TAMPER (OPERATOR TERMINAL): Sensor number is programmed which will report to CS if the MCU hears 40 Operator Terminal keystrokes that do not equal the access code + a protection level. Programmed by enabling optional sensor number 101 (A1).

TAMPER (MCU): The SYSTEM VI MCU door is tampered. The switch is wired N.C. Other devices could be wired into the same circuit. Reports as sensor 113 (C3).

TRANSMITTERS: Connect to switches or sensors and send RF signals to the MCU.

TROUBLE: The SYSTEM VI activates Trouble Beeps (6 quick beeps, once each minute) approximately 10 hours after it has detected a Supervisory or Low Battery condition. The Trouble Beeps will also sound when the system has been left in the program mode. The beeps will stop by leaving the program mode, however the Trouble Beeps caused by Supervisories or Low Batteries will re-activate every 10 hours if they have not been corrected. Changing the arming level resets the 10 hour timer. After the fault conditions have been corrected, the alarm memory display of the conditions can be cleared by selecting protection level 9.

UNIT NUMBER: A unique number to designate the devices connected to the hardwire buss. Supervisories will be reported to CS by unit number. The system will accommodate a maximum of eight (8) hardwire buss devices.

X-10 LIGHT FEATURE OPERATION: The X-10 light feature activation of the System VI MCU is accomplished manually or automatically when the system is activated.

A. Automatic Activation

1. During the entry and exit delay sequence of the system, the X-10 lights turn on and stay on for 60 seconds. This time is not the same as the entry/exit delay, since it remains constant (factory programmed) at 60 seconds.

2. During an intrusion alarm, the X-10 lights will flash on/off for the duration of the siren timeout. They will then stay on until the system is disarmed.

3. During a Fire alarm, the X-10 lights will turn on and stay on steady until the system is disarmed.

B. Manual Activation

1. Each Wireless Operator Terminal has a light bulb button that can be used to turn the X-10 lights on or off.

2. Alpha Keypad and Hardwired Operator Terminal: Press COMMAND + 0 (Lights) to turn X-10 lights on or off.

GENERAL PRINCIPLES

Receiver

The SYSTEM VI MCU contains an extremely sensitive, crystal controlled superheterodyne receiver which is capable of receiving signals from over 500 feet away, open field, The band width is approximately 100 times narrower than previous models which reduces the chance of interference from other sources. In addition, the dual antenna spatial diversity receiver virtually eliminates phase nulls and dead spots.

Frequency

The SYSTEM VI Master Control Unit (MCU) and all associated devices (transmitters, motion sensors, smoke detectors and wireless operator terminals) used in an installation must all have the same frequency to communicate to each other. The frequency is set at the factory and is marked on all components.
All devices for a particular job (MCU, sensors, etc), must have the same factory set frequency.

Full Time Sensors

Activation of the sensors listed below will cause an alarm 24 hours a day.

All emergency push buttons on the operator terminal
Fire and Smoke sensors
Environmental Sensors (Freeze, Furnace failure, etc.)
24-hour police emergency sensors (usually portable panic buttons)
24-hour medical emergency sensors (usually portable panic buttons)

SIREN sounds

The SYSTEM VI MCU initiates a variety of alarm and system status sounds. Sounds can be produced by the Wireless Interior Siren, Hardwire Interior Siren, Hardwire Operator Terminal display and Hardwire Exterior Siren. Not all sounds are produced by all siren types. Sections of this manual which describe the various sirens, identify the sounds they can make. Both alarm siren sounds and status "beeps" can be made to sound throughout the installation site.

INTERIOR AND EXTERIOR SOUNDS

POLICE SIREN - loud intermittent tone.

FIRE SIREN - loud steady tone.

INTERIOR SOUNDS ONLY

AUXILIARY SOUNDS - low volume, on-off on-off beeping.

STATUS SOUNDS - low volume beeps which indicate the MCU's current protection level.

PROTEST BEEP - low volume rhythmic two-tone beeping sound when an arming attempt is made which indicates a Trouble or Supervisory condition or that a sensor is open.

TROUBLE OR SUPERVISORY BEEPS - Six quick low volume beeps repeated every sixty (60) seconds. Occurs as an automatic indicator if a trouble or supervisory condition exists and no change occurred in arming level for 10 hours.

CHIME BEEP - a pair of low volume tone which indicates a perimeter sensor has been opened and the MCU is armed to protection level 2.

SENSOR TEST SOUND - loud single tone or series of tones heard when testing sensors in protection level 9.

EXIT DELAY SOUNDS - Low volume status sounds which indicate the beginning of the Exit Delay Time when levels 3 & 5 are selected. The status beeps sound repeatedly for the duration of the Exit Delay Time.

ENTRY DELAY SOUNDS - Low volume repeated status sounds which indicate that the Entry Delay Time is in progress.

Protection Levels

The System VI has several arming levels. Each needs to be understood.

Level 0 **DISARM/CANCEL** - (One long beep)
All intrusion sensors off, full times sensors (fire, medical, panic and environmental) ON.

Level 1 **SPECIAL** - (One short beep)
Same as Level "0" but special intrusion sensors (silver drawer, gun cabinet, wall safe, etc.) are active and will remain active through level 7.

Level 2 **CHIME** - (Two short beeps)
Special Intrusion Sensors plus chime feature (all exterior sensors will cause chime tone when activated).

Level 3 **HOME AWAKE** - (Three short beeps)
Special Intrusion Sensors plus Perimeter Sensors armed with delays. All interior sensors disarmed. Typically used during daytime or early evenings while at home.

Level 4 **HOME ASLEEP** - (Four short beeps)
Special intrusion sensors and perimeter sensors armed with instant. Used during night hours after all expected residents have arrived (some interior sensors active). ENTRY/EXIT SENSORS ARE NOT DELAYED.

Level 5 **AWAY DELAY** - (Five short beeps)
Special Intrusion Sensors plus ALL OTHER intrusion sensors, both interior and exterior, armed with delays.

Level 6 **AWAY INSTANT** - (One long & one short beep)
Special Intrusion Sensor plus ALL OTHER intrusion sensors, both interior and exterior, armed with NO delays. ENTRY/EXIT SENSORS ARE NOT DELAYED.

Level 7 **SILENT AWAY** - (One long & two short beeps)
Same as level 6 but intrusion alarms are silent. Can only be turned on from Rollins Alarm Monitoring Center (RAMC).

Level 8 **PHONE TEST** - (One long & three short beeps)
This will send a communications test signal over the phone lines to the Central Station. Test is acknowledged at residence by activation of each siren sound for 2 seconds.
Note: Level 8 changes to level 0 after successfully communicating to the receiver. If it fails to reach the receiver after three (3) tries the MCU will display 117 (fail to communicate), but continues to try and call for a total of 8 attempts.

Level 9 **SENSOR TEST** - (One long & four short beeps)
This level is used to test each sensor (transmitter). The MCU will acknowledge a successful test by first displaying the sensor number reporting in and then removing it from the sensor number display window scroll on the front of the MCU. The sirens connected to the MCU emit a loud "beep" upon activation.

SENSOR NUMBERING

The System VI has 99 zones which can be programmed for any purpose. Zone or Sensor Numbers assigned to sensors must also be programmed into the MCU memory.

NOTE In this manual we will often use the term SENSOR. Sensors are simply RF transmitters. We will also use the term SENSOR NUMBER, this is simply the zone number of that SENSOR.

The Master Control Unit (MCU) recognizes these different Sensor Numbers as having different functions. For example, some are used for fire, some for intrusion, some for medical, etc.

Before installing a SENSOR, first pick an appropriate Group Number from 00 to 10 or 16 to 18. Refer to the following chart. For example, a smoke sensor or rate-of-rise detector would need to be programmed with a Group Number of 10. A medical emergency sensor should have a Group Number of 01. A delayed entry door should have a Group Number of 03.

GROUP NUMBERS

The following groups can be received, displayed at the MCU and reported to the Central Station. The Sensor Numbers of all transmitters used in an installation must be programmed into the MCU memory in order to function.

GROUP NUMBER	DESCRIPTION
0 [Supervised] 16 (d) [Unsupervised]	**Police / Emergency** Reports in all levels except level 9 *High Level Modulated Siren*
1 [Supervised] 17 (E) [Unsupervised]	**Auxiliary / Medical** Reports in all levels except level 9. *Low Level Siren*
2	**Special** Reports in levels 1-7 *High Level Modulated Siren* Silent in Level 7
3	**Main Entry** Reports in levels 3-7 Chime if in level 2 Initiates delay in level 3 and 5 *High Level Modulated Siren* Silent in Level 7
4	**Perimeter** Reports in levels 3-7 Chime if in level 2 *High Level Modulated Siren* Silent in Level 7

GROUP NUMBER	DESCRIPTION	
5	**Interior Delayed (Follower)** Reports in levels 4-7 Disarmed by delay in level 5 *High Level Modulated Siren* Silent in Level 7	Used for passive infrared motion detectors.
6	**Interior Delayed (Follower)** Reports in levels 5-7 Disarmed by delay in level 5 *High Level Modulated Siren* Silent in Level 7	Used for passive infrared motion detectors.
7	**Interior (starts delay)** Reports in levels 4 - 7 Initiates delay in level 5 *High Level Modulated Siren* Silent in Level 7	Used for interior doors.
8	**Interior (starts delay)** Reports in levels 5 - 7 Initiates delay in level 5 *High Level Modulated Siren* Silent in Level 7	Used for interior doors.
9 [Supervised] 18 (g) [Unsupervised]	**Silent Panic** Reports in all levels except level 9 *No Sirens*	
F (10)	**Fire** Reports in all levels except level 9 *High Level Continuous Siren*	

Groups 5 and 6 will be delayed only if a sensor which initiates the entry delay time (Group 3, 7, 8) is activated first to start the delay. If an intruder entered an unprotected window and then tripped a sensor in group 5 or 6, the alarm would sound instantly.

SENSOR CONTENTION

The System VI virtually eliminates any contention if two or more sensors transmit at the exact same moment. Each transmitter sends multiple rounds of information when in alarm with different timing intervals so as the signals can not block each other. In addition, emergency signals for fire and panic are given priority over burglary signals, and all emergencies have priority over supervisory and restoral signals.

UPPER SENSOR NUMBERS

The following is a description of pre-programmed sensor numbers resident in the MCU's memory. Those numbers that are marked with a PRE are pre-programmed. Those numbers that are marked with OPT are optional sensors that can be turned on at the time of installation if desired. You can delete or re-initialize a pre-programmed sensor according to your customer's specific installation requirements.

MCU DISPLAY	SENSOR NUMBER	SENSOR TYPE	DESCRIPTION
A0	100	OPT	**BUDDY SYSTEM** If the MCU cannot report a violation to the RAMC for Sensor Numbers 01-99, 103, 104, 105, 109 and 113 because of phone line problems, it has a hardwire output that can activate a transmitter. Another SYSTEM VI MCU within range of the transmitter can be programmed to report the account number and phone tamper condition of the MCU which originally experienced the alarm condition. It will not report the exact nature of the alarm condition.
A1	101	OPT	**OPERATOR TERMINAL TAMPER.** If the MCU hears 40 Operator Terminal signals that do not equal the proper access code, plus a protection level. The Sirens will go into audible alarm, (police siren) and report "101 OPERATOR TERMINAL TAMPER" to the RAMC.
A2	102	OPT	**Hardwire Supervisory.** If a hardwire buss device quits reporting in, a 102 Supervisory will be reported along with the unit number of the buss device.
A3	103	PRE	**24 -HOUR FIRE CALL** from a Operator Terminal. Audible.
A4	104	PRE	**24 -HOUR POLICE CALL** from a Operator Terminal. Audible.
A5	105	PRE	**24 -HOUR MEDICAL CALL** from a Operator Terminal. Audible.
A6	106	PRE	**PHONE TEST** initiated by customer. After a successful test, all sirens sound briefly at the customers home or the RAMC operator should call. In addition, the 106 will clear from the MCU display and the MCU will return to Level 0.
A7	107	OPT	**OPENING REPORT.** If 107 is initialized, the MCU will report "107 OPENING REPORT" when the MCU is disarmed. There are provisions for identifying up to 34 different users of the system.
A8	108	OPT	**CLOSING REPORT.** If 108 is initialized, the MCU will report "108 CLOSING REPORT" when the MCU is armed. There are provisions for identifying up to 34 different users of the system.

MCU DISPLAY	SENSOR NUMBER	SENSOR TYPE	DESCRIPTION
A9	109	PRE	**DURESS CODE.** A specially programmed access code that will send a 24 -hour POLICE EMERGENCY CALL silently to the RAMC. The Duress Code must be followed by any protection level number to activate. This sensor number will not display on the MCU, it will just report. Even though sensor number 109 is pre-programmed, it will not report unless the installer has entered a two-digit duress code into the MCU memory.
C0	110	OPT	**FORCE ARMED.** If 110 is initialized, the MCU will report "110 FORCE ARMED" whenever a sensor number is deliberately bypassed by a user. The MCU will report "110 FORCE ARMED AUTO" if it force armed itself. This occurs 3 minutes after the exit fault.
C1	111	OPT	**A/C FAILURE.** If 111 is initialized, the MCU will report "111 A/C FAILURE" when the AC power at the outlet that the MCU is plugged into has been off for 15 minutes.The MCU will report 112 A/C POWER RESTORED when the power comes back on.
C2	112	PRE	**LOW MCU BATTERY** After this report is sent to the RAMC (typically 2 to 3 days after AC (failure) the MCU is about to shut down until the AC POWER is restored. This shut down prevents deep battery discharge and loss of MCU memory. The memory will be OK for several weeks without AC, however the battery may need to be replaced. When the AC power is restored, the MCU will re-arm itself to the same protection level that it was in when it powered down. Up to two back up batteries can be installed in the SYSTEM VI MCU. Using two batteries will approximately double the standby time. The MCU could report 112 as a POWER SUPPLY FAILURE. This condition is usually due to a blown DC Input Fuse, a back-up battery that won't take a charge, or if the power supply chip has failed.
C3	113	PRE	**MCU TAMPER** The MCU is shipped with its door connected to a N/C hardwire tamper input. This hardwire tamper input can also have other devices such as the exterior siren tamper or RJ-31X phone cord tamper connected to it. The tamper input is configured for N/C switches only. The RAMC report will be 113 alarm tamper loop.
C4	114	OPT	**AUTOMATIC PHONE TEST.** If 114 is initialized, the MCU will report "114 AUTOMATIC PHONE TEST" to the RAMC at a programmable interval. From daily to every 255 days. If not changed from RAMC the report will be every 7 days.
C5	115	PRE	**RECEIVER FAILURE** The MCU will report "115 RECEIVER FAILURE" if it does not hear from any transmitter for 2 hours.

MCU DISPLAY	SENSOR NUMBER	SENSOR TYPE	DESCRIPTION
C6	116	OPT	**MCU BACK IN SERVICE** After the MCU has gone into its battery saver shut down routine, which is designed to prevent deep battery discharge and MCU memory loss, the 116 signal is sent when the AC power has been restored The MCU is BACK IN SERVICE. The MCU will come back on armed to the same protection level it was in when it shut down.
C7	117	PRE	**FAIL TO COMMUNICATE** The MCU makes 3 attempts to contact the RAMC. If the MCU can't get through (after 3 attempts) a 117 will be displayed at the MCU and a trouble tone will sound every 60 seconds. The tone can be silenced by entering the ACCESS CODE + 0. This alarm gives a local indication only. The control unit will continue to make a total of 8 attempts to reach the central station in any of the PMODES programmed.
C8	118	PRE	**NO PHONE LINE** If 118 is initialized, the MCU will check the phone line before attempting any communication with the RAMC. If the phone line is not operational a 118 alarm is initialized, and will be displayed at the MCU. A Trouble tone will sound. The tone can be silenced by entering the ACCESS CODE + 0. This is a local indication only.
C9	119	PRE	**PROGRAM CHANGE or OPERATOR TERMINAL low BAT or SUPERVISORY** This signal is sent if a change is made to the panel while in program mode such as initializing a sensor, deleting a sensor, change the access code etc. A Supervisory or Low Battery on C9 (119) is a supervisory or low battery on a wireless operator terminal. The operator terminal's number is sent to the CS-4000. It is not displayed locally.

NOTE: For the purposes of this document, when sensor numbers are referred to, they will be in the RAMC Format (3 digits). Remember, the System VI display will show the 2 digit representation of the sensor number.

EXAMPLE: Central station receives 113

The MCU and Hardwire Operator Terminals display C3

OPTIONAL FEATURE NUMBERS

The following OPTIONAL FEATURES can also be programmed into the MCU memory. They can also be added from the model CS-4000 Central Station as the other sensors can. Most optional features power up "OFF" and must be programmed into the MCU to be "ON". These features are discussed in more detail in the section PROGRAMMING THE SYSTEM VI.

FEATURE	DESCRIPTION
*F00	**EXIT DELAY SOUNDS.** Controls whether exit delay beeps will sound once at the beginning of the exit delay, or continuously for the entire length of the delay.
*F01	**SILENT EXIT DELAY TOGGLE.** Controls whether silent exit delay exists when the system is armed to Level 4 or Level 6. (See bottom of page 35 for more information.)
*F02	**EXTERIOR SIREN DELAY.** Controls whether the exterior siren output will be activated immediately or delayed 15 seconds.
F03	**DIGITAL COMMUNICATOR.** Controls whether the system will report alarms to RAMC. FO3 should be enabled for local alarm systems with no phone line connections.
F04	**LOW BATTERY REPORTS.** Controls whether LOW BATTERIES are to re-report weekly or daily.
F05	**SUPERVISORY REPORTS.** Controls whether SUPERVISORIES which have not been corrected will re-report to the RAMC daily or weekly.
*F06	**DIALER ABORT.** Controls whether the dialer should abort alarm calls that are canceled by the customer before the communicator dials the last digit of the RAMC phone number. Must be disabled if using Group 2 "Special" sensors.
F07	**ALARM LED.** Controls whether terminal 14 is an alarm memory LED output or a Hardwire Buss output.
F10	**SIGNAL STRENGTH INDICATOR.** Controls whether the MCU will perform a regular level 9 sensor test or will annunciate each time it hears a transmission from a tested senso
F11	**INTERIOR SIREN SOUNDS.** Controls whether Hardwire Interior Sirens will make status and alarm sounds or alarm sounds only.
F12	**RESTORE REPORTING.** Controls whether the MCU will report restorals by zone.
F13	**KEY SWITCH.** Controls whether terminal 9 is a key switch input or a buddy output.
F14	**HOURLY PHONE TEST.** Controls whether the MCU will check every hour to see if the phone line it is connected to is good.
F15	**SENSOR TAMPER.** Controls whether the MCU will treat all sensor tamper signals as alarms in all protection levels.
F16	**TROUBLE BEEPS.** Trouble beeps caused by fire sensors (Group 10) cannot be silenced.
F17	**DIRECT BYPASS TOGGLE.** Controls whether bypassed sensors can be unbypassed directly.

* Pre-programmed ENABLED, MCU EPROM Rev. E and later.

SENSOR GROUP CHART

GROUP NUMBER	SENSOR TYPE	ACTIVE LEVELS	SIREN SOUND
00/16 (d)	Police / Emergency (Group 16 unsupervised)	0 - 8	Loud Intermittent
01/17 (E)	Auxiliary / Medical (Group 17 unsupervised)	0 - 8	Low Level Siren
02	Special	1 - 7	Loud Intermittent
03	Main Entry Reports in	3 - 7	Loud Intermittent
	Chimes in	2	Low Level Beeping
04	Perimeter Reports in	3 - 7	Loud Intermittent
	Chimes in	2	Low Level Beeping
05	Interior Delayed (PIRs) - Follower	4 - 7	Loud Intermittent
06	Interior Delayed (PIRs) - Follower	5 - 7	Loud Intermittent
07	Interior (starts delay) - Interior Doors	4 - 7	Loud Intermittent
08	Interior (starts delay) - Interior Doors	5 - 7	Loud Intermittent
09/18 (g)	Silent Panic (Group 18 unsupervised)	0 - 8	Silent
F (10)	Fire	0 - 8	Loud Steady Tone
	NOTE: *Burglary sensors are silent in level 7.*		

UPPER SENSOR NUMBERS[1]

SENSOR	DISPLAY	PURPOSE	DESCRIPTION
100	A0	Buddy System	Refer to SYSTEM VI Installation Manual.
101	A1	OperatorTerminal Tamper	Alarm for Multiple disarm or arm attempts.
102	A2	Buss Device Report	Refer to SYSTEM VI Installation Manual.
103	A3	24 Hour Fire Call	Operator Terminal Audible
104	A4	24 Hour Police Call	Operator Terminal Audible
105	A5	24 Hour Medical Call	Operator Terminal Audible
106	A6	Phone Test	Customer initiated Phone Test.
107	A7	Opening Report	If the MCU is disarmed a opening report is sent to RAMC.
108	A8	Closing Report	If the MCU is armed a closing report is sent to RAMC.
109	A9	Duress Code	Reports a *silent* Police Emergency Call To RAMC.
110	C0	Forced Armed	Reports to RAMC if MCU is armed with a sensor bypassed.
111	C1	A/C Failure	Reports to RAMC if the MCU loses AC for over 15 minutes.
112	C2	Low MCU Battery	MCU Back-up Battery level is low.
113	C3	MCU Tamper	Enter 113 if using MCU tamper loop.
114	C4	Automatic Test	Refer to SYSTEM VI Installation Manual.
115	C5	Receiver Failure	Reports to RAMC if MCU does not receive any transmitter signals for 2 hours.
116	C6	MCU Back in Service	Return to service signal when AC restores.
117	C7	Fail to Communicate	Displays on MCU after 3 failed RAMC communication attempts.
118	C8	No Phone Line	Telephone Line Check before attempting any communication. Local tone heard.
119	C9	Program Change	Signal sent if a change is made to the panel in program mode.

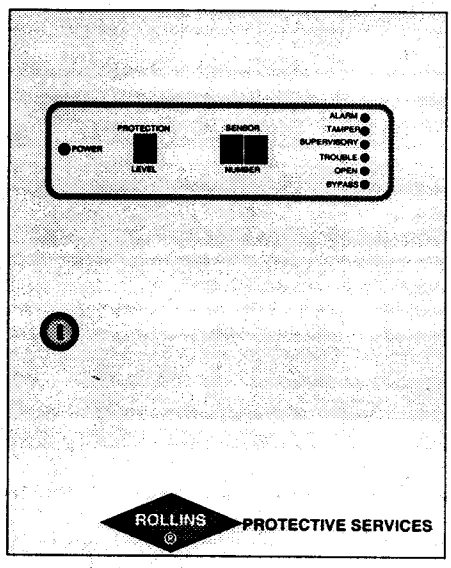
OPTIONAL FEATURES[2]

FEATURE NUMBER	PURPOSE	DESCRIPTION
F00	Exit Delay Sounds	Set to ON if you want exit beeps to sound throughout delay time.
F01	Silent Exit Delay Toggle	Set to ON to silence exit delay when system is armed to Level 4 or Level 6.
F02	Exterior Siren Delay	Set if you want the exterior siren sounds to delay for 15 seconds.
F03	Local Alarm	Set if this is a local alarm and is *not* to report to the central station.
F04	Low Battery Report	Low batteries normally report weekly. Set if they are not to report at all.
F05	Supervisory Report	Supervisories normally report daily. Set if they are to report weekly.
F06	Dialer Abort	MCU normally reports Violations and Cancels. Set for Violation reports only.
F07	Alarm LED	Set if you want to use an alarm LED. (Cannot use hardwire buss.)
F10	Dealer Sensor Test	Set and next Sensor Test will sound one beep for each sensor round received.
F11	Interior Siren Sounds	Set if hardwire interior sirens should sound alarms only, not status beeps.
F12	Restoral Reporting	Set if you want violations to send a Restoral report when the sensor is closed.
F13	KeySwitch	Set if you want to use a KeySwitch on the MCU. (Cannot use Buddy System.)
F14	Hourly Phone Test	Sounds trouble beeps & displays C4 if phone line is dead at time of hourly test.
F15	Sensor Tamper	Normally left off. See SYSTEM VI Installation Manual.
F16	Trouble Beeps	Set if Trouble Beeps sound only for Fire Sensors.
F17	Direct Bypass Toggle	Set if you wish customer to be able to directly unbypass bypassed sensors.

Note 1 To add an optional upper sensor, See the Programming Section.
Note 2 To add an Optional Feature see OPTIONAL FEATURES.

SYSTEM VI MCU

The Master Control Unit (MCU) is the "brain" of the SYSTEM VI security system. Its functions are to monitor and respond to signals from sensors, Operator Terminals, and other input devices. The MCU keeps track of sensor and system status and identifies any problems. The MCU provides audible and visual indications of the system's status. Appropriate siren sounds are also controlled by the MCU. When necessary, the MCU can communicate detailed reports to the RAMC. The MCU coordinates all system functions.



SPECIFICATIONS

MICROPROCESSOR BASED CIRCUIT BOARD

The System VI is microprocessor based to ensure maximum reliability and versatility. The Microprocessor analyzes data it receives and then acts on the data according to its pre-programmed instructions. System functions are coordinated and directed by the microprocessor.

SYSTEM VI RECEIVER

The SYSTEM VI uses a quartz crystal accurate Double Conversion superheterodyne receiver with a 25 KHz bandwidth. The Dual Antenna Spatial Diversity receiver minimizes phase nulls and dead spots, assuring signal reception.

DIMENSIONS

2 7/8"d x 9"w x 11.5"h (+9" antennas)
14 gauge steel chassis
18 gauge steel door w/lock.

FCC SPECIFICATIONS

FCC ID NUMBER:
B4Z8NW-11892-AL-R
RINGER EQUIVALENCE NUMBER:
0.1B

TEMPERATURE RANGE

32° F to 95° F

AC/DC POWER INDICATOR

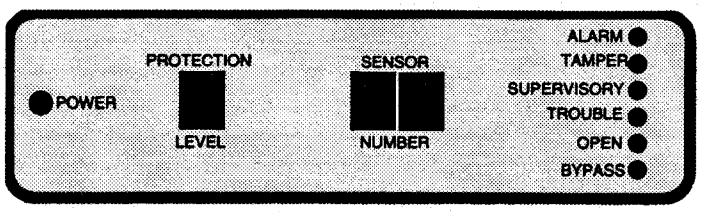
The red power LED indicates the following:

STEADY GLOW - AC power is ON

FLASHING ON AND OFF - The AC power is OFF and the backup battery is supplying power.

NOT LIT - The MCU has entered into its memory preservation shut down mode or the power switch has been turned off.

NOTE: When the system is powered by the standby battery, the MCU will shut down all visual status indications after about 15 minutes to conserve power. Pressing the STATUS button on a Operator Terminal will momentarily light the MCU display (1 second - 2 minutes, depending on the clock cycle) showing current conditions. An alarm condition will light the display for 5 minutes.



PROTECTION LEVEL DISPLAY

The Protection Level Display window shows the protection level to which the system is armed, from 0 to 9. The window displays "P" any time the MCU is in the Program Mode. The MCU will enter the Program Review Mode when you turn the Program Mode Switch "ON". Additionally, when setting a Temporary Access Code or when Direct Bypassing sensor numbers, the MCU automatically switches to the Program Mode for a few seconds and then reverts back to the previous protection level after the change takes place.

SENSOR NUMBER DISPLAY

The Sensor Number display shows (in this order on display windows) which sensors are: (1) in ALARM, (2) have a SUPERVISORY condition, (3) have a TROUBLE condition, (4) are BYPASSED, (5) are in TAMPER, or (6) are OPEN. If a sensor has a trouble condition, is bypassed, is in alarm or has a supervisory condition, the sensor number will appear on the display and the appropriate condition LED will light.

The sensor number display also indicates any sensors which are not restored when the customer attempts to arm the system. For example, if a customer attempts to arm his system to LEVEL 3 (home awake) with a door #34 and a window #40 open, the interior sirens would make repeated protest beeps and the numbers 34 and 40 would flash in the sensor number window along with all 6 LEDs. After seeing which sensors are open, the customer can then go to door number 34 and window 40 and close them. This causes the numbers to clear from the display and the beeping to stop. The customer can now arm the system.

If a sensor has a trouble (usually low battery) or supervisory condition, the problem sensor number and appropriate condition LED will light. Attempting to arm the system will cause "Protest" beeps to sound. To determine whether the protest beeps are due to an open sensor or a problem sensor, watch the condition LEDs. All six flashing indicates a sensor is open, a particular one flashing will identify the cause of the protest. Sensors protesting with a trouble or Supervisory condition can be temporarily silenced by pressing the BYPASS button immediately after selecting the protection level.

The sensor number display will show the number of open sensors when the MCU is in protection level 0, 1 or 2. Open sensors can be distinguished from sensors experiencing an alarm, supervisory, trouble or bypass condition because open sensors display their number and the "OPEN" LED will be lit. Sensors with open tamper switches will also display "open" in levels 0, 1, or 2.

SUPERVISORY INDICATIONS

Every 64 minutes each sensor sends a supervisory signal to the MCU. If no signals have been heard from a particular sensor after approximately 12 hours, the number of the problem sensor is displayed and the "SUPERVISORY" LED is lit. The problem sensor will be reported to the RAMC. It will be re-reported once a day at STIME (or optionally once a week) until the MCU hears from the sensor. The MCU will protest to indicate the supervisory condition as the arming level is changed (except Level 0). Trouble beeps will sound every 60 seconds as an indicator of an existing supervisory condition if no change in arming level has occurred for 10 hours.

The interval at which the MCU checks to see if sensors have reported is every 12 hours. The reports to RAMC can be daily or weekly at STIME, see Programming Section.

Each time the MCU checks for supervisories it looks for and reports all supervisory conditions. The supervisory condition will be removed automatically if the MCU receives a transmission from the missing sensor or temporarily if the system is armed to protection level 9.

ALARM MEMORY

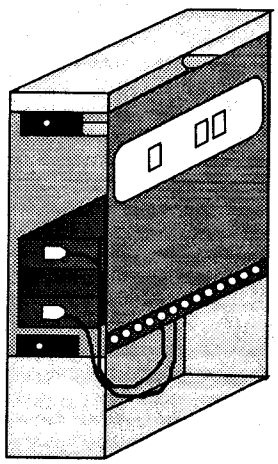
The sensor number display can be viewed to determine if there are any alarms or trouble conditions in memory. If STATUS is pressed, the system will give an audible indication of its current protection level and the displays will show the sensor number of any sensors which were in alarm during the previous arming period. Sensors which were in alarm are retained in the alarm memory for six hours after the system is disarmed. The alarm memory will be cleared immediately by arming to Level 9.

LINE CARRIER POWER SUPPLY

The power supply provides a DC voltage of approximately 13 to 14 VDC (unloaded) to the MCU through terminals 1 & 2. Additionally, it contains the line carrier circuitry for the Wireless Interior Siren through terminal 3. The AC power indicator voltage for the MCU is carried through terminal 4.

RECHARGEABLE STANDBY BATTERY

The SYSTEM VI uses 6 volt 3.2 amp hour rechargeable lead acid batteries for standby power. The battery compartment behind the MCU board has room for two batteries. At the maximum normal standby current draw of 200mA and maximum alarm current of 500mA total, 16 hours of standby time is available from one 3.2 A-Hr battery. A second battery in parallel doubles the standby time to 32 hours.



This assumes that batteries are in "new" 100% capacity condition. As is the case with automobile lead-acid batteries, the MCU battery will "age" over time and will slowly lose capacity. It must be replaced at approximate 3-year intervals, or when it will no longer provide the required standby power capacity.

DIGITAL COMMUNICATOR

The Digital Communicator allows the MCU to transmit over phone lines with Bell 103 format through an RJ-31X jack. The communications format between the MCU and RAMC is interactive (i.e.: MCU programming, system status information and other data can be viewed or changed from the RAMC.) The reporting is done by zone for Alarm, Alarm Canceled, Supervisory, Trouble, Sensor Bypass and Restorals. The communicator Pulse Dials up to 14 digits.

OPTIONAL PRODUCTS

Rollins offers numerous optional products and devices which can be connected to the SYSTEM VI MCU to enhance its versatility and make it suitable for a wide variety of security applications. Sections of this manual are dedicated to each of these products.

MCU INSTALLATION

DETERMINE THE MCU MOUNTING LOCATION.

- ***DO*** locate the MCU centrally, relative to all sensors.
- ***DO*** locate the MCU in an out of the way area yet easily accessible to the customer.
- ***DO*** locate the MCU in a heated area of the building (32° F to 95° F).
- ***DO*** permanently mount the MCU on a wall. Do not mount with double-sided tape!
- ***DO*** locate the MCU near eye level so the displays can be easily viewed. Areas such as coat closets or behind the master bedroom door are good locations. Remember to leave enough room for the antennas. Never bend the antennas to accommodate shelves in closets. Drill holes in the shelves to accommodate the antennas, or remove the shelves entirely.
- ***DO*** verify the availability of a 110V non-switched AC outlet for the power supply. The outlet must be a 3-prong grounded outlet.
- ***DO*** install the RJ-31X jack within 5 feet of the MCU.
- ***DO*** avoid locations with interfering metal, such as furnace ducts, foil insulation, pipes and electrical wiring. Sensor radio reception requires line-of-sight paths, unobstructed by metal.
- ***DO*** locate the MCU on the same or a higher level as most of the sensors.
- *It is recommended that the MCU display is mounted so that the display is not visible from outside the protected area, yet readily viewable by the customer.*
- ***DO*** install all equipment and wiring in accordance with the National Electrical code and NFPA 74 Standard (National Fire Protection Association, Battery Park, Quincy, MA 02269).

LEVEL AND MOUNT THE MCU

1) Open any knockouts for wire feeds.

2) Mark the four keyhole mounting slots, and any knockout holes on the wall where the MCU is to be mounted, keep in mind that the MCU antennas extend about 9" above the MCU cabinet.

3) MOUNT THE MCU SECURELY, either directly to a stud with 1-1/2" screws or, if a stud cannot be located, with toggle bolts.

4) The MCU is heavily protected against power surges and lightning using Metal Oxide Varistors (MOV), Spark Gaps and Transorbs. However, these protective devices require that the MCU plug-in power supply is connected to a 3-prong grounded electrical outlet for maximum transient and surge protection.

MCU CONNECTIONS

The instructions which follow describe MCU connections for power and digital communicator only. A variety of the other devices can be wired to the SYSTEM VI MCU. If you will be using any device hardwired to the MCU, refer to the appropriate section of this manual for connection information and wiring diagrams.

All connections to the MCU must be made with the POWER OFF to avoid damaging the MCU.

NOTE: The MCU Power-up procedure is located at the beginning of the PROGRAMMING SECTION.

CAUTION!!! IT IS IMPORTANT TO BE FREE OF STATIC ELECTRICITY WHENEVER WORKING WITH THE CABINET DOOR OPEN. BE SURE TO DISCHARGE ANY STATIC BY FIRST TOUCHING THE MCU CABINET AND STAY IN CONTACT WITH THE CABINET WITH ONE HAND WHENEVER TOUCHING ANY COMPONENT ON THE BOARD OR USE A WRIST ATTACHED GROUND STRAP AVAILABLE FROM THE CENTRAL WAREHOUSE THROUGH NORMAL REQUISITIONING METHODS.

1) Insert the two antennas through the holes provided in the top of the MCU and tighten the set screws. The antennas should be vertical and clear of metal wires, coat hangers, pipes, duct work, etc. Do not bend or otherwise deform the antennas.

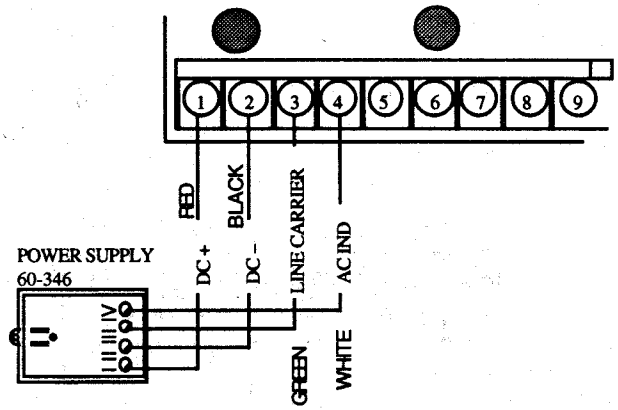
2) Be sure the Master Power Switch & Programming Switch both are OFF (down).

3) ***With the power supply unplugged and the back-up battery disconnected,*** connect ALL 4 WIRES to the MCU as follows:

Power Supply Terminal 1 to MCU screw Terminal 1 (DC+) RED
Power Supply Terminal 2 to MCU screw Terminal 2 (GND/DC-) BLACK
Power Supply Terminal 3 to MCU screw Terminal 3 (LINE CARRIER) GREEN
Power Supply Terminal 4 to MCU screw Terminal 4 (AC INDICATOR) WHITE

For wire runs of 1'-15' use minimum 22 gauge wire, 16'-50' use minimum 18 gauge wire.

Warning: Do Not Connect to an AC Receptacle Controlled by a Switch or to a non-grounded receptacle.



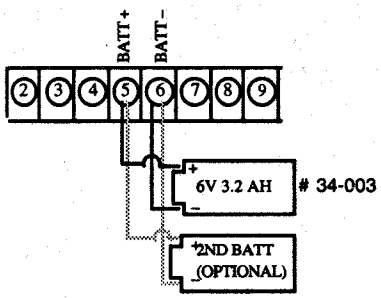
- *** DO NOT STORE ANY EXCESS WIRE BEHIND THE MCU CIRCUIT BOARD.**
- *** Do not power other equipment from the MCU's power supply.**

4) Connect the standby battery leads to the MCU. POLARITY MUST BE OBSERVED. THE BATTERY SHOULD CHARGE TO 6.4 VOLTS DC OR ABOVE. The MCU is designed to use only the Panasonic LCR 306P battery for standby power.

Battery + lead (red)	to	MCU screw Terminal 5 (+Batt)
Battery - lead (black)	to	MCU screw Terminal 6 (- Batt)

A second battery may be installed in the battery compartment if required. Loosen the two screws and remove the cover to gain access. The second battery must be connected in parallel (ie: directly to the MCU terminal strip with its own leads). Replace the battery compartment cover and tighten the set screws after sliding the battery into place. Be careful not to pinch the battery leads with the cover plate!

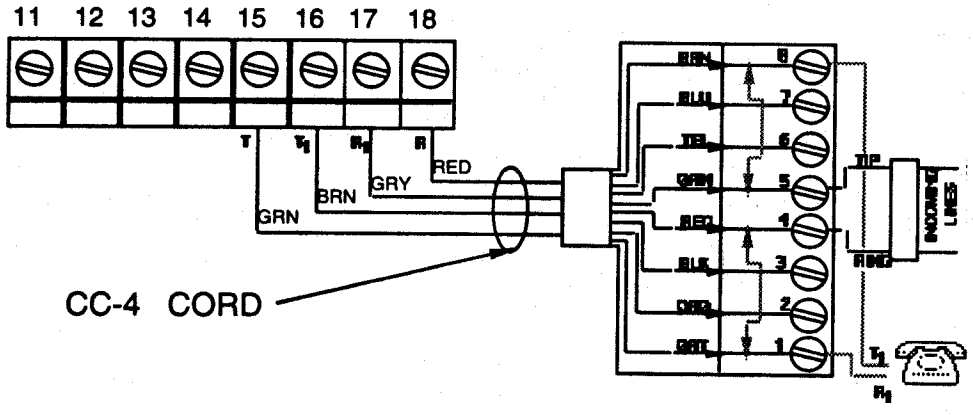
Notice: Test batteries at least once per year with and without AC power connected.



5) Connect the RJ-31X cord to the MCU as indicated below.

Terminal 15 (line tip)	to	RJ-31X Cord Green
Terminal 16 (phone tip)	to	RJ-31X Cord Brown
Terminal 17 (phone ring)	to	RJ-31X Cord Gray
Terminal 18 (line ring)	to	RJ-31X Cord Red

6) Secure the RJ-31X cord strain relief to the MCU chassis using the screw in the lower right corner of the MCU board.



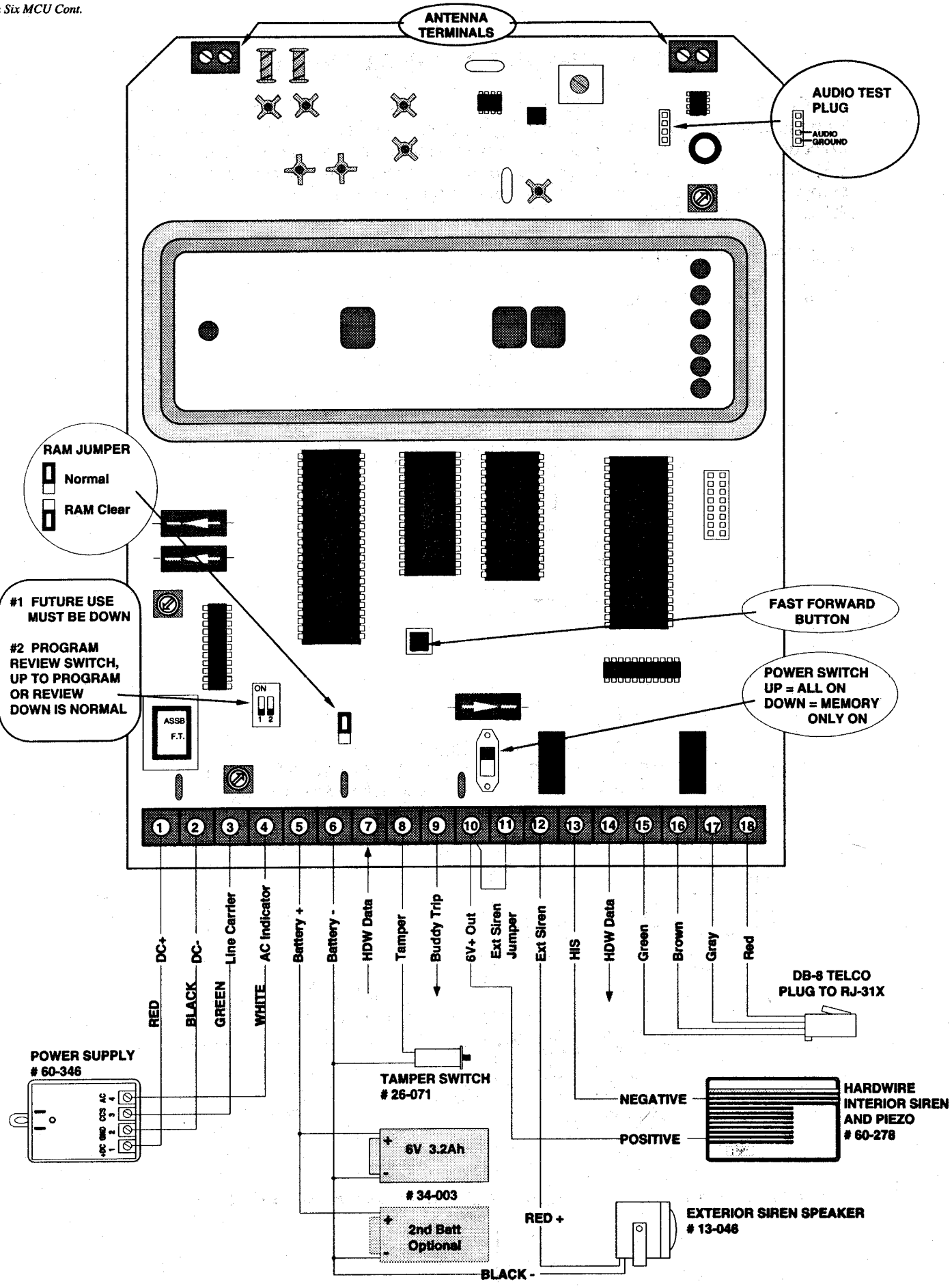
TAMPERING THE RJ-31X JACK

By using an 8 conductor RJ-31X cord you can tamper the cord against removal. You simply need to connect the two unused wires (orange and blue) in series with the MCU tamper switch and install a jumper in the RJ-31X jack to accomplish this.

1) Connect the blue and orange in series with the MCU tamper switch.

2) Install a jumper between screw 2 and screw 7 inside the RJ-31X jack and plug the RJ-31X cord back into the RJ-31X jack.

3) To test the tamper circuit, put the MCU in Level 1-7, remove the cord. This will test the tamper circuit. The MCU will go into a 113 (C3) alarm after several seconds.

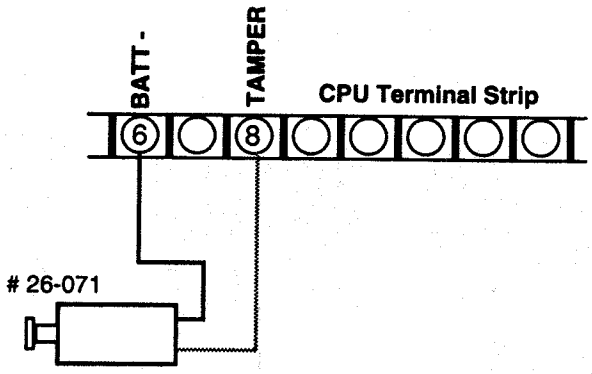

ANTENNA TERMINALS
AUDIO TEST PLUG
AUDIO
GROUND
RAM JUMPER
Normal
RAM Clear
#1 FUTURE USE MUST BE DOWN
#2 PROGRAM REVIEW SWITCH, UP TO PROGRAM OR REVIEW DOWN IS NORMAL
ON
1 2
ASSB
F.T.
FAST FORWARD BUTTON
POWER SWITCH UP = ALL ON DOWN = MEMORY ONLY ON
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
DC+
DC-
Line Carrier
AC Indicator
Battery +
Battery -
HDW Data
Tamper
Buddy Trip
6V+ Out
Ext Siren Jumper
Ext Siren
HIS
HDW Data
Green
Brown
Gray
Red
RED
BLACK
GREEN
WHITE
DB-8 TELCO PLUG TO RJ-31X
POWER SUPPLY # 60-346
TAMPER SWITCH # 26-071
NEGATIVE
POSITIVE
HARDWIRE INTERIOR SIREN AND PIEZO # 60-278
6V 3.2Ah
34-003
2nd Batt Optional
RED +
BLACK -
EXTERIOR SIREN SPEAKER # 13-046

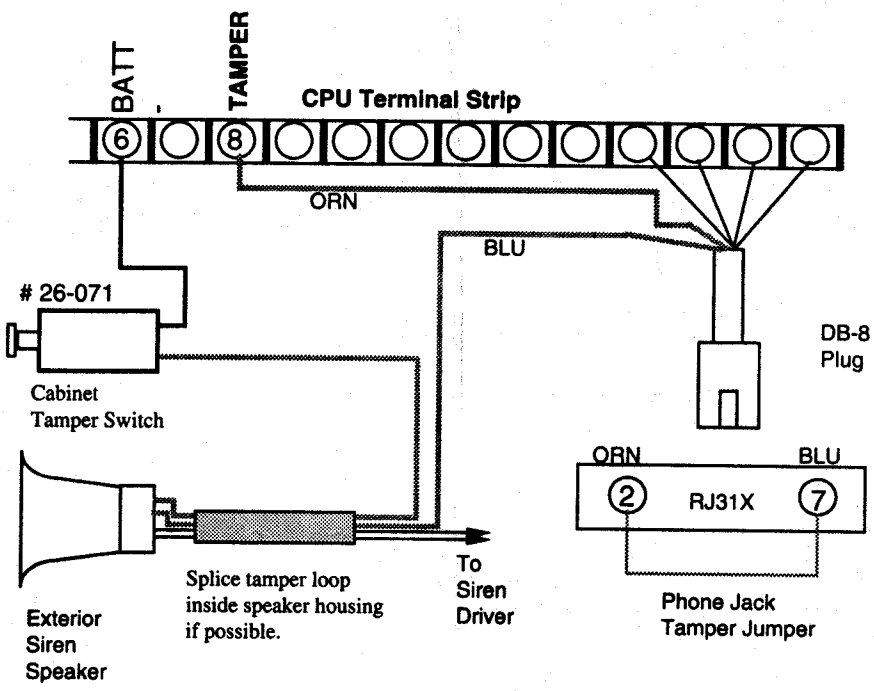
MCU HARDWIRE TAMPER INPUT

The SYSTEM VI MCU has a Hardwire Input which is connected to a tamper switch. With the tamper switch installed, opening the door when the MCU is armed to protection Level 1-7 causes the MCU to go into audible police alarm, and report a 113 (C3) MCU TAMPER to the RAMC. Optionally, other hardwire devices such as a siren tamper or RJ-31X cord tamper can be wired in series into this input. The input is set NORMALLY CLOSED (open on alarm).

SAMPLE CONNECTIONS

Refer to the drawings below for sample tamper connections.



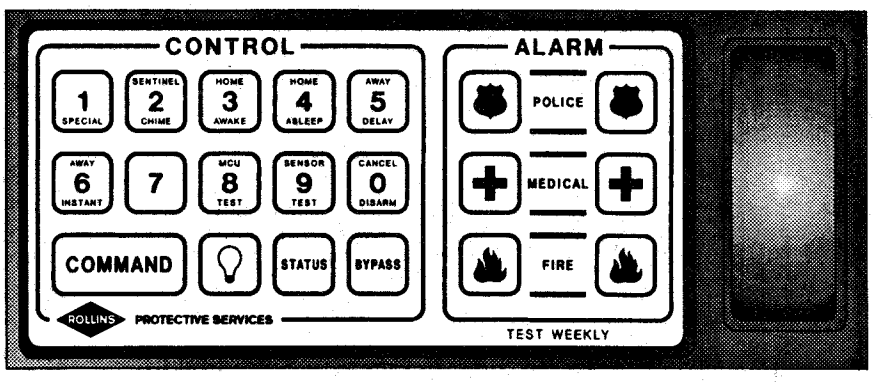


NOTE: *In a U.L. Listed System, a U.L. listed tamper switch shall be used.*

NOTES

OPERATOR TERMINALS

WALL MOUNT WIRELESS OPERATOR TERMINAL (OT)
60-349
(Walnut Enclosure)



The Wireless Operator Terminal (OT) is used to give commands to the MCU. All arming, disarming and other signaling can be done with the OT.

When the MCU's program switch is ON, the OT becomes the installer's programming tool. (See section: PROGRAMMING)

The OT consists of two sections of touch sensitive pads, an ALARM section and a CONTROL section.

WIRELESS OPERATOR TERMINAL - ALARM SECTION

The ALARM section is used to manually trigger an alarm in Levels 0 through 8. The three alarms that can be triggered from the OT are POLICE, MEDICAL, and FIRE. There are two buttons for each alarm and BOTH must be pressed simultaneously and held for one second to set off the alarm. This guards against accidental triggering of the alarms. The table below illustrates the MCU response when the two alarm buttons are pressed.

MCU ALARM RESPONSE

BUTTON PRESSED	SENSOR NUMBER REPORTED	MCU DISPLAY	AUDIBLE RESPONSE
FIRE + FIRE	103	A3	Loud Steady tone siren
POLICE + POLICE	104	A4	Loud Modulated Siren
MEDICAL + MEDICAL	105	A5	Low-level beeping tone

When an alarm is activated from the Wireless Operator Terminal, a signal is also sent to the Rollins Alarm Monitoring Center.

WIRELESS OPERATOR TERMINAL - CONTROL SECTION

The CONTROL section is used to select the arming level. This section is made up of buttons 0 through 9, STATUS, BYPASS, COMMAND and LIGHTS. To properly use the CONTROL section, it is necessary to know the 4-digit Access Code (combination). The system powers up with an Access Code of 1-2-3-4.

The 4-digit Access Code must be entered before any change in arming level. For example: To arm the system to protection level 1, enter the 4 digit Access Code, then immediately press the digit 1. A single "beep" will be heard and a "1" will be displayed on the MCU's protection level display window.

An access code with a status of LO cannot disarm to level zero (0).

STATUS

The STATUS button serves two purposes during normal operations.

1. To request an audible indication of the system's current protection level.
2. To activate the ALARM MEMORY and give a visual indication of any sensors that were in alarm during the previous arming period.

The table that follows outlines the audible responses for each protection level when the STATUS button is pressed.

AUDIBLE STATUS RESPONSES

PROTECTION LEVEL	AUDIBLE RESPONSE
0 - DISARM/CANCEL	One long beep
1 - SPECIAL	One short beep
2 - CHIME	Two short beeps
3 - HOME AWAKE	Three short beeps
4 - HOME ASLEEP	Four short beeps
5 - AWAY DELAY	Five short beeps
6 - AWAY INSTANT	One long and one short beep
7 - SILENT AWAY	One long and two short beeps
8 - PHONE TEST	One long and three short beeps
9 - SENSOR TEST	One long and four short beeps

ALARM MEMORY

The ALARM MEMORY is displayed at the MCU when the STATUS button is pressed. If an alarm occurred, the MCU will light the alarm LED and the number of any and all sensors that had been in alarm will be displayed. The ALARM MEMORY is available for review for six hours after the system is disarmed and then it automatically clears. Selecting Level 9 will also clear the ALARM MEMORY. There is no audible indication that an alarm occurred during the previous arming period. The alarm memory can also store supervisory and trouble conditions.

BYPASS

The SYSTEM VI will not allow immediate selection of a new protection level unless all sensors active in that new level are closed or restored. Instead of arming to the new level, the system will generate two-tone "protest" beeps. The display will show which sensor(s) are open. The system can be "force armed" by using the BYPASS button.

INDIRECT BYPASSING

On a nice spring evening a customer could protect the house by arming to Level 3, and also leave his master bedroom window (for example, sensor 42) open. The BYPASS button is used to accomplish this. First, all doors and windows must be closed except the bedroom window, which is left open. Next, the system is armed to Level 3. When the protest beeps are heard immediately press the BYPASS button. This will cause the system to arm to Level 3 while bypassing the bedroom window, number 42.

This bypass procedure can be used to bypass more than one sensor at a time. It is recommended that the display always be checked to be sure the correct sensor or sensors have been bypassed

Note: This Bypass procedure shall not be used in a U.L. listed installation.

AUTOMATIC BYPASSING

If the customer attempts to arm the system with a sensor or sensors in the non-restore condition, the system will generate protest beeps. Should the customer mistake the protest beeps for the exit delay beeps and leave the premises unsecured the SYSTEM VI will automatically arm to the protection level the customer attempted to select after 3 minutes. Any sensors which were causing the MCU to protest (ie: all open sensors) will automatically be bypassed. The MCU will report an "110 FORCE ARM AUTO" to the Central Station.

DIRECT BYPASSING

Another way to BYPASS is called Direct Bypassing. To use direct bypassing, select a particular sensor number that you want bypassed. Then enter the 4 digit Access Code + BYPASS + the sensor number.

To bypass the same bedroom window (42) from the example above, arm the system to Level 3 (Access Code + 3). Next, enter the Access Code + BYPASS + 42. If properly bypassed, 42 will show in the sensor number window and the Bypass LED will be on. An Access Code with a status of HI, must be used when direct bypassing. The Temporary Access Code will not work for this feature. This will leave the MCU in protection Level 3 but bypass sensor number 42. All other sensors active in Level 3 will still be armed.

Using direct bypassing, the customer can bypass any sensor number (except sensors programmed for fire). Multiple sensors must be bypassed one at a time. With each direct bypassing command, the exit delay timer is reset to allow the user time to exit. With either method of sensor bypassing, keep in mind that changing the protection level clears the bypass. Thus, the customer must repeat the bypassing steps if they change protection levels and still want bypassed sensors. Below is a summary of the differences between direct and indirect bypassing.

INDIRECT BYPASSING	DIRECT BYPASSING
Primary, Low Level or Temporary Access Codes can be used to bypass sensors	Only the primary Access Code or High Level Access Codes can be used to direct bypass sensors.
Sensors to be bypassed must be open or activated.	Sensors to be bypassed can be either open or closed.
Can only bypass those sensors which can be left OPEN (doors and windows).	Any* sensor number can be open bypassed. *Not fire sensors.
Can bypass as many sensors as are open, all at once.	Can only bypass one sensor number at a time.

LIGHTS

Turns lights connected to X-10 Modules on or off. Toggles lights.

COMMAND

Allows the user to arm without entering an access code. Two keystrokes are all that is needed to arm to a higher protection level. Can only be used to increase protection. Cannot be used if an alarm has occurred or during an entry delay.

Pressing the COMMAND button followed by a higher protection level will arm the panel to that level. The access code is needed to disarm or reduce the protection level at all times.

Pressing the COMMAND button followed by 0 will toggle the X-10 lights on or off.

If optional feature F01 is ON, entering the four-digit access code followed by the COMMAND button starts a silent exit delay in protection levels 4 and 6. This silent exit delay is the same length as the normal exit delay as in levels 3 and 5, except it is silent. The delay only affects Entry/Exit Group 3 sensors. For example, this feature allows exit from the protected premises without disturbing sleeping occupants. When the silent exit delay time expires, the entry/exit sensors re-arm to "instant" status, even though the protection level doesn't change.

INSTALLING THE WIRELESS OPERATOR TERMINAL

Most of the time the Operator Terminal will be left on its mounting bracket which can be permanently secured to a wall. It can also be lifted off its bracket for portability. Typical locations are near exterior doors and in or near the master bedroom.

INSTALLATION CONSIDERATIONS

- ***DO*** locate the Operator Terminal in a convenient location offering easy access for exit and entry control.
- ***DO*** avoid metallic mounting surfaces such as foil wallpaper, steel frames, mirrored walls, etc.
- ***DO*** test the Operator Terminal before you permanently mount it.
- ***DO*** try to keep the Operator Terminal within 100 feet of the MCU.

> Although the open air range of Rollins sensors can be over 500 feet, the installation environment will influence this distance. The 100 foot distance recommendation is given as a starting guideline. In your actual installation, transmission range may be greater.

- ***DON'T*** install Operator Terminal in areas with interfering metal or electrical wiring, such as furnace/utility rooms, etc.
- ***DON'T*** attach mounting bracket with two sided tape.
- ***DON'T*** locate Operator Terminal where it is likely to be exposed to moisture.
- ***DON'T*** install the Operator Terminal in a location where the room temperature will exceed the Operator Terminal's operating limits 10° F to 120° F.

INSTALLATION OF THE WIRELESS OPERATOR TERMINAL

1) Secure the mounting bracket to the wall, narrow part up, hollow side towards you.

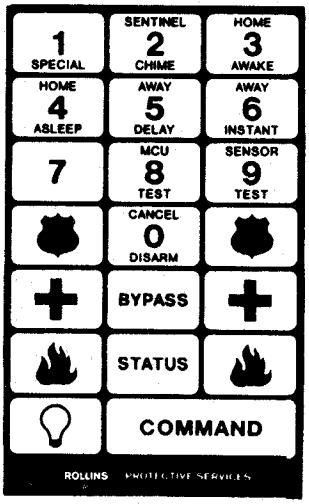
   NOTE: The mounting bracket is not centered on the back of the Operator Terminal, it is off to one side. This must be taken into account when the Operator Terminal is to be centered between two objects.

2) A good height for the Operator Terminal is about 5 feet from the floor.

3) Mount securely, use molly bolts or plastic anchors if mounting on plaster.

4) Hang the Operator Terminal on the mounting bracket and be sure it is level.

HAND HELD WIRELESS OPERATOR TERMINAL (HHOT)
60-348
(Plastic Enclosure)



The Hand Held Operator Terminal is housed in a pocket size plastic case and functions in the same way as the model in the walnut enclosure. The Hand Held Wireless Operator Terminal is light weight and portable. It is used to arm and disarm the MCU and can also be used to perform some programming functions. The Status and Bypass, Lights and Command buttons, work the same as on the walnut Wireless Operator Terminal.
Estimated battery life is 3 to 5 years.

ALARM KEYS

The ALARM section is used to manually trigger an alarm in Levels 0 through 8. The three alarms that can be triggered from the OT are POLICE, MEDICAL, and FIRE. There are two buttons for each alarm and BOTH must be pressed simultaneously and held for one second to set off the alarm. This guards against accidental triggering of the alarms. The table below illustrates the MCU response when the two alarm buttons are pressed.

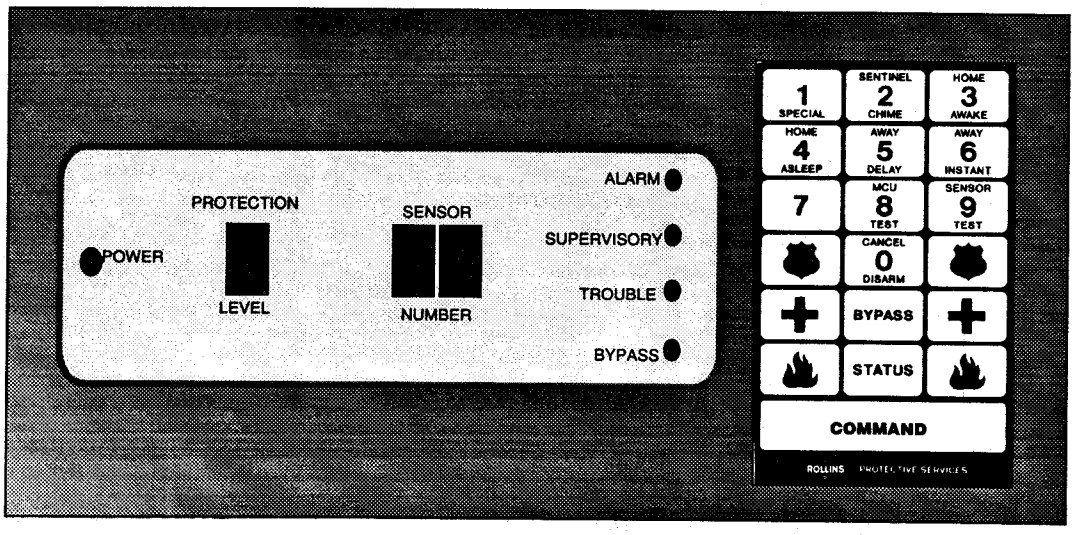
MCU ALARM RESPONSE

BUTTON PRESSED	SENSOR NUMBER REPORTED	MCU DISPLAY	AUDIBLE RESPONSE
FIRE + FIRE	103	A3	Loud Steady tone siren
POLICE + POLICE	104	A4	Loud Modulated Siren
MEDICAL + MEDICAL	105	A5	Low-level beeping tone

When an alarm is activated from the Wireless Operator Terminal, a signal is also sent to the Rollins Alarm Monitoring Center.

Try to keep the Operator Terminal within 100 feet of the MCU.

HARDWIRE OPERATOR TERMINAL AND DISPLAY
60-382

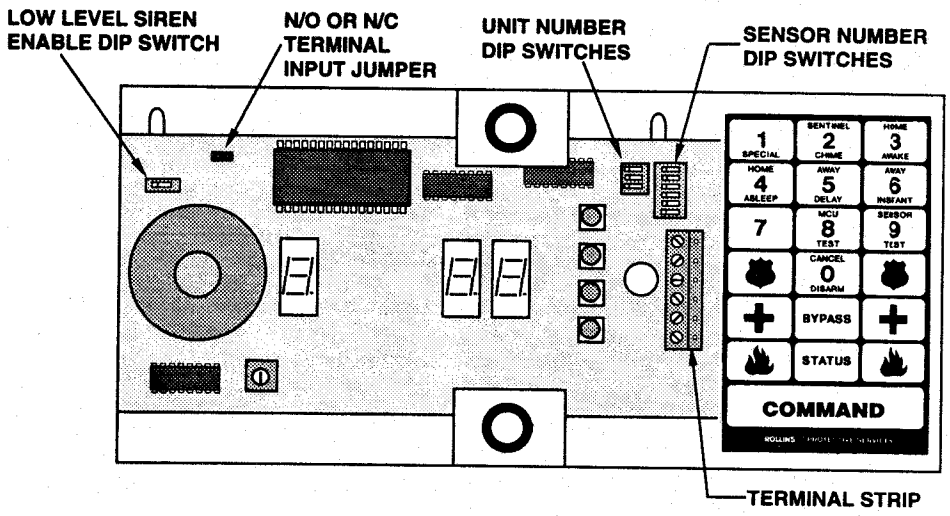


The Hardwire Operator Terminal and Display is a supervised component operating on the Hardwire Buss that offers you four products in one unit. The **Display** duplicates the visual indications on the MCU. It also contains an **Annunciator** capable of making both low volume status sounds and full volume alarm sounds. Two Terminals allow for a N/O or N/C hardwired **Burglary Loop.** Finally, it allows you to arm, disarm and also program the system with its built-in **Operator Terminal**.

PRELIMINARY CONSIDERATIONS

- ***DO*** locate the Hardwire Operator Terminal and Display in a convenient location offering easy access for exit and entry control. A good height for the Hardwire Operator Terminal is about 5 feet from the floor.
- ***DON'T*** locate the Hardwire Operator Terminal where it is likely to be exposed to moisture.
- ***DON'T*** install the Hardwire Operator Terminal in a location where the room temperature will exceed the Hardwire Operator Terminal's operating limits 10° to 120° F.
- ***DO*** consider the total current draw of all hardwired devices on the buss.

NOTE: It is recommended that the operator Terminal is mounted so that the display not be visible from outside of the protected area.



ANNUNCIATOR SOUND OPTIONS

The Hardwire Operator Terminal has a DIP switch that allows the choice of either High Level Alarm sounds only or all Alarm and Status sounds.

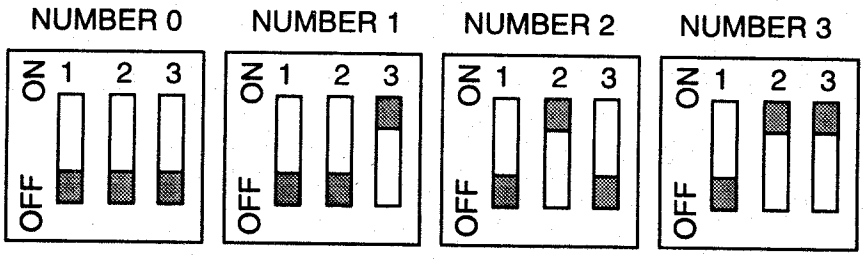
Alarms and Status - With the DIP switch "ON", the Hardwire Operator Terminal will make all sounds.

High Level Alarms Only - With the DIP switch "OFF", High Level Alarm sounds only (such as Police and Fire) no low level alarms or status beeps. Used in areas where Status sound could be disruptive such as near children's bedrooms.

NOTE: If a hardwire interior siren is not used or a hardwire interior siren is used but location F11 is "set", then the siren sound option switch shall be "on".

UNIT NUMBER DESIGNATION

Each Hardwire Operator Terminal on the hardwire buss must be assigned a unit number from 0 to 3. Other hardwire buss devices can use numbers 0 to 8. The unit number uniquely identifies each device on the buss. If one of the devices fails, the MCU reports a "102 Supervisory" signal. The Hardwire Operator Terminal and Display includes a set of three DIP switches which set the unit number. Set these DIP switches prior to applying power to the Hardwire Operator Terminal. Use the diagrams below to set the unit number DIP switches. Use only the switches labeled 2 and 3 to set the unit number. Switch 1 must always be OFF.



INSTALLATION INSTRUCTIONS

1) Set unit number DIP switches (0 to 3). Use only the switches labeled 2 and 3. Switch 1 must always be OFF.

2) Make all connections with the power off.

•Each unit requires a 4 conductor wire connection (shielded wire is preferred). For lengths from 1 foot to 50 feet, use 22 gauge; for lengths over 50 feet, use 18 gauge or greater stranded, twisted cable. The maximum wire run resistance should be no more than 200 ohms.

•The maximum current draw is 100 mA per Hardwire Operator Terminal. When determining how many Hardwire Operator Terminal's can be powered directly by the MCU, keep in mind that the total current available to power all devices hardwired to the MCU is 500 mA (normal supervisory condition).

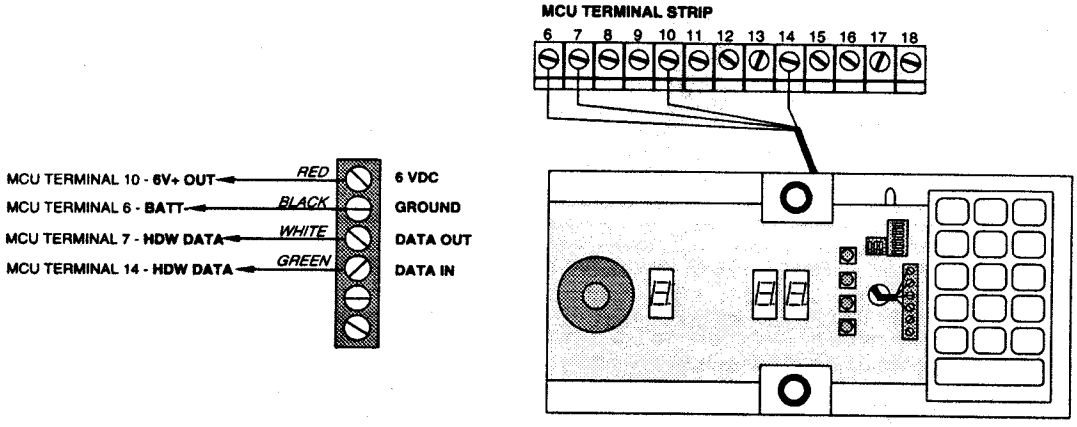
3) Mount securely, use molly bolts or plastic anchors if mounting on plaster.

4) Power up the MCU and place the programming switch in the program position, then press the STATUS button on the Hardwire Operator Terminal.

NOTE: Sensor number 102 must be programmed into the MCU in order for the hardwire buss to be supervised. The MCU will "learn" the unit numbers of each device on the hardwire buss. If you wish to change a unit number, you must remove 102, make the change, then re-initialize 102.

5) Return the program switch to the operate mode.

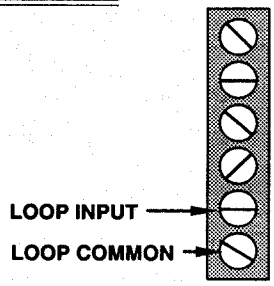
HARDWIRE OPERATOR TERMINAL AND DISPLAY WIRING DIAGRAM



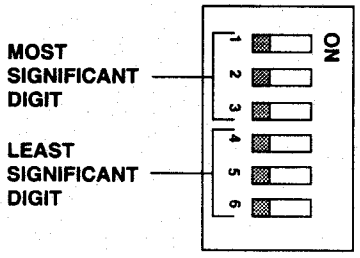
CAUTION: Be careful not to bend the LED leads when making the wiring connections to the terminals

SETTING THE SENSOR NUMBER AND CONFIGURATION OF A HARDWIRED SWITCH

The Hardwire Operator Terminal and Display includes two additional terminals (the bottom two) to attach a hardwire burglary loop. The device connected to the loop requires a minimum 3 second lockout and a 1 second open and close time. Use 20 gauge stranded twisted pair wires and do not exceed 50 feet in length.



A group of six DIP switches set the sensor number. The first three DIP switches (1, 2 and 3) are used to set the first or most significant digit of the sensor number and the last three (4, 5 and 6) are used to set the second or least significant digit. For example, if a switch were hardwired to an exterior door and is to be sensor 37, the first three DIP switches will be set to the 3 and the last three DIP switches set to 7. The table of switch settings given for the unit number can be used to set each group of three DIP switches.



The sensor number chosen will operate with the same standard default sensor group characteristics as a wireless sensor. See the group chart. These characteristics can only be changed through programming from a central station.

IMPORTANT: If the terminals are not being used, all DIP switches must be set to the OFF position.

The configuration of the hardwire switch, whether normally open (close initiates alarm) or normally closed (open initiates alarm), is set by the jumper in the upper left hand corner of the Hardwire Operator Terminal and Display. If the loop is to be normally closed, keep the jumper in place. If the loop is normally open, remove the jumper.

Normally Closed

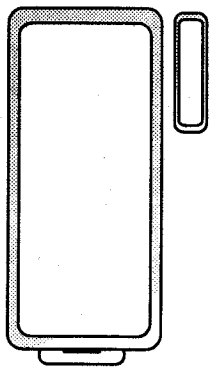
Normally Open

NOTES

SENSORS

DOOR/WINDOW SENSOR (DWS) 60-362

These sensors are designed to be installed on doors, windows, gun cabinets, or anything else that opens and closes. Each contains two built-in magnetic reed switches and is designed to go into alarm by moving the supplied magnet away from the sensors reed switches. The sensor offers screw Terminals that will accept normally open or normally closed hardwire devices (switches, carpet mats, etc.)



A Door/Window Sensor will transmit signals during normal operation. When a door is opened, a "VIOLATION" signal is sent to the MCU. When the door is closed a "RESTORE" signal is transmitted. ***These signals are sent whether the system is armed or not.*** If an attempt is made to arm the system to a level in which the sensor is active and that sensor is in a violated state (door open, for example), the MCU will "protest" by emitting a series of continuous beeps and refuse to arm to the desired level. The number of the violated sensor will also be displayed on the MCU's LED display. The system can be armed when all of the sensors used at a particular protection level are in the "RESTORE" condition, or, if the user deliberately "BYPASSES" one or more sensors.

BATTERY POWER -- The Door/Window Sensor is powered by a 3.5 VDC Lithium battery. The battery is monitored. Under normal circumstances, the battery should last 3 to 5 years.

TEMPERATURE RANGE -- 10° F to 120° F

TAMPER SWITCH -- Door/Window Sensors contain a built-in tamper switch. Removing the sensor cover causes the sensor to transmit a "TAMPER" signal to the MCU. If the MCU is armed to a protection level in which the tampered sensor is active, an alarm will occur. If the tampered sensor is not active in that arming level, the MCU will not go into immediate alarm, but will remember the TAMPER signal and "PROTEST" (as if the sensor had been left open) the next time an attempt is made to arm the system. The MCU will still "PROTEST" until a "RESTORE" signal is heard from the sensor. This can be accomplished by opening, then closing the protected door or window.

IMPORTANT -- When working on Door/Window Sensors, be sure to select a protection level in which the sensor, whose cover you are removing, is disarmed before opening sensors. For 24 hour sensors or if F15 is active, this will mean selecting protection level 9. You can also turn off the MCU master switch.

NOTE: The tamper feature cannot be disabled.

SUPERVISORY INDICATIONS

Every 64 minutes sensors send a supervisory signal to the MCU. If no signals have been heard from a particular sensor after 12 hours, the number of the problem sensor is displayed and the "SUPERVISORY" LED is lit. The problem sensor will be reported to the Central Station within 24 hours.

INSTALLATION CONSIDERATIONS

- ***DON'T*** mount within 5 inches of the floor on a door to avoid damage and to allow better signal transmission.
- ***DON'T*** mount sensors or magnets on any metallic surfaces such as metal doors or foil wallpaper. If you must, then use spacers to keep sensor & magnet away from the metal.
- ***DON'T*** install transmitters closer than 3 feet to MCU.
- ***DO*** mount magnet on one door, sensor on the other for double door installation.
- ***DO*** mount sensors with screws (never use two-sided tape).
- ***DO*** try to keep all transmitters within 100 feet of the MCU.

Although the open air range of Rollins transmitters can be over 500 feet, the installation environment will influence this distance. The 100 foot distance recommendation is given as a starting guideline. In your actual installation, transmission range may vary greatly.

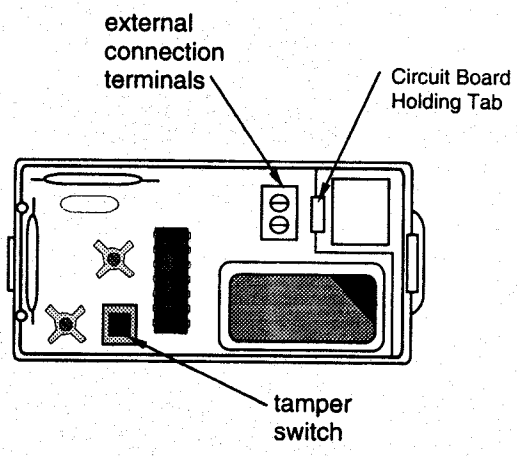
- ***DO*** avoid areas with interfering metal or electrical wiring, such as furnace/utility rooms.
- ***DO*** avoid locating transmitters where they are likely to be exposed to moisture.
- ***DO*** install the sensor in a location where the temperature will not exceed the sensors operating limits of 10° F to 120° F.

PREPARATION BEFORE INSTALLATION

1) Remove the sensor cover by pressing on the cover end to release the tab on the cover from the slot in the sensor base.

CAUTION!!! It is important for you to be free of all static electricity when handling transmitters. Use a static wrist strap, or touch something metal before handling the transmitter circuit board. Handle only by the edges. Never set the circuit board on any metallic surface.

2) Carefully remove the circuit board by pulling back on the tab and lifting the battery holder; or gently flex the plastic sensor base to release the circuit board.



MOUNT THE SENSOR BASE

1) Two screw holes are provided, one is enlarged to allow for sensor alignment.

NOTE: The sensor base has markings which indicate the position of the reed switches when the circuit board is reinstalled. Use the markings to aid in your alignment.

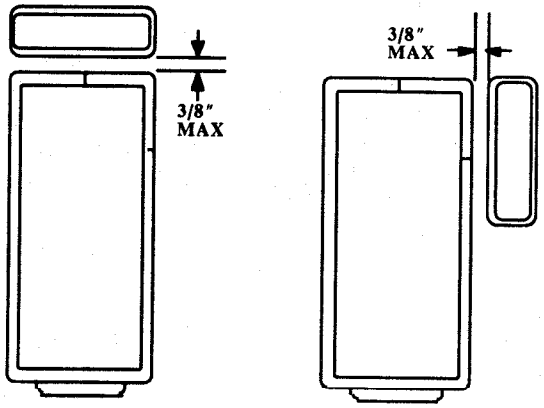
2) Use #4 countersunk screws when mounting the sensor. Optionally two small holes are provided to allow for mounting with 18 gauge wire nails.

MOUNTING THE MAGNET

1) Mount magnet base within 3/8" of the sensor's base, centered on the notch or tab. Use two #4 x 1/2" countersunk screws or #18 x 1/2" wire nails. A brad driver works well if using nails.

2) Be sure magnet won't interfere with door or window opening.

3) Do not use two sided tape to mount magnet.



REPLACE THE CIRCUIT BOARD

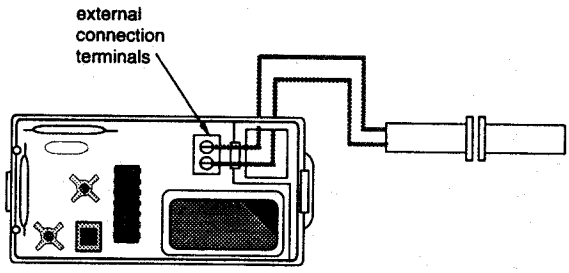
REPLACE THE SENSOR COVER.

INTERFACING REMOTE DEVICES TO A DOOR/WINDOW SENSOR

The Door/Window Sensor can be connected to either Normally Open (closes on alarm) or Normally Closed (open on alarm) devices.
Note: The wire from the remote device to the sensor is not supervised (no end-of-line resistor).
The configuration of the sensor is a programmable option selected when programming. See Programming section.

Multiple NORMALLY CLOSED devices would be wired in SERIES all in the same line.

Multiple NORMALLY OPEN devices would be wired in PARALLEL all to the same two screw terminals.



Note: *The normally closed configuration must be used in U.L. listed installations.*

INTERFACING CONSIDERATIONS

Note: Use recognized limited energy cable to all initiating, indicating and supplementary devices.

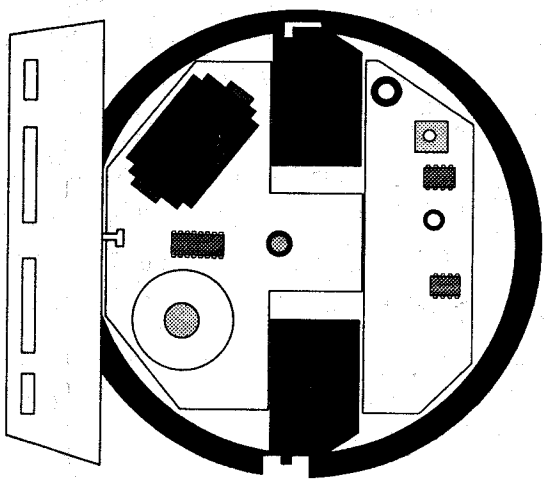
- ***DO*** make sure the device connected to the sensor is a hermetically sealed type. Such as a sealed reed switch. ***DON'T*** use mechanical switches connected to a DWS.
- ***DO*** make sure the device supplies a minimum 100 millisecond open or closure on alarm. This is important! ***DON'T*** attempt to connect fast pulse devices such as Window Bugs to a DWS.
- ***DON'T*** exceed 6 feet of wire in any wire run if using untwisted wire.
- ***DO*** use stranded wire, not solid core wire. ***DON'T*** exceed 25 feet of 22AWG (minimum) wire in any wire run if using twisted wire.
- ***DON'T*** connect more than 5 switches to a DWS. Fewer than 5 is preferred.
- ***DON'T*** connect more than 1 alarm screen to a DWS.
- ***DON'T*** run wires within 18" of electrical wiring. Never run parallel to electrical wires, cross them at a 90 degree angle.

SMOKE SENSOR 60-352 and 60-506

The Smoke Sensor is a Photo-Electric type that contains its own Alarm Horn and Low Battery Annunciator. It has an output that will trip a special transmitter already built into the detector. The built-in alarm horn will sound as long as smoke remains in the Smoke Sensor. It is powered by two 9 Volt Alkaline batteries. Both of the 9 volt batteries are monitored. The Smoke Sensor's own low battery annunciator will make a short "beep" sound every minute until the batteries are replaced.

Refer to the Owners Manual included with each Smoke Sensor for detailed information. Also, be sure to give the Smoke Sensor's Owners Manual to the purchaser of the system after the installation is complete.

Additional information on Household Fire Warning is available at nominal cost from: The National Fire Protection Association, Battery Mark Park, Quincy, mA 02269. Request NFPA Standard 74.



Model 60-352

SUPERVISORY INDICATIONS

Every 64 minutes sensors send a supervisory signal to the MCU. If no signals have been heard from a particular sensor after 12 hours, the number of the problem sensor is displayed and the "SUPERVISORY" LED is lit. The problem sensor will be reported to the Central Station.

INSTALLATION CONSIDERATIONS

While it is not possible to get too specific about Smoke Sensor location (since each residence has different design requirements), there are some guidelines that can be followed. Refer to the sensor's Owners Manual for detailed information on sensor location. Some additional hints appear on the next page:

- ***DO*** determine the best locations for each Smoke Sensor so as to optimize early detection, and maintain accessible escape routes out of the building.
- ***DO*** locate a Smoke Sensor at the bottom of the basement stairwell(s). For other levels, it is usually best to locate Smoke Sensors at the top of the stairwell.
- ***DO*** locate a Smoke Sensor in any hallway servicing bedrooms. For maximum protection, place a Smoke Sensor inside each bedroom, especially smokers bedrooms or bedrooms where electric blankets or other electrical devices are used.

- ***DO*** mount sensors on ceilings whenever possible. Make sure that the sensor is no closer than 4 inches to any wall. For wall mounting, make sure that the nearest edge of the detector is at least 4" and no more than 6" from the ceiling.
- ***DO*** avoid mounting sensors on any slanted surface.
- ***DO*** try to keep the Smoke Sensor within 100 feet of the MCU.

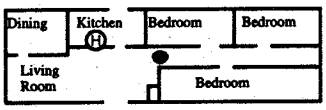
Although the open air range of Rollins transmitters can be over 500 feet, the installation environment will influence this distance. The 100 foot distance recommendation is given as a starting guideline. In your actual installation, transmission range may vary greatly.

- ***DO*** check for areas of the installation which may inhibit the Smoke Sensors radio signals from reaching the MCU. This would include areas with interfering metallic surfaces or electrical wiring.

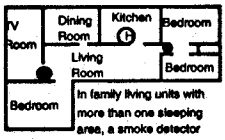
NOTE: Ceiling mounted smoke detectors should be located in the center of the room or hall, or not less than 4 inches from any wall. When the detector is mounted on a wall, the top of the detector should be 4 to 12 inches from the ceiling

NOTE: Do not install smoke detectors where normal ambient temperatures are above 100 F or below 40 F. Also do not locate detectors in front of AC/Heat registers or other locations where normal air circulation will keep smoke from entering the detector.

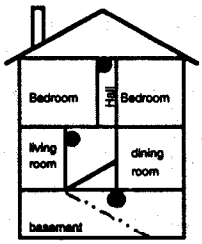
NOTE: Additional information on household fire warning is available at nominal cost from: The National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. Request Standard No. NFPA74.



Smoke detectors should be located between the sleeping area and the rest of the family living unit.



In family living units with more than one sleeping area, a smoke detector should be located at each area.

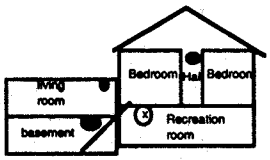


A smoke detector should be located on each level.

Required smoke detector ●

Indicates smoke detector is optional if door is not provided between ceiling and recreation rooms.

Heat Detector H



MOUNTING THE SMOKE SENSOR:

1) Remove the sensor's mounting bracket to screw onto mounting surface.

2) Mount directly onto wood surfaces using 1 1/2" wood screws. If mounting onto plaster or dry wall use molly bolts or appropriate plaster anchors.

3) Re-attach sensor onto the mounting bracket.

TESTING THE SMOKE SENSOR

The following procedure can be used for testing. It can be done now or with the final testing of the entire system.

1) Verify that the MCU is programmed with the sensor number(s) of the Smoke Sensor(s) being tested. If not, program the MCU as described in the Programming Section.

2) Arm the MCU to protection Level 9 (SENSOR TEST). The sensor numbers of the Smoke Sensors being tested should scroll in the MCU display window.

3) Press and hold the test button on the Smoke Sensor. After ***20 to 30 seconds*** the alarm horn sounds and the red light glows steadily. Keep holding the test button for about another 20 seconds to ensure that the sensor has transmitted a signal to the MCU.

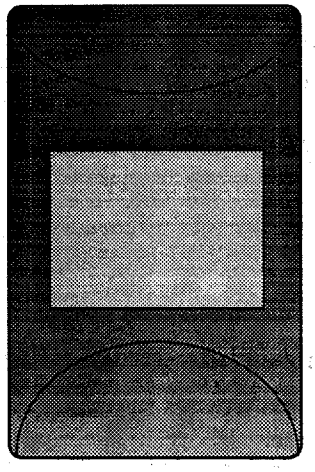
4) Check the scrolling sensor numbers on the MCU. The sensor's number should no longer be displayed.

5) It is recommended that the Smoke Sensor be tested as part of the SYSTEM VI system by disarming to Level 0 and pressing the test buttons on the sensors. Sirens should sound with a steady loud tone. The Smoke Sensor's built-in alarm will stop a few seconds after the test button is released. Rearm to level 0 to stop the MCU siren. If the phone jack is plugged in, the Central Station will receive the alarm. The Central Station must be informed before testing begins.

NOTE: The alarm system sirens and the Smoke Sensor's built-in siren will BOTH sound when smoke is detected. The MCU alarm is canceled from the Operator Terminal (Access Code + 0) and the sensor's alarm is canceled by clearing the smoke from the detector.

PASSIVE INFRARED INTRUSION MOTION SENSOR
60-356

A Passive Infrared (PIR) Sensor is designed to detect movement of a human intruder in the interior sensing range of an enclosed structure. The PIR Sensor adapts to the environment in which it is placed, and continually gathers information about that area. When the PIR senses a change in this stable environment caused by an intruder emitting a different degree of infrared heat energy, it transmits a signal to the MCU.



NOTE The PIR is designed to detect the movement of a human intruder within the sensor's detection pattern. It is not designed to detect fire, or heat generated from a fire.

When a PIR detects sufficient human intruder movement, a "VIOLATION" signal is sent to the MCU. These signals are sent whether the MCU is armed or disarmed. A PIR cannot prevent the system from arming.

PIR sensors are SUPERVISED, i.e. they send a check in signal to the MCU every 64 minutes just like the DWS.

The System VI PIR comes complete from Rollins with a built-in wireless transmitter. The transmitter is compatible with the System VI "learn mode".

BATTERY POWER: The PIR uses a 3.5 VDC Lithium battery. Under normal conditions this battery will last 3 Years. Whenever the PIR transmits to the MCU it reports its battery condition. When the batteries begin to get low the MCU will display and report the number of the PIR with the low battery. When this happens, replace the battery.

TEMPERATURE RANGE: 10°F TO 120°F

TEST FEATURES: A fast-reset LED walk light is selected by pressing the walktest switch. When in this mode the PIR's LED indicates when the unit detects movement. When in the LED mode the PIR will transmit every time the LED lights. There must be 10 seconds of inactivity between each test.

TRANSMITTER LOCKOUT: In the Radio Mode the transmitter will transmit once, then "lockout" (i.e. not transmit again) for 3 minutes. Any movement during the 3 undisturbed minutes does not affect the duration of the lockout.

INSTALLATION CONSIDERATIONS

- REFERENCE POINT - Mount the PIR so there is a reference point (such as a wall) at the end of its pattern. Otherwise the PIR becomes very unstable, causing false alarms.

- FOR BEST DETECTION - Mount these sensors so an intruder will most likely walk ACROSS the sensing area.

- PERMANENTLY MOUNT THE PIR - Do not simply set it on a shelf without screwing it down because the customer might move it and change its field of view.

- MOUNTING HEIGHT - Mount at between 5 and 8 feet high for best detection.

- PETS - If pets will be allowed in the PIR's field of view you must use the optional PIR lens for Pet Patterns. The down finger zones are eliminated, thus making it possible for pets to have access to the protected area.

- DON'T ATTEMPT TO MASK OFF ZONES - Instead select an optional lens to provide the desired coverage.

- LOCATION - Even though these PIR's are highly immune to false alarms you should follow these standard Passive Infrared locating guidelines:

    * Don't locate in direct sunlight.
    * Don't aim at air conditioners, heat vents, wood stoves, fireplaces, etc.
    * Don't aim at moving objects (curtains, plants, etc). Heated water in a pipe is considered a "moving object."
    * Don't aim at solar heated walls or uninsulated metal walls.
    * Do attempt to mount on an outside wall facing in.
    * Do mount on a surface which is rigid and free from vibration.

- As with any radio transmitter, avoid mounting on or near large or obstructing metal objects such as a heat duct or foil wallpaper.

LENS REPLACEMENT

See the DS923 Installation Instructions included to replace lenses.
Many lens options are available for the DS923 PIR. If you require a different detection pattern for your application, select the appropriate lens from the DS923 installation instructions. A cross reference list for Rollins part numbers follows:

DS Part #.	*ITI Part #*
OLB92	13-0166
OLP92	13-0167
OLWA92	13-0168

INSTALLATION

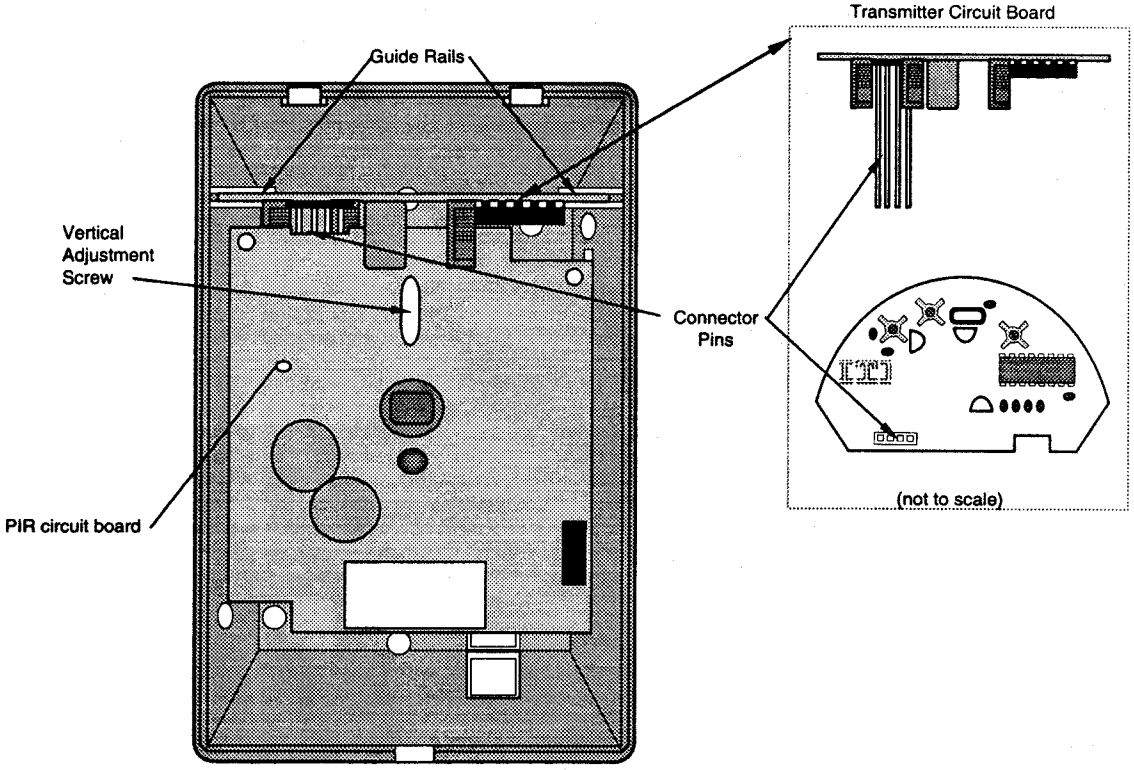
Install the PIR according to the Installation Instructions included with the DS923 detector.

NOTE: Be sure to plug any holes in the case with silicone rubber or other suitable caulking material to prevent insects or dust from entering the unit and possibly causing false alarms.

TRANSMITTER INSTALLATION

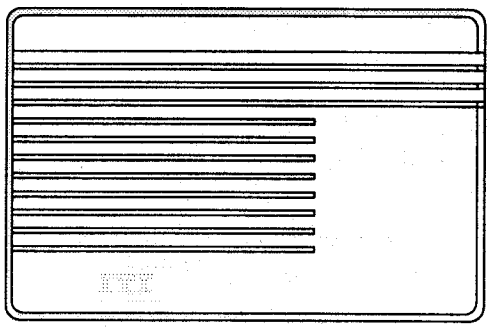
The PIR comes to you complete with a transmitter pre-installed. This transmitter is for use with the System VI MCU. The System VI MCU will "learn" of the presence of a PIR in its system by simply tripping the tamper on the PIR (remove the cover). See programming section for more details.

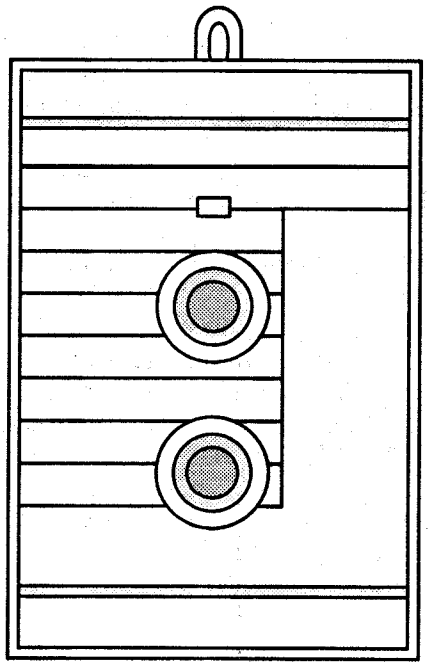
The transmitter circuit board connects to the PIR circuit board by a 4 pin connector on the top of the PIR circuit board. You must remove the vertical adjustment screw on the PIR circuit board if you wish to remove the PIR or transmitter circuit board. You will notice the guide rails on either side of the PIR base that holds the semicircular transmitter board. To remove, simply slide the transmitter board away from the PIR board. To reinstall, position the transmitters connector pins into the PIR boards connector and slide on. When reinstalling, take note that the transmitter circuit board will have a fairly tight fit in the PIR case. If you have installed each board and the PIR case cover does not close easily, please check the position of both circuit boards.



NOTES

SIRENS





SIRENS

The SYSTEM VI MCU initiates a variety of alarm and system status sounds. There are several types of sirens available. Both alarm siren sounds and status "beeps" can be made to sound throughout the installation site.

INTERIOR AND EXTERIOR SOUNDS

POLICE SIREN - loud intermittent tone siren sound.

FIRE SIREN - loud steady tone siren sound.

INTERIOR SOUNDS ONLY

AUXILIARY SOUNDS - low volume, on-off on-off beeping.

STATUS SOUNDS - low volume beeps which indicate the MCU's current protection level.

PROTEST BEEP - low volume rhythmic two-tone beeping sound when an arming attempt is made which indicates a Trouble or Supervisory condition or that a sensor is open.

TROUBLE OR SUPERVISORY BEEPS - Six quick low volume beeps repeated every sixty (60) seconds. Occurs as an automatic indicator if a trouble or supervisory condition exists and no change occurred in arming level for 10 hours.

CHIME BEEP - a pair of low volume tone which indicates a perimeter sensor has been opened and the MCU is armed to protection level 2.

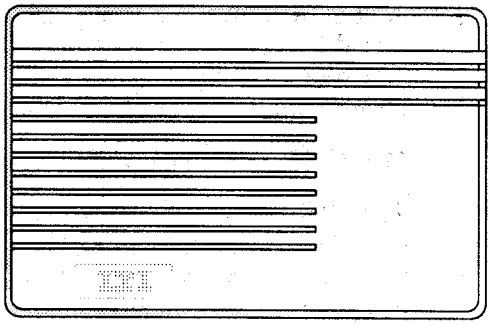
SENSOR TEST SOUND - loud single tone or series of tones heard when testing sensors in protection level 9.

EXIT DELAY SOUNDS - Low volume status sounds which indicate the beginning of the Exit Delay Time when levels 3 or 5 are selected. Can be programmed to sound repeatedly for the duration of the Exit Delay Time if Feature F00 is enabled in the MCU program.

ENTRY DELAY SOUNDS - Low volume repeated status sounds which indicate that the Entry Delay Time is in progress.

HARDWIRE INTERIOR SIREN AND PIEZO
60-278

The SYSTEM VI Interior Siren and Piezo is a combination unit that produces both low volume status sounds and high volume siren sounds. It is located in areas where the SYSTEM VI status and siren sounds need to be heard. Each unit draws 75 mA of current in alarm. It contains three piezo sirens that can deliver a 85 dB siren level in high level alarm. The trouble sound current draw is approximately 12mA.



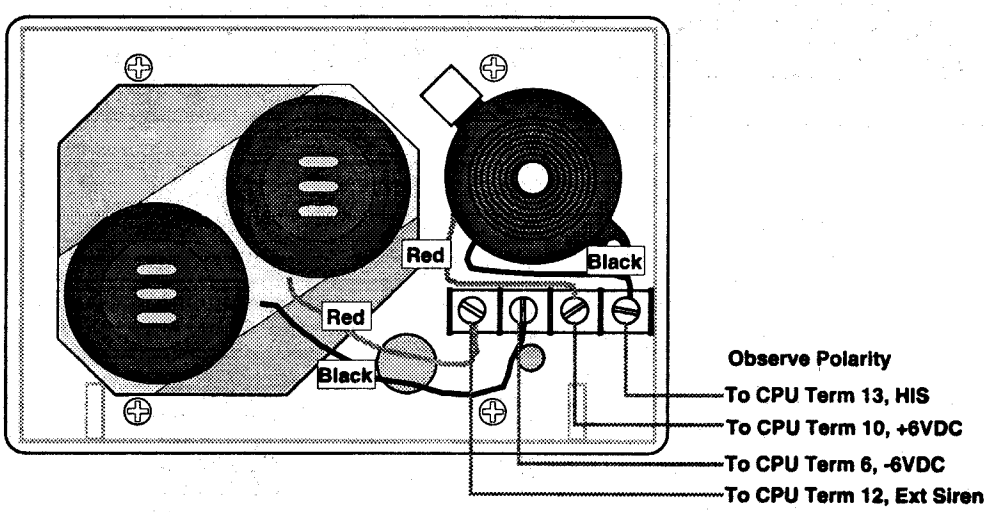
APPLICATION CONSIDERATIONS

- The Hardwire Interior Siren and Piezo can be mounted in any location where the status sounds need to be heard.
- The number of sirens that can be installed depends on what other devices are being powered from the MCU. The total current available for all devices powered from the MCU is 500 mA.

INSTALLATION INSTRUCTIONS

1) Using 22 gauge or greater, 4 conductor stranded wire, run cable from the MCU to the siren location. Note: The MCU should be OFF when connecting the siren/piezo wires.
2) Remove the front cover of the siren by removing the 2 bottom screws. Next, remove the 4 screws that secure the piezo assembly, and pull the piezo assembly off the base.
3) Feed the cable through the circular cut-out in the back of the base. Two mounting holes are provided to mount the base to the wall with the proper anchors and screws.
4) Resecure the piezo assembly to the base.
5) Connect the 2 wires from the double piezo board to the 2 left screws, and the single piezo wires to the 2 right screws.
6) Follow the wiring diagram for proper terminations. **Note**: the double piezos are activated for fire and burglary alarms only. The single piezo activates for both status and alarm sounds.
7) Install a jumper between MCU Terminals 10 and 11. The double piezos will not activate if this jumper is not in place.

Note: If you are using more than 1 Hardwire Interior Siren and Piezo, the connections to the piezos must be in parallel with polarity observed in order to maintain the siren volume.



HARDWIRE INTERIOR SIREN (HIS)
60-136

A Hardwire Interior Siren (HIS) is available from for the System VI. Up to 3 can be wired to the MCU using 2 conductor wire. Standby power is provided by the MCU. The total number of HIS installed is based on the maximum alarm current rating of 150mA total for the MCU. Each HIS draws approximately 50mA.

HARDWIRE INTERIOR SIREN SOUND OPTIONS

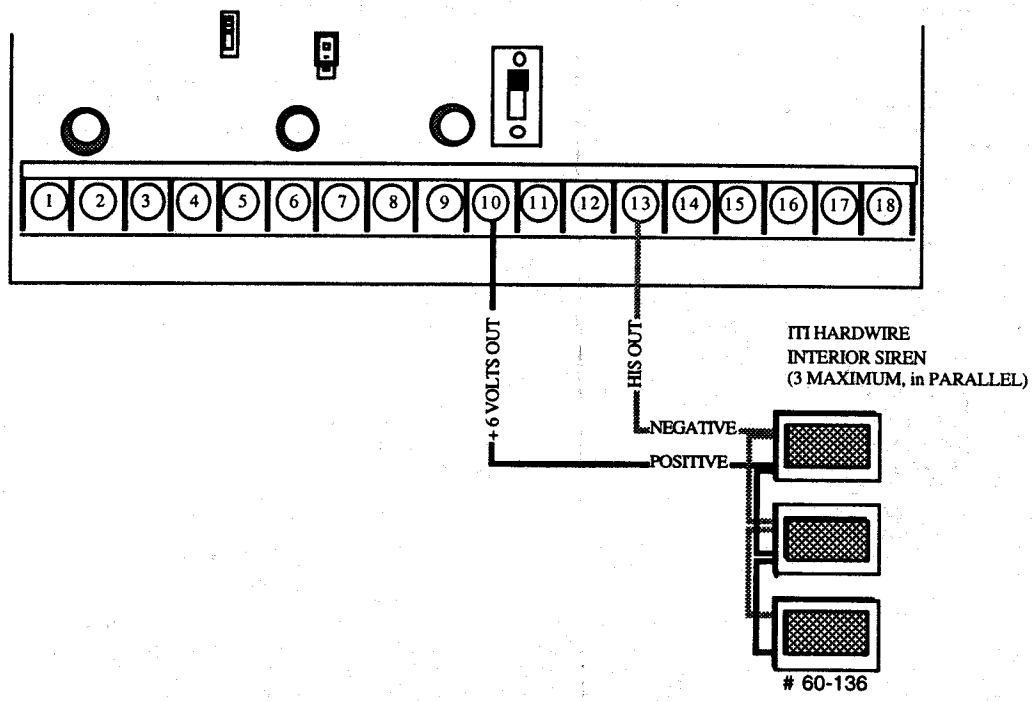
The HIS can produce alarm or alarm and status sounds. There is an "F" feature that determines which sounds the HIS will produce. With F11 programmed into the MCU memory, the HIS will produce ONLY the emergency sounds. You would program in F11 if a HIS was, for example, placed in a child's bedroom where emergency sounds were wanted, but status sounds were not. With F11 not in the MCU memory, the HIS will produce emergency sounds and the various status beeps. The MCU powers up without F11 in its memory.

To add optional feature number F11 to the MCU memory, see the Programming Section.

HARDWIRE INTERIOR SIREN CONNECTIONS

- Connect POSITIVE on the HIS to SCREW 10 (+OUT) of the MCU terminal strip.
- Connect NEGATIVE on the HIS to SCREW 13 (HIS) of the MCU terminal strip (see note).
- Multiple Hardwire Interior Sirens would be connected in parallel.
- WARNING - Do not store any excess siren wires behind the circuit board.

NOTE: Although the combined device, maximum current available at terminal 10 is 500mA, the maximum current available at terminal 13 is 150mA.



HARDWIRE EXTERIOR SIREN
13-046

The Hardwire Exterior Siren must be hardwired to the MCU. Only full volume sounds (police and fire emergency) will be heard from the exterior sirens. The current draw of the siren driver speaker combination should not exceed 500 mA.

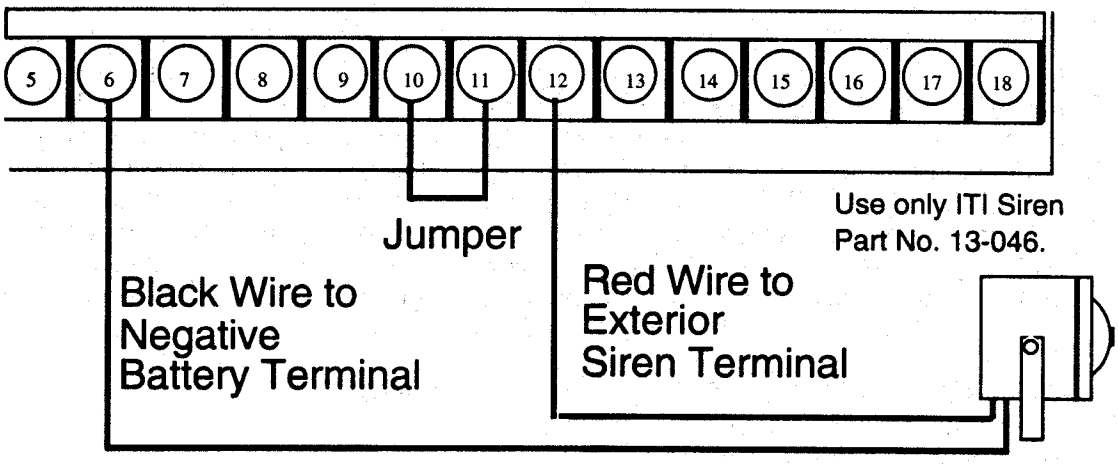
HARDWIRE EXTERIOR SIREN CONNECTIONS

WARNING: Be sure you fully understand the wiring connections below. Failure to follow instructions may result in blown fuses and/or may permanently damage the MCU circuit board or your siren.

1) To provide DC power to the exterior siren relay, connect a jumper from screw 10 to screw 11 on the MCU.

2) Connect the RED LEAD to screw 12.

3) Connect the BLACK LEAD to screw 6.

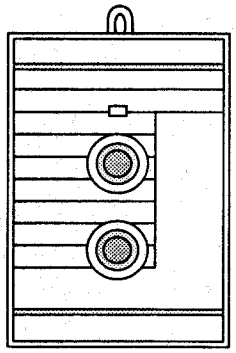


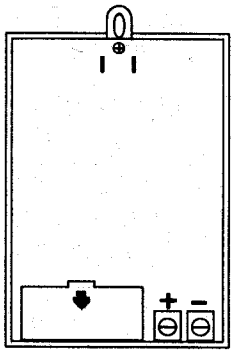
REMEMBER: Do not store any excess siren wires behind the MCU circuit board.

NOTE: Exterior Sirens will be delayed for 15 seconds when Optional Feature F02 is set. See Programming Section.

WIRELESS INTERIOR SIREN (WIS)
60-353

The Wireless Interior Siren (WIS) is used as a siren/annunciator in areas of the installation where the MCU's siren and status sounds need to be heard. Any number can be installed and no wiring to the MCU is required. The WIS is simply plugged into a live, non-switched, 110 volt AC wall outlet. The WIS receives its signals from the MCU over the AC power line in the house. The WIS also contains a 9 volt alkaline or optional rechargeable NiCad backup battery to supply power in the event of an AC power failure.



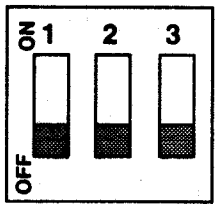


The battery will supply at least 4 hours of standby power and will also provide 85 dB minimum sound level output for at least 4 minutes. If the backup battery becomes low, the WIS will beep every 60 seconds until the battery is replaced or fails. The WIS also has screw terminals which are used to connect another siren. The terminals provide 6 volts DC and 100 mA maximum current.

The Wireless Interior Siren (WIS) is used as a siren/annunciator in areas of the installation where the MCU's siren and status sounds need to be heard. Any number can be installed and no wiring to the MCU is required. The WIS is simply plugged into a live, non-switched, 110 volt AC wall outlet. The WIS receives its signals from the MCU over the AC power line in the house. The WIS also contains a 9 volt alkaline or optional rechargeable NiCad backup battery to supply power in the event of an AC power failure. The battery will supply at least 4 hours of standby power and will also provide 85 dB minimum sound level output for at least 4 minutes. If the backup battery becomes low, the WIS will beep every 60 seconds until the battery is replaced or fails. The WIS also has screw terminals which are used to connect another siren. The terminals provide 6 volts DC and 100 mA maximum current.

WIS DIP SWITCHES OPTIONAL FEATURES

The Wireless Interior Siren has three DIP switches located in the battery compartment which allow you to modify the operation of the WIS to fit the needs of the installation.



SWITCH 1 This DIP switch allows either an alkaline or NiCad battery to be used as the battery back-up.

If SWITCH 1 is **OFF**, an alkaline battery must be used.
If SWITCH 1 is **ON**, a 1 mA trickle charge is applied to the battery terminals to charge an optional NiCad battery.

CAUTION: NEVER have Switch 1 ON if you will be using an alkaline battery. Alkaline batteries may leak or explode if recharged.

SWITCH 2 This DIP switch allows the choice of either High Level Alarm sounds only or all Alarm and Status sounds from the WIS.

SWITCH 2 **OFF**, all Alarm and Status beeps will sound from the WIS.
SWITCH 2 **ON**, only High Level Alarm (Police and Fire) will sound from the WIS.

SWITCH 3 This controls whether a 15 second delay will be applied to a siren wired to the terminals on the back of the WIS.

SWITCH 3 **OFF**, the siren attached to the terminals will activate at the same time as the WIS.
SWITCH 3 **ON**, the siren attached to the terminals will be delayed for 15 seconds before sounding.

NOTE: The siren delay on the WIS is independent of the MCU Optional Feature F02. However to avoid any confusion, it is recommended that if F02 has been programmed into the MCU, then SWITCH 3 should also be in the ON position if a siren is attached.

INSTALLING A WIRELESS INTERIOR SIREN

1) Plug the WIS into a non-switched outlet.

2) Be sure to secure the WIS to the outlet with the center outlet screw so that it cannot be accidentally unplugged.

3) Press the STATUS button on a Operator Terminal. The MCU's House Code will automatically be read and entered into the WIS. Communication from the MCU to the WIS is verified by the LED on the front of the WIS. The LED flashes every time it receives a valid transmission.

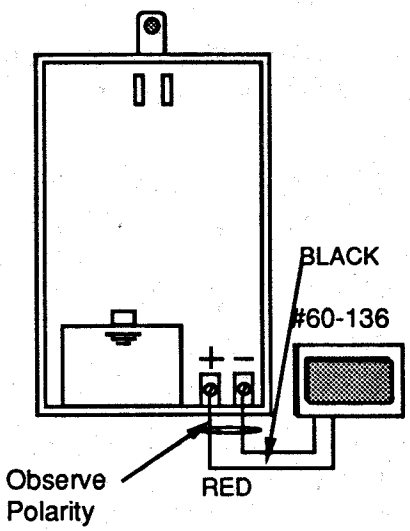
NOTE: To ensure consistent WIS operation, the WIS must be plugged into an outlet on the same electrical "leg" (phase) as the MCU plug-in power supply. If you experience intermittent WIS operation, plug the WIS into another outlet.

NOTE: If you ever wish to change House Codes, simply unplug the WIS and disconnect the battery. After a minimum of 30 seconds, reconnect the battery and plug the WIS back into the outlet. Pressing the STATUS button will reprogram the WIS with the House Code of the MCU.

WARNING - NEVER OPEN THE WIS WHILE IT IS PLUGGED INTO A LIVE CIRCUIT, A SERIOUS INJURY OR DEATH COULD RESULT FROM ELECTRIC SHOCK.

CONNECTING ANOTHER SIREN TO THE W.I.S.

The WIS has two screw terminals on the back of the unit which can be connected to another self contained siren (6 VDC 100 mA maximum). By taking advantage of these terminals which are already connected to the MCU, you can avoid doing a "home run" wiring from the siren to the MCU. Connect the siren to the WIS as shown. Polarity must be observed.



NOTE: Only the POLICE and FIRE alarm sounds will be activated from these terminals.

WIS INTERFERENCE AND PHASING PROBLEMS

In some installations a Wireless Interior Siren may experience problems. The signal path between the WIS and the MCU plug-in transformer is the electrical wiring of the building.

SIGNAL BLOCKING - Occasionally appliances (especially TVs) can act as a filter and will block signals being sent to a WIS. If you experience signal blocking, either use a different circuit than the TV or be sure the WIS is on the near side of the circuit in relation to the MCU and the TV is beyond the WIS.

PHASING PROBLEMS - AC power coming into an installation site is usually broken into two different 110 volt lines, with each line serving different areas. These different lines are referred to as different line phases or :"legs." Frequently, when an MCU is plugged into one phase and a WIS into another, signals may not get through properly. To overcome phasing problems, move the WIS to an outlet that is in phase with the MCU (or move the MCU to an outlet in phase with the WIS). If this is not possible, you may want to switch to a Hardwired Interior Siren or a Phone Jack Siren.

INTERFERENCE - The WIS uses line carrier technology for signaling. Under some circumstances, RF interference, AC power spikes, and other "noise" on an AC power line may cause any line carrier device to operate erratically or intermittently. If you experience these problems, try installing the WIS on a different electrical circuit. If that does not help, you should install a Hardwire Interior Siren or Phone Jack Siren in place of the WIS.

PROGRAMMING

PROGRAMMING THE SYSTEM VI MCU

MCU INITIAL POWER-UP PROCEDURE

1) Turn the power switch ON. Panel will show "**r rr**" in the protection level and sensor number display windows. During the next 2 1/2 - 4 minutes the MCU completely checks its RAM memory. If it finds a problem, the display will show "**b ad**".
NOTE: Panel will not power-up on battery alone. AC power must be applied.

2) When the self test is complete the MCU will respond as follows:

- Audible trouble beeps will sound once every 60 seconds if interior sirens are installed, or the internal MCU piezo unit is connected.
- Protection level display window will show "0".
- MCU sensor number display will show "cS" (checksum).

3) If the MCU does not respond as described above:

- Verify that the power supply is providing 7-14 VDC to MCU terminals 1 and 2.
- Verify that the outlet the power supply is plugged into is providing 110 VAC.
- Verify that the power supply is providing approximately 7 - 10 VAC to MCU terminals 2 and 4.
- On later production MCUs, verify that there is no jumper clip on the 2-pin connector strip located at the right-center edge of the circuit board.

4) Clear the RAM only if the MCU comes on without giving the "cS" indication in the sensor number display following these steps:

The RAM Memory may have to be manually reset by the technician;

- If data from factory testing remained in the memory causing the MCU to not enter the RAM clear function upon initial power up,

or

- For troubleshooting to set all MCU parameters to known values.

Clearing the memory on the SYSTEM VI MCU causes the MCU to perform a 2 1/2 - 4 minute RAM test. The RAM is thoroughly tested and if irregularities are discovered the MCU will indicate that there is a problem. Any programmable features, sensor numbers, phone numbers account number etc. will be erased when the RAM is cleared. ***The MCU must be completely reprogrammed to become functional again.***

1) The MCU must be turned ON and the power supply must be providing voltage.

2) Locate the RAM CLEAR PINS and jumper on the MCU board. See wiring diagram in installation sections for location of jumper. The jumper will be installed connecting the Top and Center pins (normal position).

3) Remove the jumper from the Top and Center pins and install it on the Bottom and Center pins. This will force the MCU into its RAM check routine. (The display will show "**r rr**")

4) ***IMPORTANT:*** As soon as the MCU display shows "r rr'" remove the jumper from the Bottom and Center pins and reinstall it on the Top and Center pins.

PROGRAMMING OPERATOR TERMINALS

PROCEDURE

1) Slide the Program Review Switch (program switch 2) up (on).

2) Press 4 3 2 1 on a operator terminal (puts MCU in Program Mode)
{Display shows P PP}

3) Press the "STATUS" button. A bouncing ball will appear on the protection level display. If nothing occurs for 10 seconds, the display shows P PP and you must repeat step 3.

4) Press 11 then the "COMMAND" button. The next available O.T. number will display.

5) Either press the "COMMAND" button again or enter the desired operator terminal number, then the "COMMAND" button. The number can only be changed when it is flashing.

6) Press the "BYPASS" buttons on all operator terminals to be programmed for this system. All "BYPASS" buttons must be pressed in a 4 minute window or the display returns to P PP.

7) Press the "COMMAND" button when done. The MCU display returns to P PP.

8) You must label the O.T. with its number after programming; otherwise, it may be difficult to locate later.

DELETING A OPERATOR TERMINAL

PROCEDURE

1) Slide the Program Review Switch to up (on).

2) Press 4 3 2 1 on a operator terminal (puts MCU in Program Mode)
{Display shows P PP}

3) Press the "STATUS" button. A bouncing ball will appear on the protection level display. If nothing occurs for 10 seconds, the display shows P PP and you must repeat step 3.

4) Press 12 then the "COMMAND" button. A "H" should appear on the protection level display.

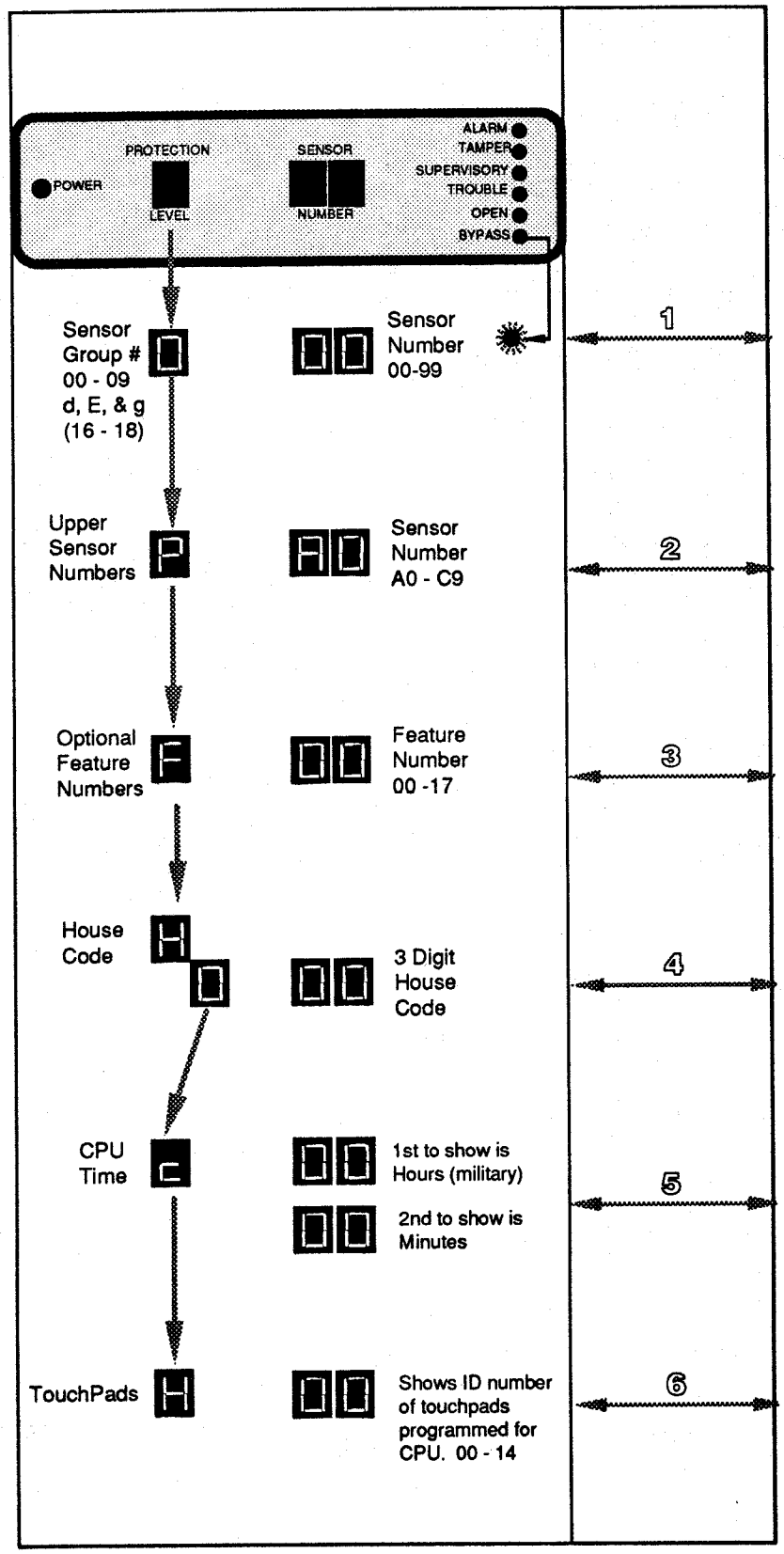
5) Enter the operator terminal number "xx" to be deleted. Verify that the numbers appearing on the displays are the desired numbers.

6) After 8 seconds, bouncing ball will confirm the operator terminal has been deleted. If you enter the wrong number by mistake, you must "re-learn" that O.T.

7) Repeat steps 3-6 for each operator terminal to be deleted.

PROGRAM REVIEW MODE DISPLAY SEQUENCE

Slide the Program Review Switch to up (on).



Sequence One shows how the sensor is grouped in the MCU memory. The protection level window shows the group number of the sensor currently displayed in the sensor number windows. The BYPASS LED when lit, indicates the current sensor displayed is programmed for a normally open switch.

Sequence Two indicates the Upper Sensor Numbers that are initialized in the MCU memory. The protection level window will show a "P" continuously while the sensor number windows will scroll the Upper sensor numbers A0, A1, A2 - C9.

Sequence Three indicates the Optional Features that are initialized in the MCU memory. The protection level window will show an "F" continuously while the sensor number windows will scroll the feature numbers (00 - 17) if active. Do not confuse with Fire Group 10 (F).

Sequence Four indicates the MCU house code. The protection level display will show an "H" prior to changing to the first digit of the house code. The sensor number windows will show the last two digits of the house code. The display will then move on to the next sequence.

Sequence Five indicates the time of day programmed into the MCUs memory. The protection level window will show a small "c" continuously while the sensor number windows will show the hour first (in military time 00 - 23 hundred hours), and then show the minutes (00 - 59).

Sequence Six indicates the ID numbers of the Operator Terminals programmed for this MCU. The "H" in the protection level display will be lit continuously while the sensor number windows scroll from 00 - 14.

SENSOR PROGRAMMING

This section describes how to program sensors. As discussed earlier, sensors are RF transmitters. They communicate with the MCU which has a built-in radio receiver. In order to successfully communicate:

1) The Sensor frequency must match the frequency of the MCU Receiver.
2) The Sensor Number assigned to each transmitter (a unique number for every sensor) must be programmed into the MCU memory.

DETERMINE GROUP NUMBERS FOR SENSORS

If you have not yet determined which group numbers to use for the installation refer to the Group Number Chart and description below before proceeding.

SENSOR GROUP CHART

GROUP NUMBER	SENSOR TYPE		ACTIVE LEVELS	SIREN SOUND
* 00/16 (d)	Police / Emergency		0 - 8	Loud Intermittent
* 01/17 (E)	Auxiliary / Medical		0 - 8	Low Level Siren
02	Special		1 - 7	Loud Intermittent
03	Main Entry	Reports in	3 - 7	Loud Intermittent
		Chimes in	2	Low Level Beeping
04	Perimeter	Reports in	3 - 7	Loud Intermittent
		Chimes in	2	Low Level Beeping
05	Interior Delayed		4 - 7	Loud Intermittent
06	Interior Delayed		5 - 7	Loud Intermittent
07	Interior (starts delay)		4 - 7	Loud Intermittent
08	Interior (starts delay)		5 - 7	Loud Intermittent
* 09/18 (g)	Silent Panic		0 - 8	Silent
F (10)	Fire		0 - 8	Loud Steady Tone
	NOTE: *Burglary sensors are silent in level 7.*			

* Groups 16, 17, and 18 correspond to groups 0, 1, and 9 except they are not supervised. They will display as group "d" (16), "E" (17), and "g" (18).

PROGRAMMING PROCEDURE

1) Enter the Program Mode and press the "STATUS" button on the Wireless Operator Terminal. This will momentarily clear the Sensor Number display and a bouncing ball will appear in the protection level window.

2) Before the display returns to all P's, press the TWO DIGITS (i.e.: 05 not 5) on the Wireless Operator Terminal which make up the group number of the sensor you wish to add and then press the "COMMAND" button. The group number will move to the protection level display, and the next available sensor number will appear flashing in the sensor number displays. (Data must be entered within 8 seconds or display resets to P PP.

3) Press the "COMMAND" button (if you wish to use that number) OR enter the sensor number you wish to use, then the "COMMAND". The sensor number will quit flashing.

4) Activate the tamper button on all transmitters in that group (for smoke sensors, press the test button). NOTE: If you want the external input programmed for a normally open switch, make sure the two contacts are shorted together before activating the tamper switch.

5) When done with the group, press the "COMMAND" button. (4 minutes after the last sensor is activated, the display returns to P PP.)

6) Repeat for all other groups.

After adding all desired sensors, check the Sensor Number Window (when in program review mode) to verify all are there. The bypass LED will be lit if the sensor has been programmed for a normally open switch.

DELETING A SENSOR

1) Enter program mode.
2) Press BYPASS and the two digit sensor number to be deleted. After 8 seconds, the "bouncing balls" will confirm your actions.
   If you delete several sensors, you must push the BYPASS button each time.
3) After deleting any sensors, check the Sensor Number Window (when in program review mode) to be sure they are gone.
   NOTE: Entering the wrong number of digits or a number out of the proper range prevents the change from taking effect.

PROGRAMMING MCU OPTIONS

These instructions describe how to program the following information into the memory of the MCU. For many installations only a few of these items will need to be programmed. All of these parameters can be programmed or changed from a Central Station, except for sensor numbers.

SENSOR NUMBER of every transmitter
ENTRY DELAY TIME
EXIT DELAY TIME
ACCESS CODE
DURESS CODE

Any OPTIONAL SENSOR NUMBERS: 100, 102, 107, 108, 110, 111, 114.

Any OPTIONAL FEATURE NUMBERS: F00 through F07, F10 through F17 (F00 On at Power-up).

MCU REAL TIME CLOCK

TO BEGIN PROGRAMMING YOU MUST:

- Be sure the MCU is in Protection Level 0.
- Be sure to use a Wireless Operator Terminal programmed in the MCU.
- Turn the Program Switch "ON" (up) to select program review mode.
- Press 4 3 2 1.

The protection level and sensor number window should show "P PP".

FAST FORWARD PROGRAM VIEWING

If you wish to look at a specific entry in the program while in the program review mode, press the fast forward button on the MCU board to quickly advance the program list.

CHANGING ACCESS CODE

(preset to 1234)

1) Be sure the program mode is entered and "P PP" is displayed.

2) Press the two MEDICAL buttons and then the desired four digit access code.

3) Wait for the "bouncing balls" to appear in the Sensor Number Window and for an audible beep from the interior sirens. This indicates the data was accepted.

4) If the bouncing balls don't appear, try again.

ENTERING DURESS CODE

(preset OFF)

1) Be sure the program mode is entered and "P PP" is displayed.

2) Press both POLICE buttons and the desired last two digits of the duress code, and wait for the "bouncing balls". The first two digits are the same as the Access Code set above.

WARNING: Make the last two digits of the Duress Code totally different from ALL DIGITS of the Access Codes.

FOR MULTIPLE ACCESS CODES:

1) The first two digits of all access codes must be the same as the first two digits of the master code.

2) The last two digits of the duress code must be totally different from any access code.

3) Only one unique duress code is possible.

CHANGING ENTRY DELAY TIME (preset at 32 seconds)

1) Be sure the program mode is entered and "P PP" is displayed.

2) Press both POLICE buttons then STATUS (1E will display on sensor number display) and then the two digit entry time in seconds, from 0 to 60, and wait for the "bouncing balls". The number entered is rounded down to a multiple of four seconds.

   For U.L. Listed Systems: Entry delay shall not exceed 45 seconds.

3) The "bouncing balls" and audible indication confirm MCU acceptance of your programming. If they do not appear repeat sequence.

CHANGING EXIT DELAY TIME (preset at 32 seconds)

1) Be sure the program mode is entered and "P PP" is displayed.

2) Press both POLICE buttons then BYPASS (0E will display on sensor number display) and then the two digit exit time in seconds, from 0 to 60, and wait for the "bouncing balls". The number entered is rounded down to a multiple of four seconds.

3) The "bouncing balls" and audible indication confirm MCU acceptance of your programming. If they do not appear repeat sequence.

SETTING TEMPORARY ACCESS CODE

Your customer can set a Temporary Access Code (for use by baby-sitter, etc.):

1) The program switch in the MCU must be in the OFF (down) position.

2) Enter the primary access code.

3) Press STATUS and immediately enter the desired four-digit Temporary Access Code.

4) Wait for the "bouncing balls" to appear in the Sensor number window of the Central Processing Unit and listen for the protection level sound that accompanies the bouncing balls.

NOTE: When not used, program the Temporary Access Code to be the same as the primary access code. The Secondary Access Code cannot be used to direct bypass sensors.

CAUTION!! Do not make the Secondary Access Code similar to the Duress Code!

PROGRAM HOUSE CODE

1) Be sure the program mode is entered and "P PP" is displayed.

2) Press both FIRE buttons and then enter the 3 digit house code (**002** not 2).

3) The "bouncing balls" and audible indication confirm MCU acceptance of your programming. If they do not appear repeat sequence.

NOTE: *The house code is used for the WIS and the X-10 light modules. The house code that is entered (001-255) is mapped to the X-10 house code using the following chart.*

The MCU powers up with house code "B." Set the X-10 light modules to the proper house code prior to installation.

MCU HOUSE CODE																X-10 HOUSE CODE
	016	032	048	064	080	096	112	128	144	160	176	192	208	224	240	A
001	017	033	049	065	081	097	113	129	145	161	177	193	209	225	241	B
002	018	034	050	066	082	098	114	130	146	162	178	194	210	226	242	C
003	019	035	051	067	083	099	115	131	147	163	179	195	211	227	243	D
004	020	036	052	068	084	100	116	132	148	164	180	196	212	228	244	E
005	021	037	053	069	085	101	117	133	149	165	181	197	213	229	245	F
006	022	038	054	070	086	102	118	134	150	166	182	198	214	230	246	G
007	023	039	055	071	087	103	119	135	151	167	183	190	215	231	247	H
008	024	040	056	072	088	104	120	136	152	168	184	191	216	232	248	I
009	025	041	057	073	089	105	121	137	153	169	185	192	217	233	249	J
010	026	042	058	074	090	106	122	138	154	170	186	193	218	234	250	K
011	027	043	059	075	091	107	123	139	155	171	187	194	219	235	251	L
012	028	044	060	076	092	108	124	140	156	172	188	195	220	236	252	M
013	029	045	061	077	093	109	125	141	157	173	189	196	221	237	253	N
014	030	046	062	078	094	110	126	142	158	174	190	197	222	238	254	O
015	031	047	063	079	095	111	127	143	159	175	191	198	223	239	255	P

UPPER SENSOR NUMBERS

The following is a description of pre-programmed sensor numbers resident in the MCU's memory. Those numbers that are marked with a PRE are pre-programmed. Those numbers that are marked with OPT are optional sensors that can be turned on at the time of installation if desired. You can delete or re-initialize a pre-programmed sensor according to your customer's specific installation requirements.

MCU DISPLAY	SENSOR NUMBER	ACTIVE LEVELS	DESCRIPTION
A0	100	0-8 **(OPT)**	PHONE TAMPER (Buddy System). If the MCU cannot report a VIOLATION for sensor numbers 01-99, 103, 104, 105, 109 or 113 to the Central Station because it detects a FAIL to COMMUNICATE (pre-programmed sensor 117) or because of NO PHONE LINE (sensor 118) it has a hardwire output that can activate a transmitter. This transmission can be heard by another System VI MCU which is within receiving range. The MCU which hears the transmission will silently call the Central Station and report "100 ALARM! PHONE TAMPER" and identify itself with the account number of the MCU which experienced the alarm condition. Each System VI MCU can be programmed to monitor up to 4 other System VI MCUs within range. This programming can only be done by the Central Station. Non-Alarm reports such as Trouble or Supervisory conditions will not activate this sensor number.
A1	101	0-8 **(OPT)**	OPERATOR TERMINAL TAMPER. If 101 is initialized and the MCU hears 40 Operator Terminal signals that do not equal the proper access code, plus a protection level, then the sirens will go into audible alarm (Police Siren, silent in Level 5), and report "101 OPERATOR TERMINAL TAMPER" to the Central Station. The Operator Terminal has a 4-minute inter-digit reset timer. If no button is pressed for four minutes, the MCU resets.
A2	102	0-8 **(OPT)**	HARDWIRE DEVICE -- If a hardwire buss device quits reporting in a 102 supervisory will be reported along with the unit number of the buss device.
A3	103	0-8 **(PRE)**	**24 -HOUR FIRE CALL** from a Operator Terminal. Audible.
A4	104	0-8 **(PRE)**	**24 -HOUR POLICE CALL** from a Operator Terminal. Audible.
A5	105	0-8 **(PRE)**	**24 -HOUR MEDICAL CALL** from a Operator Terminal. Audible.
A6	106	8 **(PRE)**	**PHONE TEST** initiated by customer. After a successful test, all sirens sound briefly at the customers home or the Central Station operator should call. In addition, the 106 will clear from the MCU display and the MCU will return to Level 0.

MCU DISPLAY	SENSOR NUMBER	ACTIVE LEVELS	DESCRIPTION
A7	107	0-8 **(OPT)**	OPENING REPORT. If 107 is initialized, the MCU will report "107 OPENING REPORT" if an arming level is changed and the level being left was a closed level (3,4,5, 6 or 7). A7 will clear from the MCU display after successfully reporting to the Central Station. You MUST initialize 108 for this feature to work properly. **
A8	108	0-8 **(OPT)**	CLOSING REPORT. If 108 is initialized, the MCU will report "108 CLOSING REPORT" if an arming level is changed and the level being entered is a closed level (3,4,5, or 6). A8 will clear from the MCU display after successfully reporting to the Central Station. You MUST also initialize 107 this feature to work properly. **

** The System VI MCU can be programmed from the Central Station to understand up to 34 different access codes from 34 different users - when OPENING REPORTS and CLOSING REPORTS are sent to the Central Station the ID Number of the User, whose access code armed or disarmed the system, will also be reported.

A9	109	0-8 **(PRE)**	**DURESS CODE.** A specially programmed access code that will send a 24 -hour POLICE EMERGENCY CALL silently to the Central Station. The Duress Code must be followed by any protection level number to activate. This sensor number will not display on the MCU, it will just report. Even though sensor number 109 is pre-programmed, it will not report unless the installer has entered a duress code into the MCU memory.
C0	110	0-8 **(OPT)**	FORCE ARMED. If 110 is initialized, the MCU will report "110 FORCE ARMED" whenever the BYPASS button is used to bypass a sensor or gain access to a protection level. The sensor number that was bypassed will also report. C0 will clear from the MCU display after successfully reporting to the Central Station. The System VI MCU will automatically force arm whether 110 is initialized if the user fails to respond to the "PROTEST" beeps by restoring the open sensor and rearming or by deliberately bypassing the open sensor. If the user leaves the MCU protesting, it will automatically force arm after a 3 minute timeout. The MCU will arm to the protection level the user attempted to select and bypass any sensors which were not restored. A 110 Forced Armed Auto, will always be sent even if sensor 110 is not Initialized. The ID number of the user whose access code was used will also be reported.

MCU DISPLAY	SENSOR NUMBER	ACTIVE LEVELS	DESCRIPTION
C1	111	0-8 **(OPT)**	A/C FAILURE. If 111 is initialized, the MCU will report "111 A/C FAILURE" when the AC power to the MCU has been off for 15 minutes. The "Trouble" beeps will annunciate locally. Use this feature only when there is a special need. Remember, if there was a city wide power failure all systems set to report a 111 A/C FAILURE will report at once.
C2	112	0-9 **(PRE)**	**LOW MCU BATTERY** After this report is sent to the Central Station (typically 2 to 3 days after AC failure) the MCU is about to shut down until the AC POWER is restored. This shut down prevents deep battery discharge and loss of MCU memory. The memory will be OK for several weeks without AC, however the battery may need to be replaced. When the AC power is restored, the MCU will re-arm itself to the same protection level that it was in when it powered down. The MCU will report 112 A/C POWER RESTORED when the power comes back on. Up to two back up batteries can be installed in the SYSTEM VI MCU. Using two batteries will approximately double the standby time. The MCU could report 112 as a POWER SUPPLY FAILURE. This condition is usually due to a blown DC Input Fuse, a back-up battery that won't take a charge, or if the power supply chip has failed.
C3	113	1-7 **(PRE)**	**MCU TAMPER** The MCU is shipped with provisions for its door to be connected to a N/C hardwire tamper input. This hardwire tamper input can also have other devices such as the exterior siren tamper or RJ-31X phone cored tamper connected to it. The central station report will be 113 (C3) alarm tamper loop.
C4	114	0-8 **(OPT)**	**AUTOMATIC PHONE TEST** If 114 is initialized, the MCU will report "114 AUTO PHONE TEST" to the Central Station once every 7 days. The Central Station has the ability to change this time period to report from daily up to once every 255 days. No audible indication is given at the subscribers to indicate this test was sent.
C5	115	0-9 **(PRE)**	**RECEIVER FAILURE** The MCU will report "115 RECEIVED FAILURE" if it does not hear from any transmitter for 2 hours.
C6	116	0-8 **(OPT)**	**MCU BACK IN SERVICE** After the MCU has gone into its battery saver shut down routine, which is designed to prevent deep battery discharge and MCU memory loss, the 116 signal is sent when the AC power has been restored The MCU is BACK IN SERVICE. The MCU will come back on armed to the same protection level it was in when it shut down.

MCU DISPLAY	SENSOR NUMBER	ACTIVE LEVELS	DESCRIPTION
C7	117	0-8 **(PRE)**	**FAIL TO COMMUNICATE** The MCU makes 3 attempts to contact the Central Station, If the MCU can't get through (after 3 attempts) a 117 (C7) will be displayed at the MCU and a trouble tone will sound every 60 seconds. The tone can be silenced by entering the ACCESS CODE + 0. This alarm gives a local indication only. The control unit will continue to make a total of 8 attempts to reach the central station in any of the PMODES programmed.
C8	118	0-8 **(PRE)**	**NO PHONE LINE.** If 118 (C8) is initialized, the MCU will check the phone line before attempting any communication with the Central Station. If the phone line is not operational a 118 alarm is initiated, and will be displayed at the MCU. A Trouble tone will sound. The tone can be silenced by entering the ACCESS CODE + 0. This is a local indication only.
C9	119	0-9 **(PRE)**	**PROGRAM CHANGE and/or OPERATOR TERMINAL** (low BAT or SUPER). This signal is sent if a change is made to the panel while in program mode such as initializing a sensor, deleting a sensor, change the access code etc. A Supervisor Low Battery on C9 (119) is a supervisory or low battery or wireless operator terminal. The operator terminals number i sent to the CS-4000, but not displayed locally.

NOTE: For the purposes of this document, when sensor numbers are referred to, they will be in the Central Station Format (3 digits). Remember, the System VI display will show the 2 digit representation of the sensor number.

EXAMPLE:	Central station receives	113
	Customers Operator Terminal shows	C3

ADDING AN UPPER SENSOR NUMBER

1) First, be sure the program switch is ON.

2) Press 4 3 2 1 on operator terminal. Display should show "P PP".

3) Press the STATUS button, then 13, then "COMMAND", then the lowest digit of the sensor number you wish to add first. For example: when programming sensor number 100 you would enter 00, for sensor number 102 you would enter 02, etc.

4) The "bouncing balls" will confirm the MCU's acceptance.

5) Repeat steps 1 to 4 for each optional sensor number.

NOTE: The optional sensor numbers toggle on and off by using the above method. Repeat the above to remove an optional sensor number from the MCU.

OPTIONAL FEATURE NUMBERS

The following OPTIONAL FEATURES can also be programmed into the MCU memory. They can also be added from the model CS-4000 Central Station as the other sensors can. All optional features power up "OFF" (except F00, and must be programmed into the MCU to be "ON".

FEATURE	DESCRIPTION
***F00** - EXIT DELAY SOUNDS	WHEN NOT SET - Exit delay beeps will sound only once at the beginning of the exit delay. WHEN SET - Exit delay beeps will sound continuously throughout the exit delay time. RECOMMENDATION - Set under normal circumstances (default sets this feature "on").
***F01** - SILENT EXIT DELAY	Controls whether silent exit delay exists when the system is armed to level 4 or level 6. (See page 35 for details.)
***F02** - EXTERIOR SIREN DELAY	WHEN NOT SET - Exterior Sirens will activate at the same time as Interior Sirens. WHEN SET - Exterior Sirens will be delayed for 15 seconds before sounding. RECOMMENDATIONS - For highest security, leave it off.
F03 - DIGITAL COMMUNICATOR	WHEN NOT SET - System WILL dial the Central Station. WHEN SET - System will NOT report to the Central Station. The MCU should NOT be wired to the phone lines if F03 is set. RECOMMENDATION - Set ONLY if system is to be local non-reporting system. In U.L. applications, the dialer must be installed.
F04 - LOW BATTERY REPORTS	WHEN NOT SET - Low batteries will report daily at STIME. WHEN SET - Low batteries will report to the weekly at STIME. RECOMMENDATION - We recommend that this feature NOT BE SET so low batteries will report daily.

FEATURE	DESCRIPTION
F05 - SUPERVISORY REPORTS	WHEN NOT SET - Supervisories will report DAILY until repaired. WHEN SET - Supervisories will report WEEKLY until repaired. RECOMMENDATION - We recommend that this feature NOT BE SET so supervisories will re-report daily.
***F06** - DIALER ABORT	WHEN NOT SET - System will report VIOLATION and CANCEL even if a customer cancels an alarm within the first 15-20 seconds. WHEN SET - System will automatically abort the call to the central station if the customer disarms within 15-20 seconds of accidentally tripping the system. (Except for Smoke, Panic Alarms and status reports.) RECOMMENDATION - Leave off under normal circumstances.
F07 - ALARM LED OPTION	WHEN NOT SET - Terminal 14 outputs hardwire buss information. WHEN SET - Terminal 14 controls an Alarm output LED. RECOMMENDATION - Do not set unless using an Alarm LED.
F10 - SIGNAL STRENGTH INDICATOR	WHEN NOT SET - The standard Level 9 Sensor Test is performed. WHEN SET - The MCU will cause Interior Sirens to beep up to 8 times as each data round is received. This feature must be turned on every time you want to hear the data rounds as it turns off as the arming level is changed. RECOMMENDATION - See the section of this manual called TESTING YOUR WORK, SENSOR TEST for details.

* Pre-programmed ON in MCU EPROM Rev. E and later.

FEATURE	DESCRIPTION
F11 - INTERIOR SIREN SOUND	WHEN NOT SET - The Hardwire Interior sirens will sound Status and Alarm sounds. WHEN SET - The Hardwire Interior Sirens will Sound Alarm Sounds only - not Status sounds. RECOMMENDATION - The location of the Hardwire Interior Siren will determine whether or not to set this feature. A siren located in a sleeping area, for example, typically would sound alarm sounds but not status to minimize disturbances.
F12 - RESTORAL REPORTING	WHEN NOT SET - Violation signals will not be followed up with a Restored report when the sensor is returned to a non-alarm condition. WHEN SET - Violation signals set to the Central Station will be followed by a Restored report when the sensor is returned to the non-alarm state. The report will indicate the time, sensor number, and RESTORED condition. RECOMMENDATION - Leave not set for most installations unless the additional information of restoral time is desirable.
F13 - KEYSWITCH ENABLE	WHEN NOT SET - Terminal 9 is a Buddy Option output. WHEN SET - Terminal 9 is a KeySwitch input. RECOMMENDATION - Do not set unless a KeySwitch is used.
F14 - HOURLY PHONE TEST	WHEN NOT SET - The MCU will not test the telephone line it is connected to once every hour to see if there is DC current in the line. WHEN SET - The MCU will test the telephone line once every hour to see if there is DC current in the line. If the MCU detects a problem with the line it will sound the "trouble " beeps (a single beep every 60 seconds from the Interior Sirens) and display a C8 Alarm on the MCU panel. The trouble beeps can be silenced by changing the arming level. If the phone line is not restored in six hours the trouble beeps will begin again.

NOTICE -When the MCU checks the phone line, it seizes the line for 1/2 second to sample it. If the user is on the phone at the time, a brief "click" will be heard but the line will not be cut off. However, if the line the MCU is connected to is ringing and the MCU checks the line while it is ringing the MCU will answer the call then hang up on it.

RECOMMENDATION - Typically do not set unless this is a high security application requiring frequent phone line checks. In most installations adding optional sensor number C4 AUTOMATIC PHONE TEST to test once a day provides adequate security.

FEATURE	DESCRIPTION
F15 - SENSOR TAMPER	WHEN NOT SET - The MCU will go into alarm and report to the Central Station when it hears a "TAMPER" signal from a sensor - provided the MCU is armed to a protection level in which that sensor number is active. If the MCU is armed to a level that the sensor number is not active, the MCU will remember the "Tamper" signal and "PROTEST" as if sensor is open when the system is armed to a level in which the sensor is active. The report to the Central Station identifies the alarm as a "TAMPER". WHEN SET - The MCU will go into alarm and report to the central station as soon as it hears a "TAMPER" signal from a sensor regardless of the protection level the MCU is set to. The only exception is if the MCU is armed to protection level 9 - sensor test or if the sensor is bypassed. The report to the Central Station identifies the alarm as a "TAMPER". RECOMMENDATION - NEVER set except in very high security applications to prevent nuisance alarms.
F16 - TROUBLE BEEPS	WHEN NOT SET - The system will sound 6 quick trouble beeps once each minute to indicate a trouble condition. These beeps will sound for a supervisory 10 hours after detection, a low sensor battery 7 days after detection, a low MCU battery, if the MCU is unable to communicate, or if the MCU is left in the program mode. WHEN SET - The system will protest only if a sensor is open. It will not protest if there is a trouble condition with the exception of fire sensors. Smoke and heat sensors will operate as if the feature were not set. ***NOTE:*** Trouble beeps caused by fire sensors cannot be silenced. RECOMMENDATION - Leave "not set".
F17 - DIRECT BYPASS TOGGLE	WHEN NOT SET - Sensors which have been "Bypassed" can only be "unbypassed" by changing the MCU arming level. WHEN SET - Sensors which are presently "bypassed" can be un-bypassed by entering the access code + bypass + the sensor number. See the section on the Wireless Operator terminal and Bypassing for more details. RECOMMENDATION - Leave "not set".

ADDING OR DELETING AN OPTIONAL FEATURE NUMBER

(All optional feature numbers power up OFF except F00 and F02).

1) Put the MCU in the program mode.

2) Press both MEDICAL buttons on the Operator Terminal for one second, then immediately press the STATUS button.

3) The letter "F" will appear in the sensor number display.

4) Press the desired feature number (from 00 - 17). Wait for the "bouncing balls" to confirm your entry.

5) Put into review mode and watch the MCU display to confirm that the feature number has been added to memory.

NOTE: THESE OPTIONAL FEATURES TOGGLE ON AND OFF BY USING THE SAME PROGRAMMING METHOD. REPEAT STEPS 1 THROUGH 5.

CONNECTING THE MCU TO THE CENTRAL STATION

PRELIMINARY STEPS

- Use an RJ-31X analyzer to confirm that the jack is properly wired.
- Verify that the MCU is plugged into the RJ-31X jack.
- Do not use a headset to attempt to listen to the programming while it is in progress. If you do, the MCU will not program properly.
- Remember DO NOT hang up the telephone until AFTER you put the MCU on line by entering the Access Code and Level 8 (PHONE TEST).
- Since the Rollins Alarm Monitoring Center (RAMC) uses the automatic TEST feature, the MCU will activate all of its sirens tones for a few seconds when the MCU first reaches the Central Station and then again when the operator releases the line during a Phone Test (level 8).
- Under most circumstances programming the account number and telephone numbers takes only a couple of minutes to complete and verify. If you do not receive an acknowledgment call from the Central Station operator within 10 minutes, then either the Central Station missed the call or the call was terminated abnormally. This might tie up your customers phone line indefinitely, so you need to check to be sure the phone line is not still seized. If the line is seized then:

  1. Unplug the RJ-31X phone cord to free the line.
  2. Shut off the MCU power switch.
  3. Call RAMC for further instructions.

CENTRAL STATION CONNECTION

1) The Rollins Alarm Monitoring Center requires that the Customer Emergency Data Form and the Sensor Location Form, be in the customers possession before final programming.

2) Call the Remote Monitoring Station, identify yourself, and tell the operator you wish to connect a new system.

3) Provide the operator with the telephone number that the MCU's RJ-31X jack is connected to.

4) Tell the operator about any unusual requirements to access the telephone network. For example, sometimes you must:

- Dial "1" or "120" then the number.
- Dial "8" or "9" to get an outside line.
- Any pauses needed.

5) Inform the operator of any special programming requirements.

6) Hang up so the operator can call back on the same line as the MCU and RJ-31X jack.

7) Make sure that the MCU is in the normal operating mode, ***NOT*** program mode.

8) The operator will call you back and have you run a PHONE TEST by arming the system to protection Level 8.

9) When you arm to Level 8, the phone will go dead. You should hang up. The Operator will program the MCU for you. The phone line will be reconnected to the house phones when the programming is completed.

The following will be programmed:

- The customer's central station account number.
- The central station number(s) the MCU will dial.
- Any special programming requirements you arranged for with the operator.

10) Write the account number on your copy of the Customer Emergency Data Form.

11) To be sure that the account number and phone number(s) have been correctly programmed, initialize a PHONE TEST (Level 8). You should get acknowledgment of a successful test within 2 - 3 minutes.

CENTRAL STATION RECEIVER PROGRAMMING

Although you can program most of the MCU's functions using a Wireless Operator terminal, the following features and functions are typically programmed or changed from RAMC.

1) **CUSTOMER ACCOUNT NUMBER.**

2) **CENTRAL STATION RECEIVER PHONE NUMBER(s)** - one or two numbers can be dialed by an SYSTEM VI.

3) **PMODE:** There are five phone number PMODES or options to choose from. These can be **programmed or changed only from the Central Station Receiver**, using the PMODE Command.

PMODE O: In PMODE 0 Only 1 phone number is dialed, the second phone number is not used. The MCU powers up in PMODE 0 and no programming need be done if only 1 phone number is to be dialed.

PMODE 1: In PMODE 1 the second phone number is called only if the MCU fails to get through to the first number. The MCU will make 3 attempts to reach the first number before dialing the second number.

PMODE 2: In PMODE 2 the MCU dials the first number to report all alarms and cancels. The MCU dials the second number to report TROUBLE and SUPERVISORY signals only.

This PMODE would be selected by a company that wants alarm calls to go to their Central Station operators and trouble & supervisory calls to go to a different receiver in the service department.

PMODE 3: In PMODE 3 the MCU dials the first number to report all alarms and openings and closings. The MCU dials the second number to report everything.

This PMODE would be used by a company who has an ITI receiver and is monitored by someone else. The monitoring service would receive only alarm calls, but the alarm company would receive both a record of alarm calls and all trouble reports and supervisory reports.

PMODE 4: In PMODE 4 the MCU dials the first number to report all alarms. The MCU dials the second number to report everything.

This PMODE would be used by a company who has an ITI receiver and is monitored by someone else. The monitoring service would receive only alarm calls, but the alarm company would receive both a record of alarm calls and all trouble, supervisory all opening/closing reports.

4) **REPORT TIME or STIME** - The time of day that unrepaired trouble or supervisory conditions are reported to the Central Station can be changed from the Central Station. This time is preset to 12 hours upon first powering up the MCU. For example, if you first connected the battery to the MCU at 12 noon, the MCU would report any trouble and supervisories at 12 midnight. The Central Station operator will use the STIME command to change the time.

5) **SIREN TIMEOUT** - This is preset to 5 minutes but can be set to anywhere from 1 to 15 minutes by the Central Station Operator using the TIMEOUT Command. U.L. installations require a minimum 4 minute TIMEOUT for burglary, 5 minutes for medical.

6) **PROTECTION LEVEL CONTROL** - The Central Station operator can control each protection level to determine whether it is:

- Active or disabled entirely.
- Accessible using Hi level Access Codes only.
- Accessible using Hi or Low level Access Codes.

For example, in a commercial installation you may want to disable or restrict all arming levels except 0,5, 8 & 9. That way the system can only be completely disarmed (Level 0), armed for maximum protection (Level 5) or tested (levels 8 & 9). The Central Station LEVEL Command is used.

7) **MULTIPLE ACCESS CODES** - The Central Station operator can program up to 10 Access Codes, in addition to the primary Access Code, into the MCU. Each of these Access Codes can be defined as Hi or Low privileged using the MACCESS command. If a code is Low privileged, only certain protection levels will be accessible. (See Protection Level Control.)

CODE	DESCRIPTION	PROGRAM FROM	PRIVILEGE STATUS
0	Primary Access Code	RAMC, or WT	Always Hi
2	Alternate Primary Access Code	RAMC only, using MACCESS command	Always Hi
1	Temporary Access Code	RAMC , using MACCESS command or Operator Terminal	Always Low
3-10	Multi User Access Codes	RAMC only, using MACCESS command	Can be defined Hi or Low
11-33	Multi User Access Codes	RAMC only using XACCESS command	Always Low
34	Duress	RAMC only using XACCESS command	Always Low
35	Command	RAMC only using XACCESS command	Always Low

8) **PHONE TAMPER** - (Buddy System Programming) the RAMC operator can program the MCU with the Account Numbers, of up to 4 other MCU's within its receiver range. If one of the other MCU's can't communicate with RAMC because of a PHONE TAMPER, it can trip a transmitter programmed to Sensor Number 100. The "BUDDY" MCU will hear the transmission and relate the House Code to one stored in its memory. It will then report a PHONE TAMPER using the account number of the MCU which couldn't communicate.

9) **MCU TIME and DATE** - The RAMC Operator can program the time of day and day of the year into the MCU. This is to keep track of events as they occur in the MCU 64 event buffer.

10) **EVENT BUFFER** - The MCU keeps a record of all arming & disarming, alarm, trouble, cancel, and supervisory signals in an event buffer. The last 64 events are stored. The RAMC Operator can review this data using the EVENT COMMAND and can also clear the buffer from RAMC. When the buffer is full, the oldest data is deleted automatically as new events occur.

11) **AUTOMATIC PHONE TEST** - From RAMC, the operator can program how often the MCU will perform an Automatic Phone Test (optional sensor number 113). This is programmable from once daily to once every 255 days using the PTFREQ Command.

12) In addition, the RAMC operator can change the **DURESS CODE**, turn options ON or OFF, change ENTRY & EXIT DELAYS, etc.

BUDDY SYSTEM BACK-UP REPORTING CAPABILITIES

The SYSTEM VI MCU has a hardwire output which can activate a transmitter in the event of a phone tamper condition. This output is activated only if the MCU is trying unsuccessfully to report an alarm condition. It does not activate for trouble, supervisory or other reports. Another SYSTEM VI MCU installed within receiving range of the transmitter can be programmed to "listen" for signals from the transmitter. The "listening" MCU will look at the Identification Number of the signal it hears. If it matches an Identification Number stored in the MCU memory it will silently report the ALARM PHONE TAMPER condition and the account number of the MCU which tried to report the original alarm signal.

PRELIMINARY CONSIDERATIONS

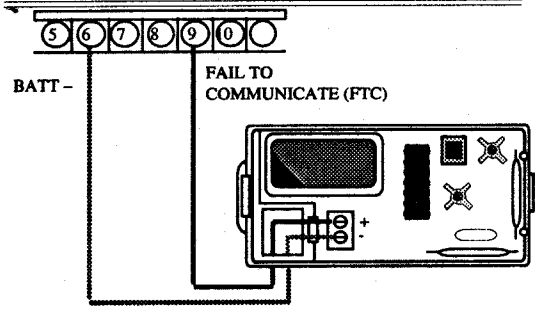
- The transmitter must be within range of the "listening" MCU.
- Each SYSTEM VI MCU can monitor up to 4 other SYSTEM VI MCU's for Phone Tamper.
- MCU's can back-up each other, ie: MCU A could store the ID Number and Account Number of MCU B and vice versa.
- Both MCUs must have sensor 100 in memory.
- Only the Model CS-4000 Central Station can set up MCUs for this feature.
- The door/window transmitter shall be mounted within 30 feet of the SYSTEM VI MCU.

PROGRAMMING

WARNING: Steps must be followed exactly as shown.

1) Program BUDDY sensor, then install a wire jumper across the sensor screw terminals.
2) Place the MCU in the program mode.
3) Press "STATUS", then 14, then "COMMAND". The MCU will display the next available buddy number.
4) Trip the tamper on the transmitter that is connected to the MCU to be monitored. Bouncing Balls will confirm programming.
5) Connect dependent MCU to the programmed transmitter.
6) Repeat steps 1 - 3 for each buddy MCU to be monitored.
7) Call RAMC with data to program host MCU with dependent account.
8) Program ACCOUNT numbers into each MCU from the RAMC.
9) Test your work.

TRANSMITTER CONNECTIONS



Connect the programmed sensor to the MCU as shown in the drawing at left. Remove the unused reed switches if maximum security is desired.

Transmitter	MCU
+Terminal	Screw 9 (FTC)
-Terminal	Screw 6 (-BATT)

WARNING: The buddy MCU (host) supervised the dependent MCU's transmitter (#00) and vice versa. A buddy supervisory in this context is actually a defective or otherwise inoperative transmitter which is connected to the dependent MCU.

TESTING YOUR WORK CHECKLIST

After all devices are installed and programming is complete the system should be thoroughly tested.

_____ Test for proper arming to all protection levels

_____ Test secondary Access Code

_____ Test Duress Code

_____ Test Standby Power

_____ Test AC Power/Transformer

_____ Test Bypass Feature

- _____ Direct
- _____ Indirect
- _____ Automatic

_____ Test Open Sensor Protest

_____ Test Alarm Memory

_____ Test Phone connections to CS

_____ Test any other features you have added.

_____ Test all Sensors using Sensor Test.

_____ Test all Sensors using Level 9 Sensor Test.

TESTING YOUR WORK

After all the components of the system are in place, and the MCU has been programmed, the entire system should be checked out using the procedures outlined in this section.

PROTECTION LEVEL TEST / STATUS TEST

1) Disconnect the RJ-31X jack if connected.
2) Place each Wireless Operator Terminal on its mounting bracket. THIS IS IMPORTANT!
3) Arm to each protection level, 1 to 7. Listen for proper STATUS beeps.
4) Push the STATUS button at each level.
5) Activate various sensors about the house. Be sure the sensors that are supposed to work at each protection level do, and the ones that are supposed to be disarmed at each level are.
6) Disarm to Level 0 between each arming, or go directly from one arming level to another.
7) Repeat above from every Wireless Operator Terminal location.
8) Select protection Level 0 to end test.
9) Reconnect the RJ-31X plug when test is complete.

TESTING TEMPORARY ACCESS CODE

Following the procedure in the programming section, enter a secondary access code from one of the Operator Terminals. Try the Temporary access code by arming the MCU to a new protection level to be sure it works properly.
Now, delete the Temporary access code by making it the same as the primary access code. To do this enter the primary access code, push STATUS, then enter the primary access code again.

SENSOR TEST

Sensor Test (Protection Level 9) is used to verify a secure and reliable communications link between the MCU and each of the sensors at the installation site. It also allows testing of the communications between each Wireless Operator Terminal and the MCU. Additionally, the MCU standby battery is checked since the MCU automatically switches to battery power when Level 9 is selected.

NOTES ABOUT SENSOR TEST

- When the system is set to protection Level 9 it cannot call the Central Station and affords no protection except DURESS calls. Thus, the MCU will automatically go to protection Level 0 fifteen minutes after entering Level 9. This restores basic (fire, panic, etc.) protection.
- Reentering Level 9 (without going to any other level) will reset the 15 minute timer, without changing the display, to give you more test time.
- If Optional Feature F10 is programmed into the MCU, the interior sirens will beep up to 8 times as each data round is received. This feature must be turned on every time you want to hear the data rounds as it turns off as the arming level is changed.

WARNING: Enable the F10 feature before entering level 9 to reduce receiver sensitivity.

SENSOR TESTING

ACTION	CORRECT RESPONSE
1) Select protection Level 9. (optionally set F10)	All the sensors you programmed, plus pre-programmed sensors 103, 104, & 105 should scroll through the sensor number display. Be sure everything is OK.
2) Activate each door/window sensor	You should hear a loud "beep" (or series of 2-3 beeps for each data round) from all interior sirens as each sensor tests and its sensor number will be removed from the scroll. The sensor number being tested will momentarily display when activated, then it will disappear.
3) Test each Passive Infrared (PIR) at various distances within its pattern.	Listen for the loud "beep" (or series of beeps) as you test each sensor. Remember the PIR needs 3 motion free minutes before each test.
4) Test each Smoke Sensor 2-3 times.	Press and hold the test button on the Smoke Sensor for 20 to 30 seconds until the internal horn sounds and the sensor number is removed from the display.
5) Test each Portable Panic Button from several places.	Point out to your customer any poor reception areas (if any) within the installation.
6) Activate all other sensors in same manner.	Listen for the loud "beep" (or series of the beeps) as you test each sensor.
7) Activate all the emergency (POLICE), buttons from EVERY Operator Terminal.	Sensor Number 103 (FIRE), 104 (Police) & 105 (MEDICAL) should be removed from the display.
8) Check to see if any numbers still appear on the display	If so, retest these sensors.

DURESS CODE TEST

NOTE: The policy at RAMC is to NEVER cancel a Duress Code. Thus, the police will be dispatched whenever a duress code is reported, even if a canceled report is sent with it. Therefore, be sure to call RAMC before beginning a Duress Code test.

The DURESS Code will have the same first two digits as the customer's Access Code, the last two digits will be different. The DURESS Code can be entered at any time, in any protection level.

ACTION	CORRECT RESPONSE
1) Call RAMC and inform them of the Duress Code test by identifying yourself and giving the correct customer account number. Ask the RAMC Operator to call you back when the test comes through. Give the operator the correct telephone number.	• RAMC Personnel authorize the Duress Code test, and repeat correct account number being tested and the phone number of the installation site.
2) Select any protection level by entering the Duress Code rather than the Access Code.	• The interior sirens will sound the appropriate number of beeps for the protection level selected.
3) Enter the customer's ACCESS CODE + 0 from a Operator Terminal.	• MCU should disarm.
4) Wait for Central Station Operator to call and confirm the receipt of an "109" alarm.	• They should call within two minutes to confirm successful Duress Code test.

STANDBY POWER TEST

Follow the actions below and verify the correct indications and response to check the standby power.

ACTION	CORRECT INDICATIONS / RESPONSE
1) Unplug the MCU's power supply.	• The MCU display should remain lit. • After a few seconds the power LED will blink. (It glows steady when the MCU has AC power). If the display goes blank immediately then either the MCU battery is dead or disconnected. Check battery leads and power before continuing. See AC POWER/POWER SUPPLY TEST below for testing procedure. All memory may be lost.
2) Verify that the system operates using only standby power by selecting 2 or 3 different protection levels.	• System responds just as it would if operating on AC power.
3) Plug the power supply into the AC outlet and resecure the screw.	• After a few seconds the power LED will glow steady again.

NOTE: The MCU has a power conservation procedure which will shut off the MCU visual displays, except for the power LED, after approximately 15 minutes of drawing from the standby battery. Pressing the Status button will light the display momentarily. An alarm will light the display for approximately 5 minutes.

AC POWER / POWER SUPPLY TEST

ACTION	RESPONSE
1) Carefully disconnect the positive battery lead from terminal #5.	• Everything should remain the same
2) Verify that the system is working properly.	• System responds just as it would if battery were connected.
3) Reconnect the battery lead.	

INDIRECT BYPASSING TEST

ACTION	CORRECT INDICATIONS / RESPONSE
1) Select protection Level 0.	• MCU protection level display shows "0".
2) Deliberately open any exterior sensor (group numbers 3 & 4) and note its number.	• The sensor is open and remains open.
3) Select protection Level 3.	• MCU will not change protection levels (protection level display = "0").
	• Interior sirens will produce the "protest" beeping sound.
	• The number of the open sensor will be displayed. (**NOTE:** If more than 1 sensor is violated, the sensor numbers of all violated sensors will be displayed.)
	• All six sensor condition LED's will blink simultaneously. (ALARM, TAMPER SUPERVISORY, TROUBLE, OPEN and BYPASS.)
4) Select protection Level 0.	• "Protest" beeping ceases.
5) Select protection Level 3, then press the BYPASS key.	• Interior sirens will indicate the protection level.
(ACCESS CODE + 3 + BYPASS)	• The MCU protection level LED reads "3".
	• The numbers of any sensors which were BYPASSED are displayed and the BYPASS LED lights.
6) Close and open the bypassed sensor or sensors a couple of times.	• The bypassed sensor or sensors do not cause an alarm when closed then opened.

NOTE: With indirect bypassing you can only bypass sensors such as those on doors or windows which can be left in the alarm condition while attempting to arm the system.

DIRECT BYPASSING TEST

ACTION	CORRECT INDICATIONS / RESPONSE
1) Select protection Level 0.	• MCU protection level display shows "0".
2) Select protection Level 3.	• MCU will arm to Level 3. The MCU display shows "3" and the sirens sound a group of 3 beeps.
3) Reenter the Access Code + BYPASS + the sensor number you want to bypass. (Choose a number which would be active in protection Level 3.)	• The MCU display will remain at Level 3. The number of the sensor you bypassed will display and the BYPASS LED will light.
4) Activate the bypassed sensor a couple of times.	• The bypassed sensor does not cause an alarm when tripped.

NOTE: Using direct bypassing you can bypass any sensor number, including smoke detectors and passive infrareds.

OPEN SENSOR PROTEST TEST

ACTION	CORRECT INDICATIONS / RESPONSE
1) Select protection Level 0.	• MCU protection level display shows "0".
2) Deliberately open one or more exterior sensors.	• The sensor is open and remains open. MCU shows sensor number and lights the OPEN LED.
3) Select protection Level 3.	• MCU does not change protection levels. (Protection level display = 0.) • Interior sirens produce the "protest" beeping sound. • The number of the open sensor(s) will be displayed on the MCU. • All six condition LEDs blink simultaneously.
4) While the MCU is protesting close the open sensors.	• When all open sensors are closed the protest beeping will stop. • The sensor(s) numbers will clear from the display.
5) Select protection Level 3.	• The MCU protection level changes to 3. • The system properly arms to Level 3.

ALARM MEMORY TEST

ACTION	CORRECT INDICATIONS/ RESPONSE
1) Select protection Level 3. (ACCESS CODE + 3)	• The MCU protection level display shows "3".
2) Activate a sensor which is armed in Level 3. Remember this sensor numbers.	• Activating the sensor causes the MCU to go into its appropriate alarm sound. • The number of the tripped sensor appears on the MCU display and the Alarm LED lights.
3) Select protection Level 0 to silence the sirens.	• The MCU protection level display shows "0". • The sirens stop. • Be sure to disarm quickly so the Central Station operator will not dispatch the authorities.
4) While watching the MCU display press the "STATUS" button on a Operator Terminal.	• Interior sirens will sound one long beep indicating protection Level 0. • The sensor which was activated will momentarily be displayed when the Alarm LED is lit.

NOTE: The alarm memory will clear automatically six hours after the protection level is changed. To clear it immediately, arm the system to Level 9.

PHONE TEST

The PHONE TEST verifies a secure and reliable telephone communications link between the customer's MCU and RAMC.

ACTION	CORRECT RESPONSE
1) Verify that the phone cord is plugged into the RJ-31X jack.	• If not, connect it now.
2) Notify the RAMC of your tests.	• Be sure they have a copy of the Customer Emergency Data Form.
3) Select protection Level 8.	• Listen for correct audible status response.
4) Observe MCU display.	• Should show protection Level 8. Also, the Sensor Number window should display "A6" and the Alarm LED will be lit.
5) Wait 2 minutes for these three indications of a successful communications test.	(1) A6 will clear from the display and the protection level will change to Level 0 when the test is successfully received by the central station receiver. (2) If the test feature is kept on at RAMC, it will automatically activate the customer's sirens causing them to sound each of their alarm sounds for two seconds each. (3) You must call RAMC to confirm receipt of test.

MAINTENANCE AND INSPECTIONS

Regularly scheduled maintenance and inspections (at least yearly) are necessary to keep alarm systems in proper working order. Offer a regular maintenance schedule to the system owner and user in addition to advising the user in the system's operation and limitations. Recommendations would include but not be limited to specific guidelines for weekly testing of the system.

The user may not under any circumstances try to service or repair the system; repairs must be done by the factory or an authorized dealer.

ALARM SYSTEM LIMITATIONS

Not even the most advanced alarm system can guarantee protection against burglary or fire. All alarm systems are subject to compromise or failure-to-warn for a variety of reasons:

- If sirens or alarms are not placed within hearing range of persons sleeping or in remote parts of the house. Warning devices may not be heard if they are placed behind doors or other obstacles, or on levels distant from space frequently occupied by residents.
- If intruders gain access through unprotected points of entry, or areas where sensors have been bypassed
- If intruders have the technical means of bypassing, jamming or disconnecting all or part of the system.
- If power to detectors is discontinued or inadequate. Devices will not work if the AC power supply is off and backup batteries are either missing, dead, or improperly installed.
- If smoke does not reach the detector. Smoke detectors cannot detect smoke in chimneys, in walls or roofs, or smoke blocked by a closed door. They may not detect smoke or fire on a level of the building different from the one on which they are located. Sensors may not be able to warn in time about fires started by smoking in bed, explosions, improper storage of flammables, overloaded electrical circuits, or other types of hazardous conditions.
- If transmission lines are out of service. Transmissions from the MCU to a Central Monitoring Station cannot be made over lines that are out of service. Telephone lines are also vulnerable to compromise by any of several means.

Inadequate maintenance is the most common cause of alarm failure. Therefore, the system should be tested at least once per week to be sure sensors, sirens, the communicator, etc. are all working properly.

Although having an alarm system may make the owner eligible for reduced insurance premiums, the system is no substitute for insurance. Warning devices cannot compensate for loss of life or property.

TELEPHONE PROBLEMS

Should problems develop with the telephone system, unplug the MCU from the RJ-31X jack. If a problem still exists after disconnecting the MCU, notify the telephone company. If the regular phone works after the MCU has been disconnected from the phone lines, this indicates a problem with the MCU, RJ-31X jack or your wiring.

If this condition exists;

- Thoroughly check the RJ-31X wiring.
- With the power switch OFF check terminals 15 and 16 as well as 17 and 18 for continuity with an ohmmeter. These contacts should be SHORTED since the MCU is in a non-dialing condition.

Upon installation of the system demonstrate disconnection of the phones to your customer.

Disconnecting the phone connection inside the MCU will result in loss of power from the phone lines.

FEDERAL COMMUNICATIONS COMMISSION REGULATIONS

This equipment is in compliance with Federal Communications Commission (FCC) Part 15, Subpart J and E and Part 68 where applicable. Each device carries a label giving the specifics and conditions of compliance. The FCC requires that you be informed of the following:

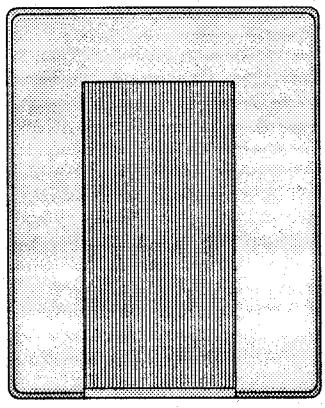
> This equipment complies with FCC Rules Part 15. Operation is subject to the following two conditions: (1) this equipment may not cause harmful interference and (2) this equipment must accept any interference that may be received, including interference that may cause undesired operation.

For additional help consult your dealer or an experienced radio/television technician. See also the FCC booklet, "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 No. 004-000-00345-4.

SYSTEM-VI
HARDWIRE OUTPUT MODULE
Part #60-370

OVERVIEW

The Hardwire Output Module (HOM) gives the System-VI the ability to output a DC voltage to eight separate lines. These lines go high (+5VDC) when specific zones are violated, when minor or major trouble conditions exist, and for various other reasons. The HOM is connected with a four-wire cable directly to the MCU, to another HOM or to another device on the hardwire buss such as a Hardwire Operator Terminal with Display.

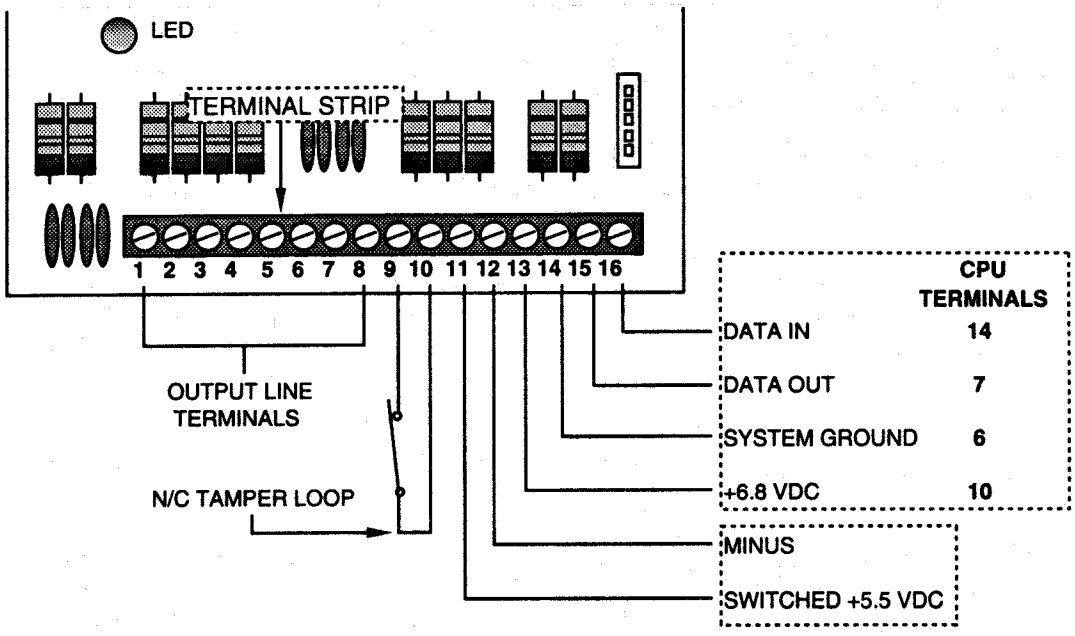


PRELIMINARY CONSIDERATIONS

1. The HOM will work only with the Rollins System VI.
2. The HOM draws 10mA. The total power consumed from the Hardwire Buss can be no more than 500 mA. Total the current requirements for your buss devices to determine if an additional power supply is needed.
3. All programmed data is stored in a removable E^2PROM. If the circuit board were to be changed, the chip could be moved to the new board to retain the programming.
4. The HOM has a removable terminal strip for easier wiring.
5. The HOM Module requires a four conductor wire. It is recommended that you use 20 gauge or greater stranded jacketed cable. In some long run instances shielded cable should be used.
6. The HOM sends supervisory signals for the tamper zone to the MCU just like wireless sensors. The MCU looks at these signals the same as if it were a wireless zone.
7. The HOM's plastic case can be tampered by using a reed switch connected between terminals #9 - #10. The plastic base has a molded housing for the reed switch (1/4 inch drill mount) and the top cover will hold the magnet. Opening the cover will open a normally closed switch.

INSTALLATION AND WIRING INSTRUCTIONS

1. Determine the location of the HOM and run a four conductor cable to the location. The HOM (with plastic case removed) may also be mounted inside the MCU itself and secured to the metal mounting tabs using 3/4" screws. We recommend remote mounting, however, because wiring is difficult with the HOM inside the cabinet. With the MCU power off, connect the cable to the MCU terminals or another device connected to the Hardwire Buss.
2. Carefully remove the circuit board, then mount the HOM base using the three mounting holes provided. Be sure and handle the board by its edges to avoid static problems.
3. Carefully reinstall the HOM circuit board.
4. If needed, remove the terminal strip and connect the MCU input wiring to the HOM. The output lines of the HOM will go from 0 to 5.0 VDC at 100mA when activated.
5. Now wire the output lines to the dialer, long range radio, or other device. If you are going to power the external device from the HOM, it must operate at 6.8 VDC. Remember 500 mA is the total current supplied from the MCU Buss supply. There is a switched supply available from the HOM on terminals #11. This will supply 5.5 VDC at 200mA. This supply is used to power a dialer in the event of a major failure condition. It will switch off 3 minutes after the failure to give the dialer ample time to communicate the failure to the central station..
6. Verify that all wiring is correct and the terminal strip is seated properly before applying MCU power.

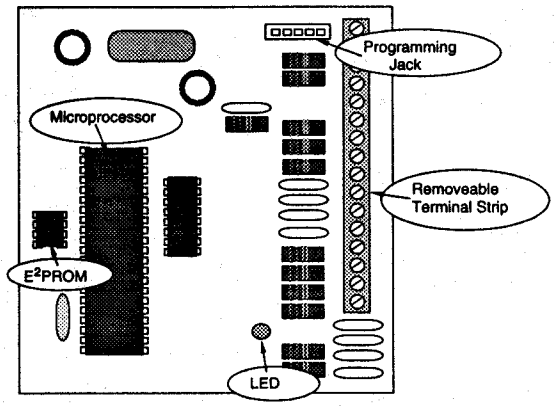


PROGRAMMING THE HOM

Standard Configuration

** Turn MCU power switch back on at this time.*

1. With the HOM wired to the MCU (or any other 'Buss' device) plug the programming cable from the Hand Held Programmer into the Programming Jack. **Polarity must be observed. The open face of the programmer cable must be toward the outside edge of the HOM board.** Note: If your programmer displays a decimal point following the "HELLO", the software will not work in programming the HOM.



2. Press the House Code Button on the Programmer. Then enter the Unit ID Number for the Hardwire Buss. This number can be from 0 to 7 and must not be the same as any other device on the Hardwire Buss.

3. (**NOTE:** The LED must be on to program the tamper switch sensor number, to turn the LED on press the read key on the programmer until the LED comes on). If you want to tamper the HOM plastic case and the reed switch is in place, press the Sensor Number Button on the Programmer, enter the desired sensor number (any number but '0' will work). Now press the Sensor Type Button on the Programmer, the only options you can select for programming are Normally/Open, Normally/Closed for the tamper switch. All other options on the programmer are not used and won't affect the HOM operation. The tamper zone is supervised and the tamper zone will continue sending data until an acknowledge is received from the MCU.

4. Press the Enter key on the Programmer. The display will show DONE or FAIL. If FAIL is displayed repeat steps 1 through 3 making sure entries are valid.

5. Press READ key on the Programmer to verify your programming.

6. Finally place the MCU in the Program Mode. Program the tamper zone the same as a wireless zone. It is recommended that a Level 9 Sensor Test be performed to verify tamper programming.

TROUBLE LED

The LED on the board acts as a tamper, programming, and trouble indicator. In normal operation it is *OFF*.

If this LED is *Flashing*, there is a communication problem with the MCU. For example: if two different Buss devices had the same unit ID#, the LED would flash, indicating a Buss communication problem (the MCU will also show "A-2 supervisory", if two devices have the same unit ID number).

If the LED is *Solid ON*, the memory has been lost.

SYSTEM-VI HARDWIRE OUTPUT MODULE OUTPUT LINE CONFIGURATIONS

The HOM has two modes of operation: **Standard** and **Programmed**. The standard mode of operation is similar to that of other panels that trip external dialers; the programmed mode of operation gives the system expanded flexibility. A jumper on the PCB determines the mode of operation. If the jumper is not in place, the standard configurations are used. (The jumper is included with the HOM.) If the jumper is in place on the jumper pins, the programmed mode will be used; the jumper also enables the EEPROM to be programmed for data storage. (If power is lost, the EEPROM will retain memory.) 7 of the 8 lines can be programmed; the Major Trouble condition from the Standard configuration is not programmable, so that a system failure may always be communicated. The other 7 lines can be programmed to any one of a set of predetermined configurations. The programming will be done with the Hand Held Programmer.

The following is a list of the Standard configurations that are possible on the HOM.

ROLLINS SYSTEM-VI, *STANDARD* OUTPUT LINE CONFIGURATIONS

Fire Alarms - Momentary — **Configuration 00, Output line 1**

All sensors assigned to Group #10 at the MCU that are in an alarm condition will cause activation of the output line. The output will deactivate at a level change or 3 minutes, whichever occurs first. *Default sensor is #103.*

Silent Panic and Duress Alarms - Momentary — **Configuration 01, Output line 2**

All sensors assigned to Group #9 at the MCU that are in an alarm condition. The output line will deactivate at a level change or 3 minutes whichever occurs first. *Default Sensor is #109.*

Intrusion Alarms - Momentary — **Configuration 02, Output line 3**

All sensors assigned to groups #2 (Special), #3, #4 (Perimeter), #5, #6, #7, #8 (Interior) at the MCU that are in alarm condition. The output line will deactivate at a level change or 3 minutes whichever occurs first. *This is commonly used to report all burglary type alarms.*

Audible Panic alarms - Momentary — **Configuration 03, Output line 4**

All sensors assigned to Group #0 at the MCU that are in an alarm condition. The output line will deactivate at a level change or 3 minutes, whichever occurs first. *Default sensors are #102,104.*

Medical and Environmental - Momentary — **Configuration 04, Output line 5**

All sensors that are assigned to Group #1 at the MCU. The output line will deactivate at a level change or 3 minutes, whichever occurs first. *Default Sensors are #105.*

Minor Trouble Conditions - Momentary **Configuration 05, Output line 6**

Any one of the following conditions will cause immediate activation. These conditions will deactivate at a level change or 3 minutes, whichever occurs first. **1)** All SUPERVISORY conditions on any sensor. **2)** All TROUBLE conditions on any sensor: **Sensor #111** in ALARM - A/C power failure (group 14). **Sensor #112** in ALARM - MCU low battery (group 14). **Sensor #119** in ALARM (group 13).*These conditions, if they occur, will not affect the ability of the MCU to detect ALARMS, except if the sensor in TROUBLE or SUPERVISORY is activated.*

Major Trouble Conditions - Momentary **Configuration 06, Output line 7**

Non-Programmable

Any one of the following conditions will cause immediate activation. This condition will deactivate at a level change or 3 minutes, whichever occurs first. **Sensor #115** - Receiver failure (group 14) **Sensor #117** - MCU to CS-4000 failure (group 11). **Sensor #118** - Phone line failure (group 11). **Communication failure** over the hardwire buss to this device (on own 3 minute timer). **Loss of EEPROM memory** at this HOM (in program mode of operation). *These conditions will affect the ability of the MCU to detect ALARMS. This configuration/output line is not programmable in case of system failure. This is so a report can be done.*

Phone Test & Weekly Test - Momentary **Configuration 7, Output line 8**

Sensors #106 (Phone test) and #114 (Weekly test) are in ALARM (both in group 13). The output line will deactivate at a level change or 3 minutes whichever occurs first. *This configuration could be used to test a backup communicator at the same time that the MCU is testing it's dialer.*

ROLLINS SYSTEM-VI, *PROGRAMMABLE* OUTPUT LINE CONFIGURATIONS

PROGRAMMING THE OUTPUT LINES

1. A jumper block must be installed on the two vertical pins located slightly off center on the HOM board.

2. With the HOM wired to the MCU (or any other ITI Buss device) plug the programming cable from the Programmer into the Programming Jack. **Polarity must be observed. The open face of the programmer cable should be toward the outside.** Note: If your programmer displays a decimal point following the "HELLO", the software will not work in programming the HOM.

3. Press the House Code Button on the Programmer. Then enter the Unit ID Number for the Hardwire Buss. This number can be from 0 to 7 and must not be the same as any other device on the Hardwire Buss. If the HOM case is to be tampered, follow the instructions listed in Standard Configuration #3. * The tamper zone cannot be programmed with the jumper block installed! (Program the tamper zone first, then install jumper.)

4. Press the Sensor Number key and enter the chosen Configuration number from the chart.

5. Press the Sensor Type key and enter a Output line, terminal 1 - 6, or 8. This assigns what output line will go high (+5.5 VDC) for that particular configuration (seven is not programmable, and is always used for major trouble output).

PROGRAMMABLE CONFIGURATION CHART

The following is a list of the Programmable configurations that are possible on the HOM:

Special Intrusion Alarms - Momentary

Configuration 10

All sensors assigned to Group #2 (special) at the MCU that are in an alarm condition. The output line will deactivate at a level change or 3 minutes, whichever occurs first. *Used to report ALARMS into gun cabinets or wall safes.*

Interior Intrusion Alarms - Momentary

Configuration 11

All sensors assigned to Groups #5, #6, #7, #8, (Interior) at the MCU that are in an alarm condition. The output line will deactivate at a level change or 3 minutes, whichever occurs first.

Exterior Intrusion Alarms - Momentary

Configuration 12

All sensors assigned to Groups #3, #4 (exterior) at the MCU that are in an alarm condition. The output line will deactivate at a level change or 3 minutes, whichever occurs first.

Intrusion Alarms Excluding Exit Delay - Momentary
Configuration 13

All sensors assigned to Groups #2 (Special), #3, #4 (Perimeter), #5, #6, #7, #8, (Interior) at the MCU that are in an alarm condition and not caused by an exit delay. The output line will deactivate at a level change or 3 minutes whichever occurs first. *Used to report only true break-in situations. The exterior delayed intrusion sensors will be ignored if the operator did not get out quickly enough or left a door open.*

Silent Intrusion Alarms - Momentary
Configuration 14

All sensors assigned to Groups #2 (Special), #3, #4 (Perimeter), #5, #6, #7, #8, (Interior) at the MCU that are in an alarm condition when the arming level is 7 (Silent). The output line will deactivate at a level change or 3 minutes whichever occurs first. *Used to report burglary ALARMS when no sirens are enabled at the site.*

Audible Intrusion Alarms - Momentary
Configuration 15

All sensors assigned to Groups #2 (Special), #3, #4 (Perimeter), #5, #6, #7, #8, (Interior) at the MCU that are in an alarm condition when the arming level is 3, 4, 5, 6. The output line will deactivate at a level change or 3 minutes, whichever occurs first. *Used in conjunction with configuration #14 to get all intrusion ALARMS.*

Intrusion Alarms W/Activation Delay - Momentary
Configuration 16

Same as Configuration 02, only the output line does not activate until a 30 second delay is over. *Used to facilitate dialers with no abort feature or to give pre-alarms.*

Special Alarms W/Activation Delay - Momentary
Configuration 17

Same as Configuration 10 only the output line does not activate until after a 30 second delay. *Used to facilitate dialers with no abort feature or to give pre-alarms.*

Interior Alarms W/Activation Delay - Momentary
Configuration 20

Same as Configuration 11 only the output line does not activate until a 30 second delay is over. *Used to facilitate dialers with no abort feature or to give pre-alarms.*

Exterior Alarms W/Activation Delay - Momentary
Configuration 21

Same as Configuration 12 only the output line does not activate until a 30 second delay is over. *Used to facilitate dialers with no abort feature or to give pre-alarms.*

Intrusion Alarms Except Exit Delay W/Delay - Momentary
Configuration 22

Same as Configuration 13 only the output line does not activate until a 30 second delay is over. *Used to facilitate dialers with no abort feature or to give pre-alarms.*

Silent Intrusion Alarms W/Activation Delay - Momentary
Configuration 23

Same as Configuration 14, only the output line does not activate until a 30 second delay is over. *Used to facilitate dialers with no abort feature or to give pre-alarms.*

Audible Intrusion Alarms /Activation Delay - Momentary
Configuration 24

Same as Configuration 15 only the output line does not activate until a 30 second delay is over. *Used to facilitate dialers with no abort feature or to give pre-alarms.*

Intrusion Alarm Memory W/Modulation - Sustained
Configuration 25

All sensors assigned to Groups #2 (Special), #3, #4 (Perimeter), #5, #6, #7, #8, (Interior) at the MCU that are in an alarm condition. The output line will toggle ON (1 second), OFF (1 second) and deactivate with a level change. *Used to notify returning person of possibly dangerous situation at the protected site.*

Intrusion Alarm Memory - Sustained
Configuration 26

All sensors assigned to Groups #2 (Special), #3, #4 (Perimeter), #5, #6, #7, #8, (Interior) at the MCU that are in an alarm condition. The output line will turn on until a level change. *Same uses as Configuration 25 without modulation.*

Fire Alarm Memory - Sustained
Configuration 27

All sensors assigned to Groups #10 (Fire) at the MCU that are in an alarm condition. The output line will deactivate with a level change. *Used to light escape routes during fire. The default sensor that fall into this configuration is #103.*

Intrusion & Fire Alarm Driver - Momentary (16 Mins.)
Configuration 30

All sensors assigned to Groups #10 (Fire) that are in an alarm condition and all sensors in Groups #2 (Special), #3, #4 (Perimeter), #5, #6, #7, #8, (Interior) that are in an alarm condition if the MCU is not in level 7. The output line will deactivate after 16 minutes or with a level change, whichever occurs first. *Can be used to drive a strobe light, sirens to scare off would-be burglars. The default sensors that fall into this configuration are #103, 113.*

Intrusion & Fire Alarm Driver - Momentary (5 Mins.)
Configuration 31

Same as Configuration 30 except deactivation occurs after 5 minutes or level change, whichever is first. *The default sensors that fall into this configuration are #103, 113.*

Fire Alarms W/Activation Delay - Momentary
Configuration 32

Same as Configuration 00 only the output line does not activate until a 30 second delay is over. *Used to facilitate dialers with no abort feature or to give pre-alarms.*

MCU to Monitoring Station Failure - Momentary
Configuration 33

Sensors #117 (Fail to communicate) and #118 (Phone line failure) assigned to group #11 in alarm. The output line will deactivate at a level change or 3 minutes, whichever occurs first. *Used as an early warning for backup communicator that the MCU communicator has failed.*

MCU Low Level Siren Driver
Configuration 34

This output will follow the System VI high level siren drive. Steady for fire and modulated for intrusions. *Can be used to drive a light for the deaf or auxiliary sirens.*

MCU High Level Siren Driver
Configuration 35

This output will follow the System VI low level siren drive. *Can be used to drive a light to indicate arming level or entry/exit delay in instances where sirens cannot be heard.*

SYSTEM VI System Armed Status - Sustained
Configuration 36

If the MCU arming level is 3, 4, 5, 6, 7 the output line will be active. For all other levels the output line will be inactive. *Used to drive an LED indicating a disarmed state at an entry door.*

SYSTEM VI System Disarmed Status - Sustained
Configuration 37

If the MCU arming level is 0, 1, 2, 8, 9 the output line will be active. For all other levels the output line will be inactive. *Used to drive an LED indicating a disarmed state at an entry door.*

Opening Report - Momentary
Configuration 40

If Sensor #107 is assigned to Group #13 and is in ALARM condition. The output line will deactivate at a level change or 3 minutes, whichever occurs first. *Used to report the arrival of employees at a business site.*

Closing Report - Momentary
Configuration 41

If Sensor #108 is assigned to Group #13 and is in ALARM condition. The output line will deactivate at a level change or 3 minutes, whichever occurs first. *Used to report the departure of employees at a business site.*

Energy Saver Daytime Set Point Driver - Sustained
Configuration 42

If the MCU is in level 0, 1, 2, 3, 8, or 9 the output line will be in the active state. In all other levels the output line will be deactivated. *Used to energize a relay to connect a thermostat for when user is home.*

Energy Saver Away Driver - Sustained
Configuration 43

If the MCU is in level 5,6 or 7 (Away) the output line will be in an active state. In all other levels the output line will be inactivated. *Used to energize a setback thermostat when nobody is home.*

Energy Saver Nighttime Driver - Sustained
Configuration 44

If the MCU is in level 4 (Night) the output line will be in an active state. In all other levels the output line will be inactivated. *Used to energize a setback thermostat when user is sleeping.*

Energy Save At Home Driver - Sustained
Configuration 45

If the MCU is in level 0, 1, 2, 3, 4, 8, or 9 the output line will be in an active state. In all other levels the output line will be inactivated. *Used in up to 2 thermostat systems in conjunction with Configuration 43.*

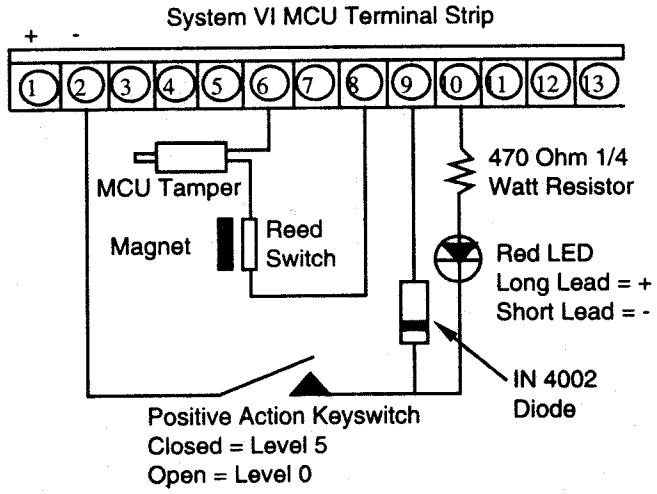
KeySwitch with "Armed" LED Indicator

Overview

The keyswitch is designed to provide a simple on and off operation for the System VI. The MCU defaults to "ON" level 5 and "OFF" level 0. To change either or both of these levels, RAMC must be notified, and the operator through the Central Station Receiver can change these levels. The LED illuminates to indicate if the system is armed.

Installation and Wiring

1. Determine location of the keyswitch
2. Run wire from the MCU to that location.
3. Install and connect a maintained contact keyswitch and LED as shown in the diagram below.



Programming the switch

1. Enter MCU into program mode.
2. Then press MED-MED + Status + 13
3. This program field, F13, will enable the keyswitch to operate.

CAUTION: *Only one switch can operate properly on one MCU and a keypad is still required to operate other features of the system (BYPASS, etc.).*

Note: The system will not arm if a supervisory or low battery condition exists or if a device is open.

APPENDIX C

ALARM MEMORY LED (Not for use in U.L. Listed Systems.)

Overview

The alarm LED is designed to provide a visual indication of past and current alarm conditions.

CAUTION: WHEN THIS FEATURE IS ACTIVATED, THE HARDWIRE BUSS WILL NOT OPERATE ANY OTHER DEVICE. THIS FEATURE SHOULD BE OFFERED ONLY IF NO OTHER DEVICE IS REQUIRED TO OPERATE FROM THE HARDWIRE BUSS.

The following devices will **NOT** operate if alarm LED feature is activated:

Hardwire Operator Terminal	Alpha Keypad
Hardwire Input Module	Hardwire Output Module

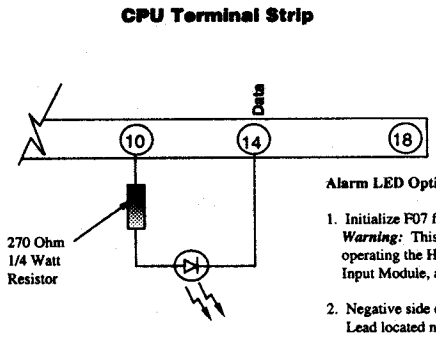
Operation

The LED is designed to act as a memory display to show if an alarm occurred during the past arming period. If lit, there was a violation during the past arming period. Any change in arming level will clear the LED.

Installation and Wiring

1. Select location for LED with single gang electric outlet cover plate.
2. Run two-conductor wire to MCU.
3. Turn off MCU.
4. Connect Wiring.

LED Connections Strip	MCU Terminal
LED positive lead (with series 270 Ohm, 1/2 Watt Resistor)	Red - 10
LED Negative lead	Black - 14



Alarm LED Option

1. Initialize F07 for LED operation.
   Warning: This option will prevent you from operating the Hardwire Touchpad, Hardwire Input Module, and the Hardwire Output Module.
2. Negative side of LED is "Hooked" element. Lead located next to flat on lead case.
3. Use 270 Ohm 1/4 Watt Resistor on positive side.

Programming the Alarm LED

1. Enter MCU into program mode. (program switch up, enter 4321 from operator terminal.
2. Press MED-MED + Status + 07.
3. Wait for "bouncing balls" (approx. 10 seconds).
4. Test by causing a violation and see if LED lights.

NOTE: The LED will light up if a change has been made to the MCU program because 119 is sent to RAMC each time any change is made the MCU program.

Wireless Shatterbox 5745-03

Follow the location selection and mounting procedures enclosed with each 5745-03. Caution: The wiring diagram in the "installation" instruction is not correct for System VI transmitter connections. Use the schematic diagram below to connect this device.

Overview

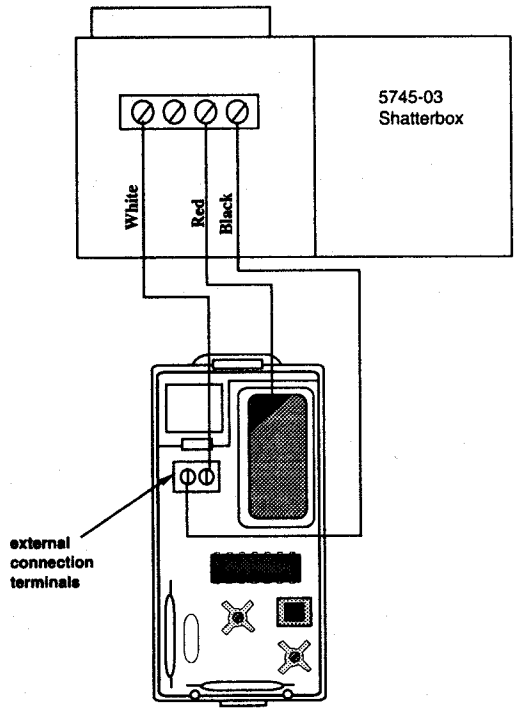
The 5745-03 is rated to protect areas 35 feet and 20 feet high. The tester is accurate only within this rated pattern. For larger areas, use additional Shatterbox detectors. Curtains, blinds, and other window coverings will absorb energy from breaking glass. Heavy curtains, for example, will effectively block the sound signal.

NOTE:

1) When the window has coverings, through pre-testing is required. Use the tester behind the coverings if they will be closed by the user.
2) The Shatterbox responds only to framed glass. Do not test the Shatterbox by breaking an unframed pane of glass.

Installation and Wiring

1. Connect the black and red wires from the connector cable provided in the box as shown in the diagram following this text. Do not connect white wire until sensor is programmed into MCU.
2. Enter MCU program mode.
3. Select group for Shatterbox transmitter.
4. Activate the TAMPER on the transmitter.
5. Connect white lead as shown.
6. Assemble unit by putting the transmitter into Shatterbox case. Take care to properly fold the wire.
7. Test in level 9.



Shock Sensor Sentrol 5105

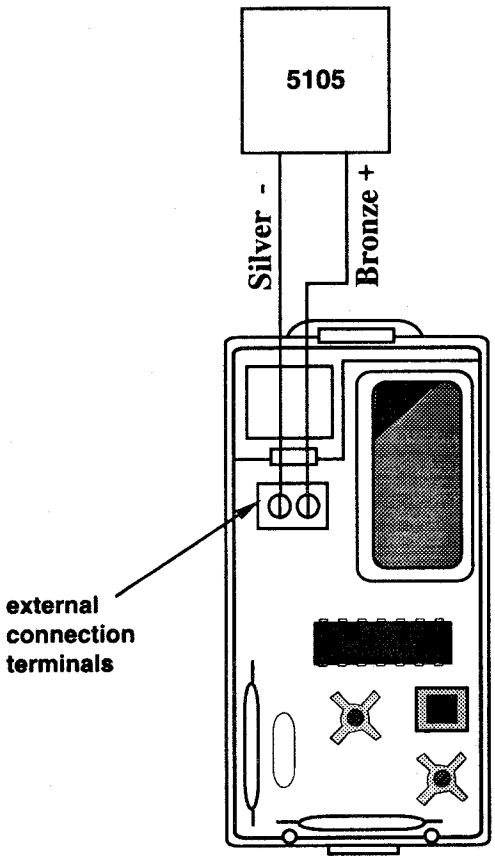
Overview

The Sentrol 5105 Glasstrap is a piezoelectric shock sensor. It converts impact energy to electrical impulse. Undisturbed, it has about 5 Ohms of resistance across terminals. On impact, it will go "open": to 1 Meg Ohm. The leads are polarity sensitive. You must connect them exactly as shown in diagram below.

The 5105 Glasstrap does not require field adjustment. It comes in three colors; Off white, gray, and mahogany.

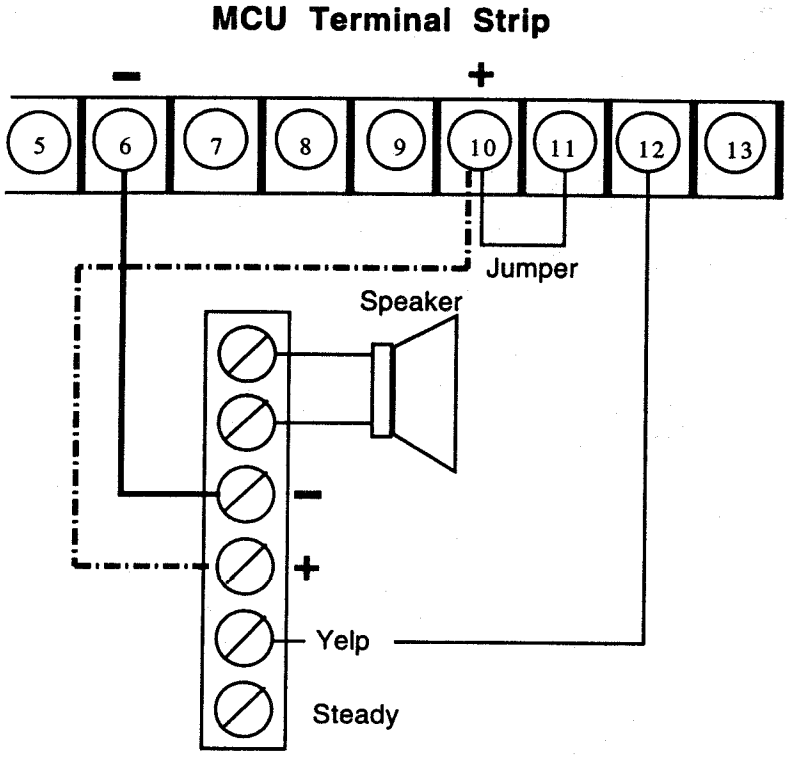
Installation and Wiring

1. Install on clean, dry surface with double side pad provided in the package.
2. Program the transmitter into MCU. (see sensor programming)
3. Connect the 5105 Glasstrap to the transmitter.
4. Test in level 9 with the use of shock emulator.



SD11-17 Siren Driver (Adcor)

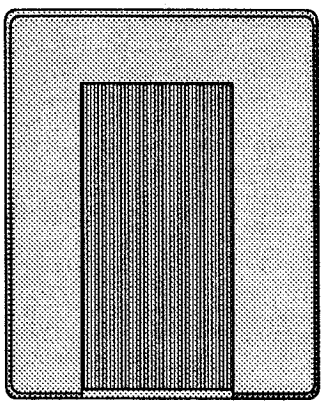
Connections



Hardwire Input Module (HIM)

Part # 60-242

Overview



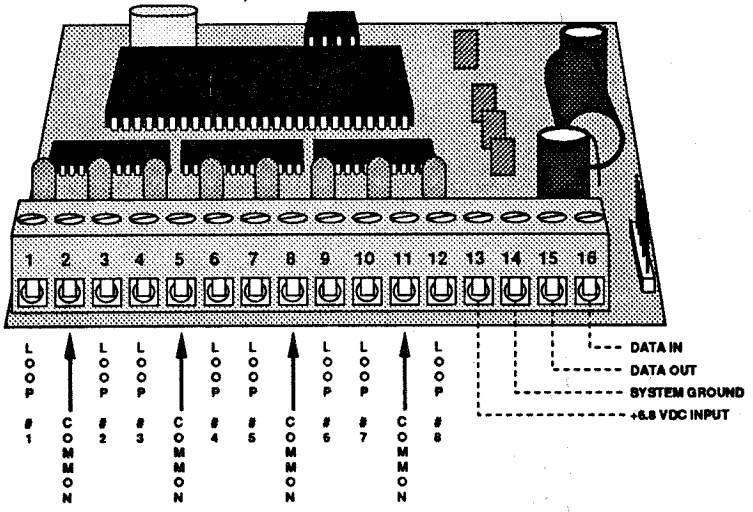
The Hardwire Input Module (HIM) allows the addition of 8 normally open (NO) or normally closed (NC) zones to the System VI. Each zone has an individual E.O.L. resistor for supervision. The Handheld programmer is used to program the HIM. All programmed data is stored in a removable E^2PROM. The HIM is connected to the MCU by a four conductor cable. Up to 8 HIMs can be connected to the MCU. Each HIM draws 10mA of current.

NOTE: Since the HIM is a buss device, the maximum number of HIMs you can connect depends on the total number of buss devices to be connected to the MCU.

INSTALLATION AND WIRING

1) Remove the circuit board and mount the case using #6 pan head screws.

2) Disconnect all power to the System VI by disconnecting the power supply and the battery. Using 20 gauge wire, connect the HIM to the System VI as shown. Using 22 gauge or greater wire, connect your hardwire loops on the HIM. Verify that the end-of-line resistors are installed properly (Normally Open in parallel, Normally Closed in series).



Connections

HIM Terminal Strip	System VI Terminal Strip	
13	10	RED
14	6	BLACK
15	7	WHITE
16	14	GREEN

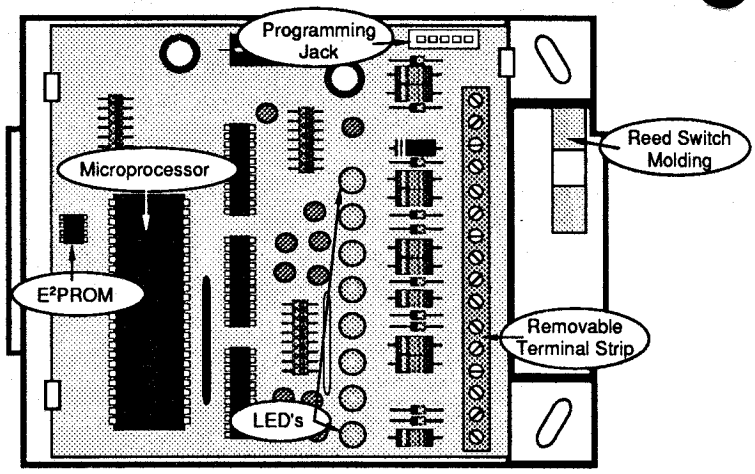
3) Be sure power is off when you plug the strip back in. Double check the wiring and be sure the terminal strip is seated properly. Restore power back to the MCU.

PROGRAMMING THE HIM

1) Make sure that the HIM is wired to the MCU properly.
   NOTE: EOLR must be in place for all zones - even unused zones.

2) Plug the programming cable from the System VI programmer into the Programming Jack. Polarity must be observed. The open face of the programmer displays a decimal point following the "HELLO".

NOTE: If a period is showing after the HELLO., replace the programmer. Its software needs to be updated.



3) Press the READ button on the programmer. One of the LED's will light. This LED corresponds to the zone or loop you are programming. By pressing the READ button, you can toggle through the 8 LED's to select the zone you wish to program.

4) Press the HOUSE CODE button on the programmer. Enter the Unit ID number for the Hardwire Buss. This number can be from 0 to 7 and must not be the same as any other device on the Hardwire Buss.

5) Press the SENSOR NUMBER button. This is followed by the two-digits of the sensor number for the zone.

6) Now press the SENSOR TYPE button on the programmer. Enter the Type on the programmer. NOTE: The programming option keys operate the same as an RF sensor except for the Supervised and Fire Panic Priority buttons. All zones are supervised and each zone will continue sending data until an acknowledgment is received from the MCU.

NOTE: Make sure that all closed loops are programmed for RESTORAL. Also, normally open (NO) panic buttons must be programmed for restoral by pressing the RESTORE button on the programmer. The LED lights to indicate that the restoral function is enabled.

7) Press the ENTER key on the programmer. The display will show DONE or FAIL. (If FAIL is displayed, repeat steps 1 through 5 making sure entries are valid.) You must press ENTER before programming the next loop!

8) Press READ to verify your programming.

9) Press READ again to step to the next zone and continue programming all devices hardwired to the HIM.

10) Put any unused zones to sleep using the programmer. All eight zones must be either programmed or put to sleep, otherwise FAIL is displayed.

11) Place the MCU into program mode. The Handheld Programmer is used only to program the characteristics of each hardwired loop. The sensor group and sensor number must be programmed into the MCU using the same method as wireless sensors. The only difference is that you trip each loop to learn it, instead of tripping a tamper switch.

12) Enter the type of sensor you wired to the first zone on the HIM in the following manner:

a. STATUS + GROUP + COMMAND + 1ST SENSOR NUMBER. (The first zone or sensor in the HIM must be the same as the sensor number in the MCU for that zone.
b. Activate the first zone/sensor on the HIM. This will "teach" that number into the MCU memory.
c. Now activate each zone/sensor in the same sequences as they are programmed in the HIM. This will scroll the numbers in the MCU in the same sequence, matching the zone/sensor designations.
d. Note that HIM loops programmed for "fire" have a 4-second, built-in delay.

13) Turn the MCU program switch to OFF.

14) You must test each sensor connected to the HIM. This will verify programming. Be sure to set the MCU to level 9 test first, then trip each hardwired loop.

HOW TO CHANGE A SENSOR NUMBER ON A HIM

1) Turn MCU program switch ON.

2) Plug the programmer cable into the HIM. Make sure to observe proper polarity. The open face of the programmer cable should be toward the outside.

3) Press the READ button to step to the zone you wish to program.

4) Press the sensor number key and enter the new sensor number.

5) Press ENTER. The display should read "Done". Press READ to verify programming.

6) To remove the previous Sensor Number from MCU, use a wireless or hardwire operator terminal. Enter BYPASS and the sensor number. The bouncing balls in the display will confirm the bypassing.

7) To enter the new sensor number, repeat step 12 in the programming the HIM section.

8) Turn the program switch OFF.

HOW TO CHANGE A UNIT ID NUMBER OF A HIM

1) Turn MCU program switch ON.

2) Plug the programmer cable into the HIM. Make sure to observe proper polarity. The open face of the programmer cable should be toward the outside.

3) Turn the programmer ON.

4) Press the READ button. This should light the first LED on the HIM.

5) Press the HOUSE CODE button and enter the desired ID number (0-7). Do not duplicate ID numbers!

6) Press ENTER. The display should read "Done". Press READ to verify your programming. If it reads "Fail", check for proper polarity on programmer plug and repeat steps 5 and 6, making sure entries are valid.

7) Activate a zone in the HIM. This will send the new ID to the MCU.

8) Turn the MCU program switch OFF.

TROUBLE LED

The LED that corresponds to the Number One Loop also acts as a trouble indicator:

If this LED is flashing, there is a communications problem with the MCU.

If the LED is constantly illuminated, the HIMs memory has been lost.

APPENDIX H

System VI Alpha Keypad

Part # 60-248

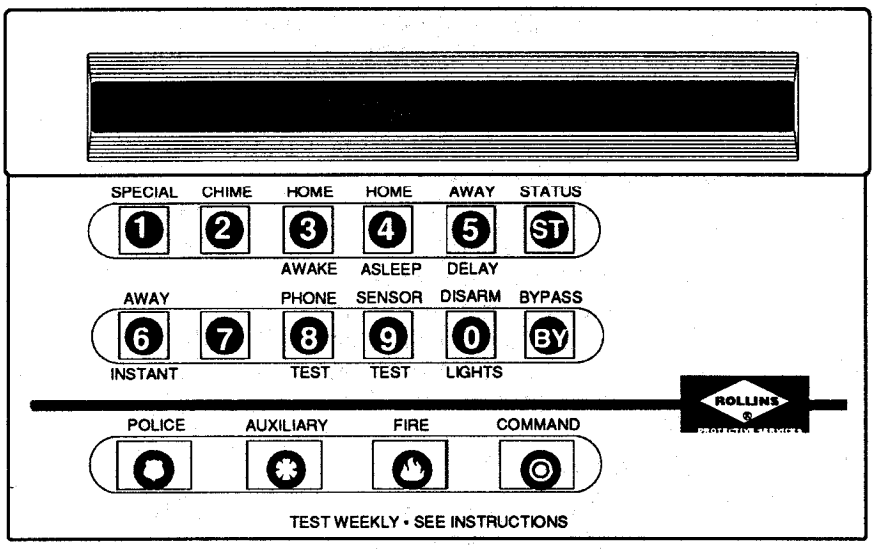
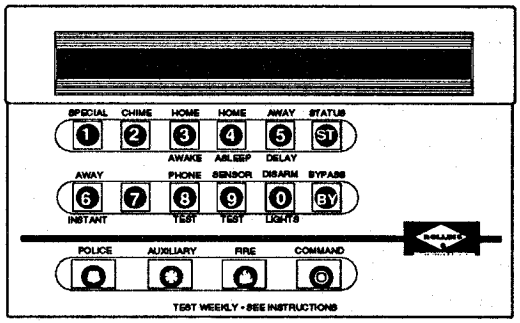


Table of Contents

Introduction

SYSTEM VI ALPHA KEYPAD



The System VI Alpha Keypad is a full-function keypad which includes a 16 character Vacuum Fluorescent Alpha-Numeric Display for visual system status messages. The unit's display can identify a specific programmed location name which allows the user to easily determine where an Alarm, Trouble or Open Sensor condition exists. Location names can be selected from a list of pre-programmed words or they can be customized by the installer to suit the customer's needs.

FEATURES

- Display has four brightness levels and a black-out option.
- Keypad keys illuminate after first key press for easy night viewing.
- Built-in piezo emits Alarm/Status tones.
- 24 hour panic buttons for Police, Auxiliary and Fire emergencies.
- Unit accepts one hardwire zone input.
- ON/OFF control of X-10 lights (command + 0)

PRELIMINARY CONSIDERATIONS

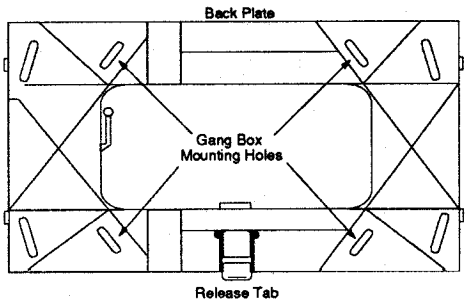
- Total current draw of the keypad is 75mA.
- Maximum current draw allowed from the System VI MCU, is 500 mA.
- Mount the unit in an environmentally controlled area (42°F to 95°F).
- Mount the unit near the area where you plan to utilize the optional Hardwire Input.
- Use 4 conductor, 22 gauge or greater stranded wire from the display to the System VI MCU.
- Use 2 conductor, 22 gauge or greater stranded wire for the optional Hardwire Input.
- Do not exceed 100' of wire length from keypad to MCU.

Installation

GANG BOX MOUNTING

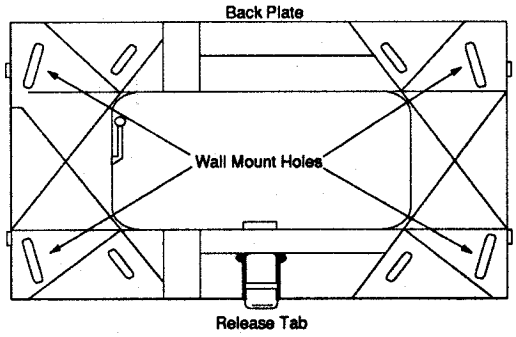
1. Separate the Back Plate from the display by pressing the Release Tab and pulling it down.
2. Place the Back Plate on the gang box so that the 4 inner slots on the Back Plate line up with the 4 outer holes of the gang box.
3. Secure the Back Plate to the gang box using #6 x 1/2" or #6 x 3/4" panhead screws.

CAUTION! Do not use screws larger than #6 or the display will not seat properly onto the Back Plate. Also, do not over-tighten screws or the Back Plate may bind and not allow the display to mount properly.



WALL MOUNTING

1. Separate the Back Plate from the display by pressing the Release Tab and pulling it down.
2. Place the Back Plate at the desired location on the wall and use a pencil to mark the Wall Mount Holes.
3. Insert anchors suitable for #6 screws at the marked locations.
4. Position the Back Plate so that the Wall Mount Holes line up with the anchors in the wall.
5. Secure the Back Plate to the wall using #6 x 1/2" or #6 x 3/4" screws. Do not use screws larger than #6 or the display will not seat properly onto the Back Plate.
6. Cut a hole in the wall along the inner right edge of the Mounting Plate to pull your cable through for terminations.

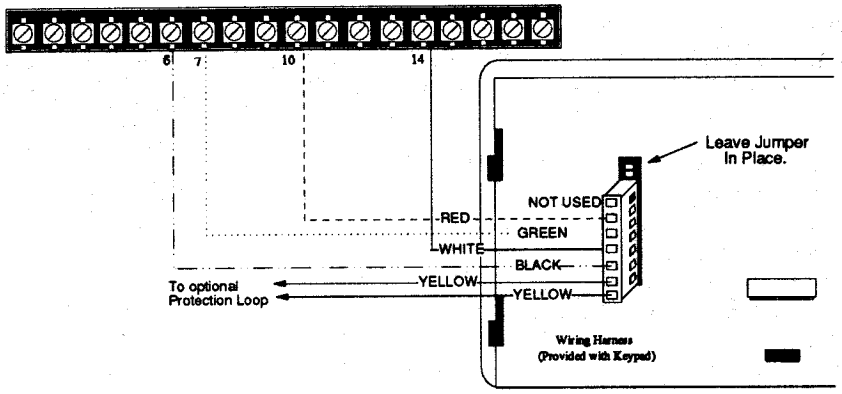


WIRING

1. If the System VI MCU is powered up, set the protection level to 0 and turn the power switch off.
2. Follow the diagram below for proper termination of the Wire Harness to the MCU.
3. Insert the Wire Harness onto the pins located on the rear of the keypad. Make sure the Yellow wires are positioned on the two bottom pins.
4. Leave the jumper on the top two pins.
5. Attach the display to the mounted Back Plate by lining up the wide portion of its four Tab Slots with the four Tabs on the Mounting Plate. Once aligned, slide the display downward until you hear the Release Tab "click" into place.

Note: All wiring shall beU.L. listed cable, 22AWG minimum.

SYSTEM VI MCU TERMINAL STRIP



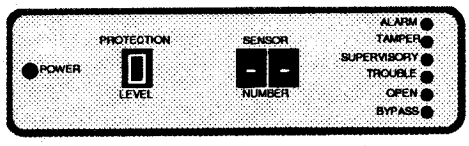
OPTIONAL PROTECTION LOOP NOTES - U.L Requirements

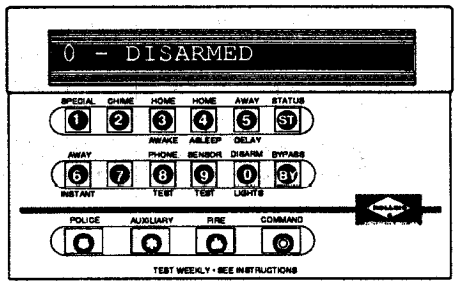
- If the loop is used and programmed Normally Closed, the keypad shall be mounted within 3 feet of the MCU.
- If the loop is programmed Normally Open, the MCU, keypad and initiating devices shall be mounted within 3 feet of each other. No interfering walls or barriers shall be present between the devices.
- Only U.L. Listed devices shall be connected to the loop.
- The loop shall not be used for fire initiating devices.

POWER UP

Programmed MCU

1. Check wiring for proper terminations.
2. Turn the System VI power switch ON. The MCU display should read as illustrated below.
3. The keypad display should power up with all segments of every other character ON for about 4 seconds. Then the display will perform two self tests.
4. First, the display will scroll the letters of the alphabet starting at the right of the display.
5. After the letter "Z" appears, the display will show the message **KEY TEST**. Press any key and the display will show which key was pressed. For example, press 🔥 and the display will show **KEY TEST-FIRE**. Press each key to verify its operation. After about five seconds of no key pressing the display will show **XXXX TEXT MEMORY OK** and then display as illustrated below. (XXXX = Software I.D.)

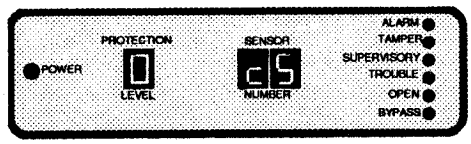


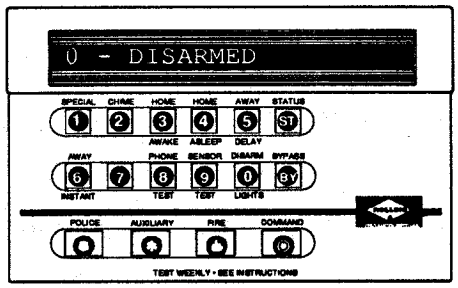


Unprogrammed MCU

(Read CAUTION at the end of this section)
For U.L. programming, refer to System VI In-Installation Manual .

1. Check wiring for proper terminations.
2. Turn the System VI power switch ON.
3. The System VI MCU will perform its RAM Check function. During this time the keypad's display will remain dark.
4. After the System VI completes its RAM check, the MCU display should read as illustrated below. The keypad display will show all segments of every other character ON for about 4 seconds, then perform two self tests.
5. First, the display will scroll the letters of the alphabet starting at the right of the display.
6. After the letter "Z" appears, the display will show the message **KEY TEST**. Press any key and the display will show which key was pressed. For example, press 🔥 and the display will show **KEY TEST-FIRE**. Press each key to verify its operation. After about five seconds of no key pressing the display will show **XXXX TEXT MEMORY OK** (**XXXX** = software I.D.) and then display as illustrated below.





7. Now turn the MCU program switch (#2) ON. The keypad display should read as follows: PRESS MCU FF SWITCH
8. Press and hold the MCU fast forward button until you hear the piezo in the keypad activate, or wait for all programmed sensor numbers to cycle-through one time on the MCU Display. After all sensors have cycled, the piezo in the keypad will activate. The keypad display should read: PROGRAM MODE
9. Press the Alpha Keypad's COMMAND button. The MCU display should show three P's, and the keypad display should read: program sensors
10. The keypad can now be programmed or the MCU program (#2) switch can be returned to the down (OFF) position, and the keypad buttons will then become operational.

*****CAUTION*****

Unprogrammed MCU's will respond to any wireless keypad upon initial power-up. It is recommended that the MCU antennas be removed during initial keypad programming to prevent possible programming errors. Keypad RF signals can cause significant problems, perhaps making it necessary to clear the MCU memory and repeat the initial programming procedure. This should not be a concern after any desired wireless keypads are programmed in, or the MCU programming switch (#2) is returned to down (OFF) position.

Programming

If you have more than 1 keypad connected to the MCU, work from 1 keypad for all programming. Once you have completed all programming, the information from this keypad can be downloaded to the others. The download procedure will be covered later in this section.

IMPORTANT! If you have more than 1 keypad connected to the MCU, you must first program each one with a different Unit I.D. Number. See pages 16-17 for this procedure. In cases where the Unit I.D. Numbers are identical (such as units out of the box from the factory), the procedure may have to be done twice. Failure to change identical Unit I.D. Numbers can cause the keypads to malfunction during normal operation. Upon initial power-up, the Default unit I.D. is 7. Change the Unit I.D. Number to a number other than 7. Make sure that the number choosen is not the same as any other Hardwire Bus Device (HIM's, HOM's, Hardwire Keypads, etc.)

1. Turn the MCU Program Switch (#2) ON. The keypad's display should read as follows: **PRESS MCU FF SW**
2. Press and hold the MCU Fast Forward Button until you hear the piezo in the display activate or wait for all programmed sensor numbers to cycle through 1 time on the MCU display. After all sensors have cycled, the piezo in the keypad will activate. The display should read **PROGRAM MODE**.
3. Press the Keypad COMMAND button, the MCU display should three P's.

The keypad can now be used to program the System VI features, sensor numbers and names. The unit's piezo will beep 6 times every 60 seconds to remind you that the MCU is in the program mode.

Note: The panel's alarm functions are not operational with the MCU/keypad in the programming mode.

KEY FUNCTIONS for PROGRAMMING

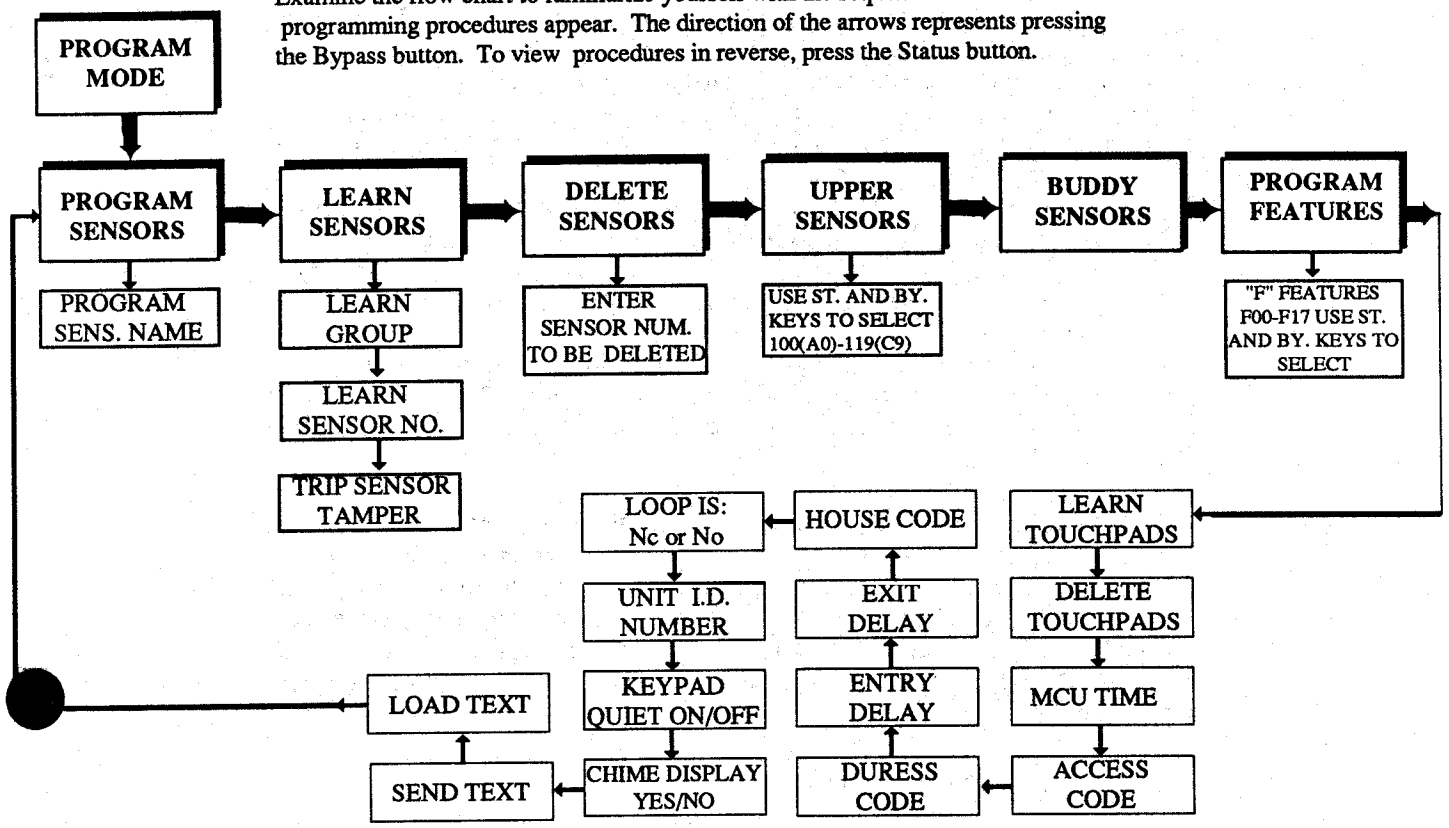
Before proceeding, it is important to know the function of each key when programming. Study the key functions listed below, then examine the flow chart on the next page to familiarize yourself with the sequence in which the programming procedures appear.

- BY Cycle Forward
- ST Cycle Backward
- Proceed/Execute
- Abort/Exit
- Delete This Entry and Move Remaining Entries Up One Slot*
- Insert This Entry and Move Remaining Entries Down*
- 0 - 9 Face Value or Word/Letter Numbers

*** These features used only when programming sensor names**

PROGRAMMING FLOW CHART

Examine the flow chart to familiarize yourself with the sequence in which the programming procedures appear. The direction of the arrows represents pressing the Bypass button. To view procedures in reverse, press the Status button.



Programming Sensor Names

As indicated by the flow chart, the first procedure to appear is for Sensor Programming. Once the sensor number has been entered, the sensor name can be programmed using any of the characters or names described in the chart on the next page.
Each sensor number contains 10 word or character locations to program its name. These locations are lettered A through J and require a 2 digit entry (according to the chart) to set the desired words and/or characters.
The example below shows the procedure for programming sensor 34 as the FRONT DOOR. Notice in this case only locations A & B are used to name the sensor. Spaces are automatically inserted after each word when using 40-99 and do not occupy any locations. This example leaves 8 unused locations (C-J) for this sensor's name. Not all locations need to be used.
In most cases the words in the chart (40-99) will be sufficient. Should you need to create a word using individual characters, remember each character (01-39) uses one location. Use the worksheet on page 12 and the worksheet at the back of this manual to determine all sensor name programming ahead of time.

Helpful Hint: When using characters (01-39), abbreviate where possible or generalize instead of being specific. For example, if two brothers are sharing a bedroom, it is unlikely you could program both their names to identify the sensor in their room without running out of locations. A good choice would be to create the word BOY'S using locations A-E, then use location F for a Space, location G for the word BEDROOM and location H for the word WINDOW. (See worksheet on page 13 for this example.)

PROGRAM A SENSOR'S NAME

1. Press BY, until display reads `PROGRAM SENSORS`
2. Press ◎, display reads `Sn ## + (group)`
3. Enter 3 4, display reads `Sn34 DISABLED (if not programmed)*.`
4. Press ◎, display reads `A 00 -`
5. Enter 6 3 display reads `A 63 - FRONT`
6. Press ◎, display reads `B 00 -`
7. Enter 5 4. display reads `B 54 - DOOR`
8. Press ⏻, display scrolls `Sn34 DISABLED - FRONT DOOR`

*Note: Sensors are displayed as disabled until programmed into the MCU. See LEARN SENSORS on page 9 to program sensors.

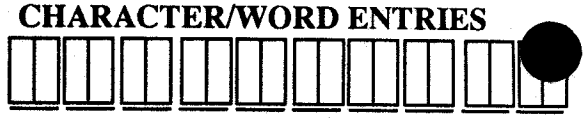
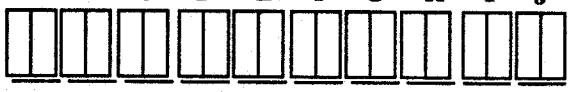
To review the programming, press .

To continue programming sensors press again and repeat the procedure on page 7 beginning at step 2. If you enter a wrong number at steps 5 or 7, simply re-enter the desired number. This procedure assumes the sensor number being programmed does not already exist in the System VI MCU memory. Therefore, both the MCU and the display are programmed simultaneously.

Character	Entry	Character	Entry	Character	Entry
Null	00	M	13	(Space)	27
A	01	N	14	' (Apostrophe)	28
B	02	O	15	- (Dash)	29
C	03	P	16	0	30
D	04	Q	17	1	31
E	05	R	18	2	32
F	06	S	19	3	33
G	07	T	20	4	34
H	08	U	21	5	35
I	09	V	22	6	36
J	10	W	23	7	37
K	11	X	24	8	38
L	12	Y	25	9	39
		Z	26		

Word	Entry	Word	Entry	Word	Entry
AREA	40	FIRST	60	PATIO	80
ATTIC	41	FLOOR	61	POLICE	81
BASEMENT	42	FREEZE	62	POOL	82
BATHROOM	43	FRONT	63	PORCH	83
BEDROOM	44	GALLERY	64	REAR	84
BOTTOM	45	GARAGE	65	RIGHT	85
BREEZEWAY	46	HALL	66	ROOM	86
CABINET	47	HEAT	67	SAFE	87
CARPET	48	KITCHEN	68	SCREEN	88
CENTER	49	LAUNDRY	69	SECOND	89
CLOSET	50	LEFT	70	SENSOR	90
DEN	51	LEVEL	71	SHOCK	91
DESK	52	LIBRARY	72	SIDE	92
DINING	53	LIVING	73	SLIDING	93
DOOR	54	MAIN	74	SMOKE	94
DRAWER	55	MEDICAL	75	SOUND	95
EAST	56	MOTION	76	SOUTH	96
ENTRY	57	NORTH	77	STAIRS	97
FAMILY	58	OFFICE	78	WEST	98
FIRE	59	PANIC	79	WINDOW	99

PROGRAMMING WORKSHEET

SENSOR#	SENSOR NAME	CHARACTER/WORD ENTRIES
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	
_____	_____	

LEARN SENSORS

Use this procedure to initialize sensor numbers 01-99 into the MCU memory. Refer to your System VI Installation Manual for sensor Group numbers and their characteristics.

1. Press BY or ST until display reads **LEARN SENSORS**.
2. Press ◎, display reads **LEARN GROUP _ _**. (00-10, 16-18)*
3. Enter 2 digit Group Number (00-10, 16-18), then press ◎.
4. Display reads **LEARN Sn01**. The 01 will flash rapidly. Press ◎ if you want the MCU to learn sensor 01 or enter the desired sensor number and press ◎.
5. Display reads **TRIP Sn01**. Remove the cover of the desired sensor. This way the MCU will learn the signal pattern of the sensor.
6. Once the sensor's signal is received, the keypad's piezo will beep twice. The display will read **TRIP Sn02**. Trip the tamper of the next sensor.
7. To change the Group Number, press 🔥, then ◎ and enter the desired Group Number, followed by ◎ (command). Continue programming sensors as described above.

* Groups 16-18 are available with MCU EPROM dated 05/15/92 (revision E) or later. Groups 16-18 are equivalent to groups 00, 01 and 09 respectively, except that they are not supervised. They will display on the MCU (in program review mode) as groups "d" (16), "E" (17), and "g" (18).

DELETE SENSORS

This procedure deletes the sensor number from the System VI MCU and deletes the sensor number and name from the keypad's memory.

Pressing the BY or ST buttons while in this mode will cycle all sensors which *are enabled in the MCU.* Step 2 will always display the *lowest sensor number which is programmed.*

1. Press BY or ST until the display reads **DELETE SENSORS**
2. Press ◎, display reads **DEL SN 01 -** (plus description, if programmed)
3. Press ST, display reads **DEL SN _ _**
4. Enter 4 0, display reads **DEL SN 40 - DEN DOOR (if** sensor #40 was programmed as **"DEN DOOR"**
5. Press ◎, display reads **DEL SN 40 - DONE**

UPPER SENSORS

This procedure is ideal for programming sensor numbers with pre-programmed names which *cannot be changed.* These sensor numbers are: 100 - 119. The name of the sensor number will automatically appear in the display after entering the sensor number in step 4.

Pressing the BY or ST buttons while in this mode will cycle through all Upper sensors. Sensors 103, 104, 105, 106, 109, 112, 113, 115 117, 118, 119 power-up in the "ON" mode (enabled). Make sure that these are not accidentally toggled "OFF" (disabled).

1. Press BY or ST until display reads **UPPER SENSORS**

2. Press ◎, display reads **Sn 100 ON - PHONE TAMPER**

3. Press ST or BY to step through the upper sensors.

4. Enter 0 6, display reads **Sn106 ON - PHONE T, then** scrolls to read entire description (**PHONE TEST**).

5. Press ◎, display reads **Sn106 OFF - PHONE, the** ◎ button toggles it between **ON** and **OFF.**

PROGRAMMING NOTES

- Each time the MCU Program Switch is turned ON, the keypad is forced to "learn" the sensor numbers and features already programmed into the MCU memory. The more sensors and features that are programmed, the longer the learning process. Pressing the MCU Fast Forward Switch accelerates the "learning" process but is not necessary, as long as the entire memory sequences through at least once.

- When programming sensor names, notice that all locations (A-J) default to 00. Enter 00 whenever you want to delete a character or word from the sensor's name.

- Remember to add spaces (27) where necessary when programming individual characters (01-39) to create custom words. Each programmed space uses one location (A-J). It is usually necessary to program a space after every custom word.

- Spaces are automatically inserted (after the word) when programming fixed words (40-99) and do not use up any extra locations.

- Sensor numbers which are deleted using the Alpha keypad *will not keep their sensor name* when added back into the MCU memory.

- Sensor numbers which are deleted using a Wireless Keypad *will keep their sensor name* if added back to the MCU memory. When adding the sensor back into memory, use a Wireless Keypad.

PROGRAMMING MCU OPTIONS

Press BY or ST until the display reads **PROGRAM FEATURES**.

The System VI Options will appear in the sequence shown below.

If you don't need to program or change an option, press BY to cycle forward to the next option.

DISPLAY READS	PRESS	DISPLAY READS	ENTER	PRESS	DISPLAY READS	PRESS	PRESS
PROGRAM FEATURES	◎	FEATURE 00 ON	00-17	◎	FOR DESIRED SETTING THEN		BY To Continue
LEARN TOUCHPADS	◎	LEARN TP XX	00-14	◎	PRESS TP XX BYP		BY To Continue
DELETE TOUCHPADS	◎	DEL TP XX	00-14	◎	DEL TP XX DONE		BY To Continue
MCU TIME 1200	◎	SET TIME	0000-2359	◎	SET TIME DONE	To Review	BY To Continue
ACCESS CODE	◎	SET CODE	Any 4 Digits	◎	SET ACCESS DONE		BY To Continue
DURESS CODE	◎	SET DURESS	Any 2 Digits	◎	SET DURESS DONE		BY To Continue
ENTRY DELAY	◎	SET ENTRY	04-60 Seconds	◎	SET ENTRY DONE		BY To Continue
EXIT DELAY	◎	SET EXIT	04-60 Seconds	◎	SET EXIT DONE		BY To Continue
HOUSE CODE	◎	SET CODE	001-255	◎	SET CODE DONE	To Review	BY To Continue
LOOP DISABLED	◎	ENTER NUM	02-76	◎	ENTER NUM DONE	To Review	BY To Continue
LOOP IS NC	◎	LOOP IS NO		PRESS ◎	FOR DESIRED SWITCH STATE, THEN		BY To Continue
UNIT NUMBER	◎	SET UNIT	0-7	◎	SET UNIT DONE	To Review	BY To Continue
KEYPAD QUIET ON	◎	KEYPAD QUIET OFF		PRESS ◎	FOR DESIRED SETTING, THEN		BY To Continue
CHIME DISPLAY Y	◎	CHIME DISPLAY N		PRESS ◎	FOR DESIRED SETTING, THEN		BY To Continue

INSTALLING MULTIPLE ALPHA KEYPADS

CAUTION: The Alpha Keypad's default Unit I.D. Number is 7. All keypads must be assigned a different Unit I.D. Numbers before performing Send Text/ Load Text. ONLY ONE keypad should be connected when first programming MCU options and Sensor Text (Program Sensors). After initial programming is complete on the first keypad, set its Unit I.D. Number to 0, then add each additional keypad or hardwired bus devices one at a time and increment their Unit I.D. Numbers by 1. Perform the following steps before you perform Send Text/ Load Text procedures. No two Hardwire Bus Devices can have the same Unit I.D. Number.

1. Program the first keypad completely with all sensor designation information.

2. Press BY or ST on the programmed keypad until the display reads **UNIT NUMBER X** (where **X** = the programmable Unit I.D. Number 0-7). The power-up default Unit I.D. Number is 7 for the Alpha Keypad. IMMEDIATELY change the Unit I.D. Number of the programmed Alpha Keypad to a number other than 7, since additional unprogrammed keypads will power-up with their Unit I.D. Number defaulted to 7, and will cause Hardwire Bus Unit I.D. Number conflicts. This can result in non-operation of the Alpha Keypad. Make sure that other Hardwire Bus Devices (HIMs, HOMs, Hardwired wood operator terminals) do not have their Unit I.D. Numbers set to the same Unit I.D. Numbers as the Alpha Keypads. Note that the Hardwired Wood Operator Terminals can only use Unit I.D. Numbers 0-3.

3. After changing the programmed Alpha Keypads Unit I.D. Number to a number other than 7, set the MCU Program Switch (#2) to the "off" (down) position. Turn the MCU Power Switch to the "off" (down) position and connect the first additional Alpha Keypad in parallel with the programmed Alpha Keypad.

4. Turn the MCU Power Switch to the "on" (up) position. Both the programmed Alpha Keypad and the first additional Alpha Keypad displays will show every other character "on" for about four seconds, then perform two self-tests.

5. First, the displays will scroll the letters of the alphabet starting at the right of the display.

6. After the letter "Z" appears, the displays will show the message KEY TEST. Press any key and the display will show which key was pressed. For example, press FIRE and the display will show KEY TEST-FIRE. Press each key to verify its operation. After about five seconds of no key pressing, the display will show XXXX TEXT MEMORY OK (where XXXX= Software I.D.).

7. Turn the MCU Program Switch (#2) "on". The keypads' displays should read PRESS MCU FF SW. Press and hold the MCU Fast Forward Switch until you hear the piezo in the keypad display activate or wait for all programmed sensor numbers to cycle-through at least one time on the MCU display. After all sensors have cycled, the piezo in the keypad will activate. The Alpha Keypad displays should read PROGRAM MODE. The MCU display will continue to cycle through the programmed sensor numbers.

8. Now press ◎ on the first additional Alpha Keypad. The MCU displays should read PPP. The first additional Alpha Keypad display should read PROGRAM SENSORS.
9. IMMEDIATELY change the first additional Alpha Keypad Unit I.D. Number to one other than its default power-up Unit I.D. Number of 7. Observe the precaution of having a unique Unit I.D. Number for each Hardwire Bus Device.

10. If any additional Alpha Keypads are to be installed, follow the same procedure as you did to install the first additional Alpha Keypad. Remember that you must return the program Switch (#2) and the MCU Power Switch to their "off" (down) positions before connecting each additional Alpha Keypads. Also be sure to change the Alpha Keypad power-up default Unit I.D. Number from 7 to another number as you add each additional unit. You must go through the complete self-test/ PRESS MCU FF SW sequence each time you add an additional Alpha Keypad. Keep in mind that each Alpha Keypad draws 75 mA of power from the MCU, and that the MCU can only supply 500 mA. of power to all Hardwire Bus Devices combined. This will limit the number of Alpha Keypads to a maximum of **6**, with no other Hardwire Bus Devices allowed (6 x 75 mA = 450 mA).

11. When all of the Alpha Keypads have been added, then proceed to Send Text/ Load Text procedures. Leave the MCU in the Program Mode with PPP displayed.

SEND TEXT / LOAD TEXT

This feature will send all sensor message text from the programmed Alpha - Numeric Touchpad to any others connected to the MCU. Follow the procedure below.

1. Press BY or ST on the programmed Keypad until the display reads **SEND TEXT.**
2. Press ◎ , on the programmed Keypad, the display should read **SEND RDY.**
3. Press BY or ST on all unprogrammed keypads until they read **LOAD TEXT.**
4. Press ◎ on all unprogrammed keypads. The displays should read **LOAD.**
5. Press ◎ on the programmed keypad. The display will cycle all sensors beginning at 99 and ending at 00.
6. The unprogrammed keypad displays will cycle all sensors beginning at 99 and ending at 00.
7. When all information is sent, the programmed keypad display will read **SEND DONE** and the other keypad displays should read **000 ERRS.** If any keypad displays indicate errors, repeat steps 1-5. If any keypad displays still indicate errors, contact Tech Center at 404-888-2943.

OPTIONAL FEATURE NUMBERS

Some optional features power up OFF and must be programmed ON to activate the desired feature. Refer to your System VI Installation Manual (part no. 46-392) for a complete description of each feature.

*F00 EXIT DELAY SOUNDS
*F01 EXIT DELAY TOGGLE (silent exit delay, levels 4 and 6)**
*F02 EXTERIOR SIREN DELAY
F03 DIGITAL COMMUNICATOR
F04 LOW BATTERY REPORTS
F05 SUPERVISORY REPORTS
*F06 DIALER ABORT**
F07 DO NOT USE - THE ALPHA KEYPAD IS A HARDWIRE BUS DEVICE.
F10 SIGNAL STRENGTH INDICATOR
F11 INTERIOR SIREN SOUND
F12 RESTORAL REPORTING
F13 KEY SWITCH
F14 HOURLY PHONE TEST
F15 SENSOR TAMPER
F16 TROUBLE BEEPS
F17 DIRECT BYPASS TOGGLE

* Indicates feature is Defaulted "ON" at power-up
**Requires MCU EPROM dated 05/15/92 (Revision E) or later

PRE-PROGRAMMED SENSOR NAMES (Upper Sensor Numbers)

The following list shows the sensor numbers with names which *cannot be changed or edited.* The names will appear with the sensor number on the display as shown below.

100 A0 PHONE TAMPER
101 A1 TOUCHPAD TAMPER
102 A2 HARDWIRE UNIT
*103 A3 FIRE PANIC
*104 A4 POLICE PANIC
*105 A5 AUXILIARY PANIC
*106 A6 PHONE TEST
107 A7 OPENING REPORT
108 A8 CLOSING REPORT
*109 A9 DURESS
110 C0 FORCED ARMED
111 C1 AC FAILURE
*112 C2 LOW MCU BATTERY
*113 C3 MCU TAMPER
114 C4 AUTO PHONE TEST
*115 C5 RECEIVER TROUBLE
116 C6 MCU BACK IN SERVICE
*117 C7 FAILURE TO COMMUNICATE
*118 C8 NO PHONE LINE
*119 C9 PROGRAM CHANGE or TOUCHPAD

* Indicates feature is Defaulted "ON"

Operation

PROTECTION LEVELS

LEVEL 0 - CANCEL/DISARM 24 hour sensors ON, all other sensors off.

LEVEL 1 - SPECIAL Same as Level 0, plus Special Sensors ON.

LEVEL 2 - CHIME Same as Level 1, plus Exterior sensors chime when opened.

LEVEL 3 - HOME AWAKE 24 hour and Exterior ON. Delays ON.

LEVEL 4 - HOME ASLEEP Same as Level 3, plus Interior Groups 5 & 7 ON.

LEVEL 5 - AWAY DELAY All Exterior & Interior Sensors ON. Delays ON.

LEVEL 6 - AWAY INSTANT Same as Level 5 except no delays.

LEVEL 8 - PHONE TEST Tests communication from System VI MCU to Central Station.

LEVEL 9 - SENSOR TEST Tests communication from sensors to System VI MCU.

SYSTEM STATUS

The Protection Level number on the display will flash to indicate one or more of the following conditions exist:

ALARM CONDITION	BYPASSED SENSOR
ALARM IN MEMORY	TROUBLE
OPEN SENSOR	SUPERVISORY

The built-in piezo will emit the following tones when the system is armed or disarmed:

1 BEEP - Level 1	1 LONG, 1 SHORT BEEP - Level 6
2 BEEPS - Level 2	1 LONG, 2 SHORT BEEPS - Level 7
3 BEEPS - Level 3	1 LONG, 3 SHORT BEEPS - Level 8
4 BEEPS - Level 4	1 LONG, 4 SHORT BEEPS - Level 9
5 BEEPS - Level 5	1 LONG BEEP - Level 0

Press ST once to read condition messages. Press ST twice to read Alarm Memory messages and to hear current Protection Level *beeps*.

If the system is in alarm, pressing ST once will display the number and name of those sensors in alarm only.

ACCESS CODE ARMING/DISARMING

The four digit Access Code allows the user to arm the system to any protection level. The keypad display will show the protection level number and name after successful arming.

For example, arming to level 5 will look like this:

Enter 4 digit Access Code + 5.

Display reads **5 - OK TO EXIT NOW**, then, **AWAY DELAY**

Successful arming to level 4 will look like this:

Enter 4 digit Access Code + 4.

Display reads **4 - GOOD NIGHT**, then, **HOME ASLEEP**

To disarm the system:

Enter 4 digit Access Code + 0.

Display reads **0 - DISARMED**

QUICK ARM

The COMMAND button allows any user to arm the system without using the Access Code.

The COMMAND button cannot be used to lower the protection level or to perform a phone or sensor test.

The COMMAND button does not work during Entry Delay or Alarm conditions.

With the system in Level 0, use the COMMAND button to arm the system to any level from 1-6. For example, to arm the system to Level 4:

Enter ◎ + 4

Display reads **4 - GOOD NIGHT**, then, **HOME ASLEEP**

SENSOR PROTEST

A protest condition is intended to alert the user of a sensor which is not in a normal state, such as Open, Trouble or Supervisory. Sensors in any of these states during an arming attempt (using the Access Code) will protest the arming command.

During a protest condition, the piezo in the keypad will emit 6 rapid beeps continuously and the display will alternate flashing the current protection level and the protest condition. The display will scroll once through all sensor messages when protesting starts.

Pressing ST once will display the state of the sensor, the sensor number and its name. The user then has two options to consider:

1. Change the protesting sensors to their normal state and re-arm.
2. Bypass the protesting sensor(s).

Bypass means to leave a sensor in a non-protection mode while other parts of the system are still armed. Any bypassed sensor can be activated without triggering an alarm condition. There are two methods in which to Bypass sensors described below.

Indirect Bypassing allows the user to bypass only those sensor numbers upon an arming attempt. After pressing STATUS to determine the state of protesting sensors, the user must wait for the keypad to return to the *main protest display* before a successful Indirect Bypass attempt (step # 2).
Direct Bypassing allows the user to bypass a sensor after the system is armed.

BYPASSING SENSORS

Indirect Bypass (Bypass Protesting Sensors Only)
Example: Open sensor 40 - Bedroom Window.

1. With the system in Level 0, enter Access Code + 5
2. Display reads `0 - DISARMED` then `0 - PROTEST`
3. Press BY.
4. Display reads `5 - OK TO EXIT NOW`, then, `AWAY DELAY`
5. Press ST. Display will scroll the bypassed sensor number and name. The Protection Level number will flash to indicate there is a bypassed sensor.

Direct Bypass (Bypass A Sensor After Arming)
Example: All sensors closed.

1. With the system in Level 0, enter Access Code + 5
2. Display reads `5 - OK TO EXIT NOW` then `5 - AWAY DELAY`
3. Enter Access Code + BY. Display reads `BYPASS SN _ _`
4. For example: Enter 4 0
5. Display reads `BYPASS SENSOR 40` then `BYPASS SN DONE`
6. Display returns to `5 - AWAY DELAY`. The Protection Level number will flash to indicate there is a bypassed sensor.

KEYPAD PANICS

Each keypad panic is active 24 hours. Press and hold each panic for about one second to trip the appropriate alarm condition.

Press and hold [0]. Built-in piezo emits 6 rapid beeps, then slow ON OFF ON OFF siren sounds with Interior and Exterior sirens. Display reads **POLICE ALARM.**

To cancel alarm, enter Access Code + [0].

Press and hold [*]. Built-in piezo emits 6 rapid beeps, then fast ON OFF ON OFF siren sounds with Interior sirens only. Display reads **AUXILIARY ALARM**

To cancel alarm, enter Access Code + [0].

Press and hold [#]. Built-in piezo emits 6 rapid beeps, then a STEADY tone with Interior and Exterior sirens. Display reads **FIRE ALARM**

To cancel alarm, enter Access Code + [0].

PHONE TEST

1. With the system in Level 0, enter Access Code + [8]
2. Display reads **8 - PHONE TEST**
3. Between 1-2 minutes the display should read **0 - DISARMED**

If the display shows **C7 - FAILURE TO COMMUNICATE** or **C8 - NO PHONE LINE**, refer to your System VI Installation Manual for troubleshooting the problem.

SENSOR TEST

1. With the system in Level 0, enter Access Code + [9]
2. Display reads **9 - SENSOR TEST** (9 flashes).
3. As each sensor is tripped, the built-in piezo will beep once and the display will scroll the sensor number and its name.
4. After the MCU has responded to all sensors (including keypad panics), the display will read **9 - SENSOR TEST** (9 stops flashing).
5. Enter Access Code + [0]. Display reads **0 - DISARMED**

To perform a Signal Strength Sensor Test, you must first program feature F10 into the System VI MCU and then enter Level 9. Remember, once the Protection Level is changed after a Signal Strength Sensor Test, feature F10 is automatically deleted from the MCU memory.

OPERATION NOTES

Display

- The COMMAND button also acts as a dimmer control for the display. Press and hold the COMMAND button and the display will dim from 100% to 75%, 50%, 25% or blackout. Once you see the desired level, quickly release the COMMAND button.
- Once a dim level is set, pressing any button will illuminate the display to full brightness. After 15 seconds of no keypad activity, the display will return to the set dimmed level. For example: Pressing ST once will bring LEDs to full brightness and will display condition messages by pressing ST twice when the system is not in alarm, the LEDs will go to full brightness and the Keypad displays the status buffer contents (supervisory, alarms in memory, etc.), plus an audible indication of the protection level.
- If an alarm condition occurs while the display is dimmed, it will automatically return to the full brightness level and stay there until siren time-out or the user disarms the system and there are 15 seconds of no keypad activity.
- The Entry Delay time and Level 9 Sensor Test will also force the display to full brightness. After disarming and no keypad activity for 15 seconds, the display will return to the set dimmed level.
- If "CHIME DISPLAY" is turned "ON", any time the piezo beeps for any reason, the keypad display LEDs will go to full brightness for 15 seconds.
- If "CHIME DISPLAY" is turned "OFF", open perimeter sensors in levels 0, 1, 2 will cause the protection level to blink on the Alpha Keypad display.
- If "CHIME DISPLAY" is turned "ON", in addition to the blinking protection level LEDs, the Alpha Keypad display will scroll through the descriptive text for each open sensor when in level 2 only.

Buttons

- The buttons on the keypad are backlit for easy night viewing. After 15 seconds with no keypad activity, this lighting goes out. Pressing any key will illuminate the buttons.

Keypad Quiet Mode

- When set to ON the keypad's piezo will not emit Status or Entry Delay beeps. However, pressing any key will temporarily disable the Quiet Mode and allow the keypad to operate normally. After 15 seconds of no keypad activity, the Quiet Mode is restored.
- Quiet Mode should be set to ON only in sleeping areas to avoid disturbing people with Status beeps, Entry Delay beeps, etc. The Chime Display feature will not cause the keypad display to brighten when perimeter sensors are opened.
- The Alpha Keypad piezo features are independent of the MCU F11 feature. The Alpha Keypad piezo will beep regardless of the F11 setting. To eliminate status beeps in the Alpha Keypad, toggle the "KEYPAD QUIET" to "ON".

KEYPAD OPERATIONS

Silencing the siren while system is in alarm.

- To silence the siren when the system is in alarm, enter the access code. This will silence the siren. Wait at least 10 seconds before pressing any other digit(s), or the system will change protection levels. To cancel the alarm message, go to level 0.

- Exit delay beeps may be silenced by simply entering the Access Code.

Operating selected lights with your Alpha Keypad

- The System VI is designed to turn "ON" and "OFF" designated (X-10) light controls.

- Press ◎ then 0 if the light are "OFF", this procedure will turn them "ON". If the lights are "ON" this procedure will turn them "OFF".

Dialer abort

- By entering access code + 0, the dialer terminates the alarm call, unless it has already completed dialing with the RAMC receiver at the time. The Auto-Abort Feature is pre-programmed to "ON" with MCU EPROM Dated 05/15/92 (REV. E) or later.

FCC notice

This notice complies with FCC Rules Part 15. Operation is subject to the following two conditions:

1) This device may not cause harmful interference

2) This device must accept any interference that may be received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by Interactive Technologies, Inc. can void the user's authority to operate the equipment.