
1. Introduction

The Silent Knight Model 5128/29 is a low-cost slave communicator that meets the requirements for UL 864, NFPA 72 Central Station Fire Protective Signaling System and Remote Signaling.

NOTE: In this manual, a rectangle represents a key that you press. For example, “Press ENTER” means “Press the <ENTER> key.”

1.1 Features

- Compatibility with the Security Industry Association (SIA) reporting format and six other standard reporting formats.
- Four channel (zone) inputs for system status reporting: fire alarm (channel or zone 1); system trouble—channel 2 (or zone 2); supervisory—channel 3 (or zone 3); and miscellaneous—channel 4 (or zone 4).
- Optional two-number dialing with same or different account codes and reporting formats. Alarms, troubles, disables, and tests can be programmed to be reported to either or both numbers.
- Programmable as rotary-only or as Touch-Tone/rotary dialing.
- Built-in dual phone line-seizure circuit.
- Dual phone line monitor circuits.
- Transient voltage protection of phone lines.
- Built-in audible trouble buzzer with a loudness of 80 decibels (dB) at 30 cm (ie, 300 mm or, approximately, 12 inches).
- One relay output, programmable for alarm or trouble conditions.
- Light-emitting diodes (LEDs), visible from front of plastic enclosure, indicating: trouble condition (yellow); presence of DC power (green), phone line 1 trouble (red); and phone line 2 trouble (red).
- Easy, English-language programming using Model 5230 Remote Annunciator.
- Test features: Real-time programmable 24-hour communicator test; manual communicator test; automatic daily test (programmable from 5230 annunciator).
- Fuseless design, 24 VDC.
- Electrically erasable read-only memory (EEPROM) for nonvolatile storage of all programmable option data. Eliminates the need to reprogram the communicator if power is lost.
- Built-in watchdog circuit that monitors the operation of the 5128/29 and resets the communicator if a fault is detected.

(list continued on next page)

Features (continued from previous page)

- Active high, contact closure or direct monitoring input for monitoring control panel's primary power.
- Compatibility with many Underwriters Laboratories (UL) Fire Listed receivers. (See Section 1.3 for list.)
- Housed in plastic enclosure (8-5/8 x 4 x 1-3/8 inches) for mounting inside control panel. (Refer to the installation manual of the compatible control panel you are using for 5128 mounting instructions.)
- Model 5129 housed in metal enclosure (10 x 10) with AC monitoring transformer.

1.2 Optional Devices

The following accessories are available for use with the 5128/29:

- Model 5230 Remote Annunciator. Can be temporarily connected to the system for programming and troubleshooting only. Only one model 5230 can be used.
- Cable for 5230, P/N 130294.
- Model 9230 Step Transformer. Required for AC monitoring if the control panel used does not have a distinctive AC trouble output.

1.3 UL Fire Listed Receivers

The following UL Listed receivers are compatible with the 5128/29:

RECEIVER	FORMATS
Silent Knight Model 9000	BFSK14 BFSK23 FSK SK 3/1 SK 4/2 SIA8 SIA20
Osborn & Hoffman Quickalert	SK 3/1 SK 4/2 SIA8 SIA20 BFSK14 BFSK23
Ademco 685	SK 3/1 SK 4/2
FBI CP220	SK 3/1 SK 4/2
Radionics D6500	BFSK 1400 BFSK 2300

2. Built-in Features

For easy installation and solid reliability, the Model 5128/29 is designed with several features built directly into the unit.

2.1 Phone Line Monitors

The 5128/29 dialer has two phone line monitor circuits, which detect phone line faults by monitoring their voltages. These circuits feature a 40 to 90 second delay before a line fault is reported as a trouble. When a fault is detected for longer than this amount of time, the audible trouble signal will sound, the message will be displayed on the annunciator liquid crystal display (LCD) (if used), and the trouble will be reported to the central station.

NOTE: To comply with industry standards, this product is equipped with line seizure. This means that any time the system's dialer needs to communicate with the central station, it will NOT be possible to use any telephones that are on the same line(s) as the fire system. Normally this condition will last less than one minute, but could last for as long as 15 minutes under adverse telephone circuit conditions.

2.2 Watchdog Circuit

If the 5128/29 stops running, the watchdog circuit automatically detects the problem and attempts to resume normal operation by resetting the communicator. Each time the watchdog circuit resets the system, it also sounds the trouble signal.

2.3 Power Loss Reporting

The 5128/29 monitors AC power of the main fire control panel. It can monitor either a contact closure AC failure output or the control panel's main AC power input. If monitoring the control panel's main AC power, the step down transformer supplied with the 5128/29 must be used.

The AC report delay time can be programmed as 0 or in the range of 6 to 15 hours.

3. Preconnection Requirements

3.1 Telephone Requirements

1. If requested by the telephone company, the following information must be provided before connecting this device to the phone lines:
 - A. Manufacturer: Silent Knight Security Systems
 - B. Model Number: 5128/29
 - C. FCC Registration Number: AC6USA-75160-AL-E
Ringer equivalence: 0.1B
 - D. Type of jack (to be installed by the telephone company): RJ31X
2. This device may not be directly connected to coin telephone or party line services.
3. This device cannot be adjusted or repaired in the field. In case of trouble with the device, notify the installing company or return to:

Silent Knight Security Systems
7550 Meridian Circle
Maple Grove, MN 55369
612-493-6455
800-328-0103
4. If the Model 5128/29 causes harm to the telephone network, the telephone company will notify the user in advance that temporary discontinuance of service may be required. If advance notice is not practical, the telephone company will notify the user as soon as possible. The user has the right to file a complaint with the Federal Communications Commission if he or she believes it is necessary.
5. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice so that you can make the necessary modifications to maintain uninterrupted service.

3.2 FCC Warning

WARNING:

This equipment generates and uses radio frequency energy. If not installed and used in strict accordance with this manual, it may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference. If this occurs, the user will be required, at his or her own expense, to take whatever measures may be required to correct the interference.

3.3 UL Listings and Requirements

Model	Listed As:	NFPA 72 Chapter (for more information):
5128	Signaling device subassembly for use in Central Station Fire-Protective Signaling Systems.	4-3
	Remote Signaling Service.	4-5
5129	Signaling device for use in Central Station Fire-Protective Signaling Systems.	4-3
	Remote Signaling Service.	4-5

All UL installations must comply with the requirements described below. Refer to the control unit's installation manual for complete information.

5128 Requirements:

The 5128 must be mounted within a UL listed compatible fire control panel.

5129 Requirements:

The 5129 and the UL listed compatible fire control must be installed in the same room. All wiring between the 5129 and the UL Listed compatible fire control panel must be enclosed in conduit.

Requirements for both 5128 and 5129:

All electrical connections must comply with the ratings shown in section 4.4.2.

In a remote signaling installation, the control unit, slave dialer, and receiver at the remote site must all be UL listed for remote signaling.

4. Panel Description

CAUTION:

To avoid the risk of electrical shock, make sure the main control power is OFF when wiring. DO NOT apply power until wiring is completed following the procedures described in this manual.

4.1 Indicator Lights (in Cabinet Window)

Four LEDs appear in the window of the 5128/29 enclosure.

TROUBLE LED (yellow)

ON - A system trouble condition exists.

OFF - No trouble condition exists.

DC POWER LED (green)

ON - The panel is running on DC power.

OFF - The panel has lost all power.

PHONE LINE 1 LED (red)

ON - Phone line 1 has a trouble condition.

OFF - Normal condition.

PHONE LINE 2 LED (red)

ON - Phone line 2 has a trouble condition.

OFF - Normal condition.

4.2 Electrically Erasable Read-Only Memory (EEPROM)

The electrically erasable read-only memory (EEPROM) is used to store specific information such as system configuration, telephone numbers, reporting format, and account numbers. The EEPROM retains the programmed information even when all electrical power is removed. It can be programmed more than 1,000 times without losing its ability to store information.

4.3 DC Power

The 5128/29 operates on 18-40 VDC rectified power from the main fire control panel.

4.4 5128/29 Board Layout

4.4.1 Pin Connector Descriptions

PIN CONNECTOR	FUNCTION
P1	DC power
P2	Channel (zone) inputs
P3	AC monitor
P4	5230 connect (temporary, for programming and troubleshooting only)
P6	Not used

4.4.2 Wiring and Board Layout Diagram

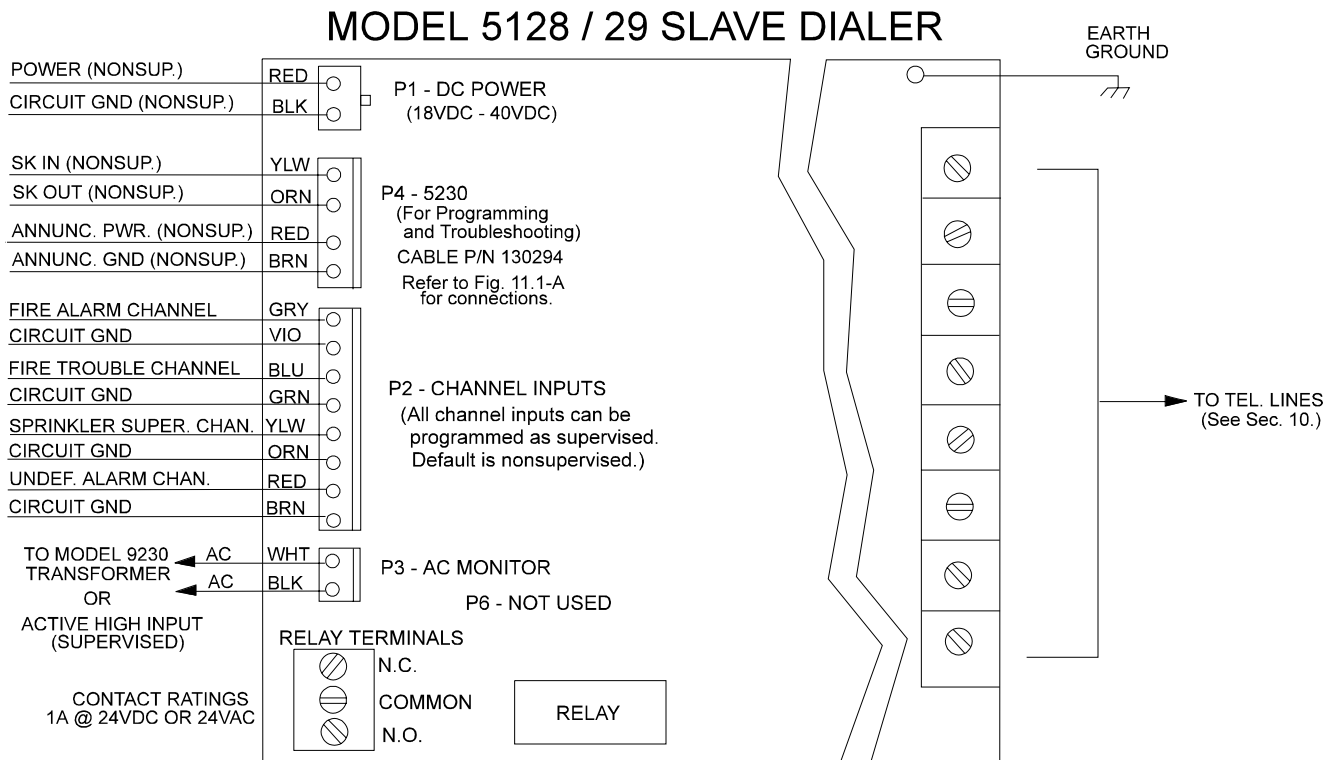


Figure 4.4.2-A: Model 5128/29 Wiring and Board Layout

4.4.3 Electrical Ratings

PRIMARY DC:	VDC: 18 - 40
	Current draw, standby 143 mA max. with annunciator attached 84 mA max. without annunciator
	Current draw, alarm 227 mA max. with annunciator attached 154 mA max. without annunciator
AC RATING:	45 mA max.
CHANNEL (ZONE) INPUTS:	0 - 30 VDC input 10 mA max. current draw
MAX. WATCHDOG RESPONSE:	50 seconds

5. Wiring Precautions

To avoid induced noise (transfer of electrical energy from one wire to another), keep input wiring isolated from high current output and power wiring. Induced noise can interfere with telephone communication, or even cause false alarms. Avoid pulling one multiconductor cable for the whole panel. Instead, separate the wiring as follows:

High current input/output: AC monitoring (if monitored directly)

Low current input/output: 24 DC power and channel (zone) wiring

Audio input/output: Telephone wiring

Wires from different groups should not be pulled through the same conduit. If you must run them together, do so for as short a distance as possible, or use shielded cable. Connect the shield to circuit ground at the panel. High and low voltages must be routed separately.

High frequency noise, such as that produced by the inductive reactance of a bell, can also be reduced by running the wire through ferrite shield beads or by wrapping it around a ferrite toroid.

NOTE: All wiring must be within the range of 12-18 American Wire Gauge (AWG). In UL installations, the 5128/29 must be located in the same room as the fire control panel.

6. Mounting the 5129

The 5129 cabinet should be installed in the same room as the control panel (wire in conduit). Mount the 5129 so it is firmly secured to the wall surface. When mounting on concrete, especially when moisture is expected, attach a piece of $\frac{3}{4}$ " plywood to the concrete surface before attaching the 5129.

6.1 Grounding the 5129 Cover

Before connecting power to the 5129, connect the earth ground wire to the base and cover. Make sure that the ring lugs are oriented properly. Figure 6.1-A shows the proper connection and orientation.

After the 5129's cover and base are attached, make a slight bend to the wire that is attached to the cover. This keeps the wire from getting caught between the cover and base when the cover is closed.

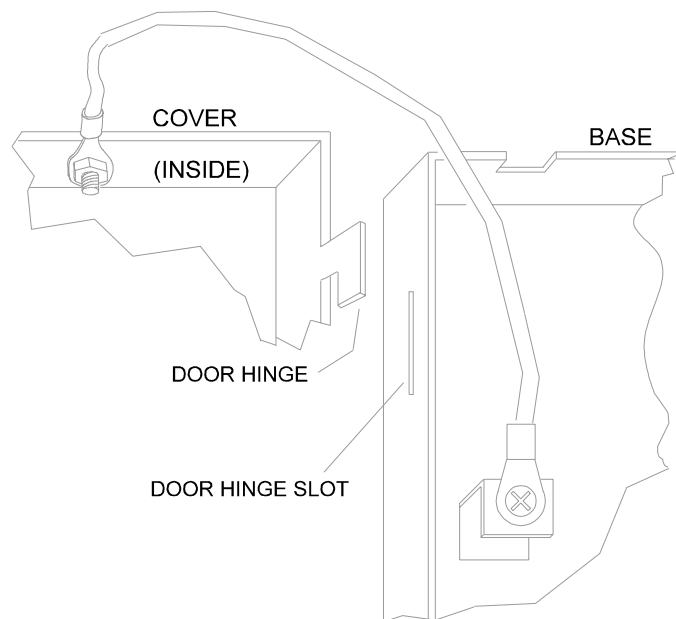


Figure 6.1-A: Connecting the Ground Wire

7. Channel (Zone) Operation and Wiring

The 5128/29 features four fully supervised channel (zone) inputs. They can be programmed to accept three types of inputs. Contact closure, active high voltage input, or active low voltage input.

CHANNEL 1 (ZONE 1): FIRE ALARM

CHANNEL 2 (ZONE 2): FIRE TROUBLE

CHANNEL 3 (ZONE 3): SPRINKLER SUPERVISORY

CHANNEL 4 (ZONE 4): UNDEFINED ALARM

7.1 Dry Contact

A short across the end-of-line resistor (EOL) causes an active channel (zone). An open loop causes a trouble condition.

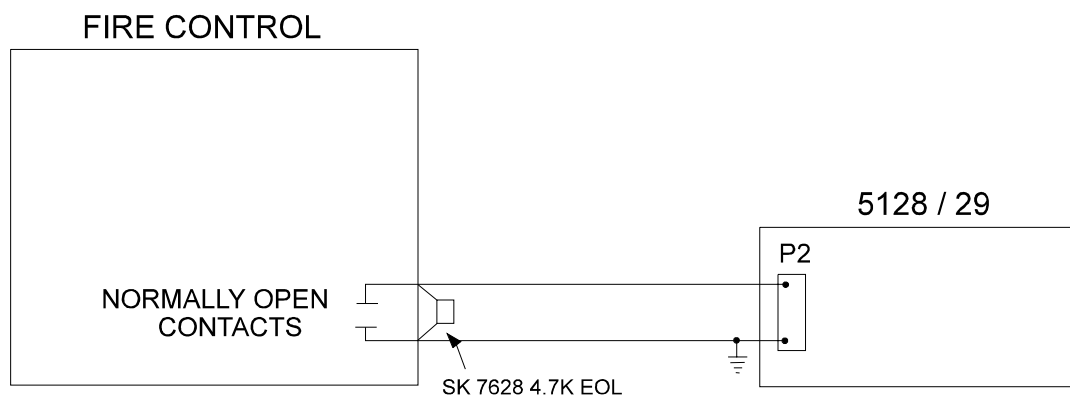


Figure 7.1-A: Contact Closure

7.2 Voltage Input (Active High or Active Low)

This diagram shows how to wire the 5128/29 for voltage input. The input must be from a compatible UL listed control panel.

Active High

A short across the EOL or an open loop causes a trouble condition. Pulling the input high (10 to 30 VDC) causes an active channel (zone). (At the time of this manual's printing, the Cerberus Pyrotronics System 3 with CSI-35 is the only UL Listed model available.)

Active Low

A short across the EOL or pulling the input low causes an active channel (zone). An open loop causes a trouble condition. (This information is provided for the future. At the time this manual was printed, no compatible UL listed control panel with an active low input is available.)

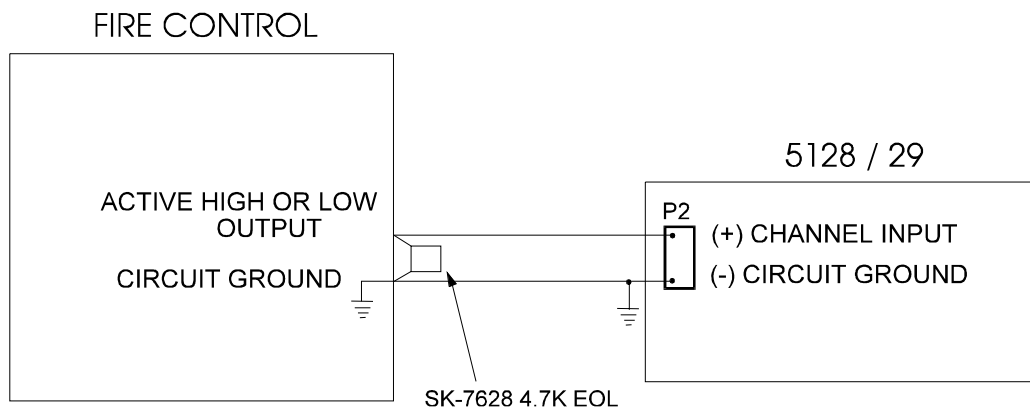


Figure 7.2-A: Active High or Active Low Voltage Input

8. AC Monitoring Operation and Wiring

The 5128/29 features an AC monitoring circuit. The communicator will report AC trouble when AC has been below 85 percent of nominal for a programmed amount of time (0 or 6-15 hours). AC can be monitored directly using a model 9230 step down transformer (see Section 8.3). AC monitoring can also be performed with a dry contact (active low) (see Section 8.2) or an active high voltage input (see Section 8.1).

8.1 Voltage Input—Active High

If the fire control panel has an active high AC trouble voltage output (10 to 30 VDC), attach this output directly to the AC monitor input on the 5128/29. (At the time of this manual's printing, the Cerberus Pyrotronics System 3 with CSI-35 is the only UL Listed model available.)

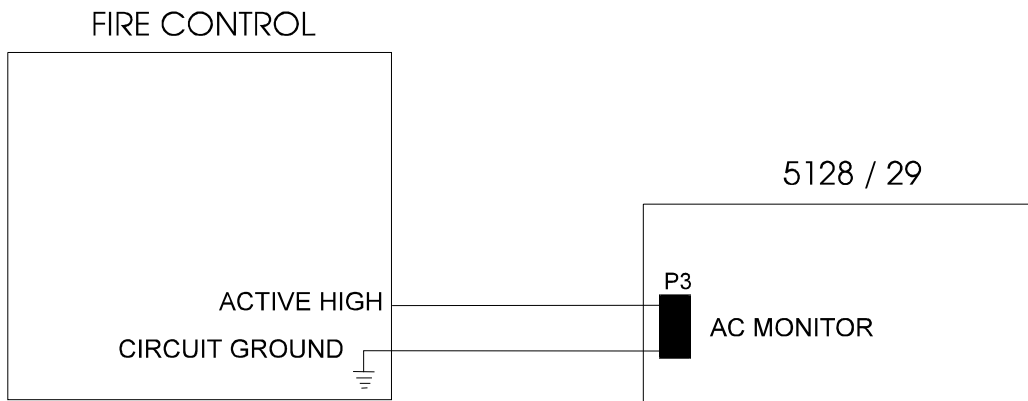


Figure 8.1-A: Active High Input

8.2 Dry Contact

If the fire control panel monitors its AC input and has a contact closure AC trouble output, apply 10 to 30 VDC to the AC monitor input of the 5128/29 through the normally closed contacts. Select “ACTIVE LOW” in programming for this configuration.

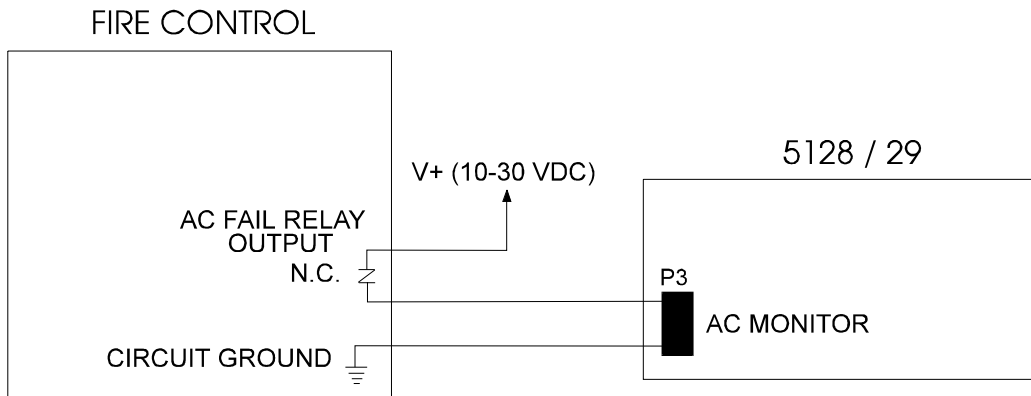


Figure 8.2-A: Dry Contact Input

8.3 Monitor AC

If the fire control panel does not have an AC trouble output, the model 9230 AC monitoring step down transformer must be used to allow the 5128/29 to monitor the fire control panel's 120 VAC power input. Wire the secondary side of the transformer directly into the 5128/29 AC monitor input.

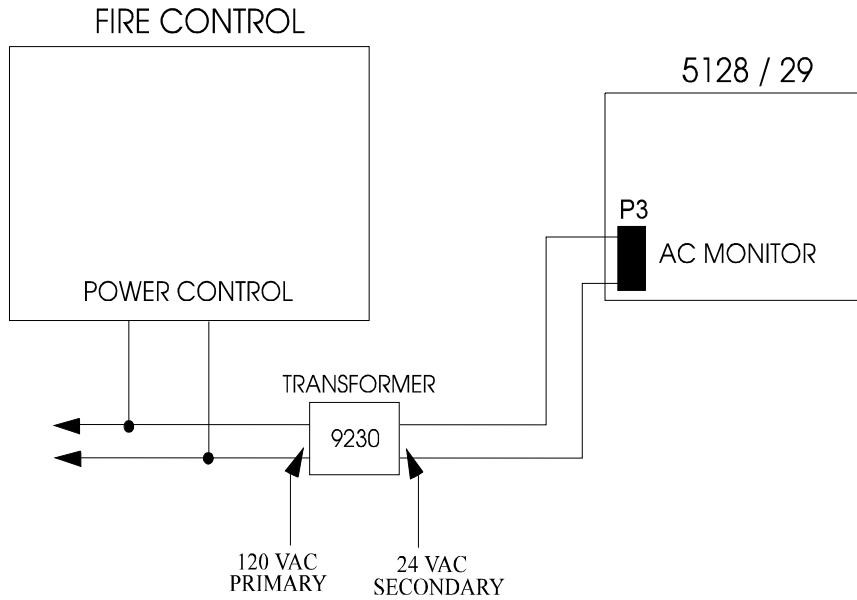


Figure 8.3-C: AC Monitoring Input

9. Relay Connection

The 5128/29 provides one relay output. You can connect the relay in normally open or normally closed configurations or both. The relay contacts are rated at 1 A, 24 VDC/24 VAC. See Figure 9-A for relay contact connections.

The relay can be used for either of the following:

- To activate for any alarm.
- To activate for system trouble conditions, loss of AC power, failure of the 5128/29 to communicate, and phone line troubles.

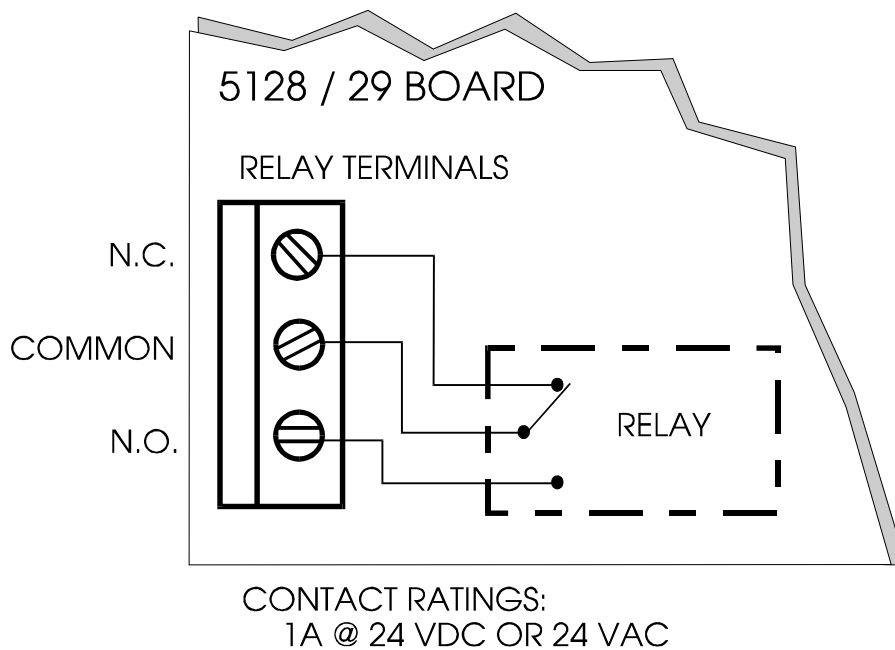


Figure 9-A: Relay Connection

10. Telephone Line Connection

To meet NFPA 72 Central Station Fire Protective Signaling and Remote Signaling Systems, both telephone lines must be installed. Connect the 5128/29 to the phone line using an RJ31X type phone jack as shown in Figure 10-A. The telephone company will install an RJ31X jack upon request.

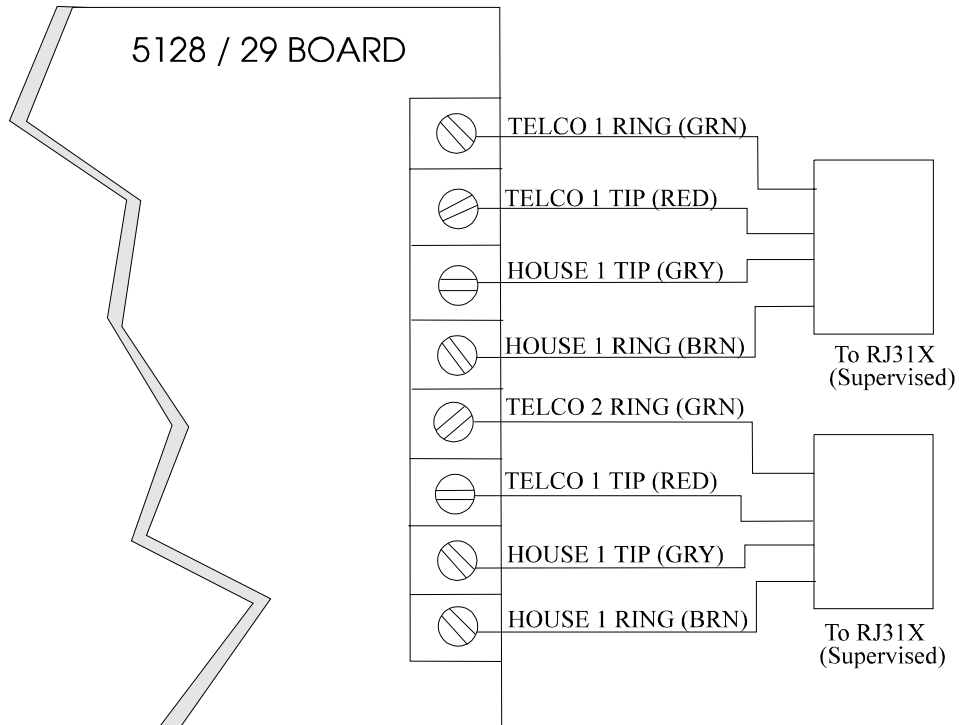


Figure 10-A: Telephone Wiring

11. Model 5230 Remote Annunciator

The optional Model 5230 Remote Annunciator can be temporarily connected to the 5128/29 to program the system. Note that only one 5230 can be used. If the 5230 is used, a cable, part number 130294, (ordered separately), is also needed.

Model 5230 key functions are described in Section 12; programming instructions are in Section 15.

NOTE: At the time this manual was printed, the 5230 is the only available method for programming the 5128/29.

11.1 5230 Installation

The table below shows how to make the connections. Figure 11.1-A below shows the location of the 5230 terminal block.

5230 TERMINALS	CABLE WIRE COLORS (P/N 130294)
1 GROUND	BROWN
2 POWER	RED
3 INPUT	ORANGE
4 OUTPUT	YELLOW

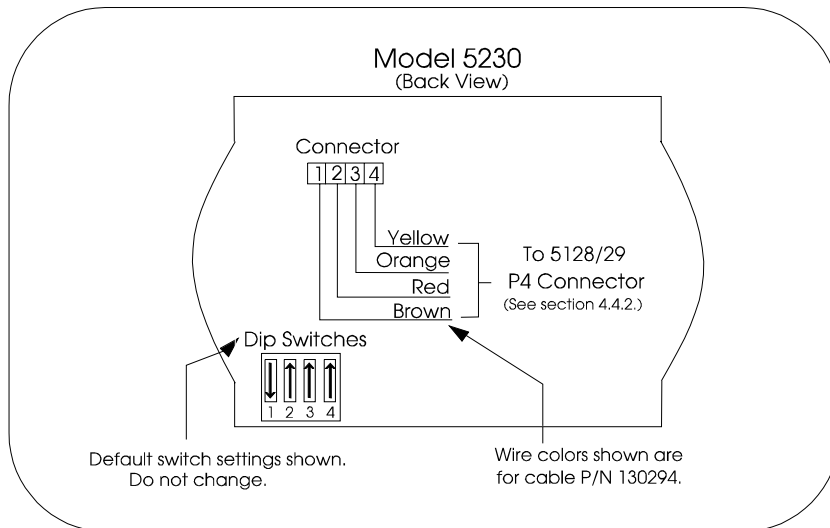


Figure 11.1-A: Model 5230 Back View

11.2 Display

The 5230 is equipped with an LCD (liquid crystal display) that displays English-language messages. If the 5128/29 is not being programmed, the LCD cycles through all messages that are applicable at the time, showing a different one every 1.5 seconds. The messages are listed in the troubleshooting section of this manual (Section 17).

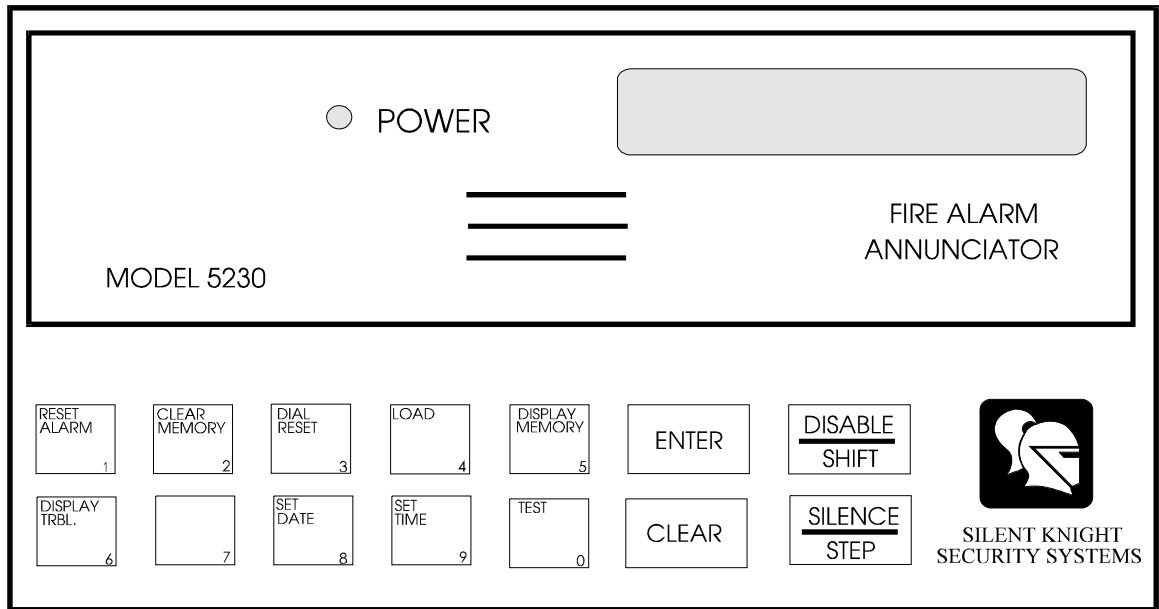


Figure 11.2-A: Model 5230 Remote Annunciator (Front)

11.3 Power LED Indicator

When DC power is being supplied, the POWER LED glows steadily. If DC power is not being supplied, the POWER LED is off.

11.4 Buzzer

An audio transducer buzzer is built into the 5230 annunciator. It produces short beeps to annunciate keystrokes. It also emits a long, high-pitched tone to indicate a trouble condition or when an annunciator function has been entered incorrectly.

12. Key Functions

The 5230 annunciator function keys are described below. The remaining keys are used only for entering digits. Code 0 refers to the installer's code (factory programmed as "5128"). Code 1 refers to the operator's code (factory programmed as "1111"). These two codes are described in Section 15, steps 11 and 12. Table 12-I explains each function and summarizes the keystrokes.

NOTE: The message, "TRY AGAIN", appears if you do not press any keys for five seconds while accessing a function, or, if you attempt to access a function before exiting from another function.

TABLE 12-I: Key Functions

FUNCTION NAME	EXPLANATION	KEYSTROKES
CLEAR	Corrects mistakes. If you enter a function incorrectly, the 5230 will emit a long, high-pitched tone.	<input type="button" value="CLEAR"/>
SYSTEM TEST	Tests the communicator by sending a test report to the central station.	<input type="button" value="0"/> <input type="button" value="ENTER"/> Code
CLEAR ALARM MEMORY	Clears all data from the alarm memory.	<input type="button" value="2"/> <input type="button" value="ENTER"/> Code
RESET DIALER	Aborts an in-progress call to the central station.	<input type="button" value="3"/> <input type="button" value="ENTER"/> Code
DISPLAY ALARM MEMORY	Displays events currently saved in the alarm memory. (NOTE: It is recommended that you clear the alarm memory after you display it.)	<input type="button" value="5"/> <input type="button" value="ENTER"/> Code
DISPLAY TROUBLES	Displays trouble conditions.	<input type="button" value="6"/> <input type="button" value="ENTER"/> Code
ENTER PROGRAMMING MODE	Enters the special programming mode that allows you to change programmable options.	<input type="button" value="2"/> <input type="button" value="7"/> <input type="button" value="ENTER"/> Code To exit programming mode, press <input type="button" value="STEP"/> <input type="button" value="STEP"/> <input type="button" value="CLEAR"/> <input type="button" value="CLEAR"/>
SET TIME	To set the time: 1. Press <input type="button" value="9"/> <input type="button" value="ENTER"/> 2. Enter Code 0. The SET MODE LED will turn on. 3. Enter the time in 24-hour military format (include leading zeros). EXAMPLE: To enter SET TIME mode and set the time for 3:30 PM, the keystrokes are: <input type="button" value="9"/> <input type="button" value="ENTER"/> <input type="button" value="1"/> <input type="button" value="5"/> <input type="button" value="3"/> <input type="button" value="0"/> <input type="button" value="ENTER"/> .	

12.1 Operating Modes

OPERATING MODE:		ALLOWED DURING ALARM:	CODE REQUIRED:
0	System test	NO	Installer's or Operator's
2	Clear alarm memory	NO	Installer's or Operator's
3	Dialer reset	YES	Installer's
5	Display alarm memory	NO	Installer's or Operator's
6	Display troubles	NO	Installer's or Operator's
9	Set time	NO	Installer's or Operator's
25	Troubleshooting	NO	Installer's
27	Program	NO	Installer's

13. Preprogrammed EEPROMS (electrically erasable read-only memory)

The Model 5128/29 provides a wide variety of features that can be selected for use depending on your needs. These features are programmed into an EEPROM (Electrically Erasable Programmable Read-Only Memory) chip. For descriptions of the options, see Section 15.

The 5128/29 is shipped with a factory-programmed EEPROM. The options that have been programmed are shown in the step programming form in Section 15.

Changing the Options

To customize the features to suit a particular installation, you can reprogram the options stored on the EEPROM using the Model 5230 Remote Annunciator. The EEPROM is an 8-pin integrated circuit chip that can be reprogrammed up to 1,000 times. For instructions on reprogramming the options, refer to Sections 14.1 through 15.

14. Step Programming—5230 Annunciator

This section describes the STEP PROGRAMMING mode (mode 27), using the 5230 Remote Annunciator. The basic operation of the 5230 is discussed in Section 14.1. The step programming procedure is explained in Section 15. (The temporary annunciator is connected at P4.)

<p style="text-align: center;">IMPORTANT: Connector P4 is used for temporary annunciator installation only.</p>
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14.1 Making Programming Selections

*NOTES: The system will automatically time out of programming mode, if no keys are pressed for four minutes. If you key in a function very quickly, you may get ahead of the LCD display. Wait for the appropriate message to be displayed before you press **ENTER**.*

TO:	KEYSTROKES:
ENTER PROGRAMMING MODE	<p>2 7 ENTER Installer's Code</p> <p>The first line of the LCD will show the programming option for Step 1, "ZONE ACTIVE." The second line will show the most recently programmed value for that option.</p>
PROGRAM AN OPTION	Type in your new data and then press ENTER .
SKIP A STEP	<p>Press ENTER.</p> <p>The data in the skipped step will not change. The LCD will show the next option.</p>
GO TO A SPECIFIC STEP	<p>Press STEP. The first line of the LCD will show "ENTER THE STEP #" and the current step number. Type in the new step number, then press ENTER. Line 1 of the LCD will show the option name; line 2 will show the programmed data for the step. (If you try to go to a step that does not exist, the display will go back to the previous step.)</p>
SELECT YES OR NO	Press any digit to toggle Yes and No.
SELECT AN OPTION FROM A MENU	Press the option number. (Option numbers appear next to the option name in Section 15.)
ENTER ALPHABETIC DATA OR NUMBERS LARGER THAN 9	<p>SHIFT 1 for A or 10</p> <p>SHIFT 2 for B or 11</p> <p>SHIFT 3 for C or 12</p> <p>SHIFT 4 for D or 13</p> <p>SHIFT 5 for E or 14</p> <p>Note that only the alphabetic characters appear on the display.</p>
CORRECT AN ERROR (If you have not pressed the ENTER key.)	Press CLEAR . Then type in the correct data and press ENTER .
LEAVE PROGRAMMING MODE AT ANY TIME	Press STEP STEP CLEAR CLEAR .

15. Step Programming Options

This section of the manual describes the programming options. You can use the Step Programming Form, which begins on the next page, to keep a record of how you have programmed an installation by checking off or writing in your choices in Column 4 of the chart. The factory-programmed defaults also appear in Column 4. Note that if the system was reprogrammed after it left the factory, the data you see on the display may be different from the data shown on the form. This form is perforated for your convenience.

5128/29 STEP PROGRAMMING FORM

STEP	OPTION	DESCRIPTION	YOUR CHOICE (D) = Default
1	ZONE ACTIVE	Select input type. 0 = Dry contact input 1 = Active high input 2 = Active low input	<input type="checkbox"/> Dry contact (D) <input type="checkbox"/> Active high <input type="checkbox"/> Active low
2	ZONE SUPERVISED	Yes = All zones supervised No = All zones unsupervised	<input type="checkbox"/> Yes <input type="checkbox"/> No (D)
3	ALARM CHANNEL (ZONE) INPUT TYPE	Alarm input 0 = Fire 1 = Sprinkler	<input type="checkbox"/> Fire (D) <input type="checkbox"/> Sprinkler
4	TROUBLE CHANNEL (ZONE) INPUT TYPE	Trouble input 0 = Fire 1 = Sprinkler	<input type="checkbox"/> Fire (D) <input type="checkbox"/> Sprinkler
5	SUPERVISORY CHANNEL (ZONE)	Supervisory input 0 = Fire 1 = Sprinkler	<input type="checkbox"/> Fire <input type="checkbox"/> Sprinkler (D)
<p>NOTES FOR STEPS 6-9: Channel (zone) response time speeds are not intended to be used as a smoke verification feature. Possible choices for channel (zone) response times are 0-3 (described below).</p>			
6	CHANNEL (ZONE) RESPONSE #1	0 = 0.3 to 0.4 seconds 1 = 3 to 4 seconds 2 = 15 to 20 seconds 3 = 30 to 40 seconds <i>NOTE: If you make a mistake and program a number other than 0-3, the resulting zone speed will be:</i> 4 = 0.3 to 0.4 seconds 5 = 3 to 4 seconds 6 = 15 to 20 seconds 7 = 30 to 40 seconds 8 = 0.3 to 0.4 seconds 9 = 3 to 4 seconds	<input type="checkbox"/> 0.3 to 0.4 sec (D) <input type="checkbox"/> 3 to 4 sec <input type="checkbox"/> 15 to 20 sec <input type="checkbox"/> 30 to 40 sec

5128/29 STEP PROGRAMMING FORM

STEP	OPTION	DESCRIPTION	YOUR CHOICE (D) = Default
7	CHANNEL (ZONE) RESPONSE #2	Factory programmed as "1" (3 to 4 seconds). Cannot be changed.	No selection.
8	CHANNEL (ZONE) RESPONSE #3	(See step 6.)	<input type="checkbox"/> 0.3 to 0.4 sec (D) <input type="checkbox"/> 3 to 4 sec <input type="checkbox"/> 15 to 20 sec <input type="checkbox"/> 30 to 40 sec
9	CHANNEL (ZONE) RESPONSE #4	(See step 6.)	<input type="checkbox"/> 0.3 to 0.4 sec (D) <input type="checkbox"/> 3 to 4 sec <input type="checkbox"/> 15 to 20 sec <input type="checkbox"/> 30 to 40 sec
10	RELAY #1	0 = Optional relay activates on alarm 1 = Optional relay activates on system trouble	<input type="checkbox"/> Alarm <input type="checkbox"/> Trouble (D)
11	INSTALLER'S CODE	Installer's code (4 digits). This code is needed to set the time and enter programming mode. Can also perform all the same operations as operator's code (see below).	_____ Default = 5128
12	OPERATOR'S CODE	Operator's code (4 digits). Can be used to silence annunciations and perform manual tests. (This code must be different from the installer's code.)	_____ Default = 1111
13	DIALER TYPE	0 = USA 1 = 9000 Direct (Do not use this option.) 2 = European (used for Europe and Asia)	<input type="checkbox"/> USA (D) <input type="checkbox"/> European
14	COMPUTER ENABLE	OPTION CURRENTLY NOT AVAILABLE. DO NOT USE.	No selection.
15	TOUCHTONE LINE 1	Yes = Phone #1 will try both TouchTone and rotary. No = Phone #1 will use rotary dialing only.	<input type="checkbox"/> Yes <input type="checkbox"/> No (D)
16	TOUCHTONE LINE 2	Yes = Phone #2 will try both TouchTone and rotary. No = Phone #2 will use rotary dialing only.	<input type="checkbox"/> Yes <input type="checkbox"/> No (D)
17	MUST REPORT #1	Yes = Reports must always be sent to central station phone #1. No = If another phone number is available first, no report to phone #1.	<input type="checkbox"/> Yes (D) <input type="checkbox"/> No
18	MUST REPORT #2	Yes = Reports must always be sent to central station phone #2. No = If another phone number is available first, no report to phone #2.	<input type="checkbox"/> Yes (D) <input type="checkbox"/> No
19	AC MONITORING	0 = Active high 1 = Active low 2 = Monitor AC	<input type="checkbox"/> Active high <input type="checkbox"/> Active low <input type="checkbox"/> Monitor AC (D)

5128/29 STEP PROGRAMMING FORM

STEP	OPTION	DESCRIPTION	YOUR CHOICE (D) = Default
20	AC LOSS HOURS	<p>_____ # of hours before AC power loss is reported (0 or 6 to 15). Use 6 to 15 for NFPA 72, Central Station Fire-Protective Signaling Systems and Remote Signaling Systems.</p> <p>To program a number larger than 9, use:</p> <p><input type="checkbox"/> SHIFT <input type="checkbox"/> 1 for 10</p> <p><input type="checkbox"/> SHIFT <input type="checkbox"/> 2 for 11</p> <p><input type="checkbox"/> SHIFT <input type="checkbox"/> 3 for 12</p> <p><input type="checkbox"/> SHIFT <input type="checkbox"/> 4 for 13</p> <p><input type="checkbox"/> SHIFT <input type="checkbox"/> 5 for 14</p> <p><input type="checkbox"/> SHIFT <input type="checkbox"/> 6 for 15</p>	<p>_____</p> <p>Default = 6</p>
21	# RINGS	OPTION CURRENTLY NOT AVAILABLE.	No selection.
<p>NOTES FOR STEPS 22 THROUGH 25.</p> <p>Steps 22-25 apply only if the 3/1 format is selected. The 3/1 format is an old format that does not make full use of 5128/29 reporting capabilities. The 3/1 sends only one digit or letter for an event. It does not send the zone number with the event. Use this format only if required by the receiver.</p> <p>If you are using the 3/1 reporting format, use Steps 22-25 to select the digit (0-9) that will be sent for each event.</p> <p>The letters A through E can be used if the receiver can accept them. Use <input type="checkbox"/> SHIFT <input type="checkbox"/> 1 for A, <input type="checkbox"/> SHIFT <input type="checkbox"/> 2 for B and so on.</p> <p>Do not duplicate any digits or letters. For example, do not use “0” for both alarm code (in step 22) and trouble code (in Step 23). Note that the 3/1 format does not distinguish between “0” and “A”, so do not use “0” if you’re using “A” and vice versa.</p> <p>See Section 16 for more information about the 3/1 format.</p>			
22	3/1 ALARM CODE	<p>Select the digit that will be transmitted to the central station for an alarm.</p> <p>(See “NOTES” above if you need more information.)</p>	<p>_____</p> <p>Default = 1</p>

5128/29 STEP PROGRAMMING FORM

STEP	OPTION	DESCRIPTION	YOUR CHOICE (D) = Default
23	3/1 TROUBLE CODE	3/1 code for trouble conditions. Default = 8 (See Step 22 "NOTES" if you need more information.)	_____ Default = 8
24	3/1 RESTORE CODE	3/1 code for restorals of alarm or trouble conditions. Default = 7 (See Step 22 "NOTES" if you need more information.)	_____ Default = 7
25	3/1 TEST CODE	3/1 code for reporting tests. Default = 9 (See "NOTES" above if you need more information.)	_____ Default = 9
26	ALARM #1 1ST	Yes = Report alarms to central station phone #1 first. No = Report alarms to central station phone #2 first.	<input type="checkbox"/> Yes (D) <input type="checkbox"/> No
27	TROUBLE #1 1ST	Yes = Report troubles to central station phone #1 first. No = Report troubles to central station phone #2 first.	<input type="checkbox"/> Yes (D) <input type="checkbox"/> No
28	TEST #1 1ST	Yes = Report tests to central station phone #1 first. No = Report tests to central station phone #2 first.	<input type="checkbox"/> Yes (D) <input type="checkbox"/> No
29	ACCOUNT #1	Account # for central station phone #1 (6 digits; leading zeros if shorter).	_____ Default = 105128
30	ATTEMPTS #1	Number of times phone line #1 will try to dial each central station acct. # before "DIALER FAILED" displays on the 5230 LCD. Range is 3 to 5.	_____ Default = 3
31	FORMAT #1	Select reporting format for phone line #1. Sec section 16 for descriptions of these formats. 0 = SIA8 1 = FSK81 2 = SK4/23 3 = BFSK14 4 = BFSK23 5 = SIA20 6 = 3/1 14 7 = 3/1 23	<input type="checkbox"/> SIA8 (D) <input type="checkbox"/> FSK81 <input type="checkbox"/> SK4/23 <input type="checkbox"/> BFSK14 <input type="checkbox"/> BFSK23 <input type="checkbox"/> SIA20 <input type="checkbox"/> 3/1 14 <input type="checkbox"/> 3/1 23

5128/29 STEP PROGRAMMING FORM

STEP	OPTION	DESCRIPTION	YOUR CHOICE (D) = Default
32	PHONE #1	<p>Enter the phone number for phone line #1 (up to 16 digits). The following special options and characters and numbers can be part of a phone number: pause; look for second dial tone; * (asterisk); and # (number or pound symbol).</p> <p>For “pause”, press SHIFT 1. (“A” displays on LCD.)</p> <p>For “*”, press SHIFT 2. (“B” displays on the LCD.)</p> <p>For “#”, press SHIFT 3. (“C” displays on LCD.)</p> <p>For “look for second dial tone”, press SHIFT 4. (“D” displays on LCD.)</p>	<p>_____</p> <p>[blank—no default]</p>
33	ACCOUNT #2	Account number for central station phone #2 (6 digits; leading zeros if shorter)	<p>_____</p> <p>Default = 205128</p>
34	ATTEMPTS #2	Number of times phone line #2 will try to dial each central station acct. # before “DIALER FAILED” displays on the 5230 LCD. Range is 3 to 5.	<p>_____</p> <p>Default = 3</p>
35	FORMAT #2	<p>Select reporting format for phone line #2. Sec section 16 for descriptions of these formats.</p> <p>0 = SIA8 1 = FSK81 2 = SK4/23 3 = BFSK14 4 = BFSK23 5 = SIA20 6 = 3/1 14 7 = 3/1 23</p>	<p><input type="checkbox"/> SIA8 (D) <input type="checkbox"/> FSK81 <input type="checkbox"/> SK4/23 <input type="checkbox"/> BFSK14 <input type="checkbox"/> BFSK23 <input type="checkbox"/> SIA20 <input type="checkbox"/> 3/1 14 <input type="checkbox"/> 3/1 23</p>
36	PHONE #2	<p>Enter phone #2 (up to 16 digits). (See step 32 for more information.)</p>	<p>_____</p> <p>[blank—no default]</p>
37	COMPUTER ACCOUNT	OPTION CURRENTLY NOT AVAILABLE.	
38	COMPUTER PHONE	OPTION CURRENTLY NOT AVAILABLE.	
39	TEST TIME	Enter the test report time using the 24-hour military format (include leading zeros).	<p>_____</p> <p>Default = 0130</p>
40	CURRENT TIME	<p>Set the current time using the 24-hour military format (include leading zeros).</p> <p><i>(NOTE: It is recommended that you check the system time every few months and reset it if necessary.)</i></p>	

16. Reporting Formats

The Silent Knight Model 5128/29 can transmit information in several different formats (including two types of BFSK and SIA formats). The type of format you select is determined by the type of receiver used at the central station (see Section 15, Step 31). Note that the SIA formats are recommended for use with the 5128/29. (All formats listed below are compatible with the Silent Knight model 9000 receiver.)

NOTE: Some formats do not distinguish between certain types of reports, such as between waterflow and fire alarms or between supervisory and trouble reports. Central station personnel must keep records of how the various zones are programmed at each account, so they can determine what condition is being reported for a particular zone.

FORMAT	DESCRIPTION
SIA8	Security Industry Association standard. Used with the Silent Knight model 9000 Digital Alarm Receiver and model 9004 or model 9004I SIA line card.
SIA20	Security Industry Association standard. Used with the Silent Knight model 9000 receiver, with a 9004I SIA line card and a 9200 CPU card, Revision E.
FSK81	High-speed, single-round format for use with older receivers. Transmits a 4-digit account number and a 2-digit alarm code at 20 pps.
SK4+2	Format used with receivers that can receive 4+2 at 20 pps and can send a 1400 Hz acknowledgment tone. Uses a 4-digit account number.
BFSK14	High speed, single-round format used with receivers that can receive (Radionics) BFSK and can send a 1400-Hz acknowledgment tone. Uses a 3-digit account number.
BFSK23	High speed, single-round format used with receivers that can receive (Radionics) BFSK and can send a 2300-Hz acknowledgment tone. Uses a 3-digit account number.
SK3/1 14	Used with older Silent Knight, Ademco, or Sescoa receivers that can receive at 20 pps and send a 1400-Hz acknowledgment tone.
Sescoa 3/1 23	Used with older Sescoa or other receivers that can receive at 20 pps and send a 2300-Hz acknowledgment tone.

The tables in the subsections that follow show the digits that are transmitted for each event reported by the 5128/29 dialer, and the message that is printed if the central station uses the Silent Knight model 9000 receiver. A separate table is shown for each format.

16.1 SIA Format

In the SIA8 and SIA20 formats, the 5128/29 transmits the English description shown in the first column of Table 16.1-I. At the central station, the 9000 receiver prints the English message shown in the second column. All zones can be programmed as FIRE, WATERFLOW, UNDEFINED, or SPRINKLER. Note that in Column 2 below “FIRE” is used as an example. The actual word printed will be whatever zone type has been programmed.

Table 16.1-I: 9000 Printout for SIA Format

5128/29	9000 PRINTOUT
ALARM 1-4	FIRE ALARM 1-4
ALARM RESTORE 1-4	FIRE ALARM RESTORE 1-4
TROUBLE 1-4	FIRE TROUBLE 1-4
TROUBLE RESTORE 1-4	FIRE TROUBLE RESTORE
AC LOST	AC TROUBLE 0
AC RESTORE	AC RESTORE 0
MANUAL TEST	MANUAL TEST 0
AUTOMATIC TEST	AUTO TEST
FIRE DRILL	MANUAL TEST
*DOWNLOADING SUCCEEDED	PROGRAMMING PASS 0
*DOWNLOADING FAILED	PROGRAMMING FAIL 0
PHONE LINE #1 TROUBLE	PHONE LINE TROUBLE 1
PHONE LINE #2 TROUBLE	PHONE LINE TROUBLE 2
DATA LOST	DATA LOST 0
PHONE LINE #1 RESTORE	PHONE LINE RESTORE 1
PHONE LINE #2 RESTORE	PHONE LINE RESTORE 2

**Message not applicable.*

16.2 Silent Knight FSK and 4+2 Formats

The Silent Knight FSK and 4+2 formats transmit a 4-digit account number and a 2-digit alarm code. When an event is reported in either of these two formats, the dialer transmits the two digits shown in the second column. The 9000 can be programmed to print either the two digits or the English message shown in the third column of Table 16.2-I. If you are using the 9032 line card, FSK2 and BFSK are the only formats that will report in English.

Table 16.2-I: 9000 Pringout for Silent Knight FSK and 4+2 Formats

5128/29	DIGITS TRANSMITTED	9000 RECEIVER ENGLISH LANGUAGE PRINTOUT
ALARM 1-4	**01-04	ALARM 01 - ALARM 04
ALARM RESTORE 1-4	**21-24	RESTORE 01 - RESTORE 04
TROUBLE 1-4	61-64	TROUBLE 01 - TROUBLE 04
TROUBLE RESTORE 1-4	71-74	AC TROUBLE
AC LOST	60	AC RESTORE
AC RESTORE	70	TEST
MANUAL TEST	30	TEST
AUTOMATIC TEST	30	TEST
FIRE DRILL	30	TEST
*DOWNLOADING SUCCEEDED	30	TEST
*DOWNLOADING FAILED	30	TEST
PHONE LINE #1 TROUBLE	31	PHONE LINE TROUBLE 01
PHONE LINE #2 TROUBLE	32	PHONE LINE TROUBLE 02
DATA LOST	39	DATA LOST
PHONE LINE #1 RESTORE	35	PHONE LINE RESTORE 01
PHONE LINE #2 RESTORE	36	PHONE LINE RESTORE 02

**Message not applicable.*

***“02” and “22” will never be reported. Channel/Zone 2 is a trouble indication only that will transmit only “62” and “72.”*

16.3 Radionics BFSK

In this format, the 5128/29 transmits in English with the event description shown in the first column of Table 16.3-I. At the central station, the Silent Knight model 9000 receiver prints the English message shown in the third column. In Radionics BFSK format, the 9000 does not print alarm type, just the words “ALARM,” “TROUBLE,” and so on.

Table 16.3-I: 9000 Printout for Radionics BFSK Format

DIALER CONDITION	DIGITS TRANSMITTED	9000 RECEIVER PRINTOUT
ALARM 1-4	10-40	ALARM 01 - ALARM 04
ALARM RESTORE 1-4	E1-E4	RESTORE 01 - RESTORE 04
TROUBLE 1-4	F1 -F4	TROUBLE 01 - 04
TROUBLE RESTORE 1-4	E1-E4	RESTORE 01 - 04
AC LOST	FA	TROUBLE 00
AC RESTORE	EA	RESTORE 00
MANUAL TEST	EE	RESTORE 0E
AUTOMATIC TEST	EE	RESTORE 0F
FIRE DRILL	EE	TROUBLE 0E
*DOWNLOADING SUCCEEDED	EF	TROUBLE 0F
*DOWNLOADING FAILED	FF	TROUBLE 0F
PHONE LINE #1 TROUBLE	FB	TROUBLE 0B
PHONE LINE #2 TROUBLE	FC	TROUBLE 0C
DATA LOST	FE	RESTORE 0E
RESTORE PHONE LINE #1	EB	RESTORE 0B
PHONE LINE #2	EC	RESTORE 0C

**Message not applicable.*

16.4 Silent Knight 3/1 and Sescoa 3/1 Formats

These formats transmit a 3-digit account number and a single-digit alarm code. These two formats greatly limit the amount of information that can be reported. To avoid confusion at the central station, standard alarm digits should be chosen. During programming, you select which alarm digits will be reported for different events. You can choose not to report restores or not to use zone numbers that might be duplicated by a supervisory transmission.

The second column of Table 16.4- I shows the programming step number in which each digit is programmed. The third column indicates that the 9000 prints only the digit (X) that has been programmed for that event—not an English message.

Table 16.4-I: 9000 Printout for Silent Knight and Sescoa 3/1 Formats

5128/29	9000 RECEIVER PRINTOUT
ALARM 1-4	CODE X = ALARM
ALARM RESTORE 1-4	CODE X = RESTORE
TROUBLE 1-4	CODE X = TROUBLE
TROUBLE RESTORE 1-4	CODE X = RESTORE
AC LOST	CODE X = TROUBLE
AC RESTORE	CODE X = RESTORE
MANUAL TEST	CODE X = TEST
AUTOMATIC TEST	CODE X = TEST
FIRE TEST	CODE X = TEST
*DOWNLOADING SUCCEEDED	CODE X = TEST
*DOWNLOADING FAILED	CODE X = TEST
PHONE LINE #1 TROUBLE	CODE X = TROUBLE
PHONE LINE #2 TROUBLE	CODE X = TROUBLE
DATA LOST	CODE X = TEST
PHONE LINE #1 RESTORE	CODE X = RESTORE
PHONE LINE #2 RESTORE	CODE X = RESTORE

*Message not applicable.

17. Troubleshooting

Section 17.1 describes zone troubleshooting mode. Section 17.2 contains a list of system trouble messages.

17.1 Accu-Zone™ Troubleshooting (Mode 25)

Accu-Zone™ troubleshooting mode (Mode 25) allows you to use the 5230 annunciator to determine if any input is active. A voltmeter is not necessary. Mode 25 can troubleshoot the four channels (or zones) and the AC Monitoring function.

The first line of the display will show the channel (zone) input number. The second line will show a high, low, and present channel (zone) measurement. The high and low values allow you to trip a zone momentarily, then come back to the annunciator and see the result. This procedure is also useful for locating intermittent connections.

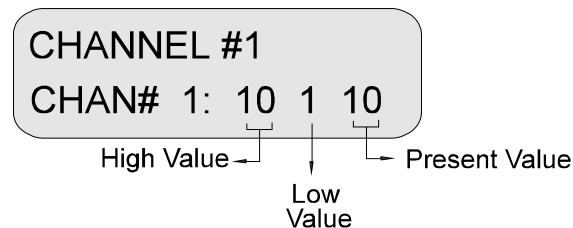


Figure 17.1-A: Example Mode 25 Display

Table 17.1-I (next page) explains how to use mode 25. Note that while you are using Mode 25, all alarms and troubles are disabled to allow you to trip channels (zones), adjust wiring, and so on.

Table 17.1-I: Using Mode 25

To	Press
Enter Mode 25	[2] [5] [ENTER] Code 0
Select the channel (or zone) you want to troubleshoot	1. [ENTER] (You must be in Mode 25.) 2. Channel # [ENTER] [1] = Channel 1 (or Zone 1) [2] = Channel 2 (or Zone 2) [3] = Channel 3 (or Zone 3) [4] = Channel 4 (or Zone 4) [5] = AC Monitoring function
Exit Mode 25	[STEP] [STEP] [CLEAR] [CLEAR]

Table 17.1-II: Typical Mode 25 Values

The readings shown in Table 17.1-II are typical for normal conditions, but readings outside the range may be acceptable depending on your application.

	Mode 25 Values				
	All Values Shown Are Approximate				
	Normal Condition		Active (Tripped)		Trouble
Valid Range	Typ. value	Valid Range	Typ. value		
Supervised Channel (or Zone) Input					
Active High	8 to 11	9	21 to 31	27	0 to 7 or 12 to 20
Active Low	8 to 11 or 21 to 31	9	0 to 7	1	12 to 20
Contact Closure	8 to 11	9	0 to 7	1	12 to 31
Non-Supervised Channel (or Zone) Input					
Active High	0 to 20	16	21 to 31	27	
Active Low	12 to 31	16	0 to 11	1	
Contact Closure	12 to 31	16	0 to 11	1	
Active High AC Monitoring	0 to 20	16	21 to 31	27	
Active Low AC Monitoring	8 to 31	16	0 to 7	1	
Direct AC Monitoring	0 to 11	1	12 to 31	16	

17.2 System Messages

Table 17.2-I shows the messages that could appear on the LCD of the model 5230 annunciator. You can connect a 5230 temporarily to allow for troubleshooting.

Table 17.2-I: Explanations of Display Messages

5230 MESSAGE	EXPLANATION/ACTION TO BE TAKEN
BAD EEPROM 5230 buzzer goes on and off.	Replace the EEPROM.
REPORTING	An event is being reported to the central station.
SYSTEM NORMAL	No trouble, alarm, or other condition exists.
AC LOW	AC power has been lost. Check connection to AC power source.
TROUBLE DIALER	The dialer has made the programmed number of attempts (programmed in steps 30 and 34) and has not been able to communicate with the central station. (This is a dialer failed condition.)
TROUBLE LINE 1	A trouble condition exists on phone line 1.
TROUBLE LINE 2	A trouble condition exists on phone line 2.
TROUBLE (ZONE 1-4)	A trouble condition exists in the indicated zone. If you need help locating the trouble, refer to Section 17.1 for information about zone troubleshooting mode (mode 25).
ALARM ZONE 1-4	An alarm condition exists in the indicated zone.
TRY AGAIN	A keystroke error has been made. Press CLEAR and enter the correct keystrokes.
Line 2: REPORTING	The system is reporting to the central station.
Line 2: CALLING COMPUTER	Message not explicable.
TIME?	The 5128/29 is in Time Set mode.
TROUBLE (line 1) TROUBLE ZONE # (line 2)	Sprinkler supervisory trouble.

NOTE: When step programming mode is in use and the 5230 annunciator powers up, the LCD displays messages that describe conditions currently in effect.

18. How to Contact Silent Knight

For questions and problems with Silent Knight products, contact Silent Knight Technical Support at 800-328-0103 (or 612-493-6455). To order parts, contact Silent Knight Sales at 800-446-6444 (or 612-493-6455).