INSTALLATION GUIDE

SCS2 Multi-Line Digital Receiver

version 1.3
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INTRODUCTION

The SCS2 is a multi-line, multi-format digital receiver for commercial fire and burglary. The basic unit consists of up to 15 individual line card modules (SCS2-200) and 30 telco lines connected to a SCS2-300. The SCS2 can decode a variety of popular and widely used communication formats. Refer to Appendix A, SCS2-200 Communication Formats for a list of the available communication protocols. The SCS2’s real-time clock and calendar stamps all information received with the time and date, and all information can be printed and/or forwarded to a computer. To ensure security, adjustment of the clock, calendar and other programming is password-protected.

SCS2-300
The SCS2-300 Central Processing Module oversees operation of the line cards. Along with its built-in keypad and LCD message screen, the SCS2-300 features one parallel printer port, and two COM Ports.

SCS2-200
Each SCS2-200 module can monitor two telephone lines. The line card module is equipped with a 256-event non-volatile memory buffer to record events and corresponding telephone numbers. Caller Source capability is built-in and telephone numbers can be printed out, sent to automation and stored in memory. Events and information stored in memory can be printed at any time. Each line card also features flash EPROM uploads through the Debug port for software upgrades or options programming.

SUPERVISION
The standby battery voltage and connections are supervised. The line cards are also continuously supervised to ensure uninterrupted communication with the SCS2-300. Any trouble conditions are reported on the LCD screens and sent to the printer and the computer.

The SCS2-200 line card module also verifies communications with the SCS2-300. In the event of a malfunction, the operator will be advised with a visual indication and the line cards will continue to function. Each line card will continue to receive information.

The printer is supervised for loss of power, off-line, paper out and other trouble conditions. The communication link to the computer through the RS-232 port is monitored by the supervisory “heartbeat” test transmissions.

COMPATIBILITY
Central station automation software packages such as M.A.S., DICE, SIMSII, S.I.S., GENESIS and MICROKEY support the SCS2 DMP interface. Compatibility with the automation software in a system used at a central station is intended to be handled under a separate UL 1981 software package and/or site certification evaluation.

SCS2-300 OUTPUTS/INPUTS
The SCS2-300 features three switched-negative outputs. One output labeled “OPTION” has a corresponding LED on the SCS2-300 front panel: the factory default programming slowly flashes the OPTION LED when the “OPTION” output is activated. Switched negative outputs are also provided for the Acknowledge and Trouble LEDs.

SYSTEM OVERVIEW

• Patented Caller Identification (Call Display) capability
• Patent pending DNIS identification
• Battery backed up RAM on each SCS2-200 line card module for programming and event buffers.
• Fast communication between line cards and SCS2-300
• Flash upload for software upgrades
• Up to 64 different options set (profiles per line)
• Patent pending Virtual configurations
• 3/1, 4/2 formats with or without parity, 4/1 without parity at 10, 14, 20, or 40 Baud
• 4/1, 4/2, 4/3, and 4/3 with checksum DTMF formats
• Optional* formats: 3-2, 4/1,4/2 extended
• Contact ID (DTMF) format
• Super Fast or High Speed DTMF format, with or without parity
• DTMF 4/1 Express format optional*, 4/2 Express format
• Westec
• FBI Super Fast format with or without parity
• RADIONICS Modem II, Modem IIE, Modem IIIa2 and BFSK formats
• SIA format: 110 and 300 Baud, tone and data acknowledgment
• SK FSK1, FSK2
• Any handshake frequencies by increment of 100 Hz from 300 Hz to 3400 HZ, Dual Tone, SIA FSK, Modem IIx, Double Dual Tone and ITI selected by configuration commands.
• Up to 8 different handshakes per profile with individual duration control.
• Large, easy to read 2-line, 16-characters-per-line, Liquid Crystal Display screen
• All modules function individually to help ensure uninterrupted operation during hardware or software upgrades
• Inputs on SCS2-300 for UPS supervisory
• 30 lines maximum per receiver
• 256-event memory buffer on each individual line card
• Real-time clock
• SCS2-300 features 16-bit microcontroller
• 1 parallel printer port and 2 serial RS-232 ports
• Programmable serial port configurations
• Programmable system functions: computer and printer
• Fast transmission of multiple alarms to the computer and printer to ensure operator’s quick response
• Continuous verification of the computer-receiver links with the “heartbeat” function
• Switched-negative outputs on SCS2-300 (special applications)
• AC-lost detection and standby battery supervision
• Low battery detection and automatic low battery disconnect to prevent deep-discharge damage to battery
• Operator Acknowledge option
• Telephone line supervision and reporting

*All formats noted as optional are selected using configuration commands.
VIRTUAL RECEIVER ARCHITECTURE
The most novel feature of the SCS2-200 is its ability to use the telephone company information delivered as DNIS (Dialed Number Information Service) or Caller ID. This allows the DMP Format Expert System to handle on the fly each received call. With this feature, dedicated line pool hardware is eliminated. Instead, the DNIS or Caller ID information allows dynamic options that set up virtual line pools to identify security formats and extend account numbers. Standard DNIS is supported up to 10 digits. Each dialed number should be assigned to a virtual receiver. Multiple Caller ID numbers can be assigned to a single virtual receiver. Each dialed number would formerly have been a line pool on conventional line cards.

NUMBER OF LINE CARDS SUPPORTED
The system will support a maximum of 15 line card modules concurrently connected.

APPROVALS
Agency Listings
- UL 864 Control Units for Fire-Protective Signaling Systems
- UL 1610 Central Station Burglar Alarm Units
This equipment should be installed in accordance with the requirements of NFPA72, NFPA70, UL827 and the local authority having jurisdiction.

UL MANUAL MODE
For UL manual mode, each event will activate the internal buzzer to be acknowledged manually. Each event will also be sent automatically to the connected printer. For Central Station applications, the signaling performance of each DACT (Digital Alarm Communication Transmitter) shall be manually tracked. Failure to receive a signal from a DACT over a 24 hour period shall be handled as a trouble signal.
SCS2 BACKPLANE CONNECTION DIAGRAM

SCS2-430 POWER CONNECTIONS

- Battery: 12V Rechargeable lead-acid 35Ah
- Transformer: 16 V AC, 175 VA
- Chassis GND connected to Earth GND

SCS2-430 CONNECTIONS

- Not used on SCS2-300
- Switched negative outputs: Maximum short circuit current 70 mA at 12V, limited by 150Ω 1W resistor.

CONNECTIONS FOR SCS2-420 LINE CARD EXPANSION

NEXT MODULE

NEXT MODULE
SCS2 UPS CONNECTION DIAGRAM

Listed power supply for protective signalling systems and/or listed burglar alarm power supply, as applicable.

110 VAC/18 VCC, 60 Hz, 175 VA TRANSFORMER

Supervised AC Input

Chassis

SCS2-430 POWER CONNECTIONS

SCS2-430 CONNECTIONS

110 VAC 60 Hz

12 V Battery (Supervised)

TO NEXT LINE MODULE

NOT USED

Serial Output to Computer

Parallel Printer Output

SCS2-430 POWER CONNECTIONS

Battery 12V Rechargeable lead-acid 35Ah

Transformer 16 VAC, 175 VA

Chassis GND connect to Earth GND

Not used on SCS2-300

+12V 450mA MAX

Not used on SCS2-300

Switched negative outputs. Maximum short circuit current 70 mA at 12V, Limited by 150Ω 1W resistor.
UNPACKING
Carefully unpack the receiver and inspect for shipping damage. If there is any apparent damage, notify the carrier immediately.

BENCH TESTING
It is suggested that the receiver be tested before actual installation; becoming familiar with the connections and setup of the unit on the workbench will make final installation more straightforward.

The following items are required:
- 16Vac, 175VA transformer
- 2 telephone lines
- One or more dialers or digital dialer control panels

Dialers and control panels using an optocoupler phone line interface will require a connection method providing a DC current for direct connection testing.

POWER UP
When power is applied, the receiver will beep and will indicate any trouble conditions on the LCD message screen. If the line cards do not have telephone lines connected, the SCS2-200 modules will beep and their “Line Fault” LEDs will FLASH.

Press the flashing [ACK] button to silence the buzzer. If there is no computer or printer connected, a trouble message will be displayed on the SCS2-300 LCD and the “ACK” light will FLASH. Press the [ACK] button to silence the SCS2-300 buzzer.

OPERATION WITH DEFAULT PROGRAMMING
Without any changes to the factory default programming, the receiver operates as follows:
- Answers incoming calls on the first ring
- Sends SIA FSK as the first handshake
- Sends 1400 Hz as the second handshake
- Sends double dual tone as the third handshake
- Sends 2300 Hz tone as the fourth handshake
- Sends Modem II tone as the fifth handshake
- Sends ITI, Modem IIE, Modem IIIa2 tone as sixth handshake
- The following formats can be manually selected: 3/2, 4/1, express, 4/2 extended, 4/2 checksum and 3/1 checksum.

Signals can be displayed on the debug output as they are received. The signals are then sent to the parallel printer and computer connected to serial port COM1. The default event codes described in the "SCS2-200 Library Decoding and Event Codes Table" will be used with the DMP Automation Communication Protocol to send signals to the computer, if connected.

If a computer is not connected, press the [ACK] button on the SCS2-300 module to silence the buzzer.

SERIAL LAPLINK CABLE FOR DEBUG/CONSOLE
For Debug/Console data transfer between a PC and the SCS2-200, a serial data transfer cable is used to connect either the DB9 male or DB25 male serial ports on a computer to the DB9 male serial (Debug/Console) port on the SCS2-200.

```plaintext
<table>
<thead>
<tr>
<th>Serial Laplink Cable</th>
<th>from DB9</th>
<th>from DB25</th>
<th>to DB9</th>
<th>to DB25</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>Receive - Transmit</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>Transmit - Receive</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>20</td>
<td>6</td>
<td>6</td>
<td>DTR - DSR</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>Ground - Ground</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
<td>20</td>
<td>4</td>
<td>DSR - DTR</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>RTS - CTS</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>7</td>
<td>CTS - RTS</td>
</tr>
</tbody>
</table>
```

DEBUG OUPUT
The debug output is another means of accessing the line card’s programmed options and diagnostics features. A null modem cable is required to connect by serial communication.

DEBUG CABLE CONNECTIVITY
Connect the female DB-9 connector to the serial port of a computer.

DEBUG SOFTWARE SETUP
Using WIN9X, point and click on the “START” button. Access “Programs” -> “Accessories” -> “HyperTerminal.” Once in the HyperTerminal window, point and click on “Hypertrm.exe” icon.

A connection description window should appear. A prompt should appear on the “Name” category. Type a name. Point and click on “OK.”

A phone number window should appear. Choose the “direct to” COM port required for connection and point and click on “OK.”

COM port properties windows should appear. The configuration should be:
- Bits per second: 19200
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

Point and click on the “OK” button after setting the configuration.

The HyperTerminal window should appear. Press any button. The debug menu will be displayed.

BUTTON COMMANDS
C Cold boot
D This button will initiate the download of a file to the line card.
O This button will enable the user to dump the current programmed options of the line card or set an option to a particular value.
V To view software version information

DOWNLOADING STEPS
Press the “D” button to initiate downloading of the binary file. The HyperTerminal will display:

```
Ready to download. 
CCCC
```

Point and click at “Transfer” on the HyperTerminal menu and access the “Send File” category (you also have right-click access with the mouse). The “Send File” window should appear. Change the protocol to “X-modem” and place the correct path and file name of the binary file to be uploaded. Point and click on the “Send” button and the downloading status window should appear. The line card will restart automatically after a successful upload.
INSTALLATION

MOUNTING THE RECEIVER
Install the SCS2 in a closed 19”/48cm rack or cabinet with a locking rear access door. Cover all unused spaces with blank metal plates. The LCD screens on the receiver are designed to be viewed below eye level. If the unit must be mounted where the screens are above eye level, angle the unit downwards to improve visibility. The following items can be supplied for a complete installation:

Stand-up Unit (61.25”/1.55cm tall up to 30 telephone lines)
Part # MLR2-CL
- Rack
- Door with lock and ventilation
- Blank plates 21”/53cm (2)
- Blank plate 5.25”/13.3cm (3)
- Screws
- Washers
- Cinch nuts
- FROST 16V/175VA transformer
  P/N FT3304
- AC utility box
- AC cable clamps (2)
- 8’/2.4m battery cables
- 3-Gauge conductor AC cable
- Secondary non-replaceable fuse, 15A, 125 VAC

NOTE: If 30 telephone lines are not used, cover each unused location with a blank plate.

Desk-mount Unit (28”/71cm tall up to 14 telephone lines)
Part # MLR2-CM
- Rack
- Louvered door back plate
- Blank Plate 1.75”
- Back Plate 7”/17.8cm
- Blank Plates 5.25 (4)
- Screws
- Washers
- Cinch nuts
- FROST 16V/175VA
- AC utility box
- AC cable clamp for 3/8”/1cm cable
- 8’/2.4m battery cable
- 18 gauge 3-conductor AC cable
- Secondary non-replaceable fuse, 15A, 125 VAC

NOTE: If 18 telephone lines are not used, cover each unused location with a blank plate.

PRINTER CONNECTIONS
Connect the parallel printer to the SCS2 printer output port using a standard parallel printer cable.

For UL Listed applications, the following UL Listed printers can be used with the SCS2:
- DMP CPU-1150
- DMP CPU DMP-206
- DMP SCS-PTR

IMPORTANT: Do not use a printer cable that has only 1 common ground wire.

COMPUTER CONNECTIONS
Connect the computer to the SCS2 RS-232 port using a serial cable to COM1. IMPORTANT: Do not use a null modem cable.

Receiver RS-232 25-pin connector
Computer RS-232 25-pin connector
Computer RS-232 9-pin connector
1 1
2 2 3
3 3 2
7 7 5

TELEPHONE LINE CONNECTIONS
With 6-pin modular cables, connect each line module jack (line 1 or 2) to its corresponding telephone line.

GROUNDING
For maximum resistance to static and electrical noise, the 19”/48cm rack frame should be connected to earth ground through the AC utility box.

POWER SUPPLY
Ensure that all electrical connections are made correctly. After verifying all connections, connect the RED and BLACK leads to a 12Vdc sealed rechargeable battery. Be sure to observe polarity when connecting the battery. When the battery is connected, test the system under battery power only. CAUTION: Connecting a positive (+) terminal to a negative (-) terminal may cause a fire and possibly serious personal harm.

For 4-hour standby a 12-volt 35 Ah rechargeable battery should be used in conjunction with an engine-driven power generator.

BATTERY CHARGING CURRENT
The maximum battery charging current is factory set at 1A.
**SCS2-200 DIGITAL RECEIVER**

**LINE CARD**

The SCS2-200 acts as an interface between the digital alarm transmitter and the SCS2-300. Different communication formats can be used to transmit the information. The main functions of the line cards are to continuously monitor the telephone line, receive calls from digital dialers or control panels, and to report alarms to the SCS2-300. In addition, if a line card is unable to communicate with the SCS2-300, each line card is capable of functioning independently. Each line card can record 256 different alarm messages and 255 Caller-ID telephone numbers.

**GENERAL INFORMATION**

The receiver is capable of processing signals from digital communicators in a variety of formats. The type of signal (alarm, trouble, restore, cancel and so on) can be printed.

**SCS2-200 FEATURES**

- Operator selection of communication formats and handshake priority
- 64 profiles per line card, up to 30 line pools.
- Flash Download for software upgrades.
- Records up to 256 messages.
- Records up to 256 Caller ID phone numbers. This feature helps to locate and identify the source of the device in communication and assists in troubleshooting.
- Multiple alarms are forwarded to the computer and printer through the SCS2-300 with minimum delay
- The SCS2-200 monitors the telephone line connection, and line faults will result in reports to the computer and the printer
- SCS2-200 automatically goes into standalone mode in case of SCS2-300 failure
- “Watchdog” timer continually monitors receiver operation
- “Cold boot” option allows receiver’s configuration to be reset to factory default programming
- DSP processing to reduce data receiving errors, and to help for weak and noisy signals
- Gain boost available to amplify weak signals
- Serial link for troubleshooting and easy software upgrade

**SCS2-200 CONTROLS**

Each SCS2-200 Module features 2 line cards. The LEDs and push buttons on the left side and the upper LCD are for Line Card 1. The LEDs and push buttons on the right side and the lower LCD are for Line Card 2.

Momentarily depressing and releasing a button will register as a single input or keystroke. Pressing and holding a button for approximately 1 second will register as a repeating input or keystroke. For example, to quickly scroll through a list of items, you press and hold the appropriate button, rather than pressing the button repeatedly.

**LCD (Liquid Crystal Display)**

Displays incoming data, programming and other information. The display is backlit for visibility in low light environments.

**AUDIO**

The “Audio” light comes ON when the receiver is in Audio mode. When ON, “listen-in” or “2-Way Audio” is in use. The “Audio” light will automatically turn OFF at the end of the timed period or when the [CANCEL] button is pressed.

**LINE FAULT**

The “Line Fault” light will come ON if the telephone line is disconnected. The “Line Fault” light will turn OFF automatically when the telephone line is restored.

**MESSAGE ERROR**

The “Message Error” light will come ON when faulty data is received (for example, if the round pair does not match, or if the checksum is incorrect). Press the [ACK] button to acknowledge the error; the “Message Error” light will be shut OFF.

**[ACK/FUNCTION] BUTTON**

Press this button to acknowledge an alarm in emergency manual mode. In the normal mode, press this button to access the line card menu.

**ALARM**

The “Alarm” light is located inside the [ACK/FUNCTION] button. The “Alarm” light will flash if an alarm is received. The “Alarm” light will be shut OFF when the alarm is successfully communicated to the SCS2-300, or when the operator acknowledges the alarm by pressing the [ACK/FUNCTION] button.

**CANCEL SELECT**

While on-line, press this button to drop the line. In normal mode, press this button to select the current item.

**WATCHDOG**

The “Watchdog” light will FLASH once every 4 seconds to indicate that line card operation is being monitored.
SCS2-200 Operating Mode

SCS2-200 STANDBY MODE
With the line card installed, apply power to the unit. This message will be displayed briefly on the top LCD:

**INITIALIZING**

**CONTRAST LOADING**

Next, the following message will be displayed on each line card in turn, starting with line card 1:

**PRESS ACK+SELECT**

**TO COLDBOOT**

The cold booting procedure is covered in detail below. The LCDs will then display:

**INITIALIZING**

**CONTRAST LOADING**

During this time, the line cards will load default options and code, and perform a low-level diagnostic to determine the status of the system.

Once the line cards are ready, they will display a message similar to the following:

**SCS2-200-Line #D**

<<-Line Fault->>

After these startup messages, the line card monitors the telephone line and the SCS2-300.

LINE FAULT
The SCS2-200 verifies the telephone line voltage every 10 seconds. The “Line Fault” light will come ON after two successive line verifications indicate irregular telephone line voltage. This message will be displayed:

**SCS2-200-Line #D**

<<-Line Fault->>

If the Line Check option is enabled, the following information will be transmitted to the printer and computer:

Printer: L01- 0000-PHONE-LINE-TROUBLETIME:DATE
(printer option set to 03)

Computer: ORRL[#0000 | NLTRRL]

**NOTE: The first RRL is subject to the line card length option. The second RRL is the receiver and line card number, both in HEX.**

If the Line Check option is disabled, the SCS2-200 will not send the report to the printer or computer. Refer to “SCS2-200 Programmable Features” for information on enabling the Line Check option.

When the line condition returns to normal, the “Line Fault” LED will be shut OFF.

If the Line Check option is enabled and the telephone line returns to normal, the following information will be transmitted to the printer and computer:

Printer: L01- 0000-PHONE-LINE-RESTORALTIME:DATE
Computer: ORRL[#0000 | NLRRRL]

**NOTE: The first RRL is subject to the line card length option. The second RRLL is the receiver and line card number, both in HEX.**

SCS2-300 ERROR; DISPLAY ALARM MESSAGES
If the SCS2-200 cannot detect SCS2-300 polling and there are no alarm events in the event buffer, this message will be displayed:

**SCS2-200-Line #D**

<<-SCS2-300 ERROR->>

If alarm messages cannot be sent to the SCS2-300 because of the error, the SCS2-200 will display the oldest message which has not been manually acknowledged. The “Alarm” light will FLASH and the sounder will beep if the “Mute Buzzer” option is programmed as [00], [02] or [03].

When a SCS2-300 error is present, each alarm must be manually acknowledged. Press the [ACK/FUNCTION] button to acknowledge the alarm and silence the line card sounder. If several alarms have been received but cannot be sent to the SCS2-300, they will have to be individually acknowledged; when all alarms are acknowledged, the line card sounder will be silenced.

Up to 128 alarm messages for the printer and computer will be retained in the SCS2-300 event buffer. When the event buffer is full, the oldest messages will be deleted as new events are recorded.

When the SCS2-300 error condition is corrected, the alarm messages in the event buffer will be transmitted to the SCS2-300.

KEEP LAST ALARM MESSAGE
The SCS2-200 may be programmed to leave the last alarm message on the display screen until a new message is received.
A typical alarm message is shown below:

0000- PHONE LINE TROUBLE 28

“0000” is the “internal” account code.
“28” is the event's location in the event buffer.

STANDBY MODE
When the line card is operating normally, this message will be displayed:

**SCS2-200-Line #D**

Unit in Standby

LINE CARD MENU MODE
When the unit is not on line, pressing the [ACK/FUNCTION] button will display the first function menu:

**PRINTER BUFFER**

ACK:menu SEL:sel
Press the [ACK] button to scroll through the menu items. Press the [SELECT] button to select the function displayed on the LCD screen. When a function is selected, press [ACK] and [SELECT] together to exit from the Menu mode. The SCS2-200 will automatically exit from the Menu mode if no keys are pressed for 30 seconds.

The following functions are available in the line card Menu mode:
- Display Printer Alarm Buffer
- Display Line Card Configuration
- Display Program Version
- Adjust LCD Contrast
- Adjust Backlight

**DISPLAY PRINTER AND CALLER ID ALARM BUFFER**

With this message displayed, press the [SELECT] button; the most recent alarm message will be displayed. If Option [12] CALLER SOURCE is selected, the corresponding Caller Identification will also be displayed.

Press the [SELECT] button to scroll backwards through alarm messages; press the [ACK] button to scroll forward through alarm messages.

Press the [ACK] button to display the alarm message:

```
3576-312
Alarm 001
```

“3576” is the Account Code.
In this example, a 4/3 communication format is used.
“3” indicates an alarm, while “12” is the zone number.
“Alarm” indicates an alarm.
“001” is the event’s location in the event buffer.

The event buffer can record up to 256 alarm messages and Caller Identifications. To print these messages, a print command can be sent from the SCS2-300; refer to “SCS2-300 Utility Mode” for information.

If no Caller Identification data was received from the telephone company, the following message will be displayed when the [ACK] button is pressed to display the Caller Identification screen:

```
1234 UnknownCall
```

If the Caller Identification is sent but with no telephone number, one of these messages could be displayed:

```
1234 PRIVATE NO
1234 UNAVAILABLE
```

If Option [12] is disabled, the Caller Identification feature will be bypassed; only the alarm messages will be displayed.

Press [ACK] and [SELECT] together to return to the Standby mode. If no keys are pressed, the SCS2-200 will automatically return to the Standby mode after 30 seconds.

**DISPLAY OPTIONS**

With this message displayed, press the [SELECT] button; the current Option Configuration will be displayed. Shown below is the first screen you will see, representing profile 0. Use the ACK button to scroll through all 64 profiles (0-63).

```
Select Profile 0
Ack: up SEL: sel
```

Press [ACK] and [SELECT] together to return to the Standby mode.

**DISPLAY PROGRAM VERSION**

With this message displayed, press the [SELECT] button; the date and the software version number will be displayed as shown below:

```
SG-SCS2-200 V1.30
Jan 19, 2001
```

Press [ACK] and [SELECT] together to return to the Standby mode.

**ADJUST LCD CONTRAST**

With this message displayed, press the [SELECT] button to adjust the LCD screen’s contrast. When the [SELECT] button is pressed, this message will be displayed:

```
Adjust CONTRAST
....
```

Press the [ACK] button to increase the contrast; press the [SELECT] button to reduce the contrast. The display will indicate the contrast level on the second line.

Press [ACK] and [SELECT] together to return to the Standby mode.

**ADJUST BACKLIGHT**

The [ACK] button is used to brighten the backlighting and the [SELECT] button is used to darken it.
SCS2-200 COLD STARTUP

From HyperTerminal, press “C” to perform a cold boot and select which channel to cold boot, either 1 or 2. The following will appear on the display:

```
COLD BOOTING
Channel X
```

\( X = 1 \) or \( 2 \)

[ACK] and [SELECT] must be pressed on power up to initiate cold boot.

```
COLD BOOT?
ACK: yes SEL: no
```

```
CHANGE LC NUMBER?
ACK: yes SEL: no
```

```
LINECARDNUMBER:OE
ACK: up SEL: down
```

COMMUNICATIONS IN PROGRESS

**Data Reception**

During data reception, a message similar to this will be displayed:

```
In Communication
1234 56
```

If valid Caller Identification information is received, a message similar to this will be displayed:

```
TEL:15145551212
1234 56
```

The SCS2-200 decodes all information received and stores the information in its event buffer. When a valid signal is received, the SCS2-200 sends a kissoff signal and transmits the decoded alarm signal to the computer and then to the printer through the SCS2-300.

Options [1D] and [1E] can be adjusted to allow the SCS2-200 to compensate for weak signals or noisy telephone lines; refer to “SCS2-200 Programmable Features” for information on programming these options.

The SCS2-200 will send each message it receives to the printer for review by the system operator. Two messages may be sent to the printer to indicate reception problems: “Invalid Report” and “Communication Fail”.

**INVALID REPORT MESSAGE**

When this problem is encountered, the following information is transmitted to the printer and the computer:

Printer: L01-0000-INVALID REPORT TIME:DATE

Computer: 0RRL[#0000 | NNYRRL]

**NOTE:** The first RRL is subject to the line card length option. The second RRL is the receiver and line card number, both in HEX.

This output indicates that a call was received, but no data was detected. The call may have been a wrong number, or the calling control panel was unable to connect with the receiver's handshake.

**CALLER ID**

If an Invalid Report or Communication Fail occurs, and Caller ID is enabled, the printer messages will be similar to the following:

```
Fault Data: "??????10 5551212"
Fault Call: "??????40 5551212"
```

Note that “?” represents the missing data; “5551212” represents the originating telephone number.

**Stopping Data Reception Manually**

To cancel communications between the SCS2-200 line card and the calling control panel, press the [CANCEL] button. Pressing the [CANCEL] button will hang up the line. This feature can be used to hang up on a control panel that is repeatedly sending alarms.
PROFILES

The SCS2-200 will load unique “profiles” in order to effectively communicate with control panels. A profile is a set of pre-programmed line card options unique for a particular “Calling ID Number” or DNIS number. The “Calling id” or “DNIS” will point to a particular profile, which will then be loaded into the line card at the beginning of each call.

Each SCS2-200 can have a maximum of 64 profiles. To change the options for a particular profile, utility software is provided. This software will allow the user/operator to edit the profiles.

STATIC OPTIONS

Option [01]: Line Card Number
The Line Card Number provides a virtual identification code for each SCS2-200 module. Hexadecimal numbers “01” to “1E” can be programmed in Option [01] to identify line cards. (Defaults are 0D and 0E)

Option [02]: Line Card Number Length
This option is used to determine how many digits from the line card number will be sent to the output. You also have the option of displaying the number in hex or decimal. Program option 02 with one of the following:

01 Send only one hex digit to the printer or computer output (If you have a 2 digit line card number, only the last digit will be sent to the output).
02 Send 2 hex digit line card number to the output.
03 Send 3 hex digit line card number to the output (leading zeros will be inserted prior to the line card number).
0A Send 2 digits receiver number in decimal. 3 digits line number in decimal.
0D Send 2 digits receiver number as programmed. Send 3 digits line card number in decimal.
0E Send 2 digits receiver number in Hex. Send 1 digit line card number as follows:

Line Card #  Send
1..F  1..F
10..1E  G..U

NOTE: When using the SCS2-200, the Line Card Number Length option should always correspond to the number of DNIS digits being received.

For example, if 5 digits are being received then the Line Card Number Length Option should be programmed to 3 so that 1RRLLL would be overwritten by the 5 digits of DNIS to become 1ddddd. (Default is 0E)

Option [04]: 2-Way Audio Activation Time
Option [04] determines how long, in 10-second increments, the 2-Way Audio function will be active once it is initiated. At the end of this time, the line card will hang up the line. Program a value from “01” to “FF” for 10 to 2550 seconds.

Three minutes (set option 04 to 12) is the recommended length of time for the 2-Way Audio activation time.

To disable the 2-Way Audio feature, program Option [04] as “00”.

NOTE: For UL Listed installations program time maximum 20 seconds. (Default is 00)

Option [05]: Pre-Handshake Delay
When the line card seizes the line, it will wait the time programmed at option [05], then send the first handshake. The time programmed (hex) at this location will be multiplied by 100 ms – e.g., 100 ms, 200 ms etc. The default setting is 0A, for 1 second.

NOTE: If DNIS is used, this time will not start until DNIS is received. (Default is 00)

Option [06]: Mute Buzzer Option
Operation of the line card’s buzzer may be programmed as follows:

00 Buzzer sounds for line fault, SCS2-300 error, or if an alarm occurs during a SCS2-300 error
01 Buzzer does not sound for any event
02 Buzzer sounds for audio, line fault, SCS2-300 error, or if an alarm occurs during a SCS2-300 error
03 Buzzer sounds for all status change conditions

(Note is 00)

Option [10]: Keep Last Message On
To have the last alarm message retained on the SCS2-200 display, enable this option with a setting of 01.

Option [11]: Hook-flash Enable/Disable
Enables or disables ability to hook-flash the telephone lines and determines its duration in increments of 10 ms.
If programmed as 00, the option is disabled. If set to anything else, you multiply the decimal equivalent of the hex value by 10ms and that is the duration.
For example, if a hook-flash time of 500 ms is wanted, program option [11] to 32 hex. 500 ms/10=50, 50 Dec=32 hex. (Default is 00)

Option [12]: Caller Source Selection
Option [12] allows the line card to receive Caller ID data or DNIS that is transmitted after the first ring on the telephone line.

The appropriate service must be available and requested from the telephone company for this feature to be operational.

00 Disabled
01 North American CID
• Private Call: An anonymous indication is received instead of the originating telephone number
• No call no.: An out-of-area or unavailable indication is received instead of the originating telephone number
02 British Caller ID (BABB hardware required)

04 – 0A Receive 04 –10 DTMF DNIS digits (Default is 00)

Option [13]: Caller Source to SG Computer
Option [13] allows the transmission of the Caller Identification or DNIS, to the computer output.
Program Option [13] as one of the following:

00 Do not send to the computer
01 4RRL protocol: send to the computer using North American Caller ID protocol
05 4RRL protocol: send to the computer using North American Caller ID protocol sending calling name to the computer if available.

NOTE: Option [12] must be enabled. (Default is 00)
Option [14]: Caller Source to printer
Option [14] allows the transmission of the Caller Identification or DNIS, to the printer output.
Program Option [14] as one of the following:
00  Do not send Caller Source to the printer
01  Send Caller ID to the printer
05  Send Caller Name and Caller ID to the printer if available.
Each alarm will print an extra line, printing the Caller Source.
NOTE: Option [12] must be enabled.  [Default is 00]

Option [19]: Fault Data Counter
This option allows the line card to control the rate at which fault call messages are generated.
00  Generate a fault call message for every 10 fault calls received
01  Generate a fault call message for every fault call received  [Default is 00]

Option [1A]: DNIS Sensitivity
NOTE: Do not change this option unless specified by a DMP technician.

Option [1C]: Busy Out
This option allows the line card to immediately seize the phone line in case of loss of communication with the SCS2 checksum error after download.
Program Option [1C] with one of the following:
00  The line is seized if any of the conditions mentioned above occurs
01  The line is not seized if any of the conditions mentioned above occurs  [Default is 01]

Option [1D]: Input Sensitivity
NOTE: Do not change this option unless specified by a DMP technician.  [Default is 3F]

Option [1E]: Output Levels
Default is C0 for –9.7db transmit level.
NOTE: Do not change this option unless specified by a DMP technician.  [Default is C0]

Option [1F]: Debug Output
00  Disabled
01  Enabled
This output when enabled will allow you to see the data received by the SCS2-200 on the HyperTerminal.
NOTE: Do not change this option unless specified by a DMP technician.  [Default is 00]

Option [27]: Caller ID DNIS
This option determines how many digits of Caller ID or DNIS the receiver will process.
0x  x is number of digits of DNIS or Caller ID to be processed (range from 1 to A hex).  [Default is 00]

Option [2A]: Hook Flash Delay
This option will control the duration ×100ms (maximum of 9500 ms) after dialing and before the receiver goes back on hook.  [Default is 00]

Options [2F]: Max On-Line time
On-line duration delay is built in to control runaway dialers. A duration delay from 01 to 99 minutes can be programmed. The receiver starts timing when it picks up the line and, when the delay expires, the receiver will hang up the call even if the dialer continues to send data. If the duration delay is programmed as 00, this feature will be disabled.  [Default is 00]

DEFAULT DYNAMIC OPTIONS
The SCS2-200 uses a unique DMP communication format to transmit data through the SCS2-300 to the central station computer. Event codes corresponding to alarm codes in 10 to 40 Baud formats and DTMF 4/1 to 4/3 formats are used in this unique format to enable the computer software to determine alarm types.

Options [30] - [3F]: 3/1, 4/1 Format Event Codes
The SCS2-200 will use the last digit of data received in 3/1 and 4/1 formats to determine the computer event code. The event code will then be transmitted to the central station computer. Refer to the SCS2-200 Decoding Library for the complete set of event codes used by the SCS2-200. In Sections [30] through [3F], program ASCII codes according to the Decoding Library. Values other than 20-7F (ASCII) will not be accepted. Note that the old value programmed in each Option will not be changed until a command with valid data is received.
Default settings are as below:
• 30-38: 41  • 3A: 41  • 3C: 43  • 3E: 52
• 39: 52  • 3B: 4F  • 3D: 5C  • 3F: 54

Options [40] - [4F]: 4/2 Format Event Codes Selection
The SCS2-200 will use the first digit following the account code in 4/2, 3/1 extended, 4/1 extended, or 3/2 formats to determine the computer event code. The event code will then be transmitted to the central station computer. Refer to the “SCS2-200 Decoding Library” for the complete set of event codes used by the SCS2-200. In Sections [40] through [4F], program ASCII codes according to the Decoding Library. Values other than 20-7F (ASCII) will not be accepted. Note that the old value programmed in each Option will not be changed until a command with valid data is received. Default settings are as below:
• 40-48: 41  • 4A: 41  • 4C: 43  • 4E: 52
• 49: 52  • 4B: 4F  • 4D: 5C  • 4F: 54
Options [50] - [5F]: 4/3 Format Event Codes Selection
The SCS2-200 will use the fifth digit of data received in 4/3 and 4/2 extended formats to determine the message and event code. The event code will then be transmitted to the central station computer. Refer to the “SCS2-200 Decoding Library” for the complete set of messages and event codes used by the SCS2-200.
In Sections [50] through [5F], program ASCII codes according to the Decoding Library. Values other than 20-7F (ASCII) will not be accepted. Note that the old value programmed in each Option will not be changed until a command with valid data is received. Default settings are as below:

<table>
<thead>
<tr>
<th>Option</th>
<th>Default Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>50: 54</td>
<td>54: 43</td>
</tr>
<tr>
<td>51: 41</td>
<td>55: 4F</td>
</tr>
<tr>
<td>52: 41</td>
<td>56: 54</td>
</tr>
<tr>
<td>53: 41</td>
<td>57: 41</td>
</tr>
<tr>
<td>54: 41</td>
<td>58: 41</td>
</tr>
<tr>
<td>55: 41</td>
<td>59: 52</td>
</tr>
<tr>
<td>56: 41</td>
<td>5A: 54</td>
</tr>
<tr>
<td>57: 41</td>
<td>5B: 43</td>
</tr>
<tr>
<td>58: 41</td>
<td>5C: 4F</td>
</tr>
<tr>
<td>59: 52</td>
<td>5D: 42</td>
</tr>
<tr>
<td>5A: 54</td>
<td>5E: 48</td>
</tr>
<tr>
<td>5B: 43</td>
<td>5F: 5C</td>
</tr>
</tbody>
</table>

Option [60]-[6F]: See APPENDIX D

Option [70]: Automation Common Event Code
Some central station software packages are unable to process the alarm using the event codes listed in the SCS2-200 Decoding Library. Where a central station monitors thousands of accounts belonging to different companies, the same reporting codes may have different meanings depending on the company. Because of this, the individual event codes in Options [30] through [5F] cannot accurately represent the alarm condition.
To overcome this, Option [70] may be programmed as follows:

Program Operation
00 Use Individual Event Codes to computer
20, 30-39, 41-5A Use Common Event Codes (space, 0-9, A-Z)
When using Common Event Codes, it is recommended that either hexadecimal code “5A” (ASCII “Z”) or hexadeciml code “41” (ASCII “A”) be used.
The “Space” character (Hex 20) can be used as the common event code with certain automation software packages to avoid account code database changes when switching over from other brand receivers to the DMP receiver. Note that Option [70] is ignored when using Modem formats, Contact-ID, ACRON, FBI Super Fast, BFSK, ADEMCO Super Fast and SK FSK1, 2 formats.

[Default is 00]

Option [71]: Library Select
Determine how to use Printer Words Options.
00 No printer words
01 Printer word options used for 1-digit reporting code formats only; other will use predefined (hard coded) library.
02 Printer word options used for 2-digit reporting code formats only; other will use predefined library.
03 Printer word options used for 3-digit reporting code formats only; other will use predefined library.
04 Printer word options used for 1-digit and 2-digit reporting code formats only; other will use predefined library.
05 Printer words options 60-6F used for 1-digit, 2-digit and 3-digit reporting code formats.

[Default is 04]

Option [74]: Equivalent Line
Equivalent line option is used when an incoming signal can be received on another receiver telephone line if the original line is busy. Information printed and/or sent to the computer will indicate that the information was received on the same telephone line. The receiver number does not change. Program 00 at option [74] to disable, or a number from 01 to 1E.

[Default is 00]

Option [75]: Receiver Number
The Receiver Number is used to identify the receiver to the central station software.
Refer to the manuals for any central station automation software being used to determine if there are any special requirements for this number. Also, check the numbers used for any other receivers in the station to ensure that numbers are not duplicated.

[Default is 01]

Option [76]: 3 Digit Account (3/x to 4/x)
Program Option [76] with one of the values listed below:

Value Function
00 All 3 digit account codes will have a leading space.
01 All 3 digit account codes will have a leading zero.
02 All 3 digit account codes will have a leading zero and all one digit event codes will have a leading zero.

[Default is 00]

Option [78]: Max Inter-digit Time
Certain old dialers may have difficulties communicating with the receiver. The SCS2-200 provides a possible solution by programming this option. This option should be left as a default and should be changed only on the recommendation of a DMP technician. When programmed as 00, the inter-digit time is determined by the Baud rate of the format being used; all other values are in 100 ms intervals.

Value Function
00 determined by Baud rate (default)
01 100 ms
02 200 ms
... etc.

[Default is 00]

Option [79]: Max Inter-burst
Certain old dialers may have difficulties communicating with the receiver. The SCS2-200 provides a possible solution by programming this option. This option should be left as default and should be changed only on the recommendation of a DMP technician. When programmed as 00, the inter-burst has a time of 100 ms, all other values are in 10ms increments.

Value Function
00 100 ms (default)
01 10 ms
02 20 ms
... etc.

[Default is 00]
Option [7A]: Account Codes to Activate 2-Way Audio
Option [7A] determines which 4 digit account codes will be able to activate the 2-Way Audio feature. Program the first digits of the desired account codes in Option [7A]. For example, to allow all account codes between 1000 and 2FFF to activate the 2-Way Audio function, program Option [7A] as “12.” To allow all account codes between 3000 and 6FFF to activate the 2-Way Audio function, program Option [7A] as “36.” Option [7A] may be used with any formats supported by the SCS2. To disable the 4 digit account range 2-Way Audio function, program Option [7A] as “00.”

**NOTES:** Option [04] must have a value other than 00.

In order to receive 2-way audio from an ITI panel, the account number needs to fall within the account range.

*For UL Listed installations Option [04] shall not have a value greater than 20.*

[Default is 00]

<table>
<thead>
<tr>
<th>Option [7A]</th>
<th>Option [7B]</th>
<th>Switch to Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>1-2</td>
<td>Yes Alarm code 2 falls within the code range 1-2.</td>
</tr>
<tr>
<td>1-1</td>
<td>00</td>
<td>Yes Account code 1234 falls within the range 1-1.</td>
</tr>
<tr>
<td>2-3</td>
<td>00</td>
<td>No Account code 1234 is outside the range 2-3.</td>
</tr>
<tr>
<td>00</td>
<td>3-4</td>
<td>No Alarm code 2 is outside the range 3-4.</td>
</tr>
<tr>
<td>1-2</td>
<td>3-4</td>
<td>No If both are programmed, both must be good and alarm code 2 is outside the range 3-4.</td>
</tr>
<tr>
<td>3-5</td>
<td>1-3</td>
<td>No Both must be good and account code 1234 is outside the range 3-5.</td>
</tr>
<tr>
<td>1-4</td>
<td>1-5</td>
<td>Yes Alarm code 2 falls within the code range 1-5, account code 1234 falls within the range 1-4.</td>
</tr>
</tbody>
</table>

Option [7B]: 3 Digits Account Codes to Activate 2-Way Audio
Option [7B] determines which 3 digit account codes will be able to activate the 2-Way Audio feature. Program the first digits of the desired account codes in Option [7B]. For example, to allow all 3 digit account codes between 200 and 3FF to activate the 2-Way Audio function, program Option [7B] as “23.” To allow all 3 digit account codes between 300 and 6FF to activate the 2-Way Audio function, program Option [7B] as “36.” Option [7B] may be used with any 3 digit account code formats supported by the SCS2. To disable the 3 digit account range 2-Way Audio function, program Option [7B] as “00.”

**NOTES:** Option [04] must have a value other than 00.

*For UL Listed installations Option [04] shall not have a value greater than 20.*

[Default is 00]

<table>
<thead>
<tr>
<th>Option [7C]: Alarm Codes to Activate 2-Way Audio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option [7C] determines the range of alarm codes which will activate the 2-Way Audio function. Program the first digits of the desired alarm codes in Option [7C]. For example, if all alarm codes beginning with 6, 7 and 8 are to activate 2-Way Audio, program Option [7C] as “68.” Option [7C] may be used with 10 to 40 Baud formats, DTMF 4/1, 4/2 and 4/3. Program Option [7C] as “00” to disable this function. The SCS2-200 will initiate audio by the account range, option [7A] and [7B] or by option [7C] ALARM CODE or a combination of all that are programmed. Example: 4/2 format with account code 1234, alarm code 2 on zone 3 (1234-23).</td>
</tr>
<tr>
<td>NOTES: Option [04] must have a value other than 00.</td>
</tr>
<tr>
<td>For UL Listed installations Option [04] shall not have a value greater than 20.</td>
</tr>
</tbody>
</table>

[Default is 00]

Option [7D]: Audio Zone Code
Audio zone code is the range of zone (last digit) codes that will activate audio. The most significant nibble tells us the lowest code and the least significant nibble tells us the highest zone that will activate audio.

**NOTES:** Option [04] must have a value other than 00.

*For UL Listed installations Option [04] shall not have a value greater than 20.*

[Default is 00]

<table>
<thead>
<tr>
<th>Option [7E]: Audio Event Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option [7E] is used to send a message to the computer and the printer to indicate that the line card has enabled the 2-Way Audio function.</td>
</tr>
<tr>
<td>00 Audio event to computer Disabled</td>
</tr>
<tr>
<td>01 Send SRRL[#AAAA][NLF][RRL][DC4] where S = protocol identifier RR = receiver number L = line card number AAAA = account number</td>
</tr>
<tr>
<td>02 Send 0RRL[#AAAA][NLF][RRL][DC4] where 0 = protocol identifier RR = receiver number L = line card number AAAA = account number</td>
</tr>
</tbody>
</table>

**NOTES:** Option [04] must have a value other than 00.

*For UL Listed installations Option [04] shall not have a value greater than 20.*

[Default is 00]
Option [7F]: Enable Audio Format
This option will give the user the ability to enable and
disable audio for selected formats. A ‘1’ in the formats bit
position will enable the format for audio. A ‘0’ in the formats
bit position will disable audio for the format.
Bit 0 3 Digit pulse formats.
Bit 1 4 Digit pulse formats.
Bit 2 DTMF formats.
Bit 3 Contact ID
Bit 4 SIA Level 1, 2 and 3
Bit 5 Modem II
Bit 6 ITI
Example: If the user wants Audio to work only for 3 digit
pulse and SIA formats, option 7F would have to be programmed
as 11 hex which enables bit 0 and bit 4.
**NOTE:** Option [04] must have a value other than 00.
For UL Listed installations Option [04] shall not have a
value greater than 20.

[Default is 00]

Option [80]: Kissoff to Hang-up Time
This option determines the delay between kissoff and the
release of the line.
The hex value programmed at this location will be converted
to decimal and then multiplied by 100 milliseconds to generate
the delay.
For example:
Option 80 = 0A hex = 10 decimal * 100 ms = 1000 ms = 1
second delay.
Option 80 = 28 hex = 40 decimal * 100 ms = 4000 ms = 4
second delay.

[Default is 1E]

Options [81] through [88]: Handshake Selection
The SCS2-200 is a multi-format receiver capable of sending
several handshakes to a dialer. Often it is important which
handshake is sent first. Program Options [81] through [88]
according to your applications.

<table>
<thead>
<tr>
<th>Handshake</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>No handshake</td>
</tr>
<tr>
<td>0B</td>
<td>Modem II handshake</td>
</tr>
<tr>
<td>0C</td>
<td>SIA FSK handshake</td>
</tr>
<tr>
<td>0D</td>
<td>Westec</td>
</tr>
<tr>
<td>0E</td>
<td>Modem IIIE, Modem IIll and ITI handshake</td>
</tr>
<tr>
<td>0F</td>
<td>DMP handshake</td>
</tr>
<tr>
<td>1D</td>
<td>Single Dual tone handshake</td>
</tr>
<tr>
<td>2D</td>
<td>Double Dual tone handshake</td>
</tr>
<tr>
<td>FC</td>
<td>Full duplex SIA FSK</td>
</tr>
</tbody>
</table>

All other frequencies can be used by programming the first
two digits. For example:
23 = 2300 Hz, 18 = 1800 Hz, 14 = 1400 Hz, 10 = 1000 Hz
Default settings are as below:
• 81: 14
• 83: 2D
• 85: 0E
• 87: 00
• 82: 23
• 84: 0C
• 86: 0B
• 88: 00

**Note:** For Westec formats the handshake and kissoff
duration time must be set to 600 ms.

Option [89] to [90]: Handshake and Kissoff Duration
Some control panels may require different handshake duration.
Each unit has increments of 100 ms, from 100 ms to a
maximum of 6.3 sec. Program options 89 to 90 to the desired
duration respective to the corresponding handshake options
81-88.
00 1 sec (default)
01 100 ms
02 200 ms
03 300 ms
04 400 ms
05 500 ms
06 600 ms
07 700 ms
08 800 ms
09 900 ms
0A 1 sec
0B 1.1 sec
0C 1.2 sec
...
3F 6.3 ms

**NOTE:** These options will only affect steady tone hand-
shakes.

[Default is 00]

Option [91]: Inter Handshake Duration
The SCS2-200 line card will usually wait for signals from the
control panels for 4 seconds before sending the next handshake,
if there are no signals received. In certain applications,
control panels can not wait long enough to get their own
handshake, especially if the handshake is programmed as
the fifth or later handshake.
Program Option [91] with one of the following:
00 4 second interval (default)
01 1 second interval
02 2 second interval
03 3 second interval

[Default is 00]

Option [95]: 5 digits pulse
The SCS2-200 cannot distinguish between 4/1, 3/2 and 3/1
with checksum because all of them contain a total of 5
digits. Therefore, this option must be programmed to inform
the SCS2-200 which of the 3 formats may be used.
00 select 4/1 format (default)
01 select 3/2 format
02 select 3/1 with checksum format

**NOTE:** The printer messages for the 3-2 format are the
same as those used for the 4/2 format.

[Default is 00]
Option [96]: 4/1 Extended Format
Program Option [96] as “01” to combine 2 round pairs of 4/1 extended format into 4/2 output for reporting to the computer and the printer.
For example, with Option [96] enabled, the security control panel may transmit the following information:
1234 3
1234 3
3333 1
3333 1
The SCS2-200 will interpret this information as: 1234 31
This format is not recommended as it occupies the telephone line for long periods of time. The default setting for Option [96] is “01”; when programmed as “00,” the option is disabled. [Default is 00]

Option [97]: 4/2 Extended Format
Program Option [97] as “01” to combine 2 round pairs of 4/2 extended format into 4/3 output for reporting to the computer and the printer. Program one of the following:
00 4/2 Extended format data is not combined
01 The panel sends: 1234 05
1234 05
0505 16
0505 16
The SCS2-200 will interpret this information as 1234 516, or the panel sends:
1234 03
1234 03
3333 01
3333 01
The SCS2-200 will interpret this information as 1234 301.
NOTE: The default setting for Option [97] is “00”; when programmed as “00”, the option is disabled. [Default is 00]

Option [98]: 3/1 extended format
Program Option [98] as “01” to combine 2 round pairs of 3/1 extended format into 3/2 output for reporting to the computer and the printer. (For M.A.S. software users, the option should be programmed as “02.”)
For example, with Option [98] enabled, the security control panel may transmit the following information:
123 3
123 3
333 1
333 1
The SCS2-200 will interpret this information as: 123 31
The default setting for Option [98] is “01”; when programmed as “00”, the option is disabled. [Default is 00]

Option [99]: 8 Digit DTMF
The Ademco 4/1 Express format may cause conflicts with the DMP DTMF 4/3 with checksum format or FBI Superfast without checksum. Therefore, this option must be programmed to inform the SCS2-200 which of the 3 formats may be used.
00 DMP DTMF 4/3 with checksum
01 Ademco 4/1 Express
02 FBI without checksum
[Default is 01]

Option [9A]: Error Counter
0X This option is used for pulse formats. If set to X value, the line card will hang up after X bad rounds.
00 Disabled [Default is 01]

Option [9B]: Echo Suppression
00 Disabled
01 Enabled: The echo suppression option will enable the transmission of a 2 second, 2025 Hz tone from the line card to disable echo suppression equipment. This option will only work with panels which require a 2225 Hz handshake.

Option [9C]: Acron RS-232
When this option is programmed as “00”, the SCS2-200 will convert the Acron Super Fast format signal into 3/2 or 4/2 format (Ex: AAAAsXssYY[DC4]). If it is programmed as “01” the Acron Super Fast will be sent to the computer as follows:
9RRLssssAAAACCCCCCCC[DC4]
Where:
9 = Protocol number
RR = Receiver number
L = Line number
ssss = Spaces
AAAA = Account code
CCCC = Channel 1-4
CCCC = Channel 5-8
[DC4] = Terminator
Example:
• Raw data:
  1578BDDDDDDD
  1578BDDDDDDD
• Printer output will be as follows:
  (01-001-1578-BDDDDDDD-)
• Computer output:
  (901001 1578BDDDDDDD) [Default is 01]
Option [9D]: MODEM II RS-232
The SCS2-200 is able to decode the Modem II formats. The handshake 0B needs to be programmed as one of the handshakes of the SCS2-200 for the Modem II, Modem IIa, or Modem IIb, and handshake 0E for Modem IIE or Modem IIla. Option [9D] determines the protocol sent to the computer.
NOTE: This option will also affect the BFSK format only if programmed as 00 or 01.
Option 9D: Modem II RS-232
00: 1RRLssssssAAAAXXYYYY[DC4] (6500 protocol)
01: 6RRLssssssAAAAXXYYYY[DC4] (SG protocol)
02: Modem II to SIA protocol
03: Modem II to SIA protocol, and text is decoded and sent to printer and computer.
NOTE: please make sure the automation software supports settings 02 and 03 if the SIA protocol is desired.
[Default is 00]

Option [9F]: Ademco High Speed RS-232
When this option is programmed as "00", the SCS2-200 will convert the High-Speed format signal into 4/2 format (Ex: 1RRLssssssAAAAsXssYY[DC4]). If it is programmed as "01" the Ademco High Speed will be sent to the computer as follows:
8RRLAAAAsCCCCsCCCCsCC[DC4]
Where:
8 = Protocol number
RR = Receiver number
L = Line number
AAAA = Account code
s = Space
CCCC = Channel 1-4
s = Space
CCCC = Channel 5-8
s = Space
C = Channel 9
[DC4] = Terminator
[Default is 01]

Option [A1]: FBI RS-232
To enable the computer FBI Superfast protocol, program option [A1] as "01." When enabled, the computer output will be as follows:
JRRLssssssAAAATZZss[DC4]
Where:
J = FBI protocol identifier
RR = Receiver number
L = Line number
s = Spaces
AAAA = Account code.
T = Zone type
ZZ = Zone number, in hex.
E = Event code
NOTE: if E=0 and T=0 : listen in.
[Default is 01]

Option [A3]: D6500 computer output
The SCS2-200 will emulate the Radionics D6500 RS-232 protocol on pulse formats only (00 = disable, 01 = enable).
Examples:
1. 3/1 format: Account code "123" with alarm code "1" (alarm), the computer output will be:
   00 1RRLssssss123ss1s[DC4]
   01 1RRLssssss123ss1s[DC4]
2. 3/1 format: Account code "123" with alarm code "B" (opening), the computer output will be:
   00 1RRLssssss123ssB[DC4]
   01 1RRLssssss123ssB[DC4]
3. 4/2 extended (or 3/2 or 3/1 extended): Account code "1234" with alarm code "2" on zone "1" (alarm), the computer output will be:
   00 1RRLssssss1234ss2[DC4]
   01 1RRLssssss1234ss2[DC4]
4. 3/1 extended (or 4/2 or 3/2): Account code "234" with alarm code "C" on zone "2" (closing), the computer output will be:
   00 1RRLssssss234ssC[DC4]
   01 1RRLssssss234ssC[DC4]
Where RR = Receiver number
L = Line number
s = Space
[DC4] = Terminator
Please note that option [70] must be left as individual event code when enabling this option.
[Default is 01]

Option [A4]: BFSK RS-232
When programming option [A4] as "01", the BFSK format will convert its Radionics D6500 computer output to a standard protocol output.
[Default is 01]

NOTE: This option also affects the modem option [9D].

Option [A5]: 7 Digit Pulse
This option allows the SCS2-200 to select Sescoa Super Speed or 4/2 checksum pulse. Ordinarily, the SCS2-200 cannot distinguish between these two formats, since they are both 7 digit pulse. Program option [A5] as 00 to have all incoming 7 digit pulse calls decoded as 4/2 checksum, or 01 to decode as Sescoa Super Speed.
[Default is 00]

Option [A7]: SK FSK2 RS-232
The SCS2-200 provides two possible outputs to the computer. Select 00 for protocol #1 or 01 for protocol #2. Please refer to SCS2-200 Communication Formats section (SK FSK communication format) for more details.
[Default is 00]
SCS2-200 COMMUNICATION FORMATS

COMMON FORMATS
The following formats are commonly used:
• 3/1, 4/1, 4/2 formats; 10, 14, 20 Baud
• 3/1 extended format; 10, 14, 20, 40 Baud.
• 3/1, 4/2 formats with or without checksum; 40 Baud
• 3-2 format; 10, 14, 20 Baud
• 4/1 Extended format; 10, 14, 20 Baud
• 4/2 Extended format; 10, 14, 20, 40 Baud

Example:
• 3/1 FORMAT
  Computer: 1011ssssss123sAss1[14]
  Printer: L01-123-1-FIRE ALARM  HH:MM:SS-DD/MM
• 3/1 EXTENDED FORMAT
  Computer: 1011ssssss123sAss32[14]
  Printer: L01-123-32-FIRE ALARM  HH:MM:SS-DD/MM
• 4/2 FORMAT
  Computer: 1011ssssss1234sAss22[14]
  Printer: L01-1234-22-FIRE ALARM  HH:MM:SS-DD/MM

DMP DTMF FORMATS
DMP DTMF 4/3 and 4/3 with checksum formats provide fast, reliable and easy-to-understand and decode data transmission. On-line time will be greatly reduced when using 4/3 and 4/3 with checksum formats. The 4/1 and 4/2 DTMF formats can also be decoded by the SCS2-200. The 4/3 with checksum format is recommended for use with DMP and DSC security control panels.

Example:
• DMP 4/3 format
  Each round pair represents a single event: AAAAEZZ
  AAAA = 4-digit account code.
  E = Event code.
  ZZ = Zone number or user number.
  Computer: 1011ssssss2255sAs266[14][6]
  Printer: L01—2255-266-PANIC ALARM  HH:MM:SS-DD/IMM

ADEMCO CONTACT ID
This DTMF format requires a dual tone handshake and 1400 Hz kissoff, or 1400 Hz handshake and 1400 Hz kissoff.

**PLEASE SEE APPENDIX G FOR EVENT CODES CLASSIFICATIONS TABLE**

ADEMCO EXPRESS
This format consists of 4-digit account codes, two digit format identifiers and 1- or 2-digit alarm codes. The SCS2-200 will decode the signal as regular 4/1 or 4/2 format. Option [99] must be programmed as “01” to decode the 4/1 Express format instead of the DMP 4/3 with checksum format or FBI Superfast no checksum.

Example:
• Option 99 set to 00
  Raw data: 23451726
  Printer Output: L01-2345-172-FIRE ALARM  HH:MM:SS-DD/MM
• Option 99 set to 01
  Raw data: 23451726
  Computer Output: 1011 2345 A 2
  Printer Output: L01-2345-2-PANIC ALARM  HH:MM:SS-DD/MM

Example:
• Option 99 set to 00
  Raw data: 23451726
  Computer Output: 1011 2345 A 172
  Printer Output: L01-2345-172-FIRE ALARM  HH:MM:SS-DD/MM
• Option 99 set to 01
  Raw data: 23451726
  Computer Output: 1011 2345 A 2
  Printer Output: L01-2345-2-PANIC ALARM  HH:MM:SS-DD/MM
ADEMCO SUPER FAST
(High Speed Format)

The High Speed format consists of 4 account numbers, 8 channel status digits, and 1 auxiliary channel.

**NOTE:** When option [9F] is programmed as “00,” the SCS2-200 will convert the signal into 4/2 format. When option [9F] is programmed as “01,” the SCS2-200 will send the information as it received to the printer and to the computer using High Speed RS-232 communication protocol.

8RRLAAAAAsCCCsC[DC4]

AAAAA = Three digit or four digit account number.
ZZZZ ZZZZ = Zone status.
S = Status Channel indicates the meaning of the message.

The above two automation signals are both DMP serial 1 format. The 15th character in the above examples will determine if the received format is serial 1 or serial 3. If the 15th digit is anything but an uppercase "Z", the DMP format is serial 1. If you look at the signal below, you will see that the 15th digit is an uppercase "Z"; therefore, the signal is serial 3 format.

P011s12345sA00081EASTsSMOKE[DC4]

NOTE: When option [9F] is disabled
Computer: 1011ssssss1234sAss02[14][6]
Printer: L01-1234-02-ALARM ZONE02
HH:MM:SS-DD/MM

With option 9F enabled
Computer: 8011 1234s5155s5555s7[14][6]
Printer: L01-1234 – 51555557 HH:MM:SS-DD/MM

Expected Output

P011ss1234s5155s5555s7[DC4]

Data:
P = DMP protocol identifier
ddddd = RRL replaced by the 5-digit DNIS, therefore increasing the length by two.
s = Spaces
AAAA = Account code
X = DMP serial format identifier
T₁-Tₙ = Alarm information

NOTE: When option [9F] is enabled
Computer: 8011 1234s5155s5555s7[14][6]
Printer: L01-1234 – 51555557 HH:MM:SS-DD/MM

FBI SUPER FAST FORMAT

This DTMF format consists of 4-digit account codes, 2-digit zone codes, 1-digit zone type codes, and 1-digit event codes. The zone codes will be converted into 3-digit decimal codes by the SCS2-200.

The following are the zone types used by this format:

<table>
<thead>
<tr>
<th>FBI Code</th>
<th>Converted Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fire A</td>
</tr>
<tr>
<td>2</td>
<td>Panic A</td>
</tr>
<tr>
<td>3</td>
<td>Burglary A</td>
</tr>
<tr>
<td>4</td>
<td>Medical A</td>
</tr>
<tr>
<td>5</td>
<td>Auxiliary A</td>
</tr>
<tr>
<td>6</td>
<td>Bypass B</td>
</tr>
<tr>
<td>7</td>
<td>Inactive A</td>
</tr>
<tr>
<td>8</td>
<td>Eight A</td>
</tr>
<tr>
<td>9</td>
<td>Nine A</td>
</tr>
<tr>
<td>0</td>
<td>Zero A</td>
</tr>
<tr>
<td>B</td>
<td>Opening B</td>
</tr>
<tr>
<td>C</td>
<td>Closing C</td>
</tr>
<tr>
<td>D</td>
<td>Abort D</td>
</tr>
<tr>
<td>E</td>
<td>Restore E</td>
</tr>
<tr>
<td>F</td>
<td>Trouble F</td>
</tr>
</tbody>
</table>

NOTE: Option [A1] enabled will output the FBI RS-232 protocol.
### ITI FORMAT

The ITI format covers ITI panel models RF Commander, Caretaker Plus, SX-V, SX-IVB, UltraGard 5000 (Pro 5000), Commander III and Commander 2000 Simon. In order to receive the ITI format, the handshake 0E must be programmed. Upon a cold boot, the fifth handshake (option [86]) is programmed as 0E hex.

#### RF Commander/Commander III:

Sensor# Printed out as

<table>
<thead>
<tr>
<th>Sensor #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00-16</td>
<td>ALARM</td>
</tr>
<tr>
<td>80</td>
<td>ALARM</td>
</tr>
<tr>
<td>81</td>
<td>ALARM</td>
</tr>
<tr>
<td>82</td>
<td>ALARM</td>
</tr>
<tr>
<td>83</td>
<td>PHONE TEST</td>
</tr>
<tr>
<td>84</td>
<td>OPEN USER X</td>
</tr>
<tr>
<td>85</td>
<td>CLOSE USER X</td>
</tr>
<tr>
<td>86</td>
<td>SILENT DURESS</td>
</tr>
<tr>
<td>87</td>
<td>FORCE ARMED</td>
</tr>
<tr>
<td>90</td>
<td>AC FAILURE</td>
</tr>
<tr>
<td>91</td>
<td>LOW CPU BAT</td>
</tr>
<tr>
<td>92</td>
<td>ALM TAMPR LOOP</td>
</tr>
<tr>
<td>93</td>
<td>AUTO PHONE TEST</td>
</tr>
<tr>
<td>94</td>
<td>TROUBLE</td>
</tr>
<tr>
<td>95</td>
<td>CPU BACK IN</td>
</tr>
</tbody>
</table>

#### Caretaker Plus

<table>
<thead>
<tr>
<th>Sensor #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>77</td>
<td>ALARM TAMPER</td>
</tr>
<tr>
<td>78</td>
<td>TROUBLE</td>
</tr>
<tr>
<td>79</td>
<td>NO ACTIVI ALM</td>
</tr>
<tr>
<td>80</td>
<td>ALARM</td>
</tr>
<tr>
<td>81</td>
<td>ALARM</td>
</tr>
<tr>
<td>82</td>
<td>ALARM</td>
</tr>
<tr>
<td>83</td>
<td>PHONE TEST</td>
</tr>
<tr>
<td>84</td>
<td>OPEN USER X</td>
</tr>
<tr>
<td>85</td>
<td>CLOSE USER X</td>
</tr>
<tr>
<td>86</td>
<td>ALARM SILENT DURESS</td>
</tr>
<tr>
<td>87</td>
<td>FORCE ARMED</td>
</tr>
<tr>
<td>88</td>
<td>TROUBLE</td>
</tr>
<tr>
<td>92</td>
<td>ALARM TAMPER LOOP</td>
</tr>
<tr>
<td>93</td>
<td>AUTO PHONE TEST</td>
</tr>
</tbody>
</table>

#### SX-V

<table>
<thead>
<tr>
<th>Sensor #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>BAD SENSOR #</td>
</tr>
<tr>
<td>02-76</td>
<td>ALARM</td>
</tr>
<tr>
<td>77</td>
<td>TAMPER KEYPAD</td>
</tr>
<tr>
<td>80</td>
<td>ALARM</td>
</tr>
<tr>
<td>81</td>
<td>ALARM</td>
</tr>
<tr>
<td>82</td>
<td>ALARM</td>
</tr>
<tr>
<td>83</td>
<td>PHONE TEST</td>
</tr>
<tr>
<td>84</td>
<td>OPEN USER</td>
</tr>
<tr>
<td>85</td>
<td>CLOSE USER</td>
</tr>
<tr>
<td>86</td>
<td>SILENT DURESS</td>
</tr>
<tr>
<td>87</td>
<td>FORCE ARM</td>
</tr>
<tr>
<td>90</td>
<td>AC FAILURE</td>
</tr>
<tr>
<td>91</td>
<td>LOW CPU BAT</td>
</tr>
<tr>
<td>92</td>
<td>ALM TAMPR LOOP</td>
</tr>
<tr>
<td>93</td>
<td>AUTO PHONE TEST</td>
</tr>
<tr>
<td>94</td>
<td>RECEIVER TROUBLE</td>
</tr>
<tr>
<td>95</td>
<td>CPU BACK IN</td>
</tr>
</tbody>
</table>

#### Commander 2000

<table>
<thead>
<tr>
<th>Sensor #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-18</td>
<td>ALARM</td>
</tr>
<tr>
<td>80</td>
<td>ALARM</td>
</tr>
<tr>
<td>81</td>
<td>ALARM</td>
</tr>
<tr>
<td>82</td>
<td>ALARM</td>
</tr>
<tr>
<td>83</td>
<td>ALARM</td>
</tr>
<tr>
<td>84</td>
<td>OPEN USER#</td>
</tr>
<tr>
<td>85</td>
<td>CLOSE USER#</td>
</tr>
<tr>
<td>86</td>
<td>SILENT DURESS</td>
</tr>
<tr>
<td>87</td>
<td>FORCE ARMED</td>
</tr>
<tr>
<td>89</td>
<td>RF TOUCHPAD</td>
</tr>
<tr>
<td>90</td>
<td>AC FAILURE</td>
</tr>
<tr>
<td>91</td>
<td>LOW CPU BAT</td>
</tr>
<tr>
<td>92</td>
<td>ALM TAMPR LOOP</td>
</tr>
<tr>
<td>93</td>
<td>AUTO PHONE TEST</td>
</tr>
<tr>
<td>94</td>
<td>CPU RX FAIL</td>
</tr>
<tr>
<td>95</td>
<td>CPU BACK IN</td>
</tr>
<tr>
<td>96</td>
<td>FAIL TO COMMUNICATE</td>
</tr>
<tr>
<td>98</td>
<td>EVENT DUMP REPORT</td>
</tr>
</tbody>
</table>

#### Pro5000 (UltraGard 5000)

<table>
<thead>
<tr>
<th>Sensor #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-76</td>
<td>ZONE ALARM</td>
</tr>
<tr>
<td>01-76</td>
<td>Zone Alarm Cancel</td>
</tr>
<tr>
<td>77</td>
<td>Touchpad Tamper</td>
</tr>
<tr>
<td>77</td>
<td>Touchpad Tamper Cancel w/User ID</td>
</tr>
<tr>
<td>78</td>
<td>Freeze Sensor Trouble</td>
</tr>
<tr>
<td>79</td>
<td>No Activity Time-out</td>
</tr>
<tr>
<td>79</td>
<td>No Activity Time-out Cancel</td>
</tr>
<tr>
<td>80</td>
<td>Touchpad Fire Alarm</td>
</tr>
<tr>
<td>81</td>
<td>Touchpad Police Alarm</td>
</tr>
<tr>
<td>82</td>
<td>Touchpad Auxiliary Alarm</td>
</tr>
<tr>
<td>83</td>
<td>Manual Phone Test w/User ID</td>
</tr>
<tr>
<td>84</td>
<td>Open User #</td>
</tr>
<tr>
<td>85</td>
<td>Close User #</td>
</tr>
<tr>
<td>86</td>
<td>Silent Duress w/User ID</td>
</tr>
<tr>
<td>87</td>
<td>Force Arm</td>
</tr>
<tr>
<td>88</td>
<td>Energy Saver Trouble</td>
</tr>
<tr>
<td>89</td>
<td>Wireless Touchpad (Supervisory or Low Battery)</td>
</tr>
<tr>
<td>90</td>
<td>AC Failure</td>
</tr>
<tr>
<td>90</td>
<td>AC Restore</td>
</tr>
<tr>
<td>91</td>
<td>Low Panel Battery</td>
</tr>
<tr>
<td>91</td>
<td>Panel Battery Restore</td>
</tr>
<tr>
<td>92</td>
<td>Panel Tamper</td>
</tr>
<tr>
<td>93</td>
<td>Automatic Phone Test</td>
</tr>
<tr>
<td>94</td>
<td>Wireless Receiver Failure</td>
</tr>
<tr>
<td>95</td>
<td>Panel Reset</td>
</tr>
<tr>
<td>96</td>
<td>Phone Failure</td>
</tr>
</tbody>
</table>

Example:
- ITI Printer: L01-12345-81-TOUCHPAD FIRE ALARMHH:MM:SS-DD/MM
- ITI Computer Example: 1011ssss1B2345081A31[DC4]
MODEM II, MODEM IIE, MODEM IIIa² and BFSK FORMATS

BFSK, Modem II, Modem IIIa² or Modem IIE formats can be decoded by the SCS2-200.

Modem II

Example
- Modem II RS-232 Option ON
  Computer Output: 6011 7112 T 9[14]
  Printer Output: L01-7112—BATTERY MISSING
  HH:MM:SS-DD/MM
- Modem II RS 232 option OFF
  Computer Output: 1011 7112 R F0[14]
  Printer Output: L01-7112—PROG ACCESS OK
  HH:MM:SS-DD/MM

BFSK

Example:
- Modem II RS232 option ON
  Computer Output: 6011 112F 1[14]
  Printer Output: L01 112—FIRE ALARM HH:MM:SS-DD/MM
- Modem II RS232 option OFF
  Computer Output: 1011 112F 1[14]
  Printer Output: L01-112—FIRE ALARM HH:MM:SS-DD/MM

SIA FSK

The SIA digital format is a modem format communicating at 110 or 300 Baud and using the SIA protocol to transfer information to the computer.

The standard SCS2-200 can receive Bell 103 modem frequencies. **NOTE: The SCS2-200 can accept SIA formats with and without separators. The SCS2-200 version 1.3 software implements Levels 1, 2 and 3 of the SIA 1993llb Digital Communication Standard, but it does not support “Receiver Call out and Access Passcode Block,” “Reverse Channel Block,” and “V-Channel Communications.”**

The SCS2-200 supports an account code with a maximum of 16 digits, (including any displayable ASCII characters except the pipe symbol: "|"). It also supports an alarm code with a maximum of 4 digits. Usually, the central station automation refers to the SIA Event Block Data Code Definitions for information on interpreting the alarm codes.

Acknowledgments for the SIA format are tonal by default. The transmitter may, however, request data acknowledgment by transmission of the optional configuration block. When the SCS2-200 receives the configuration block from a transmitter requiring data acknowledgment, it will send the tonal acknowledgment to this block. It will then send the data acknowledgment to the following data blocks if the data received is valid.

Example
- Printer: L01-1234 – NM008 HH:MM:SS-DD/MM
- Computer: 5011[14]

SILENT KNIGHT FSK1, FSK2

Silent Knight FSK1 Protocol

**ERRLssssAAAAAXXsss[DC4]**

Where:
- **E** FSK protocol identifier
- **RR** Receiver number
- **L** Line number
- **s** Spaces
- **AAAAA** Account number (if the account is 4 or 5 digits, the leading “A”s will be replaced by spaces)
- **XX** Alarm code

Possible alarm codes are as follows:
- 00 Alarm Panic
- 01-08 Alarm 01-08
- 09 Holdup
- 10-19 Alarm 10-19
- 30 Test code
- 31 Trouble line 1
- 32 Trouble line 2
- 33 Expand trouble
- 34 Forced access
- 35 Restore line 1
- 36 Restore line 2
- 37 Expand restore
- 38 Cancel code
- 39 Data lost
- 40 Closing
- 41-49 Closing 1-9
- 50-59 Bypass 10-19
- 60 Trouble AC
- 61-68 Trouble 1-8
- 69 Trouble bat
- 70 Restore AC
- 71-78 Restore 1-8
- 79 Restore bat
- 80 Access
- 81-89 Access 1-9
- 90 Opening
- 91-99 Opening 1-9

**[DC4]** Represents the terminator

Example
- Printer: L1-1234-03-LIBRARY WORD
- Computer: E01001 123403 [14]
SILENT KNIGHT FSK2 PROTOCOL

The SCS2-200 will provide two possible outputs to the computer, according to the value set under option A7. When the option is programmed as “00” (factory default), the computer output will be as follows:

FRRLssssAAAAAYYZZss[DC4]

Where:
F  FSK2 protocol 1 identifier
RR Receiver number
L  Line number
s  Spaces
AAAAAA Account number (if the account is 4 or 5 digits, the leading “A”s will be replaced by spaces)
YY  Event code
ZZ  Zone/user number
[DC4] Represents the terminator

Possible events are as follows:
YT00 Battery Trouble
YR00 Battery Restore
AT00 System Trouble AC
DOZZ Access left open ID ZZ
DFZZ Access forced ID ZZ
DSZZ Access Station ID ZZ
AJ00 System Restore AC
LT0Z Trouble phone line #0Z
    Restore phone line 0Z
    Expand trouble device ID z
    Expand restore device ID z
ETZZ Expand trouble station ID ZZ (zz=17-31)
ERZZ Expand restore station ID ZZ (zz=17-31)
RP00 Automatic test
RXZZ Manual test zone ZZ
CA Automatic closing
OA Automatic opening
CLZZ Normal closing ID ZZ
OPZZ Normal opening ID ZZ
CFZZ Forced closing ID ZZ
ORZZ Forced opening ID ZZ
OTZZ Supervised closing ID ZZ
TGZZ Supervised opening ZZ
CG0a Closing area 0a
OG0a Opening area 0a
DRZZ Access granted ID ZZ

When the option is programmed as “01”, the computer output will be as follows:

CRRLssssAAAAAYYZZss[DC4]

Where:
C  FSK2 protocol 2 identifier
RR Receiver number
L  Line number
s  Spaces
AAAAAA Account number (if the account is 4 or 5 digits, the leading “A”s will be replaced by spaces)
X  Event code
Y  Condition code
ZZ  Zone/user number
[DC4] Represents the terminator

Possible events are as follows:
D60z Trouble phone line #0z
DE0z Restore phone line 0z
E60z Expand trouble device ID z
EEOz Expand restore device ID z
E6zz Expand trouble station ID zz (zz=17-31)
EEzz Expand restore station ID zz (zz=17-31)
E100 Automatic test
E2zz Manual test zone ZZ
F000 Automatic closing
F400 Automatic opening
F1zz  Normal closing ID ZZ
F5zz  Normal opening ID ZZ
F2zz  Forced closing ID ZZ
F6zz  Forced opening ID ZZ
F3zz  Supervised closing ID ZZ
F7zz  Supervised opening ZZ
FD0a  Closing area 0a
FF0a  Opening area 0a
FBzz  Access
FAzz  Access forced ID ZZ
FBzz  Access station ID ZZ
FC00  Duress
FE00  Data lost

SESCOA SUPER SPEED

Sescoa Super Speed is a 40 Baud communication format. Account codes are programmed as 4-digit decimal codes ranging from 0001 to 3374. The account code is followed by a 1-digit event code, a 2-digit alarm code, and 1-digit checksum.

Option [A5] must be programmed as “01” in order to use Sescoa Super Speed decoding instead of 4/2 with checksum decoding.

Example:
Printer: L01-1234—LOW BATT HH:MM:SS-DD/MM
Computer: 7017ssssss1234sF

WESTEC FORMATS

The WESTEC formats are a DTMF format. The SCS2-200 will receive and decode signals from the following WESTEC panels: W900, W2K, W800, W1000/W2000/W3000, and W5000.

NOTE: For full WESTEC printer messages, the SCS2-300 must be set to 80 columns printer output.

Example:
Printer: Oct 08 1998-12:00:00-04/06-SG –12-206-0900—S
SYSTEM TYPE:900
CALL#:01
STATUS: 0000 0000 0110 0000 (000000 000000)
DATA1 POWER UP
DATA2 CLEAR POWER UP
DATA3 CLEAR
ENDCALL
Computer: W0100101Cssss40ssssSSss011567871404166650[14]
### SCS2-200 PREDEFINED LIBRARY
### DECODING AND EVENT CODES TABLE

#### 3/1 - 4/1 Alarm Library

<table>
<thead>
<tr>
<th>For Alarm Message</th>
<th>Corresponding Code</th>
<th>Event Message Code (Options 30-3F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (A)</td>
<td>A</td>
<td>PER TEST REPORT</td>
</tr>
<tr>
<td>1</td>
<td>A</td>
<td>FIRE ALARM</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>PANIC ALARM</td>
</tr>
<tr>
<td>3</td>
<td>A</td>
<td>BURGLARY</td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td>GENERAL ALARM</td>
</tr>
<tr>
<td>5</td>
<td>A</td>
<td>GENERAL ALARM</td>
</tr>
<tr>
<td>6</td>
<td>A</td>
<td>GENERAL ALARM</td>
</tr>
<tr>
<td>7</td>
<td>A</td>
<td>MEDICAL</td>
</tr>
<tr>
<td>8</td>
<td>A</td>
<td>SYSTEM TROUBLE</td>
</tr>
<tr>
<td>Restore 9</td>
<td>R</td>
<td>RESTORE</td>
</tr>
<tr>
<td>Open B</td>
<td>O</td>
<td>OPENING</td>
</tr>
<tr>
<td>Close C</td>
<td>C</td>
<td>CLOSING</td>
</tr>
<tr>
<td>Cancel D / CANCEL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restore E</td>
<td>R</td>
<td>RESTORE</td>
</tr>
<tr>
<td>Trouble F</td>
<td>T</td>
<td>SYSTEM TROUBLE</td>
</tr>
</tbody>
</table>

#### 3/1-4/1 Extended, 3/2 & 4/2 Alarm Library

| Alarm 0x(Ax)      | A                 | FIRE ALARM                       |
| Alarm 1x          | A                 | PANIC ALARM                      |
| Alarm 2x          | A                 | BURGLARY                         |
| Alarm 3x          | A                 | GENERAL ALARM                    |
| Alarm 4x          | A                 | GENERAL ALARM                    |
| Alarm 5x          | A                 | GENERAL ALARM                    |
| Alarm 6x          | A                 | GENERAL ALARM                    |
| Alarm 7x          | A                 | MEDICAL                          |
| Alarm 8x          | A                 | SYSTEM TROUBLE                   |
| Restr 9x          | R                 | RESTORE                          |
| Open Bx           | O                 | OPENING                          |
| Close Cx          | C                 | CLOSING                          |
| Cancel Dx / CANCEL|                   |                                  |
| Restr Ex          | R                 | RESTORE                          |
| Trouble Fx        | T                 | SYSTEM TROUBLE                   |

#### 4/2 Extended & 4/3 Alarm Library

| Alarm 0xx(Axx)    | T                 | 0 PER TEST REPORT                |
| Alarm 1xx         | A                 | 1 FIRE ALARM                     |
| Alarm 2xx         | A                 | 2 PANIC ALARM                    |
| Alarm 3xx         | A                 | 3 BURGLARY                       |
| Close 4xx         | C                 | 4 CLOSING                        |
| Open 5xx          | O                 | 5 OPENING                        |
| Alarm 6xx         | T                 | 6 SERVICE                        |
| Alarm 7xx         | A                 | 7 MEDICAL                        |
| Alarm 8xx         | A                 | 8 MESSAGE                        |
| Restr 9xx         | R                 | 9 RESTORE                        |
| CloseGrp Bxx      | C                 | C GROUP CLOSING                  |
| OpenGrp Cxx       | O                 | O GROUP OPENING                  |
| Bypas Dxx         | B                 | CANCEL                           |
| UnByp ExxH        | H                 | ZONE BYPASS                      |
| Cancel Fxx / /    |                   | UN BYPASS                        |

Ensure that the central station automation software is able to accept these codes if they are to be used.

### Event Codes Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Automatic Test</td>
</tr>
<tr>
<td>1</td>
<td>Fire Alarm</td>
</tr>
<tr>
<td>2</td>
<td>Panic Alarm</td>
</tr>
<tr>
<td>3</td>
<td>Burglary Alarm</td>
</tr>
<tr>
<td>4</td>
<td>Closing by User Number</td>
</tr>
<tr>
<td>5</td>
<td>Opening by User Number</td>
</tr>
<tr>
<td>6</td>
<td>Service</td>
</tr>
<tr>
<td>7</td>
<td>Medical Emergency</td>
</tr>
<tr>
<td>8</td>
<td>Message</td>
</tr>
<tr>
<td>9</td>
<td>Restore</td>
</tr>
<tr>
<td>A</td>
<td>Alarm</td>
</tr>
<tr>
<td>B</td>
<td>Bypass</td>
</tr>
<tr>
<td>C</td>
<td>Closing</td>
</tr>
<tr>
<td>D</td>
<td>or / Cancel</td>
</tr>
<tr>
<td>H</td>
<td>Unbypass</td>
</tr>
<tr>
<td>O</td>
<td>Opening</td>
</tr>
<tr>
<td>R</td>
<td>Restore</td>
</tr>
<tr>
<td>T</td>
<td>Trouble</td>
</tr>
<tr>
<td>Z</td>
<td>Common Event Code</td>
</tr>
</tbody>
</table>

20 Hex Common Event code “Space”
SCS2-300 – Central Processing Module

GENERAL INFORMATION
The SCS2-300 16-bit microcontroller and real-time assembly language program running at 16 MHz allow the system to quickly and efficiently execute several tasks at the same time. The use of a unique menu display system enhances the system’s ease of use for the operator and makes the system configuration and programming simple and efficient. Several diagnostic modes are available to assist the operator in troubleshooting and maintenance.

FEATURES
• Multi-tasking allows the receiver to perform functions that might otherwise be delayed by a slow computer acknowledgment response.
• Fast internal communication results in practically no delay in transfer of information between the line card and the SCS2-300.

SCS2-300 CONTROLS
• 128-event computer alarm message buffer
• 128-event printer alarm message buffer
• LCD contrast easily adjusted
• Ability to individually examine each line card message
• “Cold boot” option allows easy installation of default configuration
• Built-in diagnostic “debug” mode allows each line card to be monitored individually
• Serial port COM1 features LED indicators for Transmit (Tx) and Receive (Rx) functions
• Available COM1 Baud rates: 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200 or 38400
• COM1 Data bits: 7, 8 or 9
• COM1 Parity: Even, odd or none
• COM 1 Stop bits: fixed at 1
• Built-in Serial Communication Diagnostic Mode for COM1. The technician can test the communication with the central station computer and monitor what is being transmitted to and received from the computer
• Two programmable outputs, one with front panel LED indicator
• Buzzer mute option for system testing
• System menu for easy programming and diagnostics
• Software version 2.1 (or higher) supports SCADA (SCADA stands for Supervisory Control and Data Acquisition) line cards for networks of receivers
• Software version 2.1 (or higher) supports line card and SCS2-300 programming through computer software interface
• Software version 2.4 (or higher) allows up to 30 line cards to be connected to a single SCS2-300.

LIQUID CRYSTAL DISPLAY
2-line, 16 character per line liquid crystal display; backlit for easy reading in low level light

“OPTION” LIGHT
Indicates the state of the “Option” programmable output. Flashing 2 seconds ON, 2 seconds OFF, with the standard program.

[ACK] BUTTON
Used to manually acknowledge an alarm event when a computer is not connected to the receiver or when the UL Receiver option is enabled. Press the [ACK] button to turn the “ACK” light OFF and silence the buzzer. The [ACK] button is also used in the Configuration mode to select menu items.

“ACK” LIGHT
Flashes when a message is received from the line card and COM1 is disabled or disconnected.

[ENTER] BUTTON
Executes a command or scrolls the display to the next message.

“TX” LIGHT
Monitors the COM1 transmission signal.

[BACKSPACE] BUTTON
Used to erase errors or move the cursor back one character; also used to scroll the display back to the previous message.

“RX” LIGHT
Monitors the signal received from the computer connected to COM1.

[ESCAPE] BUTTON
Used to save changes and exit a mode; also used for other functions when indicated on the display screen.

“AC” LIGHT
Indicates that AC power is present.
SCS2-300 OPERATING MODE

SCS2-300 COLDSTARTUP

The “cold boot” should be performed to install the default system software. Follow the procedure described here to perform a “cold boot” of the SCS2-300.

Remove the SCS2-300 from the card cage.

Turn the “PROG EN” (Program Enable) switch ON. The Program Enable switch is located on the left side of the SCS2-300 unit; use a small screwdriver to turn the switch ON by turning it clockwise.

Reinstall the SCS2-300 in the card cage, but do not fasten the mounting screws. The SCS2-300 should power up and this message will be displayed:

```
SYST COLD BOOT?
Ent=Yes Bsp=No
```

Press the [Enter] button to perform the “cold boot.” This message will be displayed:

```
SYST COLD BOOT
Executing!
```

After approximately 1 second, this message will be displayed:

```
Please Turn Off Program Switch!
```

The SCS2-300 will remain in an inoperative mode until the Program Enable switch is turned OFF.
- Pull the SCS2-300 part way out of the card cage
- Use a small screwdriver to turn the Program Enable switch OFF by turning it counterclockwise.
- Reinstall the SCS2-300 in the card cage and secure the faceplate screws

The SCS2-300 is now ready for operation. Set the clock and calendar and configure the SCS2-300.

SCS2-300 IN STANDBY MODE

When the SCS2-300 is in Standby mode, a message similar to this will be displayed:

```
*FEB-23 07:30:45
Scanning 1E (30)
```

This indicates that the system is ready to receive data from the line cards and input from the numeric keypad and push buttons.

SCS2-300 CONFIGURATION MODE

The Configuration mode allows programming of the various features and options available on the SCS2-300. To enter the Configuration mode, press the [Escape] button; this message will be displayed:

```
Enter MASTER-ID...
```

Enter the Master Access Code using the keypad; the default Master Access Code is “CAFE.” When the access code is entered, the screen will display the first option in the Options menu:

```
01:Sys Date/Time
Ent:+ Bs:- Ack:S
```

Press the [Enter] button to display the next menu item, or press the [Backspace] button to display the previous menu item; press the [ACK] button to select the menu item presently displayed on the screen.

CONFIGURATION OPTIONS

The SCS2-300 features 28 configuration options:

01 System Date and Time
02 System Passwords
03 Number of Line Cards
04 Printer Select
05 COM1 Configuration
06 COM1 Format
07 Acknowledge Wait Delay
08 Heartbeat Select
09 COM2 Configuration
10 COM2 Format
11 Contrast Adjust
12 UL Receiver Option
13 Erase Memory
14 Mute Buzzer
15 Keep Last Message
16 Debug ComPort
17 Test 9v/12v Batt
18 Debug Line Card
19 Program Version
20 Monitor Battery
21 Year / Second
22 Force Reset
23 Change Receiver Number
24 Scada COM1 and COM2 Control
25 Printer Control
26 Printer Test
27 Printer Width
28 Tamper Input

Option 01: Setting the Clock

Option [01] allows the SCS2-300 date and time to be set. Press the [ACK] button when the “01: Sys Date/Time” message is displayed; this message will be displayed:

```
(D/M/Y) 23/02/93
(H:M:S) 07:30:45
```

Enter the date and time using the numbers 0 through 9 only.

Press the [Enter] button to move the cursor one character to the right; press the [Backspace] button to move the cursor one space to the left. When the date and time are entered, press the [Escape] button; when the [Escape] button is pressed, the next Configuration option will be displayed on the screen. Note that if “0” or a number greater than “12” is programmed for the month, the screen will display the word “Nul” in place of the month while in the Standby mode. “Nul” will also be displayed for the time if the time has not been programmed properly.
Option 02: Changing System Passwords
Option [02] allows the SCS2-300 passwords to be changed or erased. Press the [ACK] button when the “02: Sys Passwords” message is displayed; this message will be displayed:

PassID#0: xxxx
Operator: S.G.

Sixteen 4-digit passwords are available for use on the SCS2-300. Password 0 is the Master password, and passwords 1 through F may be assigned to individual operators. Two letters, representing the initials of the operator, may be assigned to each password to help identify the operator. When this option is entered, a cursor will appear beneath the first character in the 4-digit password. Enter a new password using the 0 through 9 and the A through F keys. To enter the operator’s initials, use the [0] and [1] keys to scroll forward or backward through the alphabet. When the desired letter is displayed, press the [Enter] button; the cursor will move to the next character. To move the cursor to the previous character, press the [Backspace] button. When the password and initials have been entered, press the [Escape] button; the next password will be displayed. When all passwords have been programmed, the display will advance to the next Configuration option.

Option 03: Change the Number of Line Cards
Option [03] is used to set the number of line cards polled by the SCS2-300. Press the [ACK] button when the “03: Numb of Lcard” message is displayed; this message will be displayed:

#LnCard Attached
0E Change to:xx

Enter a number from 01 to 1E to indicate how many line cards, from 1 to 30, are to be polled by the SCS2-300. When the new number is entered, press the [Enter] button; the screen will then display the next Configuration option.

Option 04: Select Printer Function
Option [04] determines how the printer connected to the SCS2-300 will operate. Press the [ACK] button when the “04:PrnterSelect” message is displayed; this message will be displayed:

Prnter Config As:
Bkup:0 Enable:1

Enter a digit from 0 through 1 for both “Bkup” and “Enable” according to the chart below:
Bkup Enable Printer Operation
0 0 Bypass printer
0 1 Enable printer (default setting)
1 x Enable printer only if COM1 is in failure where x = don’t care
(same as above)
If “Bkup” is programmed as “1,” messages will only be sent to the printer if an acknowledge signal is not received from COM1. When using the Star 8340 printer, the SCS2-300 is able to print in both red and black. If an IBM-compatible printer is selected, the SCS2-300 will print in black only. When programming is complete, press the [Enter] button; when the [Escape] button is pressed, the next Configuration option will be displayed on the screen.

Option 05: COM1 Configuration
Option [05] determines the Baud rate, data bits and parity to be used on COM1. Press the [ACK] button when the “05: Com#1 Config.” message is displayed; this message will be displayed:

Br: Baud Rate
Enter... for Baud Rate
11 110
15 150
03 300
12 1200
24 2400
48 4800
96 9600
19 19200
38 38400

Da: Data Bits
Enter a number from 7 through 9 to indicate 7, 8, or 9 data bits.

Pa: Parity
Enter… for Parity
0 no parity
1 odd parity
2 even parity

NOTE: The stop bit is fixed at 1.

When programming is complete, press the [Escape] button; when the [Escape] button is pressed, the next Configuration option will be displayed on the screen.

Option 06: COM1 Communication Format
Option [06] determines the communication format to be used on COM1. Press the [ACK] button when the “06: Com#1 Format” message is displayed; this message will be displayed:

Com#1 Format is:
1 Change to: x

Enter a number from 0 to 4 to select one of the following:
0 COM1 disabled
1 DMP format (default setting)
2 DMP format with common event code “A”
3 DMP format with header 01 Hex.
4 DMP Clock Signal format

When programming is complete, press the [Enter], [Backspace], or [Escape] button; when a button is pressed, the next Configuration option will be displayed on the screen.

Option 07: Wait Time for Acknowledge on COM1
Option [07] determines the acknowledge wait time, in seconds, to be used for COM1. Press the [ACK] button when the “07:ACK Wait Time” message is displayed; this message will be displayed:

<ACK> Wait Delay
4.0S Chg to:x.xS
Enter a decimal number from 4.0 to 9.9. Use the [Enter] and [Backspace] buttons to move the cursor forward or backward when editing the acknowledge time. When programming is complete, press the [Escape] button; when the [Escape] button is pressed, the next Configuration option will be displayed on the screen.

NOTE: It is strongly recommended that you not change the default setting (4.0 sec.) unless so instructed by a DMP technician.

Option 08: Heartbeat Time for COM1
Option [08] determines at what time interval, in seconds, the supervisory “heartbeat” transmission will be sent to COM1. The “heartbeat” transmission is used to ensure that communications through COM1 are functioning normally. Press the [ACK] button when the “08: Heartbeat Sel” message is displayed; this message will be displayed:

Enter a decimal number from 01 through 99 to determine the time interval between heartbeat transmissions. Program this option as “00” to disable the heartbeat transmission. Use the [Enter] and [Backspace] buttons to move the cursor forward or backward when editing the heartbeat time. When programming is complete, press the [Escape] button; when the [Escape] button is pressed, the next Configuration option will be displayed on the screen.

Option 09: COM2 Configuration
Option [09] determines the Baud rate, data bits and parity to be used on COM2. Press the [ACK] button when the “05: Com#1 Config.” message is displayed; this message will be displayed:

Enter a number from 7 through 9 to indicate 7, 8, or 9 data bits.

Pa: Parity
Enter... for Parity
0 no parity
1 odd parity
2 even parity

NOTE: the stop bit is fixed at 1.

When programming is complete, press the [Escape] button; when the [Escape] button is pressed, the next Configuration option will be displayed on the screen.

Option 10: COM2 Communication Format
Option [10] determines the application to be used on COM2. Press the [ACK] button when the “10: Com#2 Format” message is displayed; this message will be displayed:

Enter a number from 0 to 2 to select one of the following:
0 PC Computer Programming Software capability (default setting)
1 SCADA connection through Com#2 enable
2 SCADA connection through Com#2 with Redundancy Backup enable

Option 11: Adjust LCD Contrast
Option [11] allows the contrast of the message display screen to be adjusted. Press the [ACK] button when the “11: Contrast Adj” message is displayed; this message will be displayed:

Press the [Enter] button to increase the contrast; press the [Backspace] button to reduce the contrast. When the display contrast is adjusted to the desired level, press the [Escape] button; when the [Escape] button is pressed, the next Configuration option will be displayed on the screen.

Option 12: UL Receiver Option
To have the SCS2 operate in compliance with UL Listed Central Station requirements, press the [ACK] button when the “12: UL Receiver” message is displayed. This message will be displayed:

When Option [12] is programmed as “1,” the SCS2-300 will operate according to the following UL864 requirements:
• All signals are sent to the computer and/or the printer if connected.
• The SCS2-300 retains alarm messages received from the line cards and the SCS2-300 supervisory signal on the LCD display, and activates the buzzer to alert the operator. The display will also indicate if additional signals are waiting to be displayed and acknowledged.
• The operator must press the [ACK] button to acknowledge the signal manually. The SCS2-300 will scroll to the next message if there are more messages to display.
• The SCS2-300 returns to the Standby mode when all signals have been manually acknowledged.

When Option [12] is programmed as “00,” functions described above will be bypassed. The default setting for Option 12 is “00.”

NOTE: By activating this option, the SCS2-300 will overwrite some option settings if they are not set to comply with UL requirements.

Option 13: Erase Alarm Message Buffer

NOTE: Under normal operating conditions, the buffer should not be erased.

Option [13] is used to erase the SCS2-300 alarm message buffer. Press the [ACK] button when the “13: Erase Memory”
message is displayed; this message will be displayed:

```
Erase all MEMORY
ent=Y bs=N esc=X
```

Press the [Backspace] or [Escape] buttons to cancel this option without erasing the SCS2-300 buffer. To erase the buffer, press the [Enter] button. When the [Enter] button is pressed, this message will be displayed:

```
Are You Sure?
ent=Y bs=N esc=X
```

Again, press the [Backspace] or [Escape] buttons to cancel this option without erasing the SCS2-300 buffer. To erase the buffer, press the [Enter] button. When the [Enter] button is pressed, all printer and computer messages will be erased. Ensure that a printed record of the alarm messages is made before erasing the buffer.

**Option 14: Mute Buzzer**

A buzzer will sound when the SCS2-300 receives an alarm and is unable to forward the alarm message to COM1. The buzzer can be silenced by programming Option [14] as "1." Press the [ACK] button when the "14: Mute Buzzer" message is displayed; this message will be displayed:

```
Mute Buzzer: 1/0
0 Change to:x
```

When programmed as "1," the buzzer will not sound when an alarm is received and cannot be forwarded to COM1. When programmed as "0," the buzzer will sound when an alarm is received and cannot be forwarded to COM1. The default setting is "0."

**NOTE: Option 14 will have no effect on the buzzer if the UL Receiver Option is enabled.**

**Option 15: Display Last Message**

When an alarm is received, the alarm message is displayed on the screen until the message is forwarded to the computer and printer. When the message is sent to the computer and printer, the Standby mode message will be displayed. The most recent alarm message may be retained on the screen until the next alarm message is received. To retain the most recent alarm message, program Option [15] as "1." Press the [ACK] button when the "15: Keep Lst Msg" message is displayed; this message will be displayed:

```
Keep Lst Msg:1/0
0 Change to:x
```

To have the Standby mode message displayed after an alarm is received and sent to the computer or printer, program Option [15] as "0." The default setting is "0." When "0" or "1" has been entered, press the [Enter] key.

**Option 16: ComPort Diagnostics**

The SCS2-300 features a Diagnostics mode that allows the operator to view all data being communicated through COM1 (or COM2) on the display screen. To use this feature, press the [ACK] button when the "16: Debug ComPort" message is displayed; this message will be displayed:

```
Debug ComPort1,2
0 Change to:x
```

Enter "1" and press the [Enter] button to enable the Diagnostics feature on Com1 (or "2" for Com2). All data being sent through COM1 will now be displayed on the screen. A typical transmission is shown here:

```
1RRL AARRsX
YY N 06
```

N represents the number of times the SCS2-300 tries to resend the message to COM1; this value should be "1" during normal communication.

[06] represents the Acknowledge received from COM1. To disable the diagnostics feature, program Option 16 as "0." The Diagnostics mode should only be enabled to test and review the information being sent to COM1; the Diagnostics feature should be disabled during normal receiver operation.

**Option 17: Test 9V/12V Battery**

Some earlier SCS2-300 units provide 9V battery for memory storage while present SCS2-300 units use different technology for this purpose. If the unit uses 9V battery, the battery voltage should be supervised by enabling this option. Press [ACK] button when the "17: Test 9V/12v." message is displayed; the following message will be displayed:

```
9V/12V Batt: 0-3
2 Change to:x
```

0 Do not supervise the 12V and 9V batteries
1 Supervise 9V only
2 Supervise 12V only
3 Supervise both batteries

**Option 18: Line Card Diagnostics**

The SCS2-300 features a Diagnostics mode that allows the operator to view all data being communicated between the SCS2-300 and the line cards. To enable this feature, press the [ACK] button when the "18: Debug LnCard#" message is displayed.

Enter a hexadecimal number from "01" through "E" to monitor line card 01 through 14, or enter "FF" to monitor all line cards connected to the SCS2-300. Standby communications between the line card and the SCS2-300 will be displayed with messages similar to this:

```
01
FE
```

- 01 represents the line card number
- FE represents the response from line number 1 to the normal SCS2-300 alarm messages transmitted by the line cards will be displayed with messages similar to this:

```
L01-1234-C01
OpenGrp
```

**NOTE: When Diagnostics mode are enabled, messages will be displayed according to the following priority:**

- UL message - Acknowledge required
- COM1 Diagnostic messages
- Line Card Diagnostic messages
- "Retain last message" displays
- Internal Troubles messages
- Standby mode message

Refer to "Message Priorities" for more information.
Option 19: Display Software Version
To display the software version presently installed in the SCS2-300, press the [ACK] button when the “19:Program Vers#” message is displayed; a message similar to this will be displayed:

SG-SCS2-300 RECEIVER
*June-22-00 U2.4

Option 20: Battery Monitor
To view the present voltage of the 12V general backup batteries, press the [ACK] button when the “20: Monitor Batt.” message is displayed. A message similar to this will be displayed:

Battery Monitor:
12V: 13.9 Volt

If the 12V battery is disconnected, approximately 11.2V will be indicated for that battery.

NOTE: If option 17 is at 03, a message similar to this will be displayed:

Battery Monitor:
9V: 08.8 12V: 13.9

Option 21: Alarm Messages Print Year or Seconds
Alarm messages may be programmed to include either the year in their dates, or the seconds in their times. To program Option [21], press the [ACK] button when the “21: Year/Second” message is displayed; this message will be displayed:

Year/Second: 1/0
0 Change to: X

Program Option [21] as “1” to include the year in the alarm message date; alarm messages will be printed as follows:
L01-1234-05 Alarm 21:24-24/11/94
Note that the time (21:24) is represented with just hours and minutes, and that the year is added to the date (24/11/94). Program Option [21] as “0” to include the seconds in the alarm message time; alarm messages will be printed as follows:
L01-1234-05 Alarm 21:24:30-24/11
Note that the time (21:24:30) now includes hours, minutes and seconds; the date (24/11) only indicates the day and the month.

NOTE: This option will affect COM1 when COM1 is programmed with communication format 4.

Option 22: System Reset
To reset the SCS2-300 program, press the [ACK] button when the “22: Force Reset” message is displayed; this message will be displayed:

Force Sys Reset
Ent=Yes Bsp=No

Press the [Backspace] button to cancel the option without resetting the SCS2-300. To reset the SCS2-300, press the [Enter] button. The reset will take approximately 8 seconds to complete. Press the [Backspace] or [Escape] buttons to move to the next Configuration option.

Option 23: Change Receiver Number
The receiver number is used to identify the receiver when communicating to COM1 and printer to report internal troubles. To change the receiver number, press the [ACK] button when the ‘23: Chg Receiver#” message is displayed. This message will be displayed:

Receiver Number:
01 Chg to: xx

Enter a new receiver number using the hexadecimal numbers “01” to “FF”. When a new number is entered, press the [Enter] button.

Options 24 to 27: Not used

Option 28: Tamper Input
To view the Tamper Input / UPS Low Battery supervisory, press the [ACK] button until “28: Tamper Input” is displayed. Press [ACK], the following message will then be displayed:

UPS/<ACK>: 0/1
0 Change to: 0

When this option is set to “0,” the TAMP terminal when shorted to ground will send a UPS Low Battery supervisory to the computer and activate the buzzer and ACK LED. The buzzer will shut off when the [ACK] button is pressed, or the UPS Low Battery is restored. When the option is set to “1,” the TAMP terminal can be used as a remote [ACK] button when shorted to ground. The default setting is “0.” Connect a push-button switch between the TAMP terminal and the GND terminal. When shorting the TAMP terminal with the ground, the receiver will react as if the front [ACK] button had been pressed. This could be used to install a remote Acknowledge button when using the receiver in manual mode.
MESSAGE PRIORITIES
When in Standby mode, the SCS2-300 will display warning and other operational messages according to the following priority:
1 UL Requirement Message
2 COM1/COM2 Diagnostics
3 Line Card Diagnostics
4 "Retain last message" Displays
5 Printer Error
6 COM1 Absent
7 12V Battery Low
8 9V Battery Low
9 AC Failure
10 Standby Mode Message

UL REQUIREMENT MESSAGE
When Option [12] is programmed as "01," the [ACK] button must be pressed to acknowledge each incoming alarm manually and to silence the internal buzzer.

COM1 DIAGNOSTICS
If both Option [16] and Option [06] are enabled, the screen will display the data being communicated through COM1. Refer to Option [16] for information.

LINE CARD DIAGNOSTICS
If Option [18] is enabled, the screen will display the data exchanged between the SCS2-300 and the selected (or all) line card(s). Refer to Option [18] for more information.

"RETAIN LAST MESSAGE" DISPLAYS
If Option [15] is enabled, the latest printer message will be retained on the display screen. Refer to Option [15] for more information.

PRINTER ERROR
If Option [04] is enabled and there is a printer trouble (for example, printer off-line, paper out, and so on), a message similar to this will be displayed:
*Feb-23 07:30:45
<Printer ERROR!>

COM1 ABSENT
If Option 06 is enabled and COM1 is absent (for example, disconnects, off-line, or fails to send acknowledge signal), a message similar to this will be displayed:
*Feb-23 07:30:45
<Com#1 ABSENT>

12V BATTERY LOW
If the 12V backup battery is disconnected or its voltage is low, a message similar to this will be displayed:
*Feb-23 07:30:45
12V Battery LOW!

AC FAILURE
If AC power is removed from the SCS2-300, this message will be displayed:
*Feb-23 07:30:45
<AC Power LOST!>

Standby Mode Message
During normal standby operation, this message will be displayed:
*Feb-23 07:30:45
Scanning 1E (30)

SCS2-300 UTILITY MODES
SCS2-300 v2.4 provides for a 2 digit line card number. Since v2.4 is being shipped with all SCS2-200 modules, the sample screens need to be changed.
[A] Send Computer Messages to Printer
[B] Operator Log-On
[C] System Command Mode
[D] Send Printer Messages on Display Screen
[E] Examine Printer Messages on Display Screen
[F] Examine Computer Messages on Display Screen

[A] SEND COMPUTER MESSAGES TO PRINTER
This mode is used to send the computer messages from the buffer to the printer. When the [A] key is pressed, this message will be displayed:
Dump COM Msg->PRT
Lcard#:FF Ent:EXE
Enter a hexadecimal number to print the following:
Enter... to print
00 SCS2-300 internal supervisory signals (if any)
FF Computer messages for all line cards and
SCS2-300 internal supervisory signals
01-E Computer messages for specified line card
Example: If "0" is entered, the following will be printed:
Dump Computer Alarm Buffer
1011 ...... 0000 . R .. 06 12:37:31 - 12/10 106
1011 ...... 0000 . A .. 01 12:38:22 - 12/10 106
NOTE:"106" indicates the message was sent to the computer once and the computer has responded correctly with an [06] acknowledge.

[B] OPERATOR LOG-ON
Different operators may "log on" to the system by entering this mode. When an operator logs on, a message similar to this one will be printed: "Operator on duty S.G. 11:03-21/12/92"; the operator's initials (if programmed) and the time and date will be printed. If the Star 8340 printer is being used, this message will be printed in red.
To log on, press the [B] key, and then enter a 4-digit password. If a valid password is entered, a log-on message will be printed. If an invalid password is entered, the SCS2-300 will sound a tone to indicate that the code was entered incorrectly. Refer to SCS2-300 Option [02] for information on programming operator passwords and initials.
[C] SYSTEM COMMAND MODE

The System Command mode is used to send commands to the line cards through the SCS2-300. To enter this mode, press [C] and then enter an Operator password. When the password is entered, this message will be displayed:

```
LCard:__ Comd:__
Op:__ Cd:__ Sc:__
```

- LCard: Enter a 2-digit hexadecimal number from 01 to 0E to indicate which line card is to be affected.
- Comd: Enter one of the line card Commands described in the SCS2-200 line card Menu mode section of this manual.
- Op: and Cd: “Op” and “Cd” are used to indicate parameters that may be required within certain commands. For example, when using the F7 line card programming command “Op” and “Cd” are used to indicate the Option number and the new code programmed for that option.
- Sc: “Sc” is used with SCADA applications. Enter digits using the keypad; when a digit is entered, the cursor will move one character to the right. Press the [Backspace] button to delete the character presently indicated by the cursor and move the cursor 1 character to the left. When a command has been entered, press the [Escape] button to send the command to the line card. If more than one command is to be sent, press the [ACK] button to send the command presently displayed on the screen. Another command may now be entered.

[D] SEND PRINTER MESSAGE TO THE PRINTER

With the SCS2-300 in the Standby mode, press the [D] key to send printer messages in the buffer to the printer. When the [D] key is pressed, this message will be displayed:

```
Dump PRT Msg->PRT
LCard#:FF ent:EXE
```

Enter a hexadecimal number to print the following:

```
Enter... to print
00 SCS2-300 internal trouble messages (if any)
01to1E Messages for specified line card
FF Messages for all line cards
```

If an error is made in entering the number, simply re-enter the desired number on the keypad.

Press the [Backspace] or [Escape] button to cancel this function and return to the Standby mode, or, press the [Enter] button to view the indicated messages. When the [Enter] button is pressed, the SCS2-300 will display the printer messages, starting with the most recent message. When [Enter] is pressed, a message similar to this will be displayed:

```
L01-1234-05
Alarm xx
```

“xx” indicates the number (in hexadecimal) of printer messages in the line card buffer.

Press the [Enter] button to scroll through the messages; the messages will be displayed in order from the most recent to the oldest. Press the [Backspace] button to scroll from the oldest message to the most recent.

When finished viewing the messages, press the [Escape] button.

[F] EXAMINE COMPUTER MESSAGES ON DISPLAY SCREEN

With the SCS2-300 in the Standby mode, press the [F] key to review computer messages on the display screen. When the [F] key is pressed, this message will be displayed:

```
Examine COM1 msg
LCard#:FF ent:EXE
```

Enter a hexadecimal number to view the following:

```
Enter... to view
00 SCS2-300 internal trouble messages (if any)
01to1E Messages for specified line card
FF Messages for all line cards
```

If an error is made in entering the number, simply re-enter the desired number on the keypad.

Press the [Backspace] or [Escape] button to cancel this function and return to the Standby mode, or, press the [Enter] button to view the indicated messages. When the [Enter] button is pressed, the SCS2-300 will display the computer messages, starting with the most recent message. When [Enter] is pressed, a message similar to this will be displayed:

```
1011......0000.R
..03 1.06 xx
```

“xx” indicates the number (in hexadecimal) of computer messages in the line card buffer.

Press the [Enter] button to scroll through the messages; the messages will be displayed in order from the most recent to the oldest. Press the [Backspace] button to scroll from the oldest message to the most recent. When finished viewing the messages, press the [Escape] button.

SCS2-300 Computer Interface

The SCS2-300 is able to send alarm messages to a computer connected to the COM1 serial port. This section describes the communication procedures, and the communication formats available for use.
OVERVIEW OF COMMUNICATION
When the SCS2-300 receives data from a line card, it forwards the data to COM1 and awaits an acknowledgment signal from the computer. If a NAK signal is received from the computer, the SCS2-300 will make 4 attempts to send the data. If all four attempts fail, SCS2-300 buzzer will sound and the SCS2-300 will retain the alarms in its internal buffer until communications are restored. This routing provides reliable and supervised communication between the SCS2-300 and the line cards. The SCS2-300 also monitors the connection to the computer by sending a supervisory “heartbeat” signal through COM1 every 30 seconds. If the “heartbeat” transmission determines that the computer is off-line or disconnected, a message similar to this will be sent to the printer:

Com#1 Absent!! 09:45-21/09/92

Note that the message indicates the time and date that communications through COM1 were determined to be interrupted. When COM1 communications are re-established, a message similar to this one will be printed:
Com#1 Restored 09:50-21/09/92

Note that the message indicates the time and date that communications through COM1 were determined to be re-established. The “heartbeat” feature may be disabled if this feature is not compatible with the central station automation software being used on the computer.

SCS2-300 COM1 STATUS REPORT MESSAGES
The SCS2-300 will send the following messages to COM1 to report internal status conditions. SCS2-300 will use an account code of “0000” to indicate that it is reporting an internal condition. The line number is fixed to be “0.”

<table>
<thead>
<tr>
<th>Sent to COM1</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000 A 00</td>
<td>Reserved to indicate Operator activity for C or ESC mode (not implemented in this program version).</td>
</tr>
<tr>
<td>0000 A 01</td>
<td>Printer Error</td>
</tr>
<tr>
<td>0000 R 02</td>
<td>Printer Restored</td>
</tr>
<tr>
<td>0000 A 03</td>
<td>12V Battery Low</td>
</tr>
<tr>
<td>0000 R 04</td>
<td>12V Battery Restored</td>
</tr>
<tr>
<td>0000 A 05</td>
<td>COM1 Absent</td>
</tr>
<tr>
<td>0000 A 06</td>
<td>COM1 Restored</td>
</tr>
<tr>
<td>0000 A 07</td>
<td>UPS AC Fail</td>
</tr>
<tr>
<td>0000 R 08</td>
<td>UPS AC Restored</td>
</tr>
<tr>
<td>0000 A 11</td>
<td>9V Batt. Low</td>
</tr>
<tr>
<td>0000 R 12</td>
<td>9V Batt. Restr</td>
</tr>
<tr>
<td>0000 A 13</td>
<td>COM2 Absent</td>
</tr>
<tr>
<td>0000 R 14</td>
<td>COM2 Restored</td>
</tr>
<tr>
<td>0000 A 15</td>
<td>AC Failure</td>
</tr>
<tr>
<td>0000 R 16</td>
<td>AC Restored</td>
</tr>
<tr>
<td>0000 A 17</td>
<td>UPS Low Battery</td>
</tr>
<tr>
<td>0000 R 18</td>
<td>UPS Low Batt Restr</td>
</tr>
<tr>
<td>0000 T 19</td>
<td>SCS2-300 Master Fail</td>
</tr>
<tr>
<td>0000 A C1 to CU</td>
<td>Internal Communication Error</td>
</tr>
</tbody>
</table>

NOTE: Trouble can be caused by bad backplane connections or RAM failure. Cold boot may be necessary.

0000 A D0: SCS2-300 Reset

When a SCS2-300 event is sent to the computer that has the line card number in it, the SCS2-300 changes the value of the line card number to a letter. Line cards 01 to 1E will be displayed as 1 to 9 for line cards 01 to 09 and A to U for line cards 0A to 1E.

0000 A F1 to FU: Line Card 01 to 1E Absent
0000 R E1 to EU: Line Card 01 to 1E Restored

The following messages will be sent to COM1 to report status changes on the line cards. Again, the account code of “0000” indicates that an internal event is being reported. The line number varies depending on which line card is reporting.

<table>
<thead>
<tr>
<th>Sent to COM1</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>#0000</td>
<td>YNRRL</td>
</tr>
<tr>
<td>#0000</td>
<td>NLTRRL</td>
</tr>
<tr>
<td>#0000</td>
<td>NLRRL</td>
</tr>
<tr>
<td>#0000</td>
<td>NYCRL</td>
</tr>
</tbody>
</table>

Depends on Option [7E] Audio on line X

When a SCS2-300 event is sent to the printer that has the line card number in it, the SCS2-300 changes the value of the line card number to a letter. Line cards 01 to 1E will be printed as 1 to 9 for line cards 01 to 09 and A to U for line cards 0A to 1E.

The message will be printed as follows:

L1T-Linecard restored 17:49:56-11/08
L1U-Linecard Inc. Resp. 17:51:36-11/08
L1S-Comm Error 17:35:37-11/08
### SCS2-300 EPROM PROGRAMMING

<table>
<thead>
<tr>
<th>Address</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6500</td>
<td>05H</td>
<td>Printer strobe pulse width default = 5 microseconds</td>
</tr>
<tr>
<td>6501-6502</td>
<td>3E80</td>
<td>Delay time x 0.25 ms to re-send message to COM1 if heartbeat is not selected</td>
</tr>
<tr>
<td>6505-6506</td>
<td>0100H</td>
<td>Test Line Card 01 at 01:00</td>
</tr>
<tr>
<td>6505-6508</td>
<td>0115H</td>
<td>Test Line Card 02 at 01:15</td>
</tr>
<tr>
<td>6507-650A</td>
<td>0130H</td>
<td>Test Line Card 03 at 01:30</td>
</tr>
<tr>
<td>6509-650C</td>
<td>0145H</td>
<td>Test Line Card 04 at 01:45</td>
</tr>
<tr>
<td>650B-650E</td>
<td>0200H</td>
<td>Test Line Card 05 at 02:00</td>
</tr>
<tr>
<td>650D-6510</td>
<td>0215H</td>
<td>Test Line Card 06 at 02:15</td>
</tr>
<tr>
<td>6511-6512</td>
<td>0230H</td>
<td>Test Line Card 07 at 02:30</td>
</tr>
<tr>
<td>6513-6514</td>
<td>0245H</td>
<td>Test Line Card 08 at 02:45</td>
</tr>
<tr>
<td>6515-6516</td>
<td>0300H</td>
<td>Test Line Card 09 at 03:00</td>
</tr>
<tr>
<td>6517-6518</td>
<td>0315H</td>
<td>Test Line Card 0A at 03:15</td>
</tr>
<tr>
<td>6519-651A</td>
<td>0330H</td>
<td>Test Line Card 0B at 03:30</td>
</tr>
<tr>
<td>651B-651C</td>
<td>0345H</td>
<td>Test Line Card 0C at 03:45</td>
</tr>
<tr>
<td>651D-651E</td>
<td>0400H</td>
<td>Test Line Card 0D at 04:00</td>
</tr>
<tr>
<td>6501F6520</td>
<td>0415H</td>
<td>Test Line Card 0E at 04:15</td>
</tr>
</tbody>
</table>

The 24 Hour Timetest will occur only for the first 14 line cards. Changes are rarely required, but these features may be changed to suit particular needs. To make changes to the EPROM programming, first insert a standard SCS2-300 EPROM into an EPROM programming unit. Follow the instructions provided with the EPROM programmer to select addresses and modify data. Ensure that the correct addresses are being programmed, and verify the existing data in the address before making changes.

### AUTOMATION PROTOCOLS

The DMP SG-SCS2 receiver sends the various protocols to report signals to the central station computer via an RS-232 port. The complete description of protocols is available upon request.

### DATA BYTE PROTOCOL

The DMP SCS2 receiver uses a default configuration of 19200 Baud, one start bit, seven data bits, one even parity bit, and one stop bit structure to transmit and receive signals on the RS-232 port. This protocol can be programmed on the receiver to enable different configurations.

### ACKNOWLEDGEMENT OF THE SIGNAL

The DMP receiver requires an acknowledgment signal [ACK] (Hex 06) from the computer software within 4 seconds for each message sent. Failure to receive the [ACK] will result in the retransmission of the same signal three times before giving up. The same thing happens if the receiver receives a [NAK] (hex 15). In case of communication failure with the computer, the DMP receiver can store up to 127 times the number of lines installed in its internal memory. The communication is resumed when the first ACK is received on the heartbeat.
APPENDIX A: SCS2-200 COMMUNICATION FORMATS

**UL has verified compatibility with the following formats:**

<table>
<thead>
<tr>
<th>NAME</th>
<th>HANDSHAKE</th>
<th>DATA</th>
<th>BAUD</th>
<th>FORMAT</th>
<th>EXTENDED</th>
<th>KISS OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ademco Slow</td>
<td>1400Hz</td>
<td>1900Hz</td>
<td>10bps</td>
<td>3/1,4/1 (or 3/2), 4/2</td>
<td>NO</td>
<td>1400Hz</td>
</tr>
<tr>
<td>Ademco Slow</td>
<td>1400Hz</td>
<td>1900Hz</td>
<td>10bps</td>
<td>4/2, 4/1, 3/1</td>
<td>YES</td>
<td>1400Hz</td>
</tr>
<tr>
<td>Silent Knight Fast</td>
<td>1400Hz</td>
<td>1900Hz</td>
<td>14bps</td>
<td>3/1, 4/1 (or 3/2), 4/2</td>
<td>NO</td>
<td>1400Hz</td>
</tr>
<tr>
<td>Silent Knight Fast</td>
<td>1400Hz</td>
<td>1900Hz</td>
<td>14bps</td>
<td>4/2, 4/1, 3/1</td>
<td>YES</td>
<td>1400Hz</td>
</tr>
<tr>
<td>Franklin</td>
<td>2300Hz</td>
<td>1800Hz</td>
<td>20bps</td>
<td>3/1, 4/1 (or 3/2), 4/2</td>
<td>NO</td>
<td>2300Hz</td>
</tr>
<tr>
<td>Franklin</td>
<td>2300Hz</td>
<td>1800Hz</td>
<td>20bps</td>
<td>4/2, 4/1, 3/1</td>
<td>YES</td>
<td>2300Hz</td>
</tr>
<tr>
<td>Radionics</td>
<td>2300Hz</td>
<td>1800Hz</td>
<td>40bps</td>
<td>3/1, 4/2</td>
<td>NO</td>
<td>2300Hz</td>
</tr>
<tr>
<td>Radionics</td>
<td>2300Hz</td>
<td>1800Hz</td>
<td>40bps</td>
<td>4/2, 3/1</td>
<td>YES</td>
<td>2300Hz</td>
</tr>
<tr>
<td>Radionics</td>
<td>2300Hz</td>
<td>1800Hz</td>
<td>40bps</td>
<td>3/1, 4/2 + parity</td>
<td>NO</td>
<td>2300Hz</td>
</tr>
<tr>
<td>Radionics</td>
<td>2300Hz</td>
<td>1800Hz</td>
<td>40bps</td>
<td>4/2, 4/2 + parity</td>
<td>YES</td>
<td>2300Hz</td>
</tr>
<tr>
<td>Sescoa S. Speed</td>
<td>2300Hz</td>
<td>1800Hz</td>
<td>40bps</td>
<td>4/3 + Checksum</td>
<td>NO</td>
<td>2300Hz</td>
</tr>
<tr>
<td>Sescoa S. Speed</td>
<td>2300Hz</td>
<td>1800Hz</td>
<td>40bps</td>
<td>4/3 + Checksum</td>
<td>ID O/C</td>
<td>2300Hz</td>
</tr>
<tr>
<td>SIA FSK Level 1, 2, and 3</td>
<td>FSK mark Space</td>
<td>FSK mark</td>
<td>110bps</td>
<td>FSK mark Space</td>
<td>110bps</td>
<td>FSK mark Space</td>
</tr>
<tr>
<td>Contact ID</td>
<td>Dual Tone</td>
<td>DTMF</td>
<td>DTMF</td>
<td>4/2/1/3/2/3</td>
<td>NO</td>
<td>1400Hz</td>
</tr>
<tr>
<td>DMP</td>
<td>2300Hz</td>
<td>DTMF</td>
<td>DTMF</td>
<td>4/1, 4/2, 4/3</td>
<td>NO</td>
<td>2300Hz</td>
</tr>
<tr>
<td>DMP</td>
<td>Dual Tone</td>
<td>DTMF</td>
<td>DTMF</td>
<td>4/1, 4/2, 4/3</td>
<td>NO</td>
<td>1400Hz</td>
</tr>
<tr>
<td>DMP</td>
<td>2300Hz</td>
<td>DTMF</td>
<td>DTMF</td>
<td>4/3 + Checksum</td>
<td>NO</td>
<td>2300Hz</td>
</tr>
<tr>
<td>S.F. Ademco</td>
<td>Dual Tone</td>
<td>DTMF</td>
<td>DTMF</td>
<td>4/8/1</td>
<td>NO</td>
<td>1400Hz</td>
</tr>
<tr>
<td>S.F. Ademco</td>
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* UL has not verified compatibility with these formats.
## APPENDIX B: ASCII CHARACTER CHART

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## APPENDIX D: PRINTER WORDS - OPTIONS [60] - [6F]

The English Printer Library is provided and can be selected by programming the event codes to the corresponding word. Words available:

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<td>01 PENDANT TRANSMITTER</td>
<td>47 LOW WATER PRESSURE</td>
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<tr>
<td>02 FAIL TO REPORT IN</td>
<td>48 LOW CO2</td>
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<tr>
<td>03 RESERVED</td>
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<td>50 SYSTEM TROUBLE</td>
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<td>7 DIGIT PULSE:</td>
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<td>PGM OUTPUT:</td>
<td>000</td>
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<td>AE</td>
<td>DIAL-OUT 2-WAY:</td>
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<td>PGM INPUT:</td>
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<td>DIAL-OUT 2-WAY:</td>
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<td>FILTER OPT:</td>
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<td>6D</td>
<td>FILTER OPT:</td>
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APPENDIX G: EVENT CODE CLASSIFICATIONS

The Event codes have been grouped according to the type of event, as described below.

Medical Alarms - 100
100 Medical
101 Pendant transmitter
102 Fail to report in

Fire Alarms - 110
110 Fire alarm
111 Smoke
112 Combustion
113 Water Flow
114 Heat
115 Pull Station
116 Duct
117 Flame
118 Near alarm

Panic Alarms - 120
120 Panic alarm
121 Duress
122 Silent
123 Audible

Burglar Alarms - 130
130 Burglary
131 Perimeter
132 Interior
133 24 Hour
134 Entry/Exit
135 Day/Night
136 Outdoor
137 Tamper
138 Near alarm
139 Silent Burg

General alarms
140 General alarm
141 Polling loop open
142 Polling loop short
143 Expansion module failure
144 Sensor tamper
145 Expansion module tamper
146 Silent Alarm

24 Hour Non-Burglary - 150 and 160
150 24 Hour non-burg
151 Gas detected
152 Refrigeration
153 Loss of heat
154 Water leakage
155 Fail break
156 Day trouble
157 Low bottled gas level
158 High temp
159 Low temp
161 Loss of air flow

Fire supervisory - 200 and 210
200 Fire supervisory
201 Low water pressure
202 Low CO2
203 Gate valve sensor
204 Low water level
205 Pump activated
206 Pump failure

System Troubles - 300 and 310
300 System trouble
301 AC loss
302 Low system battery
303 RAM checksum bad
304 ROM checksum bad
305 System reset
306 Panel program changed
307 Self-test failure
308 System shutdown
309 Battery test failure
310 Ground fault

Sounder/Relay Troubles - 320
320 Sounder/relay
321 Bell 1
322 Bell 2
323 Alarm relay
324 Trouble relay
325 Reversing

System Peripheral Troubles - 330 and 340
330 System Peripheral
331 Polling loop open
332 Polling loop short
333 Exp. module failure
334 Repeater failure
335 Local printer paper out
336 Local printer failure
337 Exp Mod DC Loss
338 Exp Mod Low Batt
339 Exp Mod Reset
341 Exp Mod Tamper

Communication Troubles - 350 and 360
350 Communication
351 Telco 1 fault
352 Telco 2 fault
353 Long range radio
354 Fail to communicate
355 Loss of radio supervision
356 Loss of central polling
357 Radio Xmr VSWR

Protection Loop Troubles - 370
370 Protection loop
371 Protection loop open
372 Protection loop short
373 Fire trouble
374 Exit Alarm

Sensor Troubles- 380
380 Sensor trouble
381 Loss of super. - RF
382 Loss of super. - RPM
383 Sensor tamper
384 RF xmr. low battery
385 Smoke Hi-Sens.
386 Smoke Low Sens.
387 Intrusion Hi-Sens.
388 Intrusion Low Sens.
389 Detector Self Test Fail

Open/close - 400
400 Open/Close
401 O/C by user
402 Group O/C
403 Automatic O/C
404 Late to O/C
405 Deferred O/C
406 Cancel

Remote Access - 410
410 Callback request made
412 Success - download access
413 Unsuccessful access
414 System shutdown
415 Dialer shutdown

Access Control - 420
421 Access denied
422 Access report by user

System O/C - 440 and 450
441 Armed stay
450 O/C by Exception
451 Early O/C
452 Late O/C
453 Fail to Open
454 Fail to Close
455 Auto Arm Fail
456 O/C Partial Arm
457 Exit Error
458 User on Premises
459 Recent Close

System Disables - 500 and 510

Sounder/Relay disables - 520
520 Sounder/Relay disable
521 Bell 1 disable
522 Bell 2 disable
523 Alarm relay disable
524 Trouble relay disable
525 Reversing relay disable

System Peripheral Disables - 530 and 540

Communication Disables - 550 and 560
551 Dialer disabled
552 Radio xmitter disabled

Bypasses - 570
570 Zone bypass
571 Fire bypass
572 24 Hour zone bypass
573 Burg. bypass
574 Group bypass
575 Swinger Bypass

Test/Misc. - 600
601 Manual trigger test
602 Periodic test report
603 Periodic RF Xmission
604 Fire test
605 Status report to follow
606 Listen-in to follow
607 Walk Test Mode
621 Event log reset
622 Event log 50% full
623 Event log 90% full
624 Event log overflow
625 Time/Date Reset
626 Time/Date inaccurate
627 Program mode Entry
628 Program mode Exit
631 Exception Schedule change
632 Access Sched Change
FCC Compliance Statement
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. CAUTION: Changes or modification not expressly approved by DMP Security Systems Ltd. could void the user's authority to operate the equipment.

Important Information
This equipment complies with Part 68 of the FCC Rules. On the back of this equipment is a label that contains among other information, the FCC registration number of this equipment.

Notification to Telephone Company
Upon request, the customer shall notify the telephone company of the particular line to which the connection will be made, and provide the FCC registration number and the ringer equivalence of the protective circuit.

FCC Registration Number: 1VDCAN-35164-AL-N
Ringer Equivalence Number: 01A

telephone Connection Requirements
Except for the telephone company provided ringers, all connections to the telephone network shall be made through standard plugs and telephone company provided jacks, or equivalent, in such a manner as to allow for easy, immediate disconnection of the terminal equipment. Standard jacks shall be so arranged that, if the plug connected thereto is withdrawn, no interference to the operation of the equipment at the customer's premises which remains connected to the telephone network shall occur by reason of such withdrawal.

Incidence of Harm
Should terminal equipment or protective circuitry cause harm to the telephone network, the telephone company shall, where practicable, notify the customer that temporary disconnection of service may be required, however, where prior notice is not practicable, the telephone company may temporarily discontinue service if such action is deemed reasonable in the circumstances. In the case of such temporary discontinuance, the telephone company shall promptly notify the customer and will be given the opportunity to correct the situation.

Changes in Telephone Company Equipment or Facilities
The telephone company may make changes in its communications facilities, equipment, operations or procedures, where such actions are reasonably required and proper in its business. Should any such changes render the customer's terminal equipment incompatible with the telephone company facilities, the customer shall be given adequate notice to effect the modifications to maintain uninterrupted service.

General
This equipment should not be used on coin telephone lines. Connection to party line service is subject to state tariffs.

Ringer Equivalence Number (REN)
The REN is useful to determine the quantity of devices that you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most, but not all areas, the sum of the REN's of all devices connected to one line should not exceed five (5). To be certain of the number of devices that you may connect to your line, you may want to contact your local telephone company.

Equipment Maintenance Facility
If you experience trouble with this telephone equipment, please contact the facility indicated below for information on obtaining service or repairs. The telephone company may ask you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

U.S. Point of Contact
Digital Security Controls Ltd.
160 Washburn St.
Lockport, NY 14094
**Limited Warranty**

Digital Monitoring Products warrants that for a period of 36 months from the date of purchase, the product shall be free of defects in materials and workmanship under normal use and that in fulfillment of any breach of such warranty, Digital Monitoring Products shall, at its option, repair or replace the defective equipment upon return of the equipment to its repair depot. This warranty applies only to defects in parts and workmanship and not to damage incurred in shipping or handling, or damage due to causes beyond the control of Digital Monitoring Products, such as lightning, excessive voltage, mechanical shock, water damage, or damage arising out of abuse, alteration or improper application of the equipment.

The foregoing warranty shall apply only to the original buyer, and is and shall be in lieu of any and all other warranties, whether expressed or implied and of all other obligations or liabilities on the part of Digital Monitoring Products This warranty contains the entire warranty. Digital Monitoring Products neither assumes responsibility for, nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

In no event shall Digital Monitoring Products be liable for any direct, indirect or consequential damages, loss of anticipated profits, loss of time or any other losses incurred by the buyer in connection with the purchase, installation or operation or failure of this product.

**Warning**

*Digital Monitoring Products recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.*

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**How to contact us:**

- **Sales**
  For information about additional products, please call our customer service number: 1-800-641-4282, fax us at 1-800-743-5724 or e-mail us at customerservice@dmpnet.com.

- **Technical Support**
  If you have questions or problems when using this product, you can call Technical Support. If you are within the United States, you can get support by dialing 1-888-436-7832, or e-mail us at techsupport@dmpnet.com.

- **Internet**
  Visit our web site at www.dmpnet.com for further product information.