

# 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 IIIa<sup>2</sup> 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

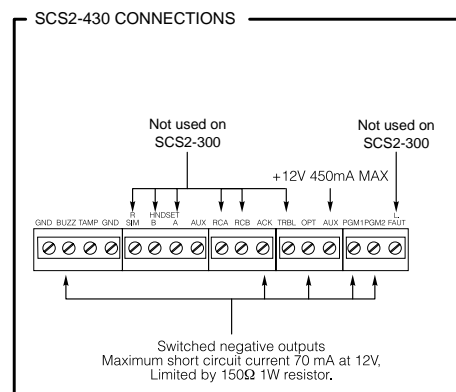
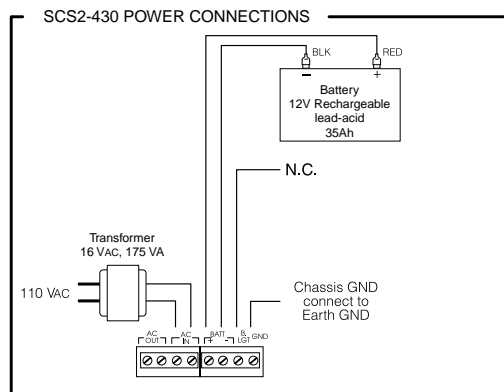
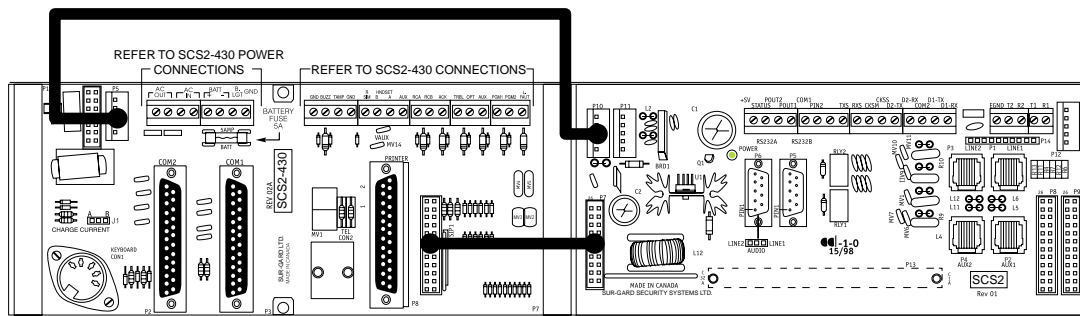
This equipment should be installed in accordance with the requirements of NFPA72, NFPA70, UL827 and the local authority having jurisdiction.

### UL MANUAL MODE

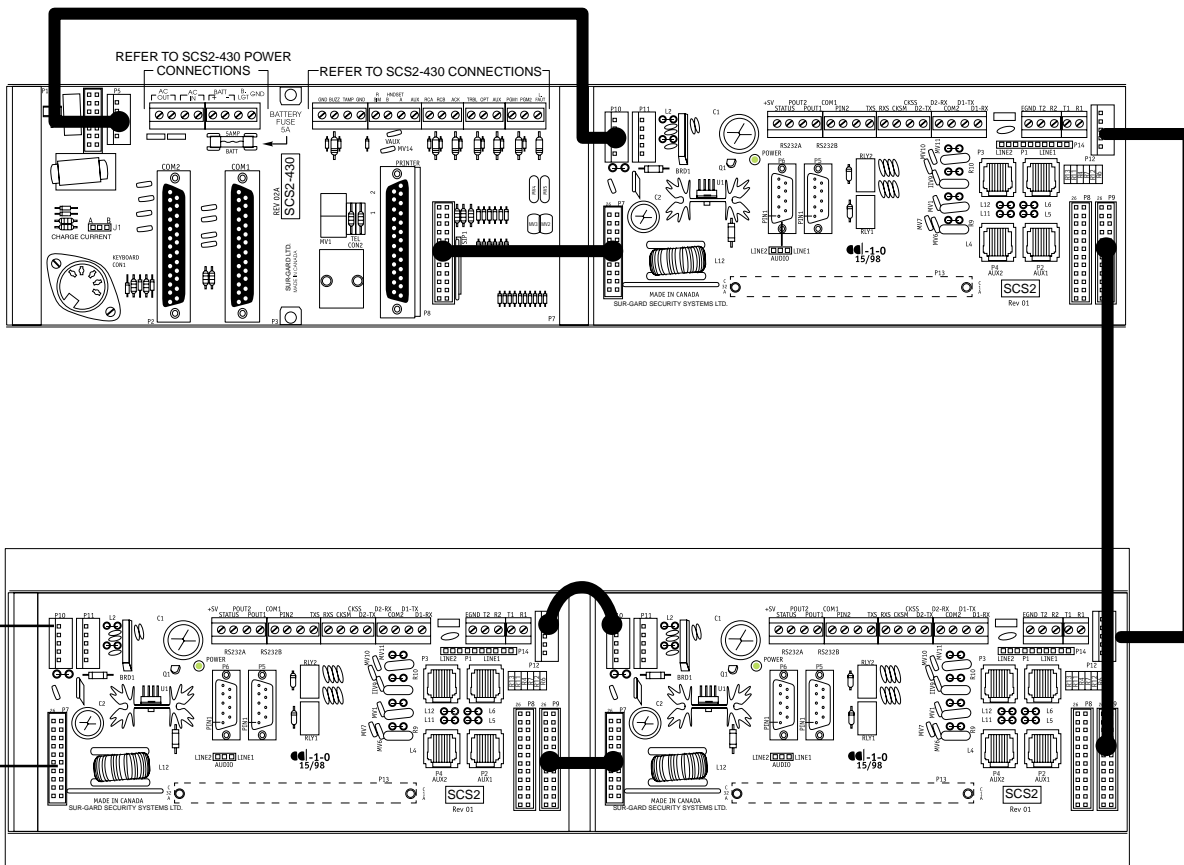
For UL manual mode, each event will activate the internal buzzer to be acknowledged manually. Each event will also be sent automatically to the connected printer.

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.

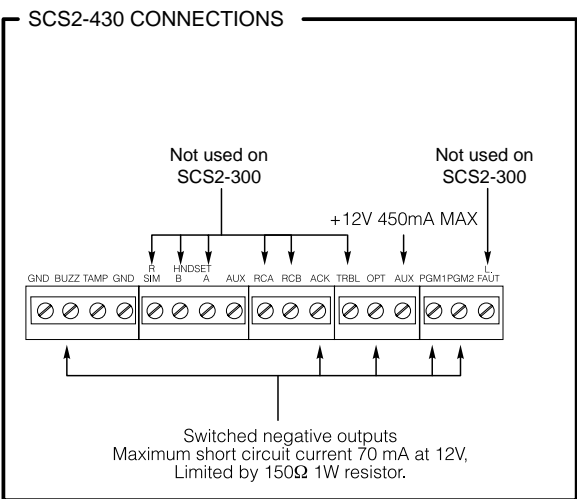
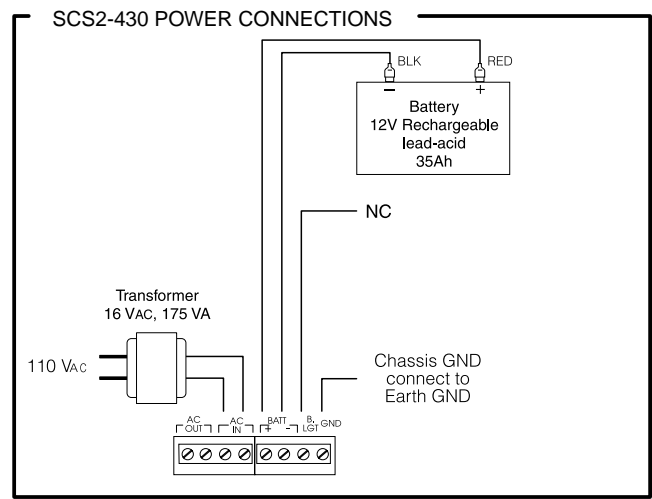
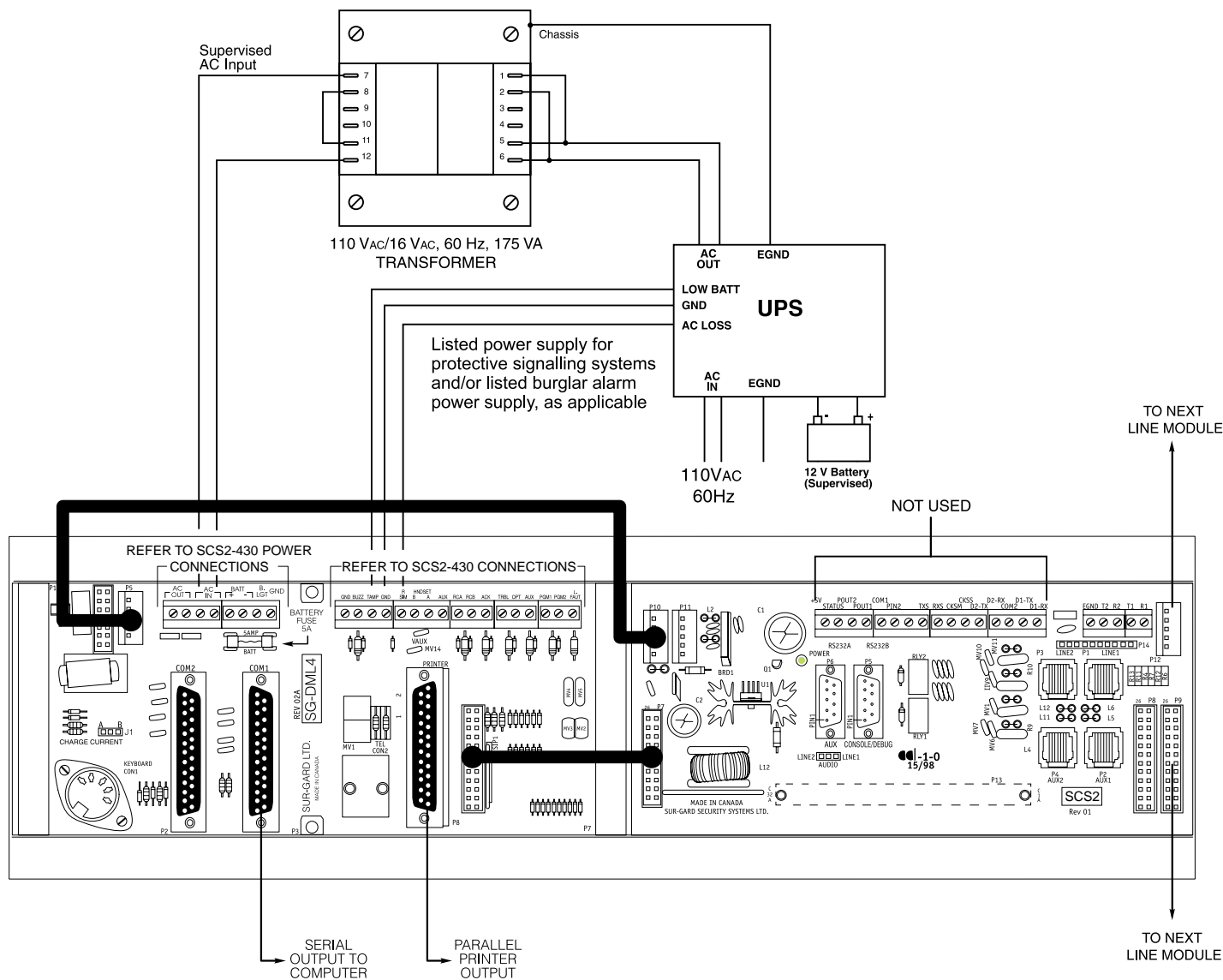
## SCS2 BACKPLANE CONNECTION DIAGRAM



## CONNECTIONS FOR SCS2-420 LINE CARD EXPANSION



SCS2 UPS CONNECTION DIAGRAM



## QUICK START

### Receiver Setup and Operation Without Programming

#### 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:

- 16V<sub>AC</sub>, 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.

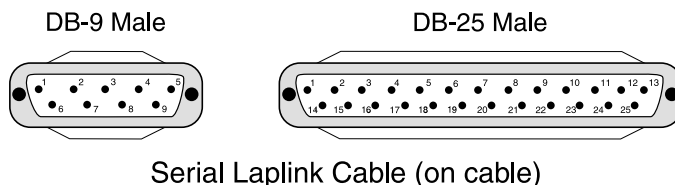
Signals can be displayed on the debug output as they are received. The signals are then sent to the parallel printer and computer connected to serial port COM1. The default event codes described in the "SCS2-200 Library Decoding and Event Codes Table" will be used with the DMP Automation Communication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

Serial Laplink Cable				
from DB9	from DB25	to DB9	to DB25	Signal
2	3	2	3	Receive - Transmit
3	2	3	2	Transmit - Receive
4	20	6	6	DTR - DSR
5	7	7	5	Ground - Ground
6	6	20	4	DSR - DTR
7	4	5	8	RTS - CTS
8	5	4	7	CTS - RTS



#### 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.

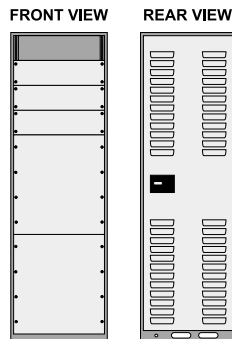
# INSTALLATION

## 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

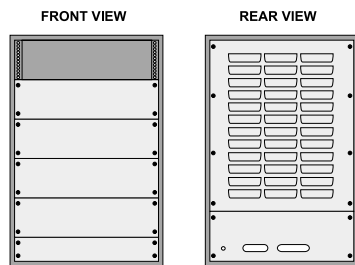
- Rack
- Door with lock and ventilation
- Blank plates 21"/53cm (2)
- Blank plate 5.25"/13.3cm (3)
- Screws
- Washers
- Clipnuts
- FROST 16V/175VA transformer P/N FT3304
- AC utility box
- AC cable clamps (2)
- 8'/2.4m battery cables
- 3-Gauge conductor AC cable
- Secondary non-replaceable fuse, 15A, 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
- Clipnuts
- 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.

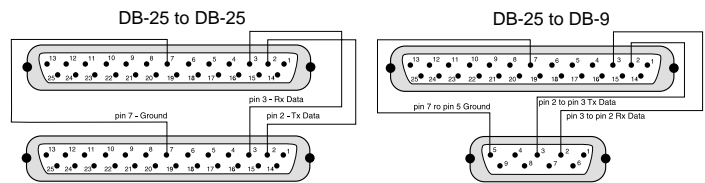
**For UL Listed applications, the following UL Listed printers can be used with the SCS2:**

- 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.**



SCS2 COM1 or COM2  
Automation Computer Connection

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.

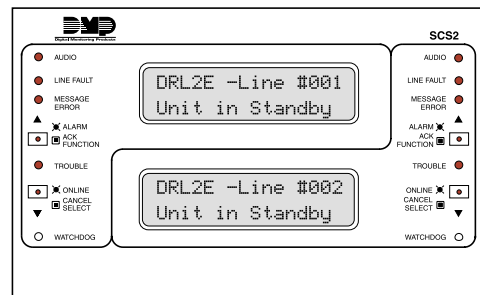
### GENERAL INFORMATION

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: 0RRL[#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: 0RRL[#0000 | NLRRL]

**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.**

### 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

```
PRINTER BUFFER
ACK:menu SEL:sel
```

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

```
DISPLAY OPTIONS
ACK:menu SEL:sel
```

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.

```
options display
and description
```

## DISPLAY PROGRAM VERSION

```
PROGRAM VERSION
ACK:menu SEL:sel
```

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

```
Adjust CONTRAST
ACK:menu SEL:sel
```

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

```
ADJUST BACKLIGHT
ACK: up  SEL: down
```

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 | NYNRLL]

**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 for account code "0000" indicates that data has been received, but is not valid (for example, there are unmatched rounds or the wrong parity). The following is an example of faulty data received by the SCS2-200, and the printer output generated:

Round	Data Received	Printer Output
1st	123456	[No printout]
2nd	123446	?1234?56 Invalid Report
		?1234?46 Invalid Report
3rd	123356	?1233?56 Invalid Report
4th	123456	?1234?56 Invalid Report
5th	123346	?1233?46 Invalid Report
		?????10 Invalid Report

**NOTE: There is only 1 invalid report at the end of a call.**

### COMMUNICATION FAIL

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

Printer: L01- 0000-COMMUNICATION FAIL TIME:DATE

Computer: 0RRL[#0000 | NYCRRLL]

**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 [0F]: 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

[Default 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 phone 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
- Unknown Call: The originating telephone number has not been received or was not transmitted

**02** British Caller ID (BABT 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:

- |          |          |          |          |
|----------|----------|----------|----------|
| • 50: 54 | • 54: 43 | • 58: 41 | • 5C: 4F |
| • 51: 41 | • 55: 4F | • 59: 52 | • 5D: 42 |
| • 52: 41 | • 56: 54 | • 5A: 54 | • 5E: 48 |
| • 53: 41 | • 57: 41 | • 5B: 43 | • 5F: 5C |

### 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 hexadecimal 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
-------	----------

- |           |  |
|-----------|--|
| <b>00</b> | All 3 digit account codes will have a leading space.   |
| <b>01</b> | All 3 digit account codes will have a leading zero.  |
| <b>02</b> | 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.

- |           |                                   |
|-----------|-----------------------------------|
| <b>00</b> | determined by Baud rate (default) |
| <b>01</b> | 100 ms                            |
| <b>02</b> | 200 ms                            |
| ...       | etc.                              |

[Default is 00]

### Option [79]: Max Inter-burst

Certain old dialers may have difficulties in 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.

- |           |                  |
|-----------|------------------|
| <b>00</b> | 100 ms (default) |
| <b>01</b> | 10 ms            |
| <b>02</b> | 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]

### 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]

### Option [7C]: Alarm Codes to Activate 2-Way Audio

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).

**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 [7A]/[7B]	Option [7C]	Switch to Audio?	Reason
00	1-2	Yes	Alarm code 2 falls within the code range 1-2.
1-1	00	Yes	Account code 1234 falls within the range 1-1.
2-3	00	No	Account code 1234 is outside the range 2-3.
00	3-4	No	Alarm code 2 is outside the range 3-4.
1-2	3-4	No	If both are programmed, both must be good and alarm code 2 is outside the range 3-4.
3-5	1-3	No	Both must be good and account code 1234 is outside the range 3-5.
1-4	1-5	Yes	Alarm code 2 falls within the code range 1-5, account code 1234 falls within the range 1-4.

### 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]

### Option [7E]: Audio Event Code

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.

00 Audio event to computer Disabled

01 Send `SRRL[#AAAA|NLFRR][DC4]`  
where S = protocol identifier  
RR = receiver number  
L = line card number  
AAAA = account number

02 Send `ORRL[#AAAA|NLFRR][DC4]`  
where O = protocol identifier  
RR = receiver number  
L = line card number  
AAAA = account number

**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.

Handshake	Options
00	No handshake
0B	Modem II handshake
0C	SIA FSK handshake
0D	Westec
0E	Modem IIE, Modem IIIa <sup>2</sup> and ITI handshake
0F	DMP handshake
1D	Single Dual tone handshake
2D	Double Dual tone handshake
FC	Full duplex SIA FSK

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 600ms.**

### 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 handshakes.**

[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:

9RRLssssAAAACCCCCCCCC[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 IIIa<sup>2</sup>. 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: 1RRLssssssAAAAXYYYY[DC4] (6500 protocol)

01: 6RRLssssssAAAAXYYYY[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: 8RRLAAAAsCCCCsCCCCsC[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:

JRRLssssssAAAATZZEss[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      1RRLssssss123sAss1[DC4]

01      1RRLssssss123sAss1[DC4]

2. 3/1 format: Account code "123" with alarm code "B" (opening), the computer output will be:

00      1RRLssssss123sOssB[DC4]

01      1RRLssssss123sOss[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      1RRLssssss1234sAs21[DC4]

01      1RRLssssss1234sAs21[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      1RRLssssss234sCsC2[DC4]

01      1RRLssssss234sCs2[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]

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## 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: 1011sssss123sAsss1[14]  
Printer: L01-123-1-FIRE ALARM HH:MM:SS-DD/MM
- 3/1 EXTENDED FORMAT  
Computer: 1011sssss123sAss32[14]  
Printer: L01-123-32-FIRE ALARM HH:MM:SS-DD/MM
- 4/2 FORMAT  
Computer: 1011sssss1234sAss22[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: 1011sssss2255sAs266[14][6]  
Printer: L01—2255-266-PANIC ALARM HH:MM:SS-DD/MM

### ADEMCO CONTACT ID

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

Example:

Printer: L1-1221-E110-00 FIRE ALARM  
HH:MM:SS-DD/MM  
Computer: 5011 181221E11000101[14]

**\*\*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  
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.**

8RRLAAAAsCCCCsC[DC4]

AAAAZZZZ ZZZZ S

AAAA= Three digit or four digit account number.

ZZZZ ZZZZ = Zone status.

S = Status Channel indicates the meaning of the message.

AAAAZZZZZZZZS or AAZZZZZZZZS

### Example

- With option 9F disabled  
Computer: 1011ssssss1234sAss02[14][6]  
Printer: L01-1234-02-ALARM ZONE02  
HH:MM:SS-DD/MM
- With option 9F enabled  
Computer: 8011 1234s5155s555s7[14][6]  
Printer: L01-1234 - 51555557 HH:MM:SS-DD/MM

### Examples:

P011ss12345sA00081EASTsSMOKE[DC4]

P011ss12345sA00085555116NORTH OFFICE PRI15S.

WEST BUILDING[DC4]

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.

P011ss12345sZa\61\t"BU\z 0232"FRONT DOOR\A  
03OFFICE\U0568"JOHN SMITH[DC4]

**NOTE: The position of the DMP serial format identifier can change, depending on the line card number length.**

## 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 type codes used by this format:

FBI Event	Code	Converted Code	Event
Fire		1	A
Panic	2	A	
Burglary	3	A	
Medical	4	A	
Auxiliary	5	A	
Bypass	6	B	
Inactive	7	A	
Eight	8	A	
Nine	9	A	
Zero	0	A	
Opening	B	O	
Closing	C	C	
Abort	D	T	
Restore	E	R	
Trouble	F	T	

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

## DMP FSK

PRRLssAAAAAsXT<sub>1</sub>...T<sub>n</sub>s[DC4]

Data:

P = DMP protocol identifier

RR = Receiver number

L = Line number

s = Spaces

AAAA = Account code

X = If X position is inhabited by any character other than an upper case "Z", the incoming signal is in serial 1 format. If X position holds an upper case "Z" than the incoming signal will be in serial 3 format.

The actual character position of X will vary depending on number of account digits and/or line number length.

T<sub>1</sub>-T<sub>2</sub> = Alarm information

**NOTE: If account code changes, it will be right justified by the panel. Panel will send leading spaces as place fillers.**

### Expected Output

PRRLssAAAAAsXT<sub>1</sub>...T<sub>n</sub>s[DC4]

Data:

P = DMP Protocol identifier

dddd = RRL replaced by the 5-digit DNIS, therefore increasing the length by two.

s = Spaces

AAAA = Account code

X = DMP serial format identifier

T<sub>1</sub>-T<sub>n</sub> = Alarm information

### Example

Alarm string - 1234B001

FBI RS-232 Option on

Automation: J011 1234B001[14]

FBI RS-232 Option Off

Automation: 1011 1234B001[14]

## 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

00-16	ALARM
80	ALARM
81	ALARM
82	ALARM
83	PHONE TEST
84	OPEN USER X
85	CLOSE USER X
86	SILENT DURESS
87	FORCE ARMED
90	AC FAILURE
91	LOW CPU BAT
92	ALM TAMPR LOOP
93	AUTO PHONE TEST
94	TROUBLE
95	CPU BACK IN

### Caretaker Plus

77	ALARM TAMPER
78	TROUBLE
79	NO ACTIVI ALM
80	ALARM
81	ALARM
82	ALARM
83	PHONE TEST
84	OPEN USER X
85	CLOSE USER X
86	ALARM SILENT DURESS
87	FORCE ARMED
88	TROUBLE
92	ALARM TAMPER LOOP
93	AUTO PHONE TEST

### SX-V

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

## Commander 2000

Sensor #

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

### Pro 5000 (UltraGard 5000)

Sensor #

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

Example:

- ITI Printer:  
L01-12345-81-TOUCHPAD FIRE ALARMHH:MM:SS-  
DD/MM
- ITI Computer Example:  
1011ssss1B2345A081A31[DC4]

## MODEM II, MODEM IIE, MODEM IIIa<sup>2</sup> and BFSK FORMATS

BFSK, Modem II, Modem IIIa<sup>2</sup> 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 F01[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 1993IIb 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: S011[#1234:NBA08]

## SILENT KNIGHT FSK1, FSK2

### Silent Knight FSK1 Protocol

ERRLssssAAAAAXssss[DC4]

#### Where:

E FSK protocol 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)  
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  
HH:MM:SS-DD/MM  
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:

FRRLssssAAAAAAYYZss[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  
Supervised closing ID ZZ  
OTZZ 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:

CRRLssssAAAAAXYZss[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:

B600 Battery Trouble  
BE00 Battery Restore  
C600 System Trouble AC  
CE00 System Restore AC  
  
D60z Trouble phone line #0z  
DE0z Restore phone line 0z  
E60z Expand trouble device ID z  
EE0z 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  
F8zz : Access  
F9zz : Access left open ID zz  
FAzz : Access forced ID ZZ  
FBzz : Access station ID ZZ  
FC00: Duress  
FE00: Data lost

## SESCOASUPERSPEED

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  
YSTEM TYPE:900  
CALL#:01  
STATUS: 0000 0000 0001 0110 0000 (000000 000000)  
DATA1 POWER UP  
DATA2 CLEAR POWER UP  
DATA3 CLEAR  
  
ENDCALL\*  
Computer: W0100101Csss40ssssSSss011567871404166650[14]



## SCS2-200 PREDEFINED LIBRARY DECODING AND EVENT CODES TABLE

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

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

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

Alarm	0x(Ax)	A	PER TEST REPORT
Alarm	1x	A	FIRE ALARM
Alarm	2x	A	PANIC ALARM
Alarm	3x	A	BURGLARY
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
Cancl	Dx	/	CANCEL
Restr	Ex	R	RESTORE
Trble	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	B	CANCEL
UnByp ExxH	H	ZONE BYPASS
Cancl 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

Code	Event
0	Automatic Test
1	Fire Alarm
2	Panic Alarm
3	Burglary Alarm
4	Closing by User Number
5	Opening by User Number
6	Service
7	Medical Emergency
8	Message
9	Restore
A	Alarm
B	Bypass
C	Closing
D or /	Cancel
H	Unbypass
O	Opening
R	Restore
T	Trouble
Z	Common Event Code
20 Hex	Common Event code "Space"

# SCS2-300 – Central Processing Module

## GENERAL INFORMATION

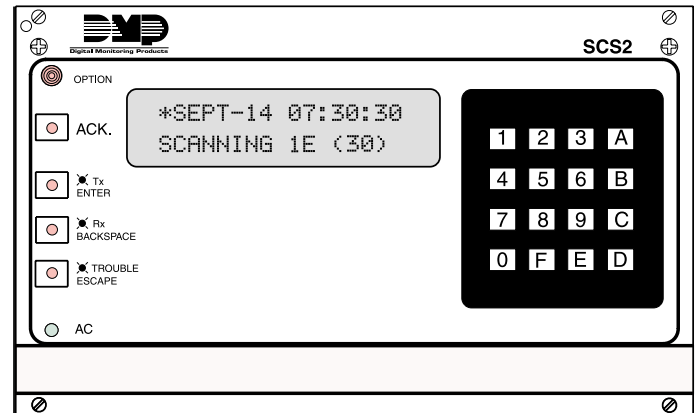
The SCS2-300 16-bit microcontroller and real-time assembly language program running at 16 MHz allow the system to quickly and efficiently execute several tasks at the same time. The use of a unique menu display system enhances the system's ease of use for the operator and makes the system configuration 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 COLD STARTUP

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 in identifying 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:PrinterSelect" 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 [Escape] 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:

```
Com#1 Config As:
Br:12 Da:7 Pa:2
```

#### • 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:

```
Heartbeat Select
30S Chg to:XXSec
```

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:

```
Com#2 Config As:
Bd:03 Da:8 Pa:2
```

- Bd: Baud Rate  
Enter... for Baud Rate
 

11	110
15	150
03	300
12	1200
- 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 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:

```
Com#2 Format is:
0 Change to x
```

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:

```
Contrast Level
*****
```

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:

```
UL Requirement:
0 Change to:x
```

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 AAAA=X
YY N 06
```

N represents the number of times the SCS2-300 tries to re-send 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 "1" 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 V2.4
```

### 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 to the Printer

[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 print the indicated messages. When the [Enter] button is pressed, the SCS2-300 will print the printer messages, starting with the oldest message. The messages will be printed in red if the Star DP8340 printer is being used. If the SCS2-300 receives new alarms from the line card while the buffer is being printed, the new alarms will be sent to the printer when the buffer printout is completed.

## [E] EXAMINE PRINTER MESSAGES ON DISPLAY SCREEN

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

```
Exam PRINTER 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 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	Computer messages for specified line card
FF	Computer 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.A  
..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."

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

**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.

Sent to COM1	Event
#0000 NYNRRL	Faulty Data Received on Line Card
#0000 NLTRRL	Telephone Line Fault on Line Card
#0000 NLRRRL	Telephone Line Restored on Line Card
#0000 NYCRRL	Faulty Call; No Data Received on Line Card

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

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

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:***

NAME	HANDSHAKE	DATA	BAUD	FORMAT	EXTENDED	KISS OFF
Ademco Slow	1400Hz	1900Hz	10bps	3/1,4/1(or 3/2),4/2	NO	1400Hz
Ademco Slow	1400Hz	1900Hz	10bps	4/2,4/1,3/1	YES	1400Hz
Silent Knight Fast	1400Hz	1900Hz	14bps	3/1,4/1(or 3/2), 4/2	NO	1400Hz
Silent Knight Fast	1400Hz	1900Hz	14bps	4/2,4/1,3/1	YES	1400Hz
Franklin	2300Hz	1800Hz	20bps	3/1,4/1(or 3/2), 4/2	NO	2300Hz
Franklin	2300Hz	1800Hz	20bps	4/2,4/1,3/1	YES	2300Hz
Radionics	2300Hz	1800Hz	40bps	3/1,4/2	NO	2300Hz
Radionics	2300Hz	1800Hz	40bps	4/2,3/1	YES	2300Hz
Radionics	2300Hz	1800Hz	40bps	3/1+parity	NO 4/2+parity	2300Hz
Radionics	2300Hz	1800Hz	40bps	3/1+parity 4/2+parity	YES	2300Hz
Sescoa S. Speed	2300Hz	1800Hz	40bps	4/3+Checksum	NO	2300Hz
Sescoa S. Speed	2300Hz	1800Hz	40bps	4/3+Checksum	ID O/C	2300Hz
SIA FSK Level 1, 2, and 3.	FSK mark Space	FSK mark 300bps	110bps			tonal data ACK
Contact ID	Dual Tone	DTMF	DTMF	4/2/1/3/2/3	NO	1400Hz
DMP	2300Hz	DTMF	DTMF	4/1,4/2,4/3	NO	2300Hz
DMP	Dual Tone	DTMF	DTMF	4/1,4/2,4/3	NO	1400Hz
DMP	2300Hz	DTMF	DTMF	4/3+Checksum	NO	2300Hz
DMP	Dual Tone	DTMF	DTMF	4/3+Checksum	NO	1400Hz
S.F. Ademco	Dual Tone	DTMF	DTMF	4/8/1	NO	1400Hz
S.F. Ademco	Dual Tone	DTMF	DTMF	4/8/1 + Checksum	NO	1400Hz
Ademco Express	Dual Tone	DTMF	DTMF	4/1(option), 4/2	NO	1400Hz
FBI Super Fast	2300Hz	DTMF	DTMF	4/3/1	NO	2300Hz
Modem II	FSK	FSK	110 Baud	FSK	NO	FSK
RadionicsBFSK	1400Hz	FSK	42 Baud	3/2	NO	1400Hz
RadionicsBFSK	2300Hz	FSK	42 Baud	3/2	NO	2300Hz
Silent Knight FSK1	2300Hz	FSK	110 Baud	4/2, 5/2, 6/2	NO	2300Hz
Silent Knight FSK2	2300Hz	FSK	110 Baud	SIA equiv.	NO	2300Hz
III	FSK	FSK	110/300 Baud		NO	FSK
Modem IIE	FSK	FSK	300 Baud		NO	FSK
Modem IIIa <sup>2</sup>	FSK	FSK	300 Baud		NO	FSK
DMP	Data hsk	FSK	300 Baud		NO	Data K-O
*Varitech	2300Hz	FSK	40 Baud	4/2	NO	2300Hz
*Westec	Double Dual Tone	DTMF	DTMF		NO	

***\* UL has not verified compatibility with these formats.***

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## APPENDIX B: ASCII CHARACTER CHART

ASCII with library on printer (Option 30)	Hex	Corresponding ASCII Character
	20	Space
B0	30	0
B1	31	1
B2	32	2
B3	33	3
B4	34	4
B5	35	5
B6	36	6
B7	37	7
B8	38	8
B9	39	9
C1	41	A
C2	42	B
C3	43	C
C4	44	D
C5	45	E
C6	46	F
C7	47	G
C8	48	H
C9	49	I
CA	4A	J
CB	4B	K
CC	4C	L
CD	4D	M
CE	4E	N
CF	4F	O
D0	50	P
D1	51	Q
D2	52	R
D3	53	S
D4	54	T
D5	55	U
D6	56	V
D7	57	W
D8	58	X
D9	59	Y
DA	5A	Z
DC	5C	\

## APPENDIX C DECIMAL - HEX - BINARY CONVERSION CHART

DEC	HEX	BINARY	DEC	HEX	BINARY	DEC	HEX	BINARY	DEC	HEX	BINARY
000	00	00000000	064	40	01000000	128	80	10000000	192	C0	11000000
001	01	00000001	065	41	01000001	129	81	10000001	193	C1	11000001
002	02	00000010	066	42	01000010	130	82	10000010	194	C2	11000010
003	03	00000011	067	43	01000011	131	83	10000011	195	C3	11000011
004	04	00000100	068	44	01000100	132	84	10000100	196	C4	11000100
005	05	00000101	069	45	01000101	133	85	10000101	197	C5	11000101
006	06	00000110	070	46	01000110	134	86	10000110	198	C6	11000110
007	07	00000111	071	47	01000111	135	87	10000111	199	C7	11000111
008	08	00001000	072	48	01001000	136	88	10001000	200	C8	11001000
009	09	00001001	073	49	01001001	137	89	10001001	201	C9	11001001
010	0A	00001010	074	4A	01001010	138	8A	10001010	202	CA	11001010
011	0B	00001011	075	4B	01001011	139	8B	10001011	203	CB	11001011
012	0C	00001100	076	4C	01001100	140	8C	10001100	204	CC	11001100
013	0D	00001101	077	4D	01001101	141	8D	10001101	205	CD	11001101
014	0E	00001110	078	4E	01001110	142	8E	10001110	206	CE	11001110
015	0F	00001111	079	4F	01001111	143	8F	10001111	207	CF	11001111
016	10	00010000	080	50	01010000	144	90	10010000	208	D0	11010000
017	11	00010001	081	51	01010001	145	91	10010001	209	D1	11010001
018	12	00010010	082	52	01010010	146	92	10010010	210	D2	11010010
019	13	00010011	083	53	01010011	147	93	10010011	211	D3	11010011
020	14	00010100	084	54	01010100	148	94	10010100	212	D4	11010100
021	15	00010101	085	55	01010101	149	95	10010101	213	D5	11010101
022	16	00010110	086	56	01010110	150	96	10010110	214	D6	11010110
023	17	00010111	087	57	01010111	151	97	10010111	215	D7	11010111
024	18	00011000	088	58	01011000	152	98	10011000	216	D8	11011000
025	19	00011001	089	59	01011001	153	99	10011001	217	D9	11011001
026	1A	00011010	090	5A	01011010	154	9A	10011010	218	DA	11011010
027	1B	00011011	091	5B	01011011	155	9B	10011011	219	DB	11011011
028	1C	00011100	092	5C	01011100	156	9C	10011100	220	DC	11011100
029	1D	00011101	093	5D	01011101	157	9D	10011101	221	DD	11011101
030	1E	00011110	094	5E	01011110	158	9E	10011110	222	DE	11011110
031	1F	00011111	095	5F	01011111	159	9F	10011111	223	DF	11011111
032	20	00100000	096	60	01100000	160	A0	10100000	224	E0	11100000
033	21	00100001	097	61	01100001	161	A1	10100001	225	E1	11100001
034	22	00100010	098	62	01100010	162	A2	10100010	226	E2	11100010
035	23	00100011	099	63	01100011	163	A3	10100011	227	E3	11100011
036	24	00100100	100	64	01100100	164	A4	10100100	228	E4	11100100
037	25	00100101	101	65	01100101	165	A5	10100101	229	E5	11100101
038	26	00100110	102	66	01100110	166	A6	10100110	230	E6	11100110
039	27	00100111	103	67	01100111	167	A7	10100111	231	E7	11100111
040	28	00101000	104	68	01101000	168	A8	10101000	232	E8	11101000
041	29	00101001	105	69	01101001	169	A9	10101001	233	E9	11101001
042	2A	00101010	106	6A	01101010	170	AA	10101010	234	EA	11101010
043	2B	00101011	107	6B	01101011	171	AB	10101011	235	EB	11101011
044	2C	00101100	108	6C	01101100	172	AC	10101100	236	EC	11101100
045	2D	00101101	109	6D	01101101	173	AD	10101101	237	ED	11101101
046	2E	00101110	110	6E	01101110	174	AE	10101110	238	EE	11101110
047	2F	00101111	111	6F	01101111	175	AF	10101111	239	EF	11101111
048	30	00110000	112	70	01110000	176	B0	10110000	240	F0	11110000
049	31	00110001	113	71	01110001	177	B1	10110001	241	F1	11110001
050	32	00110010	114	72	01110010	178	B2	10110010	242	F2	11110010
051	33	00110011	115	73	01110011	179	B3	10110011	243	F3	11110011
052	34	00110100	116	74	01110100	180	B4	10110100	244	F4	11110100
053	35	00110101	117	75	01110101	181	B5	10110101	245	F5	11110101
054	36	00110110	118	76	01110110	182	B6	10110110	246	F6	11110110
055	37	00110111	119	77	01110111	183	B7	10110111	247	F7	11110111
056	38	00111000	120	78	01111000	184	B8	10111000	248	F8	11111000
057	39	00111001	121	79	01111001	185	B9	10111001	249	F9	11111001
058	3A	00111010	122	7A	01111010	186	BA	10111010	250	FA	11111010
059	3B	00111011	123	7B	01111011	187	BB	10111011	251	FB	11111011
060	3C	00111100	124	7C	01111100	188	BC	10111100	252	FC	11111100
061	3D	00111101	125	7D	01111101	189	BD	10111101	253	FD	11111101
062	3E	00111110	126	7E	01111110	190	BE	10111110	254	FE	11111110
063	3F	00111111	127	7F	01111111	191	BF	10111111	255	FF	11111111

## 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:

00 MEDICAL	46 FIRE SUPERVISORY	8C PROTECTION LOOP	D2 SOUNDER/RELAY DISABLED
01 PENDANT TRANSMITTER	47 LOW WATER PRESSURE	8D PROTECTION LOOP OPEN	D3 BELL 1 DISABLE
02 FAIL TO REPORT IN	48 LOW CO2	8E PROTECTION LOOP SHORT	D4 BELL 2 DISABLE
03 RESERVED	49 GATE VALVE SENSOR	8F FIRE TROUBLE	D5 ALARM RELAY DISABLE
04 RESERVED	4A LOW WATER LEVEL	90 EXIT ALARM	D6 TROUBLE RELAY DISABLE
05 RESERVED	4B PUMP ACTIVATED	91 PANIC ZONE TROUBLE	D7 REVERSING RELAY DISABLE
06 RESERVED	4C PUMP FAILURE	92 HOLDUP ZN TROUBLE	D8 NOTIFICATION APPLIANCE 3 DISABLED
07 RESERVED	4D RESERVED	93 SWINGER TROUBLE	D9 NOTIFICATION APPLIANCE 4 DISABLED
08 RESERVED	4E RESERVED	94 CROSS ZONE TROUBLE	DA RESERVED
09 RESERVED	4F RESERVED	95 RESERVED	DB RESERVED
0A FIRE ALARM	50 SYSTEM TROUBLE	96 SENSOR TROUBLE	DC RESERVED
0B SMOKE	51 AC LOSS	97 LOSS OF SUPERVISORY - RF	DD DIALER DISABLED
0C COMBUSTION	52 LOW SYSTEM BATTERY	98 LOSS OF SUPERVISORY - RPM	DE RADIO TRANSMITTER DISABLED
0D WATER FLOW	53 RAM CHECKSUM BAD	99 SENSOR TAMPER	DF REMOTE UPLOAD DOWNLOAD DISABLED
0E HEAT	54 ROM CHECKSUM BAD	9A RF TRANSMITTER. LOW BATTERY	E0 RESERVED
0F PULL STATION	55 SYSTEM RESET	9B SMOKE HI-SENSOR	E1 RESERVED
10 DUCT	56 PANEL PROGRAM CHANGED	9C SMOKE LOW-SENSOR	E2 RESERVED
11 FLAME	57 SELF-TEST FAILURE	9D INTRUSION HI-SENSOR	E3 RESERVED
12 NEAR FIRE ALARM	58 SYSTEM SHUTDOWN	9E INTRUSION LOW-SENSOR	E4 MESSAGE
13 RESERVED	59 BATTERY TEST FAILURE	9F SELF TEST FAIL	E5 SERVICE
14 PANIC ALARM	5A GROUND FAULT	A0 OPEN/CLOSE	E6 ZONE BYPASS
15 DURESS ALARM	5B BATTERY MISSING/DEAD	A1 O/C BY USER	E7 FIRE BYPASS
16 SILENT ALARM	5C POWER SUPPLY OVERCURRENT	A2 GROUP O/C	E8 24 HOUR ZONE BYPASS
17 AUDIBLE ALARM	5D ENGINEER RESET	A3 AUTOMATIC O/C	E9 BURGLARY BYPASS
18 DURESS	5E RESERVED	A4 LATE O/C	EA GROUP BYPASS
19 DURESS	5F RESERVED	A5 DEFERRED O/C	EB SWINGER BYPASS
1A RESERVED	60 RESERVED	A6 CANCEL	EC ACCESS ZN SHUNT
1B RESERVED	61 RESTORE ALARM	A7 REMOTE ARM/DISARM	ED ACCESS POINT BYPASS
1C RESERVED	62 OPENING ALARM	A8 QUICK ARM	EE RESERVED
1D RESERVED	63 CLOSING ALARM	A9 KEYSWITCH O/C	EF UNBYPASS
1E BURGLARY	64 SOUNDER/RELAY	AA RESERVED	F0 RESERVED
1F PERIMETER	65 BELL 1	AB CALLBACK REQUEST MADE	F1 MANUAL TRIGGER TEST
20 INTERIOR	66 BELL 2	AC SUCCESSFUL DOWNLOAD ACCESS	F2 PERIODIC TEST REPORT
21 24 HOUR	67 ALARM RELAY	AD UNSUCCESSFUL ACCESS	F3 PERIODIC RF TRANSMISSION
22 ENTRY/EXIT	68 TROUBLE RELAY	AE SYSTEM SHUTDOWN	F4 FIRE TEST
23 DAY/NIGHT	69 REVERSING	AF DIALER SHUTDOWN	F5 STATUS REPORT TO FOLLOW
24 OUTDOOR	6A NOTIFICATION APPLIANCE 3 CHECK	B0 SUCCESS FULL UPLOAD	F6 LISTEN-IN TO FOLLOW
25 TAMPER	6B NOTIFICATION APPLIANCE 4 CHECK	B1 RESERVED	F7 WALK TEST MODE
26 NEAR BURGLARY ALARM	6C RESERVED	B2 RESERVED	F8 OFF NORMAL CONDITION
27 INTRUSION VERIFIER	6D RESERVED	B3 RESERVED	F9 VIDEO TRANSMITTER ACTIVE
28 GENERAL ALARM	6E SYSTEM PERIPHERAL	B4 RESERVED	FA RESERVED
29 POLLING LOOP OPEN	6F POLLING LOOP OPEN	B5 ACCESS DENIED	FB FIRE POINT TEST
2A POLLING LOOP SHORT	70 POLLING LOOP SHORT	B6 ACCESS REPORT BY USER	FC FIRE POINT NOT TESTED
2B EXPANSION MODULE FAILURE	71 EXPANSION MODULE FAILURE	B7 FORCED ACCESS	FD INTRUSION ZONE WALK TESTED
2C SENSOR TAMPER	72 REPEATER FAILURE	B8 EGRESS DENIED	FE FIRE ZONE WALK TESTED
2D EXPANSION MODULE TAMPER	73 LOCAL PRINTER PAPER OUT	B9 EGRESS GRANTED	FF PANIC ZONE WALK TESTED
2E SILENT BURG	74 LOCAL PRINTER FAILURE	BA ACCESS	
2F SENSOR SUPERVISOR FAILURE	75 EXPANSION MODULE DC LOSS	BB ACCESS	
30 RESERVED	76 EXPANSION MODULE LOW BATTERY	BC ACCESS	
31 RESERVED	77 EXPANSION MODULE RESET	BD ACCESS	
32 24 HOUR NON-BURGLARY	78 RESERVED	BE RESERVED	
33 GAS DETECTED	79 EXP. MODULE TAMPER	BF ARMED STAY	
34 REFRIGERATION	7A EXP. MODULE AC LOSS	C0 KEYSWITCH ARMED STAY	
35 LOSS OF HEAT	7B EXP. MODULE SELF-TEST FAIL	C1 RESERVED	
36 WATER LEAKAGE	7C LOSS SUPERVISORY RF	C2 RESERVED	
37 FOIL BREAK	7D RESERVED	C3 RESERVED	
38 DAY TROUBLE	7E RESERVED	C4 RESERVED	
39 LOW BOTTLED GAS LEVEL	7F RESERVED	C5 RESERVED	
3A HIGH TEMPERATURE	80 RESERVED	C6 GROUP CLOSING	
3B LOW TEMPERATURE	81 RESERVED	C7 GROUP OPENING	
3C RESERVED	82 COMMUNICATION	C8 EXCEPTION O/C	
3D LOSS OF AIR FLOW	83 TELCO 1 FAULT	C9 EARLY O/C	
3E CARBON MONOXIDE	84 TELCO 2 FAULT	CA LATE O/C	
3F TANK LEVEL	85 LONG RANGE RADIO	CB FAIL TO O/C	
40 RESERVED	86 FAIL TO COMMUNICATE	CC FAIL TO O/C	
41 RESERVED	87 LOSS OF RADIO SUPERVISION	CD AUTO ARM FAIL	
42 RESERVED	88 LOSS OF CENTRAL POLLING	CE O/C PARTIAL ARMED	
43 RESERVED	89 VSWR	CF EXIT ERROR	
44 RESERVED	8A RESERVED	D0 USER PRESENT	
45 RESERVED	8B RESERVED	D1 RECENT CLOSE	

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# APPENDIX E: DEFAULT STATIC OPTIONS

<i>Option</i>	<i>Description</i>	<i>Default</i>	<i>Option</i>	<i>Description</i>	<i>Default</i>
01	LINE #	0D, 0E	14	CALLER SOURCE	00
02	LINE # LENGTH	0E	15	LINE SEIZE EVENT	00
03	DSC AUDIO	01	16	LINE RELEASE EVENT	00
04	AUDIO TIME	00	1C	BUSY OUT	01
05	PRE H.S. TIME	0A	1D	INPUT SENSITIVITY	3F
0E	LINE DETECTION	01	1E	OUTPUT LEVELS	00
0F	MUTE BUZZER	00	1F	DEBUG	00
10	LAST MESSAGE	1D	2A	HOOK FLASH DURATION	00
11	HOOK-FLASH	00	27	CALLER SOURCE PROCESS	00
12	CALLER SOURCE	00	28	SK FSK ENABLE	00
13	CALLER SOURCE -COMP00		2B	ECHO SUPPRESSION	00
			2F	MAX ONLINE TIME	00

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## APPENDIX F: DEFAULT DYNAMIC OPTIONS [30] - [AF]

### Line Card Configuration Command:

LCard      Comd      Op      Cd      Sc  
 Line Card   Command(F7)   Option   Code   Second Code

Option	Description	Default	Change	ASCII (HEX)	Option	Description	Default	Change	ASCII (HEX)
30	4/1 DIGIT#0 -A-	41			6D	PRINTER WORDS:	A6		
31	4/1 DIGIT#1 -A-	41			6E	PRINTER WORDS:	61		
32	4/1 DIGIT#2 -A-	41			6F	PRINTER WORDS:	50		
33	4/1 DIGIT#3 -A-	41			70	AUTOMATION CODE:	00		
34	4/1 DIGIT#4 -A-	41			71	LIBRARY SELECT:	04		
35	4/1 DIGIT#5 -A-	41			72	COM SELECT:	01		
36	4/1 DIGIT#6 -A-	41			73	PRINTER SELECT:	01		
37	4/1 DIGIT#7 -A-	41			74	EQUIVALENT LINE:	00		
38	4/1 DIGIT#8 -A-	41			75	RECEIVER NUMBER:	01		
39	4/1 DIGIT#9 -R-	52			76	3 DIGIT ACCOUNT	00		
3A	4/1 DIGIT#A=0 -A-	41			78	INTEGER DIGIT:	00		
3B	4/1 DIGIT#B -O-	4F			79	INTEGER BURST:	00		
3C	4/1 DIGIT#C -C-	43			7A	AUDIO 4 DIGIT	00		
3D	4/1 DIGIT#D -\-	5C			7B	AUDIO 3 DIGIT:	00		
3E	4/1 DIGIT#E -R-	52			7C	AUDIO CODE:	00		
3F	4/1 DIGIT#F -T-	54			7D	AUDIO ZONE:	00		
40	4/2 DIGIT#0=A -A-	41			7E	AUDIO EVENT:	00		
41	4/2 DIGIT#1 -A-	41			7F	AUDIO FORMAT:	00		
42	4/2 DIGIT#2 -A-	41			80	KO/HANGUP TIME:	1F		
43	4/2 DIGIT#3 -A-	41			81	HANDSHAKE#1:	14		
44	4/2 DIGIT#4 -A-	41			82	HANDSHAKE#2:	23		
45	4/2 DIGIT#5 -A-	41			83	HANDSHAKE#3:	2D		
46	4/2 DIGIT#6 -A-	41			84	HANDSHAKE#4:	0C		
47	4/2 DIGIT#7 -A-	41			85	HANDSHAKE#5:	0B		
48	4/2 DIGIT#8 -A-	41			86	HANDSHAKE#6:	0E		
49	4/2 DIGIT#9 -R-	52			87	HANDSHAKE#7:	00		
4A	4/2 DIGIT#A=0 -A-	41			88	HANDSHAKE#8:	00		
4B	4/2 DIGIT#B -O-	4F			89	HS/KO TIME#1:	00		
4C	4/2 DIGIT#C -C-	43			8A	HS/KO TIME#2:	00		
4D	4/2 DIGIT#D -\-	5C			8B	HS/KO TIME#3:	00		
4E	4/2 DIGIT#E -R-	52			8C	HS/KO TIME#4:	00		
4F	4/2 DIGIT#F -T-	54			8D	HS/KO TIME#5:	00		
50	4/3 DIGIT#0=A -T-	54			8E	HS/KO TIME#6:	00		
51	4/3 DIGIT#1 -A-	41			8F	HS/KO TIME#7:	00		
52	4/3 DIGIT#2 -A-	41			90	HS/KO TIME#8:	00		
53	4/3 DIGIT#3 -A-	41			91	INTER H.S:	00		
54	4/3 DIGIT#4 -C-	43			95	5 DIGIT PULSE	00		
55	4/3 DIGIT#5 -O-	4F			96	4/1 EXTEND	01		
56	4/3 DIGIT#6 -T-	54			97	4/2 EXTEND	00		
57	4/3 DIGIT#7 -A-	41			98	3/1 EXTEND	00		
58	4/3 DIGIT#8 -A-	41			99	8 DIGIT DTMF	01		
59	4/3 DIGIT#9 -R-	52			9A	GROUP O/C	00		
5A	4/3 DIGIT#A=0 -T-	54			9B	4/3 USR/ZN	00		
5B	4/3 DIGIT#B -C-	43			9C	ACRON RS-232	01		
5C	4/3 DIGIT#C -O-	4F			9D	MODEM II RS-232	01		
5D	4/3 DIGIT#D -B-	42			9F	ADEMC0 HS RS-232	01		
5E	4/3 DIGIT#E -H-	48			A0	RESERVED	00		
5F	4/3 DIGIT#F -A-	5C			A1	FBI RS-232	01		
60	PRINTER WORDS:	F2			A3	D6500 COM	00		
61	PRINTER WORDS:	0A			A4	BFSK RS-232	01		
62	PRINTER WORDS:	14			A5	7 DIGIT PULSE	01		
63	PRINTER WORDS:	1E			A7	SKFSK RS-232	00		
64	PRINTER WORDS:	28			A8	DIAL-OUT 2-WAY	00		
65	PRINTER WORDS:	28			A9	DIAL-OUT 2-WAY	00		
66	PRINTER WORDS:	50			AA	DIAL-OUT 2-WAY	00		
67	TEPRINTER WORDS:				AB	DIAL-OUT 2-WAY	00		
68	PRINTER WORDS: 50				AC	DIAL-OUT 2-WAY	00		
69	PRINTER WORDS:	61			AD	DIAL-OUT 2-WAY	00		
6A	PGM OUTPUT: 000	F2			AE	DIAL-OUT 2-WAY	00		
6B	PGM INPUT: 000	62			AF	DIAL-OUT 2-WAY	00		
6C	FILTER OPT: 000	63							

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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 Foil 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 Xmtr 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 xmtr. 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

- 407 Remote arm/disarm
- 408 Quick Arm
- 409 Keyswitch O/C

### Remote Access - 410

- 411 Callback request made
- 412 Succes - 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

## Industry Canada NOTICE

**Notice:** The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorised Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. User should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

**Caution:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

**NOTICE:** The Load Number assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on an interface may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100.

**Ringer Equivalence Number: 01**

**AVIS:** L'étiquette de l'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme à certaines normes de protection,

d'exploitation et de sécurité des réseaux de télécommunications. Industrie Canada n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur. Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêchent pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, les lignes téléphoniques et les canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

**AVERTISSEMENT:** L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un électricien, selon le cas.

L'indice de charge (IC) assigné à chaque dispositif terminal indique, pour éviter toute surcharge, le pourcentage de la charge totale qui peut être reccordée à un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison de circuit bouclé peut être constituée de n'importe quelle combinaison de dispositifs, pourvu que la somme des indices de charge de l'ensemble des dispositifs ne dépasse pas 100.

**Indices d'équivalence de la sonnerie: 01**

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## 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.***

### 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](mailto: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](mailto:techsupport@dmpnet.com).

- **Internet**

Visit our web site at [www.dmpnet.com](http://www.dmpnet.com) for further product information.