



From Tyco Security Products



system five



SG-System 5 v1.2 Operating Manual

NOTE: This manual contains information regarding product use and function, in addition to manufacturer liability and restrictions pertaining to it. The entire manual should be read carefully.

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2.0 Introduction

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2.1 SG-System 5 overview

The SG-System 5 is a multi-platform receiver intended for remote monitoring of commercial fire and burglary systems. The SG-System 5 can monitor up to 24 communication line cards (SG-DRL5-IP or SG-DRL5/DRL5E/DRL5-2L) to receive and process alarm data in up to 64 pre-programmed profiles per line card. The SG-System 5's real-time clock date stamps all received alarm signals which are then transmitted to a central station computer via TCP/IP or RS-232 port; transmitted directly to a printer using the serial printer port and/or TCP/IP; and viewed on the LCD of the front panel while the receiver is in the manual state. Options can be programmed using a PC with SG-System 5 Console or locally using the touchscreen LCD.

2.1.1 CPM redundancy

The SG-System 5 can be used in a redundant configuration using two SG-CPM5s, where the primary SG-CPM5 backs up to the secondary SG-CPM5 and vice versa. Under normal conditions, the primary SG-CPM5 is active and outputs all signals to the printer and automation, while the secondary SG-CPM5 is in standby. If the primary fails, the secondary SG-CPM5 automatically switches to active within 30 seconds and starts outputting signals to the printer and automation. During the switchover from standby to active, signal reception is not affected because the line cards are still able to receive signals. The output to printer and automation is delayed by the length of time required to switch from standby to active.

2.1.2 Diagrams

FIGURE 2-1: SG-System 5 front with door closed



1. Thumb screws to hold faceplate closed
2. Line card status indicators (top LED is watchdog, middle LED is status and bottom LED is network)
3. SG-CPM5 Status LEDs (from left to right: Console, Trouble, Network, Watchdog, Automation)
4. Quick HOME button
5. 7-inch resistive touch LCD screen

FIGURE 2-2: SG-System 5 front with door open

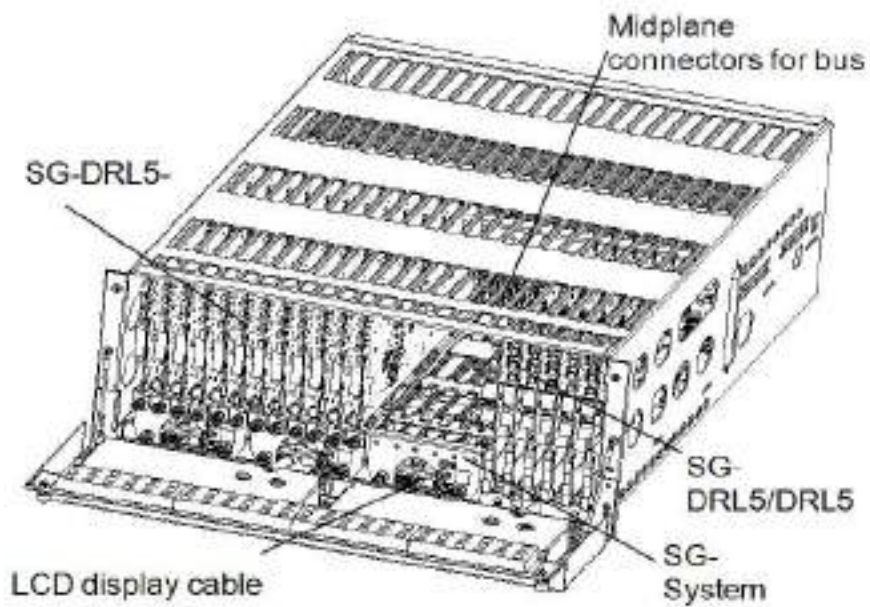
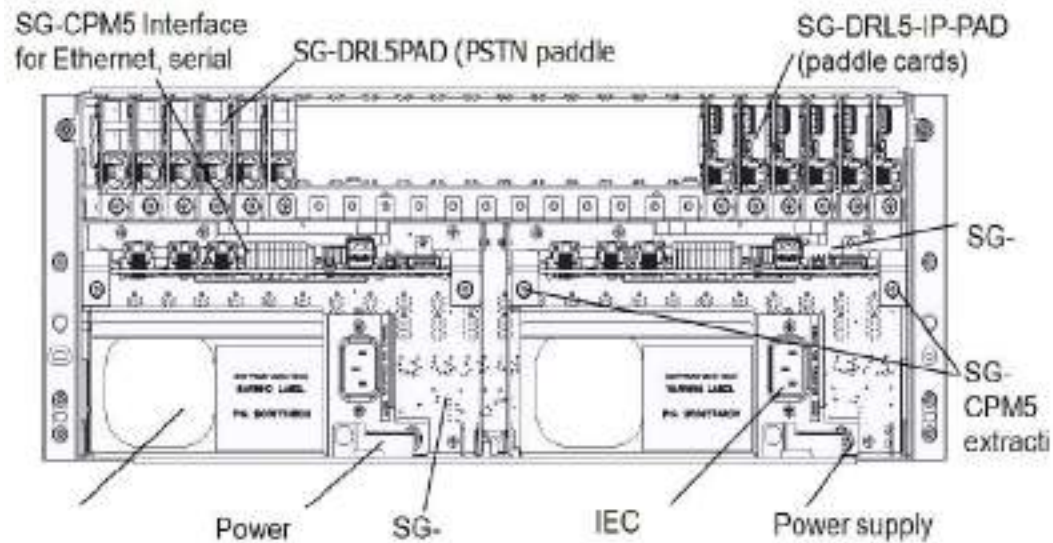


FIGURE 2-3: SG-System 5 back



NOTE: Employ only 26 AWG wires for the Telco connections.

2.1.3 Description

The basic configuration consists of one 19-inch rack mounted chassis comprising the following:

- SG-MLRF5 - Metal rack of the SG-System 5 with SG-MP5
- SG-PSU5-600 - 600W power supply unit provides power to all system modules
- SG-PSU5-250 - 250W power supply unit provides power to all system modules
- SG-CPM5 - Central processing module controls all communication to and from receiver modules and printers
- SG-UIB5 - Touch screen user interface
- SG-DRL5-IP - Internet protocol line card
- SG-DRL5-IP PAD - Paddle card for SG-DRL5-IP provides network connection
- SG-MLRF5-RM - Rack mount rails
- SG-S5LFANTR - Line card fan tray
- SG-S5CFANTR - SG-CPM5 fan tray
- SG-S5SERCAB - Y cable for serial connection to the SG-CPM5 for automation/printer
- SG-SYS5MEM4 - Removable EMMC memory
- SG-SYS5DDR31 - DDR3 RAM 1GB
- SG-CPM5BATT - SG-CPM5 real time clock battery
- SG-DRL5 - Single line PSTN card
- SG-DRL5E - Single line PSTN card with backup channel and 2-way audio bridge
- SG-DRL5-2L - Dual line PSTN card
- SG-DRL5PAD - Paddle card for SG-DRL5/DRL5E/DRL5-2L PSTN cards
- SG-ADPT5 - Adapter card for SG-DRL5/DRL5E/DRL5-2L PSTN cards

2.1.4 Specifications

Dimensions

Depth:	27.5 in.	(69.85 cm)
Width:	19 in.	(48.26 cm)
Height:	7 in.	(17.78 cm)
Required rack space:	4U	

SG-System 5 UL Electrical:

Input voltage:	100-240 VAC, 50/60Hz.
Input current 600W:	8A max (RMS) @ 100VAC
Input current 250W:	3A max (RMS) @ 100VAC
Backup power supply:	External UPS (not supplied)

In a two SG-CPM5 configuration, a redundant SG-PSU5 can be inserted in the second slot. In the event of a SG-PSU5 failure, the redundant SG-PSU5 automatically assumes operation. These modules are hot swappable (can be removed and replaced while the system is in operation) if a working, redundant SG-PSU5 is installed. Both PSU units used in the system must have the same power rating.

Environmental:

Temperature:	0-49°C (32 - 120°F)
Humidity:	93%RH, non-condensing

Accounts:

ULC Line Security Levels: A1-A4 (active channels) or P1-P3 (passive channels)

Printers (UL/ULC Listed Installations):

Serial:	Seiko DPU-414
DACT Compatible communication formats (ULC Passive channels):	SIA, CID
Encryption:	AES 128 bit

2.2 System features

2.2.1 SG-System 5

- Reduced size of 4U in height for improved receiver room logistics management
- CMS access to visual verification files through SG-System 5 Console
- Upgradeable through the SG-System 5 Console
- Enhanced hardware diagnostics via SG-System 5 Console
- Static IP for programming of network protocols
- Real time system status via intuitive user touchscreen interface
- Supports visual verification features for DSC PowerSeries Neo

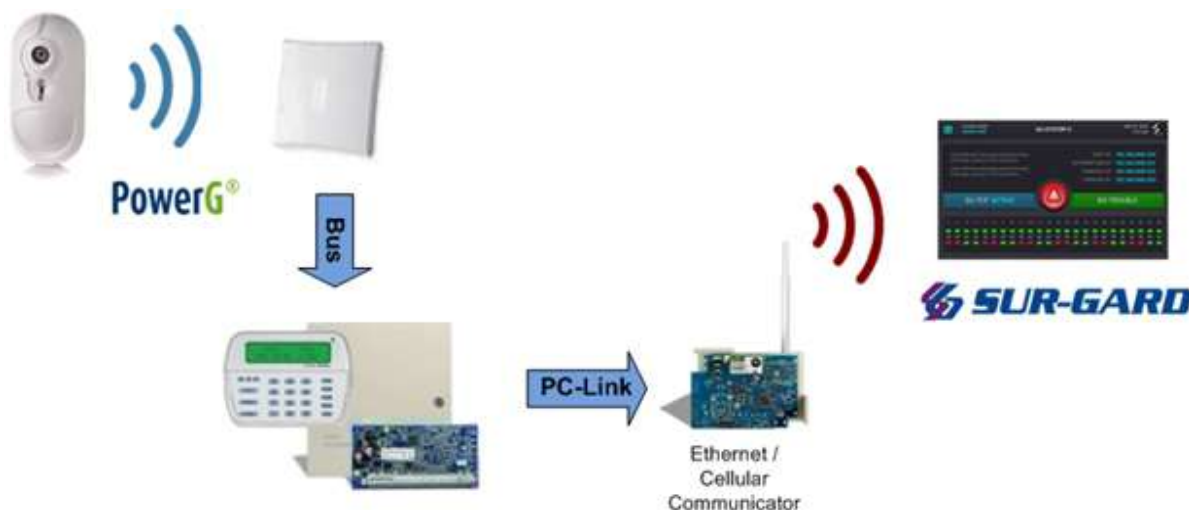
- Monitor up to 1,474,560 IP communicators (Cellular or Ethernet) with up to 24 IP line cards
- Line card capacity starting at 4,094 IP accounts, upgradable to 61,440 via licenses
- Standard line card capacity of 512 visual verification, 512 supervised IP accounts, and 3070 unsupervised
- Upgradeable memory to handle extensive future IP account capacity
- Network trouble detection is displayed on LCD/printer and automation software
- Data network polling environment for replacement of an existing DVACS network using a TL-300. Meets the 90-second ULC requirement for this option
- A security function communicates to the central station when a module is removed and replaced
- The T-LINK accounts table and data encryption keys are stored in the local database
- Supports up to 24 PSTN line interfaces with the SG-DRL5E/DRL5 (24 max) or up to 48 PSTN line interfaces with the SG-DRL5-2L (24 max)

NOTE: The SG-DRL5-IP can only receive data from the following transmitters: TL150, TL250*, TL250DV, TL300*, TL300CF*, GS3055*, GS3055-I, GS3055-ICF*, GS3060*, TL26X*, GS206X*, TL26XGS*, GS31XX, 3G2060(R)*, TL2603G(R)*, 3G3070*, 3G3070RF*, 3G3070CF*, TL2803G(R)(E)*, 3G2080(R)(E)*, TL280(R)(E)*, 3G4000*, 3G4000RF*, 3G4010, 3G4010CF
 * UL/ULC Listed, x = 0, 5.

2.2.2 Visual Verification

Visual Verification enables the system operator to view images and hear audio captured during an alarm event. The images (JPG) and audio (WAV) files are sent via Ethernet to the SG-DRL5-IP where they are converted to films (AVI) for viewing on the SG-System 5 Console.

Data such as detector ID, zone ID, film type, file size, number of files in film and event time is available for each Visual Verification event.



2.3 Approvals

2.3.1 Industry approvals

- UL 1610 Central Station Burglar Alarm Units
- UL 864 10th Edition Standard for Control Units and Accessories for Fire Alarm Systems
- CAN/ULC-S304-2016-REV1 Control Units, Accessories and Receiving Equipment for Intrusion Alarm Systems
- CAN/ULC-S559-13 Equipment for Fire Signal Receiving Centres and Systems
- EN60950-1:2006 Standard for Information Technology Equipment.
- AS/NZS 60950.1:2003 Information Technology Equipment - Safety
- CISPR22 Class B Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurements
- EN50130-4 Immunity requirements for components of fire, intruder and social alarm systems
- NIST validation certificate number 2913 for AES 128 bit encryption.

For UL listed installations, the equipment must be installed in accordance with the requirements of NFPA72, NFPA70, UL827 and the authority having jurisdiction.

SG-System 5 with SG-DRL5-IP Line Card is ULC listed for active communication channel security level A1 - A4 when used in conjunction with T-Link TL250 and T-Link TL300(CF), TL260(R), TL280LE(R), LE2080(R), TL280(R)E, TL880LT, TL880LE, LE9080, 3G9080, HS3128/032/248, LE4010(CF), LE4020(CF), and 3G4010(CF) Internet/Intranet and/or GSM-GPRS alarm communicators. For this type of application the supervision

and encryption features have to be enabled. The receiver can be used also in conjunction with ULC listed passive communication systems based on the configuration of the systems at the protected premises.

For ULC Installations the equipment must be installed in accordance with the requirements of ULC-S561 and ULC-S301 Standards and the authority having jurisdiction. SG-System 5 with SG-DRL5/DRL5E/DRL5-2L PSTN line cards is ULC listed for passive communication channel security levels P1-P3 when used in conjunction with compatible alarm systems using Industry Open SIA standard communication formats Contact ID or SIA.

This product has been approved by the California State Fire Marshal (CSFM) pursuant to section 13144.1 of the California Health and Safety Code. See CSFM Listing No. 7300-1273:0157 for allowable values and/or conditions for use concerning material presented in this document. The approval is subject to reexamination, revision and possible cancellation.

For ULC-S304 applications, the heartbeat timer (option [411]) shall be set to 30 seconds.

For UL864 Commercial Fire applications the following compatible communicators can be used with receiver model SG-System 5 SW Ver. 1.1x:

LE4010/LE4010CF SW Ver. 5.x

LE4020/LE4020CF SW Ver. 4.x

3G2010CF SW Ver. 4.x

TL300/TL300CF SW Ver. 1.5

The transmitter supervision (option [221] in SG-DLR5-IP line card) shall be set to 60 min for single path and to 6 h for multiple path performance based technologies.

2.3.2 UL864 programming requirements

NOTE: Users, Installers, Authorities having Jurisdiction and other involved parties; this product incorporates field programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarms Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below.

SG-CPM5 - UL864 programming requirements				
Opt #	Program option	Permitted in UL864? (Y/N)	Possible settings	Settings permitted (UL 864)
202	Buzzer	N	Enabled/Disabled	Enabled
411	Heartbeat Timer	Y	00-FF	Not Allowed 00
601	CPM5 1 Fan Trouble	N	Enabled/Disabled	Enabled
602	CPM5 2 Fan Trouble	N	Enabled/Disabled	Enabled
603	PSU 1 Trouble	N	Enabled/Disabled	Enabled
604	PSU 2 Trouble	N	Enabled/Disabled	Enabled
609	UPS AC 1 Trouble	N	Enabled/Disabled	Enabled
610	UPS AC 2 Trouble	N	Enabled/Disabled	Enabled
611	UPS Battery 1 Trouble	N	Enabled/Disabled	Enabled
612	UPS Battery 2 Trouble	N	Enabled/Disabled	Enabled
615	SG-Serial Automation Sec 1 Trouble	N	Enabled/Disabled	Enabled
617	Serial CPM 1 Printer 1 Trouble	N	Enabled/Disabled	Enabled
618	Serial CPM 2 Printer 1 Trouble	N	Enabled/Disabled	Enabled
619	Serial CPM 1 Printer 2 Trouble	N	Enabled/Disabled	Enabled
620	Serial CPM 2 Printer 2 Trouble	N	Enabled/Disabled	Enabled
621	SG-TCP Automation Pri - Trouble	N	Enabled/Disabled	Enabled
631	SG-TCP Automation Sec - 1 Trouble	N	Enabled/Disabled	Enabled
665	TCP Printer Pri - 1 Trouble	N	Enabled/Disabled	Enabled
675	TCP Printer Sec - 1 Trouble	N	Enabled/Disabled	Enabled

SG-DRL5-IP				
Opt #	Program option	Permitted in UL 864 (Y/N)	Possible settings	Settings permitted (UL 864)
221	Transmitter Absent Debounce Time	Y	5-65535	3600 sec (1 h)/ 21600 sec (6 h)
222	Transmitter Restoral Debounce Time	Y	5-65535	200
301	Transmitter Unencrypted Trouble	N	Enabled/Disabled	Enabled
302	Unknown Account Trouble	N	Enabled/Disabled	Enabled
303	Supervised Accounts Exceeded Trouble	N	Enabled/Disabled	Enabled

SG-DRL5-2L/DRL5E/DRL5				
Opt #	Program option	Permitted in UL 864? (Y/N)	Possible settings	Settings permitted (UL 864)
104/204	2-Way Activation Time	N	00-FF	00

SG-DRL5-2L/DRL5E/DRL5				
Opt #	Program option	Permitted in UL 864? (Y/N)	Possible settings	Settings permitted (UL 864)
12F/22F	4- and 5-digit Account Codes to Activate 2-Way Audio	N	00-FF	00
17B/27B	3-Digit Account Codes to Activate 2-Way Audio	N	00-FF	00
17C/27C	Alarm Codes to Activate 2-Way Audio	N	00-FF	00
17D/27D	Supervised Accounts Exceeded Trouble	N	00-FF	00

NOTE: For Commercial Fire applications a DACT shall automatically initiate and complete a test signal transmission sequence to its associated receiver (SG-DLR5/SG-DLR5E/SG-DLR5-2L line cards) at least once every 6 hours. The Automation Software connected to the receiver at the supervising station will indicate the absence of the test transmission (change settings from 24 h to 6 h).

2.3.3 Printers

Serial printer

For UL and ULC Listed applications, the following UL/ULC Listed printer can be used with the SG-System 5:

- Seiko DPU-414

TCP/IP printer

For UL Listed applications, the UL Listed SG-System 5 Console software can be used with the SG-System 5.

NOTE: For ULC Listed applications, the Console Printer application is considered supplemental and is only allowed to be used in conjunction with a compatible ULC Listed printer.

SG-System 5 Console software system requirements

Compatible operating systems:

- Microsoft Windows 2008 Server (32 and 64 bit)
- Microsoft Windows 7 (32 and 64 bit)
- Microsoft Windows 8 (32 and 64 bit)
- Microsoft Windows 8.1 (32 and 64 bit)
- Microsoft Windows 10 (32 and 64 bit)

NOTE: Requires .NET Framework 3.51.

Hardware requirements:

- Intel Atom CPM @ 1.6GHz and 1 GB of RAM

NOTE: Do NOT use printer cables that have only one common ground wire.

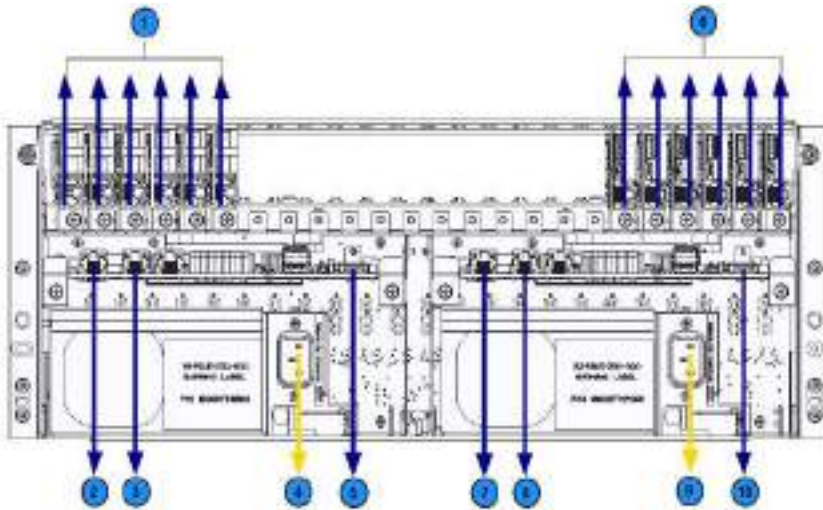
2.3.4 UL Manual mode

For UL Manual mode, each event activates the internal buzzer to be acknowledged manually. Each event is sent automatically to the connected printer.

NOTE: A user must be logged in before acknowledging signals. A logged in user remains logged in until a new user enters a valid user name and password or if the SG-CPM5 resets or reboots.

2.3.5 SG-System 5 power limited circuit separation

FIGURE 2-4: SG-System 5 power limited circuit separation from non-power limited circuit diagram



- | | |
|---|---|
| 1. Secondary line card phone connections | 6. Primary line card Ethernet connections |
| 2. Secondary SG-CPM5 Ethernet connection | 7. Primary SG-CPM5 Ethernet connection |
| 3. Secondary SG-CPM5 automation and printer port | 8. Primary SG-CPM5 automation and printer port |
| 4. Secondary SG-PSU5 AC power connection (see note) | 9. Primary SG-PSU5 AC power connection (see note) |
| 5. Secondary SG-CPM5 display connection | 10. Primary SG-CPM5 display connection |

NOTE: Employ only 26 AWG wires for the Telco connections.

NOTE: The power cord must be routed ¼ inch away from all other cables coming from or which are part of the SG-System 5.

2.4 Safety instructions

The SG-SYSTEM 5 equipment is a **class 1, rack-mounted, (fixed-stationary) equipment, pluggable type A using a detachable power supply cord, designed to be installed, operated and maintained by service persons only** [a person having appropriate technical training and experience necessary to be aware of hazards to which that person may be exposed in performing a task and of measures to minimize the risks to that person or other persons].

The equipment SG-SYSTEM 5 is designed to be installed in **restricted access locations** within an environment that provides the Pollution Degree max 2 and **overvoltages category II - nonhazardous locations, indoor only**.

The **power supply** cord serves as a means of disconnection from the **mains**. The **outlet** used to power the equipment shall be installed near the equipment and shall be easily accessible. The equipment must be connected to a socket-outlet with a protective earthing connection! The **installation** of the SG-SYSTEM 5 equipment must provide a reliable earth connection and it shall respect the local electrical wiring regulations.

IMPORTANT: It is the installer's responsibility to ensure that the SG-SYSTEM 5 is properly mounted within a metallic fire enclosure with a minimum thickness of 1.5 mm and the final assembly is compliant with all applicable requirements from the point of view of the accessibility to the energized parts (hazardous voltages, TNV circuits, etc.) as these characteristics are defined within EN60950-1: 2006 standard.

The external enclosure shall meet all of the applicable requirements from the point of view of physical requirements, e.g., steady force 250N, impact and stability. The equipment must be secured to the building structure before operation; all wiring and installation shall be in accordance with electrical codes acceptable to the authorities that have jurisdiction where the equipment is installed, serviced and operated. The rack must be **fixed** in place; the sub-assemblies shall **not be extended away** from the rack for installation and/or any other purpose.

Internal wiring shall be routed in a manner that prevents:

- excessive strain on wire and on terminal connections;
- loosening of terminal connections;
- damage of conductor insulation.

The wireways within the enclosure shall be smooth and free from sharp edges. Wires shall be protected and routed so that they do not come in contact with burrs, cooling fan or heat sinks which could cause damage to the insulation of conductors. Holes in metal shall have smooth well-rounded surfaces or shall be protected with bushings.

The external enclosure shall be connected to the **protective earth ground**. The external cabinet (rack) must be secured to the building structure before operation in a such a way to fully meet the stability requirements as per EN60950-1: 2006 conditions.

An adequate marking, visible on the front of the door (cover), **next to the access door** (or cover) of the rack, with instructions for protection once the **door** (or covers) is (are) removed, stating that the "telephone cord is to be disconnected prior to opening the door" (or other acceptable marking), shall be provided by the installer.

An acceptable power supply cord (detachable) shall be used in accordance with the local outlets and voltages. **It is the installer's responsibility to provide an appropriate acceptable power supply cord.**

CAUTION: This product uses lithium batteries. Improper handling of lithium batteries may result in heat generation, explosion or fire, which may lead to personal injuries. Please ensure that the above precautions are strictly observed by the related divisions including but not limited to sales, service, customers and (or) outside contractors. The equipment SG-SYSTEM 5 is equipped with lithium non replaceable battery. Do not attempt to replace the battery.

CONNECTION TO THE MAINS

1. Connect first the **detachable power supply cord** to the IEC320 connector located on SG-SYSTEM 5 equipment.
2. Connect all the telecommunications cord-sets to the appropriate connectors.
3. Ensure that the enclosure of the equipment SG-SYSTEM 5 is fully installed (covers, doors, etc.) in a such a way that **hazardous voltages** will not be **accessible** when the equipment is connected to the **mains** and/or **telecommunication network**.

Warning: The internal power supplies are not swappable. Disconnect power before attempting to change a power supply.

In order to change the **internal** Power Supply, first **disconnect** the **detachable power supply cord** from the socket outlet used to provide power, and then, from the IEC320 connector which is mounted on the SG-SYSTEM 5 equipment.

Do not touch the **heatsinks** within the equipment: these are **live parts** and/or may present a hazard related to high temperatures. In order to swap the boards **use the provided plastic handles (inserters, extractors)**.

No repairs in the field are allowed. The SG-System 5 equipment must be returned to the manufacturer for repairs.

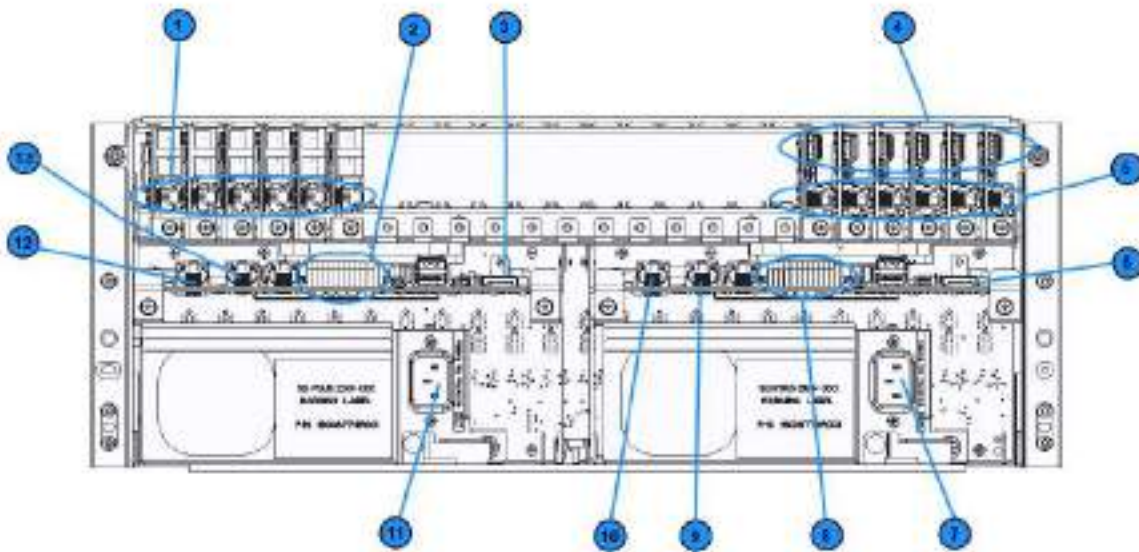
3.0 Receiver Setup and Operation

In this chapter...

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3.1 SG-System 5 quick install guide

FIGURE 3-1: SG-System 5 connections (back)



1. Line card phone line connections
2. Secondary SG-CPM5 I/O terminal connections
3. Secondary SG-CPM5 display connection
4. Line card USB connections
5. Line card Ethernet connections
6. Primary SG-CPM5 display connection
7. Primary SG-PSU5 AC power connection
8. Primary SG-CPM5 I/O terminal connections
9. Primary SG-CPM5 automation and printer port
10. Primary SG-CPM5 Ethernet connection
11. Secondary SG-PSU5 AC power connection
12. Secondary SG-CPM5 Ethernet connection
13. Secondary SG-CPM5 automation and printer port

NOTE: This equipment must be operated by **SERVICE PERSONS** only within **RESTRICTED ACCESS LOCATIONS**; refer to this **Operating Manual for Safety Instructions**.

NOTE: For equipment used at signal receiving centers and intended to facilitate IP communication (hubs, routers, NID, DSL/cable modems), 24-hour backup power is required.

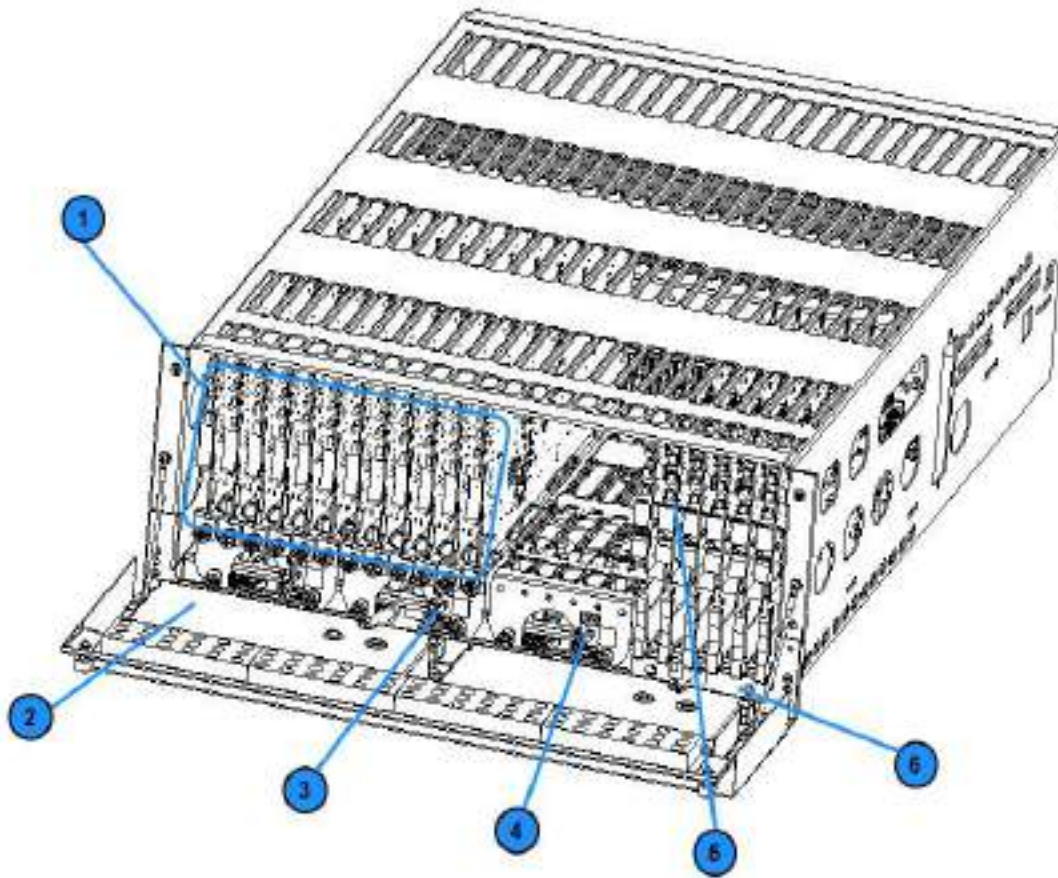
NOTE: To test the operation of LED indicators and LCD:

From the LCD, click the menu at the top right>> login/options>>More Options>> Visual indicator test>>yes.

NOTE: When using private, corporate, and high-speed data networks, network access and domain access policies are set to restrict unauthorized network access and 'spoofing' or 'denial of service' attacks. Select an ISP that provides redundant servers/systems, backup power, routers with firewalls enabled and methods to identify and protect against these types of attacks ('e.g., 'spoofing', 'DoS').

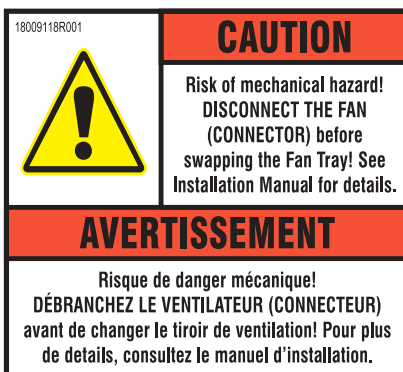
NOTE: Install external devices connected to SG-CPM5 Ethernet, SG-CPM5 automation printer ports and SG-CPM5 I/O terminal connections in the same room as the SG-System 5. Maintain 6.5 mm (1/4 inch) of separation between power limited and non-power limited circuits. Use power limited, supervised circuits only.

FIGURE 3-2: SG-System 5 front with door open



1. Line cards
2. Warning label
3. Primary display power connection
4. Secondary display power connection
5. PSTN line card
6. Line card extraction plate

FIGURE 3-3: SG-System 5 warning label



WARNING: To reduce the risk of electric shock, the product is provided with a grounding type power supply IEC receptacle. Connect product using an appropriate IEC cable to a grounded receptacle.

Do not connect to a receptacle controlled by a switch.

- RS-232 Serial Automation Output: Provides serial connection to a local computer running automation software. A null modem serial cable must be used.

- RS-232 Serial Printer Output: Provides serial connection to a local computer or serial printer. A null modem serial cable must be used.
- Ethernet Output 1 GigE: Traditional automation communication is provided via port 1025 on the Ethernet connection. This primary port is a Sur-Gard standard output and provides Sur-Gard standard automation protocol output.

CAUTION: The Ethernet communication lines must be connected first to an approved (acceptable to the local authorities) type NID (Network Interface Device) before leaving the premises (e.g., UL installations, UL60950 Listed NID).

NOTE: All external devices should be mounted in the same room as the receiver.

All circuits are power limited except AC input.

Maintain 6.5 mm (1/4 inch) separation between power limited and non-power limited circuits.

All outputs are supervised.

3.1.1 Receiver installation

Sur-Gard recommends testing the receiver before actual installation. Becoming familiar with the connections and setup of the unit on the workbench simplifies the final installation.

The following items are required:

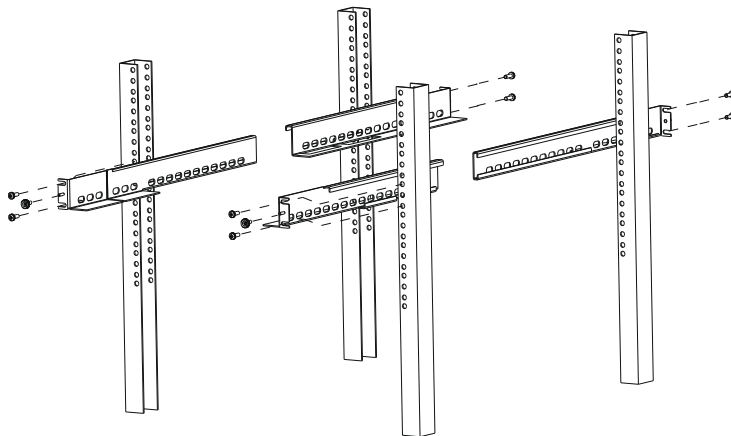
- 1 IEC power supply cord per SG-PSU5
- Philips #1 screwdriver
- Phillips #2 screwdriver
- 5/16 inch [or 8 mm] nut driver
- Depending on rack mounting:
 - 8 clip nuts for the 19-inch rack
 - 8 screws to fit into the clip nuts

1. Unpack the components for the SG-System 5.

NOTE: Carefully unpack the receiver and inspect for shipping damage. Notify the carrier immediately of any apparent damage.

2. Mount the rails to the 19-inch rack:
 - a. Slide the rails together.
 - b. Insert the clip nuts into the 19-inch rack 1U apart on the front and the back of the rack, leaving minimum 4U of space from the bottom of the rail.
 - c. Place the rails and then secure in place with rack screws (four per rail, two on the front and two on the back).
 - d. Unfasten the front rail screws and set aside.

FIGURE 3-4: Rail installation

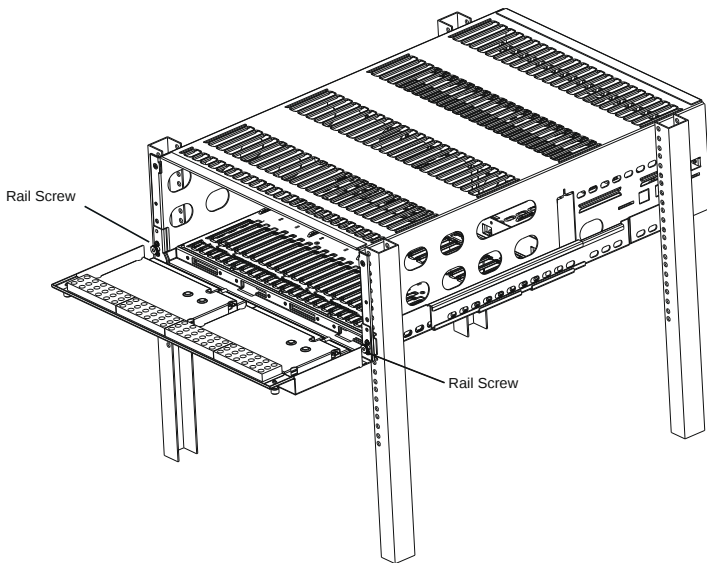


NOTE: Maximum distance between front and rear rails is 31 inches (78.74 cm)

CAUTION: This component is heavy and requires two people to lift. Keep fingers clear of rails.

3. Slide the SG-MLRF5 subrack onto the rails.
4. Unfasten the thumb screws and open the front plate.
5. Fasten the thumb screw set aside from the rails.

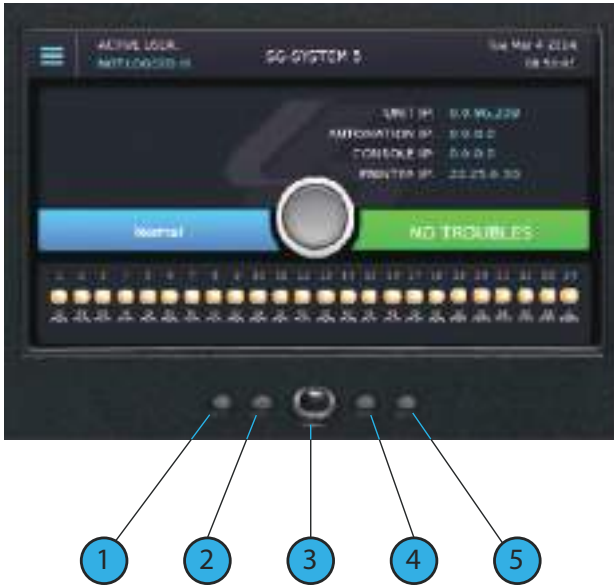
FIGURE 3-5: Securing SG-MLRF5 to rack



6. Install optional secondary LCD:
 - a. Unscrew the four nuts holding the cover plate.
 - b. Push the blank plate from the front to remove it.
 - c. Remove the display cable from its holder in the cover plate.
 - d. Discard the cover plate.
 - e. Remove the plastic sheet covering the LCD.
 - f. Place the LCD onto the front plate.
 - g. Connect the power cable from the SG-MLRF5 to the LCD (tab up).
 - h. Attach the display cable.
 - i. Install the cable holder using the two screws provided. Ensure both the display cable and the LCD power cable are secured.
 - j. Place the metal shield on top of the LCD.
 - k. Fasten the ground strap.
 - l. Screw on all four nuts (do not over-tighten).
7. Insert the fan tray and connect the fan tray wire. Make sure the fan tray is between the two guides. Fasten the thumb screws. Repeat the process for additional fan trays.
8. Insert all cards, starting with slot 1, into their appropriate positions in the rack. Ensure there are no open slots between cards. Fasten the thumb screws.
9. Close the front plate and fasten the thumb screws.
10. At the back of the SG-System 5:
 - a. Insert the SG-CPM5 partially and connect fan (at the back). The SG-CPM5's fan connector tab should be up.
 - b. Insert the SG-CPM5 completely in the rack. Fasten the thumb screws.
 - c. Connect the LCD display port cable and a network cable to the SG-CPM5.
 - d. Insert a paddle card into each slot with a SG-DRL5-IP line card. Fasten the thumb screws.
 - e. Connect a network cable to each paddle card.
 - f. Insert the SG-PSU5(s) into the rack and fasten the thumb screw.
 - g. Connect the main power using a standard computer IEC cable (not supplied).
11. The LCD powers up and displays internal troubles (e.g., printer, automation).
12. Press the ACK button and log in (Default: Admin//adminpass).
13. Press the ACK button until all of the initial signals have been acknowledged (ACK button has stopped flashing and the buzzer has been silenced).

NOTE: Internal diagnostics may require more than one minute during the power up sequence.

3.1.2 SG-CPM5 LEDs



1.	Console Connected (Green)	ON = Console connected OFF = Console disconnected
2.	Trouble Status (Yellow)	ON = Troubles present OFF = No troubles present
3.	Network Status (around the home button)	Blue = 1Gb/s Green = 100Mb/s Flashing Green = Decommission or firmware update in progress Orange = 10Mb/s Red = network absent Flashing Red = Decommission is complete, CPM5 can be power cycled
4.	Watchdog (Blue)	Flashing = Normal , Off/On – SG-CPM5 failure
5.	Automation (Green)	ON = Automation connected and system is active Flashing = Automation is connected and system is in standby OFF = Automation disconnected

4.0 Hardware Descriptions and Specifications

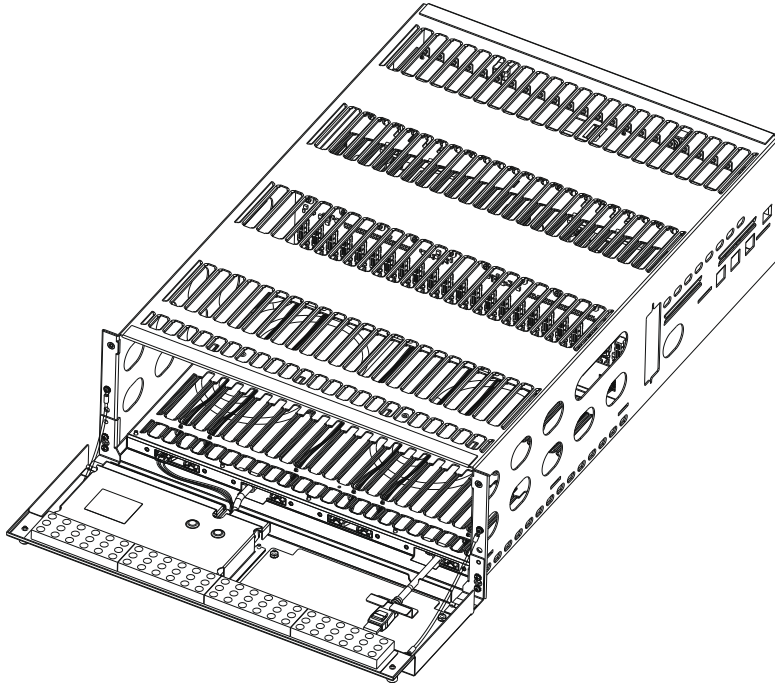
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4.1 SG-MLRF5

The SG-MLRF5 houses the components of the SG-System 5 and is secured into a 19-inch rack by the SG-MLRF5-RM rails. The SG-MLRF5 ships with the mid-plane, two CPM fans and one LCD pre-installed.

FIGURE 4-1: SG-MLRF5 rack



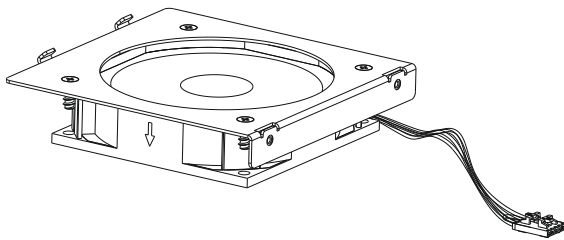
4.1.1 SG-MP5 midplane

The SG-MP5 interconnects system modules.

4.1.2 SG-S5CFANTR – SG-CPM5 fan tray

The SG-S5CFANTR cools the SG-CPM5 while the SG-CPM5 is running. The SG-S5CFANTR is mounted above the SG-CPM5 in the MLRF5. It must be plugged into the SG-CPM5 to function.

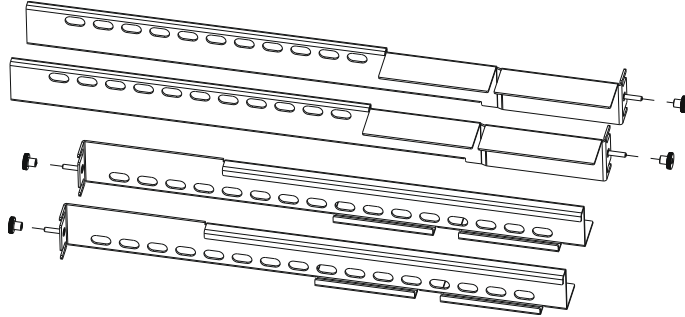
FIGURE 4-2: SG-S5CFANTR



4.1.3 SG-MLRF5-RM – Mounting rails

The SG-MLRF5-RM are used to hold the MLRF5 in place in the 19-inch rack. The mounting rails are installed in the rack before the SG-MLRF5 to allow it to slide in place. The rails must be mounted on the front and back of the 19-inch rack. This product does not support racks that only have front supports. Eight clip nuts or screws (not included) are required to install each rail.

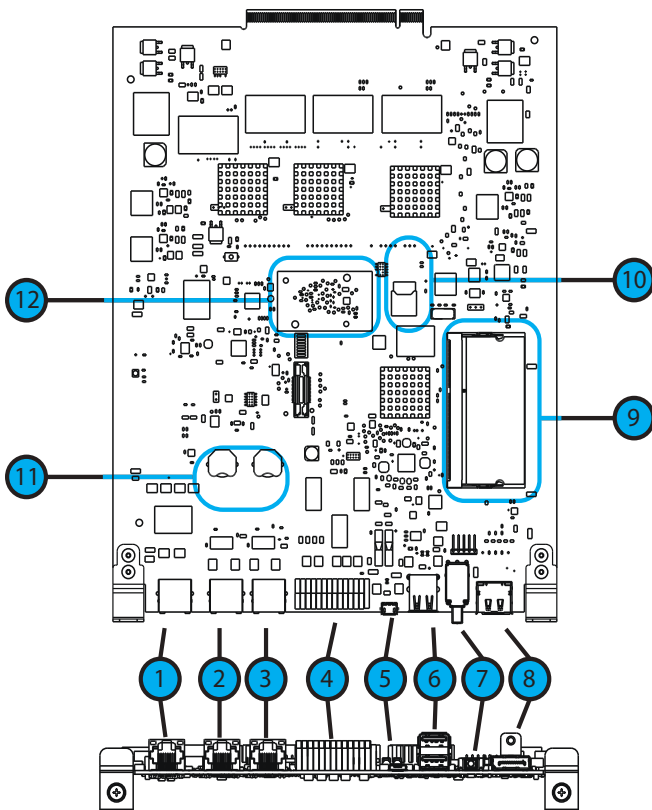
FIGURE 4-3: SG-MLRF5-RM



4.2 SG-CPM5 - Central processing module

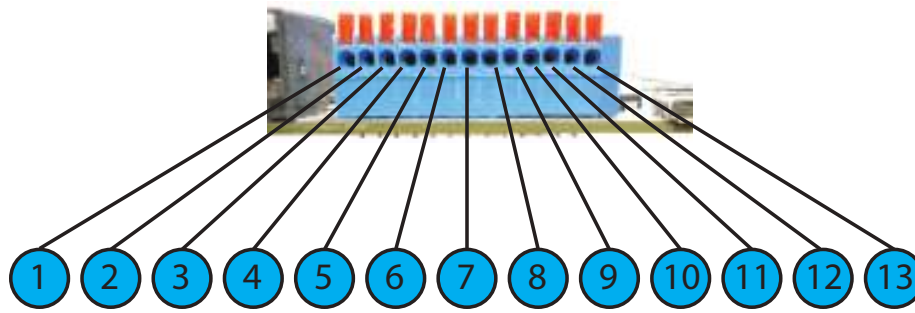
The SG-CPM5 central processing module collects system information and directs line card information to the appropriate outputs. Along with its connection to the LCD touch screen, the SG-CPM5 features a TCP/IP connection (supports 10/100/1000Mbps), serial connections for automation and printer, and I/O terminal pin outs for external ACKing and monitoring of the UPS and Buzzer/Trouble/Network follower. The printer is supervised for loss of power, off-line, paper out and other trouble conditions. The communication link to the automation computer through the RS-232 and TCP/IP port can be monitored by the supervisory heartbeat transmissions.

FIGURE 4-4: SG-CPM5



1. Ethernet - supports 10/100/1000Mbps
2. Serial automation 1 and serial printer 1
3. For future use
4. I/O terminals
5. USB OTG (for future use)
6. USB (for future use)
7. Decommission switch (for future use)
8. Display port connection
9. DDR3 memory
10. SD card (for future use)
11. Real time clock (RTC) back-up batteries
12. Expandable module (for AHS functionality)

4.2.1 SG-CPM5 I/O terminal pin-outs



- | | | |
|-----|-----------|--|
| 1. | Input 1 | UPS AC Failure: UPS AC normally closed output opens on failure. |
| 2. | GND | Common (ground) |
| 3. | Input 2 | UPS DC Failure: UPS battery normally closed output opens on failure. |
| 4. | Input 3 | Remote ACK: When the SG-CPM5 is in manual mode, pressing the ack button (front panel) or connecting this input to ground (typically using a button) acknowledges the first event on the LCD. |
| 5. | GND | Common (ground) |
| 6. | Input | Future use |
| 7. | Output R1 | Follow Buzzer: Relay contact closes following the buzzer caused by manual mode. |
| 8. | R1 | Relay 1 Common |
| 9. | Output R2 | Trouble Output: Relay contact closes when the trouble (Status) LED activates. |
| 10. | R2 | Relay 2 Common |
| 11. | Output R3 | Network Status: Relay contact closes when the network is present. |
| 12. | R3 | Relay 3 Common |
| 13. | GND | Common (Gound) |

For ULC installations, the equipment shall be rack-mounted and powered by a permanently wired supply in accordance with C22.1, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations, section 32. This equipment is intended to utilize the building emergency AC supply system for their standby supply (e.g., UPS, batteries in conjunction with engine-driven generators).

4.2.1.1 UPS AC Failure – Pin 1

UPS AC Failure – this normally closed input is used with backup power supplies that support output activation for status indication. When this input is activated, the SG-CPM5 indicates a trouble condition for UPS AC Fail (see SG-CPM5 option [609] for the primary and [610] for the secondary).

4.2.1.2 UPS DC Failure – Pin 3

UPS BATT Failure – this normally closed input is used with backup power supplies that support output activation for status indication. When this input is activated the SG-CPM5 indicates a trouble condition for UPS Battery Fail (see SG-CPM5 option [611] for the primary and [612] for the secondary).

4.2.1.3 Remote ACK – Pin 4

Remote Ack – this input is used to provide a method to acknowledge an alarm condition (while the receiver is in manual mode) from a remote location. The Remote Ack input is available any time that the front panel Ack button is available.

4.2.1.4 Buzzer Follow Output – Pin 7

Manual Mode Buzzer Follow – this output is activated in synchronization with the buzzer output of the SG-CPM5. When the buzzer is silenced/ended, the output deactivates. This output is used to monitor the buzzer when the receiver is in a remote location.

4.2.1.5 Trouble Status Output – Pin 9

Trouble output – this output is activated with the trouble status output of the SG-System 5. Any enabled trouble condition on the system activates the output. The output deactivates once all trouble conditions have been cleared. This output is used to monitor trouble conditions when the receiver is in a remote location.

4.2.1.6 Network Status Output – Pin 11

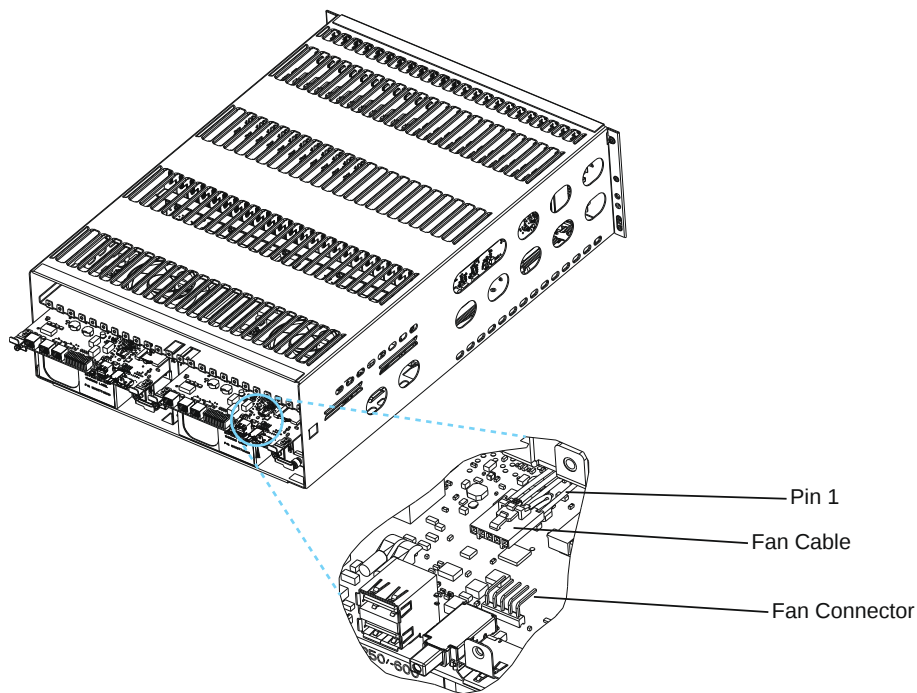
Network Status output – This output is activated when there is a network absent condition. Once the network connection is restored, this output deactivates. This output is used to monitor the network status when the receiver is in a remote location.

4.2.2 SG-CPM5 Setup

4.2.2.1 Connecting the SG-CPM5 Fan Cable

To connect the CPM's fan cable, partially slide the SG-CPM5 into the SG-MLRF5 and connect the cable to the SG-CPM5 board with the connector facing up. Slide the SG-CPM5 all the way into the rack.

FIGURE 4-5: SG-CPM5 Fan Cable



4.2.2.2 Y-Cable

The Y-cable is used to connect the SG-CPM5's RJ-45 port to serial cables. To connect it, plug it into the second RJ-45 port from the left.

4.2.2.3 RTC Battery

The SG-CPM5 has two replaceable A76 alkaline RTC batteries. Replace batteries approximately every five years.

To replace the RTC batteries, follow these steps:

1. Unfasten the SG-CPM5 thumb screws.
2. Partially remove the SG-CPM5, disconnect the SG-CPM5 fan tray cable, then remove the SG-CPM5 fully.
3. Insert a small screwdriver into either side of the battery holder and push the battery out.
4. Insert the new battery into the holder (label up).
5. Repeat steps 3-4 for the other battery.

4.2.2.4 EMMC Memory

The SG-CPM5 has an optional add-on EMMC memory module that is required to expand the AHS table.

To replace the EMMC memory, follow these steps:

NOTE: If the EMMC is not already installed, please skip steps 3-4.

1. Unfasten the SG-CPM5 thumb screws.
2. Partially remove the SG-CPM5, disconnect the SG-CPM5 fan tray cable, then remove the SG-CPM5 fully.
3. Unfasten the two screws on the EMMC module.

4. Carefully lift the EMMC module off of the board.
5. Place the new EMMC module on the board.
6. Fasten the two EMMC screws.
7. Install the SG-CPM5 back into the SG-MLRF5.

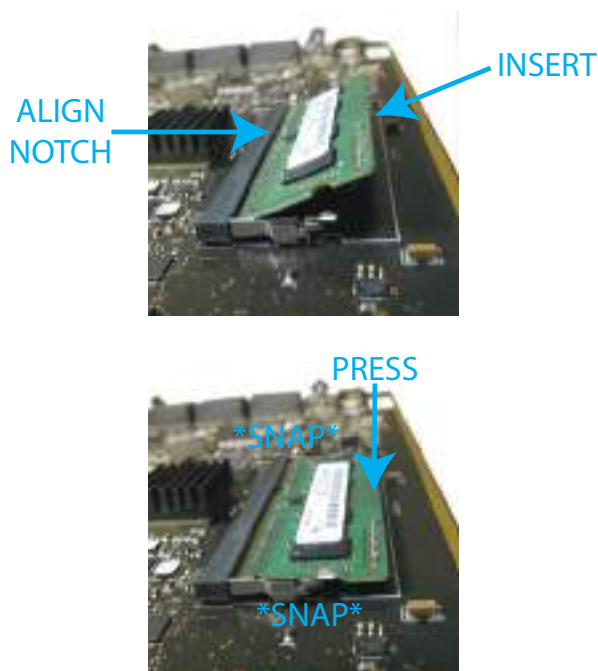
4.2.2.5 DDR3 Memory

The SG-CPM5 incorporates replaceable/upgradable DDR3 required for normal operation.

To replace the DDR3 Memory, follow these steps:

1. Unfasten the SG-CPM5 thumb screws.
2. Partially remove the SG-CPM5, disconnect the SG-CPM5 fan tray cable, then remove the SG-CPM5 fully.
3. Push the clips on either side of the DDR3 away from the board. It should lift up automatically.
4. Slide the DDR3 out at a 45 degree angle.
5. Slide the new DDR3 in at a 45 degree angle (label up).
6. Push down until the clips engage.
7. Install the SG-CPM5 back into the MLRF5.

FIGURE 4-6: DDR3 Installation



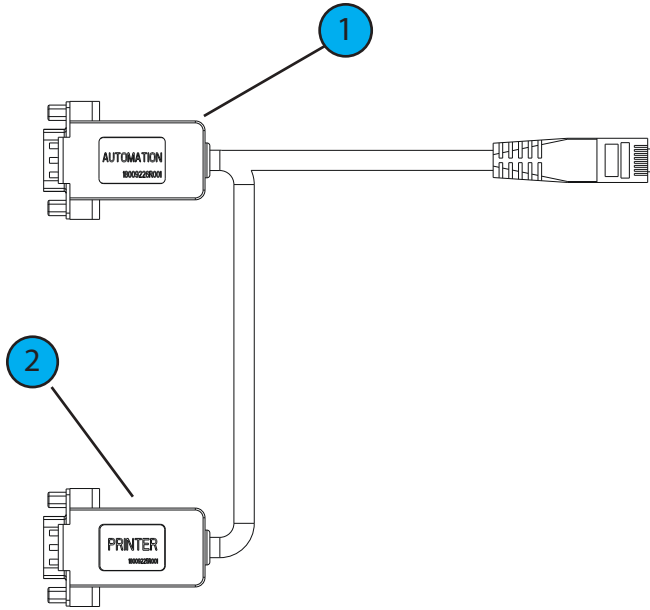
4.2.3 SG-CPM5BATT - RTC battery

The SG-CPM5 requires two SG-CPM5BATT batteries on the board to power the Real-Time Clock (RTC) circuit. These batteries allow the SG-CPM5 to track the time even when the SG-CPM5 is completely powered down.

4.2.4 SG-S5SERCAB - Y-cable

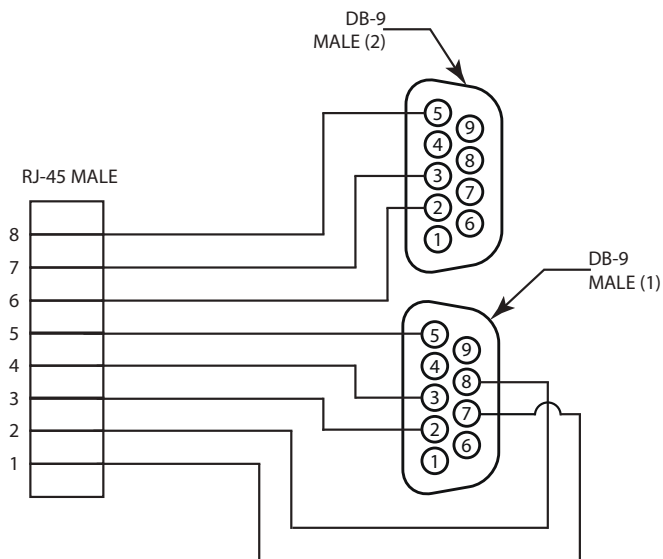
The Y connector is used to branch out the RJ-45 printer/automation port on the SG-CPM5 to two serial connections:

1. Serial port 1 is for the automation.
2. Serial port 2 is for the printer.



Serial Pin OUTS:

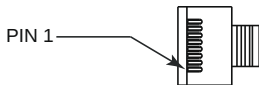
From		To	
Connector	Pin#	Connector	Pin#
RJ-45 Male	1	Printer DB-9	7
	2		8
	3		2
	4		3
	5		5
	6	Automation DB-9	2
	7		3
	8		5



DB-9 pin OUTS:

Pin#	Pin function
1	Data carrier detect
2	Receive data
3	Transmit data
4	Data terminal ready
5	Signal ground
6	Data set ready
7	Request to send
8	Clear to send
9	Ring indicator

FIGURE 4-7: RJ-45 Pin 1 location



4.2.4.1 Maximum connected cable length

The maximum cable length from the SG-SYSTEM 5 to another device (e.g., hub, UPS) is 3ft (0.9144 meters). All connections made in the same room (termination must be within the secure premises).

Connector	Length (feet)	Length (meters)	Typical termination
I/O Terminal	3	0.9144	Sounding/lighting/input devices
Serial printer	3	0.9144	Printer or PC- based printer (serial port)
Serial automation	3	0.9144	PC-based software (serial port)
LAN	3	0.9144	Network switch or direct to PC (crossover cable)
IEC connector	3	0.9144	UPS backup power supply or standard wall outlet (110/220VAC)

4.2.5 SG-CPM5 fan tray replacement

To replace an SG-CPM5 fan tray, first remove the SG-PSU5, the SG-CPM5 and paddle cards.

The steps are as follows:

1. Unplug the IEC cable from the power supply. Lift the red tab and unfasten the thumb screw.
2. Remove the SG-PSU5.
3. Unfasten the SG-CPM5's thumb screws. Disconnect all the wires (Ethernet, automation/printer, I/O wires, and LCD cable).
4. Partially remove the SG-CPM5, disconnect the fan cable, and then remove the SG-CPM5 fully.
5. Unfasten the paddle card thumb screws and remove the paddle cards.
6. Unfasten the fan screws.
7. Grasp the fan, push away then pull down to remove.
8. Insert the new fan by pushing up and then back.
9. Fasten the two screws, ensuring that the fan is secure.
10. Replace the paddle cards removed in previous steps.

4.2.6 UPS setup

FIGURE 4-8: SG-System 5 UPS supervision connection diagram

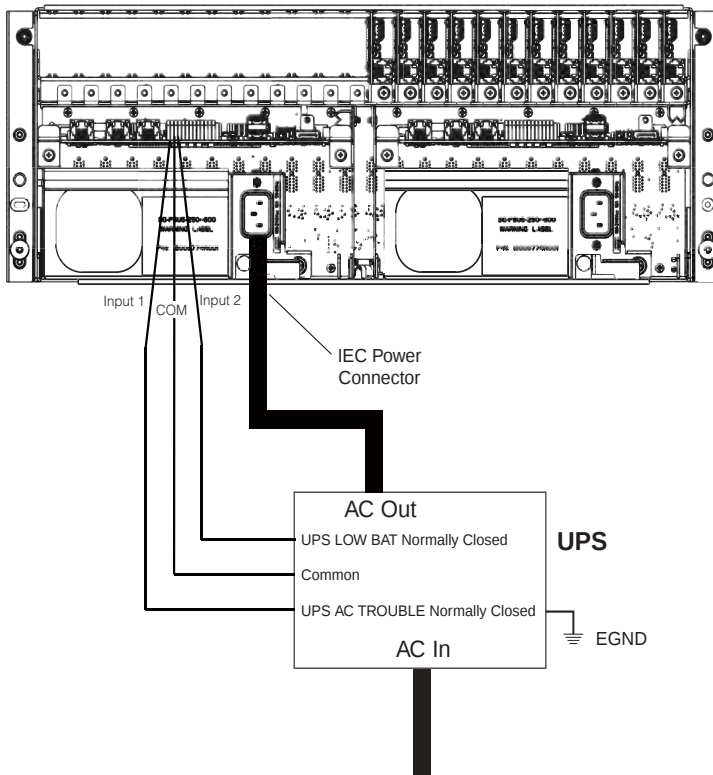
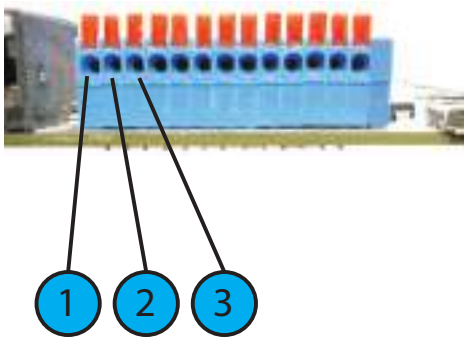


FIGURE 4-9: I/O Terminal UPS connections



1.	Input 1	UPS AC Failure: toggles from ground to open on failure.
2.	GND	Common (ground)
3.	Input 2	UPS DC Failure: battery of the UPS failed (toggles from ground to open on failure)

For UL/ULC installations, use a UL listed UPS (Uninterruptible Power Supply) for protective-signaling systems and/or a listed burglary alarm power supply, as applicable.

NOTE: UPS connection is to be made using dry contact connections provided by the UPS.

For UL and ULC installation of model SG-System 5: UPS Output 120V AC/60Hz, 5A

For ULC Installations, the equipment shall be rack mounted and energized by a permanently wired supply in accordance with C22.1, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations, section 32.

Connection to a UPS (Uninterruptible Power Supply) with minimum 24 hour standby capability is required.

WARNING: To reduce the risk of electrical shock, the product is provided with a grounding type power supply IEC receptacle. Connect product using an appropriate IEC cable to a grounded receptacle.

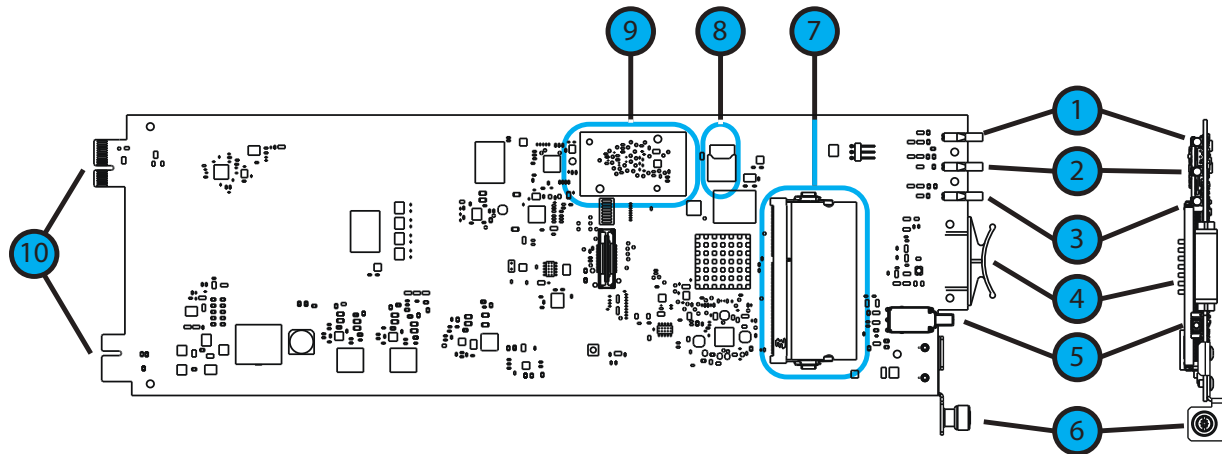
4.3 SG-DRL5-IP - IP line card

The SG-System 5 supports a maximum of 24 line cards. The SG-DRL5-IP cards function as a LAN or WAN server to remote transmitters. The SG-DRL5-IP line card receives alarm events from the transmitter, decoding them before forwarding the signals to the SG-CPM5 for subsequent output to the printer and automation outputs.

After a SG-DRL5-IP has been installed and configured, it listens on a programmed port and awaits communications from transmitters configured to connect to that specific receiver. The SG-DRL5-IP logs the connection and generates the appropriate event which is forwarded to the SG-CPM5.

The SG-DRL5-IP line card receives heartbeats from all network supervision enabled transmitters periodically. This allows the receiver to determine whether the transmitters are still online. The receiver maintains a table of all installed transmitters and monitors their status (presence/absence, installed software versions, MAC addresses for swap detection purposes, and other network statistics).

NOTE: The SG-DRL5-IP can receive data from DSC (and other compatible) IP communicators. Please see the communicator manual for compatibility limitations.



1. Watchdog LED
2. Trouble status LED
3. Network status LED
4. Pull tab
5. Decommission button
6. Thumb screw
7. DDR module
8. SD card holder
9. Expandable EMMC module
10. Edge connector - DO NOT TOUCH

4.3.1 SG-DRL5-IP configurations

The following product ordering codes are available for the different configurations of the line card model SG-DRL5-IP:

SG-DRL5-IP STD

Standard Build

- 512 Visual Verification accounts (SD card required)
- 512 supervised accounts
- 3072 unsupervised accounts
- Total accounts on each table 4096
- 1 table - With a valid license, 2 additional tables can be unlocked with the same table properties as table 1.
- Total accounts with all 3 tables is 12228
- 1GB DDR3 memory (installed)
- 4GB EMMC memory (installed)

SG-DRL5-IPF

Full Build

- 2560 Visual Verification accounts (SD card required)
- 2560 supervised accounts
- 15360 unsupervised accounts
- Total accounts on each table 20480
- Three tables
- Total accounts with all 3 tables is 61440
- 1GB DDR3 memory (installed)
- 4GB EMMC memory (installed)

SG-DRL5-IPE

CE Build

- 2560 Visual Verification accounts (SD card required)
- 2560 supervised accounts
- Total accounts on each table 5120
- 1 table - With a valid license, 2 additional tables can be unlocked with the same table properties as table 1.
- Total accounts with all 3 tables is 15360
- 1GB DDR3 memory (installed)
- 4GB EMMC memory (installed)

4.3.2 SG-DRL5-IP LED status indicators

After start-up, the line card enters Standby mode and monitors the network connection and the SG-CPM5. Depending on the system's status, the following conditions are displayed for each line card:

		Normal operation	Trouble present	Problem with card or rebooting	Decomission mode
	Watchdog	Flashing	-	On or Off	Flashing
	Trouble	Off	Flashing (see trouble table)	-	Flashing red
	Network Status	Blue – 1Gb/s Green – 100Mb/s, Orange – 10Mb/s, Red – Network Absent	-	-	Flashing red

LEDs during bootup

		Boot-up	Boot fail	Unqualified memory
	Watchdog	Flashing	On	Off
	Trouble	Off	Off	Off
	Network Status	Flashing	On red	On red

Trouble table

Flashes/Color	Error
1/Yellow	CPM absent
2/Yellow	Line card busy out
3/Yellow	Printer buffer full
4/Yellow	Computer buffer full

Flashes/Color	Error
5/Yellow	Checksum failed when downloading flash ROM files.
2/Green	SD Card is 90% full
5/Green	SD Card ID Mismatch - Mismatch occurs when an SD card is not formatted using the console or the SD card is inserted into the wrong DRL5-IP. To resolve this, either format the SD card or Re-ID the SD card using the console. Please refer to the SG-System 5 Console Manual for more detailed instructions.

4.3.2.1 Network fault

When this problem occurs, the following information is transmitted to the printer and automation.

Printer: SG -01-001-0000-NR-Network Failure

Automation: 001001[#0000|NNT*IP.IP.IP.IP*]

When this problem restores, the following information is transmitted to the printer and automation:

Printer: SG -01-001-0000-NR-Network Restoral

Automation: 001001[#0000|NNR*IP.IP.IP.IP*]

4.3.2.2 Invalid report condition

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

Printer: SG-12-234-AAAAAA-YN-*Invalid Report 192.158.8.34*

Automation: 012234[#AAAAAA|NYN*192.158.8.34*]

The output for account code 'AAAAAA' indicates that data has been received but is not valid (e.g., the packet is encrypted and the SG-DRL5-IP does not have the proper key) or the T-LINK transmitter packet was rejected (NAK) four times by the receiver.

4.3.2.3 SG-CPM5 absent

If the line card cannot detect the SG-CPM5 polling, it starts buffering incoming calls (depending on option [123] Busy Out). Up to 2500 alarm messages for the printer and computer are retained in the line card event buffer. When the event buffer is full, the line card stops answering calls and the status LED flashes to indicate busy out. When the SG-CPM5 error condition is corrected, alarm messages in the event buffer are transmitted to the SG-CPM5 with the corresponding time/date the alarm was received.

4.3.2.4 Ethernet interface

The SG-DRL5-IP has an Ethernet interface which operates as a 10BaseT/100BaseT/1000BaseT. This port is accessible via a standard RJ45 connector. The IP address of the SG-DRL5-IP is programmable. The Ethernet port is used for transmitter communications.

The Ethernet communication lines must be connected first to an approved (acceptable to the local authorities) type NID (Network Interface Device) before leaving the premises (e.g., UL installations, UL60950 Listed NID).

4.3.2.5 Supervised receiver database

The receiver has the capability of monitoring IP transmitters set up as supervised units. It automatically keeps track of new transmitters and indicates when one has been lost.

Transmitters restore differently depending on type. Older transmitters, such as the TL-250, must receive two heartbeats within the Transmitter Restoral Debounce time window (Option [222]) and one heartbeat after the window has expired within the Transmitter Absent Debounce time (Option [221]). When a heartbeat is received after the Restoral window, an event is transmitted to the printer and automation. Newer transmitters, such as the TL2803G or the 3G4000, restore immediately after receiving a second heartbeat within the programmed window.

Restoral:

Printer: SG -00-001-XXXXXXXXXXYK-*Transmitter Restoral IP.IP.IP.IP*

Automation: 000001[#XXXXXXXXXX|NYK*IP.IP.IP.IP*]

Failure:

Printer: SG -00-001-XXXXXXXXXXYC-*Transmitter Failure IP.IP.IP.IP*

Automation: 000001[#XXXXXXXXXX|NYC*IP.IP.IP.IP*]

NOTE: Newer DSC transmitters only transmit a heartbeat after the last transmission, whereas the older transmitters transmit a heartbeat at the programmed amount of time regardless of the alarm traffic.

NOTE: Transmitter Restore Time must be 30 seconds minimum.

NOTE: For UL Listed products, the permitted setting is 90 seconds.

NOTE: Two heartbeats must be received from the supervised IP transmitter before the register and restoral of the communicator.

4.3.2.6 Profiles

IP channel profiles are sets of customized options designed to improve efficiency when communicating with alarm control panels over IP. This is achieved by tailoring the programming of the receiver to a customer's unique parameters. Up to 64 separate profiles can be created for each SG-DRL5-IP, effectively enabling a single line card to have the capability of 64 traditional line cards. When DNIS information is received by the SG-DRL5-IP, it automatically applies the appropriate profile options.

Only profile 0 contains static line card options (e.g., line card address). Profile 0 to 64 contain unique pre-programmed options (e.g., custom supervision window, automatic encryption) for a particular DNIS or caller ID number. For a complete description of available static and dynamic options, "6.2.5"

4.3.2.7 Rules for account table exceeded messages

The IP account table limit exceeded message is generated under the following conditions.

Any account added is written to the corresponding account type table (i.e., visual verification, supervised, or unsupervised). If there is no room for the account in the account table type that is licensed, the line card generates the appropriate message and does one of the following:

- If the account type is full, the SG-DRL5-IP generates the message and adds the account to the system. The initialization message from that account generates the corresponding JO message. For example: if the account table is full for supervised accounts, the account is added and the SG-DRL5-IP outputs the "Supervised Account Table size has been exceeded" message. The account is still be added to the account table, responded to and outputs signals.
- If the account table is past capacity for total number of accounts (e.g., STD line card with more than 4096 accounts), the card outputs and logs the correct JO message for the account table type and does not add the account to the table. The SG-DRL5-IP will **not** respond to the account. When filling accounts to "other" table type the order of insertion is:
 1. Unsupervised
 2. Supervised
 3. Visual Verification.

The total number of accounts for the receiver account table is based on the license type added.

- Example 1 – SG-DRL5-IPS line card has 4096 accounts per table
- Example 2 – SG-DRL5-IPE line card has 5120 accounts per table
- Example 3 – SG-DRL5-IPX line card has 20480 accounts per table

Maximum Account Table size has been exceeded:

Printer: 001001[#XXXXXXXXXX|NJO01CC*IP.IP.IP.IP*]

Automation: SG -01-001-XXXXXXXXXX-JO01CC-*Maximum Accounts Exceeded IP.IP.IP.IP*

Supervised account table size has been exceeded:

Printer: 001001[#XXXXXXXXXX|NJO02CC*IP.IP.IP.IP*]

Automation: SG -01-001-XXXXXXXXXX-JO02CC-*Maximum Supervised Accounts Exceeded IP.IP.IP.IP*

Visual account table size has been exceeded:

Printer: 001001[#XXXXXXXXXX|NJO03CC*IP.IP.IP.IP*]

Automation: SG -01-001-XXXXXXXXXX-JO03CC-*Maximum Visual Accounts Exceeded IP.IP.IP.IP*

Unsupervised Account Table size has been exceeded:

Printer: 001001[#XXXXXXXXXX|NJO04CC*IP.IP.IP.IP*]

Automation: SG -01-001-XXXXXXXXXX-JO04CC-*Unsupervised Visual Accounts Exceeded IP.IP.IP.IP*

4.3.3 SG-DRL-IP setup

The SG-DRL5-IP has modules (fan tray, paddle cards) and removable components that can be replaced. This section provides a guide for replacing each one.

4.3.3.1 Line card fan tray installation

To replace the line card fan tray, follow these steps:

NOTE: If a fan tray is not already installed, skip steps 1-4.

1. Remove any SG-DRL5-IP's that are on top of the fan tray.
2. Remove the fan tray power cable.
3. Unfasten the thumb screws.
4. Carefully remove the fan tray by pulling from the opening in the middle.
5. Place the new fan tray into the SG-MLRF5 between the two screw posts and slide in, making sure the back doesn't lift up.

NOTE: Ensure that the fan connector is not under the tray while inserting the fan tray.

6. Fasten the thumb screws.
7. Insert the fan tray power cable.

4.3.3.2 Paddle card installation

To replace the SG-DRL5-IP paddle cards, follow these steps:

NOTE: If a paddle card is not already installed, please skip steps 1-3.

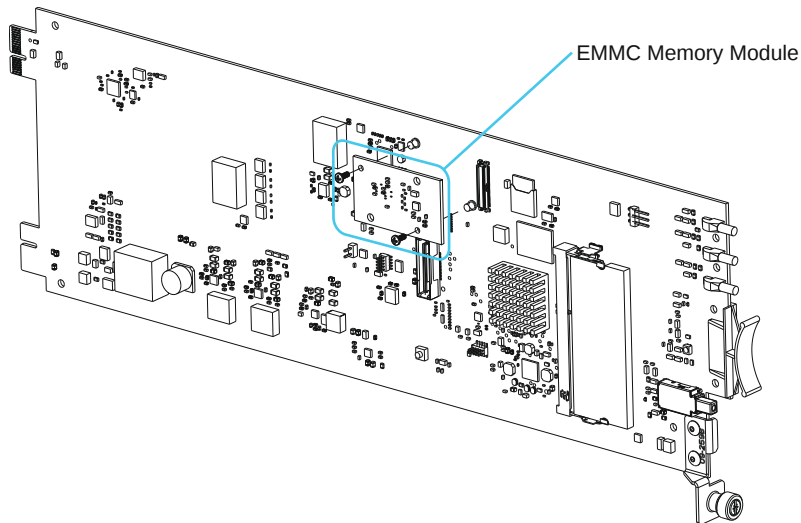
1. Remove the network cable.
2. Unfasten the thumb screw.
3. Slide the paddle card out of the SG-MLRF5.
4. Slide the new paddle card in the SG-MLRF5.
5. Secure the thumb screw.
6. Replace the network cable.

4.3.3.3 EMMC memory

The SG-DRL5-IP has an EMMC module that is used for the account table.

To replace the EMMC memory, follow these steps:

1. Unfasten the SG-DRL5-IP thumb screw.
2. Pull out the SG-DRL5-IP using the pull tab and remove from the rack completely.
3. Unfasten the two screws on the EMMC module.
4. Carefully lift the EMMC module off the board.
5. Place the new EMMC module on the board.
6. Secure the new EMMC to the SG-DRL5-IP with the screws removed in step 2.
7. Install the SG-DRL5-IP back into the SG-MLRF5.



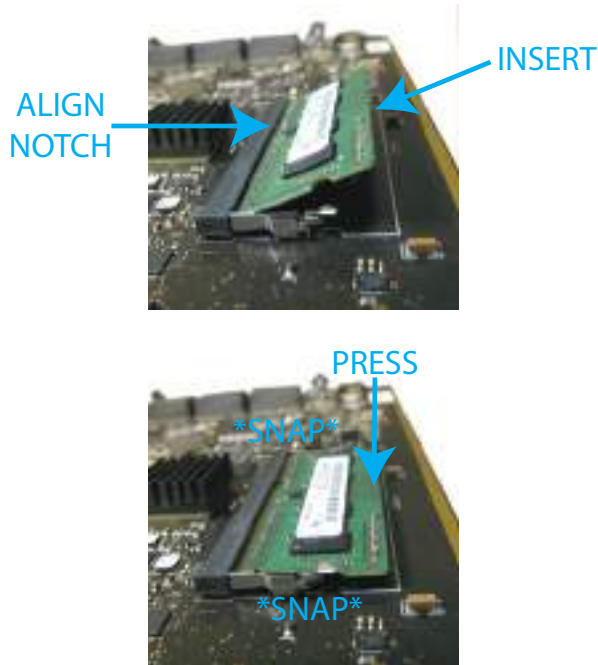
4.3.3.4 DDR3 memory

The SG-DRL5-IP incorporates replaceable/upgradable DDR3 memory required for normal operation.

To replace the DDR3 Memory, follow these steps:

1. Unfasten the SG-DRL5-IP thumb screw.
2. Pull out the SG-DRL5-IP using the pull tab and remove from the SG-MLRF5 completely.
3. Push the DDR3 clips on either side of the DDR3 away from the DDR3. It should lift up automatically.
4. Slide the DDR3 out at a 45 degree angle.
5. Slide the new DDR3 in at a 45 degree angle (label up).
6. Push down until the clips engage.
7. Install the SG-CPM5 back into the SG-MLRF5.

FIGURE 4-10: DDR3 Installation



4.3.3.5 SD card

The SG-DRL5-IP has an optional SD card that is used for visual verification.

NOTE: The SG-DRL5-IP does not ship with an SD card.

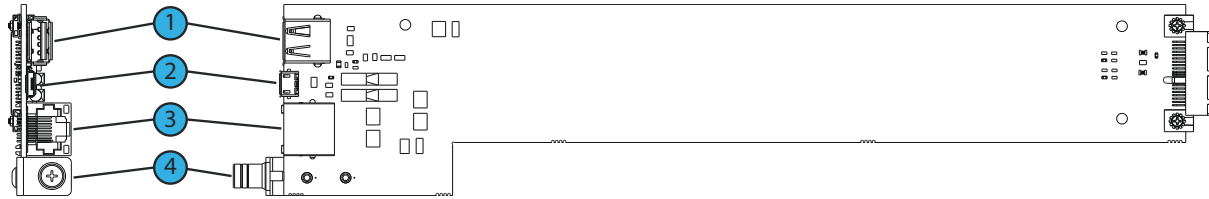
To replace the SD card, follow these steps:

NOTE: If the SD card is not installed already, skip step 3.

1. Unfasten the SG-DRL5-IP thumb screw.
2. Pull out the SG-DRL5-IP using the pull tab and remove from the SG-MLRF5 completely.
3. Pull the SD card out of the holder.
4. Push the new SD card in.
5. Install the SG-DRL5-IP back into the SG-MLRF5 and secure the thumb screw.

4.4 SG-DRL5-IP PAD – SG-DRL5-IP paddle card

Each paddle card connects to a line card and provides a connection for an Ethernet cable.

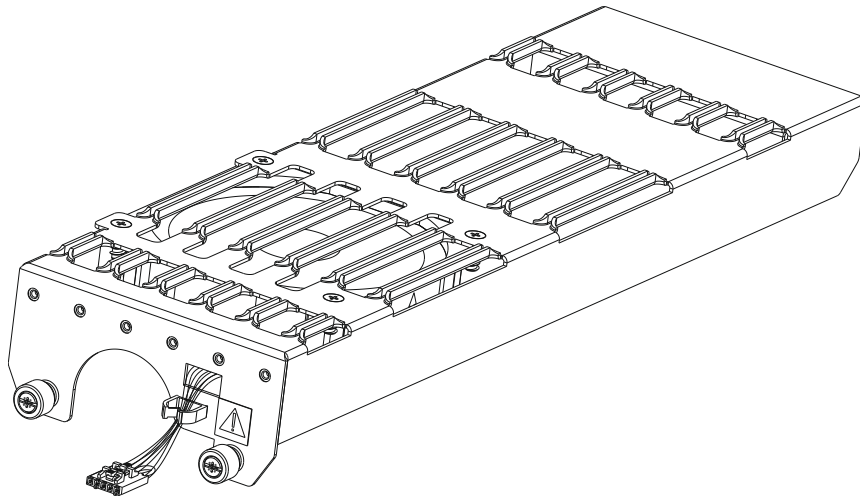


1. USB port (for future use)
2. USB OTG (for future use)
3. Ethernet port
4. Thumb screw

4.5 SG-S5LFANTR - Line card fan tray

The line card fan tray is required to install the SG-DRL5-IP. The fan tray is used to cool the line cards.

FIGURE 4-11: SG-S5LFANTR

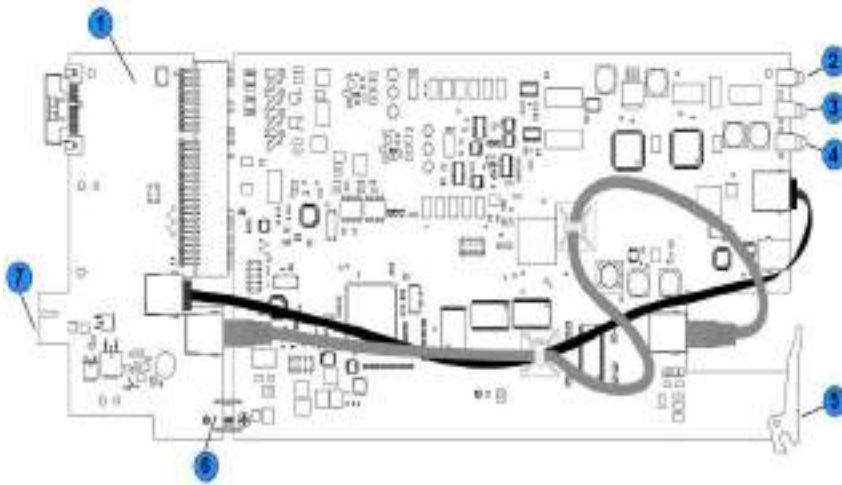


4.6 SG-DRL5/DRL5E/DRL5-2L - Line card

The SG-System 5 supports a maximum of 24 line cards. The SG-DRL5 PSTN cards function as a Telco interface to remote transmitters. The line card receives alarm events from the transmitter, decoding them before forwarding the signals to the SG-CPM5 for subsequent output to the printer and automation outputs. SG-DL5 line cards ordered for the SG-System 5 are pre-assembled with SG-DRL5-ADPT and cabling.

NOTE: In order to install the DRL5 PSTN line card, the SG-S5LFANTR fan tray must be removed and the SG-S5LBRKT line card extractor bracket must be installed.

FIGURE 4-12: SG-DRL5/DRL5E/DRL5-2L line card

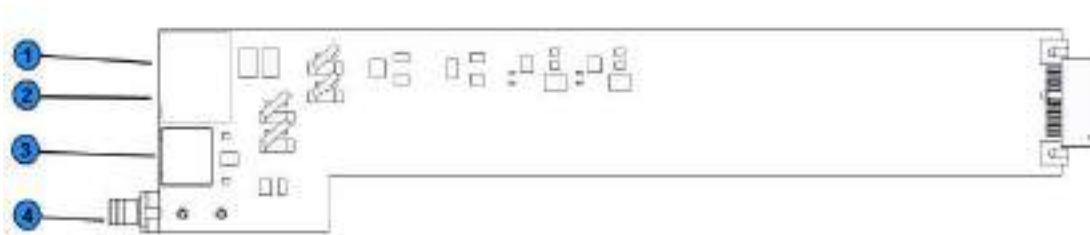


1. Adapter card
2. Watchdog LED
3. Channel 1 status LED
4. Channel 2 status LED
5. Extraction lever
6. Connection plate and screws
7. Edge connection

4.7 SG-DRL5-PAD - Paddle card

Each paddle card connects to a line card and provides a connection for up to two phone lines, and serial (RS232) debug. The same paddle card is used with all variants of the line card.

FIGURE 4-13: SG-DRL5-PAD paddle card

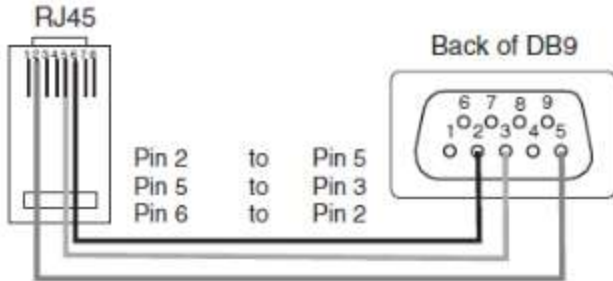


1. Telco 1 connection
2. Telco 2 connection
3. Serial debug RJ-45 connection
4. Thumb screw

Serial debug pin out

RJ45 Pin #	DB9 DRL Port Pin #	Description
1		NO CONNECTION
2		NO CONNECTION
3	2	TX
4	3	RX
5	5	COMMON/GROUND
6		NO CONNECTION
7		NO CONNECTION
8		NO CONNECTION

FIGURE 4-14: Serial debug pin out



4.8 SG-DRL5-ADPT - Adapter card

The SG-DRL5-ADPT adapter card provides the connections to the SG-System 5 for power and internal communications on the SG-DRL5X. It also provides the connection for the SG-DRL5-PAD.

FIGURE 4-15: SG-DRL5-ADPT adapter card



4.9 SG-DRL4-2L upgrade to System 5

Customers with SG-DRL4-2L line cards can upgrade their existing cards to SG-DRL5-2L line cards by purchasing the SG-DRL5-ADPT and performing a firmware update of the line card.

There are two methods to upgrade the line cards.

Method 1

If the cards are installed in the SG-System IV, they can be updated using the SG-Systems Console firmware update.

1. Select the desired line card and select the downloadable SG-DRL5 software. When the firmware update is complete, the line card can no longer communicate with the SG-System IV receiver.
2. Convert the SG-DRL4-2L card by following the instructions below and insert the converted line card into the SG-System 5 receiver.

Method 2

1. Remove the SG-DRL4-2L card from the SG-System 5 receiver.
2. Convert the SG-DRL4-2L card by following the instructions below and insert the converted line card into the SG-System 5 receiver.
3. From the SG-System 5 console, navigate to the line code upload window and select USB upload.
4. Select the line card from the download window. When the process is complete, the line card functions in the SG-System 5.

Converting SG-DRL4-2L line cards to SG-DRL5-2L line cards

1. Connect the SG-DRL4-2L to the SG-DRL5-ADPT as shown in "FIGURE 4-16"
2. Connect the debug cable (optional) to the line card and to the SG-DRL5-ADPT (Position 1).
3. Connect the Ethernet cable to the line card and to the SG-DRL5-ADPT (Position 2).
4. Attach the plastic tie down clips in the locations shown in "FIGURE 4-16"
5. Arrange the two cables as shown in "FIGURE 4-16" and secure with the supplied zip ties. Ensure that the cables lie as flat as possible on the circuit board to avoid becoming tangled when the line card is inserted into the SG-System 5 receiver.

FIGURE 4-16: SG-DRL5/DRL5E/DRL5-2L PSTN card

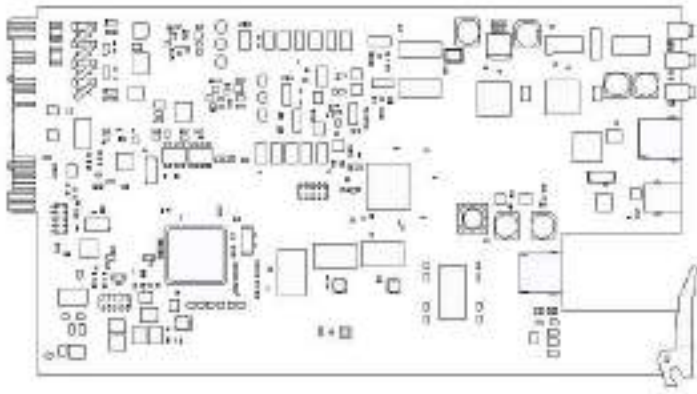


FIGURE 4-17: SG-DRL5-PAD paddle card



4.10 Installing SG-DRL5 PSTN cards in a SG-System 5

You can install PSTN line cards in groups of six. IP line cards and PSTN line cards cannot be grouped together. To facilitate card insertion and removal, you must install an additional bracket with the PSTN card slots. Refer to "FIGURE 4-18" for placement of the SG-S5LBRKT bracket. Refer to "FIGURE 4-19" for the location of the power and display cables.

NOTE: In order to install the DRL5 PSTN line card, the SG-S5LFANTR fan tray must be removed and the SG-S5LBRKT line card extractor bracket must be installed.

FIGURE 4-18: Placement of the SG-S5LBRKT PSTN line card extractor bracket

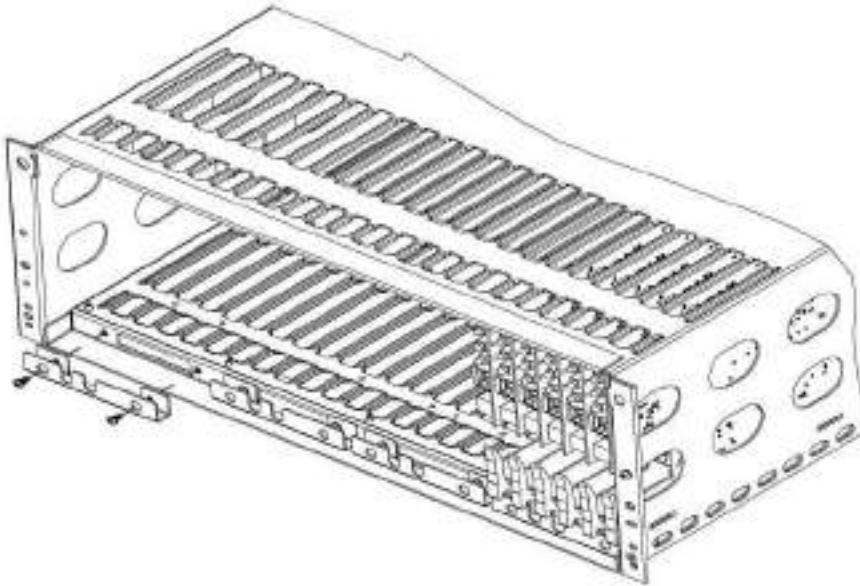
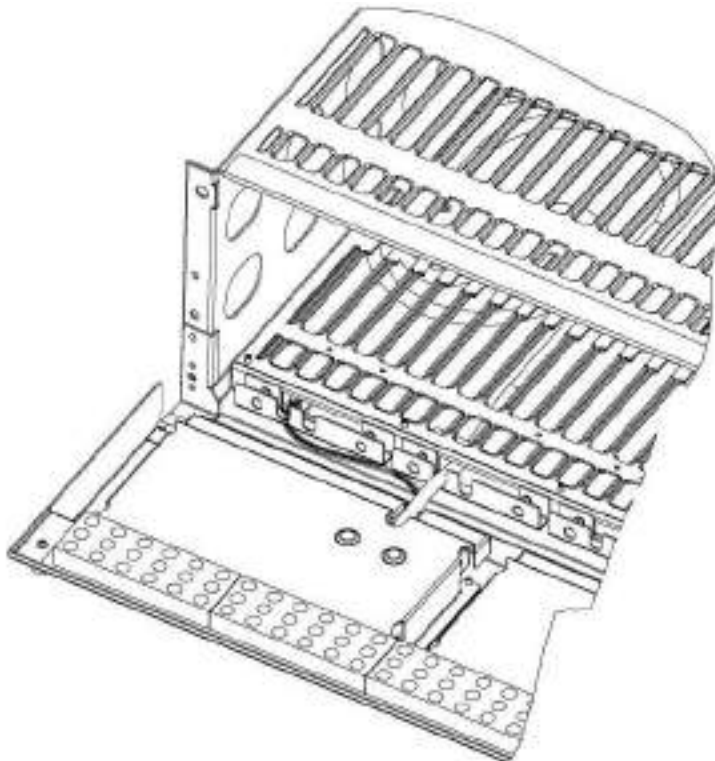


FIGURE 4-19: SG-System 5 location of power and display cables



SG-System 5 PSTN loading capacity of hunt groups					
	Number of lines in hunt group				
System loading at the supervising station	1	2	3	4	5-8
Number of initiating circuits	NA	5000	10000	20000	20000
Number of DACTs	NA	500	1500	3000	3000
	With DACR lines processed serially				
Number of initiating circuits	NA	3000	5000	6000	6000
Number of DACTs	NA	300	800	1000	1000

4.11 SG-PSU5 250W and 600W power supply

Depending on system load requirements the SG-System 5 may be equipped with one of two power supply modules. The SG-PSU5-600W is a 600W power supply. The SG-PSU5-250W is a 250W power supply. These power supplies are able to operate from 100-240Vdc 50/60Hz. A power cord with a IEC connector is required.

NOTE: For UL/ULC installations use only 120VAC/60Hz to power the SG-System 5. For UL installations use a UL listed UPS Power Supply for protective signaling systems and/or listed burglar alarm power supply, as applicable.

The SG-PSU5 red tray latch prevents the installation or removal of the power supply when the IEC connector is in place. The latch must be in the open position for the removal or insertion of the SG-PSU5. Any attempt to install or remove the SG-PSU5 when the latch is in the closed position could cause equipment failure or damage.

FIGURE 4-20: Power supply unit latch open - installation and removal

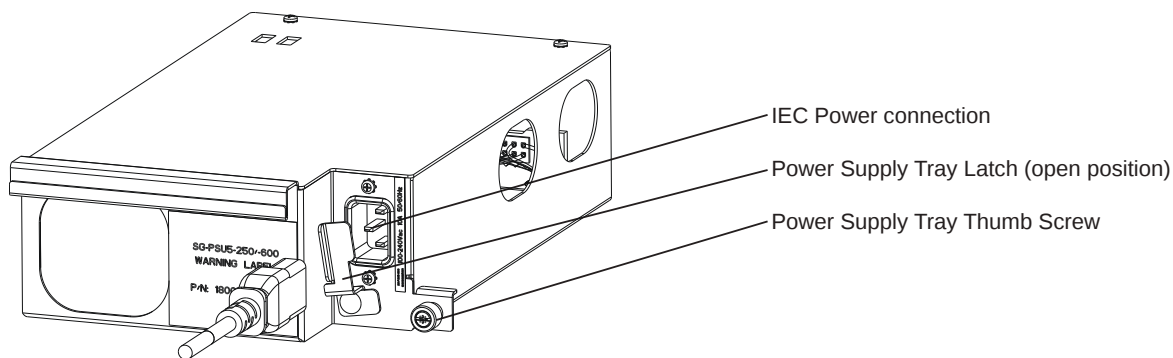


FIGURE 4-21: Power supply unit latch locked - operating

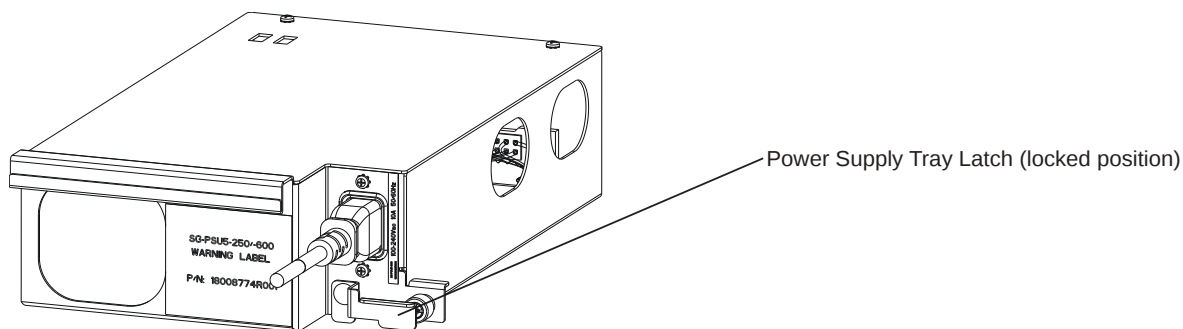
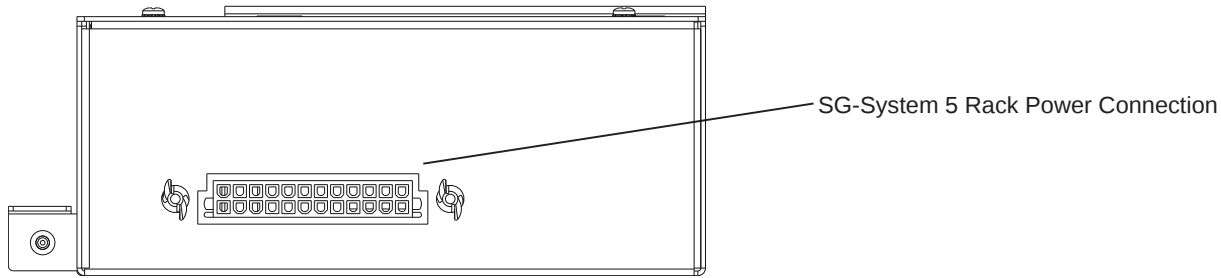


FIGURE 4-22: Power supply unit rack connection



Electrical specifications 600W:

- Input voltage range: 100 - 240VAC
- Frequency: 50/60Hz
- Input current: 8A maximum (RMS) @ 100VAC
- Wattage: 600W

Electrical specifications 250W:

- Input voltage range: 100 - 240VAC
- Frequency: 50/60Hz
- Input current: 3.5A maximum (RMS) @ 100VAC
- Wattage: 250W

In a redundant SG-System 5 configuration, a secondary SG-PSU5 can be inserted in the secondary slot. In the event of a SG-PSU5 failure, the redundant SG-PSU5 automatically assumes operation. These modules are Hot Swappable (can be removed/replaced while the system is in operation) if a working redundant SG-PSU5 is installed in the other power supply bay.

NOTE: A SG-PSU5-600 and a SG-PSU5-250 cannot be used in the same SG-MLRF5.

4.11.1 SG-PSU5-600/SG-PSU5-250 installation

To replace the SG-PSU5 in a SG-MLRF5, follow these steps:

NOTE: If a SG-PSU5 is already installed, skip steps 1-3.

1. Pull out the IEC cable from the SG-PSU5.
2. Lift the red safety tab and unfasten the thumb screw.
3. Pull the SG-PSU5 out of the SG-MLRF5.
4. Slide the new SG-PSU5 into the SG-MLRF5.
5. Fasten the thumb screw and slide the red safety tab down.
6. Plug in the IEC cable.

4.11.2 Power management

The SG-System 5 can accommodate two different power capacity PSUs to accommodate different system configuration requirements. Depending on the PSU installed, the CPM monitors the power usage and signals in the event of an overload condition. The system also prevents further line cards from being added to the system when an overload has been detected.

There are two sizes for the power supply, 600 Watt and 250 Watt, which is detected by the CPM automatically.

If line cards cannot be powered up, they remain in a decommissioned state so that they are not able to process signals.

4.12 SG-UIB5 - User interface

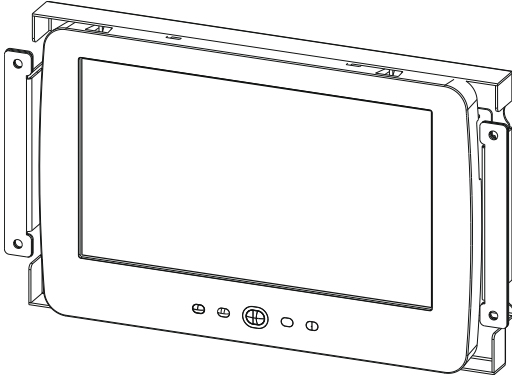
The SG-UIB5 is used to configure and interact with the system. The SG-UIB5 has a resistive touch screen that allows the user to acknowledge alarms when the SG-System 5 is in manual and to program the SG-CPM5. The SG-UIB5 must be connected to the SG-CPM5 in order to operate.

NOTE: The SG-MLRF5 ships with one LCD. A secondary LCD must be installed separately for the secondary SG-CPM5.

The SG-UIB5 displays:

- Manual/Active/Standby
- Troubles
- The system time
- User programmable LCD message
- Hardware diagnostics
- SG-CPM5 programming options

FIGURE 4-23: SG-UIB5 LCD module



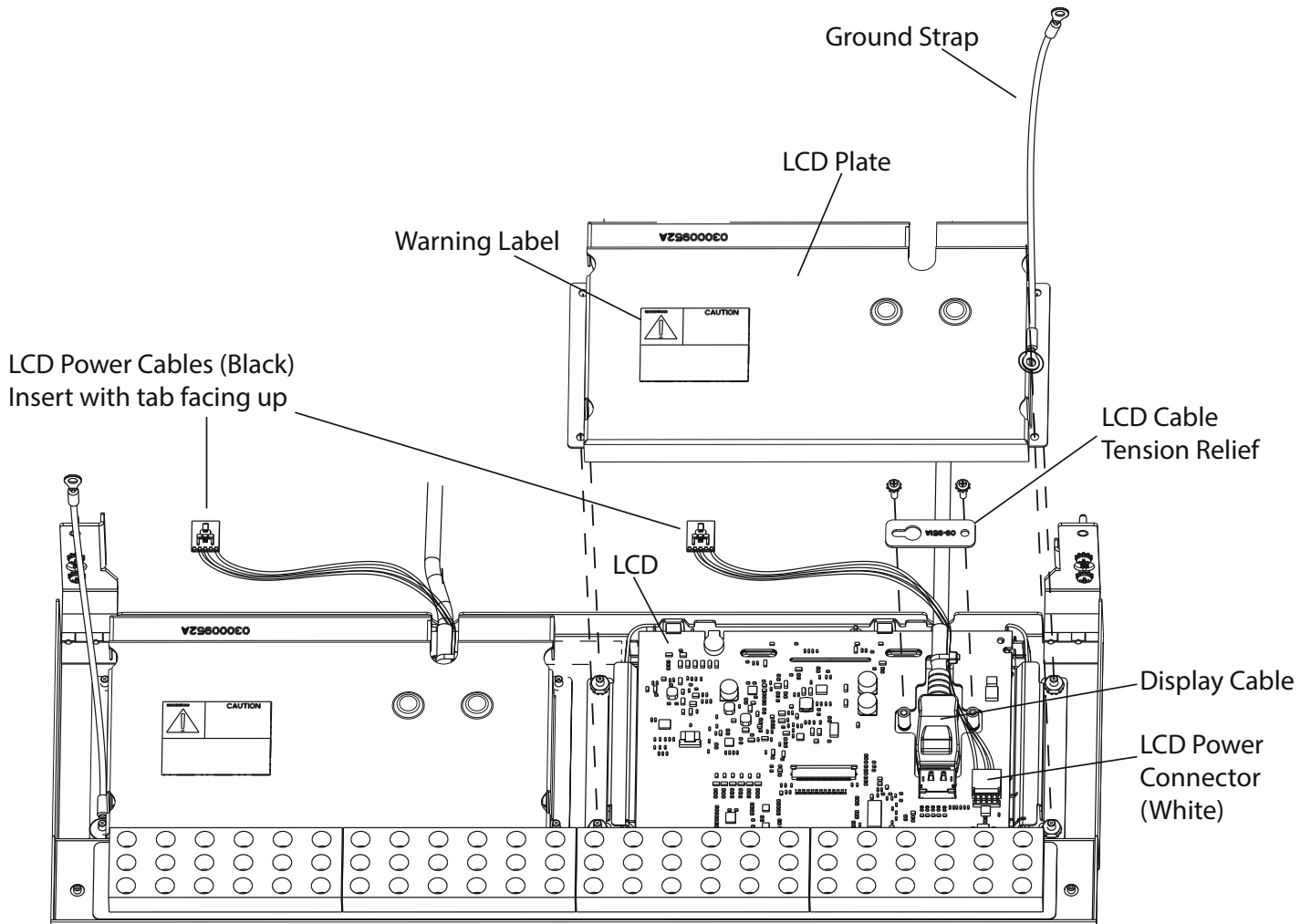
4.12.1 SG-UIB5 LCD replacement

To replace the SG-UIB5, follow these steps:

NOTE: If an LCD is not installed but has a blank plate, these steps are completed in the initial setup above.

1. Unfasten the four nuts holding the LCD.
2. Lift off the ground strap.
3. Lift off the metal shield.
4. Unfasten the LCD cable holder and place aside.
5. Unclip the LCD cable by pushing down.
6. Unplug the LCD power cable from the LCD.
7. Lift off the LCD board.
8. Remove the plastic sheet covering the new LCD.
9. Place the LCD onto the front plate.
10. Connect the power cable from the SG-MLRF5 to the LCD (tab up).
11. Attach the display cable.
12. Install the display cable holder with the two screws (both the display cable and the LCD power cable must be under this).
13. Insert a tie wrap around the LCD power cable and display cable.
14. Place the metal shield on top of the LCD.
15. Replace the ground strap.
16. Fasten all four nuts (do not over-tighten).

FIGURE 4-24: SG-UIB5 installation

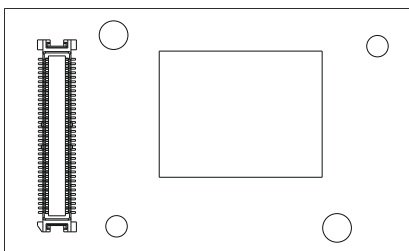


4.13 SG-SYS5MEM4 - Expandable EMMC

The expandable EMMC stores the account table and non-volatile event storage on the SG-DRL5-IP. On the CPM5 the expandable EMMC is used to store the AHS Table and is only required if this function will be used with the receiver.

NOTE: The SG-SYS5MEM4 includes 250,000 AHS entries. The EMMC supports expansion up to 1,000,000 AHS entries via separate licenses.

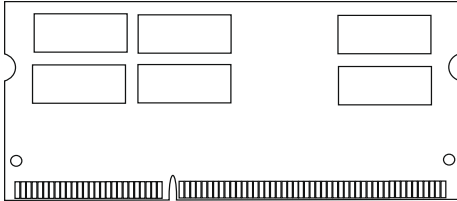
FIGURE 4-25: SG-SYS5MEM4



4.14 DDR3 RAM

The DDR3 is random access memory (RAM) required for operation. Only Sur-Gard qualified DDR3 RAM functions with the SG-CPM5 and the DRL5-IP. Available RAM modules are SG-SYS5DDR31 (1GB) and SG-SYS5DDR34 (4GB). The 4GB model may be required for the AHS function depending on required license size.

FIGURE 4-26: DDR3 RAM

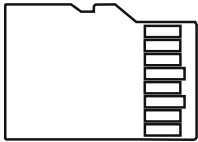


4.15 SD card

The SD is required for the SG-DRL5-IP to work with visual verification. Recommend 4GB, class 4, with a maximum size of 32GB. Sur-Gard recommends using UHS (Ultra High Speedcards) for best performance

NOTE: The SD card is not shipped with the product.

FIGURE 4-27: SD card



5.0 Operation

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5.1 Basic operation

5.1.1 Connectivity

Each SG-CPM5 has one static IP address and a number of associated ports. The configuration management, done from the SG-System 5 Console software, is located on port 1024. The SG-System 5 Console software is provided for Microsoft Windows operating system (refer to the console documentation for compatibility listing), which provides a graphical style menu for configuration. Additional features are available with the SG-System 5 Console software including storage of virtual receiver setups and configuration wizards.

5.1.2 SG-System 5 Console software

The Console software is intended to be the primary method of programming the system. Refer to the SG-System 5 Console Manual for details.

5.1.2.1 Visual verification

This port is used by the SG-System 5 Console to accept visual verification files such as images, sound, and movie files.

5.1.2.1.1 Connectivity

The visual verification port is TCP/IP port 2025 (default) on the SG-CPM5 that the console connects to.

5.1.2.1.2 Functionality

All the commands are XML files transmitted over the TCP/IP stream. The XML files parse all the information generated by the receiver for each visual verification event.

5.1.2.1.3 Header file

Included in each folder is an XML file that contains account and alarm specific information. This file can be viewed with any text editor.

5.1.2.1.4 Unique ID

The unique ID is a number assigned to each film for identification and retrieval purposes.

The Unique ID is a 20-digit number in which the first ten digits are the 10-digit transmitter account number.

5.1.2.1.5 Automation and printer messages

When a visual verification event is received, the SG-System 5 outputs a message to automation and printer.

Automation message: 001001[#XXXXXXXXXX|Idu255]

Printer message: SG -01-001-XXXX-Idu255 -IMAGE VERIFICATION INITIATED

5.1.2.1.6 ACK

Once a command is issued by either the SG-System 5 or the console/automation software it should return an ACK within 4 seconds.

5.1.2.1.7 NACK from the console or automation software

If the receiver sends a command and receives a NACK response from the console software, the receiver re-sends this command up to four times. After the fourth NACK to the same message, the system generates an internal communication error and outputs the applicable information for the event to the printer. The system does not change the automation slot that it is currently in as the response to the message is a valid command (NACK). If at any time in the sequence the system receives an ACK to the message, the system accepts this and clears any counters for the previous failed attempts.

The automation/printer message is outputted via the SG-automation/printer path indicating that a message has failed:

Visual Verification output 001000[#0000|NYOssSS]

Communication Failure SG -01-000-0000-NYOssSS-Visual: Inter-Comm Error: DDDDD AAAAAAAAAA - Unique ID

After the fourth re-try, the line card moves on to the next command that it has to send.

5.1.2.1.8 NACK from the receiver

If the console software receives a NACK while sending any command from the receiver, it re-sends the command up to four times. After the fourth attempt, the console software generates an error in the command log to indicate that the command failed. If at any time in the sequence the system receives an ACK to the message, the system accepts this and clears any counters for the previous failed attempts.

The application software generates different messages depending on the circumstance. This message is only generated after the fourth re-try:

Reason="Invalid Command" – This generates the message: "Invalid Command"

Reason="Corrupt" – This generates the message: "Unable to read command"

Reason="LC Absent" – This generates the message: "Line card not present"

5.1.2.1.9 No response from the console software

If the console software doesn't respond to a command from the receiver, the receiver re-sends the command up to four times with an inter-attempt time of four seconds. After the fourth attempt has timed out the receiver checks to see if there are any other commands being sent or ACK'ed/responded to. If after this last attempt the application software still does not provide an ACK/Response, the SG-CPM5 gracefully closes the visual verification port. If at any time in the sequence the system receives an ACK to the message the system accepts this and clears any counters for the previous failed attempts. If the Console connection is closed, the receiver gracefully closes the TCP/IP socket connection.

5.1.2.1.10 No response from the receiver

SG-DRL5-IP – Visual verification

When the SG-DRL5-IP does not respond to a command from the application software, the application retransmits the command after four seconds up to four additional times.

SG-CPM5 - SG visual commands

When the SG-CPM5 does not respond to commands from the application software, the application software retransmits the command after two seconds up to four additional times. When the SG-CPM5/SG-DRL5 is not responding to the output transmissions, the SG-CPM5 generates a trouble.

5.1.2.2 Advanced output protocol specification

Please refer to the advanced output protocol for a detailed explanation of each of the commands.

5.2 Printer

5.2.1 Introduction

The SG-CPM5 has two printer ports, one for TCP/IP and one for serial. The SG-System 5 outputs internal and external events to these printer ports.

5.2.2 TCP/IP

The TCP/IP printer port is port 1027 and is connected via the Ethernet port on the back of the SG-CPM5. It can be connected using the console or a third party printer application. A heartbeat must be generated by the application every 25 seconds to keep the TCP/IP port alive.

5.2.3 Serial

The serial port is located on the back of the SG-CPM5 via a RJ-45 port. An optional Y-cable connects to this port to allow a serial cable to be connected. If a printer is to be connected, then a straight-through serial female-female cable should be used.

Straight through cable		
DB9		DB9
Pin #	Connects to	Pin #
1	<----->	1
2	<----->	2
3	<----->	3
4	<----->	4
5	<----->	5
6	<----->	6
7	<----->	7
8	<----->	8
9	<----->	9

If connecting to a serial port on a computer, a null modem female-male cable should be used.

Null modem cable		
DB9		DB9
Pin #	Connects to	Pin #
1	<----->	4
2	<----->	3
3	<----->	2
4	<----->	1,6
5	<----->	5
6	<----->	4
7	<----->	8
8	<----->	7
9	<----->	9

If connecting a serial port on a computer to the DRL-DRL5/DRL5E/DRL5-2L, RS232 debug port pin out.

Serial debug pin out

RJ45 Pin #	DB9 DRL Port Pin #	Description
1		NO CONNECTION
2		NO CONNECTION
3	2	TX
4	3	RX
5	5	COMMON/GROUND
6		NO CONNECTION
7		NO CONNECTION
8		NO CONNECTION

5.3 AHS table management

New and modified AHS entries that are generated by incoming calls to line cards are added to the AHS Table. These new or modified entries are automatically synchronized to the other CPM (if used) in real time.

The SG-System 5 logs "AHS Database Full" when the AHS table has reached capacity. The SG-System 5 continues to log "AHS Database Full" at midnight every day until space is made in the AHS table is made by deleting entries. The AHS table size is available through license from 250,000 entries to 1,000,000 entries. Please contact your local sales representative for more information on how to acquire additional licenses.

NOTE: The SG- SG-SYS5MEM4 is required to have AHS support and includes the initial 250,000 AHS entries.

Available AHS License options are:

SG-CPM5-250KAHS AHS table expansion to 250,000. This license is included when the SG-SYS5MEM4 is installed.

NOTE: Additional SG-CPM5-250KAHS licenses can be purchased to expand the AHS table in increments of 250,000 up to a maximum of 1,000,000 entries.

5.4 Automation

5.4.1 Automation input/output

Traditional automation communication is provided via port 1025 (default) on the Ethernet connection and/or the serial port. This port is a Sur-Gard standard output and provides Sur-Gard standard automation output. Each CPM can be expanded to 4 SG-TCP automation port connections through SG-CPM5-AUTO license. The connection status of all automation ports is sent to the SG-System 5 Console and are monitored independently for connection status.

5.4.2 Automation compatibility

Central station automation software packages support the SG-System 5 Sur-Gard interface. Refer to automation software specifications for compatibility.

Examples of supported automation software packages:

- MAS
- DICE
- SIMS II
- GENESYS
- S.I.S.
- IBS
- MicroKey
- Bold

NOTE: Automation connections are considered supplementary per UL864 Listing. Compatibility with the automation software in a system used at a central station is intended to be handled under a separate UL1981 software and/or site certification evaluation.

5.4.3 Automation protocols

The SG-System 5 receiver sends ContactID and SIA to report signals to the central station computer via a TCP/IP and/or RS-232 serial port.

5.4.4 Acknowledgment of the signal

The SG-System 5 receiver requires an acknowledgment signal [ACK] (Hex 06) from the computer software within four seconds for each message sent. Failure to receive the [ACK] results in retransmission of the signal. After the fourth attempt, the SG-System 5 indicates a communication failure on the automation port. During a communication failure the SG-System 5 receiver stops transmitting except for the heartbeat. In case of communication failure with the computer, each SG-DRL5-IP can store up to 2500 events in its internal memory and the SG-CPM5 can store 50 events for its own internal events. Communication is resumed when the first heartbeat acknowledgment is received; all buffered information is then transmitted.

5.4.5 COM responses

When the SG-CPM5 sends an event to the computer, it checks for three responses: ACK, NAK or Unknown/No Response. An ACK indicates that the computer automation received the event successfully. A NAK indicates the computer automation received the message but didn't understand it. The line card attempts to send the message 26 times. If after the 26th attempt it receives a NAK from the computer automation, the SG-DRL5 generates an internal communication error. The SG-CPM5 sends the internal communication error event to the printer and outputs the message to the printer in ASCII, and attempts to move onto the next signal. Any other response from the computer automation, including no response, causes the SG-CPM5 to attempt to resend the message up to four times. If after four attempts the SG-CPM5 does not receive a response or receives an unknown response, it assumes nothing is connected, generates an alarm and falls to the next active automaton port or manual mode.

5.4.6 Automation absent

When the computer is not responding to transmissions, the SG-CPM5 generates a 'SG-Serialx fail' or 'SG-TCP/IPx Fail' trouble. When the trouble occurs, the SG-CPM5 continues to attempt to send a heartbeat signal to the computer until it gets a response. The SG-System 5 receiver makes four attempts, then waits for the next heartbeat period before making another four attempts. The typical heartbeat interval is 30 seconds.

Supervisory heartbeat signal protocol (1)	
	100000ssssssssss@ssss [DC4]
1	Protocol ID
RR000	Receiver number (RR is set in SG-CPM5 option [408])
s	Space character
@	Supervisory signal
[DC4]	Terminator, 14 Hex

This signal is used to supervise the communication between the receiver and computer automation. It is sent to the computer automation every 30 seconds and is programmable from the receiver. The computer automation should acknowledge this signal with an [ACK]. The SG-CPM5 can be programmed to send a heartbeat signal to the computer automation once every 01-99 seconds to test the connection between the SG-CPM5 and the computer automation (30 seconds is recommended). If a heartbeat fails to get a response from the computer automation, the SG-CPM5 immediately transmits the heartbeat again, up to four attempts. The SG-System 5, by default, outputs the automation signals via TCP/IP. If TCP/IP fails, the automation signal is output to the next automation slot.

5.4.7 SIA internal status output

The SG-CPM5/DRL5-IP generates internal events to the printer and automation such as troubles. Automation message formats are listed below. A full list of internal events for the printer/automation is listed in Appendix D - "Events & Messages"

0RRLLL[#0000 NYZZZZ] [DC4]	
0	Protocol ID
RR	Programmed receiver number (SG-CPM5 option [408] or SG-DRL5-IP option [111])
LLL	Line card number (Channel 1 [112], Channel 2 [113], Channel 3 [114]) 000 signifies a SG-CPM5 Event.
0000	SG-System 5 account.
NYZZZ	SIA Event
[DC4]	Terminator, 14 Hex

5.4.8 Line card addressing

Line card status is reported via physical addressing. Slot number is assigned automatically to each line card. All device status information is in Sur-Gard format. The reporting of status on this port, automation output and printer relates to physical addressing.

5.5 Operation - LCD user interface

5.5.1 Bootup

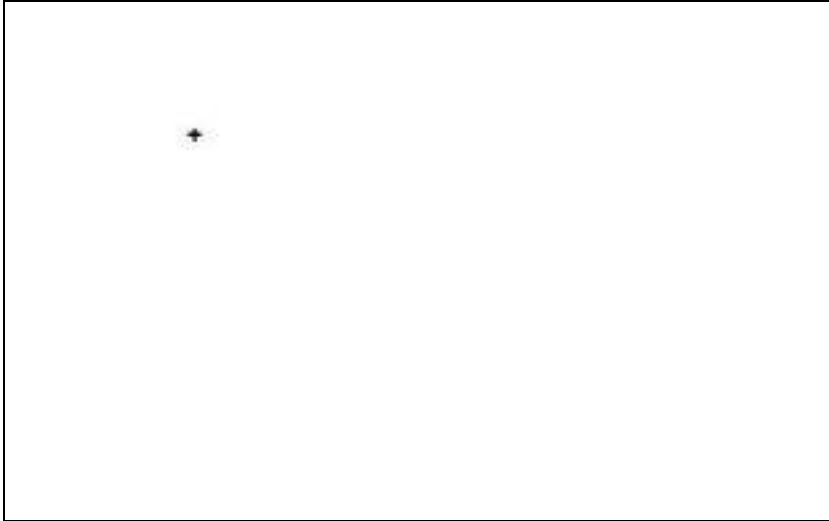
While the SG-CPM5 is booting up, a splash screen with the System 5 logo is displayed.



5.5.2 Calibration

When the CPM5 is first powered up, calibration may be required. Calibration can also be initiated from the console or by holding the home button for 10 seconds.

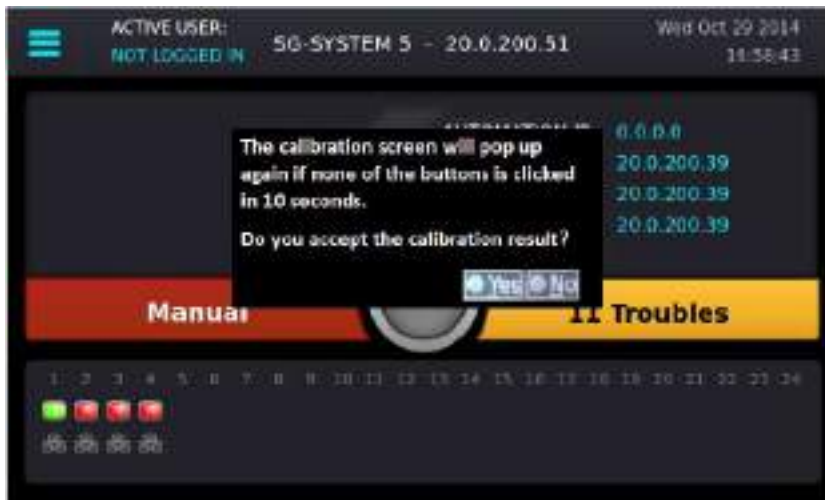
To calibrate the LCD, press the five crosses which display one at a time.



After calibrating the screen, a confirmation message appears.

Press **Yes** if all five crosses were pressed successfully.

Press **No** to try again.

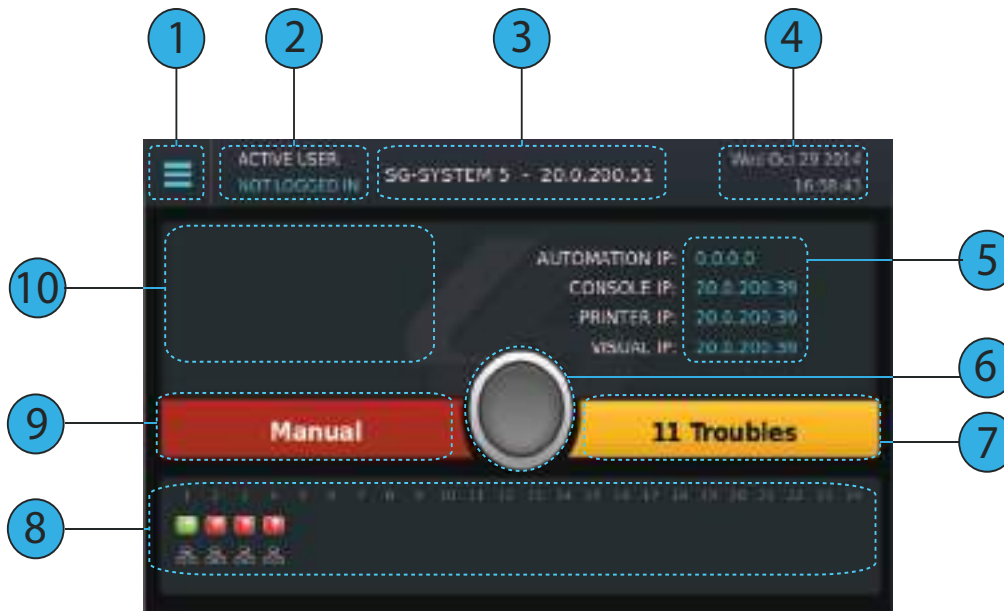


5.5.3 Home screen

The Home screen displays the overall state of the SG-CPM5 and line cards including:

1. **Menu** button
2. Active user
3. Title with the unit IP
4. Time and date
5. IP addresses of computers connected to the SG-CPM5
6. **ACK** button
7. Trouble status
8. Line card status
9. Status banner (ACTIVE/MANUAL/STANDBY)
10. User defined messages

After 60 seconds without user activity, all user and administrator screens (except for the Hardware Diagnostics screen) time out and jump to the Home screen.



5.5.3.1 Status banner

The Status banner displays whether the SG-CPM5 is in Active, Manual, or Standby mode and which automation slot is currently outputting to displayed SG-TCP, SG-SERIAL or SG-ALL.

This banner is displayed in reduced size on other user screens.

5.5.3.2 Type - unit IP

The upper middle of the screen displays the type of System and the SG-CPM5's IP address. For the SG-System 5, it displays "SG-SYSTEM 5 - X.X.X.X"

5.5.3.3 Active mode

The SG-CPM5 is Active when sending signals to automation. In this mode, the Status banner displays "Active" and the color of the banner is blue.

5.5.3.3.1 SG-TCP

The Status banner displays SG-TCP when it is currently outputting the signals to the TCP port.

5.5.3.3.2 SG- SERIAL

The Status banner displays SG-SERIAL when it is currently outputting the signals to the serial port.

5.5.3.3 SG-ALL

The Status banner displays SG-ALL when Option [401] is set to ALL Mode where the signals are outputted to TCP and SERIAL.

5.5.3.4 Standby mode

When the SG-CPM5 is not active, it is in Standby mode. In this mode, the Status banner displays "Standby" and the color of the banner is blue.

5.5.3.5 Manual mode

The SG-CPM5 is in Manual mode when *not* sending signals to automation software and when not the standby SG-CPM5.

When in Manual mode, the status banner displays "Manual" and the color of the banner is red. The number of pending events requiring acknowledgment are displayed in this banner.

If acknowledgment events are pending, the ACK button, along with the status and trouble banners, slide over the line card widget. The pending events are displayed where the user defined message and IPs were displayed. When an incoming alarm arrives, the buzzer sounds and the **ACK** button flashes. If more events are present than can be displayed on the screen, a scroll bar is displayed to the right. Once an event is acknowledged, the display returns to the top of the list.

A user must be logged in to acknowledge events.

On screens other than the Home screen, a red flashing ACK condition is shown via a flashing red screen border.



5.5.3.6 System trouble

The Trouble banner indicates the presence of system troubles and is located on the right of the Home screen beside the **ACK** button. If pending alarms require acknowledgment, and the SG-CPM5 is in Manual mode, this bar covers the line cards.

While not on the Home screen, this banner remains visible in reduced size. The color of the banner is the same as on the Home screen.

5.5.3.6.1 No troubles

If no system troubles are present, the banner displays "No Troubles" and the color of the banner is green.

5.5.3.6.2 Troubles

If system troubles are present, the banner displays "X Troubles," where X is the number of system troubles. The color of the banner is yellow.

5.5.3.6.3 Trouble screen

The Trouble Status screen displays the current list of SG-CPM5 troubles, including problems with the power supplies, batteries, fans, printers, etc. To navigate to the Trouble Status screen, either click on the Trouble banner or click the menu and then Trouble Status. Scroll arrows provide access to the next or previous page of troubles.



5.5.3.7 Line Card banner

The Line Card banner displays the line cards being polled by the SG-CPM5. This banner displays the type of line card (indicated by an icon), as well as the status of the line card (indicated by color).

If the SG-CPM5 is in Manual mode and alarms are pending acknowledgment, the Status banner, **ACK** button, and Trouble banner slide down and the Line Card banner disappears.

5.5.3.7.1 Numbering

The slot number of each SG-DRL5-IP (1-24) is displayed at the top of the Line Card banner.

5.5.3.7.2 Icons

The following icons indicate the type of line card and the status:



DRL5-IP icon



DRL5-2L icon



DRL5/DRL5E icon



Line card slot not polled – no icon – background color



Line card absent. The icon is in the middle of the display and there is no line card icon with it just the red orb.



Line card polled by other CPM. To be used for Split Reporting mode only – when the two CPMs are sharing the polling of cards. The icon is in the middle of the display and there is no line card icon with it just the purple orb.

5.5.3.7.3 Status color

SG-DRL5-IP

The mode and/or network speed of each line card is indicated by the color above and below the line card icons.

The status color indicates the mode and/or network speed:

SG-DRL5-IP



Blue OK and 1GB/s network



Green OK and 100Mb/s network



Orange OK and 10Mb/s network



Red Network Fault



Grey No status received or no communication from the line card. Unless the line card status changes, this indicator disappears within one minute.



Yellow Busied out



Purple Decommissioned

SG-DRL5/DRL5E/DRL5-2L

Color	Description	Icon DRL5/DRL5E (single line card)	Icon DRL5-2L
Green	Phone line 1 and 2 are present		
Red	Phone line 1 and 2 are absent		
Yellow	System trouble present/busy out		
Green/red	Line 1 is present Line 2 is absent	NA	
Red/green	Line 1 is absent Line 2 is present	NA	

5.5.3.8 IPs

Four IPs are displayed above the Trouble banner: Automation IP, Console IP, Printer IP and Visual IP. These IPs are hidden if the system is in Manual mode with pending alarms to be acknowledged.

5.5.3.8.1 Automation IP

This displays the IP address of the automation computer connected to the automation port of the SG-CPM5. Depending on the system configuration there may be up to four automation IP addresses listed.

5.5.3.8.2 Logging IP

This displays the IP address of the logging automation computer connected to the automation port of the SG-CPM5.

NOTE: The logging port is a licensed feature and requires purchase of the SG-CPM5-LOG license.

5.5.3.8.3 Console IP

This displays the IP address of the SG-System 5 Console Server installed on the Console port of the SG-CPM5. The Console port of the SG-CPM5 is 1024.

5.5.3.8.4 Printer IP

This displays the IP address of the SG-System 5 Console Server or third party printer software installed on the Printer port of the SG-CPM5. The printer port of the SG-CPM5 is 1027.

5.5.3.8.5 Visual IP

This displays the IP address of the SG-System 5 Console Server or third party visual verification software installed on the visual verification port of the SG-CPM5. The visual verification port of the SG-CPM5 is 2025 (default value).

5.5.3.9 Time and date

The time and date is displayed at the upper right of the screen in the format:
Mon Jun 17 2013
12:30:40 PM

5.5.3.10 Active user

This displays the user currently logged in.

5.5.3.11 User defined message

User defined messages are displayed below the active user.

5.5.3.12 ACK button

The **ACK** button is displayed in the middle of the Home screen. When the SG-CPM5 is in Active, Standby or Manual mode with no pending alarms to be acknowledged this button is gray. When the system is in Manual mode with pending alarms, this button slides down to enable the user to record the alarm and then press the **ACK** button to acknowledge the top event.

5.5.3.13 Menu button

The **Menu** button at the top left opens a menu that enables navigation to the Home screen, LOGIN/Options, Trouble Status, Hardware Diagnostics and Back.

This menu is accessible at all times except when the system is in Manual mode with pending alarms to be acknowledged.

5.5.3.14 Home button

The Home button, located below the LCD screen, returns the display to the Home screen. This is the physical button below the LCD screen.

5.5.4 Logging In

5.5.4.1 Login/Options

This screen provides access to username and password entry.



5.5.4.2 Username

The text box on the left is for the username. The username must be 1-8 characters long and can contain A-Z, a-z, 0-9 and space. The username cannot be only a space.

5.5.4.3 Password

The text box on the right is for the password. The password must be 8-20 characters long and can be A-Z, a-z, 0-9.

Click the Eye icon inside the text box to show the password characters as they are typed. By default, characters are hidden and each character appears as * (asterisk).

5.5.4.4 Default username and password

Administrator – User 1

Username : Admin

Password : adminpass

User 2-16

Username : User [X]

Users 2-16 do not have passwords. Assign a password with the LCD or Console using the admin login.

Coldboot – Login to coldboot the system

Use this login to set the options back to default if the admin password is lost.

Username : Coldboot

Password : resetoption

5.5.4.5 Keyboard

Use the keyboard at the bottom of the screen to type a-z and 0-9. Press the Shift key to change to capitals for the next letter typed. Press and hold the Shift key for caps lock. Press the Shift key again to remove caps lock.

FIGURE 5-1: Shift Key



5.5.4.6 Valid username and password

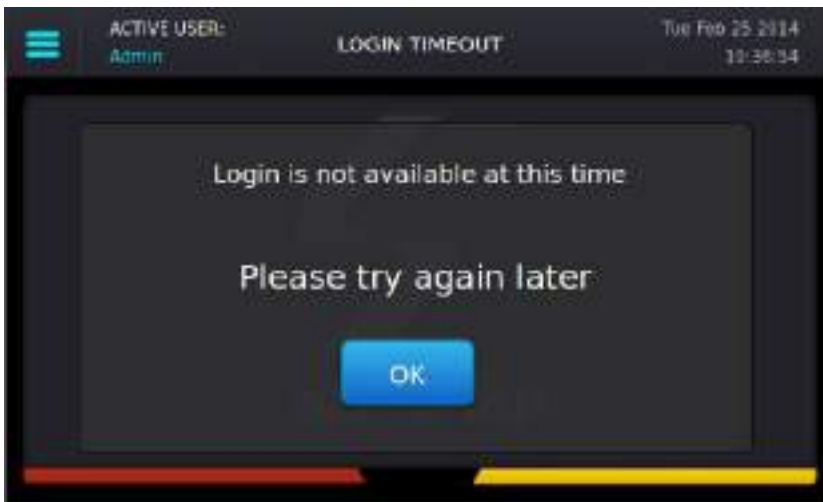
When a valid user name and password are used, pressing the submit button displays the Main Menu.

5.5.4.7 Invalid username and password

If the username and the password are invalid, pressing the submit button displays an error message.



If an invalid username and password combination is entered three times, the system returns to the Home screen. The Login screen is locked out for one minute.



5.5.5 Hardware Diagnostics

The Hardware Diagnostics screen enables the user to view the current fan speeds, temperatures and power consumption of the receiver.

5.5.5.1 Fan Speed tab

The Fan Speed screen displays the current fan speed of the receiver. The color of each of the up to six gauges changes from green to yellow to red as fan speed increases. The readings are shown in RPM. The gauges for CPM 1(primary) and CPM 2 (secondary), and Fan Tray 1 and 2 are displayed by default. To view the other fan trays, scroll using the arrow button.



5.5.5.2 Temperatures tab

The Temperature screen displays the current temperature of each SG-CPM5. Each gauge changes color from green to yellow to red as the temperature increases. The readings can be displayed in either Celsius or Fahrenheit, and are received approximately every five seconds. Both positive and negative readings are shown.

Temperature Alert Thresholds:

- 65°C/149°F - Normal state to Warning (generates temperature warning on printer/automation):
- 95°C/203°F - Warning to Alarm (generates temperature alarm on printer/automation):
- 55°C/131°F - Warning to normal (generates temperature restore on printer/automation):
- 85°C/185°F - Alarm to Warning (generates temperature warning on printer/automation):



5.5.5.3 Power Consumption screen

The Power Consumption screen displays the power used by the system in real time as well as the maximum total allowed. The usage bar provides a graphical indication of power consumption and changes color from green to yellow to red as the maximum is reached. At that point, a PSU5 trouble is output to printer/automation.



5.5.6 Admin Menu screen

This screen can only be accessed if the user logs in as User 1 (Admin).

The Admin Menu provides access to SG-CPM5 options, Date & Time, System Information, Brightness/Tone, Reset SG-CPM5 and More Options.



5.5.7 Admin access versus user access

User 1 is the admin and users 2-16 are users. The admin has access to all the menus in the Admin Menu screen while users only have access to the View Options, Date & Time and System Information.

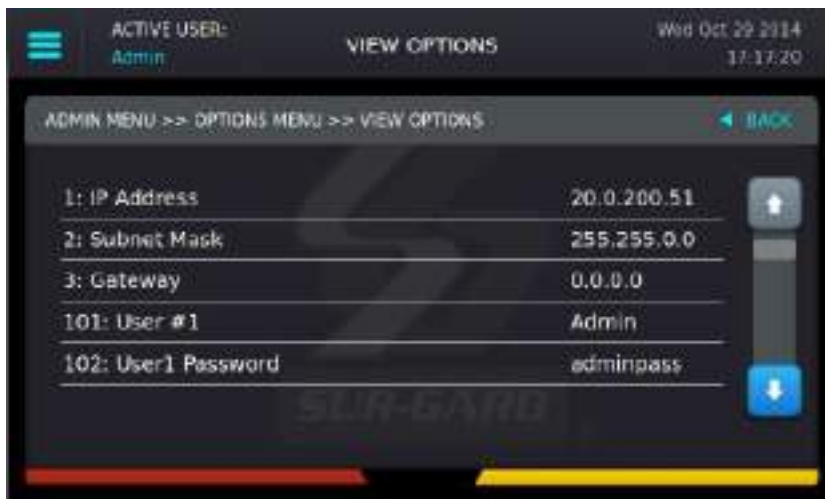
5.5.7.1 CPM Options

This section provides access to View Options, Change Options, and Cold Boot CPM.



5.5.7.2 View Options

The View Options screen displays a list of system information. Use the scroll bar on the right to view all options.



5.5.7.3 Change SG-CPM5 options

This screen is used to change SG-CPM5 options. Use the scroll bar on the right to access all SG-CPM5 options.



Click on an option to change it. The current value and the appropriate keyboards are displayed.

To save a change, press the **Save** button. To cancel the changes, press the **Cancel** button.

If a change requires a reset, a pop-up is displayed when the user exits the Main Menu or goes back to the Home screen. If reboot later is selected, a red reset icon appears beside the time indicating that the user must reboot for the changes to take effect.

5.5.7.4 Full Keyboard options

A full keyboard is provided for options requiring alphanumeric entry. To save changes, press the **Save** button. The **Save** button turns red if the entry is invalid. Press the Shift key to capitalize the next character typed. Press and hold the Shift key to enable or disable caps lock. When caps lock is enabled, all letters are entered in uppercase.



5.5.7.5 Numeric Keyboard options

A reduced keyboard is provided for options that require only numbers and/or hex characters. Users can enter a value from 0-9, and A-F. To save changes, press the **Save** button. To cancel and go back to the Change Options screen, click either **Back** or **Cancel**.



5.5.7.6 Selectable options

Options with limited input choices are provided with the appropriate options to select from. To save changes, press the **Save** button. To cancel and go back to the Change Options screen, click either **Back** or **Cancel**.



5.5.7.7 Cold Boot SG-CPM5

This changes the options back to default and will require a reset.

When Cold Boot CPM is selected, the following prompt is displayed: “This will restore CPM options to default. Restore now?”

To restore the SG-CPM5 options to default press the **YES** button. The CPM5 reboots. To cancel, press the **NO** button.



5.5.7.8 Set Date Time

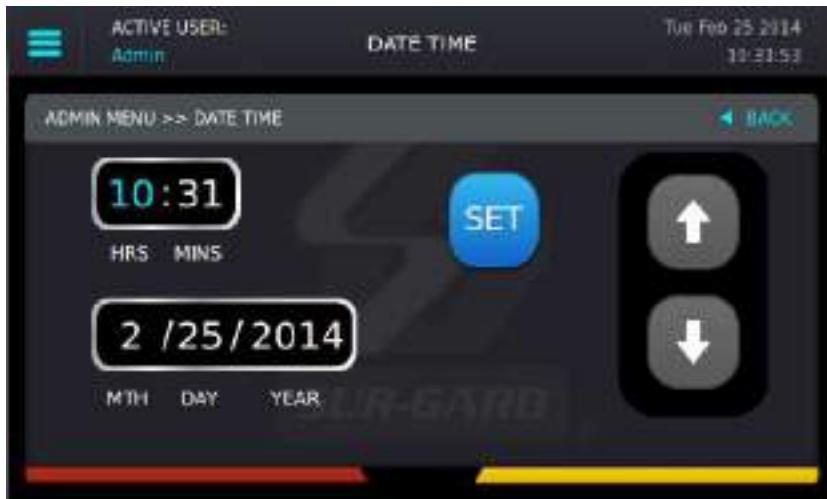
This screen is used to change the system date and time.

To change a value, click on it to change the color to blue then press the up/down arrows to select a value.

To change the value faster, hold the up/down arrow.

To save the date and time, press **Set**.

To cancel, press **Back**.



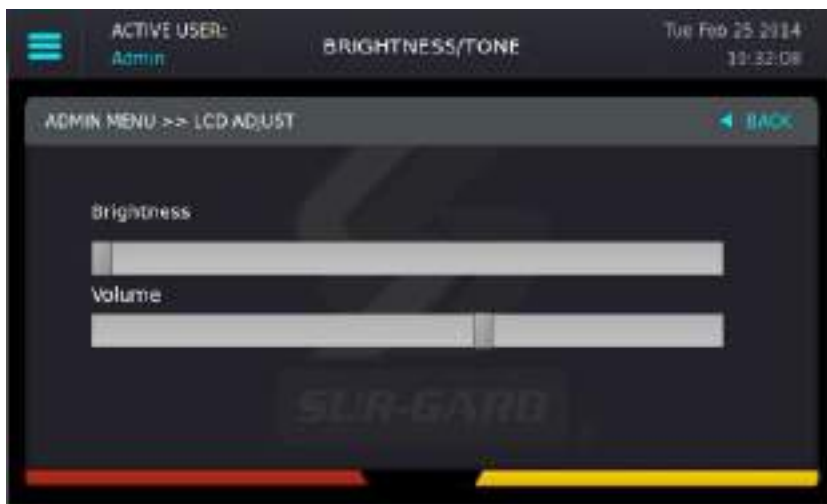
5.5.7.9 System Info

This screen displays information for the SG-CPM5. Use the scroll bar on the right to view all data. Press **Back** to go back to the previous screen.



5.5.7.10 Brightness/Tone

The Brightness/Tone screen is used to adjust the brightness of the LCD and the tone frequency of the buzzer. Changes only take effect when the slider is released. Brightness settings range from 1 (dimpest) to 100 (brightest). Nine tone settings are available ranging from 1 (1.49KHz) to 8 (4.54KHz). A setting of 0 mutes the tone.



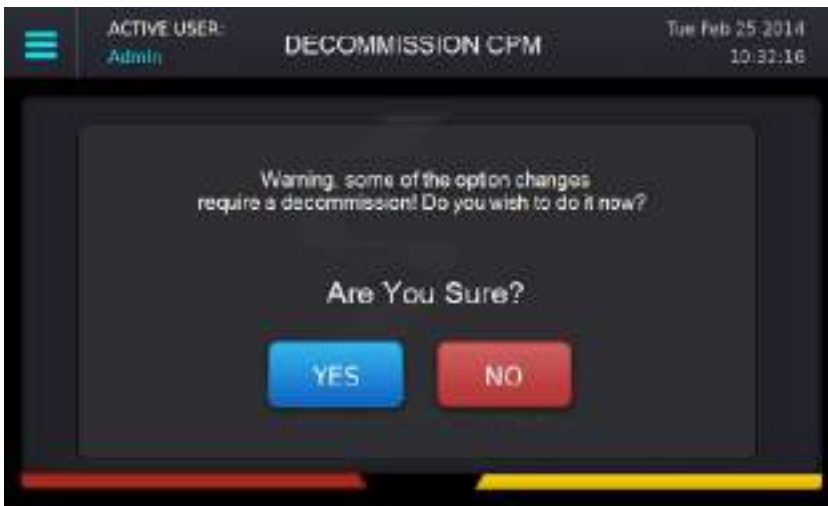
5.5.7.11 Reset SG-CPM5

This option resets the SG-CPM5. The following prompt is displayed: "This will reset the CPM. Reset now?" Select **YES** to reset the SG-CPM5 or **NO** to cancel.



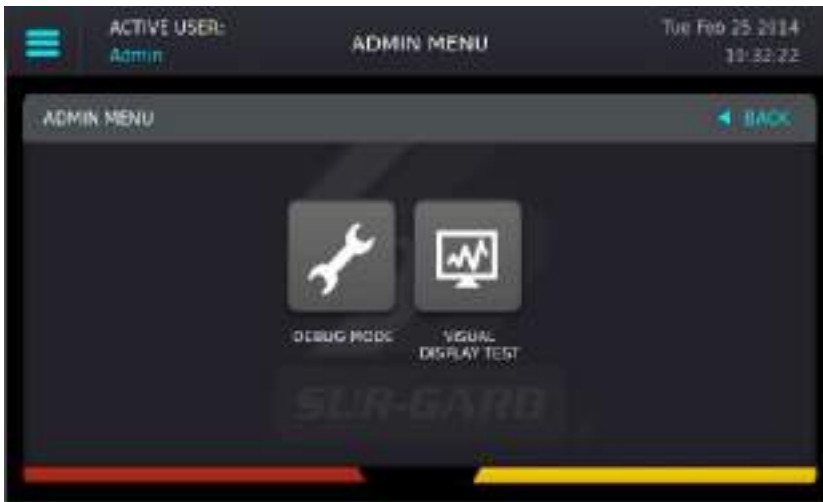
5.5.7.12 SG-CPM5 decommission

This option performs a decommission of the CPM. The following prompt is displayed: "Warning, some of the option changes require a decommission! Do you wish to do it now?" Do you wish to do it now?".



5.5.7.13 More options

This screen is an extension of the Main menu and displays selections for Debug Mode and Visual Display Test.



5.5.7.14 Debug Mode

This screen displays the automation output from the receiver on either the TCP port of 1025 or the serial automation port and should only be used for troubleshooting purposes. A test message can be sent to the automation software. Only the last 500 events are displayed.



5.5.7.15 Visual Display Test

Use this screen to perform a visual display test. The following prompt is displayed: “This will perform a Visual Display Test. Begin the test now?” Press **YES** to start the test. Press **NO** to cancel.

When the test is performed, the screen changes to white, the LEDs of all the line cards and the SG-CPM5 turn on, and the buzzer activates. The test lasts for approximately five seconds. If this test is performed on the standby CPM5, the line card LEDs do not light steady as only the Active/Manual CPM is communicating to the line cards.



5.5.8 User menu

This screen can only be accessed if the user logs in as a user or user 2-16. View Options are available for Date & Time and System Information.

5.5.8.1 View Options

This screen is used to view options. Use the scroll buttons to view all options.



In this screen the passwords are not visible and appear as *****



NOTE: For details on the Date & Time or the System Information, "5.5.7.8" and "5.5.7.9".

6.0 Options

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6.1 SG-CPM5 options

6.1.1 SG-CPM5 options: [0XX] - IP options

These sections contain options related to IP addresses.

Option [001]: IP Address

Default (0.0.0.0) - DHCP

This section is the IP address of the SG-CPM5. The IP Address is entered as a dotted decimal number. Example: 192.168.002.045. Each segment of the IP address has a valid range from 000 to 255. The default of 0.0.0.0 sets the IP as DHCP.

NOTE: The unit must be reset before parameter changes take effect.

Option [002]: Subnet Mask

Default (255.255.0.0)

This section is the subnet mask of the SG-CPM5. The subnet mask is entered as a dotted decimal number. Example: 255.255.000.000. Each segment of the subnet mask has a valid range from 000 to 255.

If section [001] is set to 0.0.0.0, the SG-CPM5 uses the Subnet Mask from the DHCP server.

NOTE: The unit must be reset before parameter changes take effect.

Option [003]: Gateway Address

Default (0.0.0.0)

The gateway address is the IP address of the router used in the event that the data being sent is not on the same network as the SG-CPM5. The gateway address is entered as a dotted decimal number. Example: 192.168.002.001. Each segment of the gateway address has a valid range from 000 to 254.

If section [001] is set to 0.0.0.0, the SG-CPM5 uses the Gateway from the DHCP server.

NOTE: The unit must be reset before parameter changes take effect.

6.1.2 SG-CPM5 Options: [1XX] - User Name/Password Options

These sections are used to change user names and passwords needed to access the programming menu and console connection. Sixteen users accounts are available. User 1 is the Administrator, while users 2 through 16 are assigned to individual operators. The Administrator can access all menus. Other user accounts are limited to read-only access.

Option [101]: User#1 (Admin) User Name

Default (Admin)

This section is the user name of the Administrator. Valid user names are between 1 and 8 characters, case-sensitive and can be composed of numbers, spaces, and upper/lower-case letters. User names cannot begin with a space.

Option [102]: User#1 (Admin) Password

Default (adminpass)

This section is the password for the Administrator. Valid passwords are between 8 and 20 characters and can be composed of numbers and upper-/lower-case letters. Passwords cannot contain **any** spaces.

Options [103], [105], [107], [109], [111], [113], [115], [117], [119], [121], [123], [125], [127], [129] and [131]: User Names 2-16

Defaults (User 2) - (User 16)

These sections are the user names of individual users. Valid user names are between 1 and 8 characters, case-sensitive and can be composed of numbers, spaces, and upper/lower-case letters. User names cannot begin with a space.

Options [104], [106], [108], [110], [112], [114], [116], [118], [120], [122], [124], [126], [128], [130] and [132]: User Passwords 2-16

Defaults (AAAAAAA)

These sections are the passwords of individual users. Valid passwords are between 8 and 20 characters and can be composed of numbers and upper-/lower-case letters. Passwords cannot contain **any** spaces.

Option [133]: User #17*Default (User 17)*

This section is the username for the User 17. This user allows firmware upgrades on the LCD and have read-only access to the system. This user is enabled for EN standards only. If option 207 (EN standard) is disabled, this user cannot be changed and the upgrade window cannot be enabled. If a user attempts to log in while option 207 is disabled, it will result in an error.

Option [134]: User #17 Password*Default (AAAAAAAAA)*

This section is the password for User 17, it follows EN standards. If option 207 (EN standard) is disabled this user cannot be changed and the upgrade window cannot be enabled. If a user attempts to log in while option [207] is disabled, it will result in an error.

6.1.3 SG-CPM5 Options: [2XX] - System Options

Option [201]: Number of Line Cards*Default (24 line cards)*

This option is used to set the number of line cards polled by the CPM. This value is a bit mask representing the line card slots that are monitored for line cards. For this option, the list view displays the number of bits as the number of line cards.

For example, if the system has four PSTN cards and two IP cards, program the options as 1, 2, 3, 4, 7, and 8. All the other slots are ignored. In this example, the CPM ignores all but six slots because six line cards are enabled.

FIGURE 6-1: Option [201] programming mode



"FIGURE 6-1" shows the programming mode for the option. You can select the slots that you want to be active. Active slots are indicated by a green circle and disabled slots are indicated by a gray circle. The number of line cards shown is the total number of bits for the shelf. In "FIGURE 6-1" there are six active cards.

You can install line cards in any order but you must group them by the physical size of the cards. For example, group DRL5-2L cards in a bank of six because you must remove the fan tray before you install these cards.

NOTE: The CPM only polls the programmed slots. It ignores all the other slots.

NOTE: The active CPM is the master and it is responsible for all line card polling.

Option [202]: Buzzer Tone*Default (6)*

This option is used to set the tone of the buzzer that sounds when the system receives an alarm and is not able to forward the alarm message to automation (Serial or TCP/IP). If set to '0', the buzzer does not sound when the SG-CPM5 is in Manual mode and alarm messages are pending.

NOTE: For UL installations, setting the buzzer tone to '0' is not permitted.

Option Value	Buzzer Frequency
0	NONE/OFF
1	1.49KHz
2	1.99KHz
3	2.10KHz

Option Value	Buzzer Frequency
4	2.65KHz
5	3.15KHz
6	3.97KHz
7	4.27KHz
8	4.54KHz

Option [205]: Temperature Format*Default (00)*

This option controls the format of any temperature displayed on the LCD.

Celcius (00) - Temperature is displayed as Celsius.

Fahrenheit (01) - Temperature is displayed as Fahrenheit.

Option [206]: AHS Operations Time*Default (24) disabled*

This option programs the time when the AHS table is saved to the expandable EMMC. Valid entries for this section are from 00 (12 AM) to 23 (11 PM) and 24 (to disable). Primary and Secondary CPM must have this option programmed with the same value. A text message shall be outputted to the printer when AHS flash write starts, stops, or fails. For installations that only have 1 CPM the AHS Sync will not be performed.

Option [207]: EN Standard*Default (00) disabled*

This option can enable or disable the EN standard options. Valid entries for this section are 00 (disable) and 01 (enable).

When this option is enabled the CPM requires that a user code is entered to allow firmware update to occur. This can only be done by User 17. The firmware update is allowed for 1 hour after a successful login of User 17. If a firmware update is attempted without User 17 logged in, the CPM will reject the code upload (SG-Systems Console displays a NACK response). This applies to all firmware update attempts (SG-CPM5, SG-DRL5-IP and SG-DRL5x cards).

This option also enables option 304 (LCD Blanking) where the LCD blanks after 1 minute of inactivity. While the LCD is blanked a valid user code will be required to blank mode. Any user code (User 1-17) can be used to unlock the LCD.

When this option is disabled firmware updates do not require an additional user code, and the LCD blanking will be disabled. LCD blanking may be enabled separately in option 304.

6.1.4 SG-CPM5 Options: [3XX] - LCD Options**Option [301]: Brightness Control***Default (50)*

This option controls the brightness of the LCD touchscreen. Valid entries are from 1 to 99, where 1 is the least bright and 99 is the brightest. In order to avoid selecting a value that cannot be seen, Sur-Gard recommends using the Brightness/Tone menu.

Option [304]: LCD Blanking*Default (00) Disable*

This section enables LCD blanking to comply with the EN standard requirement. Valid entries 00 – disable, 01 – enable.

When enabled the LCD goes blank, showing no information, until a valid user code is entered. The LCD will go blank after 1 minute of no activity.

To remove LCD blanking, touch the LCD screen or press the home button. While the LCD is blanked the status LED remains active.

6.1.5 SG-CPM5 Options: [4XX] - Automation Options

These sections are used to configure automation options. For Visual Verification (via the Advanced Output Protocol), the SG-Automation output follows the active SG-CPM5. This means that even if SG-Automation is in Manual mode, the SG-CPM5 continues to output signals for the Advanced Output Protocol.

Option [401]: Automation Mode*Default Auto IP Fallback(4)*

The TCP/IP connection is the primary output of automation alarms. Sockets appear and disappear as processes are terminated and initiated. After socket loss, automation output is redirected to other connections. This option controls how output is redirected if a connection fails.

NOTE: The unit must be reset before parameter changes take effect.

Loop (0)

The active SG-CPM5 uses TCP/IP at start-up. The unit automatically loops between TCP/IP and serial if failure is detected. If neither TCP/IP nor serial are present, the SG-CPM5 switches to Manual mode. In Manual mode, the standby SG-CPM5 only takes over if the active/manual SG-CPM5 fails or is rebooted

Fallback (1)

If both outputs are present, the active SG-CPM5 uses TCP/IP until it fails then switches to serial. The SG-CPM5 does not switch back to TCP/IP mode until a reset fallback command is received from the console. If neither TCP/IP nor serial are present, the SG-CPM5 switches to manual mode. In manual mode, the standby SG-CPM5 only takes over if the active/manual SG-CPM5 fails or is rebooted.

All Mode (2)

The active SG-CPM5 always sends to all connected outputs. If at least one output replies with an ACK, the alarm is considered to be transmitted, whether the other output acknowledged it or not. This setting is NOT recommended. If neither TCP/IP nor serial are present, the SG-CPM5 switches to manual mode. In manual mode, the standby SG-CPM5 only takes over if the active/manual SG-CPM5 fails or is rebooted.

IP Fallback Mode (3)

At start-up, the primary SG-CPM5 sends through the TCP/IP output.

If the primary SG-CPM5 TCP/IP output fails, the secondary SG-CPM5 sends through the TCP/IP output.

If the secondary SG-CPM5 TCP/IP output fails, the primary SG-CPM5 sends through its serial output.

If the primary SG-CPM5 serial fails, the secondary SG-CPM5 sends through the serial output.

If neither TCP/IP nor serial are present, the SG-CPM5 switches to manual mode.

The SG-CPM5 does not switch back to TCP/IP mode until a reset fallback command is received from the console or the serial fails.

Automatic IP Fallback (4)

This mode is similar to Fallback except that when the TCP/IP connection is restored, the SG-CPM5 automatically returns to the TCP/IP output to send events. This eliminates the need for a reset fallback command from the console.

Split Reporting Mode

Each CPM is responsible for all functions of the cards that it polls, monitoring of card status, and signal output (SG-Automation, Printer, SG-Advanced Automation, options, commissioning/decommissioning). The two CPMs need to negotiate for power management.

When enabled, line cards are split by odd numbers to CPM1 and even to CPM2. For example, in a system that has five line cards (slots 1-5) then line cards 1, 3, 5 are polled by CPM1, and line cards 2 and 4 are polled by CPM2. When the line cards being polled are not sequential, the even/odd rule still applies. For example, if polling five line cards in slots 1, 2, 3, 7, and 8, then CPM 1 polls line cards 1, 3 and 7, and CPM 2 polls line cards 2 and 8.

In the case of failure of a CPM, the other CPM takes over polling and output of all signals for all line cards. When the CPM failure clears, the polling of the cards automatically resumes the split reporting.

Valid Setting for Option 401		
Upper Nibble	Lower Nibble	Function
0	0	Loop Mode
0	1	Fallback Mode
0	2	All Mode
0	3	IP Fallback Mode
0	4	Automatic IP Fallback Mode
1	0	Loop Mode - Split Report
1	1	Fallback - Split Report
1	2	Invalid Selection – mode will be placed back to Default (04)
1	3	Invalid Selection – mode will be placed back to Default (04)
1	4	Automatic IP FallBack - Split Report
-	-	Any other value shall force the mode back to Default (04)

For example, setting option 401 to 10 (0001 0000) enables the Split Reporting function and Loop mode. The programming option can be viewed as an option list in the programming menu.

Automation Mode diagrams

FIGURE 6-2: Flow diagram for Loop Mode (0)

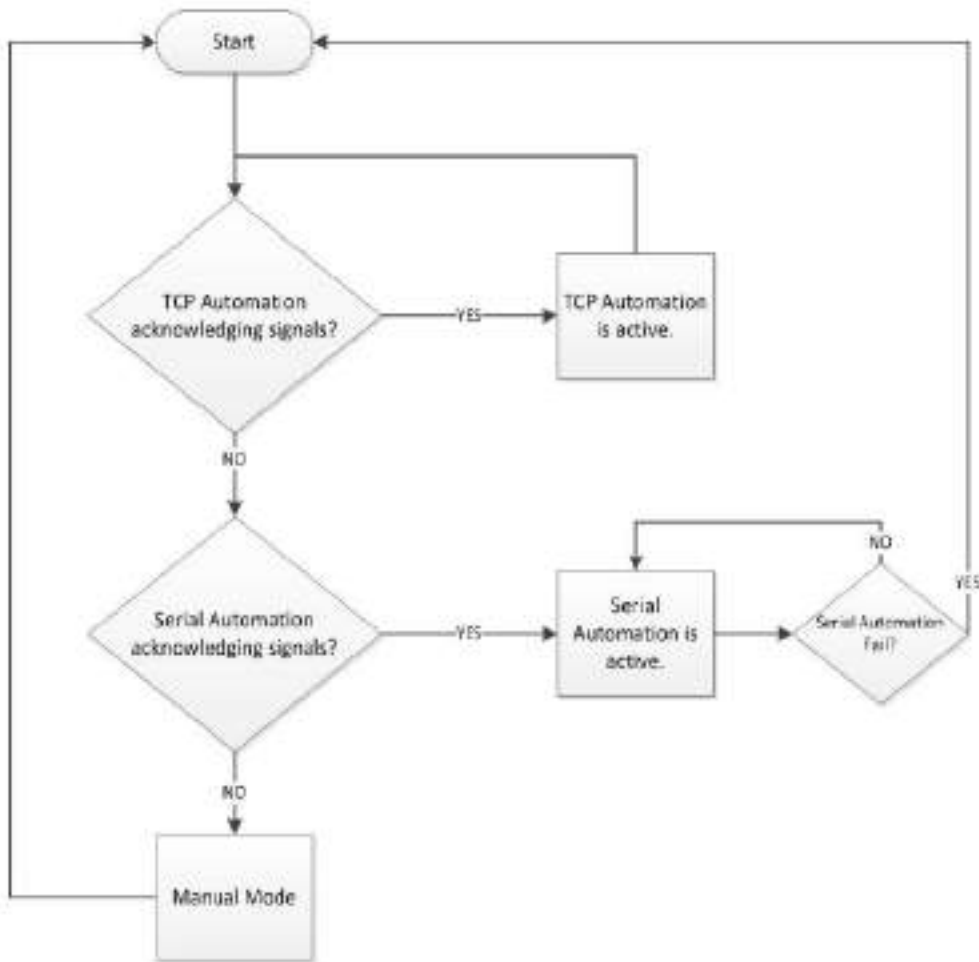


FIGURE 6-3: Flow diagram for Fallback Mode (1)

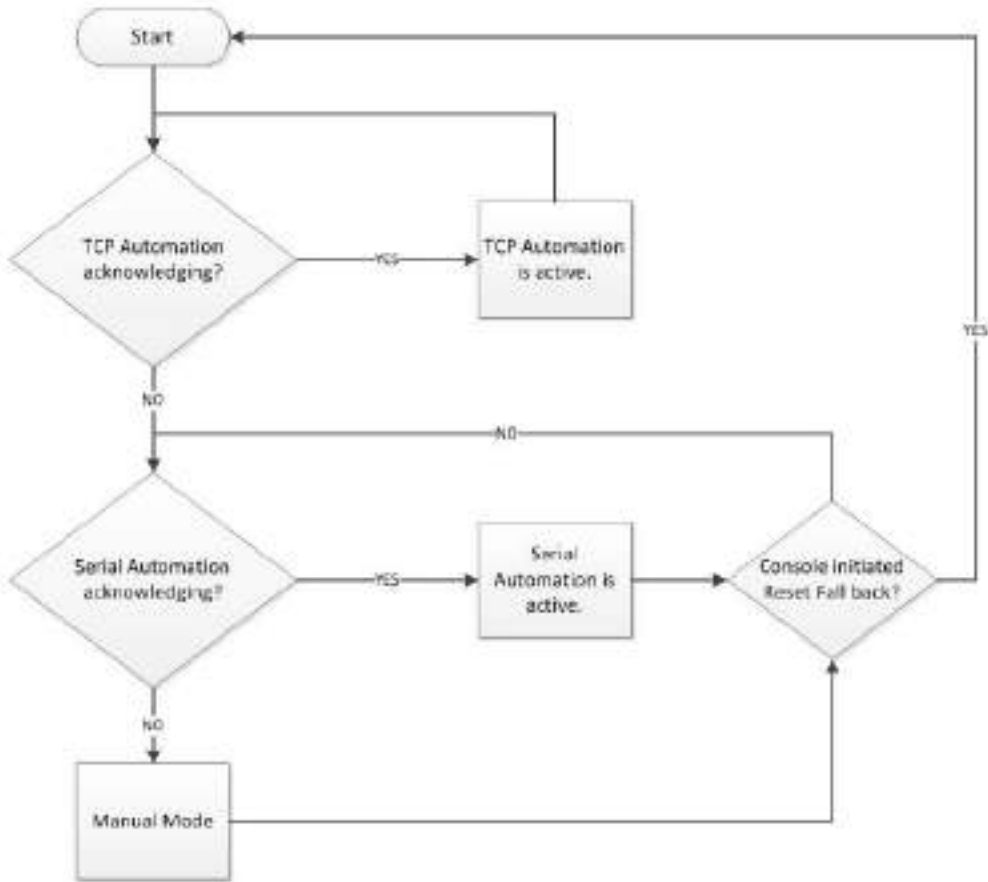


FIGURE 6-4: Flow diagram for All Mode (2)

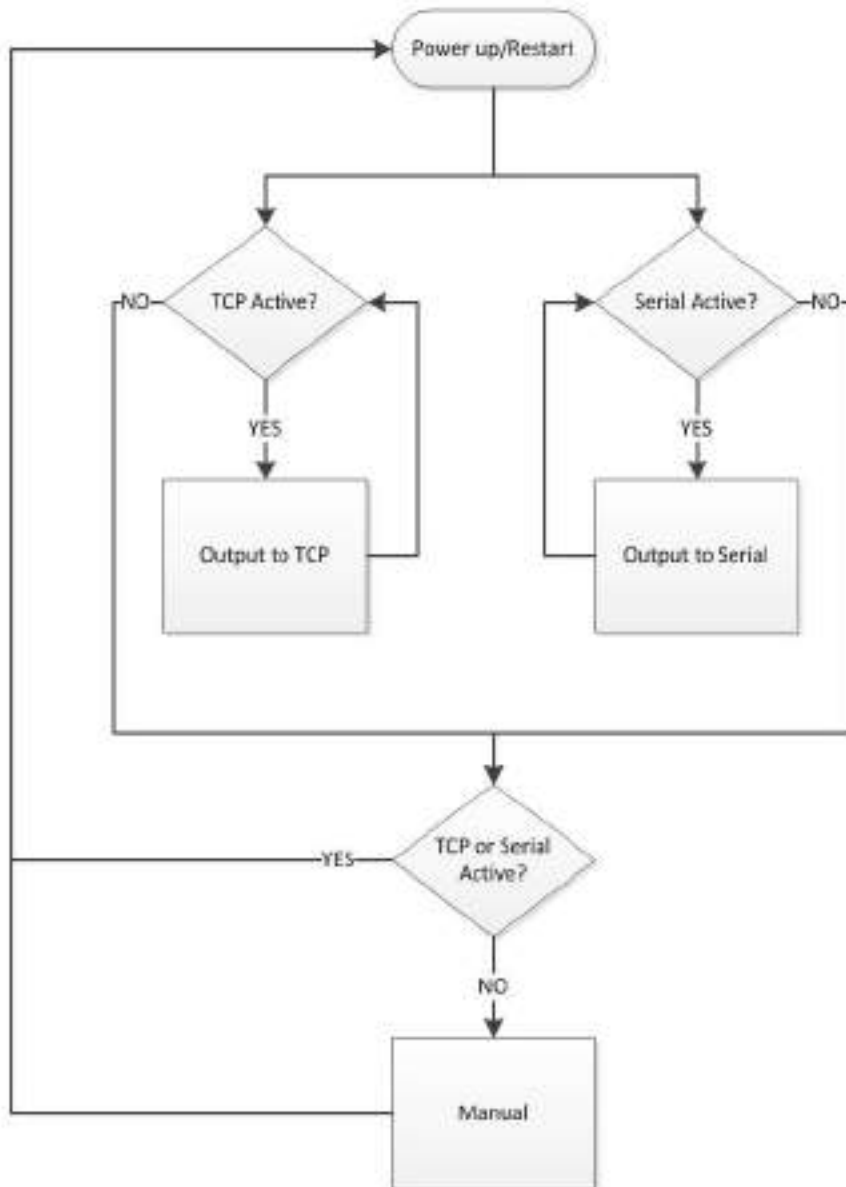


FIGURE 6-5: Flow diagram for IP Fallback Mode (3)

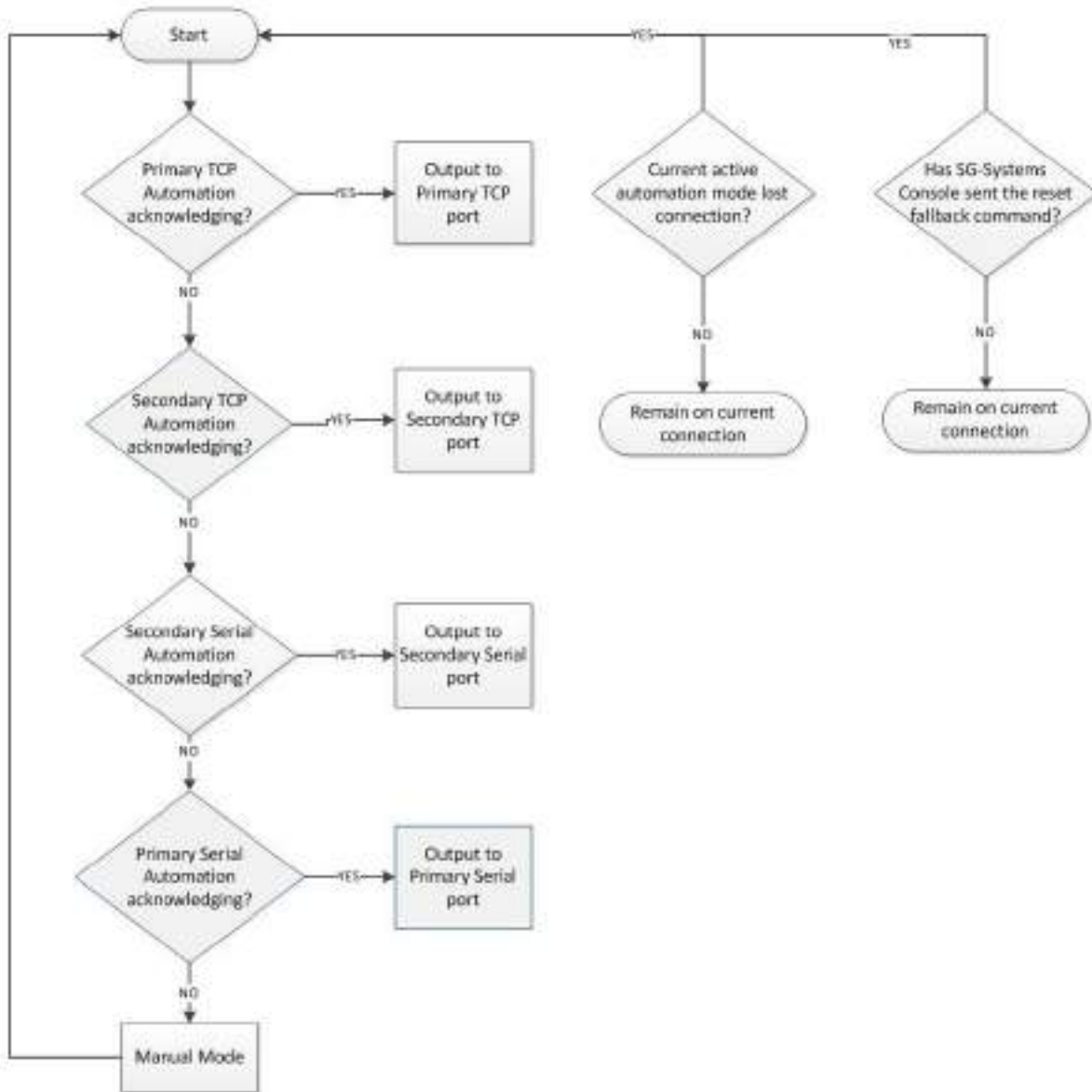
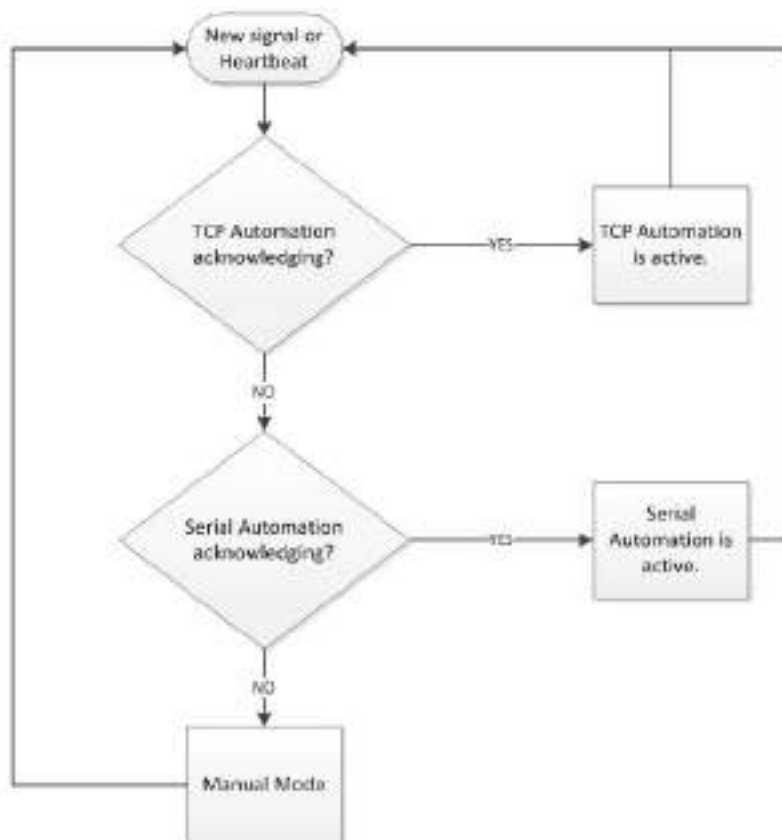


FIGURE 6-6: Flow diagram for Auto IP Fallback (4)

**Option [402]: COM1 (Automation) Baud Rate***Default (9600)*

Determines the baud rate at which the SG-CPM5 communicates to the automation software via serial automation port. Valid selections are: 1200, 2400, 4800, 9600, 19200, 38400, or 57600.

NOTE: The unit must be reset before parameter changes take effect.

Option [403]: COM1 Data Bits*Default (8)*

Determines the number of data bits used to communicate to the automation software via serial automation port. Valid selections are: 7 or 8.

NOTE: The unit must be reset before parameter changes take effect.

Option [404]: COM1 Parity*Default (0) - None*

Determines the parity of the automation serial port.

Numeric Setting	Display	Description
0	None	no parity (default)
1	Odd	odd parity
2	Even	even parity

NOTE: The number of stop bits cannot be changed and is always 2.

NOTE: The unit must be reset before parameter changes take effect.

Option [408]: Receiver Number*Default (01)*

This is used to identify the receiver when communicating to the TCP/IP automation, serial automation and the printer. To change the receiver number, enter a hexadecimal number from "01" to "FE." Receiver Number applies to all traffic unless overridden by other options.

Option [409]: Output RLLLL Digits*Default (5)*

Indicates the number of digits the SG-CPM5 sends in the header to the automation output. This should be left as 5 unless the automation software does not support MLR2000 or System III output protocol. This affects both internal SG-CPM5 and DRL5-IP messages. The valid range is from 03 to 09, for example:

03 is RRL

09 is RRLLLLLL

Option [410]: Protocol ID*Default (0) - 0RLLLL*

When this option is programmed as 0RLLLL(0), the SG-CPM5 outputs its internal messages in the following format:

0RLLLL [#AAAA | Nxxyy]

When this option is programmed as SRLLLL(S), the SG-System 5 outputs its internal messages in the following format:

SRLLLL [#AAAA | Nxxyy]

S,0 (zero): protocol ID

RR: Receiver number

LLL: Line number

AAAA: Account code, always 0000

Nxxyy: SIA event

Option [411]: Heartbeat Timer*Default (30)*

This timer determines how often a heartbeat transmission is sent to automation. The heartbeat transmission is used to ensure communications through serial and TCP/IP are functioning normally when the receiver has no traffic. Any traffic from the receiver resets the heartbeat timer. The heartbeat is only sent if no other signals are received during the timer's countdown.

Enter a value, in seconds, from 01 through 99 to set the time interval between heartbeat transmissions. Enter 00 to disable heartbeat transmission.

NOTE: When 00 is used, heartbeats are not sent to automation software - this results in the connection to the automation software being unmonitored.

NOTE: For UL listed products, 00 is not permitted.

NOTE: For ULC-S304 applications, the heartbeat timer shall be set to 30 seconds.

Option [412]: ACK Wait*Default (40)*

Determines how long the SG-CPM5 waits for acknowledgment on an automation output before retransmitting. Enter a value, in tenths of a second, from 40 (4.0 seconds) to 99 (9.9 seconds).

NOTE: The unit must be reset before parameter changes take effect.

Option [413]: B32 Headers*Default (Disabled)*

Compatible with MAS B32 automation software through TCP/IP. B32 Headers apply only to TCP/IP automation messages, not serial or printer messages. When enabled, all outgoing and incoming automation messages contain four extra bytes at the start of each packet.

These four bytes are:

00 00 LL LL

Where:

LL LL = is the BCD value of the size of the entire packet.

For example, if the original length was 1B HEX bytes, the packet would be:

00 00 00 31 <original packet>

The ACK back to the receiver would be:

00 00 00 05 06

NOTE: The ACK back to the SG-CPM5 ("30 30-30 35 06" ASCII) is at the end of the packet.

NOTE: The unit must be reset before parameter changes take effect.

Option [414]: Automation Update Time & Date

Default (Disabled)

This option allows the SG-CPM5 to receive time and date updates, from automation that supports this feature, via the TCP/IP port. If the SG-CPM5 fails to get the time and date within a 24 hour period, a status message is sent to the printer and automation, following the internal trouble protocol. The trouble status on the SG-System 5 is not affected. The receiver console time update function must be disabled when using this feature to ensure that the SG-CPM5 remains synchronized with the automation PC.

Printer message: "Time&Date Update Fail"

Automation message: 0RRLLL[#0000]NRU0000]

Option [415]: SG-TCP Automation Port # 1

Default (1025)

This section allows the SG-TCP Automation port #1 to be changed. The Automation TCP port is the port that the automation would connect to. Programmable values are from 0001-65535 (0001-FFFF).

This port is available regardless of the license configuration for Multi-port Automation.

Multi-port Automation

Each CPM can have up to four SG-TCP automation port connections. The number of ports available by license (each port is a purchase). If the license is not enabled for the extra ports (ports 2-4), then the ports do not respond to any connection request.

There are licenses for the number of ports to be used (maximum of four) per CPM (existing port 1025 and three others unlocked by license).

The connection status of all automation ports is sent to the SG-System 5 Console.

Rules for Multi-port signal output

1. Each port connection to the automation software is monitored individually.
2. When enabled, the communication of signals from the ports is in a round robin (circular) format. Meaning, assuming all four ports are enabled, the first signal is sent over port #1, followed by #2, #3 and #4, the fifth signal returns to #1.
3. Only if a port is busy (waiting ACK or disconnected etc.), does the CPM advance to the next port.
4. If a line card has a pending event ACK, another event can not be outputted until it is cleared (ACK received or NACK'd 26 times).
5. All ports must send a heartbeat if no traffic following heartbeat timer (option 411). There is only 1 heartbeat time for the system.

Limitations

Messages that have multiple parts are not necessarily be outputted on the same automation port. It is up to the automation software to correctly combine the signals received. For example, Caller ID and the Automation signal - Caller ID to port 1 but event goes to port 3.

Option [416]: SG-TCP Automation Port # 2

Default (1126)

This section allows the SG-TCP Automation port #2 to be changed. The Automation TCP port is the port that the automation can connect to. Programmable values are from 0001-65535 (0001-FFFF).

This port is only available for connection when the correct license configuration for Multi-port Automation is applied.

Option [417]: SG-TCP Automation Port # 3

Default (1127)

This section allows the SG-TCP Automation port #3 to be changed. The Automation TCP port is the port that the automation can connect to. Programmable values are from 0001-65535 (0001-FFFF).

This port is only available for connection when the correct license configuration for Multi-port Automation is applied.

Option [418]: SG-TCP Automation Port # 4

Default (1128)

This section allows the SG-TCP Automation port #4 to be changed. The Automation TCP port is the port that the automation can connect to. Programmable values are from 0001-65535 (0001-FFFF).

This port is only available for connection when the correct license configuration for Multi-port Automation is applied.

Option [449]: Logging Automation Port

Default (1140)

This section allows the SG-TCP Logging Automation port to be changed. The Logging Automation port is the port that the automation can connect to. Programmable values are from 0001-65535 (0001-FFFF).

This port is only available for connection when the correct license configuration for Log Only Automation is applied.

SG-TCP Logging Automation Rules of operation

- a. The logging port clones all SG-automation signals to a this port.
- b. This port does not impact the automation mode of the receiver if present/absent. Meaning that if all standard SG-Automation paths (TCP or Serial) are absent and the logging port is present, then the automation mode is manual.
 - i. If the SG-Automation port is in manual mode, then all signals to the logging port are stopped (if they have not been outputted to a standard automation output).
 - ii. The logging port output automation signals once they have been outputted to either the SG-Serial or SG-TCP automation connection.
 - iii. The logging port is a TCP only connection (no serial port support).
 - iv. Only ACK required is the TCP ACK (automation ACK can be there, but is not required).
- c. NACK on this port
 - i. Signal NACKs are ignored and move to the next signal.
- d. NACK of signals on the SG-Automation connection causes a repeated message to be sent to the SG-TCP Logging port.
- e. The logging port does not support the time/date update automation response – if received, it must be ignored.
- f. If multi port option is enabled on the system, all SG-Automation signals from any of the enabled ports are sent to the logging port.

Option [450]: Visual Verification Automation TCP Port

Default (2025)

This section sets the visual verification automation TCP port. The visual verification automation TCP port is the port that automation or the SG-System 5 Console connects to.

6.1.6 SG-CPM5 Options: [5XX] - Printer Options

Option [501]: Printer Mode

Default (Loop)

Printer outputs can be configured in a similar manner to automation outputs except that the only acceptable values are either LOOP (00) or ALL (02). Setting the printer mode to ALL transmits the printer message to all active ports. The first acknowledgment received is used to process the next printer message. Setting the Printer Mode to LOOP operates similar to the Automation mode LOOP, whereas it outputs to TCP/IP. If TCP/IP fails, it outputs to Serial. If Serial fails, it outputs to TCP/IP, etc.

NOTE: Order of sequence is TCP then serial. Sur-Gard does NOT recommend changing the default setting unless using more than one printer.

NOTE: The unit must be reset before parameter changes take effect.

Option [502]: Serial Printer 1 Format

Default (Disabled)

This section enables the serial handshake protocol that the SG-CPM5 uses to send signals to the device (printer or terminal) connected to the serial printer port.

NOTE: The unit must be reset before parameter changes take effect.

Option [503]: Serial Printer 1 Baud Rate

Default (57600)

Determines the baud rate at which the SG-CPM5 communicates to the serial printer connected on serial printer port 1. Valid entries are: 1200, 2400, 4800, 9600, 19200, 38400, or 57600.

NOTE: The unit must be reset before parameter changes take effect.

Option [504]: Serial Printer 1 Data Bits

Default (8)

Determines the number of data bits used to communicate to the serial printer on serial printer port 1. Choose 7 or 8 data bits.

NOTE: The unit must be reset before parameter changes take effect.

Option [505]: Serial Printer 1 Parity*Default (0)*

Determines the parity of serial printer port 1

Numeric Setting	Display	Description
0	none	no parity (default)
1	odd	odd parity
2	even	even parity

NOTE: The number of stop bits cannot be fixed at 2.**NOTE: The unit must be reset before parameter changes take effect.****Option [510]: Date Format***Default (International)*

Selects the format used to represent date for printer output. Format [1] represents US format: MM/DD/YY. Format [0] represents International format: DD/MM/YY.

Option [511]: Printer Test*Default (Enabled)*

When this option is enabled, a test signal is sent to all active printer(s) at 05:00 and 17:00 hrs. This option is set to Enabled by default.

Printer message:

26 Nov 2012 16:41:25 - 26 Nov 2012-16:41:25-00/00-SG -01-000-0000--Printer Test Message

6.1.7 SG-CPM5 Options: [6XX] and [7XX] - Troubles

The following sections control the display of trouble conditions. For installations that do not have a full SG-System 5 configuration, selected troubles can be disabled. Disabled troubles do not display.

Option [601]: CPM5 1 Fan Trouble*Default (Enabled)*

This option is used to enable or disable SG-CPM5 1 fan supervision. If this option is set to 'Disabled', the trouble condition is not reported.

NOTE: Must be enabled for UL installations.**Option [602]: CPM5 2 Fan Trouble***Default (Enabled)*

This option is used to enable or disable SG-CPM5 2 fan supervision. If this option is set to 'Disabled', the trouble condition is not reported.

NOTE: Must be enabled for UL installations.**Option [603]: PSU5 1 Trouble***Default (Enabled)*

This option is used to enable or disable SG- PSU5 1 supervision. If this option is set to 'Disabled', the trouble condition is not reported.

NOTE: Must be enabled for UL installations.**Option [604]: PSU5 2 Trouble***Default (Enabled)*

This option is used to enable or disable SG- PSU5 2 supervision. If this option is set to 'Disabled', the trouble condition is not reported.

NOTE: Must be enabled for UL installations.**Option [605]: Fan Tray 1 Trouble***Default (Enabled)*

This option is used to enable or disable fan tray 1 supervision. If this option is set to 'Disabled', the trouble condition is not reported.

Option [606]: Fan Tray 2 Trouble*Default (Enabled)*

This option is used to enable or disable fan tray 2 supervision. If this option is set to 'Disabled', the trouble condition is not reported.

Option [607]: Fan Tray 3 Trouble*Default (Enabled)*

This option is used to enable or disable fan tray 3 supervision. If this option is set to 'Disabled', the trouble condition is not reported.

Option [608]: Fan Tray 4 Trouble*Default (Enabled)*

This option is used to enable or disable fan tray 4 supervision. If this option is set to 'Disabled', the trouble condition is not reported.

Option [609]: UPS AC 1 Trouble*Default (Disabled)*

This option is used to enable or disable UPS AC 1 input supervision. If this option is set to 'Disabled', the trouble condition is not reported.

NOTE: Must be enabled for UL installations.

Option [610]: UPS AC 2 Trouble*Default (Disabled)*

This option is used to enable or disable UPS AC 2 input supervision. If this option is set to 'Disabled', the trouble condition is not reported.

NOTE: Must be enabled for UL installations.

Option [611]: UPS Battery 1 Trouble*Default (Disabled)*

This option is used to enable or disable UPS Battery 1 input supervision. If this option is set to 'Disabled', the trouble condition is not reported.

NOTE: Must be enabled for UL installations.

Option [612]: UPS Battery 2 Trouble*Default (Disabled)*

This option is used to enable or disable UPS Battery 2 input supervision. If this option is set to 'Disabled', the trouble condition is not reported.

NOTE: Must be enabled for UL installations.

Option [613]: SG-Serial Automation Pri - 1 Trouble*Default (Enabled)*

This option is used to enable or disable SG-Serial Automation 1 supervision for the primary SG-CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

NOTE: Must be enabled for UL installations.

Option [615]: SG-Serial Automation Sec - 1 Trouble*Default (Disabled)**Secondary SG-CPM5 Default (Enabled)*

This option is used to enable or disable SG-Serial Automation 1 supervision for the secondary SG-CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

NOTE: Must be enabled for UL installations.

Option [617]: SG-Serial CPM1 Printer 1 Trouble*Default (Enabled)*

This option is used to enable or disable SG-CPM5 1 printer supervision. If this option is set to 'Disabled', the trouble condition is not reported.

Option [618]: SG-Serial CPM2 Printer 1 Trouble*Default (Enabled)*

This option is used to enable or disable SG-CPM5 2 printer supervision. If this option is set to 'Disabled', the trouble condition is not reported.

Option [621]:SG-TCP Automation Pri - 1 Trouble*Default (Enabled)*

This option is used to enable or disable SG-TCP automation port (port 1025) supervision for the primary SG-CPM5. If any of these options are set to 'Disabled', the corresponding trouble condition is not be reported.

Option [622]: SG-TCP Automation Pri – 2 Trouble*Default (Disabled)*

This option is used to enable or disable the supervision for the SG-TCP Automation Port #2 for the Primary CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

Option [623]: SG-TCP Automation Pri – 3 Trouble*Default (Disabled)*

This option is used to enable or disable the supervision for the SG-TCP Automation Port #3 for the Primary CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

Option [624]: SG-TCP Automation Pri – 4 Trouble*Default (Disabled)*

This option is used to enable or disable the supervision for the SG-TCP Automation Port #4 for the Primary CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

Option [631]:SG-TCP Automation Sec - 1 Trouble*Default (Disabled)**Secondary SG-CPM5 Default (Enabled)*

This option is used to enable or disable the SG-TCP automation port (port 1025) supervision for the secondary SG-CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

Option [632]: SG-TCP Automation Sec – 2 Trouble*Default (Disabled)*

This option is used to enable or disable the supervision for the SG-TCP Automation Port #2 for the Secondary CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

Option [633]: SG-TCP Automation Sec – 3 Trouble*Default (Disabled)*

This option is used to enable or disable the supervision for the SG-TCP Automation Port #3 for the Secondary CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

Option [634]: SG-TCP Automation Sec – 4 Trouble*Default (Disabled)*

This option is used to enable or disable the supervision for the SG-TCP Automation Port #4 for the Secondary CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

Option [665]:TCP Printer Pri - 1 Trouble*Default (Enabled)*

This option is used to enable or disable TCP Printer 1 (port 1027) supervision for the primary SG-CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

Option [675]:TCP Printer Sec - 1 Trouble*Default (Enabled)*

This option is used to enable or disable TCP Printer 1 (port 1027) supervision for the secondary SG-CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

Option [709]:SG-TCP/IP CPM1 Visual Verification Trouble*Default (Enabled)*

This option is used to enable or disable visual verification port (port 2025) supervision for the primary SG-CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

Option [710]:SG-TCP/IP CPM2 Visual Verification Trouble*Default (Enabled)*

This option is used to enable or disable visual verification port (port 2025) supervision for the secondary SG-CPM5. If this option is set to 'Disabled', the trouble condition is not reported.

Option [711]: SG-TCP Automation Pri - Logging Trouble*Default (Disabled)*

This option is used to enable or disable the supervision for the SG-TCP Logging Port for the Primary CPM5. To monitor or report the trouble, change this option to Enabled.

Option [712]: SG-TCP Automation Sec - Logging Trouble*Default (Disabled)*

This option is used to enable or disable the supervision for the SG-TCP Logging Port for the Secondary CPM5. To monitor or report the trouble, change this option to Enabled.

6.2 SG-DLR5-IP Options

SG-System 5 Console v2.5 (or higher) software is required for programming and communication with SG-DRL5-IP Receiver Modules.

6.2.1 SG-DRL5-IP Options: [1XX] - System Hardware

Option [101]: IP Address (IPV4)*Default (10.0.7.200)*

This IP address identifies the SG-DRL5-IP on the IP network. Each node on the IP network must be assigned a unique IP. The SG-DRL5-IP can only use Static IPs. DHCP is not supported.

Option [102]: Subnet Mask (IPV4)*Default (255.255.0.0)*

A mask used to determine the subnet an IP address belongs to. The subnet is a portion of a network that shares a common address component. On TCP/IP networks, subnets are defined as all devices whose IP addresses have the same prefix. Dividing a network into subnets is useful for both security and performance reasons.

Option [103]: Gateway Address (IPV4)*Default (0.0.0.0)*

This is the address of the Gateway through which the SG-DRL5-IP must communicate to reach the transmitter. This address is applied to all modules connected to the SG-DRL5-IP.

Option [111]: Receiver Number*Default (01)*

The receiver number is used for sending signals to the central station software. Refer to the manuals for any central station automation software being used to determine if this number has any special requirements. Also, ensure that no duplicate receiver numbers are used. For example, in the messages below, the receiver numbers are in **bold**.

001001[#0000]NMIss00]

SG -01-001-0000-NMIss00- Firmware Update Initiated

Option [112]: Line Card Number - Channel 1

Default (01)

The line card number provides a virtual identification code for each SG-DRL5-IP module. Hexadecimal numbers “01” to “FE” can be programmed to identify line cards. For example, in the automation/printer messages below, the line card numbers are in **bold**.

001**001**[#0000]NMIss00]

SG -01-**001**-0000-NMIss00- Firmware Update Initiated

Option [113]: Line Card Number - Channel 2

Default (02)

The line card number provides a virtual identification code for each SG-DRL5-IP module. Hexadecimal numbers “01” to “FE” can be programmed to identify line cards. For example, in the automation/printer messages below, the line card numbers are in **bold**.

001**001**[#0000]NMIss00]

SG -01-**001**-0000-NMIss00- Firmware Update Initiated

Option [114]: Line Card Number - Channel 3

Default (03)

The line card number provides a virtual identification code for each SG-DRL5-IP module. Hexadecimal numbers “01” to “FE” can be programmed to identify line cards. For example, in the automation/printer messages below, the line card numbers are in **bold**.

001**001**[#0000]NMIss00]

SG -01-**001**-0000-NMIss00- Firmware Update Initiated

Option [115]: Line Card Number Length

Default (0A) - 3-Digit LC num (2-Digit Receiver DEC)

This option is used to determine how many digits from the line card number are sent to the output. This option also sets whether the number appears in hex or decimal. Program this option with one of the following:

1-HEX Digit LC num (hex) (01)

Sends only one Hex digit to the printer or computer output (the last digit of the line card number is used).

2-HEX Digit LC num (hex) (02)

Sends 2-digit Hex line card number to the output.

3-HEX Digit LC num (hex) (03)

Sends 3-digit Hex line card number to the output (a leading zero is inserted prior to the line card number).

3-Digit LC num (2-Digit Receiver DEC)(0A)

Sends 3-digit line card number in decimal; sends 2-digit receiver number in decimal

Option [116]: Protocol ID

Default (01) - 0RRLLL

00 - SRRLLL

= Output for all internal signals is SRRL protocol

01 - 0RRLLL

= Output for all internal signals is 0RRL protocol

02 - SRRLLL, Leading space (DVACS only)

= Output signals in automation protocol SRRL with leading space in the zone (DVACS only)

03 - 0RRLLL, Leading space (DVACS only)

= Output signals in automation protocol 0RRL with leading space in the zone (DVACS only)

When this option is programmed as SRRLLL(00), the SG-DRL5-IP outputs internal messages in the following format:

SRRLLL [#AAAA | Nxyyy]

If it is programmed as 0RRLLL(01), internal messages output as:

0RRLLL [#AAAA | Nxyyy]

S, 0 (zero) = Protocol number

RR = Receiver number

LLL = Line number

AAAA = Account code, always 0000

Option [123] Busy Out

Default (00) - Buffer Full, SG-CPM5 Absent, No Time or Firmware Corrupt

The line card stops acknowledging transmitter events under specific trouble conditions if option [123] is programmed with the following:

- 00** No time is set on the SG-CPM5, firmware corruption, the buffer is full or the SG-DRL-IP has lost communication with the SG-CPM5.
- 01** SG-DRL-IP is never busied out
- 04** SG-DRL-IP is busied out, there is no automation or the SG-CPM5 is absent
- 05** SG-DRL-IP is busied out, buffer is full or the SG-CPM5 is absent

NOTE: If 01 is selected, the line card overwrites the oldest alarm with a new alarm when the internal buffer is full. For UL Listed products, the permitted setting is 00.

The status LED indicates the following for busy conditions:

Number of Flashes	Reason
Solid	Internal network failed
1 flash	CPM absent
2 flashes	Line card is busied out
3 flashes	Printer buffer full
4 flashes	Computer buffer full
5 flashes	Checksum failed

Option [124]: SD Card Full

Default [00] - Disabled

This option is used to over-write old visual verification files on an SD card once it becomes full, rather than manually re-formatting or replacing the card. When disabled (00), the oldest visual verification files on the SD card are overwritten by new files.

When enabled (01), Visual Verification signals are not acknowledged if the SD card is full. Space must be made on the SD card, either by reformatting or replacing it before new Visual Verification signals are acknowledged.

Option [125]: Visual Verification Film

Default [01] - Enabled

This option determines if .AVI files are generated for visual verification events.

When enabled (01), Visual Verification Film (the .AVI file) is generated. Only the received .jpg and .wav files are saved. All required conversion of received files is still performed (e.g., Audio up-converted to 4-bit; black and white images to colour .jpg). Disabling this option improves SD card performance. When disabled (00), AVI files are not created and saved to the SD card, along with the associated .jpg and .wav files files.

6.2.2 SG-DRL5-IP Options: [2XX] - Signaling Options

Option [201]: Alarm Port Number - Channel 1

Default (3061), UDP

Use this option to set the alarm port connection number for the receiver. While the default value is suitable for environments involving just one receiver, Option [201] can be used to differentiate receivers in a complex, multiple receiver environment. If this option is changed, transmitters communicating to the SG-DRL5-IP must be programmed with the new port number. Communicators connected to the receiver send their signals to this port.

Option [202]: Alarm Port Number - Channel 2

Default (3071), UDP

Use this option to set the alarm port connection number for the receiver. While the default value is suitable for environments involving just one receiver, Option [202] can be used to differentiate receivers in a complex, multiple receiver environment. If this option is changed, transmitters communicating to the SG-DRL5-IP must be programmed with the new port number. Communicators connected to the receiver send their signals to this port.

Option [203]: Alarm Port Number - Channel 3

Default (3081), UDP

Use this option to set the alarm port connection number for the receiver. While the default value is suitable for environments involving just one receiver, Option [203] can be used to differentiate receivers in a complex, multiple receiver environment. If this option is changed, transmitters communicating to the SG-DRL5-IP must be programmed with the new port number. Communicators connected to the receiver send their signals to this port.

Option [221]: Transmitter Absent Debounce Time*Default (120)*

The time, in seconds, for which a transmitter configured in supervised mode must be absent before a transmitter failure condition is reported. Valid entries are 5-65535 seconds. The transmitter is considered absent when it hasn't received any alarm traffic or heartbeats for the duration of the transmitter absent debounce time.

This is a dynamic option and it follows the profile setting it is assigned to for the associated DNIS.

NOTE: The transmitter starts in the absent condition and must be restored before using this window.

NOTE: Transmitter Absent Time should not be less than 90 seconds. For ULC Commercial Burg Installations Security Levels A1 to A4 and ULC Commercial Fire Active communication systems, this option shall be programmed as 180 seconds. For UL Commercial Burg Installations (standard/encrypted line security), this option shall be programmed as 200 seconds. For UL Commercial Fire installations (single communication technology) this option shall be programmed as 300 seconds.

Option [222]: Transmitter Restoral Time*Default (60)*

This option determines the required time a transmitter must be present before it is registered in the Account Table and the transmitter restoral message is sent.

This is a dynamic option and it follows the profile setting it is assigned to for the associated DNIS.

NOTE: Two heartbeats must be received from the supervised IP transmitter before the register and restoral of the communicator.
For UL Listed products, the permitted setting is 90 seconds.

6.2.3 SG-DRL5-IP Options: [3XX] - System Troubles**Option [301]: Transmitter Unencrypted Trouble***Default (Enabled)*

This trouble enables or disables unencrypted event reporting. When set to Enabled, the trouble is reported. When set to Disabled, the trouble is not reported. This trouble is reported when the transmitter power cycles.

Enabled Condition reported

Disabled Condition not reported

NOTE: For UL Listed products, the permitted setting is Enabled.

Option [302]: Unknown Account Trouble*Default (Enabled)*

This trouble enables or disables unknown account signal reporting (not in the account table). When set to Enabled, the trouble is reported. When set to Disabled, the trouble is not reported.

Enabled Condition reported

Disabled Condition not reported

NOTE: For UL Listed products, the permitted setting is Enabled.

Option [303]: Supervised Accounts Exceeded Trouble*Default (Enabled)*

This trouble enables or disables reporting when the account table limit is exceeded by a new account trying to connect to a SG-DRL5-IP with a full account table. When set to Enabled, the trouble is reported. When set to Disabled, the trouble is not reported.

Enabled Condition reported

Disabled Condition not reported

NOTE: The number of accounts permitted in the account table is dependent on the table size unlocked for the IP channel.

NOTE: For UL Listed products, the permitted setting is Enabled.

Option [304]: Transmitter Restore Trouble*Default (Enabled)*

This trouble enables or disables reporting of a transmitter restoral condition on the line card. When set to Enabled, the trouble is reported. When set to Disabled, the trouble is not reported..

Enabled Condition reported

Disabled Condition not reported

Option [305]: Transmitter Absent Trouble*Default (Enabled)*

This trouble enables or disables reporting of a transmitter failure/absent condition on the line card. When set to Enabled, the trouble is reported. When set to Disabled, the trouble is not reported..

Enabled	Condition reported
Disabled	Condition not reported

NOTE: The number of accounts permitted in the account table is dependent on the table size unlocked for the IP channel.

Option [306]:TX Swap Trouble*Default (Enabled)*

This trouble enables or disables reporting of a transmitter swap condition on the line card. When set to Enabled, the trouble is reported. When set to Disabled, the trouble is not reported..

Enabled	Condition reported
Disabled	Condition not reported

Option [307]:Invalid Report Trouble*Default (Enabled)*

This trouble enables or disables reporting of an invalid report condition. A received signal is invalid if it has a bad checksum or encryption key mismatch. When set to Enabled, the trouble is reported. When set to Disabled, the trouble is not reported..

Enabled	Condition reported
Disabled	Condition not reported

Option [308]:Transmitter Deleted Trouble*Default (Enabled)*

This trouble enables or disables reporting when a transmitter account is deleted from the table. Setting the trouble to enabled signifies the trouble is reported; setting the trouble to disabled signifies the trouble is not be reported.

Enabled	Condition reported
Disabled	Condition not reported

6.2.4 SG-DRL5-IP Options: [4XX] - System Options**Option [401]: Connect 24 Program Confirm Disable***Default (00)*

This option enables the receiver to block requests for Connect 24 and DLS program confirmation. When enabled (01), the receiver does not respond to confirmation requests from Connect 24 or DLS. When disabled (00), the receiver responds to confirmation commands. For installations using the Connect 24 programming service, leave this option disabled.

Option [402]: UTC Time Update*Default (00) - Disabled*

This option defines the time zone that the SG-System 5 is operating in. From the table below, locate the appropriate time zone, then program option [402] with the value in the first column.

This is a dynamic option and it follows the profile setting it is assigned to for the associated DNIS.

Programmed (Hex)	GMT Offset	Time zone Short code	Time zone name
0	NA	NA	Disabled
1	-12	BIT	Baker Island Time
2	-11.75		
3	-11.5		
4	-11.25		
5	-11	NUT	Niue Time
		SST	Somoa Standard Time
6	-10.75		
7	-10.5		

Programmed (Hex)	GMT Offset	Time zone Short code	Time zone name
8	-10.25		
9	-10	HAST	Hawaii-Aleutian Standard Time
		THAT	Tahiti Time
		TKT	Tokelau Time
		CKT	Cook Island Time
0A	-9.75		
0B	-9.5	MIT	Marquesas Island Time
0C	-9.25		
0D	-9	AKST	Alaska Standard Time
		GIT	Gambier Island Time
0E	-8.75		
0F	-8.5		
10	-8.25		
11	-8	PST	Pacific Standard Time
		PST	Pitcarirn Standard Time
		CIST	Clipperton Island Standard Time
12	-7.75		
13	-7.5		
14	-7.25		
15	-7	MST	Mountain Standard Time
16	-6.75		
17	-6.5		
18	-6.25		
19	-6	CST	Central Standard Time
		GALT	Galapagos Time
		PIT	Peter Island Time
		EAST	Easter Island Standard Time
1A	-5.75		
1B	-5.5		
1C	-5.25		
1D	-5	EST	Eastern Standard Time
		COT	Colombia Time
		ECT	Ecuador Time
		PET	Peru Time
		ACT	Acre Time
1E	-4.75		
1F	-4.5	VST	Venezuela Standard Time
20	-4.25		
21	-4	AST	Atlantic Standard Time
		CLST	Chile Standard Time
		BWST	Brazil Western Standard Time
		SLT	San Luis Time
		PYT	Paraguay Time
		JFST	Juan Fernandez Island Standard Time
		GYT	Guyana Time
		FKST	Falkland Island Standard Time
		BOT	Bolivia Time
22	-3.75		
23	-3.5	NST	Newfoundland Standard Time
24	-3.25		
25	-3	CGT	Central Greenland Time
		ART	Argentina Time

Programmed (Hex)	GMT Offset	Time zone Short code	Time zone name
		BRT	Braziliz Time
		UYT	Uruguay Standard Time
		SRT	Suriname Time
		ROTT	Rothera Time
		PMST	Pierre & Miquelon Standard Time
		GFT	French Guiana Time
26	-2.75		
27	-2.5		
28	-2.25		
29	-2	GST	South Georgia and the South Sandwich Islands
		BEST	Brazil Eastern Standard Time
2A	-1.75		
2B	-1.5		
2C	-1.25		
2D	-1	EGT	Eastern Greenland Time
		CVT	Cape Verde Time
		AZOST	Azores Standard Time
2E	-0.75		
2F	-0.5		
30	-0.25		
31	0	WET	Western European Time
		GMT	Greenwich Mean Time
		SLT	Sierra Leone Time
		IST	Ireland Standard Time
32	0.25		
33	0.5		
34	0.75		
35	1	CET	Central European Time
		WAT	Western Africa Time
		BST	British Summer Time
36	1.25		
37	1.5		
38	1.75		
39	2	EET	Eastern European Time
		CAT	Central Africa Time
		SYT	Syrian Standard Time
		SAST	South Africa Standard Time
		IST	Israel Standard Time
3A	2.25		
3B	2.5		
3C	2.75		
3D	3	MSK	Moscow Standard Time
		EAT	Eastern Africa Time
		AST	Arabic Standard Time
		AST	Arabia Standard Time
		AST	Al Manamah Standard Time
3E	3.25		
3F	3.5	IRST	Iran Standard Time
40	3.75		
41	4	AMST	Armenia Standard Time
		SCT	Seychelles Time
		GST	Gulf Standard Time

Programmed (Hex)	GMT Offset	Time zone Short code	Time zone name
		SAMT	Samara Time
		RET	Reunion Time
		MUT	Mauritius Time
		ICT	Iles Crozet Time
		GET	Georgia Standard Time
		AZT	Azerbaijan Time
42	4.25		
43	4.5	AFT	Afghanistan Time
44	4.75		
45	5	WKST	West Kazakhstan Standard Time
		PKT	Pakistan Time
		YEKT	Yekaterinburg Time
		UZT	Uzbekistan Time
		TMT	Turkmenistan Time
		TJT	Tajikistan Time
		TFT	French Southern and Antarctic Time
		MVT	Maldives Time
		MAWT	Mawson Time
		KGT	Kyrgyzstan Time
		HMT	Heard and McDonald Island Time
		DAVT	Davis Time
46	5.25		
47	5.5	IST	Indian Standard Time
48	5.75	NPT	Nepal Time
49	6	XJT	Xinjiang Standard Time
		EKST	East Kazakhstan Standard Time
		LKT	Sri Lanka Time
		VOST	Vostok Time
		OMSK	Omsk Standard Time
		NOVT	Novosibirsk Time
		BTT	Bhutan Time
		BIOT	British Indian Ocean Time
4A	6.25		
4B	6.5	CCT	Cococ Islands Time
		MMT	Myanmar Time
4C	6.75		
4D	7	CXT	Christmas Island Time
		KOVT	Khovd Time
		KRAT	Krasnoyarsk Time
		WIB	Waktu Indonesia Bagian Barat
		ICT	Indochina Time
		BDT	Bangladesh Standard Time
4E	7.25		
4F	7.5		
50	7.75		
51	8	AWST	Australian Western Standard Time
		CST	China Standard Time
		HKST	Hong Kong Standard Time
		WITA	Waktu Indonesia Bagian Tengah
		TWT	Taiwan Time
		SST	Scarborough Shoal Time
		SIT	Spratly Island Time

Programmed (Hex)	GMT Offset	Time zone Short code	Time zone name
		SGT	Singapore Time
		PST	Philippine Standard Time
		PIT	Pratas Islands
		PIT	Parcel Island Time
		MYT	Malaysia Time
		MNT	Mongolia Time
		MBT	Macclesfield Bank Time
		IRKT	Irkutsk Time
		BDT	Brunei Time
		ACIT	Ashmore and Cartier Island Time
52	8.25	APO	Apo Island Time
53	8.5		
54	8.75	ACWST	Australian Central Western Standard Time
55	9	YAKT	Yakutsk Time
		JST	Japan Standard Time
		KST	Korea Standard Time
		WIT	Waktu Indonesia Bagian Timur
		TPT	East Timor Time
		PWT	Palau Time
56	9.25		
57	9.5	ACST	Australian Central Standard Time
58	9.75		
59	10	AEST	Australian Eastern Standard Time
		GST	Guam Standard Time
		YAPT	Yap Time
		VLAT	Vladivostok Time
		TRUT	Truk Time
		PGT	Papua New Guinea Time
		DTAT	District de Terre Adelie Time
		ChST	Chamorro Standard Time
5A	10.25		
5B	10.5	LHST	Lord Howe Standard Time
5C	10.75		
5D	11	KOST	Kosare Standard Time
		NCT	New Caledonia Time
		VUT	Vanuatu Time
		SBT	Solomon Island Time
		PONT	Phonpei Standard Time
		MAGT	Magadan Island Time
5E	11.25		
5F	11.5	NFT	Norfolk Island Time
60	11.75		
61	12	NZST	New Zealand Standard Time
		FJT	Fiji Time
		WFT	Wallis and Futuna Time
		TVT	Tuvalu Time
		PETT	Petropavlovsk Time
		NRT	Nauru Time
		MHT	Marshall Island Time
		GILT	Gilbert Island Time
		ANAT	Anadyr Time
62	12.25		

Programmed (Hex)	GMT Offset	Time zone Short code	Time zone name
63	12.5		
64	12.75	CHAST	Chatham Island Standard Time
65	13	PHOT	Phoenix Island Time
		TOT	Tonga Time
66	13.25		
67	13.5		
68	13.75		
69	14	LINT	Line Island Time

Option [403]: Two-way Audio Message*Default (00)*

This code is sent to the automation software to indicate two-way audio has been requested by a transmitter. If this option is set to (00), the audio-initiated message is not sent to the automation output.

This is a dynamic option and it follows the profile setting it is assigned to for the associated DNIS.

Setting	Description	Automation Output
00	Two-way audio message disabled	No automation output
01	Outputs automation message with protocol ID "S" and adds the phone number for the call-back	SRRLLL[#AAAAAAAAA NLFssoo*#NNNNNNNNNNNNNNNN*] [DC4]
02	Outputs automation message with protocol ID "0" and adds the dialed phone number for the call-back	ORRLLL[#AAAAAAAAA NLFssoo*#NNNNNNNNNNNNNNNN*] [DC4]
03	Outputs automation message with protocol ID "S" and adds RRLl and the dialed phone number for the call-back	SRRLLL[#AAAAAAAAA NLFssoo*RRLl#NNNNNNNNNNNNNNNN*] [DC4]
04	Outputs automation message with protocol ID "0" and adds RRLl and the dialed phone number for the call-back	ORRLLL[#AAAAAAAAA NLFssoo*RRLl#NNNNNNNNNNNNNNNN*] [DC4]
05	Telephone Number Protocol (4) will be used	4RRLLLaaaaaaLLLT TTTT [DC4]

Where:

ss	Shelf Number (always 00)
oo	Slot number
a	Account code of the transmitter. The output length is determined by option [404]: Account Digit Stripping. The maximum number of digits is six. If this value is less than six digits, leading spaces (20 Hex) are added to pad the output to six characters.
A	Account code of the transmitter. The output length is determined by option [404]: Account Digit Stripping.
#	Delimiter.
N	Call back number received from the transmitter.
L/T	Call back number. If the number is less than ten digits, leading zeros (30 Hex) are added to pad the output to ten digits
[DC4]	Terminator (14 Hex)

NOTE: Any Hex digits in the phone number received are treated as a string terminator and are not output.

NOTE: For options 1-4, if no phone number or an invalid phone number is received, the printer messages "-LF-AUDIO CALLBACK INITIATED - Phone Number Not Programmed" and/or automation message [#AAAA|NLFssoo*RRLl#Phone Number Not Programmed*][DC4] are generated.

NOTES:

- If option 05 is selected and no number is sent from the transmitter, the phone number is output to the automation software as all 0 (zero). For example: 4RRLLLaaaaaa0000000000 [DC4]

- For the telephone number output protocol, the communicator's 10-digit account code is used (a maximum of six digits is output) based on the setting of option 46. If more than six digits are output, the last six digits are sent for the telephone number protocols.
- If less than four account code digits are to be output, leading spaces are added. If an account code of less than four digits is received, two leading spaces are added and 0 the rest of the account code is filled with zeros. For example: if account code '1' is received is 1, the output is 'ss0001'; if the account code is '12345', the output is 's12345'.

NOTES:

- Options 03 and 04 always transmit in decimal.

Option [404]: Account Digit Max

Default (00)

This option controls the account number output (from 1 to 9 digits) for both account codes. If the option is set to “00”, the transmitter account code is sent to the output as 10 digits. The panel account code is sent as received.

This is a dynamic option and it follows the profile setting it is assigned to for the associated DNIS.

For example, if option [404] is set to “07” the following occurs:

Transmitter	Output
1234567890	4567890
0000001234	0001234
0012345678	2345678

Panel	Output
567890	567890
7890	7890
00567890	0567890

If option [404] is set to “00” the following occurs:

Transmitter	Output
1234567890	1234567890
0000001234	0000001234

Panel	Output
567890	567890
7890	7890
00567890	00567890

Option [405]: DNIS Replacement of RRLL

Default (00) - RRLLL

When set to 00 (RRLL), the SG-DRL5-IP outputs the RRLL (Receiver number and line number).

When set to 01 (DNIS), the SG-DRLS-IP outputs the DNIS received from the transmitter instead of the RRLLL. This applies to all messages generated by the transmitter (alarm signals, test transmissions, etc.) as well as any internally generated event messages by the receiver (unknown account, transmitter restoral, encryption enabled, etc.). Any event that uses the account code of the transmitter has RRLLL replaced by the DNIS. For events generated with account 0000, RRLLL is not replaced with the DNIS.

Option [406]: SIM Number Output

Default (00) - Disabled

This option is available with cellular transmitters. When enabled, the received SIM number is output to the printer and automation. The message includes the account number (up to 10 digits following option [404]) and the SIM number (21 digits). The automation software used with the receiver must support (s) protocol via the Sur-Gard output format in order for this feature to work.

Available settings for SIM Number output:

00 (Disabled)	No SIM number output
01 (Printer & Automation)	SIM number output to printer and automation
02 (Printer Only)	SIM number output to printer only
03 (Automation Only)	SIM number output to automation only

The automation output is as follows:

sRRLLAAAAAAAAAASSSSSSSSSSSSSSSSSSSSSS

The printer output is as follows:

SG -RR-LLL-AAAAAAAAAAAA--SSSSSSSSSSSSSSSSSSSSSSSSSSSSSS

Where:

s is the protocol identifier
RRLLL is the receiver and line number of the line card that received the event
A is the 10-digit account number
S is the SIM number of the transmitter that sent the event

Option [407]: Transmitter Encryption Enable

Default (01) - Enabled

This option enables automatic encryption based on the profile setting for supported transmitter types.

When disabled (00), encryption is disabled for all transmitters in the profile.

When enabled (01), encryption is enabled for all transmitters in the profile.

If the account table is used to override the encryption setting, the change is ignored because the profile option controls this function.

Accounts that do not allow for remote programming of the encryption field cannot be programmed (example: TL250 is a static encryption key and cannot have encryption programmed remotely via this function). This is a dynamic option that follows the assigned profile setting for the associated DNIS.

Option [408]: Encryption Randomization Interval

Default (1440) - 24 hours

When this option is enabled, a random encryption key is passed to the transmitter at a regular programmed interval. Values are in minutes and programmed in Hex. Minimum interval is 30 minutes (001E), up to a maximum of 65520 minutes or 45.5 days (FFF0).

When disabled (0000), encryption keys are not changed. This option is also available to accounts in the DNIS profile range.

Note: This feature applies only to supported transmitter types.

Option [410]: Format ID Output

Default (00) - Disabled

This option enables the line card to output the format ID and profile used to receive a call. Output is either to a printer or to automation (for V1.31 and up).

Option Values

00 – Disabled

01 – Output Format ID to printer only

02 – Output Format ID to automation only

03 – Output Format ID to printer and automation

The string is formatted as follows: (PP|FF|CC)

(= Hex 28

) = Hex 29

| = Hex 7C

PP = Profile number

FF = Format ID

CC = Channel number that received the signal (Phone line 01/02/03). The channel number output is in decimal format.

For printer output, the string is added to the event signal only (not the caller information output):

Example:

27 Nov 2009-18:51:25-01/06-SG -(PP|FF|CC)-RR-LLL-EVENT MESSAGE

For output to automation, the Format ID is added to the end of the automation string when enabled.

Example 1:

503045 187129E20001007 (PP|FF|CC)

Example 2:

R03689[#1075|NRP] (PP|FF|CC)

Format ID List

Format Description	Customer Visibility	Engineering Term	Format ID
Contact ID (4-Digit Account)	YES	CONTACT_ID_18	16
Contact ID (10-Digit Account)	YES	CONTACT_ID_58	4B
SIA FSK Level 1,2, and 3	YES	SIA_GENERIC	6B
DVACS	YES	DVACS	F1

Format Description	Customer Visibility	Engineering Term	Format ID
SIM Number Output	YES	SIM Output	F2
Call Back Number	YES	Call_Back	F3
Sur-Gard Generic Internal Messages	YES	SG_GENERIC	FF

Option [411]: Account Code Substitution*Default [00] - Disabled*

The SIA or Contact ID account code received in the data payload can be substituted with the FIBRO account code. This feature aids with account synchronization with the alarm panel (e.g., where a universal transmitter is installed with an existing panel).

When enabled, the panel account code is replaced with the FIBRO account code using the same number of digits as the original signal. This changes the output of both the Printer and SG-Automation, and the SG-Advanced automation. The FIBRO reception/Reply for signaling is not impacted.

For Example, if the panel SIA transmission code is 1234|Nri1\BA01, and the FIBRO Account code is 222205555, the new SIA output from the receiver is 5555|Nri1\BA01.

Account codes longer than 10 digits are truncated to 10 digits to match the FIBRO account code. The function applies to all transmitter types and is only dependent on the profile being used.

After the account code substitution has been performed, option 404 (account digit max) can be applied as it would on the unmodified signal. The signals stored to the alarm event buffer are the updated signal with the substituted signal.

Notes:

DVAC protocol will not follow this option.

This is a dynamic option.

Setting:

00 - Account code substitution is disabled

01 - Account code substitution is enabled

6.2.5 Profile Options

6.2.5.1 Dynamic Profile Options

IP channel profiles are sets of customized options designed to improve efficiency by tailoring the programming of the receiver to a customer's unique parameters.

The following options are used with the DNIS table to provide custom options per DNIS and per profile.

Option [221]: Transmitter Absent Debounce Time*Default (120)***Option [222]: Transmitter Restoral Time***Default (60)***Option [402]: UTC Time Update***Default (00)***Option [403]: Two-way Audio Message***Default (00)***Option [404]: Account Digit Max***Default (00)***Option [407]: Encryption Enable***Default (Disabled)***Option [408]: Encryption Randomization Interval***Default (0000)***Option [411]: Account Code Substitution***Default (00) - Disabled*

7.0 SG-DRL5/DRL5E/DRL5-2L PSTN Line Cards

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7.1 Introduction

The SG-DRL5, DRL5E, and DRL5-2L are Telco interface line cards for receiving signals from remote communicators over a Telco interface. There are three variants of this module:

SG-DRL5 - Single line PSTN card.

SG-DRL5E - Single line PSTN card with backup channel and 2-way audio bridge.

SG-DRL5-2L - Dual line PSTN card.

NOTE: Not all variants are available in all markets.

7.2 Profiles introduction

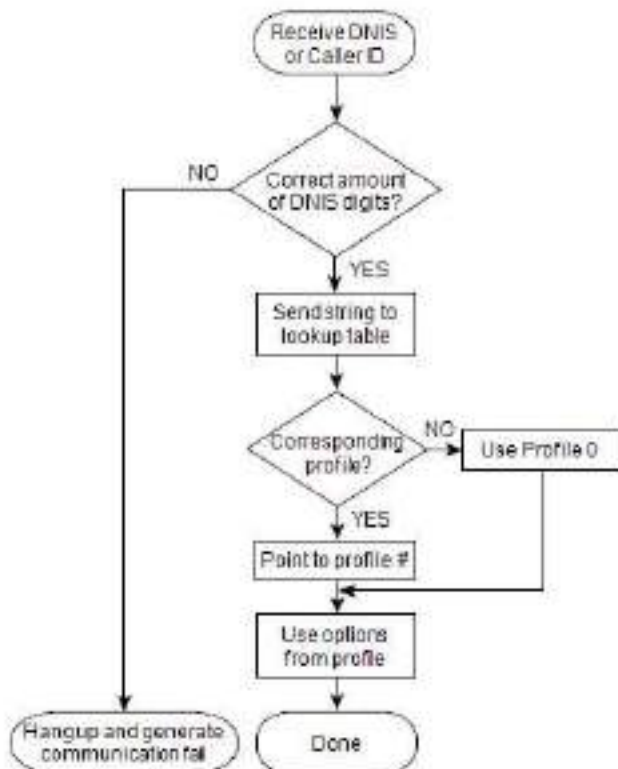
The SG-DRL5 virtual receiver loads unique profiles in order to effectively communicate with control panels. A profile is a set of pre-programmed line card options unique for a particular DNIS number. The DNIS points to a particular profile, which is then be loaded into the line card before the first handshake is sent. It is essential that the correct option be programmed for a profile in order to correctly communicate with the control panel. Each virtual receiver can have a maximum of 64 profiles. To change the options for a particular profile, the SG-System 5 Console software is provided. Users can use this software to edit the profiles.

NOTE: DNIS (Dialled Number Identification Service): This number represents the dialled number, or the number being called. **ANI (Automatic Number Identification):** This number represents the source of a call and allows the system to determine the handshake protocol. **Caller ID:** This number identifies the source of a call. For the purpose of this document, Caller ID and ANI are referred to as Caller ID, but both cannot be used at the same time. Contact your provider to determine which service is available. DNIS cannot be used with Caller ID, only ANI.

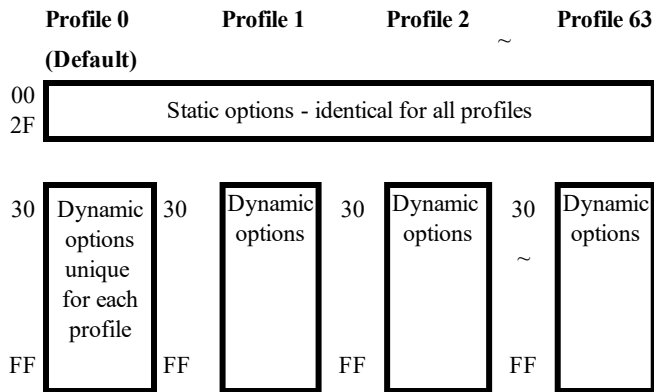
DNIS or Caller ID can be used for profile selection.

Line cards identification number handling:

FIGURE 7-1: Call processing flowchart



Each profile is made up of static options and dynamic options. The static options are the same for all profiles, but the dynamic options can be programmed specifically per hunt groups, panel type, etc. By receiving the DNIS or Caller ID, the appropriate profile can be selected through a look-up table stored on the line card.



Profile 0 is the default. When no Caller ID or unknown DNIS is received, or when the received number does not point to a profile, the default is used. Profiles are used to reduce on-line time, and for specific customers or panel/format types, one can have a profile with certain handshakes sent first. Also, some formats require certain options, and this can be predefined as well. Profiles allow for a more customized system. Rather than having a line card (or a receiver itself) devoted to certain customers, the SG-System 5 can handle any format at any time through the use of profiles. Each line card holds its own look-up table that can be shared through line pools, or shared within the entire receiver. Two types of tables are available, but only one type can be chosen. The first type, which consists of 100,000 entries, is used strictly with DNIS of up to 5-digits.

Table type 1:

DNIS received	Profile# to be used
00001	01
00002	03
00003	24
...	...
99999	45

The second type is used if ANI-Caller ID and/or DNIS are received, and can consist of up to 10,000 entries, with Caller ID or DNIS of up to 10 digits.

Table type 2:

Caller ID number	Convert data	Profile
05 603000	Not used	0
05 603001	Not used	1
9057603002	Not used	2
9057603003	Not used	3
DNIS number	Convert data	Profile
12345	54321	0
12346	54322	1
1234	54333	2

Each portion may contain 0-100,00 entries with the total of all the entries not exceeding 10,000. The receiver first checks through the Caller ID section if a Caller ID number is received. If only a DNIS number is received, or Caller ID is received but the Caller ID was not found, it checks in the DNIS section. On a standard receiver, the automation output would look similar to the following:

1RRLLLssssssAAAAsYsZZ[DC4]

1DDDDDssssssAAAAsYsZZ[DC4]

On the line card, it replaces the RRRLLL, which is normally the receiver number and the line card number, by the DNIS received or the convert data found in the table. This makes the re-use of account numbers possible, as long as they are dialling different numbers.

The output becomes:

Where DDDDD is the DNIS number. See Option 20/120 for more information on how to enable the combined table.

7.3 SG-DRL5 system options

Option 040: Channel Enable

Default (02)

This option is used to set the number of channels to be present on the line card. Valid entries are from 01 to 02.

01 - Only Channel one PSTN is used - all reporting of status/trouble conditions for the second line is masked and the channel is busied out. Programming menu display is C1.

02 - Both PSTN channels are used. Programming menu display is C1+C2. All other values are not valid. For channels that are disabled no information is displayed and no status troubles are generated – any trouble conditions that exist when the channels are disabled are restored after the unit has been reset.

Option 041: Line card number length

Default (0A)

This option is used to determine how many digits from the line card number are sent to the output. You also have the option of displaying the number in hex or decimal. This option also determine the Program Option 102/202 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 is sent to the output). If using DNIS to replace RRLLL then the output is 3 digits: RRL.

02 Send 2 hex digit line card number to the output. If using DNIS to replace RRLLL then the output is 4 digits: RRL.

03 Send 3 hex digit line card number to the output (leading Zeros are inserted prior to the line card number) If using DNIS to replace RRLLL then the output is 5 digits: RRL.

0A Send 3-digit line card number in decimal and the 2-digit receiver number in decimal. If using DNIS to replace RRLLL then the output is 5 digits: RRL (this option only affects message output for PSTN Channels and IP Channel).

0D Send 3-digit line card number in decimal and the 2-digit receiver number in Hex. If using DNIS to replace RRLLL then the output is 5 digits: RRL.

NOTE: When setting this option, 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 03. This would cause the 5 digits of DNIS DDDDD to overwrite the standard RRL.

Option 042: Line card Busy out

Default (00)

This option allows the line card to seize the phone line in case of checksum error after download or when its internal buffer is full after loss of communication with the CPM4. Program with one of the following:

00 The line is seized if any of the conditions mentioned above occur.

01 The line is NOT seized if any of the conditions mentioned above occur. Once the event buffers of the receiver are full, the oldest event in the buffer is removed to make room for the new event(s).

04 The line is seized if the automation computer is absent. System busies out ONLY if the internal computer buffer is full. If there is a loss of printer (s), any new alarms are not buffered in the internal printer buffer.

05 The line is seized immediately if there is a loss of automation software or no communication to the CPM.

NOTE: The status condition is indicated on the LED even though the unit does not busy out the line. Example – set option to 01 (do not busy out) and have a loss of time present. The status is still displayed on the status LED, but the system does not busy out. If the option is programmed to 01, the line card does NOT buffer any new alarms once the internal buffer is full. Setting this option to 01 is NOT RECOMMENDED. If this 01 is selected, the line card overwrites the oldest alarm with a new alarm when the internal buffer is full.

Option 043: Line card Protocol ID

Default: (01)

RS-232 Format

S,0 (zero): protocol number

RR: Receiver number
 LLL: Line number
 AAAA: Account code, always 0000
 Nxyy = SIA event
 [00] - Output for all internal signals is SRRL protocol
 SRRLLL[#AAAA|Nxyy]
 [01] - Output for all internal signals is 0RRL (Zero) protocol
 0RRLLL[#AAAA|Nxyy]

Option 044: Line card Class Field

Default (04)

00 Send "0"s in C.L.A.S.S. field of CONCOMM/RBUS packet.
 01 Send Receiver Line Card Number (RRLLL) from options in C.L.A.S.S. field.
 02 Send DNIS in C.L.A.S.S. field.
 03 Send Caller ID in C.L.A.S.S. field.
 04 Send whatever option12 Caller Source is set to in the C.L.A.S.S. field.
 05 Send the convert data from the DNIS/Caller-ID (combined) Conversion table in the C.L.A.S.S. field.
 Example: DNIS is: 99802
 Automation:
 S99802[#1234|NBA0F10]
 Printer:
 03 Jun 2008 08:33:33 - 03 Jun 2004-08:33:32-01/01-SG -99-802-1234--Alarm Zone

7.4 SG-DRL5 static options: 00 - 2F

NOTE: Options are displayed for the DRL5-2L. Single channel line cards only have options 1XX available to them. Options in the 2XX range are channel 2 of the SG-DRL5-2L.

SG-DRL5 Option 101/201: Line Card Number

Default (01)

The line card Number provides a virtual identification code for each line card. Hexadecimal numbers '01' to 'FE' can be programmed in Option 101/201 to identify line cards.

SG-DRL5 Option 104/204: 2-Way Audio Activation Time

Default (00)

This option 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 seconds to 2550 seconds. Three (3) minutes is the recommended length of time for the 2-way audio activation time. To disable the 2-way audio feature, program Option 104/204 as "00".

NOTE: Enabling 2-way audio will affect NFPA 72 system loading requirements. Refer to Par. 4-5.3.2.2.2 of NFPA 72 for details. If the alarm panel sends a listen-in code activation request and audio is enabled for this format (Option 17F/27F or 10B/20B), the receiver will remain in 2-way voice for a period of 60 seconds even if the activation time is not programmed.

For UL Listed products, the permitted setting is 00.

SG-DRL5 Option 105/205: Pre-H.S. Duration

SG-DRL5 Default (1A)

When the line card seizes the line, it will wait the time programmed at Option 105/205; then send the first handshake. The value programmed (hex) at this location will be multiplied by 100ms (e.g., 100ms, 200ms). The SG-DRL5 default is 0A, for 1000ms (100ms x default value).

The minimum time is 1 second. If the option is programmed with any value lower than 0A, the line card will use a 1 second delay. The maximum time for this option is 5 seconds (option programmed for 0x32) Option value higher than 0x32 will use a 5 second delay.

SG-DRL5 Option 109/209: First Ring Length

Default (05)

In order for the line card to detect an incoming ring, the ring signal must be ON for a minimum amount of time. This option allows the user to change the minimum amount of time the ring signal must be ON before the receiver will detect a valid ring length. The minimum ring duration allowed is 200 ms which corresponds to a value of 02 (200 ms). Values programmed will be multiplied by 100 ms. Values of 00 and 01 give a first ring length of 500ms.

SG-DRL5 Option 10A/20A: Format ID Output*Default (00)***Option [410]: Format ID Output***Default(00) - Disabled*

This option enables the line card to output the format ID and profile used to receive a call. Output is either to a printer or to automation (for V1.31 and up).

Option Values

- 00 – Disabled
- 01 – Output Format ID to printer only
- 02 – Output Format ID to automation only
- 03 – Output Format ID to printer and automation

The string is formatted as follows: (PP|FF|CC)

(= Hex 28

) = Hex 29

| = Hex 7C

PP = Profile number

FF = Format ID

CC = Channel number that received the signal (Phone line 01/02/03). The channel number is outputted in decimal.

For printer output, the string is added to the event signal only (not the caller information output):

Example:

27 Nov 2009-18:51:25-01/06-SG - (PP|FF|CC)-RR-LLL-EVENT MESSAGE

For output to automation, the Format ID is added to the end of the automation string when enabled.

Example 1:

503045 187129E20001007 (PP|FF|CC)

Example 2:

R03689[#1075|NRP] (PP|FF|CC)

Format ID List

Format Description	Format ID	Format Description	Format ID	Format Description	Format ID
3/8 ACRON	1	Modem II Generic	5a	3/1 Pulse (*)	4D
4/8 ACRON	2	Modem IIE or IIIa2	5b	3/2 Pulse	4E
4/1 Express (*)	10	4/3 Sescos Super Speed	69	4/1 Pulse (*)	4F
4/2 Express	11	Sescos Open/Close Super Speed	6A	3/1 Extended Pulse	50
3/8/1 Ademco Super Fast	13	SIA FSK Level 1, 2 and 3	6B	3/1 Partial Extended Pulse	51
4/8/1 Ademco Super Fast	14	Silent Knight FSK0	7A	4/2 Sur-Gard	7F
4/8/1 with Checksum Ademco Super Fast	15	Silent Knight FSK1	7B	4/2 with Checksum Sur-Gard	7F
Contact ID (4-Digit Account)	16	Silent Knight FSK2 o/p Type 1	7C	4/3 Sur-Gard	80
Bellcore Caller-ID	1B	Silent Knight FSK2 o/p Type 2	7D	4/3 with Checksum Sur-Gard	80
Bellcore Caller-Name	1D	4/1 Partial Extended Pulse	52	4/1 Varitech	85
DMP Serial 1	21	3/16/1 Scantronics Super Fast	2A	4/2 Varitech	86
DMP Serial 3	22	4/16/1 Scantronics Super Fast	2B	Westec 1	8A
4/3/1 FBI Super Fast	24	5/16/1 Scantronics Super Fast	2C	Westec 2	8B
4/3/1 with Checksum FBI Super Fast	25	6/16/1 Scantronics Super Fast	2D	Westec 3	8C
2/8/1 Scantronics Super Fast	26	ITI Generic	33	Westec 5	8D

5/8/1 Scantronics Super Fast	27	ITI Commader III	34	Westec 6	8E
6/8/1 Scantronics Super Fast	28	ITI Commader	36	CESA	90
2/16/1 Scantronics Super Fast	29	ITI Security Pro	37	Outel (*)	91
4/1 Partial Extended Pulse	52	ITI Caretaker Plus	38	ROBOFON (*)	92
4/1 Extended Pulse	53	ITI SX V	39	VONK (*)	95
4/2 Pulse	54	ITI Commander 2000	3A	ADCOR (*)	98
4/2 Extended Pulse	55	CFSK	40	Sur-Gard Generic Internal Messages	FF
5/1 Pulse (*)	56	Surtec (*)	4A	4/2 Sur-Gard	7F
Modem IIA	58	Contact ID (10-Digit Account)	4B		
Modem IIB	59	BFSK	4C		

NOTE: All these communication formats support transmission of input zone circuit identification with the exception of the ones marked with (*).

SG-DRL5 Option 10C/20C: DTMF Cadence

Default (00)

This option will allow the outputted DTMF Cadence (on and off time) to be programmed in milliseconds. The DTMF Cadence option will only be used for outbound dialling when performing a 2-way audio and line test. This will not affect DTMF for communication format detection or for Contact ID generation (line test mode). DTMF on - off time tolerance is programming value +/- 5 ms.

The first digit of the option will control the DTMF on time - the second digit will control the DTMF off time, in 25ms increments from 100ms. The Default setting of 00 will have 100/100ms cadence. Valid range is from 0 to F for both ON time and OFF time.

Digit Value	Time (ms)	Digit Value	Time (ms)
0	100	6	150
1	25	7	175
2	50	8	200
3	75	9	225
4	100	A	250
5	125		

Example:

To have a DTMF cadence of 150ms (on and off time) program the option with 66. This option will also allow for cadence settings that are not symmetrical. If desired, the on and off times may be different - Example: to have DTMF on time of 75ms and an off time of 200ms, program the option as 38.

SG-DRL5 Option 10D/20D: Line Conditions

Default (000)

Line Conditions is a bit enabled option - If programmed as 00, the line card will detect a single ring. If bit 1 is programmed the line card will detect the double ring. If bit 2 is enabled the line card will perform a Hook Flash as the end of the call before going on-hook to terminate the call. When the Hook Flash is performed, a 500ms delay shall be applied prior to the line card going on-hook.

Bit #	Option Description
All off	Single ring with no Hook Flash
Bit 1	Double ring detection enabled
Bit 2	Reserved - Line Reversal for BABT
Bit 3	Hook Flash on call end enabled. The Hook Flash performed on the call end will follow the time set in the Hook Flash option 11. If 2-way options are enabled to use Hook Flash then the 2-way session will complete and the Hook Flash for hang-up will be performed.

Examples:

Program the option with 00 for single ring and no Hook Flash for hang-up.

Program the option with 01 (bit 1 set) for double ring and no Hook Flash on hang-up.

Program the option with 04 (bit 3 set) bit for single ring and Hook Flash for hang-up.

Program the option with 05 (bit 1 and 3 set) for double ring and Hook Flash for hang-up.

SG-DRL5 Option 10E: Backup Line Enable/Disable*Default (00)***NOTE: This option is only available for the SG-DRL5E build of the line card**

use this option to enable or disable the backup line of each channel. If programmed as 00, the option is disabled. If programmed as 01, the backup is enabled and if a line fault occurs on the primary channel, the line card switches to the auxiliary line and allows normal operation. For use on either channel, you can program the option as:

01 - Backup channel enabled

00 - Backup channel disabled

NOTE: If this option is turned on, 2-way audio is not be available through the auxiliary channel. If 2-way audio is required, the hook flash operation of the channel must be used. With this option enabled, the LCD line fault message will change.

The table below shows how the line fault LED operates with this option enabled.

Primary channel	Auxiliary channel	Line fault LED	Active line
Not in line fault	Not in line fault	Off	Primary
Not in line fault	In line fault	Off	Primary
In line fault	Not in line fault	Off	Auxiliary
In line fault	In line fault	On	None

If the primary line goes into line fault, the line card then switches to the backup line and continues normal operation. If the primary line is restored while the line card is communicating with a panel, the line card finishes its on-line operation and then switches back to the primary line.

The line fault and line restoral messages for the primary line are the same as the backup (computer and printer messages). The line fault and line restoral messages for the auxiliary line are as indicated below:

The computer message for a line fault and line restoral on the auxiliary line are the same as the primary line.

The printer messages for the line fault and line restoral on the auxiliary line are different in that they contain line number "2".

Nov 17 2017 – 08:08:35 35-SS/OO-SG-RR-LLL-0000-PHONE LINE 2 RESTORE

Nov 17 2017 – 08:08:35 35-SS/OO-SG-RR-LLL-0000-PHONE LINE 2 TROUBLE

SG-DRL5 Option 111/211: Hook Flash Enable/Disable*Default (00)*

The hook flash feature is used in conjunction with 2-way voice with phone systems that support the hook flash feature. When 2-way is initiated, the line card will provide a hook flash, and then dial the digits programmed in section 1A8/2A8-1AF/2AF and then hang up the line. The line card relies on the phone system to connect the alarm panel's line to the number it dialed in section 1A8/2A8-1AF/2AF.

Enables or disables ability to Hook Flash the phone line and determines its duration in increments of 10 ms.

If programmed as 00, the option is disabled. If set to anything else, multiply the decimal equivalent of the hex value by 10 ms and that is the duration.

For example, if Hook Flash time of 500 ms is wanted, program Option 2A to 32 hex.

500 ms / 10 = 50

50 Dec = 32 hex

SG-DRL5 Option 112/212: Caller Source ID Option*Default (00)*

This option allows the line card to receive Caller Identification 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 Standard Bellcore Caller ID

0X Receive X DTMF DNIS (where X = 4 to A)

2X Receive X DNIS and ANI in <DNIS>T<ANI>T format, where T=terminator digit (any hex digit B - F). The second digit X must be 4 to A.

4X Receive ANI and X DNIS in <ANI>T<DNIS>T format, where T=terminator digit (any hex digit B - F). The second digit X must be 4 to A.

NOTE: Option 127/227: Caller Source Process must be set to the desired caller ID/DNIS length for this option to function correctly.

General messages other than Caller ID or DNIS may be received and decoded by the receiver.

- 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.

SG-DRL5 Option 113/213: Caller Source to SG Automation*Default (00)*

This option allows the transmission of the Caller Identification or ANI, to the automation output. Program Option 103/203 as one of the following:

Protocol	Format	
00	-	Do not send to the automation
01	4RRLL	Send to the automation (North American Caller ID)
02	URRLLL	Send to the computer (International Caller ID)
04	uRRLL	Send ANI information to the automation
05	uRRLLL	Calling Name protocol identifier

NOTE: Option 112/212 must be programmed for Caller ID (01), or ANI, (2X or 4X, where "X" represents the number of DNIS digits received +1).

SG-DRL5 Option 119/219: Fault Call Counter*Default (00)*

This option is used for limiting the number of fault call messages (communication fail) that are sent to the printer and computer. 00: (default) will send a fault call alarm for every 10 fault calls. On power-up, the channel will send on the first fault call, and then every 10 afterwards.

- 00 Send fault call message every 10th fault call that occurs.
- 01 Send a fault call message to the automation and printer on each fault call.

SG-DRL5 Option 11A/21A: DNIS Sensitivity*Default 00*

Sometimes the DNIS levels are much different than the phone line conditions, and therefore it may be necessary to configure the sensitivity during the reception of DNIS.

The basic formula that the DSP uses is:

DNIS Sensitivity Option[A]

00 = -35db (value of 3F is written to DSP) (Default)

0F = -42db to 0db

3F = -35db to 0db

5F = -29db to 0db

NOTE: Do not change this option unless instructed to do so by Sur-Gard Technical Support.

SG-DRL5 Option 11F/21F: Debug*Default 01*

The debug option controls the flow of debug messages to the debug port on the line card.

Set to 01 to enable. Only use the debug mode when required and disable after use. Consult Sur-Gard technical support for further assistance with collecting debug.

SG-DRL5 Option 125/225: Phone Line Voltage Select*Default - (00) for approx 20V*

To calculate the proper setting, use the following formula:

Phone Line Voltage = 2000 / option 125/225.

The debounce to detect line fault is 5.

Option 125/225 must be between 50 and 250, otherwise the default of 100 (64) = 20V will be used.

Note that it is not advised to decrease the Voltage level to < 20V since this affects the timing of ring detection, and may cause the channel not to detect rings.

For example, to set the phone line voltage to 15V:

$2000/15 = 133$ therefore set Option 125/225 = 85.

SG-DRL5 Option 127/227: Caller Source Process*Default (05)*

This option determines how many digits of Caller ID or DNIS (dependent on Option 112/212) the receiver will process the number of digits in range from 01 to 10 hex.

SG-DRL5 Option 12A/22A: Hook Flash Delay*Default (00)*

This option will control the duration after dialling, before the receiver will go back on hook. The Hook Flash Delay Option contains two levels of resolution controlled by the first digit.

00 = no delay

01 - 5F = 100ms to 9500ms.

A1 - AF = 10s to 150s

xx = 9500ms.

Examples:

If Hook Flash delay time of 500ms is wanted, program Option 12A/22A to 05 hex.

If Hook Flash delay time of 120s is wanted, program Option 12A/22A to AC hex.

SG-DRL5 Option 12C/22C: Dialler Presence*Default (00)*

00 Disabled

01 The receiver will begin its handshake sequence only if a valid dialer presence tone is received.

02 The receiver will begin its handshake sequence after a valid dialer presence tone is received, or a time-out occurs.

Valid tones are 980Hz, 1300Hz or 1890Hz each are +- 50Hz, for a minimum of 100ms.

Frequencies slightly outside of this window may work but unreliably. The receiver timeout period for dialler presence detection is 5 seconds.

When the Dialer Presence tone option is enabled, the Pre-handshake delay Option 105/205 is not functional. This timing is in order to synchronize the handshakes sent by the receiver as to not over-lap with a dialer-presence tone that is recurring.

SG-DRL5 Option 12D/22D: A.H.S.*Default (00)*

A.H.S., Automatic Handshake Selection is the process of the line card to send a handshake to be used with the ANI. Also included in A.H.S. is the ability for the receiver to “remember” which handshakes are used for which ANI Caller ID.

The A.H.S. has the ability to be used in conjunction with the DNIS to select a predefined profile based on the DNIS table that is stored in the line card.

The handshake is retrieved from the A.H.S. table, and the remainder of the options to be taken from the DNIS profile.

Also, if the panel does not respond to the handshake given by the line card, it will proceed with its handshake sequence from this profile as opposed to the default profile.

00A.H.S. disable

01A.H.S. enable, 10 digits

02A.H.S. enable international

Call Blocking

When A.H.S. is active at any time the operator may want to use a call blocking type feature for particular customers (i.e., inactive accounts). The operator will be able to manually update the A.H.S. database with the SG-System 5 Console software. If the operator wishes to call block a particular customer (Caller ID), they would do this by entering for that entry the handshake value of 99. When this is sent to the line card, the line card will release the line as soon as it sees the Caller ID.

Computer Message:

0RRLLL[#0000]BLOCKED CALL]

Printer Message:

RRLLL-0000--BLOCKED CALL

SG-DRL5 Option 12E/22E:DMP Time location Offset*Default (00)*

This option is used when sending the update time and date command to the DMP panels. You will have to provide the Greenwich Mean Time (GMT) offset for the Sur-Gard receiver, starting at GMT and moving westerly across the Earth. For the time zones that do not fall under the 1 hour interval, the

option should be left at the Greenwich Mean Time (24) setting.

An option setting of 00 is disabled - All settings above 24 must act as a disabled state (00).

When the DMP panel calls in and requests a time update, the receiver will respond with its current time and the offset value programmed in this section. The time and date of the receiver with respect to the Greenwich Mean Time (GMT). The gg values in the update time and date command are determined by starting at the GMT and moving westerly across the Earth. The table below will be used to determine the time zone for the option value.

Possible Values	Time Zone Description		Time Zone
	Military	Civilian	
00	Disabled	No time update will be sent to the panels	NA
24	Zulu	Greenwich Mean Time (GMT)	GMT (0)
23	Alpha	Central Europe Time (CET) Middle European Time (MET)	GMT + 1
22	Bravo	Eastern Europe Time (EET)	GMT + 2
21	Charlie	Baghdad Time (BT)	GMT + 3
20	Delta	Gulf Standard Time (GST)	GMT + 4
19	Echo	Pakistan Time (PKT)	GMT + 5
18	Foxtrot	Bangladesh Time (BDT)	GMT + 6
17	Golf	Java Time (JT)	GMT + 7
16	Hotel	China Coast Time (CCT)	GMT + 8
15	India	Japan Standard Time (JST)	GMT + 9
14	Kilo	Guam Standard Time (GST)	GMT + 10
13	Lima	Solomon Islands Time (SBT)	GMT + 11
12	Mike	New Zealand Standard Time (NZST)	GMT + 12
01	November	Cape Verde Time (CVT)	GMT - 1
02	Oscar	Greenland Eastern Standard Time (VTZ)	GMT - 2
03	Papa	Eastern Brazilian Standard Time (BST)	GMT - 3
04	Quebec	Atlantic Standard Time (AST)	GMT - 4
05	Romeo	Eastern Standard Time (EST)	GMT - 5
06	Sierra	Central Standard Time (CST)	GMT - 6
070	Tango	Mountain Standard Time (MST)	GMT - 7
080	Uniform	Pacific Standard Time (PST)	GMT - 8
09	Victor	Alaska Standard Time (AKST)	GMT - 9
10	Whiskey	Hawaii Standard Time (HST)	GMT - 10
11	X-Ray	Nome Time (NT)	GMT - 11

SG-DRL5 Option 12F/22F: Online Time Out

Default (1E)

The Online Time Out option hangs up after a predetermined time delay. Time Out range can be programmed from 01 to 255 seconds (Hex 01 - FF) or until the call is completed by the panel (Hex 00). When time out occurs, the line card hangs up and generates a signal to the printer and to the automation (SIA identifier YS).

For Example:

Printer Message: "DRL Online Time-Out"

Automation: NYS0102 (shelf 01, slot 02).

00 = Disabled.

xx = Maximum number of seconds (Hex) before the receiver will automatically force termination of a call.

NOTE: Depending on the order of handshakes used, the default online timeout of 30 seconds may not allow sufficient time for all handshakes to be sent before timeout occurs. This time may need to be extended to use these handshakes.

For UL Listed products, the permitted setting is 1E (30s).

7.5 SG-DRL5 dynamic options: 130/230 - 13F/23F

SG-DRL5 Options 130/230 - 13F/23F: 3/1 - 4/1 Digit 0-F

The line card uses a unique Sur-Gard communication format to transmit data through the System 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.

The receiver uses the last digit of data received in 3/1 and 4/1 formats to determine the computer event code. The event code is then transmitted to the central station computer. Refer to the Decoding Library for the complete set of event codes used by the line card. In Sections 30 through 3F, program ASCII codes according to the Decoding Library.

Do NOT use values other than 20-7F (ASCII).

SG-DRL5 Options 140/240 - 14F/24F: 3/2 - 4/2 Digit 0-F

Defaults:

Option	Value	Code
40 - 48	41	A
49	52	R
4A	41	A
4B	4F	O
4C	43	C
4D	5C	\
4E	52	R
4F	54	T

The line card uses the first digit following the account code in 4/2, 3/1 extended or 3/2 formats to determine the computer event code. The event code is then transmitted to the central station computer. Refer to the Decoding Library for the complete set of event codes used by the channel.

In Sections 40 through 4F, program ASCII codes according to the Decoding Library.

Do NOT use values other than 20-7F (ASCII).

SG-DRL5 Options 150/250 - 15F/25F: 4/3 Digit 0-F

Defaults:

Option	Value	Code
50 - 58	41	A
59	52	R
5A	41	A
5B	4F	O
5C	43	C
5D	5C	\
5E	52	R
5F	54	T

The line card uses the fifth digit of data received in 4/3 formats to determine the message and event code. The event code is then transmitted to the central station computer. Refer to the Decoding Library for the complete set of messages and event codes used by the line card. In Sections 50 through 5F, program ASCII codes according to the Decoding Library.

Do NOT use values other than 20-7F (ASCII).

SG-DRL5 Options 160/260 - 16F/26F: Printer Words

Defaults:

Option	Value	Code
160/260	F2	PERIODIC TEST
161/261	OA	REPORT
162/262	14	FIRE ALARM
166/266	1E	PANIC ALARM

Option	Value	Code
164/264	63	BURGLARY
165/265	62	CLOSING
166/266	E5	OPENING
167/267	00	SERVICE
168/268	E4	MEDICAL
169/269	61	MESSAGE
16A/26A	F2	RESTORE
16B/26B	C6	PERIODIC TEST
16C/26C	C7	REPORT
16D/26D	E6	GROUP CLOSING
16E/26E	50	GROUP OPENING
16F/26F	A6	ZONE BYPASS
		SYSTEM TROUBLE
		CANCEL

Refer also to the Library Select Option 171/271. The English Printer Library is provided and can be selected by programming the event codes to the corresponding word. For example, if the words 'exit alarm' are required when alarm code 1 is received in 3/1 (or 4/1 formats), Option 161/261 must be programmed as '90'.

Refer to Appendix A for a list of available words.

SG-DRL5 Option 170/270: Automation Common Event Code

Default (00)

Some central station software packages are unable to process an alarm using the event codes listed in the Decoding Library. Where a central station monitors thousands of accounts belonging to different companies, the same reporting codes may have different meanings for different companies. Because of this, the individual event codes in Options 130/230 through 15F/25F cannot accurately represent the alarm condition.

To overcome this, Option 170/270 may be programmed as indicated below:

Program Operation:

Setting	Description
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, Sur-Gard recommends 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 Sur-Gard receiver.
B0-DF	('0'-'9', 'A'-'Z' with the most significant bit set). This range functions in the same way as 30-39, 41-5A, with the exception that, for the Superfast Ademco Format, the Printer Message text is not output.

For example: "01-002-1234-A4-".

SG-DRL5 Option 171/271: Library Select

Default (04)

Determines how to use Printer Words Options.

00 No printer words.

01 Printer words options used for 1-digit reporting code formats only; other uses predefined library.

02 Printer words options used for 2-digit reporting code formats only; other uses predefined library.

03 Printer words options used for 3-digit reporting code formats only; other uses predefined library.

04 Printer words options used for 1-digit and 2-digit reporting code formats only; other uses predefined library.

05 Printer words options used for 1-digit, 2-digit and 3-digit reporting code formats.

NOTE: Option 171/271 is ignored when using SIA, ITI, Contact-ID, ACRON, MODEM II, MODEM IIE, MODEM IIIa², FBI SuperFast, BFSK, ADEMCO Super Fast and SK FSK1, 2 formats.

SG-DRL5 Option 172/272: SIA Option*Default 00000000*

This option is a bit selectable Option meaning some or all of these choices may be enabled. For example, to enable "Force SIA Zone Number", and "Convert Pulse formats to SIA", set Option 172/272=05. To enable only "Convert Pulse to SIA" and "Convert BFSK to SIA" set Option 172/272=0C.

Bit 0 - Force SIA Zone Number.

The receiver decodes SIA Alarms sent without Zone numbers and add '00' as the zone number to the automation output:

Example: [#1234|NriBA] becomes [#1234|NriBA00]

Example: [#1234|NBA/BH] become [#1234|NBA00/BH00]

Bit 1 - Convert SIA Account A's.

Any Account Digits received as 'A' are converted to '0'.

Example: [#A123|NriBA01] becomes [#0123|NriBA01]

Bit 2 - Convert Pulse formats to SIA.

All Pulse Format Printer and Computer outputs are converted to a SIA format, in a two step conversion process.

The automation output uses the Protocol ID of 'R'.

First the type of alarm is determined by Options 130/230-15F/25F, 170/270.

Secondly the type of alarm is mapped to a SIA output as per the following table.

Example:

1234A1 becomes '1234 A 1' becomes [#1234|NBA1]

Value	Codes	SIA
41	A	BA
42	B	BA
43	C	CL
46	F	FA
48	H	HA
4F	O	OP
4D	M	MA
50	P	PA
52	R	BR
54	T	TA
5C	\	OC
62	b	BR
66	f	FH
68	h	HH
6D	m	MH
70	p	PH
74	t	TH
7C		UB

Values programmed in Options 130/230-15F/25F, 170/270 other than in this table defaults to UAx for Undecoded Alarm.

Bit 3 - Convert BFSK format to SIA.

The BFSK outputs are converted to a SIA format. The automation output uses the Protocol ID of 'R'.

When this option is enabled it has precedence over the BFSK RS232 Option 1A4/2A4. The Accounts 3/x to 4/x Option 176/276 may be used to insert a leading 0 to the account code.

Example: [#123|NFA1]

Bit 4 - Convert comma (',') to forward slash ('/')

When enabled, any commas are converted to a forward slash.

Example: [#1234|NBA1,2,3] becomes [#1234|NBA1/2/3]

Bit 5 - SIA Recovery

Some older SIA panels require that all blocks of the call be NACK'd for the call to be complete or it would assume that if one block was acknowledged then all blocks were correctly acknowledged, and not resend the blocks that were NACK'd. This option turns off the functionality where, if one block is NACK'd, then all blocks (regardless if they are correct or not) are NACK'd. In order to disable the SIA recovery option, disable this bit option (default setting). By disabling the SIA recovery, the receiver sends Acknowledgement signals for the blocks that require it and NACK the ones that require it. To enable the SIA recovery set bit 5 to 1. If a signal has any portion of the call NACK'd, then the entire call receives a NACK. Please contact technical support for more information and updates to the list of panels affected.

Bit 6 - Pulse to SIA Hex zone numbers

This option is to be used if it is desired to have pulse conversion digits that are starting with HEX output a zone number in SIA. This option functions the same as "Convert Pulse formats to SIA" Option 172/272 - bit 2, but also appends a zone number when the pulse event code starts with a Hex Digit. Examples – with option 72 bit 2 and 6 enabled (Option 172/272 = 44)

1 - Pulse signal received 1234 41

Printer Output 1234-41-BA41

Automation put [#1234|NBA41]
 2 – Pulse signal received 1234 B2
 Printer Output 1234-B2-OPB2
 Automation put [#1234|NOPB2]
 2 – Pulse signal received 1234 3C
 Printer Output 1234-3C-BA3C
 Automation put [#1234|NBA3C]

Setting this option does not affect the output of pulse signals converted to SIA that did not start with a HEX digit.

Bit 7 – Brinks Recovery

When enabled the line card does not check for an ITI carrier on a full duplex SIA (FC) handshake

SG-DRL5 Option 173/273: Input/Output Sensitivity

Default (15)

This option serves the dual purpose of setting the DSP input sensitivity and the DSP output level. The first digit sets the input sensitivity of the DSP and the second digit sets the output level of the handshake/kiss off. Refer to the chart below for ranges. For the first digit, 0 is the most sensitive and 5 is the least sensitive. For the second digit, B is the loudest and 9 is the quietest.

First digit set to	Input sensitivity	Second digit set to	DSP output
0x	Most sensitive	xB	Loudest
1x	Default	xC	
3x	Less sensitive	xD	
5x	Least sensitive	xE	
		xF	
		x0	
		x1	
		x2	
		x3	
		x4	
		x5	DRL5-2L default
		x6	
		x7	
		x8	
		x9	Quietest

NOTE: For more information, please contact Sur-Gard Technical Support.

SG-DRL5 Option 174/274: Equivalent Line Number

Default (00)

The equivalent line number is used with the receiver number for sending signals to the central station software. This option may be used if there is no DNIS number being received by the line card.

SG-DRL5 Option 175/275: Receiver Number

Default (01)

The receiver number is used for sending signals 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.

SG-DRL5 Option 176/276: Accounts 3/x to 4/x*Default (00)*

00 - Disabled, if the alarm is reported in 3/1, 3/1 extended, BFSK, 3/2 or 3/8 ACRON formats, a leading space is communicated in front of the 3-digit account codes.

Ex: 1RRLLsSSSSsAAAsXssY[DC4]

01 - If the alarm is reported in 3/1, 3/1 extended, 3/2 or 3/8 ACRON formats, a leading '0' (zero) is communicated in front of the 3-digit account codes.

Ex: 1RRLLsSSSSs0AAAsXssY[DC4]

02 - Alarms communicated to the computer. If the alarm is reported in 3/1, 3/1 extended, 3/2 or 3/8 ACRON formats, a leading '0' (zero) is communicated in front of the 3-digit Account. And a '0' (zero) is communicated in front of the 1-digit alarm code for the above formats as well as 4/1 format.

Ex: 1011sSSSSs0AAAsXss0Y[DC4]

04 - If the panel is reported in SIA two leading '0' (zeros) are communicated in front of the 3-digit account.

EX: S1011[#00AAA[Nri0/FH00]

05 - If the alarm is reported in 3/1, 3/1 extended, 3/2 BFSK, SIA, 3/8 ACRON formats then a leading '0' (zero) is communicated in front of the 3-digit account.

If the panel is reported in SIA, two leading '00' (zeros) is communicated in front of the 3-digit account.

06 - If the alarm is reported in 3/1, 3/1 extended, 3/2 BFSK, SIA, 3/8 ACRON formats then a leading '0' (zero) is communicated in front of the 3-digit account and a '0' (zero) is communicated in front of the 1-digit alarm code.

07 - If the alarm is reported in 3/1, 3/1 extended, SIA, 3/2 BFSK, 3/8 ACRON formats then a leading '0' (zero) is communicated in front of the 3-digit account.

SG-DRL5 Option 177/277: Digit Replace*Default (00)*

This option works in conjunction with Option 1A2/2A2. When Option 1A2/2A2 is enabled and Option 177/277 is programmed with an ASCII value, the receiver replaces or inserts an account code digit. Option 1A2/2A2 determines how to replace or insert a digit.

To replace a digit, set Option 1A2/2A2 to 0x where x is the digit to be replaced. To insert a digit, set Option 1A2/2A2 to 8x where x is the digit in the account code, after which the inserted digit is placed.

Example 1 (replacing):

Option 177/277 is set for 41 and Option 1A2/2A2 is set for 01:

Account code is:

9876 1RRLLsSSSSsAAAsXssYZ

The receiver does the following. First it replaces the first digit (Option 1A2/2A2=01) of the account code (in this example "9") and replaces it with the ASCII value of 41, which is an "A".

New Output:

1RRLLsSSSSsA876sXssYZ

Example 2 (inserting):

Option 177/277 is set to 12D/22D and Option 1A2/2A2 is set for 82:

Account code is:

9876 1RRLLsSSSSs9876sXssYZ

The receiver does the following, it inserts the ASCII value of Option 177/277, in this case the ASCII value of 2D (2D is a " - ") into position two (Option 1A2/2A2=82), and the account code shifts to the left. Therefore it converts account code 9876 to 9-876 as indicated below:

1RRLLLsssss9-876sXssYZ

* This does not affect SIA.

SG-DRL5 Option 178/278: Max Inter-digit

Default (00)

Certain old dialers may have difficulties in communicating with the line cards. The receiver 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 Sur-Gard 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.

00 Automatically determine inter-digit by baud rate (Default)

01 100 ms

02 200 ms

.....

0A 1000 ms

.....

FF 25000 ms

NOTE: Although this section allows all entries from 00-FF it is not recommended to program this section with a time that exceeds 3000mS (1E Hex).

SG-DRL5 Option 179/279: Max Inter-burst

Default (00)

Certain old dialers may have difficulties in communicating with the line cards. The receiver provides the possible solution by programming this option. This option should be left as default and should be changed only on the recommendation of a Sur-Gard technician. When programmed as 00, the inter-burst has a time of 100 ms, all other values are in 10 ms increments.

00 100 ms (default)

01 10 ms

02 20 ms... and so on

SG-DRL5 Option 17A/27A: 4 and 5 Digit Account Codes to Activate 2-Way Audio

Default (00)

This option determines which account codes are able to activate the 2-way audio feature. Program the first digits of the desired account codes in Option 17A/27A.

For example:

To allow all account codes between 1000 and 2FFF to activate the 2-way audio function, program Option 17A/27A as '12'.

To allow all account codes between 3000 and 6FFF to activate the 2-way audio function, program Option 17A/27A as '36'.

To disable the 2-way audio function, program Option 17A/27A as '00'.

NOTE: The Audio Time Option 104/204 or Hook Flash Option 111/211 must be enabled to activate the 2-Way Audio feature of the line card.

NOTE: Option 17A/27A may be used with any formats supported by the receiver.

For UL Listed products, the permitted setting is 00.

SG-DRL5 Option 17B/27B: 3-Digit Account Codes to Activate 2-Way Audio

Default (00)

This option determines which 3-digit account codes are able to activate the 2-way audio feature. Program the first digits of the desired account codes in Option 17B/27B.

For example:

To allow all 3-digit account codes between 200 and 3FF to activate the 2-way audio function, program Option 17B/27B as '23'.

To allow all 3-digit account codes between 300 and 6FF to activate the 2-way audio function, program Option 17B/27B as '36'.

NOTE: The Audio Time Option 104/204 or Hook Flash Option 111/211 must be enabled to activate the 2-Way Audio feature of the line card.

NOTE: Option 17B/27B may be used with any 3-digit account code formats supported by the SG-System IV.

For UL Listed products, the permitted setting is 00.

SG-DRL5 Option 17C/27C: Audio Alarm Code Range*Default (00)*

This option determines the range of alarm codes, which activates the 2-way audio function. Program the first digit of the desired alarm codes in Option 17C/27C.

For example:

The receiver initiates audio by the account range, Options 17A/27A and 17B/27B or by Option 17C/27C ALARM CODE or by both.

If all alarm codes beginning with 6, 7 and 8 are to activate 2-way audio, program Option 17C/27C as '68'. Option 17C/27C may be used with 10 to 40 Baud formats, DTMF 4/1, 4/2, 4/3 and Contact ID formats.

Program Option 17C/27C as '00' to disable this function.

Example:

4/2 format with account code 1234, alarm code 2 on zone 3. (1234-23)

Option 17A 27A	Option 17C 27C	Switch	Reason (or 17B/27B) to audio
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.

NOTE: The first digit of the Contact ID event code also follows Option 17C/27C.

For UL Listed products, the permitted setting is 00.

SG-DRL5 Option 17D/27D: Audio Zone Code*Default (00)*

Audio zone code is the range of zone codes that activates audio. The first digit is the lowest code. The second digit indicates the highest zone that activates audio. Option 17D/27D may be used with 10 to 40 Baud formats, DTMF 4/1, 4/2, and 4/3 formats.

NOTE: Option 17D/27D Only works for DMP Serial 1 not for DMP Serial 3.

For UL Listed products, the permitted setting is 00.

SG-DRL5 Option 17E/27E Audio RS-232*Default (00)*

This is the code sent to the automation software that indicates that 2-way audio has been initiated. If this option is set to '00' there is no audio-initiated message sent to the automation output.

Setting	Description	Automation output
00	2-way audio message disabled	No Automation output
01	Outputs automation message with protocol "S"	Send SRLLLL[#AAAA NLFssoo][DC4]
02	Outputs automation message with protocol "O"	Send 0RLLLL[#AAAA NLFssoo][DC4]
05	Outputs automation message with protocol "S" and adds RRLL to the message as clear text	Send SRLLLL[#AAAA NLFssoo*RRLL*][DC4]
06	Outputs automation message with protocol "O" and adds RRLL to the message as clear text	Send 0RLLLL[#AAAA NLFssoo*RRLL*][DC4]
09	Outputs automation message with protocol "S" and adds the dialed phone number for the call transfer	SRLLLL[#AAAA NLFs-soo*#NNNNNNNNNNNNNNNN*][DC4]
0A	Outputs automation message with protocol "O" and adds the dialed phone number for the call transfer	0RLLLL[#AAAA NLFs-soo*#NNNNNNNNNNNNNNNN*][DC4]

Setting	Description	Automation output
0D	Outputs automation message with protocol "S" and adds RRLL and the dialed phone number for the call transfer	SRRLLL[#AAAA[NLFs- soo*RRLL#NNNNNNNNNNNNNNNN*]][DC4]
0E	Outputs automation message with protocol "O" and adds RRLL and the dialed phone number for the call transfer	ORRLLL[#AAAA[NLFs- soo*RRLL#NNNNNNNNNNNNNNNN*]][DC4]
8X (X=any of the values above)	Any outputted automation message has oo (line card slot number) changed to cc (line card channel number)	NLFssoo becomes NLFs00c in all messages

Where:

ss - is receiver shelf number

oo - is receiver slot number (which line card)

c - cc is channel number of the line card

RR- is receiver number (from option 75 in hex)

LL - is line card number (from option 74 in hex)

- is a delimiter

N - is the number dialed from options A8-AF

C - is the line card channel number

NOTE: When programmed with bit 1 and 2 disabled, the feature is disabled.

NOTE: When Option 174/274 is disabled (00) it outputs 00 in the LL and NOT follow Option 101/201 as the LL.

NOTE: When enabled, Bit 1 over rides the value of bit 2. If both bit 1 and bit 2 is enabled the output is:

SRRLLL[#AAAA[NLFssoo]][DC4]

SG-DRL5 Option 17F/27F: Audio Format Enable

Default (00)

This option gives you the ability to enable and disable audio for selected formats. A '1' in the formats bit position enables the format for audio. A '0' in the formats bit position disables audio for the format.

Bit 0 Standard 3-digit pulse and DTMF formats

Bit 1 Standard 4- and 5-digit pulse format

Bit 2 Standard DTMF format

Bit 3 Contact ID format

Bit 4 SIA format

Bit 5 Modem II format

Bit 6 ITI Format

Bit 7 Westec format

For example, if the user wants audio to work only for 3-digit pulse and SIA formats, Option 17F/27F would have to be programmed as 11 hex which enables bit 0 and bit 4.

SG-DRL5 Option 180/280: Kiss-Off to Hang-up Time

Default (1F)

This option determines the delay between kiss-off and the release of the line. The hex value programmed at this location is converted to decimal and then multiplied by 100 ms to generate the delay.

Example:

Option 180 = 0A hex = 10 decimal * 100 ms = 1000 ms = 1 second delay

Option 180 = 1F hex = 31 decimal * 100 ms = 3100 ms = 3.1 second delay

Option 180 = 28 hex = 40 decimal * 100 ms = 4000 ms = 4 second delay

NOTE: This option only applies to the following formats: Pulse, DTMF, SKFSK, Robofon.

SG-DRL5 Options 181/281 through 188/288: Handshake Selection*Defaults:*

181/281	23	185/285	0E
182/282	14	186/286	0B
183/283	2D	187/287	00
184/284	0C	188/288	00

The channel is a multi-format receiver capable of sending several handshakes to a dialer/panel. Often it is important which handshake is sent first. Program Options 181/281 through 188/288 according to your applications.

Note that if AHS is enabled (Option 12D/22D), the AHS handshake is sent before the handshakes programmed in Options 181/281-188/288.

Handshake Options:

00	No handshake
14	1400 Hz
0B	Modem II handshake
0C	SIA FSK handshake
0D	Westec handshake
0E	ITI and Modem IIE handshake
0F	DMP handshake
1A	Robofon handshake
1B	CESA handshake
1C	Outel handshake
1D	Single Dual Tone handshake 1400 Hz/100ms 100ms pause and 2300 Hz/100ms tone with a kiss off of 1400 Hz
1E	Scantronics Dual Tone
1F	Vonk (no handshake)
23	2300Hz
2D	Double dual-tone handshake 1400 Hz/100ms 100ms pause and 2300 Hz/100ms tone with a kiss off of 1400 Hz.
8D	Single tone - DTMF * handshake/Kiss-off.
EC	SURTEC handshake.
FB	CFSK Full duplex handshake.
FF	Perform inter-handshake time, no tone/frequency sent.
3D	Single dual-tone handshake, DTMF buffering.
4D	Double dual-tone handshake, DTMF buffering.
5D	Double dual-tone handshake, Maximum of 16 Digits DTMF. 1400 Hz/100ms 100ms pause and 2300 Hz/ 100ms tone with a kiss off of 1400 Hz.
6D	Single Dual Tone, enable Fast DTMF receive mode. 1400 Hz/100ms 100ms pause and 2300 Hz/100ms tone with a kiss off of 1400 Hz.
7D	Double Dual Tone, enable Fast DTMF receive mode. 1400 Hz/100ms 100ms pause and 2300 Hz/100ms tone with a kiss off of 1400 Hz.
98	Do not perform AHS for this ANI number.
99	Immediate hang-up, AHS has blocked it.
BE	1400Hz BFSK only, no pulse.
BF	2300Hz BFSK only, no pulse.
FB	Full duplex CFSK.
FC	Full duplex SIA.
FD	FD-SIA300 - SIA FSK handshake. [see NOTE below]
FE	ITI handshake, Modem IIE filter.

All other frequencies can be programmed using the first two digits to represent the 3rd and 4th decimal places (01-29).

NOTE: The FD handshake enables changes in the SIA reception that allows panels that are not following the SIA standard to be received more consistently. For a more detailed explanation and any updates to the list of panels affected, please contact technical support.

Examples:

NOTE: CESA must be programmed before the ITI and Outel Handshake.

NOTE: When supporting the VONK format the VONK handshake should be programmed first.

NOTE: When using the Vonk Handshake (1F) it is recommended to program this handshake first (Option 181/281).

NOTE: When using both Outel (1C) and CESA (1B) the Outel is recommended to be programmed first in the handshake order.

NOTE: The CFSK uses the 4/3 printer and automation libraries.

SG-DRL5 Options 189/289 to 190/290: Handshake and Kiss-off Duration

Default (00)

Some control panels may require a different handshake duration. Each unit has increments of 100 ms, from 100 ms to a maximum of 8.1 seconds. Program Options 189/289 to 90 for the desired duration.

00	1 second
04	100 ms
02	200 ms
03	300 ms
04	400 ms
0A	1 second
0C	1.2 second.... and so on

Sur-Gard does not recommend programmed durations longer than 1.5 seconds, as it may not be tolerated by the alarm panel. For special applications, it may be necessary, but any durations higher than 8.1 seconds are not accurate and may not match the duration programmed.

NOTE: These options only affect steady tones handshakes.

Option 189/289: Handshake #1 duration

Option 18A/28A: Handshake #2 duration

Option 18B/28B: Handshake #3 duration

Option 18C/28C: Handshake #4 duration

Option 18D/28D: Handshake #5 duration

Option 18E/28E: Handshake #6 duration

Option 18F/28F: Handshake #7 duration

Option 190/290: Handshake #8 duration

SG-DRL5 Option 191/291: Inter-Handshake Duration

Default (00)

The line card usually waits for signals from the control panels for four seconds before sending the next handshake, if there are no signals received. In certain applications, control panels cannot wait long enough to get their own handshake especially if the handshake is programmed as the fifth or later handshake.

The maximum time allowed for this section is 09 (9 seconds). Program Option 191/291 with one of the following:

00	4-second interval	02	2-second interval
01	1-second interval	03	3-second interval

SG-DRL5 Option 192/292: Pulse Mode

Default (00)

00 =	Standard Pulse Detection
01 =	50 Baud Pulse Detection
02 =	Forced (AAA) Pulse Detection, meaning only PULSE is detected.
8x =	When this bit is on, it acts as a minimum burst rejection option where x can be 1 to F(1ms to 15 ms) burst duration to reject.

SG-DRL5 Option 193/293: Min Audio Tone*Default (00)*

This option is used for 2-way audio tone detection from specific audio panels. This option should be left as default unless otherwise instructed by Sur-Gard Technical Support.

SG-DRL43-2L Option 194/294: Account Digit Stripping*Default (00)*

When Option 194/294 is set to 00 it is disabled.

When Option 194/294 is set to 01, the leading digit of a 4-digit account code is stripped if it is an F.

Standard 4/2 format Output:

1RRLLLssssssAAAAsXssYZ

Example 1:

Option 194/294 set to 01: Panel account code is F245

104091ssssssF245sXssYZ

If Option 194/294 is set to 01 the 'F' is replaced by a space.

104091ssssss245sXssYZ

This setting also enables the receiver to decode special pulse extended-extended formats.

104091ssssss245sXssYZ

If Option 194/294 is set to 02 then the leading digit of any account code greater than four digits is stripped if it is a zero.

This option works with the following formats:

Standard Pulse and DTMF(3/x, 4/x & Extended)

FBI

Ademco Super Fast (4/8/1, 4/8)

Contact ID

ITI

SIA

Modem II

SKFSK

Example 1:

Option 194/294 set to 02

Panel account code is 0345

104091ssssss0345sXssYZ

New Output:

104091ssssss345sXssYZ

Details on "special pulse extended-extended" formats:

Option 194/294 = 01, This option applies to pulse formats. If any of the reporting code digits are an A, they are reported on the computer and printer as an A instead of a 0.

4 digits:

If two rounds match, decode the 4 digit pulse extended format in the form of:

26AC x2 =>KO (last digit must be C)

CCC2 x2 =>KO (1st 3 digits must be C)

26AF x2 =>KO (last digit must be F)

FFF2 x2 =>KO (1st 3 digits must be C)

26AC2F2

Otherwise decode as 3-1 extended or normal 3-1, and if the first digit is F strip it off.

5 digits:

If the checksum is good, decode the 5 digit pulse extended format in the form of:

26ACF =>KO (2nd last digit must be C)

CCC27 =>KO (1st 3 digits must be C)

26AFC =>KO (2nd last digit must be F)

FFF2D =>KO (1st 3 digits must be C)

26AC2F2

Otherwise decode as 3-1 extended or normal 3-1, and if the first digit is F strip it off.

Do normal decoding based on options (4-1, 4-1 extended, 3-1checksum, 3-2) and if the first digit is F strip it off.

6 digits:

If two rounds match, decode the 6 digit pulse extended format in the form of:

F1231F

F1231F =>KO (last two digits must be 1F to 8F)

F12301

F12301 =>KO (last two digits must be 01 to 06)

F123B2

F123B2 =>KO (last two digits must be B0 to BF)

1231F01B2

Otherwise decode as 4-2.

SG-DRL5 Option 195/295: 5 and 6 Digit Pulse

Default (00)

The Line card cannot distinguish between various 5-digit formats and 6-digit formats. 4/1, 3/2 and 3/1 with checksum cannot be distinguished because all of them contain a total of 5 digits. 4/2 and 5/1 cannot be distinguished because all of them contain a total of 6 digits.

Value	5 Digit Setting	6 Digit Setting
00	select 4/1 format	select 4/2 format
01	select 3/2 format*	select 4/2 format
02	select 3/1 checksum format select 3/1 checksum format special**	select 4/2 format
03	select 4/1 format select 3/2 format*	select 4/2 format
10	select 3/1 checksum format	select 5/1 format***
11	select 3/1 checksum format special**	select 5/1 format***
12		select 5/1 format***
13		select 5/1 format***

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

** **NOTE:** This selects 3/1 checksum only for 40 baud panels, responding on the 2300Hz handshake. For all other panels, this is decoded as 4-1.

*** **NOTE:** The printer messages for the 5/1 format are the same as those used for the 4/1 format.

Automation outputs

1RRLLSsssssAAAAsEsssZ[DC4] (4/1)

1RRLLSsssssAAAAsEssYZ[DC4] (3/2)

1RRLLSsssssAAAAsEsssZ[DC4] (3/1)

1RRLLSsssssAAAAAsEsssZ[DC4] (5/1)

Printer outputs

RR-LLL-AAAA-Z-Message (4/1)

RR-LLL-AAA-YZ-Message (3/2)

RR-LLL-AAA-Z-Message (3/1)

RR-LLL-AAAAA-Z-Message (5/1)

SG-DRL5 Option 196/296: 4/1 Extended

Default (00)

Program the 4/1 Extended Option as '01' to enable combining 2 round pairs of 4/1 extended format into 4/2 output for reporting to the automation and the printer. For example, with Option 196/296 enabled, the security control panel may transmit the following information:

1234 3

1234 3

3333 1

3333 1

The receiver interprets this information as: 1234 31.

The default of '00', means 4/1 Extended is disabled.

SG-DRL5 Option 197/297: 4/2 Extended*Default (00)*

Program this option 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:

Example 1:

1234 05

1234 05

0505 16

0505 16

The receiver interprets this information as 1234 516.

Example 2:

1234 03

1234 03

3333 01

3333 01

The receiver interprets this information as 1234 301.

Note that a longer on-line time is required for this format than for a standard 4/2 format. The default setting for Option 197/297 is '00'; when programmed as '00', the option is disabled.

SG-DRL5 Option 198/298: 3/1 Extend*Default 01*

Program this option as '01' to combine 2 round pairs of 3/1 extended or 3/1 partial extended format into 3/2 output for reporting to the computer and the printer.

For example, with Option 198/298 enabled, the security control panel may transmit the following information:

123 3

123 3

333 1

333 1

The receiver interprets this information as: 123 31; the default setting for Option 198/298 is '01'; when programmed as '00', the option is disabled.

SG-DRL5 Option 199/299: DTMF 8/9 Digit Formats*Default (00)*

This option is used to eliminate decoding conflicts with the 8 and 9 digit DTMF formats. The Sur-Gard DTMF 4/3 with checksum, Ademco 4/1 Express and FBI Super Fast without checksum formats are all 8-digit DTMF formats. The Ademco 4/2 Express and the FBI Super Fast formats are both 9-digit DTMF formats. Therefore this option must be programmed to inform the line cards which formats are decoded if 8 or 9-digit DTMF signals are received. The first digit sets the 9-digit DTMF format whereas the second digit of the option sets the 8-digit DTMF format.

The first digit is defined as follows:

0x FBI Superfast 4/3/1 with checksum and Ademco 4/2 express (because of the identifier in the Ademco's string)

1x Ademco 4/2 Express – This decodes FBI Superfast 4/3/1 with checksum as Ademco 4-2 Express.

2x 4/3/1 with checksum – This decodes Ademco 4-2 Express as FBI Superfast 4/3/1 with checksum.

The second digit is defined as follows:

x0 X0 SurGard 4/3 with checksum – This will decode Ademco 4-1 express as SurGard 4/3 with checksum. This will not kiss off FBI 4/3/1 double round unless the last digit is the correct checksum for the string (1 in 16 chance) but will still decode it as SurGard 4/3 with checksum.

x1 and SurGard 4/3 with checksum - It looks at the identifier of 17 when choosing which format. This will not kiss off FBI 4/3/1 double round unless the last digit is the correct checksum for the string (1 in 16 chance) but will still decode it as SurGard 4/3 with checksum.

x2 FBI Superfast 4/3/1 – This will kiss off SurGard 4/3 with checksum and Ademco 4/1 express but only after it does a double round but it will decode it as FBI Superfast 4/3/1.

Example:

To decode Ademco 4/2 Express and Sur-Gard 4/3 with checksum set Option 199/299 to 11.

To decode FBI Super Fast and Ademco 4/1 Express set Option 199/299 to 21.

SG-DRL5 Option 19A/29A: Error Counter

Default (00)

When this option is set, it will configure the number of consecutive bad pulse rounds before the receiver will automatically hang-up. The default of 00 means this option is disabled and the receiver must wait for the panel to hang-up first.

SG-DRL5 Option 19B/29B: Echo Canceller

Default (00)

When enabled and an incoming call is answered, the receiver will generate a 2100 Hz tone with 180 degrees phase reversal every 450 ms for 2 seconds to suppress echo cancellation equipment.

00 Disabled

01 Enabled: Enable echo canceller

SG-DRL5 Option 19C/29C: Acron RS-232

Default 01

When this option is programmed as '00', the receiver will convert the Acron Super Fast format signal into the standard 3/2 or 4/2 format:

1RRLLSsssssAAAAsXssYY[DC4]

Where 1 = protocol number

RR = receiver number LLL = line number

sssss = spaces AAAA = account code

X = Event Code

YY = Zone Number

And to the printer with the library text as:

RR-LLL-AAAA-YY-Text

If the Acron options is programmed as '01' the Acron Super Fast format will be sent to the automation as indicated below:

9RRLLSsssAAAACCCCCCCCC[DC4]

Where 9 = protocol number

RR = receiver number

LLL = line number

ssss = spaces

AAAA = account code

CCCC = channel 1-4

CCCC = channel 5-8

[DC4] = terminator

And to the printer with no library text as:

RR-LLL-AAAA-CCCCCCCC-

SG-DRL5 Option 19D/29D: MODEM II RS-232 - Default 01

In order for the line card to receive the Modem II formats, two of the handshakes should be programmed 0B or 0E. The Modem II RS-232 option controls how the receiver will output alarms to the automation. This option is a bit-selectable option meaning more than one bit may be enabled.

Bit 0: OFF: Select protocol: 1RRLLSsssssAAAAXXYYYY[DC4]
ON: Select protocol: 6RRLLSsssssAAAAXXYYYY[DC4]

Bit 1: OFF: Do not convert to SIA protocol
ON: Convert Modem II to SIA protocol: RRLLL[#AAAA|EYYZZ][DC4]

Bit 2: OFF: Do not convert to SIA with Modem II ASCII text blocks.
ON: Convert to SIA protocol with Modem II ASCII text blocks as
SRLLL[#AAAA|EYYZZ][DC4] and
RRLLL[#AAAA|A....][DC4].

Bit 3: OFF: Only decode the first 4 digits of Modem II account codes even if more than 4 received.
ON: Decode up to 10 digits of Modem II account codes.

The default is 0x01 meaning output with 6RRLLL protocol. Do not convert to SIA, do not process Modem II text blocks, and only decode the first 4 digits of Modem II account codes.

NOTE: The lowest bit will also affect the BFSK format decoding.

NOTE: Ensure that the automation software supports settings 02 and 06 if the SIA protocol is desired.

SG-DRL5 Option 19E/29E: Scantronics Select

Default (00)

When this option is programmed as '00', 14-digit DTMF will be decoded as Scantronics 4-8-1 with Checksum.

When this option is programmed as '01', 14-digit DTMF will be decoded as Scantronics 5-8-1.

SG-DRL5 Option 19F/29F: Ademco High Speed RS-232

Default 01

When this option is programmed as '00', the receiver will convert the High Speed format signal into 4/2 format automation:

1RRLLLSssssAAAAssXXYY[DC4]

printer: RR-LLL-AAAA-YY-Alarm

When this option is programmed as '01' the Ademco High Speed will not be decoded, and the received data is passed to the outputs.

8RRLLLAAsCCCCCCCCC[DC4]

Where 8 = protocol number

RR = receiver number

LLL = line number

AAAA = account code

CCCC = channel 1-4

s = space

CCCC = channel 5-8

s = space

C = channel 9

[DC4] terminator

On the SG-SystemIV this option also controls the Scantronics formats:

2-8-1,5-8-1,6-8-1 (9-digit channels) and 2-16-1,3-16-1,4-16-1,5-16-1,6-16-1 (17-digit channels).

Refer also to the 11 & 12 digit DTMF Option 1A0/2A0 for configuring conflicting formats.

When this option is programmed as 00, the SG-SystemIV will convert the outputs in the corresponding 2-2,3-2,4-2,5-2 format:

automation: 1RRLLLSssssAAAAssXXYY[DC4]

printer: RR-LLL-AAAAAA-YY-Alarm

When this option is programmed as '01' the Scantronics formats will not be decoded and the received data is passed to the outputs.

automation:

8RRLLLAAsCCCCCCCCC[DC4] (9-digit channels)

8RRLLLAAsCCCCCCCCC[DC4] (17-digit channels)

(17-digit channels)

printer:

RR-LLL-AAAAAA--cccccccc (9-digit channels)

RR-LLL-AAAAAA--cccccccccccccc (17-digit channels)

The above examples are shown with 6-digit accounts, for accounts less than this, leading digits are not sent. For example, 2-8-1 will be output as:

8RRLLLAAscccccccc[DC4]

RR-LLL-AA--cccccccc

When this option is programmed as '02', the SG-DRL4 will perform the normal 4-2 conversion using the predefined individual event codes, instead of Option 170/270 "Common Event Code". This will not affect other formats (Pulse, ITI, etc) that will use Option 170/270.

SG-DRL5 Option 1A0/2A0: 11 / 12-Digit DTMF

(Acron or Scantronics) - Default (00)

When this option is programmed as '00', if 11 or 12-digit DTMF is received, it will be decoded as ACRON Format.

When this option is programmed as '01', if 11 or 12-digit DTMF is received, it will be decoded as SCANTRONICS Format.

	Incoming Format	Decoded Format
00	11-digit DTMF	Acron 3-8
00	12-digit DTMF	Acron 4-8
01	11-digit DTMF	Scantronics 2-8-1
01	12-digit DTMF	Scantronics 3-8-1

SG-DRL5 Option 1A1/2A1: FBI RS-232*Default 01*

To enable the computer for FBI Super Fast protocol, program Option 1A1/2A1 as '01'. When enabled, the computer output will be as indicated below:
 JRRLLssssssAAAATZZEss[DC4]

Where:

J = FBI protocol identifier

RR = receiver number

LLL = line number

s = spaces

AAAA = account code

T = zone type

ZZ = zone number, in hex.

E = event code

if E = 0 and T = 0 : listen in.

SG-DRL5 Option 1A2/2A2: Digit Replace*Default (00)*

This option works with Option 177/277. When Option 1A2/2A2 is enabled, and Option 177/277 is programmed with an ASCII value, the receiver will replace or insert an account code digit. Option 1A2/2A2 determines how to replace or insert a digit.

To replace a digit, set Option 1A2/2A2 to 0x where x is the digit to be replaced.

To insert a digit, set Option 1A2/2A2 to 8x where x is the digit in the account code, after which will be the inserted digit.

SG-DRL5 Option 1A3/2A3: D6500 RS-232*Default (00)*

This option is used to strip hex digits on the automation output. The line card will emulate the Radionics 6500 RS-232 protocol on pulse formats, Ademco Express and Varitech only. When Option 1A3/2A3 is set to 01 the hex digit will be stripped for 1-digit reporting codes including Varitech 4/1.

Example 1: Code 1

Computer output: 104091sssssss022sAsss1

Example 2: Code B

Computer output: 104091sssssss022sOssss

If Option 1A3/2A3 set to 02: the hex digit will be stripped for 2-digit reporting codes including Varitech 4/2.

Example 1: Code 21

Computer output: 104091sssssss022sAss21

Example 2: Code B1

Computer output: 104091sssssss022sOssss1

If Option 1A3/2A3 set to 03: the hex digit will be stripped for 1 and 2-digit reporting codes including Varitech.

If Option 1A3/2A3 set to 04: the hex digit will be stripped for BFSK.

NOTE: This option will only work if Option 1A4/2A4 is set to 01.

Example 1: Code 21

Computer output: 604091sssssss022sAss21

Example 2: Code B1

Computer output: 604091sssssss022sOssss1

If Option 1A3/2A3 is set to 05: the hex digit will be stripped for 1-digit reporting and BFSK.

If Option 1A3/2A3 is set to 06: the hex digit will be stripped for 2-digit reporting and BFSK.

If Option 1A3/2A3 set to 07: the hex digit will be stripped for 1-digit, 2-digit and BFSK.

If Option 1A3/2A3 set to 0F: the hex digit will be stripped for 1-digit, 2-digit BFSK and Ademco Express (4-1, 4-2).

NOTE: Option 170/270 must be left as an individual event code when enabling this option.

NOTE: When performing any conversion (such as Pulse to Ademco HS or BFSK to Ademco HS), this option will NOT take effect.

SG-DRL5 Option 1A4/2A4: BFSK RS-232*Default (00)*

This option determines how the BFSK format will be outputted to the automation. At default (set to 00) the output will be as Radionics 6500.

When set to 01, the output will be as a 3/1 extended format, and when set to 02 the output will be Ademco High Speed. The account code used in these examples is 055.

Value	Function	Examples
00	BFSK format will be reported as Radionics 6500. The protocol identifier will be a 6.	Example 1: Code 21 Computer Output: 604091 055sAsss2 Example 2: Code B1 Computer Output: 604091 055sOsss1
01	BFSK will be reported as a standard 3/1 extended format. The protocol identifier will be a 1.	Example 1: Code 21 Computer Output: 104091 055sAss21 Example 2: Code B1 Computer Output: 104091 055sOssB1
02	BFSK will be reported as Ademco High Speed for none-alarm events. The protocol identifier will be an 8. A leading '0' will be added to the account code to make it 4 digits in length. For alarm events (excluding fire) the output will be 4-1/4-2 , with a protocol identifier of 1, A leading '0' will be added to the account code.	Example 1: Code 21Computer Output: 804091 0055s5155s555s7 Computer Output: 804091 0055s1555s555s2 Example 2: Code 41Computer Output: 104091 0055 41 Example 2: Code B1 Computer Output: 104091 0055 41

SG-DRL5 Option 1A5/2A5: SESCOA Super Speed*Default 01*

This option determines how the line card decodes 7-digit pulse formats.

Setting	SESCOA Super Speed	4/2/checksum	4/2/checksum failed double round kiss-off	Decode SESCOA like SG-DRL2A
00	disabled	enabled	enabled	NO
01	enabled	disabled	disabled	NO
02	enabled	disabled	disabled	YES
03	disabled	enabled	disabled	NO

For a list of detailed event messages for the SG-DRL2A/SG-DRL4 decoding of SESCOA format please reference the communication format document.

SG-DRL5 Option 1A6/2A6: ITI Adjust*Default (00)*

When set to 01, the ITI account codes will be converted to 4 digits by stripping the last digit off. For example, a panel account of 23459 will become account 2345. If the leading digit of the panel account is a 0 then it will be stripped and replaced with a space. For example, if 02349 is sent then the receiver will output 234 for the panel account.

SG-DRL5 Options 1A8/2A8 - 1AF/2AF: Dial-out Number For 2-way Audio Transfer*Default (00)*

These 8 options are used to provide the dial-out number if the user wishes to transfer the call to another extension. Up to 16 digits may be programmed including any 'Feature Command' digits. The values in these options will be sent as DTMF tones on the phone line after the following sequence takes place:

1. The receiver has recognized the current call as a 2-way audio account and alarm code.
2. The calling control panel has finished sending its alarms and switched into 2-way audio mode.

3. The channel will perform a Hook Flash with the time value as programmed in Option 111/211 and then start to dial the digits programmed.

Options 1A8/2A8 - 1AF/2AF must be programmed in the following manner: Digits 1-9 are programmed as the numbers 1-9. The digit "A" must be programmed if a zero is needed anywhere in the dial string as the digit zero is used to indicate to the line card that there are no more digits to dial. If a '*' is needed, (e.g., *70, the transfer command in some PBX/PABX switches) program a "B". Similarly, if a '#' is needed, program a "C".

To get the line card to wait for 3 seconds in a dial string, program a "D".

DTMF Table

DTMF Digit Sent	DTMF Digit Received	DTMF Digit Sent	DTMF Digit Received
0	End of dialling string	0	End of dialling string
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
A	0	A	0
B	*	B	*
C	C	C	C
D	3 second pause	D	3 second pause
E	E	E	E
F	F	F	F

For example: to have the receiver transfer a 2-way audio call to Ext. 51386, with a 3 second pause between the transfer command and dialing, Options 1A8/2A8 to 1AF/2AF would be programmed as the following:

A8 = B7	AC = 60
A9 = AD	AD = 00
AA = 51	AE = 00
AB = 38	AF = 00

SG-DRL5 Option 1B0/2B0: CCITT Audio Format Enable bits

Default (00)

This option is similar to Option 17F/27F. It gives you the ability to enable and disable audio for the selected CCITT 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 Robofon FormatBit 4 Not Used

Bit 1 VONK FormatBit 5 Outel format

Bit 2 Stratel FormatBit 6 Not used

Bit 3 CESA FormatBit 7 Not used

For example, if the user wants audio to work only for Robofon format, Option 1B0/2B0 should be programmed as 11 HEX which enables bit 0 and bit 4.

SG-DRL5 Option 1B1/2B1: DMP Area BIN or DEC Option*Default (00)*

This option is similar to the DMP receiver.

00 = Area is sent to the automation in BINARY

01 = Area is sent to the automation in DECIMAL

The printer outputs remain unchanged.

Examples: Area is sent to the linecard as C0,

BINARY setting

Automation:

P01001 20999 L0480TIMAREA 1

P01001 20999 L0440TIMAREA 2

Printer:

00-01-001-20999--Close USR:04 AREA1 TIMAREA 1

00-01-001-20999--Close USR:04 AREA2 TIMAREA 2

DECIMAL setting

Automation:

P01001 20999 L0401TIMAREA 1

P01001 20999 L0402TIMAREA 2

Printer:

00-01-001-20999--Close USR:04 AREA1 TIMAREA 1

00-01-001-20999--Close USR:04 AREA2 TIMAREA 2

SG-DRL5 Option 1B2/2B2: DTMF Format Disable #1*Default (00)*

This option is bit oriented and will disable the decoding of the following DTMF formats.

Bit	Description	Example formats
0	15 digits DTMF format	Scantronics 6-8-1
1	13 digits DTMF format	Scantronics 4-8-1, Ademco Highspeed 4
2	8 digits DTMF format	Sur-Gard 4-3 with checksum, 4-3-1 FBI Superfast, Ademco 4-1 express
3	22 digits DTMF format	Contact ID 10 digit
4	11 digits DTMF format	Acron 3, Ademco Highspeed 2, Scantronics 2-8-1
5	12 digits DTMF format	Acron 4, Ademco Highspeed 3, Scantronics 3-8-1
6	23 digits DTMF format	Scantronics 6-16-1
7	14 digits DTMF format	Scantronics 4-8-1 with checksum, Scantronics 5-8-1

SG-DRL5 Option 1B4/2B4: 4/3 DTMF format type*Default (00)*

When disabled this option will allow the receiver to receive 4/3 DTMF formats as Sur-Gard 4/3. When enabled the receiver will be able to receive 4/3 TMF as a 4/2/Checksum format.

SG-DRL5 Option 1B5/2B5: FSK Format disable*Default (00)*

This option is bit oriented and will disable the decoding of the following pulse formats:

Bit enabled

0x01: Varitech Disable

0x02: Silent Knight Disable

0x04: BFSK Disable

0x08: - 0x80: Not used

SG-DRL5 Option 1B6/2B6: 4-2 Conversion to Ademco High Speed*Default (00)*

When a 4-2 format message is received on the receiver, the computer and printer messages will normally be outputted in the standard 4-2 format (Option 1B6/2B6 set to 0). However, when this option is enabled (set to 01) the standard 4-2 opening and closing codes by users (B0 - BF and C0 - CF) will be translated to Ademco High Speed. Whenever a 4-2 code beginning with B is received, an opening report is sent and whenever a 4-2 code beginning with a C is received a closing report is sent. The User Identifier will be set to match the zone identifier of the message.

The 4-2 format signal: ACCT XY will be converted to the Ademco High Speed format signal:

If X is B (Opening) the signal will be: ACCT Y222 2222 2

If X is C (Closing) the signal will be: ACCT Y444 4444 4

Example:

If the 4-2 opening event is: 1234 B1

The translated Ademco High Speed is: 1234 1222 2222 2

If the 4-2 closing event is: 1234 CB

The translated Ademco High Speed is: 1234 B444 4444 4

The following table outlines all possible translation into Ademco High Speed for the transmission of the standard 4-2 opening and closing codes: (Please note that account number 1234 was used for example purposes).

4-2 Format signal	Automation output	Printer output
1234 B1	101001 1234 1222 2222 2	01-001 1234 1222 2222 2
1234 B2	101001 1234 2222 2222 2	01-001 1234 2222 2222 2
1234 B3	101001 1234 3222 2222 2	01-001 1234 3222 2222 2
1234 B4	101001 1234 4222 2222 2	01-001 1234 4222 2222 2
1234 B5	101001 1234 5222 2222 2	01-001 1234 5222 2222 2
1234 B6	101001 1234 6222 2222 2	01-001 1234 6222 2222 2
1234 B7	101001 1234 7222 2222 2	01-001 1234 7222 2222 2
1234 B8	101001 1234 8222 2222 2	01-001 1234 8222 2222 2
1234 B9	101001 1234 9222 2222 2	01-001 1234 9222 2222 2
1234 BA	101001 1234 0222 2222 2	01-001 1234 0222 2222 2
1234 BB	101001 1234 B222 2222 2	01-001 1234 B222 2222 2
1234 BC	101001 1234 C222 2222 2	01-001 1234 C222 2222 2
1234 BD	101001 1234 D222 2222 2	01-001 1234 D222 2222 2
1234 BE	101001 1234 E222 2222 2	01-001 1234 E222 2222 2
1234 BF	101001 1234 F222 2222 2	01-001 1234 F222 2222 2
1234 C1	101001 1234 1444 4444 4	01-001 1234 1444 4444 4
1234 C2	101001 1234 2444 4444 4	01-001 1234 2444 4444 4
1234 C3	101001 1234 3444 4444 4	01-001 1234 3444 4444 4
1234 C4	101001 1234 4444 4444 4	01-001 1234 4444 4444 4
1234 C5	101001 1234 5444 4444 4	01-001 1234 5444 4444 4
1234 C6	101001 1234 6444 4444 4	01-001 1234 6444 4444 4
1234 C7	101001 1234 7444 4444 4	01-001 1234 7444 4444 4
1234 C8	101001 1234 8444 4444 4	01-001 1234 8444 4444 4

4-2 Format signal	Automation output	Printer output
1234 C9	101001 1234 9444 4444 4	01-001 1234 9444 4444 4
1234 CA	101001 1234 0444 4444 4	01-001 1234 0444 4444 4
1234 CB	101001 1234 B444 4444 4	01-001 1234 B444 4444 4
1234 CC	101001 1234 C444 4444 4	01-001 1234 C444 4444 4
1234 CD	101001 1234 D444 4444 4	01-001 1234 D444 4444 4
1234 CE	101001 1234 E444 4444 4	01-001 1234 E444 4444 4
1234 CF	101001 1234 F444 4444 4	01-001 1234 F444 4444 4

SG-DRL5 Option 1B8/2B8: DTMF Format Disable#2*Default (00)*

This option is bit oriented and will disable the decoding of the following DTMF formats:

Bit enabled

0x01	9 digits DTMF format
0x02	Not used
0x04	Not used
0x08	Not used
0x10	Not used
0x20	Not used
0x40	Not used
0x80	Not used

The programming of this option shall be displayed as individual options with a text label in the bit mask.

SG-DRL5 Option 1B9/2B9: Noise/Fax Detection*Default (00)*

This option will allow the receiver to perform line condition tests when the call is answered. There are two functions that are performed when a call is received: Noise Detection, and Fax Detection.

To enable Noise/Fax and Fax Tone detection set the following:

Option bit value	Setting
0000 0000	No noise or fax and tone detection
0000 0001	Noise/fax detection enabled
0000 0010	Fax tone detection enabled
0000 0011	Fax /noise and tone detection enabled

Noise/Fax Detection

This will occur during pre-init handshake duration (see Option 105/205) to perform the Fax/Noise test on the line. The DSP will require at least 150ms to evaluate the line and determine if it is noisy or a fax transmission is occurring. Overall, one cycle of this will require at least 250ms duration. If the pre-init handshake has not expired, the line card will perform the test again if it did not detect a Fax or Noise report. If a fax or Noise report was detected the receiver will generate a communication fail fax or a communication fail noise message.

If Noise is detected the receiver will continue to proceed through its programmed handshakes and format detection. If no valid signal is received then the receiver will log the call as a Communication Fail - Noise detected. If a valid signal is received (for example a SIA event) the signal will be processed as normal and no fail log will be made.

Fax tone detection

This will occur in the common mode detection for formats. In this check, the line card is looking for the 1170 ON report from the DSP. Once in this check, the line starts a 600 ms timer to check for the 1170 OFF report. If it sees the OFF report a valid fax tone is detected. If the line card does not detect any other formats after the last handshake, it will generate a communication fail fax message. To avoid conflicting with other formats the sync bit for SIA is checked. However, there is no way at the moment to distinguish from the modem II formats. At most the receiver will miss the first bytes of modem, but once it detects modem, the second round is properly received.

There are four types of Communication Fail messages that can be created:

- A message is generated if the line card receives an Invalid DNIS.
- If the line card cycles through all programmed handshakes and no data is received in response.

Two new communication fail messages have been added to the communication fail automation and printer logs. These messages will occur in the event that the following conditions occur.

- If a fax signal is detected
- If a Noise call is generated

Call could not be processed because of bad DNIS structure or no response by the panel	001002[#0000]NYC0101]	01-002-0000--COMMUNICATION FAIL
Call failed due to detection of fax device on the call	001002[#0000]NYC0102]	01-002-0000--COMMUNICATION FAIL Fax
Call failed due to detection of voice on the call	001002[#0000]NYC0103]	01-002-0000--COMMUNICATION FAIL Noise

SG-DRL5 Option 1BA/2BA: DMP User Length

Default (00)

This option is for the variable length user and zone numbers. The first digit in the option represents the user number and the second digit represents the zone number. For example, if Option 1BA/2BA is set for 24 then the receiver will output a 2-digit user number and a 4-digit zone number. The default value is 00 for 2-digit user and 2-digit zone number.

NOTE: Option 1BA/2BA affects DMP Serial 1 format not DMP Serial 3.

SG-DRL5 Option 1BB/2BB: Sur-Gard DTMF 4/3 Format Output

Default (00)

Each digit of this option controls how the 4/3 format computer output string is formatted. The first digit allows for the user and group codes for openings and closings to be combined. When programmed as "1x", group arming/disarming signals will be combined with the user code into one signal which will be sent to the computer.

Example,

Printer:

1234-B01 CloseGrp

1234-416 Close

1234-C02 OpenGrp

1234-532 Open

Computer:

1234 C1 16 (instead of 1234 C 01 and 1234 C 16)

1234 O2 32 (instead of 1234 O 02 and 1234 O 32)

If a user code is not received after the group opening/closing, the message "1234 C1 FF" will be sent; "FF" indicates that a user code was not received.

The second digit of this option controls the user/zone number conversion. The Sur-Gard 4/3 DTMF format is made up of a 4-digit account code, a 1-digit event code, and a 2-digit hexadecimal zone code or user number. However, some central station software packages use a common event code and require decimal user codes. This option allows the user codes to be converted from hexadecimal to decimal to meet the needs of the central station software. Program with one of the following:

X0 Send the last two digits as user codes without conversion.

X1 Convert the last 2-digit user codes to decimal as shown here:

User Code Received

User Code after Conversion

00 to 99	00 to 99
B0 to B9	100 to 109
C0 to C9	110 to 119
D0 to D9	120 to 129
E0 to E9	130 to 139
F0 to F9	140 to 149

Example, if 1234 4B1 is received, 1234 C 101 will be sent to the computer.

Send the last 3 digits as the zone codes with the 5th digit still used as the event code. Example, if 1234 161 is received, 1234 A 161 will be sent to the computer. When individual event codes are used, if 1234 401 is received, 1234 C 01 will be transmitted to the computer. When common event codes are used, if 1234 401 is received, 1234 Z 401 will be transmitted to the computer, where Z is the common event code.

X3 Send the last 3 digits as the zone codes and convert the user codes only to decimal.

NOTE: When the first digit of the option is set to 1 the 3-digit user codes will be combined with the group number as follows:

<i>Code received</i>	<i>Code sent to computer</i>
1234B01	No transmission
12344B1	1234 C1 101

Option [1BC-2BC]: SIA Option 2

Default (00)

This option is a bit mask to control several different functions of the SIA format.

Bit 1 – Fast Carrier:

When enabled, the receiver accepts SIA carrier durations before data of less than 100ms. When disabled, the standard SIA carrier duration before data is accepted after 100mS.

Bit 2 – Missing Alarm block is outputted as Invalid:

Setting this bit to 0 enables this functionality.

In the no valid alarm block scenarios below, the receiver should not respond allowing the panel to resend. The receiver waits for the end of call timer to expire. If no other valid data is received, an invalid report can be sent to the printer/automation.

Setting this bit to 1 disables this function; an ack is provided and the call is ended.

No valid alarm block is:

- Less than 3 bytes in the alarm block.
- Only account block and end block are received. Some panels incorrectly send only account and end blocks.
- No event block *and* no end block received.

Appendix A: DEC-HEX-BIN Conversion Chart

Dec	Hex	Binary
000	00	0000 0000
001	01	0000 0001
002	02	0000 0010
003	03	0000 0011
004	04	0000 0100
005	05	0000 0101
006	06	0000 0110
007	07	0000 0111
008	08	0000 1000
009	09	0000 1001
010	0A	0000 1010
011	0B	0000 1011
012	0C	0000 1100
013	0D	0000 1101
014	0E	0000 1110
015	0F	0000 1111
016	10	0001 0000
017	11	0001 0001
018	12	0001 0010
019	13	0001 0011
020	14	0001 0100
021	15	0001 0101
022	16	0001 0110
023	17	0001 0111
024	18	0001 1000
025	19	0001 1001
026	1A	0001 1010

Dec	Hex	Binary
027	1B	0001 1011
028	1C	0001 1100
029	1D	0001 1101
030	1E	0001 1110
031	1F	0001 1111
032	20	0010 0000
033	21	0010 0001
034	22	0010 0010
035	23	0010 0011
036	24	0010 0100
037	25	0010 0101
038	26	0010 0110
039	27	0010 0111
040	28	0010 1000
041	29	0010 1001
042	2A	0001 1010
043	2B	0010 1011
044	2C	0010 1100
045	2D	0010 1101
046	2E	0010 1110
047	2F	0010 1111
048	30	0011 0000
049	31	0011 0001
050	32	0011 0010
051	33	0011 0011
052	34	0011 0100
053	35	0011 0101

Appendix B: ASCII Character Chart

Hex	ASCII
20	Space
30	0
31	1
32	2
33	3
34	4
35	5
36	6
37	7
38	8
39	9
41	A
42	B
43	C
44	D
45	E
46	F
47	G
48	H
49	I
4A	J
4B	K
4C	L
4D	M
4E	N
4F	O
50	P
51	Q
52	R
53	S
54	T
55	U
56	V
57	W
58	X
59	Y
5A	Z
5C	\

Appendix C: TCP/IP Ports

SG-CPM5 TCP/IP ports

Port number	Port description
69	TFTP port
1024	SG-System 5 Console command port
1025	SG-Automation port 1
1026	SG-Automation port 2
1027	SG-Automation port 3
1028	SG-Automation port 4
1031	Debug port
1140	SG Logging port
2025	Visual verification automation port

Appendix D: Events and Messages

SG-CPM5 messages

NOTE: The slots (ss) of the SG-CPM5 are C1 for the primary and C2 for secondary.

Description/event	Automation message	Printer message
SG-PSU5 1 Failure PSU is Missing, Temperature trouble, power over-load trouble or unknown hardware ID	001000[#0000]NAT0000]	SG -01-000-0000-NAT0000-SG-PSU 1 Failed
SG-PSU5 1 Restoral	001000[#0000]NAR0000]	SG -01-000-0000-NAR0000- SG-PSU 1 Restored
SG-PSU5 2 Failure PSU is Missing, Temperature trouble, power over-load trouble or unknown hardware ID	001000[#0000]NAT0001]	SG -01-000-0000-NAT0001- SG-PSU 2 Failed
SG-PSU5 2 Restoral	001000[#0000]NAR0001]	SG -01-000-0000-NAR0001- SG-PSU 2 Restored
PSU Compatibility Failure (the two installed power supplies are not at the same power rating)	001000[#0000]NYP00FF]	SG -01-000-0000-NYP00FF-PSU Compatibility Failed
PSU Compatibility Restore	001000[#0000]NYQ00FF]	SG -01-000-0000-NYQ00FF-PSU Compatibility Restore
Fan Circuit 1 Failure (LINE CARD FAN 1)	001000[#0000]NYX0100]	SG -01-000-0000-NYX0100-Fan Circuit 1 Failed
Fan Circuit 1 Restoral Fan (LINE CARD FAN 1)	001000[#0000]NYZ0100]	SG -01-000-0000-NYZ0100-Fan Circuit 1 Restored
Fan Circuit 1 Warning 50% Fan (LINE CARD FAN 1)	001000[#0000]NYU0100]	SG -01-000-0000-NYU0100-Fan Circuit 1 50% Warning
Fan Circuit 2 Failure Fan (LINE CARD FAN 2)	001000[#0000]NYX0200]	SG -01-000-0000-NYX0200-Fan Circuit 2 Failed
Fan Circuit 2 Restoral Fan (LINE CARD FAN 2)	001000[#0000]NYZ0200]	SG -01-000-0000-NYZ0200-Fan Circuit 2 Restored
Fan Circuit 2 Warning 50% Fan (LINE CARD FAN 2)	001000[#0000]NYU0200]	SG -01-000-0000-NYU0200-Fan Circuit 2 50% Warning
Fan Circuit 3 Failure (LINE CARD FAN 3)	001000[#0000]NYX0300]	SG -01-000-0000-NYX0300-Fan Circuit 3 Failed
Fan Circuit 3 Restoral Fan (LINE CARD FAN 3)	001000[#0000]NYZ0300]	SG -01-000-0000-NYZ0300-Fan Circuit 3 Restored
Fan Circuit 3 Warning 50% Fan (LINE CARD FAN 3)	001000[#0000]NYU0300]	SG -01-000-0000-NYU0300-Fan Circuit 3 50% Warning
Fan Circuit 4 Failure Fan (LINE CARD FAN 4)	001000[#0000]NYX0400]	SG -01-000-0000-NYX0400-Fan Circuit 4 Failed
Fan Circuit 4 Restoral Fan (LINE CARD FAN 4)	001000[#0000]NYZ0400]	SG -01-000-0000-NYZ0400-Fan Circuit 4 Restored
Fan Circuit 4 Warning 50% Fan (LINE CARD FAN 4)	001000[#0000]NYU0400]	SG -01-000-0000-NYU0400-Fan Circuit 4 50% Warning
Fan Circuit 5 Failure (CPM FAN 1)	001000[#0000]NYX0500]	SG -01-000-0000-NYX0500-Fan Circuit 5 Failed
Fan Circuit 5 Restoral Fan (CPM 1 FAN)	001000[#0000]NYZ0500]	SG -01-000-0000-NYZ0500-Fan Circuit 5 Restored
Fan Circuit 5 Warning 50% Fan (CPM 1 FAN)	001000[#0000]NYU0500]	SG -01-000-0000-NYU0500-Fan Circuit 5 50% Warning
Fan Circuit 6 Failure Fan (CPM 2 FAN)	001000[#0000]NYX0600]	SG -01-000-0000-NYX0600-Fan Circuit 6 Failed
Fan Circuit 6 Restoral Fan (CPM 2 FAN)	001000[#0000]NYZ0600]	SG -01-000-0000-NYZ0600-Fan Circuit 6 Restored
Fan Circuit 6 Warning 50% Fan (CPM 2 FAN)	001000[#0000]NYU0600]	SG -01-000-0000-NYU0600-Fan Circuit 6 50% Warning
TCP/IP CPM 1 Printer Failure	001000[#0000]NVZ0100]	SG -01-000-0000-NVZ0100-TCP/IP 1 Printer Failed
TCP/IP CPM 1 Printer Restoral	001000[#0000]NVY0100]	SG -01-000-0000-NVY0100-TCP/IP 1 Printer Restored
TCP/IP CPM 2 Printer Failure	001000[#0000]NVZ0200]	SG -01-000-0000-NVZ0200-TCP/IP 2 Printer Failed
TCP/IP CPM 2 Printer Restoral	001000[#0000]NVY0200]	SG -01-000-0000-NVY0200-TCP/IP 2 Printer Restored
Serial CPM 1 Printer 1 Failure	001000[#0000]NVZ0102]	SG -01-000-0000-NVZ0102-Serial 1 printer Failed
Serial CPM 1 Printer 1 Restoral	001000[#0000]NVY0102]	SG -01-000-0000-NVY0102-Serial 1 printer Restored
Serial CPM 2 Printer 1 Failure	001000[#0000]NVZ0202]	SG -01-000-0000-NVZ0202-Serial 2 printer Failed
Serial CPM 2 Printer 1 Restoral	001000[#0000]NVY0202]	SG -01-000-0000-NVY0202-Serial 2 printer Restored
Serial CPM 1 Printer 2 Failure	001000[#0000]NVZ0103]	SG -01-000-0000-NVZ0103-Serial 3 printer Failed
Serial CPM 1 Printer 2 Restoral	001000[#0000]NVY0103]	SG -01-000-0000-NVY0103-Serial 3 printer Restored
Serial CPM 2 Printer 2 Failure	001000[#0000]NVZ0203]	SG -01-000-0000-NVZ0203-Serial 4 printer Failed
Serial CPM 2 Printer 2 Restoral	001000[#0000]NVY0203]	SG -01-000-0000-NVY0203-Serial 4 printer Restored
SG-TCP/IP #1 CPM 1 Failure	001000[#0000]NNT0100]	SG -01-000-0000-NNT0100-SG-TCP/IP 1 Failed

Description/event	Automation message	Printer message
SG-TCP/IP #2 CPM 1 Failure	001000[#0000 NNT0102]	SG -01-000-0000-NNT0102-SG-TCP/IP 2 Failed
SG-TCP/IP #3 CPM 1 Failure	001000[#0000 NNT0103]	SG -01-000-0000-NNT0103-SG-TCP/IP 3 Failed
SG-TCP/IP #4 CPM 1 Failure	001000[#0000 NNT0104]	SG -01-000-0000-NNT0104-SG-TCP/IP 4 Failed
SG-TCP/IP #1 CPM 1 Restoral	001000[#0000 NNR0100]	SG -01-000-0000-NNR0100-SG-TCP/IP 1 Restored
SG-TCP/IP #2 CPM 1 Restoral	001000[#0000 NNR0102]	SG -01-000-0000-NNR0102-SG-TCP/IP 2 Restored
SG-TCP/IP #3 CPM 1 Restoral	001000[#0000 NNR0103]	SG -01-000-0000-NNR0103-SG-TCP/IP 3 Restored
SG-TCP/IP #4 CPM 1 Restoral	001000[#0000 NNR0104]	SG -01-000-0000-NNR0104-SG-TCP/IP 4 Restored
SG-TCP/IP #1 CPM 2 Failure	001000[#0000 NNT0200]	SG -01-000-0000-NNT0200-SG-TCP/IP 1 Failed
SG-TCP/IP #2 CPM 2 Failure	001000[#0000 NNT0202]	SG -01-000-0000-NNT0202-SG-TCP/IP 2 Failed
SG-TCP/IP #3 CPM 2 Failure	001000[#0000 NNT0203]	SG -01-000-0000-NNT0203-SG-TCP/IP 3 Failed
SG-TCP/IP #4 CPM 2 Failure	001000[#0000 NNT0204]	SG -01-000-0000-NNT0204-SG-TCP/IP 4 Failed
SG-TCP/IP #1 CPM 2 Restoral	001000[#0000 NNR0200]	SG -01-000-0000-NNR0200-SG-TCP/IP 1 Restored
SG-TCP/IP #2 CPM 2 Restoral	001000[#0000 NNR0202]	SG -01-000-0000-NNR0202-SG-TCP/IP 2 Restored
SG-TCP/IP #3 CPM 2 Restoral	001000[#0000 NNR0203]	SG -01-000-0000-NNR0203-SG-TCP/IP 3 Restored
SG-TCP/IP #4 CPM 2 Restoral	001000[#0000 NNR0204]	SG -01-000-0000-NNR0204-SG-TCP/IP 4 Restored
SG-TCP/IP CPM 1 Visual automation Failure	001000[#0000 NNT0150]	SG -01-000-0000-NNT0150-SG-Visual Verification 1 Failed
SG-TCP/IP CPM 1 Visual automation Restoral	001000[#0000 NNR0150]	SG -01-000-0000-NNR0150-SG- Visual Verification 1 Restored
SG-TCP/IP CPM 2 Visual automation Failure	001000[#0000 NNT0250]	SG -01-000-0000-NNT0250-SG- Visual Verification 2 Failed
SG-TCP/IP CPM 2 Visual automation Restoral	001000[#0000 NNR0250]	SG -01-000-0000-NNR0250-SG- Visual Verification 2 Restored
SG-Serial 1 CPM 1 Failure	001000[#0000 NYC0101]	SG -01-000-0000-NYC0101-SG-SERIAL 1 Failed
SG-Serial 1 CPM 1 Restoral	001000[#0000 NYK0101]	SG -01-000-0000-NYK0101-SG-SERIAL 1 Restored
SG-Serial 1 CPM 2 Failure	001000[#0000 NYC0201]	SG -01-000-0000-NYC0201-SG-SERIAL 2 Failed
SG-Serial 1 CPM 2 Restoral	001000[#0000 NYK0201]	SG -01-000-0000-NYK0201-SG-SERIAL 2 Restored
SG-Serial 2 CPM 1 Failure	001000[#0000 NYC0102]	SG -01-000-0000-NYC0102-SG-SERIAL 3 Failed
SG-Serial 2 CPM 1 Restoral	001000[#0000 NYK0102]	SG -01-000-0000-NYK0102-SG-SERIAL 3 Restored
SG-Serial 2 CPM 2 Failure	001000[#0000 NYC0202]	SG -01-000-0000-NYC0202-SG-SERIAL 4 Failed
SG-Serial 2 CPM 2 Restoral	001000[#0000 NYK0202]	SG -01-000-0000-NYK0202-SG-SERIAL 4 Restored
Switch Into Active Mode	001000[#0000 NSC0003]	SG -01-000-0000-NSC0003-Switching To Active Mode
Switch To Manual Mode	001000[#0000 NSC0000]	SG -01-000-0000-NSC0000-Switching To Manual Mode
Taking Over Polling	001000[#0000 NSC0001]	SG -01-000-0000-NSC0001-Taking Over Polling
Switch To Standby Mode	001000[#0000 NSC0002]	SG -01-000-0000-NSC0002-Switching To Standby Mode
Line Card Absent - Where ss is the slot of the line card	001000[#0000 NYDss01]	SG -01-000-0000-NYDss01-Line Card Absent
Line Card Restored	001000[#0000 NYEss01]	SG -01-000-0000-NYEss01-Line Card Restored
Internal Communication Error (Computer)	001000[#0000 NYOss00]	SG -01-000-0000-NYOss00-Computer: Inter-Comm. Error (offending message)
Internal Communication Error (Printer)	001000[#0000 NYOss00]	SG -01-000-0000-NYOss00-Printer: Inter-Comm. Error (offending message)
Internal Communication Error (Console)	001000[#0000 NYOss00]	SG -01-000-0000-NYOss00-Console: Inter-Comm. Error (offending message)
CPM 1 Failure	001000[#0000 NYX0001]	SG -01-000-0000-NYX0001-Primary CPM Failure
CPM 1 Restoral	001000[#0000 NRR0001]	SG -01-000-0000-NRR0001-Primary CPM Restore
CPM 2 Failure	001000[#0000 NYX0002]	SG -01-000-0000-NYX0002-Secondary CPM Failure
CPM 2 Restoral	001000[#0000 NRR0002]	SG -01-000-0000-NRR0002-Secondary CPM Restore
CPM 1 UPS AC Fail (PGM In)	001000[#0000 NAT0102]	SG -01-000-0000-NAT0102-UPS AC 1 Failed
CPM 1 UPS AC Restored	001000[#0000 NAR0102]	SG -01-000-0000-NAR0102-UPS AC 1 Restored
CPM 1 UPS Low Battery Restore	001000[#0000 NYR0102]	SG -01-000-0000-NYR0102-UPS Battery 1 Restored
CPM 1 UPS Low Battery	001000[#0000 NYT0102]	SG -01-000-0000-NYT0102-UPS Battery 1 Low
CPM 2 UPS AC Fail (PGM In)	001000[#0000 NAT0202]	SG -01-000-0000-NAT0202-UPS AC 2 Failed
CPM 2 UPS AC Restored	001000[#0000 NAR0202]	SG -01-000-0000-NAR0202-UPS AC 2 Restored
CPM 2 UPS Low Battery Restore	001000[#0000 NYR0202]	SG -01-000-0000-NYR0202-UPS Battery 2 Restored
CPM 2 UPS Low Battery (PGM in)	001000[#0000 NYT0202]	SG -01-000-0000-NYT0202-UPS Battery 2 Low

Description/event	Automation message	Printer message
Console Session Denied CPM 1	001000[#0000 NRD0001]	SG -01-000-0000-NRD0001-CONSOLE SESSION DENIED
Console Session Denied CPM 2	001000[#0000 NRD0002]	SG -01-000-0000-NRD0002-CONSOLE SESSION DENIED
Option Change Where ## is the option being changed Value is the option setting in data or text depending on option being set NOTE: User passwords will be shown with ***** in place of data	001000[#0000 NLS01ss]	SG -01-000-0000-NLS01ss-Option Change: ## Value
Automation Time & Date Update Failed	001000[#0000 NRU0000]	SG -01-000-0000-NRU0000-Time&Date Update Fail
AHS Database Full	001000[#0000 NJOss01]	SG -01-000-0000-NJOss01-CPM AHS Database Full
Reset fallback	001000[#0000 NYY0000]	SG -01-000-0000-NYY0000-Reset SG-Fallback Initiated
Primary CPM Power Up where X.XX.XXX.XXX is the software version information.	001000[#0000 NRR0100* vX.XX.XX.XXX*]	SG -01-000-0000-NRR0100-Primary CPM Power Up vX.XX.XX.XXX
Secondary CPM Power Up where X.XX.XXX.XXX is the software version information.	001000[#0000 NRR0200* vX.XX.XXX.XXX*]	SG -01-000-0000-NRR0200-Secondary CPM Power Up vX.XX.XXX.XXX
License key entered is incorrect – ss will be C1 (primary CPM or C2 (Secondary CPM))	001000[#0000 NUXss00]	SG -01-000-0000-NUXss00-Invalid License Key
License key entered is correct – but there is insufficient EMMC memory – ss will be C1 (primary CPM or C2 (Secondary CPM))	001000[#0000 NUXss01]	SG -01-000-0000-NUXss01– Insufficient Non-Volatile memory
License key entered is correct – but there is insufficient DDR3 memory – ss will be C1 (primary CPM or C2 (Secondary CPM))	001000[#0000 NUXss02]	SG -01-000-0000-NUXss02– Insufficient Volatile memory
An AHS Entry has been deleted from the table - where XXXXXXXXXXXX is the phone number for the AHS entry	No Automation Message	SG -01-000-0000--AHS Entry Deleted XXXXXXXXXXXX
Get AHS Table	No Automation Message	SG -01-000-0000--GET AHS Table
SET AHS TABLE	No Automation Message	SG -01-000-0000--SET AHS Table
SET AHS ENTRY	No Automation Message	SG -01-000-0000--SET AHS Entry
AHS FLASH START(Primary CPM)	No Automation Message	SG -01-000-0000--AHS Flash Start (Primary)
AHS FLASH START(Secondary CPM)	No Automation Message	SG -01-000-0000--AHS Flash Start (Secondary)
AHS FLASH DONE(Primary CPM)	No Automation Message	SG -01-000-0000--AHS Flash Done (Primary)
AHS FLASH DONE(Secondary CPM)	No Automation Message	SG -01-000-0000--AHS Flash Done (Secondary)
RESET BY CONSOLE	No Automation Message	SG -01-000-0000--RESET by CONSOLE
RESET BY User	No Automation Message	SG -01-000-0000--RESET by USER
Invalid Password is entered for screen login or programming mode	001000[#0000 NLD0000]	SG -01-000-0000-NLD0000-User: Access Denied
Local Programming Begin via LCD Where xx is the user number, and NAME is the programmed user label string	001000[#0000 NLB00xx]	SG -01-000-0000-NLB00XX-User: NAME Local Programming Begins
Local Programming End via LCD Where xx is the user number, and NAME is the programmed user label string	001000[#0000 NLX00xx]	SG -01-000-0000-NLX00XX-User: NAME Local Programming Ended
LCD login has been granted Where xx is the user number, and NAME is the programmed user label string	001000[#0000 NJP00xx]	SG -01-000-0000-NJP00xx-User:NAME Local Access Granted
LCD Login End via LCD Where xx is the user number, and NAME is the programmed user label string	001000[#0000 NLX00xx]	SG -01-000-0000-NLX00XX-User:NAME Local Access Ended
Manual Mode Message ACK By User NAME - Name is the programmed user label string and {printer message} is the message that was acknowledged	No Automation Message	SG -01-sss-AAAA--01/00-0000- {Printer Message} -Acknowledged by User NAME
CPM 1 Auxiliary CPU Failure	001000[#0000 NYX0003]	SG -01-000-0000-NYX0003-Primary CPM Auxiliary CPU Failure
CPM 2 Auxiliary CPU Failure	001000[#0000 NYX0004]	SG -01-000-0000-NYX0004-Secondary CPM Auxiliary CPU Failure

Description/event	Automation message	Printer message
CPM 1 Auxiliary CPU Restore NOTE – for V1.10 CPM this message may not be required as the trouble condition is currently latching	001000[#0000 NYZ0003]	SG -01-000-0000-NYZ0003-Primary CPM 1 Auxiliary CPU Restore
CPM 2 Auxiliary CPU Restore NOTE – for V1.10 CPM this message may not be required as the trouble condition is currently latching	001000[#0000 NYZ0004]	SG -01-000-0000-NYZ0004-Secondary CPM 2 Auxiliary CPU Restore
Temp 1 Warning	001000[#0000 NKSss01]	SG -01-000-0000-NKSss01-Primary CPM TEMP WARNING
Temp 1 Alarm	001000[#0000 NKAss01]	SG -01-000-0000-NKAss01-TEMP 1 ALARM
Temp 1 Restore	001000[#0000 NKJss01]	SG -01-000-0000-NKJss01-TEMP 1 RESTORE
Temp 2 Warning	001000[#0000 NKSss02]	SG -01-000-0000-NKSss21-Primary CPM TEMP WARNING
Temp 2 Alarm	001000[#0000 NKAss02]	SG -01-000-0000-NKAss02-TEMP 2 ALARM
Temp 2 Restore	001000[#0000 NKJss02]	SG -01-000-0000-NKJss02-TEMP 2 RESTORE
LCD 1 Absent	001000[#0000 NAT0200]	SG -01-000-0000-NAT0200-UIB 1 Cable Failed
LCD 1 Restore	001000[#0000 NAR0200]	SG -01-000-0000-NAR0200-UIB 1 Cable Restored
LCD 2 Absent	001000[#0000 NAT0300]	SG -01-000-0000-NAT0300-UIB 2 Cable Failed
LCD 2 Restore	001000[#0000 NAR0300]	SG -01-000-0000-NAR0300-UIB 2 Cable Restored
PSU 1 Fan Failure (this is a fan spinning or not trouble)	001000[#0000 NYP0000]	SG -01-000-0000-NYP0000-PSU1 Fan Failed
PSU 1 Fan Restore	001000[#0000 NYQ0000]	SG -01-000-0000-NYQ0000-PSU1 Fan Restored
PSU 2 Fan Failure (this is a fan spinning or not trouble)	001000[#0000 NYP0001]	SG -01-000-0000-NYP0001-PSU2 Fan Failed
PSU 2 Fan Restore	001000[#0000 NYQ0001]	SG -01-000-0000-NYQ0001-PSU2 Fan Restored
Volatile Memory Failure	001000[#0000 NIAss00]	SG -01-000-0000-NIAss00-Volatile Memory Failed
Expansion EMMC Failure	001000[#0000 NIAss01]	SG -01-000-0000-NIAss01-Non Volatile Memory Failed
SD Card Failure	001000[#0000 NIAss02]	SG -01-000-0000-NIAss02-SD Memory Failed
SD 90% Full	001000[#0000 NJLss02]	SG -01-000-0000-NJLss02-SD Memory 90% full
SD 100% Full	001000[#0000 NJOss02]	SG -01-000-0000-NJOss02-SD Memory 100% full
SD Card Formatted - From the console	001000[#0000 NRTss02]	SG -01-000-0000-NRTss02-SD Memory FORMATTED
Firmware Update Start	001001[#0000 NMIss00]	SG -01-001-0000-NMIss00- Firmware Update Initiated
Firmware Update Failed	001001[#0000 NMIss01]	SG -00-001-0000-NMIss01- Firmware Update Failed
CPM 1 RTC Battery Trouble Restore	001000[#0000 NYR0110]	SG -01-000-0000-NYR0110-Primary CPM RTC Battery Restored
CPM 1 RTC Battery Trouble	001000[#0000 NYT0110]	SG -01-000-0000-NYT0110- Primary CPM RTC Battery Failed
CPM 2 RTC Battery Trouble restore	001000[#0000 NYR0210]	SG -01-000-0000-NYR0210-Secondary CPM RTC Battery Restored
CPM 2 RTC Battery Trouble	001000[#0000 NYT0210]	SG -01-000-0000-NYT0210- Secondary CPM RTC Battery Failed
USB 1 Active	001001[#0000 NRCss01]	SG -00-001-0000-NRCss01- USB port 1 Active
USB 1 Inactive	001001[#0000 NROss01]	SG -00-001-0000-NROss01- USB port 1 Inactive
USB 2 Active	001001[#0000 NRCss02]	SG -00-001-0000-NRCss02- USB port 2 Active
USB 2 Inactive	001001[#0000 NROss02]	SG -00-001-0000-NROss02- USB port 2 Inactive
USB 3 Active	001001[#0000 NRCss03]	SG -00-001-0000-NRCss03- USB port 3 Active
USB 3 Inactive	001001[#0000 NROss03]	SG -00-001-0000-NROss03- USB port 3 Inactive
Printer test	Not Applicable	SG -01-000-0000-Printer Test Message
COLDBOOT was performed by User via Console	001000[#0000 NYE0100]	SG -01-000-0000-NYE0100-COLDBOOT by CONSOLE
COLDBOOT was performed by User via hardware reset	001000[#0000 NYE0100]	SG -01-000-0000-NYE0100-COLDBOOT by Hardware
COLDBOOT was performed by User via LCD	001000[#0000 NYE0100]	SG -01-000-0000-NYE0100-COLDBOOT by LCD
User performed manual automation test message from LCD.	001000[#0000 NRX0000]	No Printer message
CPM Decommissioned	001000[#0000 NSCsssoo]	SG -01-000-0000-NSCsssoo-Decommissioned
CPM Recommissioned Used when Re-commissioned from Console, Push button or SD Card Format.	001000[#0000 NRRsssoo* vX.XX.XXX.XXX*]	SG -01-000-0000-NRRsssoo- Recommissioned vX.XX.XXX.XXX
AHS Size Mismatch – AHS tables are of different sizes on the 2 CPMs	001000[#0000 NYUss01]	SG -01-000-0000-NYUss01-AHS License Mismatch

SG-DRL5-IP messages

NOTE: (ss) represents the line card slot
(cc) represents the table number (1, 2 or 3)

Description/event	COMPUTER	PRINTER
Transmitter that has connected to the receiver is unencrypted (where IP is transmitters IP, and X is the transmitters account, oo is the slot and CC is the channel number)	000001[#XXXXXXXXXXXX NNC* IP.IP.IP*]	SG -00-001-XXXXXXXXXX-NC-*TRANSMITTER UNENCRYPTED IP.IP.IP*
Transmitter has successful had encryption enabled (where IP is transmitters IP, and X is the transmitters account)	000001[#XXXXXXXXXXXX NYZ0010]	SG -00-001-XXXXXXXXXX-YZ-*ENCRYPTION ENABLED - IP.IP.IP*
The transmitter is not able to support encryption request (where IP is transmitters IP, and X is the transmitters account)	No Automation Message	SG -01-001-XXXXXXXXXX-*ENCRYPTION NOT SUPPORTED - IP.IP.IP*
Transmitter has not successful had encryption enabled (where IP is transmitters IP, and X is the transmitters account)	001001[#XXXXXXXXXXXX NYZ0011]	SG -01-003-XXXXXXXXXX-YZ-*ENCRYPTION SET FAIL - IP.IP.IP*
Transmitter has successful had encryption disabled (where IP is transmitters IP, and X is the transmitters account)	000001[#XXXXXXXXXXXX NYZ0012]	SG -00-001-XXXXXXXXXX-YZ-*ENCRYPTION DISABLED - IP.IP.IP*
Transmitter has been added to Account table (where X is the transmitters account)	000001[#XXXXXXXXXXXX NXA*IP.IP.IP*]	SG -00-001-XXXXXXXXXX-XA-*Unknown Account IP.IP.IP*
Transmitter with supervision enabled - has turned off supervision (where IP is transmitters IP, and X is the transmitters account)	001001[#XXXXXXXXXXXX NYG*IP.IP.IP*]	SG -01-001-XXXXXXXXXX-YG-*Transmitter Supervision Disable IP.IP.IP*
Remote shutdown has been sent to the transmitter. Where: XXXXXXXXXXXX is the account code of the transmitter IP.IP.IP.IP is the current IP address of the transmitter	000001[#XXXXXXXXXXXX NYX0001]	SG -00-001-XXXXXXXXXX-YX-*TRANSMITTER SHUTDOWN - IP.IP.IP*
Transmitter has not successful completed the shutdown command (where IP is transmitters IP, and X is the transmitters account)	001001[#XXXXXXXXXXXX NYX0002]	SG -01-001-XXXXXXXXXX-YX-* TRANSMITTER SHUTDOWN FAIL IP.IP.IP*
Transmitter has been deleted from the account table VIA the console Where: XXXXXXXXXXXX is the account code of the transmitter IP.IP.IP.IP is the current IP address of the transmitter	001003[#0000000001 NJX* IP.IP.IP*]	SG -01-003-XXXXXXXXXX-JX-*Transmitter Deleted IP.IP.IP *
Account added to the account table VIA the console Where: # is the number of accounts added X is the transmitters account	No Automation	SG -01-000-0000--Console SET IP Account (#) XXXXXXXXXXXX
Firmware Update Start	001001[#0000 NMIss00]	SG -01-001-0000-NMIs00-Firmware Update Initiated
Firmware Update Failed	001001[#0000 NMIs01]	SG -00-0FF-0000-NMIs01-Firmware Update Failed

Description/event	COMPUTER	PRINTER
Transmitter Absent when supervised	000001[#XXXXXXXXXXXX NYC*IP.IP.IP*]	SG -00-001-XXXXXXXXXX- YC-*Transmitter Failure IP.IP.IP*]
Transmitter Restore for supervised accounts	000001[#XXXXXXXXXXXX NYK*IP.IP.IP*]	SG -00-001-XXXXXXXXXX- YK-*Transmitter Restoral IP.IP.IP*]
Transmitter Swap When the account change but MAC is the same	000001[#XXXXXXXXXXXX NYS*IP.IP.IP*]	SG -00-001-XXXXXXXXXX- YS-*Transmitter Swap IP.IP.IP*]
Invalid report when an incorrect signal is sent	000001[#XXXXXXXXXXXX NYN*IP.IP.IP*]	SG -00-001-XXXXXXXXXX- YN-*Invalid Report/Possible Compromise Attempt IP.IP.IP*]
Maximum Account Table size has been exceeded	001001[#XXXXXXXXXXXX NJO01CC*IP.IP.IP*]	SG -01-001-XXXXXXXXXX- JO01CC-*Maximum Accounts Exceeded IP.IP.IP*]
Supervised Account Table size has been exceeded	001001[#XXXXXXXXXXXX NJO02CC*IP.IP.IP*]	SG -01-001-XXXXXXXXXX- JO02CC-*Maximum Supervised Accounts Exceeded IP.IP.IP*]
Visual Account Table size has been exceeded	001001[#XXXXXXXXXXXX NJO03CC*IP.IP.IP*]	SG -01-001-XXXXXXXXXX- JO03CC-*Maximum Visual Accounts Exceeded IP.IP.IP*]
Unsupervised Account Table size has been exceeded	001001[#XXXXXXXXXXXX NJO04CC*IP.IP.IP*]	SG -01-001-XXXXXXXXXX- JO04CC-*Unsupervised Visual Accounts Exceeded IP.IP.IP*]
Option Change Message Where ## is the option being changed Value is the option setting in data or text depending on option being set	001001[#0000 NLSSSS]	SG -01-001-0000-LS-Option Change: ## Value
Console Session Denied- Incorrect Password	001000[#0000 NRD0002]	SG -01-000-0000-NRD0002- Console Session Denied
Printer Buffer Full	001001[#0000 NYB0001]	SG -01-001-0000-YB-Printer Buffer Full
Computer Buffer Full	001001[#0000 NYB0002]	SG -01-001-0000-YB-Computer Buffer Full
Computer Communication Failure	001000[#0000 NYOssSS]	SG -01-000-0000-NYOssSS- Computer: Inter-Comm Error
Printer Communication Failure	001000[#0000 NYOssSS]	SG -01-000-0000-NYOssSS- Printer: Inter-Comm Error
Visual verification output Communication Failure	001000[#0000 NYOssSS]	SG -01-000-0000-NYOssSS- Visual: Inter-Comm Error
LC Reset	No Automation message	SG -00-0FF-0000--LC RESET by CONSOLE
Account table is close to Full	001001[#0000 NJL*IP.IP.IP*]	SG -01-001-0000-JL-*Account table 75% full IP.IP.IP*]
Network Fail	001001[#0000 NNT*IP.IP.IP*]	SG -01-001-0000-NR-Network Failure
Network Restore	001001[#0000 NNR*IP.IP.IP*]	SG -01-001-0000-NR-Network Restoral
LC Power Up where X.XX.XXX.XXX is the software version information.	001000[#0000 NRRss00* vX.XX.XXX.XXX*]	SG -01-000-0000-NRRss00- LC Power Up vX.XX.XXX.XXX
Possible Compromise Attempt(where IP is transmitters IP, and X is the transmitters account)	001001[#XXXXXXXXXXXX NPC*IP.IP.IP*]	SG -01-001-XXXXXXXXXX- PC-Possible Compromise Attempt

Description/event	COMPUTER	PRINTER
COLDBOOT was performed by User via Console	No Automation message	SG -01-001-0000--LC COLDBOOT by CONSOLE
2-Way Audio Initiated Option 403 set to 01	SRRLLL[#AAAAAAAAAAAA NLFs- soo*#NNNNNNNNNNNNNNNNNN*]	SG -01-001-XXXXXXXXXX- LF-AUDIO CALLBACK INITIATED - XXXXXXXXXXXXXXXXXXXX
2-Way Audio Initiated Option 403 set to 02	0RRLLL[#AAAAAAAAAAAA NLFs- soo*#NNNNNNNNNNNNNNNNNN*]	SG -01-001-XXXXXXXXXX- LF-AUDIO CALLBACK INITIATED - XXXXXXXXXXXXXXXXXXXX
2-Way Audio Initiated Option 403 set to 03	SRRLLL[#AAAAAAAAAAAA NLFs- soo*RRL#NNNNNNNNNNNNNNNNNN*]	SG -01-001-XXXXXXXXXX- LF-AUDIO CALLBACK INITIATED - XXXXXXXXXXXXXXXXXXXX
2-Way Audio Initiated Option 403 set to 04	0RRLLL[#AAAAAAAAAAAA NLFs- soo*RRL#NNNNNNNNNNNNNNNNNN*]	SG -01-001-XXXXXXXXXX- LF-AUDIO CALLBACK INITIATED - XXXXXXXXXXXXXXXXXXXX
2-Way Audio Initiated Option 403 set to 05	4RRLLLaaaaaLLTTTTTTTT[DC4]	SG -01-001-XXXXXXXXXX- LF-AUDIO CALLBACK INITIATED - XXXXXXXXXXXXXXXXXXXX
Visual Verification received	001001[#XXXXXXXXXXXX Idu255]	SG -01-001-XXXX-Idu255 - IMAGE VERIFICATION INITIATED
Visual Verification cancelled	001001[#XXXXXXXXXXXX Itm]	SG -01-001-XXXX-Itm- IMAGE VERIFICATION ABORTED
Line Card Decommissioned	001000[#0000 NSCss00]	SG -01-000-0000-NSCss00-LC Decommissioned
Line Card Recommissioned Used when Recommissioned from Con- sole, Push button or SD Card Format.	001000[#0000 NRRssoo* vX.XX.XXX.XXX*]	SG -01-000-0000-NRRssoo- Recommissioned vX.XX.XXX.XXX
Invalid license key	001000[#0000 NUXss00]	SG -01-000-0000-NUXss00- Invalid License Key
Volatile Memory Failure	001000[#0000 NIAss00]	SG -01-000-0000-NIAss00- Volatile Memory Failed
Expansion EMMC Failure	001000[#0000 NIAss01]	SG -01-000-0000-NIAss01- Non volatile Memory Failed
SD Card Failure	001000[#0000 NIAss02]	SG -01-000-0000-NIAss02-SD Memory Failed
SD 90% Full	001000[#0000 NJLss02]	SG -01-000-0000-NJLss02-SD Memory 90% full
SD 100% Full	001000[#0000 NJOss02]	SG -01-000-0000-NJOss02-SD Memory 100% full
SD Card Formatted	001000[#0000 NRTss02]	SG -01-000-0000-NRTss02-SD Memory FORMATTED
Temp 1 Warning	001000[#0000 NKSss01]	SG -01-000-0000-NKSss01- TEMP 1 WARNING
Temp 1 Alarm	001000[#0000 NKAss01]	SG -01-000-0000-NKAss01- TEMP 1 ALARM
Temp 1 Restore	001000[#0000 NKJss01]	SG -01-000-0000-NKJss01- TEMP 1 RESTORE
USB 1 Active	001001[#0000 NRCss01]	SG -00-001-0000-RCss01- USB port 1 Active

Description/event	COMPUTER	PRINTER
USB 1 Inactive	001001[#0000 NROss01]	SG -00-001-0000-ROss01-USB port 1 Inactive
USB 2 Active	001001[#0000 NRCss02]	SG -00-001-0000-RCss02-USB port 2 Active
USB 2 Inactive	001001[#0000 NROss02]	SG -00-001-0000-ROss02-USB port 2 Inactive
GET DNIS Table	No Automation message	SG -01-002-0000--GET DNIS Table
SET DNIS Table	No Automation message	SG -01-002-0000--SET DNIS Table
Visual verification output Communication Failure	001000[#0000 NYOss00]	SG -01-000-0000-NYOssSS-Visual: Inter-Comm Error: DDDDD AAAAAAAAAA - Unique ID
IP account table has been set by the console application Where: ss is the shelf number cc is the channel number	001001[#0000 NRBsscc]	SG -01-001-0000-RBsscc-Con-sole Account Port Lead In
IP account table has been requested by the console application Where: ss is the shelf number cc is the channel number	001001[#0000 NRSsscc]	SG -01-001-0000-RSsscc-Con-sole Account Port Lead Out
SD Card File Mismatch was detected by the line card	No Automation message	SG -01-000-0000-SD ID MISMATCH TROUBLE
SD Card File Mismatch was Restored by the line card	No Automation message	SG -01-000-0000-SD ID MISMATCH RESTORE

SG-DRL PSTN messages

SG-PSTN MESSAGE	COMPUTER	PRINTER
SG-DRL4 2L Power Up where X.XX.XXX.XXX is the software version information.	001002[#0000 NRR0101]	SG -01-002-0000-NRR0101-SG-DRL4 2L v1.20.01.010 Power Up
Channel 0 Option Change (where XX is the option #, and YY is the new option setting)	001001[#0000 NLS0101]	SG -01-001-0000-NLS0101-Option Change: C0 #XX YY
Channel 1 Option Change (where XX is the option #, and YY is the new option setting)	001001[#0000 NLS0101]	SG -01-001-0000-NLS0101-Option Change: C1 #XX YY
Channel 2 Option Change (where XX is the option #, and YY is the new option setting)	001002[#0000 NLS0101]	SG-01-002-0000-NLS0101-Option Change: C2 #XX YY
Option change from console where C# is the channel changed (0/1/2 PSTN channels)	001001[#0000 NLS0101]	SG -01-001-0000-NLS0101-Option Change: C# #XX 'Y'
Printer Buffer Full (PSTN Channel)	001001[#0000 NYB0001]	SG -01-001-0000-YB-Printer Buffer Full
Computer Buffer Full (PSTN Channel)	001001[#0000 NYB0002]	SG -01-001-0000-YB-Computer Buffer Full
Software Checksum Fail	001000[#0000 NYF0100]	SG -01-001-0000--Checksum Failed
Call was blocked on channel 1 (not answered)	001001 [#0000 ABLOCKEDCALL 12345 9056601075]	SG -01-001-0000--BLOCKED CALL 9056601075 12345
Call was blocked on channel 2 (not answered) [ii]	001129 [#0000 ABLOCKEDCALL 12345 9056601075]	SG -01-129-0000--BLOCKED CALL 9056601075 12345
Panel attempted to communicate to the linecard but data was not valid.	001001[#0000 NYN0101]	SG -01-001-0000--INVALID REPORT
Panel attempted to communicate to the linecard but the format did not match the AHS Locked format	001001[#0000 NYN0101]	SG -01-001-0000--INVALID REPORT INVALID RPT UNMATCHED FORMAT
Communication Fail Due to No Response from the panel. CH1	001001[#0000 NYC0101]	SG -01-001-0000--COMMUNICATION FAIL

SG-PSTN MESSAGE	COMPUTER	PRINTER
Call failed due to detection of fax device on the call – channel 1	001001 [#0000]NYC\$SS*FAX*	SG -01-001-0000--COMMUNICATION FAIL – FAX
Call failed due to detection of Noise on the call – channel 1	001001 [#0000]NYC0101*NOISE*	SG -01-001-0000--COMMUNICATION FAIL - NOISE
Communication Fail Due to No Response from the panel. CH2	001129[#0000]NYC0101]	SG -01-129-0000--COMMUNICATION FAIL
Call failed due to detection of fax device on the call – channel 2	001129 [#0000]NYC\$SS*FAX*	SG -01-129-0000--COMMUNICATION FAIL – FAX
Call failed due to detection of Noise on the call – channel 2	001129 [#0000]NYC0101*NOISE*	SG -01-129-0000--COMMUNICATION FAIL - NOISE
Phone line trouble channel 1.	001002[#0000]NLT0102]	SG -01-002-0000--PHONE LINE TROUBLE
Phone line restore channel 1 primary.	001002[#0000]NLR0102]	SG -01-002-0000--PHONE LINE RESTORAL
Phone line trouble channel 2.	001129[#0000]NLT0101]	SG -01-129-0000--PHONE LINE 2 TROUBLE
Phone line restore channel 2.	001129[#0000]NLR0101]	SG -01-129-0000--PHONE LINE 2 RESTORAL
DSP fault channel 1	001001[#0000]NYF0101]	SG -01-001-0000--DSP FAULT
DSP fault channel 2	001129[#0000]NYF0101]	SG -01-129-0000--DSP FAULT
Communication on-line timeout Channel 1	001001[#0000]NYS0101]	SG -01-001-0000--DRL ON-LINE TIMEOUT
Communication on-line timeout Channel 2	001129[#0000]NYS0101]	SG -01-129-0000--DRL ON-LINE TIMEOUT
Two Way Audio Initiated – channel 1 - where XXXX is the account code entering two way communication	S01001[#XXXX]NLF0101]	SG -01-001-1234--AUDIO INITIATED
Two Way Audio Initiated – channel 2 - where XXXX is the account code entering two way communication	S01129[#XXXX]NLF0101]	SG -01-129-1234--AUDIO INITIATED
Two Way Audio Cancelled – channel 1	No Automation message	SG -01-001-1234--AUDIO CANCELLED
Two Way Audio Cancelled – channel 2	No Automation message	SG -01-129-1234--AUDIO CANCELLED
COLDBOOT was performed by System	No Automation message	SG -01-001-0000--LC Coldboot by CPM
Reset by console	No Automation message	SG -01-001-0000--LC Reset by CPM
Reset by User	No Automation message	SG -01-001-0000--LC Reset by DEBUG
Firmware update has been started via USB port	No Automation message	SG -01-002-0000--LC Firmware Update Initiated (USB)
Firmware update has failed	No Automation message	SG -01-000-0000--LC Firmware Update Failed
GET DNIS Table	No Automation message	SG -01-002-0000--GET DNIS Table
SET DNIS Table	No Automation message	SG -01-002-0000--SET DNIS Table
Line Card Default By Console	No Automation message	SG -01-001-0000--LC Coldboot by CPM
Computer Communication Failure	001000[#0000]NYO\$SS]	SG -01-000-0000-NYO\$SS-Computer: Inter-Comm Error
Printer Communication Failure	001000[#0000]NYO\$SS]	SG -01-000-0000-NYO\$SS-Printer: Inter-Comm Error

LCD and console trouble list

Trouble condition	Description
CPM 1 Serial Printer 1 Fail	Displayed when the serial printer is off-line - Primary SG-CPM5
CPM 2 Serial Printer 1 Fail	Displayed when the serial printer is off-line - Secondary SG-CPM5
CPM 1 SG-Serial Fail	Displayed when the serial automation is not connected/not responding to heartbeats - Primary SG-CPM5
CPM 2 SG-Serial Fail	Displayed when the serial automation is not connected/not responding to heartbeats - Secondary SG-CPM5
CPM 1 SG-TCP Fail	Displayed when the TCP automation connection 1 is not connected/not responding to heartbeats
CPM 2 SG-TCP Fail	Displayed when the TCP automation connection 1 is not connected/not responding to heartbeats
CPM 1 SG-TCP2 Fail	Displayed when the TCP automation connection 2 is not connected/not responding to heartbeats
CPM 2 SG-TCP2 Fail	Displayed when the TCP automation connection 2 is not connected/not responding to heartbeats
CPM 1 SG-TCP3 Fail	Displayed when the TCP automation connection 3 is not connected/not responding to heartbeats
CPM 2 SG-TCP3 Fail	Displayed when the TCP automation connection 3 is not connected/not responding to heartbeats
CPM 1 SG-TCP4 Fail	Displayed when the TCP automation connection 4 is not connected/not responding to heartbeats
CPM 2 SG-TCP4 Fail	Displayed when the TCP automation connection 4 is not connected/not responding to heartbeats

Trouble condition	Description
CPM 1 SG-TCP Logging Fail	Displayed when the TCP automation logging connection is not connected/not responding to heartbeats
CPM 2 SG-TCP Logging Fail	Displayed when the TCP automation logging connection is not connected/not responding to heartbeats
CPM 1 TCP Printer 1 Fail	Displayed when the TCP printer is off-line - Primary SG-CPM5
CPM 2 TCP Printer 1 Fail	Displayed when the TCP printer is off-line - Secondary SG-CPM5
CPM 1 SG-TCP Fail	Displayed when the TCP automation is not connected/not responding to heartbeats - Primary SG-CPM5
CPM 2 SG-TCP Fail	Displayed when the TCP automation is not connected/not responding to heartbeats - Secondary SG-CPM5
CPM 1 UPS Battery Fail	Displayed when the input of the receiver for UPS Battery is activated. This input is triggered by the UPS to indicate an internal battery trouble - Primary SG-CPM5
CPM 2 UPS Battery Fail	Displayed when the input of the receiver for UPS Battery is activated. This input is triggered by the UPS to indicate an internal battery trouble - Secondary SG-CPM5
CPM 1 UPS AC Fail	Displayed when the input of the receiver for UPS AC is activated. This input is triggered by the UPS to indicate a loss of AC power - Primary SG-CPM5
CPM 2 UPS AC Fail	Displayed when the input of the receiver for UPS AC is activated. This input is triggered by the UPS to indicate a loss of AC power - Secondary SG-CPM5
PSU 1 Fail	SG-PSU5 1 - provides power to all modules of the system. This trouble will be displayed if the power supply fails or is removed from the system or the total current draw exceeds rating for the power supply installed in the primary slot.
PSU 2 Fail	SG-PSU5 2 - provides power to all modules of the system. This trouble will be displayed if the power supply fails or is removed from the system or the total current draw exceeds rating for the power supply installed in the secondary slot.
Fan Tray 1 Trouble	This trouble condition occurs when fan Tray 1 fails or slows down to an undesirable speed
Fan Tray 2 Trouble	This trouble condition occurs when fan Tray 2 fails or slows down to an undesirable speed
Fan Tray 3 Trouble	This trouble condition occurs when fan Tray 3 fails or slows down to an undesirable speed
Fan Tray 4 Trouble	This trouble condition occurs when fan Tray 4 fails or slows down to an undesirable speed
CPM 1 Fan Trouble	This trouble condition occurs when the Primary SG-CPM5 fan tray fails or slows down to an undesirable speed
CPM 2 Fan Trouble	This trouble condition occurs when the Secondary SG-CPM5 fan tray fails or slows down to an undesirable speed
CPM 1 Temperature Warning	This trouble occurs when the internal board temperature of the Primary SG-CPM5 reached 65 degrees Celsius
CPM 2 Temperature Warning	This trouble occurs when the internal board temperature of the Secondary SG-CPM5 reached 65 degrees Celsius
PSU Compatibility Fail	The two power supplies installed are not at the same power rating
CPM 1 RTC Battery Fail	The backup battery for the RTC chip has reached a low voltage condition - The battery check is performed every day at midnight (00:00:00)
CPM 2 RTC Battery Fail	The backup battery for the RTC chip has reached a low voltage condition - The battery check performed every day at midnight (00:00:00)
CPM1 Absent	Message is displayed if the secondary SG-CPM5 cannot communicate with the primary SG-CPM5
CPM2 Absent	Message is displayed if the primary SG-CPM5 cannot communicate with the secondary SG-CPM5
CPM 1 Auxiliary CPU Fail	This message is displayed when the Auxiliary CPU fails on the primary SG-CPM5
CPM 2 Auxiliary CPU Fail	This message is displayed when the Auxiliary CPU fails on the secondary SG-CPM5
UIB 1 Cable Fail	This message is displayed when the primary User Interface Board communication is lost Possible Causes - Hardware ID cannot be read, Power disconnected to the display, display cable disconnected
UIB 2 Cable Fail	This message is displayed when the secondary User Interface Board communication is lost Possible Causes - Hardware ID cannot be read, Power disconnected to the display, display cable disconnected
CPM 1 EMMC Fail	This trouble condition is displayed when the EMMC memory fails (cannot be read from or written to) – Future Release
CPM 2 EMMC Fail	This trouble condition is displayed when the EMMC memory fails (cannot be read from or written to) – Future Release

Appendix E: Glossary

Account

The portion of a signal which contains the information identifying the location or the owner of the alarm panel. Also referred to as account number, account code or account digits.

Acknowledgement (ACK)

(ACK) means data was received without any detected errors. (see kiss-off). A negative acknowledgement (NAK) means data was received, but there were detected errors. An acknowledgement may be sent per packet or per alarm.

AHS

Automatic Handshake Selection. Refers to the receiver feature which enables the line card to request the handshake to be used with a particular panel from the SG-CPM5. The SG-CPM5 maintains a database of most recently used handshakes for all accounts connected to the receiver. Handshakes are stored along with the phone number of the associated alarm panel.

Alarm

A message transmitted from the panel to the receiver containing account, event, zone, user or other information. There may be one or more per call. An alarm may be repeated in the same call (if not successfully delivered in a previous attempt). An alarm will contain one or more packets. Packets can contain rounds or different information. Alarm transmission is initiated with a handshake and, if received correctly, acknowledged with a kiss-off.

ANI

Automatic Number Identification.

ASCII

American Standard Code for Informational Interchange. A seven-bit alphanumeric code used extensively in data communications. Parity is often added to the seven-bit code for error detection.

Automation

The combination of software package and PC which connects to the receiver to receive alarm events. The automation can be connected either by direct serial connection or TCP.

Automation Message

The alarm information delivered by a receiver in a specified protocol to a central station computer or network. Also referred to as a computer message.

Block

A group of data that specifically makes up one of the elements of an alarm. For example: account block, event block, or alarm block. One packet could contain multiple blocks.

Busy Out

A state of a line card. Under predefined criteria the line card will go off-hook so as to not process any new alarms.

C.L.A.S.S.

Custom Local Area Signaling Services. This term is used in the telephone industry to represent all features of a telephone line, such as Caller -ID, Call Forwarding, 3-Way Calling etc.

Call

The process of a receiver going off-hook, receiving one or more alarms and returning on-hook.

Caller ID

An FSK format received by the line card. This format can be received prior to sending the handshakes. The Caller ID data can be used by the receiver to provide additional information to all alarms received during a call.

Capture

The ability of a receiver to store commands sent to the panel from the automation computer after all of the alarms have been sent from the panel to the receiver.

Checksum

Additional data added to an alarm indicating whether the contents have been received correctly. This is generally done by summing all the digits in the message (mod 256) and reporting this as the checksum. Different methods of calculating a checksum may be specified in particular formats or protocols.

Client

One side of a 2-sided TCP socket connection. The client is the one responsible for initiating the socket connection with the remote host (the server). The console represents the client side of the socket connection with the SG-CPM5.

Computer Message

See Automation Message.

Console

A PC application program which can connect to the receiver and provide diagnostic/programming abilities to the user. For the SG-System 5, the console connects to the SG-CPM5 via TCP/IP. Visit the Tyco website (www.tyco.com) for the latest version.

Dialer

Another name for a control panel.

DNIS

Dialed Number Identification Service.

DTMF

Dual Tone Multiple Frequency. A method of dialing which utilizes 2 sets of 4 tones (frequencies) each. Selecting one tone from each set will produce 16 distinct pairs. These pairs are used to dial digits when dialing a telephone number.

Equivalent Line Number

An option in the receiver. By default printer and computer messages will contain the line card number. Sometimes it is necessary to output the printer and computer messages with a different line card number; in this case this option can be used to overwrite the line card number in the printer and computer outputs of the receiver.

Ethernet

A network protocol which encompasses the lowest logical layer of the network stack, immediately above the physical layer. This protocol is governed by the IEEE and is outlined in the IEEE802.3 specification. Ethernet consists of several variations, including 10Base2, 10Base5, 10BaseT, 100BaseT, and others. 100BaseT and 1000BaseT are the most prevalent.

Event

The specific type of alarm being reported by the panel.

Event Code

A term used to describe a character or group of characters in an automation output. This character(s) is used to represent the event that was reported by the panel. Example 1: Sur-Gard automation reports an alarm event using an event code of 'A', Restore as 'R', or Trouble as 'T'. Example 2: Sur-Gard automation reports using a SIA output for a burglary alarm using an event code of 'BA'.

FES

Format Expert Systems. The name given to a receiver task which performs the basic functions of: 1. sending handshakes; 2. detecting the format from the panel; 3. processing the alarm from the panel; 4. sending a kiss-off to the panel.

Format

The pre-established order of events and meanings of the various characters in an alarm transmitted from a panel to a receiver.

FSK

Frequency Shift Keying. A modulation technique used with low-speed modems (300 to 1800 bps). The carrier frequency is shifted between two discrete frequencies in accordance with the binary serial data.

Handshake

A signal sent by the receiver to a panel indicating that a connection has been established. These are either tones or modem data.

Heartbeat

A periodic signal sent from the automation outputter tasks to the automation software to verify the presence of that output. The period of this heartbeat is controlled via an option in the SG-CPM5. Alternatively, heartbeat refers to the signal sent between SG-CPM5s to verify each other's presence.

Hook Flash

The process of the receiver going temporarily off-hook, usually in an attempt to transfer the phone call.

Hot-Swappable

Refers to the ability to add or remove particular cards to or from the system without removing power.

HTTP

Hypertext Transfer Protocol. A higher level protocol within the TCP/IP suite of protocols which is responsible for implementing web browsers. This is the protocol implemented by the SG-CPM5 to enable the web interface to function.

IEEE 802.3

See Ethernet.

Internal Trouble

A trouble condition which is generated inside a receiver, as opposed to being sent as an alarm from the panel. Internal troubles are also sent to the printer and automation outputs.

Kiss-off

A term used in the security industry for a positive acknowledgement.

Line

An individual channel on a line card. Equivalent to one telephone line.

Line Card

A removable, hot-swappable card which contains a POTS line interface which controls 1 or more POTS lines.

MAC Address

Media Access Control. A globally unique device 6-byte address which identifies a device attached to an Ethernet network. Assignment of MAC addresses is governed by the IEEE; any OEM company which manufactures Ethernet devices must apply for and purchase an OUI (Organizationally Unique Identifier), which consists of a block of 16,777,216 MAC addresses, all of which have the same first 3 bytes. Subsequent allocation of addresses within that block is at the discretion of the purchaser. Each Ethernet device produced must be programmed with a different MAC address in order to guarantee that each device will function correctly on the network. manufacturing.

Multidrop

A communication link in which a single channel is shared by several stations or nodes (DVACS is a Multidrop network). Only one station may transmit at a time. Multidrop is also referred to as multipoint.

Negative Acknowledgement (NAK)

See acknowledgement.

Off-Hook

The process of connecting to the telephone line to answer an incoming call or dial a remote device (answering).

On-Hook

The process of releasing the telephone line after completion of a call (hanging up).

Options

A set of user-configurable parameters which controls the operation of a device. In the SG-System 5, both the SG-DRL5 and the SG-CPM5 contain sets of options. Static options affect all Profiles on a card. Dynamic options are unique to each profile.

Packet

A group of digits or characters of information in an alarm.

Panel

A device (the alarm system) at the protected premises used to transmit alarms to the receiver.

Ping

A standard network command which can be used to verify the presence of a device on a network, using the device IP address. Ping is implemented as part of the ICMP protocol and consists of the Echo Request and Echo Reply commands (poll and response respectively).

POTS

Plain Old Telephone System. An acronym used to describe a standard analog telephone network, or alternatively a standard analog telephone line.

Printer Message

The alarm information delivered by a receiver to a central station printer. This information is generally encapsulated in a descriptive English text message.

Profile

Generally refers to a group of options. The receiver can select a "profile" based on certain conditions.

Protocol

The pre-established order of events and meanings of the various characters in the information transmitted from a receiver to a monitoring computer.

PSTN

Public Switched Telephone Network. Analogous to POTS.

Receiver

The equipment used to receive alarms sent from panels. Sur-Gard's receivers are the SLR and the MLR. 'Receiver' is sometimes used interchangeably with 'line card' as it is the line card which actually receives the alarm in the MLR.

Ring

One of the wires used on a phone line. By convention this is red.

Rounds

Two or more packets of alarm information used for error checking. If two packets (rounds) are identical the packet contains valid data.

RRLLL

The part of the automation message which stores the receiver number and line card number. The length of this field is variable and is controlled via an option in both the line card and the SG-CPM5.

RS-232

An asynchronous, point-to-point serial communications protocol. Used to communicate between the SG-CPM5 and the automation computer.

Server

One side of a 2-sided TCP socket connection. The server is the one responsible for receiving the socket connection with the remote host (the client). In general, a host which acts as a server can receive multiple client socket connection requests simultaneously. The SG-CPM5 acts as a server to both the console and the web interface.

SG-CPM5

Central Processing Module. The SG-CPM5 controls the overall operation of the SG-System 5 receiver, which includes multiplexing alarm signals from the line cards and sending them to the appropriate outputs.

SG-DRL5-IP PAD

Paddle card - Each paddle card connects to a line card and provides a connection for an Ethernet cable.

SG-MLRF5

Sub-rack metal work.

SG-MP5

Mid plane - this is not sold separately but part of the SG-MLRF5.

SG-MRLF5-RM

Rack mounts rails.

SG-PSU5-250

250W Power Supply Unit.

SG-PSU5-600

600W Power Supply Unit.

SG-S5CFANTR

CPM fan tray (Fan and Metalwork).

SG-S5LFANTR

DRL5-IP line card fan tray (Fan and Metalwork).

SG-S5SERCAB

SG-System 5 serial “Y” cables.

SG-SYS5MEM4

4 GB Memory expansion for the DRL5-IP and CPM5.

SG-System 5

Name given to a single entire receiver configuration, including rack, SG-CPM5(s), line card(s), power supply, etc.

SG-UIB5

User interface PCB as well as the final assembly with LCD.

SG-UIB5-BP

User interface blank plate.

SIA

Security Industry Association. Sometimes referred to as the SIA format which is an example of FSK modulation.

TCP/IP

Transmission Control Protocol/Internet Protocol. A standard network communications protocol. On the SG-System 5, TCP/IP is used to communicate between the console and the SG-CPM5. It is also used to connect the SG-CPM5 to a TCP printer (resident on the console) and TCP automation software (runs independent of the console).

The SG-DRL5-IP receives alarm traffic from transmitters.

DRL5-IP receiver line card.

Tip

One of the wires used on a phone line. By convention this is green.

Zone

The portion of an alarm which contains the information identifying the specific zone of the panel that has been violated.

Warning Please Read Carefully

Note to Installers

This warning contains vital information. As the only individual in contact with system users, it is your responsibility to bring each item in this warning to the attention of the users of this system.

System Failures

This system has been carefully designed to be as effective as possible. There are circumstances, however, involving fire, burglary, or other types of emergencies where it may not provide protection. Any alarm system of any type may be compromised deliberately or may fail to operate as expected for a variety of reasons. Some but not all of these reasons may be:

Criminal Knowledge

This system contains security features which were known to be effective at the time of manufacture. It is possible for persons with criminal intent to develop techniques which reduce the effectiveness of these features. It is important that a security system be reviewed periodically to ensure that its features remain effective and that it be updated or replaced if it is found that it does not provide the protection expected.

Access by Intruders

Intruders may enter through an unprotected access point, circumvent a sensing device, evade detection by moving through an area of insufficient coverage, disconnect a warning device, or interfere with or prevent the proper operation of the system.

Power Failure

Control units, intrusion detectors, smoke detectors and many other security devices require an adequate power supply for proper operation. If a device operates from batteries, it is possible for the batteries to fail. Even if the batteries have not failed, they must be charged, in good condition and installed correctly. If a device operates only by AC power, any interruption, however brief, will render that device inoperative while it does not have power. Power interruptions of any length are often accompanied by voltage fluctuations which may damage electronic equipment such as a security system. After a power interruption has occurred, immediately conduct a complete system test to ensure that the system operates as intended.

System Users

A user may not be able to operate a panic or emergency switch possibly due to permanent or temporary physical disability, inability to reach the device in time, or unfamiliarity with the correct operation. It is important that all system users be trained in the correct operation of the alarm system and that they know how to respond when the system indicates an alarm.

Warning Devices

Warning devices such as sirens, bells, horns, or strobes may not warn people or waken someone sleeping if there is an intervening wall or door. If warning devices are located on a different level of the residence or premise, then it is less likely that the occupants will be alerted or awakened. Audible warning devices may be interfered with by other noise sources such as stereos, radios, televisions, air conditioners or other appliances, or passing traffic. Audible warning devices, however loud, may not be heard by a hearing-impaired person.

Insufficient Time

There may be circumstances when the system will operate as intended, yet the occupants will not be protected from the emergency due to their inability to respond to the warnings in a timely manner. If the system is monitored, the response may not occur in time to protect the occupants or their belongings.

Component Failure

Although every effort has been made to make this system as reliable as possible, the system may fail to function as intended due to the failure of a component.

Security and Insurance

Regardless of its capabilities, an alarm system is not a substitute for property or life insurance. An alarm system also is not a substitute for property owners, renters, or other occupants to act prudently to prevent or minimize the harmful effects of an emergency situation.

Limited Warranty

Digital Security Controls warrants the original purchaser that for a period of twelve months from the date of purchase, the product shall be free of defects in materials and workmanship under normal use. During the warranty period, Digital Security Controls shall, at its option, repair or replace any defective product upon return of the product to its factory, at no charge for labour and materials. Any replacement and/or repaired parts are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer. The original purchaser must promptly notify Digital Security Controls in writing that there is defect in material or workmanship, such written notice to be received in all events prior to expiration of the warranty period. There is absolutely no warranty on software and all software products are sold as a user license under the terms of the software license agreement included with the product. The Customer assumes all responsibility for the proper selection, installation, operation and maintenance of any products purchased from DSC. Custom products are only warranted to the extent that they do not function upon delivery. In such cases, DSC can replace or credit at its option.

International Warranty

The warranty for international customers is the same as for any customer within Canada and the United States, with the exception that Digital Security Controls shall not be responsible for any customs fees, taxes, or VAT that may be due.

Warranty Procedure

To obtain service under this warranty, please return the item(s) in question to the point of purchase. All authorized distributors and dealers have a warranty program. Anyone returning goods to Digital Security

Controls must first obtain an authorization number. Digital Security Controls will not accept any shipment whatsoever for which prior authorization has not been obtained.

Conditions to Void Warranty

This warranty applies only to defects in parts and workmanship relating to normal use. It does not cover:

- damage incurred in shipping or handling;
- damage caused by disaster such as fire, flood, wind, earthquake or lightning;
- damage due to causes beyond the control of Digital Security Controls such as excessive voltage, mechanical shock or water damage;
- damage caused by unauthorized attachment, alterations, modifications or foreign objects;
- damage caused by peripherals (unless such peripherals were supplied by Digital Security Controls);
- defects caused by failure to provide a suitable installation environment for the products;
- damage caused by use of the products for purposes other than those for which it was designed;
- damage from improper maintenance;
- damage arising out of any other abuse, mishandling or improper application of the products.

Items Not Covered by Warranty

In addition to the items which void the Warranty, the following items shall not be covered by Warranty:

(i) freight cost to the repair centre; (ii) products which are not identified with DSC's product label and lot number or serial number; (iii) products disassembled or repaired in such a manner as to adversely affect performance or prevent adequate inspection or testing to verify any warranty claim. Access cards or tags returned for replacement under warranty will be credited or replaced at DSC's option. Products not covered by this warranty, or otherwise out of warranty due to age, misuse, or damage shall be evaluated, and a repair estimate shall be provided. No repair work will be performed until a valid purchase order is received from the Customer and a Return Merchandise Authorisation number (RMA) is issued by DSC's Customer Service.

Digital Security Controls's liability for failure to repair the product under this warranty after a reasonable number of attempts will be limited to a replacement of the product, as the exclusive remedy for breach of warranty. Under no circumstances shall Digital Security Controls be liable for any special, incidental, or consequential damages based upon breach of warranty, breach of contract, negligence, strict liability, or any other legal theory. Such damages include, but are not limited to, loss of profits, loss of the product or any associated equipment, cost of capital, cost of substitute or replacement equipment, facilities or services, down time, purchaser's time, the claims of third parties, including customers, and injury to property. The laws of some jurisdictions limit or do not allow the disclaimer of consequential damages. If the laws of such a jurisdiction apply to any claim by or against DSC, the limitations and disclaimers contained here shall be to the greatest extent permitted by law. Some states do not allow the exclusion or limitation of incidental or consequential damages, so that the above may not apply to you.

Disclaimer of Warranties

This warranty contains the entire warranty and shall be in lieu of any and all other warranties, whether expressed or implied (including all implied warranties of merchantability or fitness for a particular purpose) And of all other obligations or liabilities on the part of Digital Security Controls Digital Security Controls 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.

This disclaimer of warranties and limited warranty are governed by the laws of the province of Ontario, Canada.

WARNING: Digital Security Controls 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.

Installer's Lockout

Any products returned to DSC which have the Installer's Lockout option enabled and exhibit no other problems will be subject to a service charge.

Out of Warranty Repairs

Digital Security Controls will at its option repair or replace out-of-warranty products which are returned to its factory according to the following conditions. Anyone returning goods to Digital Security Controls must first obtain an authorization number. Digital Security Controls will not accept any shipment whatsoever for which prior authorization has not been obtained.

Products which Digital Security Controls determines to be repairable will be repaired and returned. A set fee which Digital Security Controls has predetermined and which may be revised from time to time, will be charged for each unit repaired.

Products which Digital Security Controls determines not to be repairable will be replaced by the nearest equivalent product available at that time. The current market price of the replacement product will be charged for each replacement unit.

EULA

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WARNING: DSC 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 SOFTWARE PRODUCT to fail to perform as expected.

FCC Compliance Statement

CAUTION: Changes or modifications not expressly approved by Digital Security Controls could void your authority to use this equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

The user may find the following booklet prepared by the FCC useful: "How to Identify and Resolve Radio/Television Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402, Stock # 004-000-00345-4.

Important Information

This equipment complies with Part 68 of the FCC Rules and the requirements adopted by the ACTA. On the side of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the Telephone Company.

SG-DRL5/DRL5E/DRL5-2L Line Cards

Product Identifier: US: F53AL01ADRL5

USOC Jack: RJ-21X

REN = 0.1A

Telephone Connection Requirements

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.

Ringer Equivalence Number (REN)

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local Telephone Company. For products approved after July 23, 2001, the REN for this product is part of the product identifier that has the format. US:

AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3). For earlier products, the REN is separately shown on the label.

Incidence of Harm

If this equipment SG-SYSTEM 5 causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the Telephone Company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

Changes in Telephone Company Equipment or Facilities

The Telephone Company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the Telephone Company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

Equipment Maintenance Facility

If trouble is experienced with this SG-SYSTEM 5 equipment, for repair or warranty information, please contact the facility indicated below. If the equipment is causing harm to the telephone network, the Telephone Company may request that you disconnect the equipment until the problem is solved. This type of equipment is not intended to be repaired by the end user.

Tyco Atlanta Distribution Center, 2600 West Pointe Dr., Lithia Springs, GA, 30122 U.S.A.

Innovation, Science and Economic Development Canada

SG-System 5 IC: CAN ICES-3 (B)/NMB-3(B)

SG-DRL5/DRL5E/DRL5-2L IC: 160A-DRL5

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