1. MLR-2000

1.1 General Description

The MLR-2000 is a Multi-Format, Multi-Line, Full Redundancy Receiver. The Receiver will be able to perform to UL, and other countries regulatory requirements. The MLR-2000 consists of up to 255 individual line cards (DRL-2000) connected to a dual redundant central server and protocol converter (CPM-2000).

High bandwidth internal buses and high bandwidth external connections allow traditional network philosophies to be observed for the first time on a Central Station Receiver. TCP, IP and Ethernet are used within the Line card processing, Data transfer, Backplane Board routing and Automation Output.

The philosophy of the MLR-2000 is for handling of large account volumes, an Ethernet and TCP/IP platform provides for this where the standard use of RS232 output is not adequate or the backplane transfer rate using parallel or serial is too slow.

1.2 Virtual Receiver Architecture

Unique features of the MLR-2000 include the ability to use telephone service information delivered as DNIS (dialled number identification service); ANI (Automatic Number Identification) and Caller-ID service allowing the Sur-Gard expert format identification system to select on the fly each received call. This eliminates the requirement for dedicated line pools, Line card allocations or Hunter Groups. The MLR2000, utilizing DNIS or Caller ID, allows call up options, which set virtual line pools to identify security formats and extend account numbers.

A look-up table provides the format handshake on the first response, in so doing eliminating 2nd, 3rd, 4th handshake requirements, greatly reducing the on-line time factor. Handshake rotation also resides within the MLR-2000 for accounts not allocated to the look-up table.

64 profiles per line card are available; the profile provides for individual account to group account response, handling and identification. CPM-2000 Entries provide for output flexibility to individual or group account assignments. Virtual Receiver architecture is applicable to both input and output

1.3 Number of Line Cards Supported

A maximum configured MLR-2000 supports up to 255 line cards (DRL-2000) concurrently connected. The main MLR-2000 unit supports 60 lines with additional cabinets of 72 lines, 72 lines and 51 lines to bring to the maximum 255.

The DRL-2000 Line Cards are interconnected utilizing a backplane-Ethernet configuration, all line cards are hot replaceable.

1.4 Redundancy

The MLR-2000 has the ability and option for two (2) CPM-2000 hot redundant, hot switching controllers. Full redundancy of the Central Processors applies, allowing for automated switchover with a maximum time loss of 30 seconds.

Dual Power supplies per rack provide for continuous A and B-side power monitoring with 10B2 Ethernet configuration.

In practical terms, this means any line card (DRL-2000) or controller (CPM-2000) may fail and will not affect system performance.

1.5 Physical Connectivity

The MLR-2000 has two points of physical connectivity Line and System.

1.5.1 Line Connectivity

Each line card has the following connections

- Line in
- Tel out for two way audio with option ring voltage and DTMF Call Forward.
- Debug Port
- Standard Sur-Gard I/O

1.5.2 System Connectivity

The system may have two identical Central Processors (CPM-2000) both connected to internal resources. Internal connections are A and B-side 24 volt power and A and B-side 10B2 Ethernet. Additional internal connections provide for power-monitoring services on the primary rack. External connections are for 2 parallel printers and four serial ports. The serial ports are intended for modem, serial printer and for debug applications but may be used as a fallback automation outputs (optional).

The primary automation connection is via 10BT Ethernet connection.

1.6 Front Panel

The CPM-2000 front panel has a two line 20 character display and a keypad. LED lights and acknowledge buttons provide for visual indication of a condition and the ability to manually acknowledge if required.

1.6.1 Automation Mode

In automation mode the primary connection will be via TCP/IP networking on the 10BT Ethernet connection. In this mode a menu will prompt the user through initial IP address and port setup. Once the configuration management port is set all other options and setup may be completed via a Telenet session or Sur-Gard configurator.

1.6.2 UL Manual Mode

If in the event of UL manual mode being required each event will be presented at the display and can be acknowledged manually. Each event will then be sent via the Printer output to the connected printer as per UL standards.

1.7 Virtual Connectivity

Each CPM2000 has one IP address and a number of associated ports. Internal socket programming uses named ports for expected tasks.

1.7.1 Configuration Management – Telnet Port

This port is used after the IP has been initially configured. Additional options may be configured via the telnet connection using a VT-100 terminal style menu.

1.7.2 Configuration Management – Sur-Gard Configuration Port

This tool provides for NT 4 + or Win98 environment and allows for graphical style menus for configuration management. The additional features are storage of virtual receiver setups and configuration wizards. Sur-Gard software is available for this task.

1.7.3 STD IO

This port provides debug messages to logging software.

1.7.4 STD ERROR

This port provides MLR-2000 exceptions for logging and analysis.

1.7.5 Automation Output

The CPM-2000 provides for two forms of automation output. One element TCP/IP port per CPM, plus 3 RS232 output ports. The CPM can be programmed to the TCP/IP port with RS232 fall-back or RS232 only (dependant on automation software ability). One parallel printer port is also provided per CPM.

Optional secondary automation outputs are provided to map to proprietary automation outputs. It is expected that named virtual receiver types will be mapped to this output. In addition future two-way automation commands and Trapping commands may be supported on this port.

1.7.6 Automation Bidirectional port - Dialler

This port will be available for future Sur-Gard two-way commands. It also allows named receiver resources to be used for dialing.

1.8 Internal 10B2 Ethernet

Internal Ethernet is not standard TCP/IP, instead it has allocated proprietary type per Internet standards. Full physical 10B2 requirements are met allowing approved segment interconnects to be used including hubs, optical transceivers and wan interconnects (Wan interconnects preclude trap and capture commands).

2 Physical Requirements

2.1 Space

The MLR-2000 receiver is implemented in 19 inch - 600 mm racks. Each sub-rack is 6U high. In each 19 inch by 6U sub-rack 12 line cards (DRL-2000) can be installed.

The Main Receiver comprises a minimum of 1-Power Supply module and 1-CPM2000 module with up to 60-DRL-2000 Line Cards. Sub receiver cabinets for the additional line cards (72–72–51) must have a minimum 6U high power supply unit.

2.2 Power

Each power supply per rack provides 5% 24DC power. Optional redundancy is available and optional battery backup is available. User supplied batteries may be used externally but must be fused and connected to 10-32 lugs supplied via a ring termination. Full power operation is .5 Amps per line and 1 Amp per CPM. All elements have extensive power down capablilities and are implemented in CMOSlogic. Line cards in sleep mode are expected to reduce power requirements by 80% from full power or less.

Power supply inputs may be 115 or 240VAC at 1000W.

2.3 Spacing

All sub receivers (60 lines up) must be within 50 ft. of the main receiver and CPM-2000 to provide system timing integrity.

2.4 Printer Output

The MLR-2000 presents a unified printer output stream to STD print. When the monitoring computer fails, full reporting is automatically turned on if selected in the program option. The STD print port is supervised and if failure occurs all output goes to the physical printer port. Sur-Gard traffic will be printed per Sur-Gard standard. STD IO and STD Error streams are also routed to the printer in the event of complete automation failure preceeded by STD IO and STD ERROR respectively.

The CPM-2000 Virtual program provides for future full printer library output with convertion from randon formats to full library discription.

2.5 Real Time Commands

Bidirectional commands are available on the MLR-2000 receiver for negociated protocols. Typically a session opens with a request through the Automation Bi-Directional port. At this point a resource is assigned and provided for the session. Common Unix port standards applies. From time to time additional ports may be assigned for added functionality.

2.6 Capture Commands

Capture Commands may be available for supported protocols. Commands are stored in the CPM in tabular fashion by account number. The commands stored in Ram are built up per Sur-Gard protocols and are also required to be downloaded on reset. With optional flash or hard disk they may also be locally resident.

Capture commands storage are based on Ram available, minimum configuration will be 8000 accounts at 8 bytes each. When full, subseqent attempts return errors on the originating protocol.

2.7 DES

DES is not be implemented on the first release of the MLR-2000. DES may be released at a subseqent agreed upon date. Implementation will be as per FIPS 46-2.

4.0 SG FORMATS LIST

NAME	FORMAT TYPE	HANDSHAKE	SPEED
1. Acron Superfast	3/8	1400Hz	DTMF
2. Acron Superfast	4/8	1400Hz	DTMF
3. Ademco Slow	3/1	1400Hz	10bps
4. Ademco Slow	3/2 or 4/1	1400Hz	10bps
5. Ademco Slow	3/1 partial extended	1400Hz	10bps
6. Ademco Slow	3/1 extended	1400Hz	10bps
7. Ademco Slow	3/1 checksum	1400Hz	10bps
8. Ademco Slow	3/1 extended-checksum	1400Hz	10bps
9. Ademco Slow	4/1 partial extended	1400Hz	10bps
10. Ademco Slow	4/1 extended	1400Hz	10bps
11. Ademco Slow	4/2	1400Hz	10bps
12. Ademco Slow	4/2 extended	1400Hz	10bps
13. Ademco Slow	4/2 checksum	1400Hz	10bps
14. Ademco Slow	4/2 extended-checksum	1400Hz	10bps
15. Ademco Express	4/1	Dual Tone	DTMF
16. Ademco Express	4/2	Dual Tone	DTMF
17. Ademco Hi Speed	2/8/1	Dual Tone	DTMF
18. Ademco Hi Speed	3/8/1	Dual Tone	DTMF
19. Ademco Hi Speed	4/8/1	Dual Tone	DTMF
20. Ademco Hi Speed	4/8/1 checksum	Dual Tone	DTMF
21. Ademco Contace ID	4/2 1/3 2/3 checksum	Dual Tone	DTMF
22. DMP	6 digits account	FSK	300bps
23. FBI Superfast	4/3/1	Dual Tone	DTMF
24. Franklin/Sescoa	3/1	2300Hz	20bps
25. Franklin/Sescoa	3/2 or 4/1	2300Hz	20bps
26. Franklin/Sescoa	3/1 partial extended	2300Hz	20bps
27. Franklin/Sescoa	3/1 extended	2300Hz	20bps
28. Franklin/Sescoa	3/1 checksum	2300Hz	20bps
29. Franklin/Sescoa	3/1 extended-checksum	2300Hz	20bps
30. Franklin/Sescoa	4/1 partial extended	2300Hz	20bps
31. Franklin/Sescoa	4/1 extended	2300Hz	20bps
32. Franklin/Sescoa	4/2	2300Hz	20bps
33. Franklin/Sescoa	4/2 extended	2300Hz	20bps
34. Franklin/Sescoa	4/2 checksum	2300Hz	20bps
35. Franklin/Sescoa	4/2 extended-checksum	2300Hz	20bps
36. ITI	Up to 5 digits account	FSK	110/300bps
37. Radionics BFSK	3/2	1400Hz	42.7bps

NAME	FORMAT TYPE	HANDSHAKE	SPEED
38. Radionics BFSK	3.2	2300Hz	42.7bps
39. Radionics Hex	3/1	2300Hz	40bps
40. Radionics Hex	3/2 or 4/1	2300Hz	40bps
41. Radionics Hex	3/1 partial extended	2300Hz	40bps
42. Radionics Hex	3/1 extended	2300Hz	40bps
43. Radionics Hex	3/1 checksum	2300Hz	40bps
44. Radionics Hex	3/1 extended-checksum	2300Hz	40bps
45. Radionics Hex	4/1 extended	2300Hz	40bps
46. Radionics Hex	4/2	2300Hz	40bps
47. Radionics Hex	4/2 extended	2300Hz	40bps
48. Radionics Hex	4/2 checksum	2300Hz	40bps
49. Radionics Hex	4/2 extended-checksum	2300Hz	40bps
50. Radionics Modem II	4 digits account	FSK	110bps
51. Radionics Modem IIE	4 digits account	FSK	300bps
52. Radionics Modem IIIa²	4 digits account	FSK	300bps
53. Sescoa Super Speed	4/3 or 4/2 checksum	2300Hz	40bps
54. Sescoa Super Speed	4/3 with O/C or 4/2 checksum	2300Hz	40bps
55. SIA Level 1	Up to 10 digits account	FSK	110/300bps
56. SIA Level 2	Up to 10 digits account	FSK	110/300bps
57. SIA Level 3	Up to 10 digits account	FSK	110/300bps
58. SIA8	Up to 10 digits account	FSK	110/300bps
59. SIA20	Up to 10 digits account	FSK	110/300bps
60. Silent Knight Fast	3/1	1400Hz	14bps
61. Silent Knight Fast	3/2 or 4/1	1400Hz	14bps
62. Silent Knight Fats	3/1 extended	1400Hz	14bps
63. Silent Knight Fast	3/1 checksum	1400Hz	14bps
64. Silent Knight Fast	3/1 extended-checksum	1400Hz	14bps
65. Silent Knight Fast	4/1 extended	1400Hz	14bps
66. Silent Knight Fast	4/2	1400Hz	14bps
67. Silent Knight Fast	4/2 extended	1400Hz	14bps
68. Silent Knight Fast	4/2 checksum	1400Hz	14bps
69. Silent Knight Fast	4/2 extended-checksum	1400Hz	14bps
70. Silent Knight FSK1	4/1	2300Hz	110bps
71. Silent Knight FSK 2	4/2	2300Hz	110bps
72. Sur-Gard DTMF	4/1	2300Hz or Dual Tone	DTMF
73. Sur-Gard DTMF	4/2	2300Hz or Dual Tone	DTMF
74. Sur-Gard DTMF	4/3	2300Hz or Dual Tone	DTMF
75. Sur-Gard DTMF	4/3 checksum	2300Hz or Dual Tone	DTMF

5.0 Document Revision History

Originated (Source If applicable)

Date- July 9, 1997

Date:

Revision #: x2

Changes:

Date - September 15th, 1997

Changes: Merged with the Marketing specification.

5.1 Document Revision Endnotes

Note#	Revision	Section	Changes

SG SECURITY COMMUNICATIONS™

A Division of Sur-Gard Security Systems Ltd.

MLR-2000

VIRTUAL RECEIVER

Technical Specification
Introduction and Overview

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A Division of Sur-Gard Security
401 Magnetic Drive, Units 24-28
Downsview, Ontario Canada M3J 3H9
Tel: (416) 665-4494
Fax: (416) 665-4222
Toll Free: 1-800-418-7618
www.sur-gard.com

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