# CRS 1:N Modem Redundancy Switches







## INTRODUCTION

The CRS-300 1:10 modem redundancy switch provides fully automatic or manual redundancy for the following modems: CDM-570/570L, CDM-600/ 600L, CDM-625, CDM-Qx/QxL, CDM-700, CDM-710, CDM-710G and SLM-5650A.

The protection system consists of a maximum of 10 traffic modems, a redundant modem, and the CRS-300 redundancy switch. Two companion (slaved) 1:N switches are also available: the CRS-280/280L IF switch and the CRS-350 ESC switch. The IF switch is used in multiple transponder applications. The CRS-350 is used for open network ESC redundancy switching.

### **COMPATIBILITY**

The CRS-300 supports a wide range of terrestrial data interface types including: EIA-422/530, V.35, EIA-232, LVDS, G.703 (balanced or unbalanced), ASI, 10/100/1000 Ethernet and HSSI. In many cases, each traffic modem can have a different terrestrial data interface types.

## **KEY RELIABILITY FEATURES**

- Twin, independent AC or DC power supplies
- · Passive backplane for signal path
- Non-interruption of normal traffic upon power failure
- Non-interruption of user data when other traffic modem Interface circuit cards are removed
- Data and clock provided to the redundant modem when in Bridge Mode
- Programmable holdoff times to backup or restore
- Audible alarm programmable to activate, based on various changes in status
- Provides single-point remote Monitor and Control (M&C) to switch and traffic modems
- · Simplified configuration and control
- 2 line x 24 character Vacuum Fluorescent Display
- · Front panel keypad
- LED system status display showing unit and modem status, online/offline status, and bridge status

## SUPERIOR FUNCTIONALITY

The configuration of each traffic modem is stored in the CRS-300 controller. This information is used to program the redundant modem if the traffic modem fails. The modem information is copied to the controller through a serial cable.

The CRS-300 also controls the traffic and redundant modem IF output. All modem outputs are ON if the CRS-280 or CRS-280L IF switch is used in the system. The downlink path through the CRS-280/ CRS-280L is completely passive.

External monitor and control may be connected to the CRS-230 controller board. The CRS-300 and each traffic modem may be monitored or controlled through this remote serial interface.

The data and clock signals to and from a traffic modem are routed through a Traffic Modem Interface (TMI) via a set of relays. This allows the data signals to pass directly through to the traffic modem in the event of a power failure. If the system's power supplies are lost, or if a TMI carrying traffic is removed, no interruption of traffic occurs.

The Bridge Mode may be used to verify the user data on a specific traffic modem. The redundant modem locks to the traffic modem receive IF input signal. The operator can program a delay interval for the backup modem to wait before coming online when a traffic modem failure occurs.

## MODULAR CONSTRUCTION

The redundancy switches are modular in construction. All replaceable modules insert into slots in the back panel, including the controller, Traffic Modem Interfaces (TMIs), Redundant Modem Interfaces (RMIs), and Power Supply Units (PSUs).

Power consumption is so low, even for fully populated units, that no fan cooling is required.

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# **CRS Series 1:N Modem Redundancy Switches**

## SYSTEM SPECIFICATION

| Туре                                       | 1:N Redundancy Switch system, N=10 max, bridging architecture.   |
|--|--|
| Compatible Modems                          | CDM-570/570L, CDM-600/600L, CDM-625, CDM-Qx/QxL, CDM-700, CDM-710, and SLM-5650A.  |
| Operating Modes                            | Fully automatic or manual. Force Traffic Modem to Redundant Modem. Remove selected Traffic Modem from control. Programmable hold-off to backup and hold – off to restore (from 2 to 99 seconds). |
| Switching Conditions                       | Switch to Redundant Modem following a unit fault.<br>Tx traffic alarm or Rx traffic alarm.   |
| IF Switching                               | With CRS-280 IF Switch; all modems outputs on all the time. Without CRS-280 IF Switch: IF On/Off control to modems   |
| Redundant Modem<br>Signal Source           | Any one of the 10 traffic paths (bridge mode) (both Rx IF and Tx data).  |
| Front Panel                                | Vacuum fluorescent display, 2 lines, 24 characters.<br>LED status display showing, for all modems.<br>Unit Status, Tx Status, Rx Status, Online and Bridge Status.                               |
| Audible Alarm                              | Programmable to activate following various changes of state.   |
| Common faults                              | Dry relay contacts.  |
| Prime Power                                | Two independent inputs, (AC or DC versions available): 90 to 264 VAC, 50/60 Hz, or 48 (38 to 60) VDC <25 watts.  |
| Dimensional Envelope<br>(Rack Mount – 4RU) | 19W x 11.75D x 6.75H inch.<br>(48.26W x 29.85D x 17.15H cm).   |
| Weight                                     | ~ 20 lbs (~ 9.07 kg)   |
| Temperature                                | 0 to +40°C (32 to 104°F) Operating<br>50 to 100°C (122 to 212°F) Storage   |
| Humidity                                   | 95% at +40°C (104°F), Non-condensing   |
| CE Mark                                    | EMC and Safety.  |









# CRS-280/280L – IF SWITCH (Optional)

|                      | CRS-280 (70/140MHz)   | CRS-280L (L-Band)          |
|----------------------|-----------------------|----------------------------|
| Operating Frequency  | 50 to 180 MHz         | 950 to 1950 MHz            |
| Connector Type       | Tx/Rx BNC or TNC      | Tx/Rx N-type               |
| Return Loss          | 18 dB into $75\Omega$ | 15 dB into $50\Omega$      |
| Power                | From CRS-300          | 100-240 VAC 50/60 Hz (25W) |
| Dimensional Envelope | 19" W x 2.5" D x 7" H | 19" W x 14" D x 7" H       |
| (Rack Mount – 4 U)   |                       | (48.26 cm x 36 cm x 18 cm) |
| Weight               | < 10 lbs (< 4.54 kg)  | < 25 lbs (11.3 kg)         |







#### MODEM vs TERRESTRIAL USER DATA INTERFACE

| CDM-570  | Modem      | TMI      | User Data Type                     | User Data<br>Connector(s) |
|--|------------|----------|------------------------------------|---------------------------|
| CDM-570L         CRS-330         G.703 (Balanced/Unbalanced)         (1) DB-15F/ (2) BNC           CRS-340         EIA-422, V.35, RS232         (1) DB-25F           G.703 (Balanced/Unbalanced)         (1) DB-25F           CDM-600L         CRS-320         EIA-422, V.35, RS232         (1) DB-25F           CDM-600L         CRS-330         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-25F           G.703 Unbal (DDI, IDO, DDO, IDI)         (1) DB-15F         (2) BNC           CRS-340         EIA-422, V.35, RS232, LVDS         (1) DB-25F           G.703 Unbal (DDI, IDO, DDO, IDI)         (1) DB-15F         (2) BNC           CRS-370         HSSI (User)         (1) HD-50F           CDM-625         CRS-316         EIA-422, V.35         (1) DB-25F           10/100 Ethernet         (1) RJ45         (2) BNC           CRS-330         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO, DDO, IDI)         (1) DB-15F           G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNC           CRS-345D         Quad E1 (1 to 4 Ports of E1)         (2) DB-9F           CDM-QxL         CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)  | CDM-570    | CRS-320  | FIΔ-422 V 35 FIΔ-232               |                           |
| CRS-340  |            |          |                                    |                           |
| G.703 (Balanced/Unbalanced)  | ODIN STOL  |          |                                    |                           |
| CDM-600L         CRS-320         EIA-422, V.35, RS232         (1) DB-25F           CDM-600L         CRS-330         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO, DDO, IDI)         (4) BNC           CRS-340         EIA-422, V.35, RS232, LVDS         (1) DB-25F           G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNC           CRS-370         HSSI (User)         (1) HD-50F           CDM-625         CRS-316         EIA-422, V.35         (1) DB-25F           10/100 Ethernet         (1) RJ45         (2) BNC           CRS-325         ASI         (2) BNC           CRS-330         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNC           CRS-345D         Quad E1 (1 to 4 Ports of E1)         (2) DB-9F           CRS-365D         Quad E1 (1 to 4 Ports of E1)         (2) BNCs           CDM-OXL         CRS-316         EIA-530, V.35, EIA-232         (1) DB-25F           G.703 Unbal (DDI, IDO)         (2) BNCs  |            | 010 340  |                                    |                           |
| CDM-600L         CRS-330         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO, DDO, IDI)         (4) BNC           CRS-340         EIA-422, V.35,RS232, LVDS         (1) DB-25F           G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNC           CRS-370         HSSI (User)         (1) HD-50F           CDM-625         CRS-316         EIA-422, V.35         (1) DB-25F           107100 Ethernet         (1) RJ45         (2) BNC           CRS-325         ASI         (2) BNC           CRS-330         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNC           CDM-Ox         CRS-316         EIA-530, V.35, EIA-232         (1) DB-25F           CDM-OX         CRS-316         EIA-530, V.35, EIA-232         (1) DB-25F           CDM-OX         CRS-316         EIA-530, V.35, EIA-232         (1) DB-25F           CDM-700         CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)  | CDM-600    | CB2-330  | 1                                  |                           |
| G.703 Unbal (DDI, IDO, IDO, IDI) (4) BNC   |            |          |                                    | <u> </u>                  |
| CRS-340  | ODIVI OOOL | ONO-330  |                                    | ` '                       |
| G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F (2) BNC   |            | CRS-340  |                                    | · · ·                     |
| G.703 Unbal (DDI, IDO)   |            | 0113 340 |                                    |                           |
| CRS-370  |            |          |                                    |                           |
| CDM-625         CRS-316         EIA-422, V.35         (1) DB-25F           10/100 Ethernet         (1) RJ45           CRS-325         ASI         (2) BNC           CRS-330         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO, DDO, IDI)         (4) BNC           CRS-340         EIA-422, V.35, LVDS         (1) DB-25F           G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNC           CRS-365D         Quad E1 (1 to 4 Ports of E1)         (2) DB-9F           CRS-370         LVDS to HSSI(User)         (1) HD-50F           CDM-OX         CRS-316         EIA-530, V.35, EIA-232         (1) DB-25F           CDM-QXL         CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs         (2) BNCs           CRS-336         HSSI         (1) HD-50F           CRS-365         Quad E1 (1 to 4 Ports of E1)         (4) RJ45s           CDM-700         CRS-325         OC3 Copper         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CRS-325         Unbal G.703 (1-4 ports)         (8) BNCs  |            | CRS-370  |                                    |                           |
| 10/100 Ethernet  | CDM-625    |          |                                    |                           |
| CRS-325 ASI (2) BNC CRS-330 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F G.703 Unbal (DDI, IDO, DDO, IDI) (4) BNC CRS-340 EIA-422, V.35, LVDS (1) DB-25F G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F G.703 Unbal (DDI, IDO) (2) BNC CRS_365D Quad E1 (1 to 4 Ports of E1) (2) DB-9F CRS-370 LVDS to HSSI(User) (1)HD-50F CRS-370 LVDS to HSSI(User) (1)HD-50F CRS-316 EIA-530, V.35, EIA-232 (1) DB-25F CDM-QxL CRS-325 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F G.703 Unbal (DDI, IDO) (2) BNCs CRS-336 HSSI (1) HD-50F CRS-365 Quad E1 (1 to 4 Ports of E1) (4) RJ45s CDM-700 CRS-325 OC3 Copper (2) BNCs CRS-336 HSSI (1) HD-50F Giga Bit (1) RJ45 CRS-345 Multi-Port Unbal G.703 (1-4 ports) (8) BNCs CDM-710 CRS-325 ASI (2) BNCs CRS-336 HSSI (1) HD-50F Giga Bit (1) RJ45 CDM-710G CRS-325 Unbal G.703 (2) BNCs CRS-336 HSSI (1) HD-50F Giga Bit (1) RJ45 CRS-325 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F G.703 Unbal (DDI, IDO) (2) BNCs CRS-336 HSSI (1) HD-50F   | 05111 020  | 0100010  |                                    |                           |
| CRS-330  |            | CRS-325  |                                    | ` '                       |
| G.703 Unbal (DDI, IDO, DDO, IDI)   (4) BNC   |            |          | _                                  |                           |
| CRS-340 EIA-422, V.35, LVDS G.703 Bal (DDI,IDO, DDO, IDI) G.703 Unbal (DDI, IDO) (2) BNC  CRS_365D Quad E1 (1 to 4 Ports of E1) (2) DB-9F CRS-370 LVDS to HSSI(User) (1) HD-50F CRS-370 CDM-Qx CRS-316 EIA-530, V.35, EIA-232 (1) DB-25F G.703 Unbal (DDI, IDO) (2) BNCs CRS-325 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F G.703 Unbal (DDI, IDO) (2) BNCs CRS-336 HSSI (1) HD-50F CRS-365 Quad E1 (1 to 4 Ports of E1) (4) RJ45s  CDM-700 CRS-325 OC3 Copper (2) BNCs CRS-336 HSSI (1) HD-50F Giga Bit (1) RJ45 CRS-345 Multi-Port Unbal G.703 (1-4 ports) (8) BNCs CRS-336 HSSI (1) HD-50F Giga Bit (1) RJ45 CRS-325 GR33 Bit (1) RJ45 CRS-326 GR33 Bit (1) RJ45 CRS-326 CRS-336 HSSI (1) HD-50F  |            | ONO-330  |                                    | ` '                       |
| G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F (G.703 Unbal (DDI, IDO) (2) BNC (CRS_365D Quad E1 (1 to 4 Ports of E1) (2) DB-9F (CRS-370 LVDS to HSSI(User) (1) HD-50F (DM-QX CRS-316 EIA-530, V.35, EIA-232 (1) DB-25F (G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F (G.703 Unbal (DDI, IDO) (2) BNCs (CRS-325 Quad E1 (1 to 4 Ports of E1) (4) RJ45s (CRS-325 Quad E1 (1 to 4 Ports of E1) (4) RJ45s (CRS-336 HSSI (1) HD-50F (Giga Bit (1) RJ45 (CRS-345 Multi-Port Unbal G.703 (1-4 ports) (8) BNCs (CRS-336 HSSI (1) HD-50F (Giga Bit (1) RJ45 (CRS-336 HSSI (1) RJ45 (CRS-336 HSSI (1) RJ45 (CRS-325 (G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F (G.703 Unbal (DDI, IDO) (2) BNCs (CRS-336 HSSI (1) HD-50F (CRS-336 HSSI (1) RJ45 (CRS-336 HSSI (1) HDS-15F (G.703 Unbal (DDI, IDO) (2) BNCs (CRS-336 HSSI (1) HD-50F (CRS-336 HSSI (1) HD- |            | CRS-340  |                                    | · · · /                   |
| G.703 Unbal (DDI, IDO) (2) BNC   |            | 0113 340 |                                    | <u> </u>                  |
| CRS_365D         Quad E1 (1 to 4 Ports of E1)         (2) DB-9F           CRS-370         LVDS to HSSI(User)         (1)HD-50F           CDM-QxL         CRS-316         EIA-530, V.35, EIA-232         (1) DB-25F           CDM-QxL         CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI         (1) HD-50F           CRS-365         Quad E1 (1 to 4 Ports of E1)         (4) RJ45s           CDM-700         CRS-325         OC3 Copper         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45         (2) BNCs           CDM-710         CRS-325         ASI         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CDM-710G         CRS-325         Unbal G.703         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           SLM-5650A         CRS-316         MIL-STD-188-114, EIA-530         (1) DB-25F           Giga Bit         (1) RJ45           CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703  |            |          |                                    | ` '                       |
| CRS-370         LVDS to HSSI(User)         (1)HD-50F           CDM-Qx         CRS-316         EIA-530, V.35, EIA-232         (1) DB-25F           CDM-QxL         CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI         (1) HD-50F           CRS-365         Quad E1 (1 to 4 Ports of E1)         (4) RJ45s           CDM-700         CRS-325         OC3 Copper         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CRS-345         Multi-Port Unbal G.703 (1-4 ports)         (8) BNCs           CDM-710         CRS-325         ASI         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CDM-710G         CRS-325         Unbal G.703         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           SLM-5650A         CRS-316         MIL-STD-188-114, EIA-530         (1) DB-25F           Giga Bit         (1) RJ45           CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)   |            | CRS 365D |                                    | <u> </u>                  |
| CDM-Ox<br>CDM-QxL         CRS-316         EIA-530, V.35, EIA-232         (1) DB-25F           CDM-QxL         CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI         (1) HD-50F           CRS-365         Quad E1 (1 to 4 Ports of E1)         (4) RJ45s           CDM-700         CRS-325         OC3 Copper         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CRS-345         Multi-Port Unbal G.703 (1-4 ports)         (8) BNCs           CDM-710         CRS-325         ASI         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CDM-710G         CRS-325         Unbal G.703         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           SLM-5650A         CRS-316         MIL-STD-188-114, EIA-530         (1) DB-25F           Giga Bit         (1) RJ45           CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI   |            |          |                                    |                           |
| CDM-QxL         CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI         (1) HD-50F           CRS-365         Quad E1 (1 to 4 Ports of E1)         (4) RJ45s           CDM-700         CRS-325         OC3 Copper         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CRS-345         Multi-Port Unbal G.703 (1-4 ports)         (8) BNCs           CDM-710         CRS-325         ASI         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CDM-710G         CRS-325         Unbal G.703         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           SLM-5650A         CRS-316         MIL-STD-188-114, EIA-530         (1) DB-25F           Giga Bit         (1) RJ45           CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI         (1) HD-50F  | CDM-Ox     |          |                                    |                           |
| G.703 Unbal (DDI, IDO)   (2) BNCs  |            |          |                                    |                           |
| CRS-336         HSSI         (1) HD-50F           CRS-365         Quad E1 (1 to 4 Ports of E1)         (4) RJ45s           CDM-700         CRS-325         OC3 Copper         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CRS-345         Multi-Port Unbal G.703 (1-4 ports)         (8) BNCs           CDM-710         CRS-325         ASI         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CDM-710G         CRS-325         Unbal G.703         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           SLM-5650A         CRS-316         MIL-STD-188-114, EIA-530         (1) DB-25F           Giga Bit         (1) RJ45           CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI         (1) HD-50F   |            |          |                                    | ` '                       |
| CRS-365         Quad E1 (1 to 4 Ports of E1)         (4) RJ45s           CDM-700         CRS-325         OC3 Copper         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CRS-345         Multi-Port Unbal G.703 (1-4 ports)         (8) BNCs           CDM-710         CRS-325         ASI         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CDM-710G         CRS-325         Unbal G.703         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           SLM-5650A         CRS-316         MIL-STD-188-114, EIA-530         (1) DB-25F           Giga Bit         (1) RJ45           CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI         (1) HD-50F   |            | CRS-336  |                                    | + · ·                     |
| CDM-700         CRS-325         OC3 Copper         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CRS-345         Multi-Port Unbal G.703 (1-4 ports)         (8) BNCs           CDM-710         CRS-325         ASI         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CDM-710G         CRS-325         Unbal G.703         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           SLM-5650A         CRS-316         MIL-STD-188-114, EIA-530         (1) DB-25F           Giga Bit         (1) RJ45           CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI         (1) HD-50F  |            |          | Quad E1 (1 to 4 Ports of E1)       | (4) RJ45s                 |
| CRS-336 HSSI (1) HD-50F Giga Bit (1) RJ45 CRS-345 Multi-Port Unbal G.703 (1-4 ports) (8) BNCs CDM-710 CRS-325 ASI (2) BNCs CRS-336 HSSI (1) HD-50F Giga Bit (1) RJ45 CDM-710G CRS-325 Unbal G.703 (2) BNCs CRS-336 HSSI (1) HD-50F Giga Bit (1) RJ45 SLM-5650A CRS-316 MIL-STD-188-114, EIA-530 (1) DB-25F Giga Bit (1) RJ45 CRS-325 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F G.703 Unbal (DDI, IDO) (2) BNCs CRS-336 HSSI (1) HD-50F  | CDM-700    |          |                                    |                           |
| CRS-345 Multi-Port Unbal G.703 (1-4 ports) (8) BNCs  CDM-710 CRS-325 ASI (2) BNCs  CRS-336 HSSI (1) HD-50F  Giga Bit (1) RJ45  CDM-710G CRS-325 Unbal G.703 (2) BNCs  CRS-336 HSSI (1) HD-50F  Giga Bit (1) RJ45  SLM-5650A CRS-316 MIL-STD-188-114, EIA-530 (1) DB-25F  Giga Bit (1) RJ45  CRS-325 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F  G.703 Unbal (DDI, IDO) (2) BNCs  CRS-336 HSSI (1) HD-50F   |            |          | 1                                  |                           |
| CRS-345 Multi-Port Unbal G.703 (1-4 ports) (8) BNCs  CDM-710 CRS-325 ASI (2) BNCs  CRS-336 HSSI (1) HD-50F  Giga Bit (1) RJ45  CDM-710G CRS-325 Unbal G.703 (2) BNCs  CRS-336 HSSI (1) HD-50F  Giga Bit (1) RJ45  SLM-5650A CRS-316 MIL-STD-188-114, EIA-530 (1) DB-25F  Giga Bit (1) RJ45  CRS-325 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F  G.703 Unbal (DDI, IDO) (2) BNCs  CRS-336 HSSI (1) HD-50F   |            |          | Giga Bit                           | (1) RJ45                  |
| CDM-710         CRS-325         ASI         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           CDM-710G         CRS-325         Unbal G.703         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           SLM-5650A         CRS-316         MIL-STD-188-114, EIA-530         (1) DB-25F           Giga Bit         (1) RJ45           CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI         (1) HD-50F  |            | CRS-345  | Multi-Port Unbal G.703 (1-4 ports) | (8) BNCs                  |
| CRS-336 HSSI (1) HD-50F  Giga Bit (1) RJ45  CDM-710G CRS-325 Unbal G.703 (2) BNCs  CRS-336 HSSI (1) HD-50F  Giga Bit (1) RJ45  SLM-5650A CRS-316 MIL-STD-188-114, EIA-530 (1) DB-25F  Giga Bit (1) RJ45  CRS-325 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F  G.703 Unbal (DDI, IDO) (2) BNCs  CRS-336 HSSI (1) HD-50F  | CDM-710    |          |                                    | (2) BNCs                  |
| Giga Bit   (1) RJ45  |            | CRS-336  | HSSI                               |                           |
| CDM-710G         CRS-325         Unbal G.703         (2) BNCs           CRS-336         HSSI         (1) HD-50F           Giga Bit         (1) RJ45           SLM-5650A         CRS-316         MIL-STD-188-114, EIA-530         (1) DB-25F           Giga Bit         (1) RJ45           CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI         (1) HD-50F   |            |          | Giga Bit                           |                           |
| CRS-336 HSSI (1) HD-50F  Giga Bit (1) RJ45  SLM-5650A CRS-316 MIL-STD-188-114, EIA-530 (1) DB-25F  Giga Bit (1) RJ45  CRS-325 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F  G.703 Unbal (DDI, IDO) (2) BNCs  CRS-336 HSSI (1) HD-50F   | CDM-710G   | CRS-325  | 0                                  |                           |
| Giga Bit (1) RJ45  SLM-5650A CRS-316 MIL-STD-188-114, EIA-530 (1) DB-25F Giga Bit (1) RJ45  CRS-325 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F G.703 Unbal (DDI, IDO) (2) BNCs  CRS-336 HSSI (1) HD-50F  |            | CRS-336  |                                    | (1) HD-50F                |
| SLM-5650A         CRS-316         MIL-STD-188-114, EIA-530         (1) DB-25F           Giga Bit         (1) RJ45           CRS-325         G.703 Bal (DDI,IDO, DDO, IDI)         (1) DB-15F           G.703 Unbal (DDI, IDO)         (2) BNCs           CRS-336         HSSI         (1) HD-50F   |            |          |                                    | · · · /                   |
| Giga Bit (1) RJ45  CRS-325 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F G.703 Unbal (DDI, IDO) (2) BNCs  CRS-336 HSSI (1) HD-50F   | SLM-5650A  | CRS-316  |                                    |                           |
| CRS-325 G.703 Bal (DDI,IDO, DDO, IDI) (1) DB-15F G.703 Unbal (DDI, IDO) (2) BNCs CRS-336 HSSI (1) HD-50F   |            |          |                                    |                           |
| G.703 Unbal (DDI, IDO) (2) BNCs CRS-336 HSSI (1) HD-50F  |            | CRS-325  |                                    |                           |
| CRS-336 HSSI (1) HD-50F  |            |          |                                    | ` '                       |
|  |            | CRS-336  | · · · · · ·                        |                           |
|  |            |          | Giga Bit                           | (1) RJ45                  |

## Notes:

1. SLM-5650 (non "A" version) see Legacy 1:N Switch Datasheet.

# CRS-350 - ENGINEERING SERVICE CHANNEL SWITCH(Optional)

| Applicable Modems          | CDM-600/600L/625, SLM-5650A                  |
|----------------------------|--|
| User Data Interfaces       | (1) DB-25M connector - ESC, overhead signals |
|                            | (1) DB-15F connector - IDR Alarms            |
|                            | (1) DB-9F connector - Audio                  |
|                            |  |
| Power                      | From CRS-300                                 |
| Power Dimensional Envelope | From CRS-300<br>19" W x 4.0" D x 7" H        |
|                            |  |

