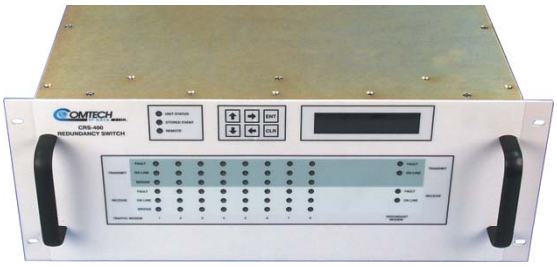
CRS Series 1:N Modem Redundancy Switches



INTRODUCTION

The Comtech EF Data 1:N Modem Redundancy Switches provide fully automatic or manual protection of traffic circuits in the case of equipment failure. They are primarily intended for hub applications, and are compatible with a variety of Comtech EF Data Satellite Modems. The protection system consists of traffic modems (up to ten for the CRS-200 and CRS-300, and up to eight for the CRS-400), plus a redundant modem, and a redundancy switch. Optional IF switches are available for multiple transponders or multiple satellite applications.

A key feature of the switches is the ability to allow the redundant modem to 'bridge' a traffic modem. The switch automatically:

- Configures the redundant modem to match the configuration of the bridged modem
- Copies the bridged modem's terrestrial transmit clock/data to the redundant modem, along with the bridged modem's Rx IF (using the CRS-280/L)

Because of this, no external test equipment is needed to determine the health of the redundant modem - live traffic is used at all times to verify performance.

FEATURES

- Dual, independent power supplies
- Passive backplane for signal path
- Normal traffic is not interrupted upon power failure
- Non-interruption of user data when other traffic modem Interface circuit cards are removed
- Data and clock are provided to the redundant modem when in bridged mode
- Programmable hold-off times to backup or restore
- Audible alarm programmable to activate based on various changes in status
- Simplified configuration and control
- 2 line x 24 character vacuum fluorescent display
- Front panel keypad
- LED system status display showing unit status, online/offline status and bridge status

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. Connection to both the traffic modems and the redundant modem is remarkably simple.

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TRAFFIC MODEM INTERFACE

Terrestrial user clock and data 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 takes place. In normal circumstances, where the redundant modem is not in service, no data is carried through the redundancy switch backplane – all data is routed via the TMI.

IF REDUNDANCY

IF switches are also available to support 1:N redundancy. There is a CRS-280 switch for 70/140 MHz operation and a CRS-280L for L-Band systems. In all cases, the IF switch provides added assurance because the redundancy switch provides an additional independent stage of muting of the Tx carrier.

The IF switch is a slave device that inherits the extensive capabilities of the CRS-200, -300, or -400 base unit and data switches. This includes full automatic operation and manual operation for troubleshooting and maintenance. The Tx path is constructed with RF switches to minimize the loss of signals destined to the uplink. The Rx side of the switch contains a power splitter and switch to continuously maintain IF into the online unit and permit user selection of the IF signal delivered to the redundant unit.

The IF switch is optional, and it is possible to omit in certain applications where the added isolation of the Tx carrier afforded by the switch is not needed. A CRS-280 IF Switch is not needed if all 70/140 MHz modems in the redundancy group are connected to the same up/down-converter or transceiver. Similarly, the CRS-280L is not necessary in L-Band applications if all the L-Band traffic is routed to the same polarization.

IF SWITCHES

In multiple transponder applications it is necessary to use the CRS-280 to route the 70/140 MHz IF traffic to multiple converters or transceivers. In L-Band applications the CRS-280L is needed for access to multiple polarizations or multiple antennas. This provides access up to 1000 MHz depending upon the L-Band modem. The switches are also recommended in situations where better isolation and higher switching reliability is needed.

The main features of the CRS-280/CRS-280L include:

- The CRS-280L uses high quality RF switches for superior performance with the following key features: Ultimate isolation between signal paths
- "No worry" Tx-Tx or Tx-Rx interference
- L-Band Test ports for offline Tx and Rx verification
- Tx test port for 70/140 MHz operation
- Splitters in the Rx path to pass L-Band signals simultaneously to the primary and standby demodulators
- Configurations: CRS-280 - 1:10 (70/140 MHz)
- CRS-280L - 1:4 through 1:10 (L-Band)
- Rear mount in rack or cabinet

	CRS-280 (70/140 MHz)	CRS-280L (L-Band)
Operating Frequency	50 to 180 MHz	950 to 1950 MHz
Connector Type	Tx/Rx BNC, female	Tx/Rx N–type, female
Return Loss	18 dB into 75Ω	15 dB into 50Ω
Power	Provided from CRS-300	100 to 240 VAC 50/60 Hz (25W)
Dimensions (Rack Mount 4RU)	19W x 2.5D x 7H inches (48.26W x 6.35D x 18H cm)	19W x 14D x 7H inches (48.26W x 36D x 18H cm)
Weight	< 10 lbs (< 4.54 kg)	< 25 lbs (< 11.3 kg)

CRS-280

CRS-280L

WHICH SWITCH IS WHICH?

Selecting the correct switch has never been easier. Refer to the following table to match the switch to the modems to be protected.

Modem	Switch	1:N	Remarks	IF Switch
CDM-500, CDM-550, CDM-550T	CRS-200	1:10	70/140 MHz	CRS-280
CDM-570	CRS-300	1:10	70/140 MHz	CRS-280
CDM-600	CRS-300, CRS-350	1:10	70/140 MHz	CRS-280
CDM-570L	CRS-300	1:10	L-Band	CRS-280L
CDM-600L	CRS-300, CRS-350	1:10	L-Band, ESC Sw	CRS-280L
CLM-9600L	CRS-300, CRS-350	1:10	L-Band, ESC Sw	CRS-280L
SDM-300L3	SMS-7000	1:8	L-Band	CRS-280L
SDM-2020	CRS-400	1:8	L-Band	CRS-280L
SDM-2020M	CRS-400	1:8	70/140 MHz	CRS-280
SDM-2020	CRS-400	1:8	70/140 MHz	CRS-280
CDM-Qx	CRS-300	1:10	70/140 MHz	CRS-280

CRS-200

The CRS-200 may be ordered in any of the following ways:

Primary Input Power – 100 to 250VAC or –48VDC

Modems Used– Listed by TMI type.

Modem	TMI
CDM-500* Rx Only (70/140 MHz) Rx & Tx (70/140 MHz)	CRS-220
CDM-550	CRS-220
CDM-550T	CRS-220

** If the CDM-550 is selected:*

Data Interface – 25-pin 'D' (EIA-422/-530A)

1:N System – 1:1 to 1:10

Data Cables – Available to support cabling between the modems and switch.

IF Switch – None, 50Ω, or 75Ω.

IF Cables – Available to support cabling between the modems and switch.

CRS-400

The CRS-400 may be ordered in any of the following ways:

Primary Input Power – 100 to 250VAC or –48VDC

Modems Used – Listed by TMI type.

Modem	TMI
SDM-2020M Mod, SDM-2020D Demod, or both	CRS-410

Data Interface – HSSI

1:N System – 1:1 to 1:8

Data Cables – available to support cabling between the modems and switch

IF Switch – None, 50Ω, or 75Ω

IF Cables – available to support cabling between the modems and switch

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CRS-300

The CRS-300 may be ordered in any of the following ways:

Primary Input Power – 100 to 250VAC or –48VDC

Modems Used – Listed by TMI type.

Modem	TMI
CDM-570/CDM-570L	CRS-320, CRS-330, CRS-340,
CDM-600/CDM-600L	CRS-320, CRS-330, CRS-340, CRS-370
CDM-700	CRS-325, CRS-335, CRS-345
CDM-Qx	CRS-315, CRS-325, CRS-335, CRS-341
SLM-5650	CRS-315, CRS-325, CRS-335

Interfaces – Up to 10 in any combination. Refer to the modem table for applicable interfaces:

CRS-315 – EIA-422/-530, V.35, EIA-232 Interface
(1) 25-pin 'D' type female connector
EIA-422/-530 DCE, V.35, SYNC EIA-232, LVDS

CRS-320 - EIA-422/-232, V.35, LVDS Interface
(1) 25-pin 'D' type female connector
EIA-422/-530 DCE, V.35, SYNC EIA-232, LVDS

CRS-325 – G.703 / ASI Interface
(1) 15-pin 'D' type female connector
G.703 Balanced
(2) BNC type female connectors

CRS-330 – G.703 Balanced/Unbalanced Interface
(1) 15-pin 'D' type female connector
G.703 Balanced (DDI, DDO, IDI, IDO)
(4) BNC type female connectors
G.703 Unbalanced. (DDI, DDO, IDI, IDO)
(1) RJ-45 Ethernet connector
8Kbps, IDR, ESC

CRS-335 – HSSI / Ethernet Interface
(1) 50-pin 'HSSI' type female connector

CRS-340 – EIA-422/-232, LVDS, G.703 Mixed Interface
(1) 25-pin 'D' type female connector
EIA-422/-530 DCE, V.35, SYNC EIA-232, LVDS
(1) 15-pin 'D' type female connector
G.703 Balanced (DDI, DDO, IDI, IDO)
(2) BNC type female connectors
G.703 Unbalanced, (DDI, IDO)

CRS-345 – Multi-Port G.703/ASI (4 Tx/Rx Ports)
(8) BNC type female connectors, 75Ω

CRS-370 – HSSI Interface
(1) 50-pin 'HSSI' type female connector

1:N System – 1:1 to 1:10

Data Cables – available to support cabling between the modems and switch

IF Switch – None, 50Ω or 75Ω (for the CRS-280), or 50Ω (for the CRS-280L)

IF Cables – available to support cabling between the modems and switch

CRS-350

Where protection of the IDR overhead signals utilized in open network environments (backward alarms, audio ESC, data ESC, etc.) is desired, the CRS-350 module may be added for use with the CRS-300 only.

CRS-350

User Data Interfaces	(1) 25-pin 'D' male connector – ESC overhead signals (1) 15-pin 'D' female connector - IDR alarms (1) 9-pin 'D' female connectors - Audio
Power	Provided from CRS-300
Dimensions (Rack Mount 4RU)	19W x 4.0D x 7H inches (48.26W x 27.5D x 18H cm)
Weight	5 lbs (2.2 kg)

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