Overview

The CRS-311 1:1 Redundancy Switch supports automatic or manual 1:1 protection for our SLM-5650A/5650 and CDM-Qx/QxL Satellite Modems. A CRS-281 IF redundancy module provides TX 70/140 MHz or L-Band backup.

The switch connects two modems – a traffic unit and a redundant unit. It monitors the fault status of these two units. If there is an equipment failure, switching automatically takes place to protect the IF, data and overhead traffic circuits.

The traffic and redundant modems are linked together so that any configuration changes made to the traffic unit are automatically updated in the redundant unit.

Functional Description

The switch has two power supply modules. Each power supply provides the full demand for the switch, providing power supply redundancy.

The 1:1 controller is within the CRS-311, providing control and driving signals for all switching. This unit continuously monitors a pair of modems so that, in the event of an equipment failure (or an undesired traffic condition), the sub-system automatically replaces the failed unit with the redundant unit.

Front Panel

The front panel of the switch contains the following items:

- Unit Status LED
- Stored Event LED
- Remote LED
- Online LEDs: indicates which modem is carrying traffic
- Keypad: provides up, down, left, right, clear and enter operation in conjunction with the display
- Vacuum fluorescent display: 2 lines x 24 characters

Rear Panel

Located on the rear panel are several key items/assemblies. These include two CRS-241 AC power supplies or two CRS-251 DC power supplies for redundant prime power. A CRS-230 System Interface Controller supports the logic and switchover, and supplies a control interface to the CRS-311. A selection of Traffic Modem Interface (TMI) and Redundant Modem Interface (RMI) modules are available to support data switchover, and one of the two types of CRS-281 IF switches is available for either 70/140 MHz or L-Band redundancy. For the CDM-QxL, the CRS-281A is available to switch BUC and LNB DC power, 10 MHz and FSK.

CRS-311 Back Panel

Specifications

Type	1:1 redundancy switch system, bridging architecture
Compatible Modems	SLM-5650A/5650, CDM-Qx/QxL
Operating Modes	Fully automatic or manual
	Force traffic modem to redundant modem
	Programmable hold-off to backup and hold-off to restore (2 to 99 seconds)
Switching Conditions	Switch to redundant modem following a unit, TX traffic, or RX traffic fault
Switching Time	2 to 7 seconds
IF Switching	IF is controlled on the CRS-281
Redundant Modem Signal Source	Both Rx IF and TX data are bridged from the traffic modem
Front Panel	Vacuum fluorescent display: 2 lines x 24 characters
	LED system status display: unit status, stored event, and remote modem traffic status
Audible Alarm	Programmable
Common Faults	Dry relay contacts
CE Mark	EMC and safety

User Data Interface to TMI / RMI By Modem Data Interface (Optional)

Data Interface	TMI	RMI
CDM-Qx/QxL Modem Interfaces and Corresponding TMI / RMI		
EIA-530 / 422 / V.35, EIA-232	CRS-316	CRS-305
G.703 T1/E1 Bal / Unbal or E2 Unbal	CRS-325	CRS-305
HSSI	CRS-336	CRS-305
Quad E1	CRS-365	CRS-305
SLM-5650A/5650 Modem Interfaces and Corresponding TMI / RMI		
MIL-STD-188-114, EIA-530	CRS-316	CRS-307
GigE	CRS-316 or CRS-336	CRS-306 or CRS-307
G.703 Bal / Unbal	CRS-325	CRS-306
HSSI	CRS-336	CRS-306 or CRS-307
4-Port Ethernet	CRS-515	CRS-505
Async RS-485/232 Overhead	CRS-351	CRS-351

Environmental and Physical

Prime Power	Two independent inputs, <25 W, (AC or DC): 90 to 264 VAC, 50/60 Hz, or 38 to 60 VDC
Weight	~ 10 lbs (~ 9.07 kg)
Dimensions (2RU) (height x width x depth)	3.46" x 19" x 11.09" (8.79 x 48.26 x 28.17 cm)
Operating Temp	0 to +50°C (32 to 122°F)
Storage Temp	-25 to +85°C (-13 to 185°F)

Humidity	95% at +50°C (104°F) non-condensing

CRS-281 IF Specifications

	CRS-281 (70/140 MHz)	CRS-281L/281A
TX/RX Operating Freq	50 to 180 MHz	950 to 1950 MHz
TX/RX Connectors	TNC female, 50 Ω or opt	Type N female, 50 Ω path
	BNC female, 50 or 75 Ω	
Return Loss	18 dB	>10 dB, external IF ports
TX IF Loss/Flatness	< 1.5 dB over operating frequency	Switched by RF relay (1.5 dB max. loss, 40 dB min. on/off isolation)
RX IF Loss/Flatness	< 7 dB over operating frequency	Passive power splitting (7 dB max. loss)
TX to TX Channel Isolation	> 50 dB	> 50 dB
TX to RX Channel Isolation	60 dB minimum	90 dB minimum
IF Switch Power	From CRS-311 chassis	From CRS-311 chassis
IF Only Switching	CRS-281	CRS-281L for SLM-5650A/5650
IF, BUC/LNB DC, 10 MHz and BUC FSK Switching	NA	CRS-281A for CDM-QxL

User Data Interfaces Supported By CRS-311

RMI/TMI	Connector	Data Type
CRS-316 (TMI)	DB-25M	EIA-422/-530/-232, V.35
	RJ-45	GigE
CRS-325 (TMI)	DB-15F	G.703 Bal
	BNC (2)	G.703 Unbal/ASI
CRS-336 (TMI)	HD50F	HSSI
	RJ-45	GigE
CRS-365 (TMI)	RJ-45 (4)	E1 Bal (only)
CRS-515 (TMI)	RJ-45 (4)	10/100/1000 Ethernet

Options

AC (90 to 264 VAC or DC (-48 VDC)	
TMI / RMI – Selected based on data interface	
CRS-281	70/140 MHz: TNC (50 Ω), BNC (50 Ω) or BNC (75 Ω)
CRS-351	Async RS-485/232 ESC overhead switching module
CRS-281L	L-Band 1:1 support for SLM-5650A/5650: Type N (50 Ω)
CRS-281A	L-Band 1:1 support for CDM-QxL: Type N (50 Ω), BUC/LNB DC, 10 MHz, BUC FSK