Overview

The RCS20 M:N Redundancy Switch provides backup switching/protection for up to nine pairs of satellite modem channels (modulators/demodulators). The RCS20 is a companion product to the DMD15/DMD2401/DMD20/DMD50/DM240/DD240 Satellite Modems.

The RCS20 is an intelligent microprocessor-controlled system, capable of controlling up to nine modems in a variety of configurations. The RCS20 is comprised of three separate units that make up the switching system; the Redundancy Control Unit (RCU20) shown above, the Digital Data Switch (DDS20), and the Intermediate Frequency Switch (IFS20), which are not shown.

The RCS20 can be operated automatically, in which case an automatic backup of a failed online modem occurs after a preprogrammed delay. The switch may also be operated manually, allowing the operator to manually switch to a backup modem.

Front panel controls and indicators provide for auto/manual configuration, as well as display of online/off line status information for all modems in the redundancy configuration.

Features

- Backup switching protection for up to nine (9) Satellite Modems (1 for 9 Protection)
- Flexible backup configuration, 1:9, 2:8, 2 x (1:4), etc.
- Large display with easy-to-use menu structure
- Automatic or manual modes of operation
- Flexible automatic configuration mode
- Independent modulator and demodulator switching
- Two fully-redundant power supplies
- Passive relay switching for terrestrial and IF signals

Digital Data Switch (DDS20)

The DDS20 provides all of the data interconnections between the online and backup modems. The DDS20 also provides buffering of terrestrial data signals to backup modulators allowing hot-standby modes of operation. The DDS20 receives control and DC power through an interconnecting cable from the RCU20. Terrestrial interface options for the DDS20 include RS-449, V.35, RS-232, ASI, DVB/M2P, HSSI, G.703 T1, E1, T2, E2, T3, E3, STS-1, and Ethernet.

Intermediate Frequency Switch (IFS20)

The IFS20 Intermediate Frequency Switch is the third component that makes up the RCS20 M:N Switch. The IFS20 interfaces the IF signals of the modems with the earth station IF system and provides backup switching. The unit provides all of the switching relays, with optional signal splitters and terminations that are necessary to backup any combination of up to nine modulators and demodulators. The IFS20 receives control and DC power through an interconnecting cable from the RCU20.

Specifications

Published specifications reflect all options available with the RCS20. Each RCS20 can be configured to customer requirements via hardware / software options applied at the factory or in the field.

General

Configurations	1:9, 2:8, 1:4+1:4, 1:2+1:6, 1:3+1:5
Online Modulators	1 to 9
Online Demodulators	1 to 9
Backup Modulators	1 to 2
Backup Demodulators	1 to 2
Uplink Transponders	1 to 9
Downlink Transponders	1 to 9
Modes of Operation	Manual, automatic revertive, automatic non-revertive and pre-emptive
Modulator Switch Time	250 ms maximum (hot-standby), 2 sec maximum (no hot-standby)
Demodulator Switch Time	250 ms maximum (hot-standby), 2 sec maximum + demod lock time (no hot-standby)
Modulator Switch Delay Time	0.0 sec to 299.9 sec, 0.1 sec intervals
Demodulator Switch Delay Time	0.0 sec to 299.9 sec, 0.1 sec intervals

IFS20 (70/140 MHz)

Uplink Transponders	1 to 9
Downlink Transponders	1 to 9
Return Loss	20 dB minimum
TX Insertion Loss	1 dB nominal
RX Insertion Loss	3.5 dB nominal
IF Connection	Coaxial, 75 Ohm (50 Ohm optional)

IFS20 (L-Band)

Uplink Transponders	Dual Ant./Dual Polarity
Downlink Transponders	Dual Ant./Dual Polarity
Return Loss	14 dB minimum
TX Insertion Loss	3 dB nominal
RX Insertion Loss	3.5 dB nominal
IFL Connection	SMA, 50 Ohm

Terrestrial Interfaces

DDS20 Universal I/O (UIO) Data Switch	RS-449, V.35, RS-232 (DCE), G.703
	T1 1.544 Mbps 100 Ohm balanced AMI or B8ZS line codes
	E1 2.048 Mbps, 120 Ohm balanced, or 75 Ohm unbalanced HDB3 line code
	T2 6.312 Mbps, 110 Ohm balanced, B6ZS line code or 75 Ohm unbalanced B8ZS
	E2 8.448 Mbps, 75 Ohm BNC unbalanced HDB3 line code
DDS20-DVB/M2P	Serial parallel interface data switch
	M2P, RS-422, DB-25 connector*
	DVB, RS-422, DB-25 connector*
	DVB, differential LVDS, DB25 connector*
	*Consult factory for availability
DDS20-ASI-M	ASI modulator data switch
DDS20-ASI-D	ASI modulator data switch
DDS20-HSSI	HSSI data Switch (Consult factory for availability)
DDS20-G.703	T3, E3, STS1 modulator data switch
DDS20-Ethernet	Ethernet data switch

Options

Clock Distribution Modules

Physical, Power & Environmental

Prime Power	100 to 240 VAC, 50 to 60 Hz, 65 W
Operating Temperature	0 to 50°C, 95% humidity, non-condensing
Storage Temperature	-20 to 70°C, 99% humidity, non-condensing
Dimensions	**(width x depth x height)**
RCU20	
Chassis Size	19” x 19” x 5.25” (48.26 x 48.26 x 13.34 cm)
Weight	16 lbs (7.2 kg) fully-equipped
DDS20-UIO	
Chassis Size	19” x 5” x 8.75” (48.26 x 12.7 x 22.23 cm)
Weight	20 lbs (9.1 kg)
DDSAIS20	
Chassis Size	19” x 2” x 5.25” (48.26 x 5.08 x 13.34 cm)
Weight	5 lbs (2.3 kg)
DDS Ethernet	
Chassis Size	19” x 1.25” x 3.5” (48.26 x 3.18 x 8.89 cm)
Weight	1.8 lbs (.82 kg)
IFS20	
Chassis Size	19” x 2” x 5.25” (48.26 x 5.08 x 13.34 cm)
Weight	5 lbs (2.3 kg)
IFS20L	
Chassis Size	19” x 2” x 5.25” (48.26 x 5.08 x 13.34 cm)
Weight	5 lbs (2.3 kg)

Compatible Modems

DMD2401 VSAT/SCPC Satellite Modem
DMD15 Universal IBS/IDR Satellite
DMD20 Universal Satellite Modem
DMD50 Universal Satellite Modem
DMD2050 Satellite Modem Mil Std 188-165A
DM240 Digital Video Broadcast Modulator
DD240 Digital Video Broadcast
DD2401 Satellite Demodulator

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