



# RCS20

## M:N Redundancy Switch



### HIGHLIGHTS

- ▶ 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

### 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 family of 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.

### 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.

# RCS20 M:N Redundancy Switch

## 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),<br>2 sec Maximum (No Hot-Standby)                   |
| Demodulator Switch Time:       | 250 ms Maximum (Hot-Standby),<br>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 |
| DDS20-DVB/M2P                         | E2 8.448 Mbps, 75 Ohm BNC Unbalanced HDB3 Line Code                       |
|                                       | Serial Parallel Interface Data Switch                                     |
|                                       | M2P, RS-422, DB-25 Connector*   |
|                                       | DVB, RS-422, DB-25 Connector*   |
| DDS20-ASI-M                           | DVB, Differential LVDS, DB25 connector*                                   |
|                                       | *Consult factory for availability   |
| DDS20-ASI-D                           | ASI Modulator Data Switch   |
| DDS20-HSSI                            | ASI Modulator Data Switch   |
| DDS20-G.703                           | HSSI Data Switch (Consult factory for availability)                       |
| DDS20-Ethernet                        | T3, E3, STS1 Modulator Data Switch  |
|                                       | Ethernet Data Switch  |

### Options

|                                |   |
|--------------------------------|---|
| Clock Distribution Modules     |   |
| <b>Power and Environmental</b> |   |
| Prime Power:                   | 100 to 240 VAC, 50 to 60 Hz, 65 Watts     |
| Operating Temperature:         | 0 to 50°C, 95% Humidity, Non-Condensing   |
| Storage Temperature:           | -20 to 70°C, 99% Humidity, Non-Condensing |

### Physical

|                     |   |
|---------------------|---|
| <b>RCU20</b>        |   |
| Chassis Size:       | 19 x 19 x 5.25 inches<br>(48.26 x 48.26 x 13.34 cm) |
| Weight:             | 16 pounds (7.2 Kg) Fully-Equipped                   |
| <b>DDS20-UIO</b>    |   |
| Chassis Size:       | 19 x 5 x 8.75 inches<br>(48.26 x 12.7 x 22.23 cm)   |
| Weight:             | 20 pounds (9.1 Kg)                                  |
| <b>DDSAIS20</b>     |   |
| Chassis Size:       | 19 x 2 x 5.25 inches<br>(48.26 x 5.08 x 13.34 cm)   |
| Weight:             | 5 pounds (2.3 Kg)                                   |
| <b>DDS Ethernet</b> |   |
| Chassis Size:       | 19 x 1.25 x 3.5 inches<br>(48.26 x 3.18 x 8.89 cm)  |
| Weight:             | 1.8 pounds (.82 Kg)                                 |
| <b>IFS20</b>        |   |
| Chassis Size:       | 19 x 2 x 5.25 inches<br>(48.26 x 5.08 x 13.34 cm)   |
| Weight:             | 5 pounds (2.3 Kg)                                   |
| <b>IFS20L</b>       |   |
| Chassis Size:       | 19 x 2 x 5.25 inches<br>(48.26 x 5.08 x 13.34 cm)   |
| Weight:             | 5 pounds (2.3 Kg)                                   |

### Complementary Products

|  |
|--|
| 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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