



The GeoSync Microwave Redundant Switchover Unit Series are designed to improve reliability and increase the availability of satellite links by providing switchover to a backup unit in the event of a critical alarm. When a fault is detected on a primary frequency converter, that converter is automatically switched to standby and the backup converter is put online in its place. A strong feature set of monitor and control functions supports powerful local and remote control. An embedded web server provides for a user friendly computer interface.

### **1:1 FEATURES (R1R SERIES)**

- Redundant protection in a 1:1 configuration
- Rear panel mounted four-port transfer switches
- Communication of settings to backup converter for automatic switchover
- Simple manual mode operation

The 1:1 Unit (R1R), as with the 1:2 and 1:N Systems, has the ability to communicate settings between the online unit and backup unit. This allows the backup path to be used for low-priority traffic. This is an optional feature, and can be accessed via a front panel key command.

### **1:2 FEATURES (R2R SERIES)**

- Redundant protection for up to two converters
- Rear panel mounted four-port transfer switches

The 1:2 Unit (R2R) is a fully integrated 1:2 System, with a four-port transfer switch matrix located on the rear panel.

### **1:N FEATURES (RNR SERIES)**

- Redundant protection for up to eight converters
- Distributed switch modules mounted at the rear of each converter for best RF performance
- Polarization switching supported
- Field expandable redundant protection

The 1:N Unit (RNR) is supplied with a 1:8 Controller (Model RNR) and up to eight Redundant Switch Modules, Model RSM-(Suffix). The suffix defines the switches provided in the Redundant Switch Module.

### **COMMON FEATURES**

- RS485/RS422 and Ethernet remote control (Telnet, SNMP, and embedded web server)
- Redundant rear panel removable hot-swappable power supplies
- Prioritized redundancy switching available
- Self configuring converter settings
- Firmware updates through Ethernet port
- Time stamped activity log
- Gain equalization to compensate for cable losses



## SWITCH SPECIFICATIONS

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#### 1:1 REDUNDANT SWITCHOVER SYSTEM

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1:1 in its “simple mode” of operation monitors the status alarm contacts on the online converter and switches to the standby unit in the event of an alarm. The user may select to enable the serial link through a front panel command. When the serial link is enabled, the 1:1 will monitor the frequency and attenuation settings of the online unit and set the backup unit to those settings in the event of a failure.

#### 1:2 REDUNDANT SWITCHOVER SYSTEM

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1:2 is a fully integrated 1:2 Redundant Switchover System. It consists of a controller and four-port transfer switches.

The 1:2 Controller monitors the status of two primary frequency converters and one backup converter, automatically detecting changes in settings and fault status.

The frequency converters can be prioritized so that critical communication channels have access to the backup converter.

#### 1:N REDUNDANT SWITCHOVER SYSTEM

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The 1:N Redundant Switchover System consists of:

- One 1:N Controller for one to eight primary frequency converters and one backup converter.
- One to eight Redundant Switch Modules (RSM) located in the rear panel of each primary frequency converter.
- The 1:N Controller monitors the status of up to eight primary frequency converters and one backup converter, automatically detecting changes in settings and fault status.
- The frequency converters can be prioritized so that critical communication channels have access to the backup converter on a prioritized basis.

### RF SPECIFICATIONS

Frequency (GHZ)	Insertion Loss (Maximum, dB)	Amplitude Flatness/40 MHz (Maximum, dB)	Return Loss (Minimum, dB)	Isolation (Minimum, dB)	Switch Connector
0.05-0.180	0.1	0.2	26	80	SMA
0.95-3.0	0.2	0.2	20	80	SMA
3.0-8.0	0.3	0.3	17	70	SMA
8.0-12.4	0.4	0.3	15	60	SMA
12.4-18.4	0.5	0.4	13	60	SMA
17-26.5	0.7	0.5	11	55	2.9 mm
26.5-31	1.0	0.6	9.5	50	2.9 mm

**Note:** RF specifications apply to a single switch. IF switches (BNC female) are 50-180 MHz, RF switches (SMA female) are 0.95-18.4 GHz. Ka switches are 18.4-31 GHz.

## MODEL DESCRIPTIONS

### 1:1 REDUNDANT SWITCHOVER SYSTEMS

Model Number	Description
R1R-B75/S50	1 each internal 75 ohm IF switch and 50 ohm RF switch
R1R-B50/S50	1 each internal 50 ohm IF switch and 50 ohm RF switch
R1R-S50/S50	1 each internal 50 ohm switch on input and output (for Block Converters)
R1R-K50/S50	1 each internal 50 ohm Ka switch and 50 ohm RF switch (for Block Converters)
R1R-B75	1 each internal 75 ohm IF switch only
R1R-B50	1 each internal 50 ohm IF switch only
R1R-S50	1 each internal 50 ohm RF switch only
R1R-K50	1 each internal 50 ohm Ka switch only

### 1:2 REDUNDANT SWITCHOVER SYSTEMS

Model Number	Description
R2R-B75/S50	2 each internal 75 ohm IF switch and 50 ohm RF switch
R2R-B50/S50	2 each internal 50 ohm IF switch and 50 ohm RF switch
R2R-S50/S50	2 each internal 50 ohm switch on input and output (for Block Converters)
R2R-K50/S50	2 each internal 50 ohm Ka switch and 50 ohm RF switch (for Block Converters)
R2R-B75	2 each internal 75 ohm IF switch only
R2R-B50	2 each internal 50 ohm IF switch only
R2R-S50	2 each internal 50 ohm RF switch only
R2R-K50	2 each internal 50 ohm Ka switch only

### 1:N REDUNDANT SWITCHOVER SYSTEMS

Model Number	Description
RNR	1:8 Control Unit

Model Number	Description
RSM-B75/S50	1 each internal 75 ohm IF switch and 50 ohm RF switch
RSM-B50/S50	1 each internal 50 ohm IF switch and 50 ohm RF switch
RSM-S50/S50	2 each internal 50 ohm switch on input and output (for Block Converters)
RSM-K50/S50	1 each internal 50 ohm Ka switch and 50 ohm RF switch (for Block Converters)
RSM-B75	1 each internal 75 ohm IF switch only
RSM-B50	1 each internal 50 ohm IF switch only
RSM-S50	1 each internal 50 ohm RF switch only
RSM-K50	1 each internal 50 ohm Ka switch only

**Note:** For a 1:N System, the following quantities must be ordered:

#### QTY

1	Model RNR, 1:8 Controller
N	RSM Redundant Switch Module where N is configuration of 1:N System (Number 1 through 8)

## PRIMARY POWER REQUIREMENTS

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Voltage.....	90-250 VAC
Frequency.....	47-63 Hz
Power Consumption.....	25 watts typical

## PHYSICAL

### CONTROLLER UNIT R1R/R2R/RNR -

Weight .....	12 pounds (5.2 kg) nominal
Chassis Dimensions .....	19" x 20" x 1.75" panel height
Converter Control and Status Connectors.....	DE-9P
Remote Interface and Status Connector .....	DE-9S (DC-37S on RNR)
Ethernet Interface Connector .....	RJ45 receptacle
RSM Switch Module Connectors .....	DE-9S
AC Inputs .....	IEC-320

### REDUNDANT SWITCH MODULES (RNM) FOR USE WITH 1:N RNR -

Weight .....	One (1) pound nominal
Housing Dimensions .....	5.60" wide x 1.61" high x 1.9" deep
RF Connectors .....	SMA female
IF Connectors .....	BNC female
Switch Module Bus Connectors.....	DE-9P

### INTERCONNECTING CABLES SUPPLIED WITH RNR -

U-links and converter interface cables supplied. RF cables from switchover unit to converter not supplied

## ENVIRONMENTAL

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### Operating -

Ambient Temperature .....	0 to 50°C
Relative Humidity .....	Up to 95% at 30°C
Altitude .....	Up to 10,000 feet

### Non-operating –

Ambient Temperature .....	-50 to +70°C
Relative Humidity .....	Up to 95% at 45°C
Altitude .....	Up to 40,000 feet
Shock and Vibration .....	Normal handling by commercial carriers