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RF-15000 Repeater

Microwave Repeater Systems

Applications

- Low-cost, highly reliable 15 GHz microwave-through-repeater for extending range of or clearing obstructed microwave radio paths.
- Excellent performance with analog, digital, or video microwave radios.
- Compatible with any manufacturer's 15 GHz radio terminal.
- Solar power compatible—economical in thin routes and remote locations.

Features

- RF output power up to +21 dBm analog FSK, +19 dBm digital 4PSK.
- Power consumption only 1.2 A at 13.5 Vdc for duplex operation.
- Solar powered, AC powered, or powered by primary cells.
- Compact and lightweight—ideally suited for remote sites that do not have access roads or commercial power.
- Environmentally protected aluminum, weathertight, lockable cabinet. No extra environmental shelter required in most installations. Suitable for use at undeveloped sites anywhere in the world—Alaska to Saudi Arabia.
- Internally protected duplex, frequency diversity, and three-way (“Y Junction”) configurations available.
- Only one active element per channel—the internally redundant linear amplifier.
- AGC/ALC provided to correct input fades and reduce overload.
- In the case of single duplex configuration, amplifiers can be replaced without disrupting service.
- RMAS-120 Alarm System (optional), which can remotely monitor the repeater.
- Equipped with directional couplers for in-service RF output power measurements.
- No frequency conversion -- received signal is filtered, amplified, and re-radiated.
- Very reliable, greater than 85,000 hours MTBF for duplex.
- Available as a self-contained RF Repeater for use with customer-furnished antenna and power equipment or as a complete package including repeater, antenna, solar electric panels, battery charger, and batteries.

RF-15000 Repeater

Technical Summary

General

Frequency Range	14.50 to 15.35 GHz
Nominal Gain	40 dB (15 dB AGC/ALC)*
Maximum Gain	55 dB (0 dB AGC/ALC)
AGC/ALC (Nominal Gain = 40 dB)	15 dB down fade*, 5 dB up fade*
Noise Figure	8.5 dB*
3rd Order Intercept	+31 dBm*

* Refer to Gain-Power-Noise Figure Table (p6) for individual configuration options.

Antenna Connections

Return Loss	20 dB min.
Antenna Ports	WR-62, Cover
Waveguide Type	WR-62

Frequency Plan

Frequency Range	14.50 to 15.35 GHz
Channel Bandwidth	28 MHz, 1 dB
T-R Spacing	180 MHz, min.
T-T Spacing (1+1) on common feeders	70 MHz, min.

Channel Response

Amplitude	± 0.5 dB, fo ± 15 MHz
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Power Requirements

Nominal Voltage	+13.5 Vdc
Voltage Range	+11.5 to +16 Vdc
Polarity	Negative Ground

Current:

RF-15000-01 Duplex	1.2 A maximum
RF-15000-02 Duplex, FD	2.4 A maximum

RF-15000 Repeater

Environmental Conditions

Housing	Aluminum	Weathertight
Ambient Temperature		-40 °C to +60 °C
Relative Humidity		90% (housing internal) 100% (housing external)
Altitude		15000 ft (5000 m)

Reliability (Single channel duplex)

MTBF	85,000 hours
MTTR	30 minutes

Dimensions:

One to Four

Frequency Channels

Height, including feeder manifold	33.1 inches (841 mm)
Width, including vent hoods	24 inches (610 mm)
Depth, including feeder manifold	9.1 inches (231 mm)

Weight:	Model	(pound/kg)
	One-Way	35/15.9
	Duplex	40/18.2
	Duplex, Freq. Diversity	45/20.5

Gain - Power - Noise Figure Table

RF-15000 OPTION	FREQUENCY CHANNEL	LINEAR GAIN MIN. dB	AGC/ALC ON *		NOISE FIGURE dB
			POWER INPUT dBm (40 dB Gain)	POWER OUTPUT dBm	
RF-15000-01	F1, F2	55.0	-20.0	+21.0	8.5
RF-15000-02	F1, F2	55.0	-20.0	+21.0	9.0
	F3, F4	54.0	-20.0	+19.0	10.0

***For Other Modulation, Please Refer to the Following Table:**

MODULATION	POWER BACKOFF dB
FM/FSK/MSK	0
4PSK	-2

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