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just great reliability.

#### World Headquarters

39 Grand Canyon Lane  
San Ramon,  
CA 94583 USA

#### President

Frank Martens

#### Phone

925.901.0103

#### Fax

925.901.0403

#### Peninsula Engineering

Solutions, inc. may  
change specifications as  
necessary to meet  
industry requirements.

Website [www.peninsulaengineering.com](http://www.peninsulaengineering.com)

Email [fmartens@peninsulaengineering.com](mailto:fmartens@peninsulaengineering.com)

# RF-13000 Repeater

Microwave Repeater Systems

## Applications

- Low-cost, highly reliable 13 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 13 GHz radio terminal.
- Compatible with any manufacturer's 13-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 installation. Suitable for use at unimproved 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.
- RMAS-120 Alarm System (optional) which can remotely monitor 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-13000 Repeater

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### Technical Summary

#### General

Frequency Range	12.75 to 13.25 GHz
Nominal Gain	41 dB (15 dB AGC/ALC)*
Maximum Gain	56 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*

\* See Table TS.1, Gain, Power, Noise Figure for individual configuration options.

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#### Antenna Connections

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

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#### Frequency Plan

Frequency Range	12.75 to 13.25 GHz
Channel Bandwidth	28 MHz, 1 dB
T-R Spacing	180 MHz, minimum
T-T Spacing (1+1) on common feeders	70 MHz, minimum

#### Channel Response

Amplitude	$\pm 0.5$ dB, fo $\pm 15$ MHz
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#### Power Requirements

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

Current:

RF-13000-01 Duplex	1.2 A max.
RF-13000-02 Duplex, FD	2.4 A max.

## RF-13000 Repeater

### Environmental Conditions

Housing	Weather Tight Aluminum
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-13000 OPTION	FREQUENCY CHANNEL	LINEAR GAIN MIN. dB	AGC/ALC ON *		NOISE FIGURE dB
			POWER INPUT dBm (40 dB Gain)*	POWER OUTPUT dBm	
RF-13000-01	F1, F2	56.0	-20.0	+21.0	8.5
RF-13000-02	F1, F4	56.0	-20.0	+21.0	9.0
	F2, F3	54.0	-22.0	+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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