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RF-1500E Repeater

Microwave Repeater Systems

Applications

- Low-cost, highly reliable 1.5 GHz microwave through repeater for extending range of or clearing obstructed microwave radio paths.
- Excellent performance with analog, digital, or video microwave radios; channel capacity to 300 FDM, 8 Mb/s PCM, and point to multipoint TDM/TDMA.
- Compatible with any manufacturer's 1.5 GHz radio terminal.
- Solar power compatible -- economical in thin routes and remote locations.

Features

- Power consumption only 2.2 amperes at 12 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 unimproved sites anywhere in the world -- Alaska to Saudi Arabia.
- Internally protected duplex, frequency diversity, and three-way or "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.
- Maximum gain can be field-adjusted for easy fine-tuning.
- In the case of single duplex configuration, amplifiers can be replaced without disrupting service.
- RMAS-100 Alarm system (optional) 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-1500E Repeater

Technical Summary

General*

Duplex (1=0)

Frequency Range	1.427 to 1.535 GHz
Nominal Gain	45 dB (15 dB AGC/ALC)
Maximum Gain	60 dB (0 dB AGC/ALC)
AGC/ALC (Nominal Gain = 45 dB)	15 dB down fade 5 dB up fade
Noise Figure	7 dB
3rd Order Intercept	+34 dBm

* Refer to Gain-Power-Noise Figure Table (p4) for individual configuration options

Antenna Connections

Impedance	50 ohms
Return Loss	20 dB min.
Antenna Ports (Panel)	Type N(f) Coax.
Jumper Supplied	Type N(m) to N(m)
Cable Type (Typical)	7/8 inch Air or Foam filled Coaxial Cable with N(f) connector

Frequency Plan

Channel Bandwidth	16 MHz, 1 dB
T-R Spacing	49 MHz, min.
T-T Spacing (1+1) on common feeders	28 MHz, min.

Channel Response

Amplitude	1 dB, fo \pm 4 MHz
Group Delay Ripple	20 nSecs, fo \pm 4 MHz

Power Requirements

Nominal Voltage	+13.5 Vdc
Voltage Range	+11 to +16 Vdc
Polarity	Negative Ground

Current:

RF-1500E-01	Duplex	2.0A
RF-1500E-02	Duplex, FD	4.0A
RF-1500E-03	One-Way	1.0A

RF-1500E Repeater

Environmental Conditions

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
MTRR	30 minutes

Dimensions:

Housing	Weather Tight Aluminum
Height	27 in (690 mm)
Width, including vent hoods	27.5 in (699 mm)
Depth	11.2 in (285 mm)

Weight: (pound/kg)

RF-1500E-01	50/23
RF-1500E-02	85/39
RF-1500E-03	40/18

RF-1500E Repeater

Gain - Power - Noise Figure Table

RF-1500E-XX

FOR FM/FSK/MSK*

RF-1500E OPTION	FREQUENCY CHANNEL	LINEAR	AGC/ALC ON *		NOISE FIGURE dB
		GAIN MIN. dB	POWER INPUT dBm	POWER OUTPUT dBm	
RF-1500E-01	F1, F2	60.0	-21.0	+24.0	7.0
RF-1500E-02	F1, F4	58.7	-22.3	+22.7	7.0
	F2, F3	58.7	-21.0	+24.0	8.3
RF-1500E-03	F1	60.3	-21.0	+24.0	6.7

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

MODULATION	POWER BACKOFF dB
FM/FSK/MSK	0
4PSK	-2
16QAM	-6
QPR3/9QPRS	-5
QPR7/49QPRS	-6
QPR9	-7

Peninsula Engineering Solutions, inc. may change performance specifications where necessary to meet industry requirement.