

# LPOD-R C-, X- or Ku-Band Block Up Converter (BUC)/SSPA

Amplifiers



Model PS .5



Model PS 1



Model PS 1.5

## Overview

Our LPOD-R family of Outdoor Amplifiers / Block Up Converters (BUCs) deliver rated power, guaranteed, to the transmit waveguide flange at the 1 dB compression point. The LPOD-R is a cost-effective alternative to the LPOD, where the full LPOD's support of internal 10 MHz and redundancy is not required. There are three LPOD-R models available – PS .5, PS 1 and PS 1.5.

Each LPOD-R consists of a SSPA module with the Monitor/Control Processor (MCP), a power supply and a fan assembly. To ensure the maximum usable output power with stable operation over a wide range of environmental conditions, the units feature a low loss combining technique and MCP-based temperature-versus-gain compensation. The LPOD-R units are compact in size and weight, lending itself to installations with limited available mounting space. Common installations for the LPOD-R are ship-borne antenna systems, small "flyaway" systems, and Satellite News Gathering (SNG) vehicles.

## Data Logging Capability

To greatly enhance system maintainability, the LPOD-R line includes a built in data logging capability. By recording critical operational parameters (such as temperature, output power, mute status, etc.) at time stamped intervals, the user can quickly gather intelligence not only about the unit itself, but also the unit's operational environment.

## Enhanced Standard Features

The LPOD-R comes equipped with useful features that other manufacturers offer only as options. Included in the base price are temperature compensation, power monitor, power factor corrected supply, and flexible remote monitor and control (M&C) capabilities.

## Monitor & Control

The LPOD-R features flexible, remote monitor and control (M&C) capabilities that are unique to the industry.

- **Advanced FSK** – When used with our modems the LPOD-R provides enhanced functionality utilizing the industry-standard FSK communications channel. Advanced FSK offers full control of single thread and, where applicable, redundant systems from the modem front panel without additional cabling or cost. The LPOD-R can also be accessed via the Ethernet M&C port of the modem and controlled via Embedded Distant-end Monitor and Control (EDMAC).
- **Ethernet** – By using the Ethernet port on the LPOD-R, the unit can be controlled via a web-based graphical user interface, Telnet and SNMP.
- **NetVue Integrated Management System** – The units can be managed by our NetVue, which provides the level of network insight required to run optimal networks. NetVue provides a single intuitive graphical user interface that acts as a user-friendly front-end to monitor and control network equipment. It features a robust, comprehensive network management and analytics engine that allows users to intelligently maximize resources, ensure network uptime and provide the elevated levels of service that are required to support fixed and remote sites in the field.
- **Optimized Efficiency** – The low power consumption (60W Nominal) of the LPOD R PS.5 10W Ku and 12W C band overcomes the BUC power limitations found in many TDMA modems. This provides a very cost effective and convenient path to increased throughput and link availability.



Figure 1: NetVue Integrated Management System

## Solid State Advantage

Our extensive experience in the design of outdoor RF transceivers led to the LPOD family's efficient thermal and mechanical package. The LPOD-R is constructed with highly reliable gallium arsenide field-effect transistors (GaAs FETs). High linearity SSPA technology enables achieving intermodulation specs using lower power amplifiers. The LPOD-R also provides mean time between failures (MTBF) that is four to five times greater than the legacy TWT MTBFs.

## Specifications

IF Input Frequency <sup>Note 1</sup>	RF Output Frequency
950 – 1525 MHz	5.850 – 6.425 GHz
950 – 1750 MHz	5.850 – 6.650 GHz (optional)
950 – 1825 MHz	5.850 – 6.725 GHz (optional)
965 – 1265 MHz	6.725 – 7.025 GHz
950 – 1450 MHz	7.900 – 8.400 GHz
950 – 1450 MHz	14.00 – 14.50 GHz (Stand. on non PS.5)
950 – 1700 MHz	13.75 – 14.50 GHz (opt.) *STD on PS.5
950 – 1450 MHz	12.75 – 13.25 GHz (PS1.5 LKu Only)

Model	Psat (Typical)	P1dB (Guaranteed) <sup>Note 1</sup>
PS.5-10Ku	40dBm (10 W)	39 dBm (8 W)
PS.5-15Ku	41 dBm (15 W)	40 dBm (10 W)
PS.5-20Ku	43 dBm (20 W)	42 dBm (16 W)
PS1-20Ku	43 dBm (20 W)	42 dBm (16 W)
PS1-32Ku	45 dBm (32 W)	44 dBm (25 W)
PS1-40Ku	46 dBm (40 W)	45 dBm (32 W)
PS1.5-50Ku	47 dBm (50 W)	46 dBm (40 W)
PS1.5-60Ku	48 dBm (60 W)	47 dBm (50 W)
PS1.5-50LKu	47 dBm (50W)	46 dBm (40 W)
PS1.5-60LKu	48 dBm (60 W)	47 dBm (50 W)
PS.5-15C	41 dBm (15 W)	40 dBm (10 W)
PS.5-25C	44 dBm (25W)	43 dBm (20W)
PS1-25C,X	44 dBm (25 W)	43 dBm (20 W)
PS1-32C,X	45 dBm (32 W)	44 dBm (25 W)
PS1-40C,X	46 dBm (40 W)	45 dBm (32 W)
PS1-50C,X	47 dBm (50 W)	46 dBm (40 W)
PS1-60C,X	48 dBm (60 W)	47 dBm (50 W)
PS1.5-75C,X	48.6 dBm (75 W)	48 dBm (60 W)
PS1.5-80C,X	49 dBm (80 W)	48.5 dBm (70 W)
PS1.5-100C,X	50 dBm (100 W)	49 dBm (80 W)
PS1.5-110C,X	50.4 dBm (110 W)	49.5 dBm (90 W)
PS1.5 -125C,X	51 dBm (125 W)	50 dBm (100 W)

Gain Min. (Typical) All power levels	PS .5: 60 ( 65 dB), optional 70 (75 dB) PS1, 1.5: 70 (75 dB)
Max. IF Input level (no damage)	+10 dBm
Gain Adjust	20 dB in 0.25 dB steps
Gain Flatness	± 2.0 dB full band (optional ± 2.5 dB full band (-50° to +55°C)) ± 0.50 dB per 40 MHz (optional ± 1.0 dB per 40 MHz (-50° to +55°C))
Gain variation over temp	±2.0 dB max., -40° to +55°C (optional ± 2.5 dB max. (-50° to +55°C))
Input Return Loss	14 dB (1.5:1 VSWR)
Output Return Loss	17.7 dB (1.3:1 VSWR)
Noise Figure	15 dB typ., 20 dB max. @ min. attenuation
RF Mute Isolation	-60 dBc min.
AM/PM Conversion	2° typ., 3.5° max. @ Rated P1dB
3rd Order Intermod. Level (2 tones, @ -3 dB Total Back Off from P1 dB (-6 dBc SCL), Δ 1 MHz)	-30 dBc typ., -25 dBc Guaranteed

### Note:

1. Allow 1 dB degradation from 13.75 to 14.0 GHz and 6425 to 6725 MHz

### Spurious Level

Harmonics	-50 dBc @ Prated -3dB
Carrier Related In-band	-60 dBc min. @ P1dB
Non-Carrier Related In-band	-60 dBm max. (Input Terminated)
LO Leakage	-25 dBm max.

### Group Delay

Linear	± 0.03 ns/MHz
Parabolic	± .003 ns/MHz <sup>2</sup>
Ripple	± 1.0 ns pk-pk

Data Logging parameters	Non-Volatile RAM: Capacity 30 days @ 90 minute intervals. Includes: RF Output Power Mute Status Heatsink Temperature
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Phase Noise (dBc/Hz)	Typical (C/X/Ku)	Spec (C/X/Ku)
Offset = 100 Hz	-65	-62
1 KHz	-75	-72
10 KHz	-85	-82
100 KHz	-95	-92
1 MHz	-105	-102

### Environmental & Physical

Temperature	
Operating	-40° to 131°F (-40° to 55°C) (optional -50° to 55°C or -40° to +60°C)
Storage	-67° to 167°F (-55° to 75°C)
Ingress Protection	Designed to meet IP-66 (Dust tight, protected against strong water jets)
Humidity	100% condensing rain 2" per hour
Altitude	10,000 AMSL
Shock	Normal commercial shipping and handling
Input Voltage	
PS .5 (10 W Ku/15 W C)	18 to 60 VDC, 60 W Nominal
PS .5 (20 W Ku)	18 to 60 VDC, 110 W Nominal
PS.5 (Other Powers)	36 to 72 VDC
PS1, 1.5	90 to 240 VAC, 36 to 72 VDC
Weight / Dimensions (height x width x depth (in. excluding connectors))	
PS .5	6 lbs Nominal / 3.3" x 4.65" x 7.7"
PS1	14 lbs Nominal / 6.2" x 6.0" x 12.65"
PS1.5	17 lbs Nominal / 6.5" x 6.2" x 12.8"
Connectors	
IF/RF Input	Type N, female Type N and Type F (via adapter), female (PS.5)
RF Output	PS.5/1, C-Band: Type N, female, opt. CPR137G
	PS1.5, C-Band: CPR137G
	PS1/1.5 X-Band: CPR112G
Supported Interface	PS.5/1/1.5/ Ku-Band: WR75G
	Ethernet (includes built-in HTML pages, SNMP, Telnet) Standard "Smart BUC" FSK Advanced FSK (provides full front panel control when integrated with select Comtech EF Data modems)

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