Model PS 1

Model PS 1.5

Model PS 2

Overview

Comtech EF Data's extensive experience in the design of outdoor RF transceivers led to the LPOD family's efficient thermal and mechanical package. Recognizing the evolution of L-Band IF systems, the LPOD is designed to eliminate the traditional requirement for the modem to supply a DC power source and a 10 MHz reference to the BUCs and LNBs. The LPOD's optional internal reference and LNB bias T greatly simplify multi-carrier operation and provide cost-effective redundant solutions. The LPOD offers valuable features not found in other L-Band BUC products.

Optional Internal 10 MHZ Reference

With the optional high-stability, ovenized reference oscillator (OCXO) installed, one more signal is removed from the TX IF cable. This ensures optimum RF performance of the BUC by eliminating any reference degradation caused by IF combiners, interconnections or rotary joints.

Optional Single and Multi-Band LNB Support

The LPOD was designed with the evolution of L-Band systems in mind. No longer relegated to low power single carrier installations, L-Band IF topologies are now found in larger multi-carrier installations. A challenge presented by multi-carrier L-Band systems is the presence of DC and reference components on the TX/RX L-Band interfaces. The LPOD design, by default, eliminates the DC component from the TX IF and can eliminate the reference requirement with the optional internal OCXO. The LNB bias/reference option completes the solution by eliminating DC and reference signal requirements from the RX L-Band interface. We also offer a high-stability "Multi-Band" Ku LNB facilitating global Ku-Band downlink coverage controlled by the LPOD M&C.

Redundancy

Another challenge addressed by the LPOD topology is the increasing need for redundant L-Band RF solutions. With its internal power supply, internal reference and internal LNB bias capability, the LPOD offers a very cost-effective solution for 1:1 redundant TX and 1:1 redundant RX requirements.

Integrated Power Supply

All LPOD models have a self-contained power supply. This eliminates the requirement for the modem to supply the BUC voltage on the center conductor of the RF cable, simplifying multi-carrier operation and modem spares maintenance.

Data Logging Capability

To greatly enhance system maintainability, the LPOD 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.

Advanced FSK

The LPOD, when used with Comtech EF Data modems, provides valuable additional functionality utilizing the industry standard FSK communications channel. This feature offers full control of single thread and redundant systems from the modem front panel without additional cabling or cost. The LPOD can also be accessed from the Ethernet port of the modem and controlled via Embedded Distant-end Monitor and Control (EDMAC).

Hand-Held Controller Devices

A variety of hand-held controller devices are available. These include the LPOD*net* M&C Accessory Kit and the CLC-10 M&C Accessory Kit. Both are designed to access the monitor and control functionality of the LPOD family of products.

Specifications

IF Input Frequency [Note 1]	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
950 – 1750 MHz	13.75 – 14.50 GHz (optional)
950 – 1450 MHz	12.75 – 13.25 GHz (optional)[Note 3]

Model	Psat (Typical)	P1dB (Guaranteed)[Note 2]
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)
PS2-100Ku	50 dBm (100 W)	49 dBm (80 W)
PS2-125Ku	51 dBm (125 W)	50 dBm (100 W)
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 or PS2-125C,X	51 dBm (125 W)	50 dBm (100 W)
PS2-150C,X	51.8 dBm (150 W)	51 dBm (125 W)
PS2-200C,X	53 dBm (200 W)	52.5 dBm (175 W)
PS2-250C,X	54 dBm (250 W)	53 dBm (200 W)
PS2-300C	55 dBm (300 W)	54 dBm (250 W)

Input Power Supply Requirements: 90 – 264 VAC, 47-63 Hz, Power Factor Corrected, .96   (48 VDC optional)

Gain Min. (Typical) All power levels	70 (75 dB)
Max. IF Input level (no damage)	+10 dBm
Gain Adjust	20 dB in 0.25 dB steps
Gain Flatness	± 1.5 dB full band (optional ± 2.0 dB full band (-50° to +55°C)) ± 0.30 dB per 40 MHz (optional ± 0.50 dB per 40 MHz (-50° to +55°C)
Gain variation over temp	±1.5 dB max., -40° to +55°C (optional ± 2.0 dB max. (-50° to +55°C))
Input Return Loss	15 dB
Output Return Loss	19.1 dB (1.25:1 VSWR)
Noise Figure	10-15 dB typ., 20 dB max. @ min. attenuation, (8 dB typ., 15 dB max. PS2 configured as SSPA only)
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

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 variation	Linear ± 0.03ns/MHz Parabolic ± .003ns/MHz^2 Ripple ± 1.0 ns pk-pk

Notes:
1. All units also available as SSPAs only, without internal L-Band BUC (Freq RF in = Freq RF out).
2. Allow 1 dB degradation from 13.75 to 14.0 GHz and 6425 to 6725 MHz.
3. Available in PS1.5-50Ku/60Ku levels. Inquire for other power levels.

Data Logging parameters	Non-Volatile RAM : Capacity 30 days @ 90 minute intervals. Includes: RF Output Power Mute Status Heatsink Temperature LNB Bias Current

Phase Noise (dBc/Hz) (with optional internal or equivalent performance external reference)	Typical (C/X/Ku) dBc/Hz	Spec (C/X/Ku) dBc/Hz
Offset = 100 Hz	-79/78/-76	-72/-72/-69
1 KHz	-91/-87/-85	-84/-84/-82
10 KHz	-105/-104/-98	-97/-97/-90
100 KHz	-120/-114/-114	-107/-107/-102
1 MHz	-132/-132/-132	-115/-115/-115

Optional Internal Reference

Internal Reference Oscillator Frequency	10 MHz (Can lock to modem supplied reference over a range of -5 dBm to +5 dBm at IF Input)
Frequency Stability	± 5 x 10^{-10} / day ± 1 x 10^{-8} (-40° to +55°C)

Optional LNB Bias/Reference

LNB Bias Voltage	Software selectable tone on/off, 12/18V, 450mA max.
LNB 10 MHz Reference Output Level	0 dBm ± 5 dB
LNB Input/Output Return Loss	15 dB
LNB Input/Output Gain	10 dB ± 2 dB (950 – 1750 MHz) -1 dB ± 2 dB (optional)
LNB Input/Output Gain Flatness	± 1 dB (950 – 1750 MHz)
LNB Input/Output Isolation (Mute condition)	55 dB min.

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)
Humidity	100% condensing rain 2" per hour
Altitude	10,000 AMSL
Ingress Protection	Designed for IP-66 (Dust tight, strong water jets)
Shock	Normal commercial shipping and handling

Weight / Dimensions (height x width x depth (in. excluding connectors))

PS1,1.5	17 lbs Nominal / 7.37" x 6.26" x 12.65"
PS2	47 lbs Nominal / 9.78" x 8.80" x 16.81"

Connectors

IF/RF Input	Type N, female, 50 ohm
RF Output	PS1, C-Band: Type N, female, 50 ohm PS1.5/PS2, C-Band: CPR137G PS1/1.5/PS2 X-Band: CPR112G PS1/1.5/PS2 Ku-Band: WR75G
LNB Bias	Type N, female
Supported Interface	RS-232/485 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)
M&C/Ethernet/ Redundancy Switches	19-pin MS Style (Single Integrated cable assembly available, dependent upon configuration)