



ETL Systems

Excelling in RF Engineering

Model Number: PRN-15 chassis

PRN-L106-xxxx / PRN-L107-xxxx

PRN-L108-xxxx / PRN-L109-xxxx/

PRN-L110-xxxx / PRN-B148-xxxx /

PRN-B224-xxxx modules

Piranha series modular power chassis - holding up to 16 power inserter modules with variable voltage options & 10MHz source/inject

The Piranha series of power inserters provide DC powering options in a compact 1U high 19" chassis for a range of components and devices in satellite ground station RF and power distribution chains.

Other chassis options in the Piranha range: Model PRN-10 with 13/18V LNB powering & 22kHz tone.

Typical applications:

- Providing power to multiple satellite dish LNBs & BUCs
- Large satellite teleports with multiple antennas
- Maintains optimum RF performance

Chassis



Variable voltage specified by power inserter module



10MHz Source/Inject - internal source available or option to inject from an external source



Local control & monitoring via front panel push buttons & display



Compact & expandable up to 16 power inserter modules housed in a 1U high chassis



Resilience from dual redundant hot-swap power supplies & hot-swap power inserter modules



Remote control & monitoring via RJ45 Ethernet port with SNMP & web browser interface



RF input monitoring for LNB & BUC power inserter modules



Power Supply Module Options



Energy efficient consumption with SMART load monitoring from 200W & 350W power supply module



Power Inserter Module Options



LNB Powering switchable 13/18V & 22kHz tone

BUC Powering 48V



3 - 30 MHz IF Band & 850 - 2450 MHz extended L-band operating frequency range





Chassis - Specification

Model Numbers		PRN-15				
Spec Version		1.6				
Dimensions		1U high x 450mm deep x 19" wide				
Capacity		Up to 16 modules (Piranha 1xx series modules)				
AC Consumption		55W (no modules fitted) Maximum consumption at steady state, internal source on & fans full speed. 35W typical consumption for ambient 25°C				
10MHz Reference		Switchable between internal source or external reference via SMA connector on rear, common feed to all modules (PRN-L106-xxxx) Individual module feeds switchable on/off				
External 10MHz Reference		50 Ω SMA female connector on rear. Do not exceed +5 dBm 10 MHz input power				
External 10MHz Ref. Gain		Maximum: 15 ± 2 dB	Minimum: -10 ± 2 dB		Steps: 1 ± 0.5 dB	
1 dB Gain Compression		+5 dBm output (maximum gain)				
Return Loss		14 dB typical				
10MHz RF Input Power Detect		-40 dBm to 0 dBm (for indication only)				
Internal 10 MHz Source		Freq setting: 10 MHz ± 0.000001 MHz	Output type: Sinewave	Output Power Range: 0 dBm to +8dBm	Output Power Steps: 1 ± 0.5 dB	
	Harmonic rejection	2 nd : >40 dB	3 rd : >50 dB	4 th : >60 dB	5 th : >60 dB	
	Single sideband Phase noise (dBc/Hz):	10 Hz: <-125 (0 dBm 10 MHz src) / <-125 (5 dBm 10 MHz src)	< 100 Hz: <-145 (0 dBm 10 MHz src) / <-145 (5 dBm 10 MHz src)	1000 Hz: <-147 (0 dBm 10 MHz src) / <-147 (5 dBm 10 MHz src)	10000 Hz: <-149 (0 dBm 10 MHz src) / <-152 (5 dBm 10 MHz src)	100000 Hz: <-152 (0 dBm 10 MHz src) / <-157 (5 dBm 10 MHz src)
Freq. stability		Over temp: <±5x10 ⁻⁹	Short term stability (per sec):±5x10 ⁻¹²	Load change (±5%): <±5x10 ⁻¹⁰	Power supply variations (±5%): <±2x10 ⁻⁸	
Frequency ageing		Per Day: ±5x10 ⁻¹⁰		Per Year: ±5x10 ⁻⁸		
Alarms		Via Ethernet Port (RJ45) for MPS and module status				
Local Control & Monitoring		Via front panel LCD and keypad				
Remote Control & Monitoring		Via Ethernet (RJ45) CPU hot-swap module, with SNMP & web browser interface. Monitored / controllable features defined in module specification below.				
Temperature / Humidity		Operating Temp: 0 to 45 °C	Storage Temp: -20 to +75 °C	Humidity: 20% to 90% non-condensing	Relative humidity	
Location		Indoor use only		Altitude: 10,000 feet AMSL		
Weight / Colour		8 kg fully loaded with 16 modules		RAL9003 - White (Semi-Matte)		

Power Supply Module Options - Specification

PSU Module Model Numbers	HP225	HP350
Modular Power Supply Options	Power Supply dependent on client load requirement & number of modules fitted. SMART monitoring of chassis load & MPS prevents overloading of PSU & provides feedback	
PSU Power	195W	325W
PSU	Hot-swap, dual redundant & alarmed	



Power Inserter Module Options - RF Parameters

PSU Module Model Numbers	PRN-L107-xxxx	PRN-L106-xxxx	PRN-L109-xxxx	PRN-L110-xxxx	PRN-L108-xxxx
Spec Version	1.1	1.2	1.1	1.1	1.1
Frequency Range	850-2450 MHz (Extended L-band)			3 to 30 MHz (IF Band)	850-2450 MHz (Extended L-band)
Capacity	Single path				
Impedance & RF Connectors	50Ω: BNC & SMA / 75Ω: BNC & F-type		Input 50Ω: BNC & SMA Output 75Ω: BNC & F-type	50Ω: BNC & SMA / 75Ω: BNC & F-type	
Insertion Loss	<1.5 dB (full band)				
Flatness	Full band: ± 0.40 dB / Any 36MHz: ± 0.15 dB			Full band: ± 0.40 dB	Full band: ± 0.40 dB / Any 36MHz: ± 0.15 dB
Return Loss	Typical: 17 dB / Minimum: 14 dB				
10 MHz	-	10MHz INJECT: To port 1. Switchable on/off	Switchable on/off to port 2.	-	10MHz PASS: Between port 1 and 2
Isolation	80 dB minimum between any 2 modules				
LNB/BUC Voltage	0/13/18Vdc selectable & 22kHz tone on/off - via port 1. Custom - 12V to 24V in 0.5V steps		0/13/18Vdc selectable & 22kHz tone on/off - via port 2. Custom - 12V to 24V in 0.5V steps	13/18/24/45 Vdc selectable Custom 12V to 45V in 0.5V steps	0/13/18Vdc selectable - via port 1. Custom - 12V to 24V in 0.5V steps
LNB/BUC Load	Up to 500mA maximum. Fitted with 1A resettable fuse.				
Input RF power	+5 dBm absolute maximum				
DC Consumption	12W full load / 2W no load		2W	12W full load / 2W no load	
RF Power Detect	Range -50 dBm to -10 dBm total power across band			Range -40 dBm to 0 dBm total power across band	Range -50 dBm to -10 dBm total power across band
Control & Monitoring	Remote voltage / tone selection, LNB current monitoring & RF power in monitor				
Weight / Module Finish	Weight: 0.18kg / Module finish: Machined Aluminium				

Power Inserter Module Option - RF Parameters

Power Inserter Model Numbers		PRN-B148-xxxx (BUC)	PRN-B224-xxxx (BUC)
Spec Version		1.1	1.0
Frequency Range		850-2450 MHz (Extended L-band)	850-2450 MHz (Extended L-band)
Capacity		Single path	Single path
Impedance & RF Connectors		50Ω: BNC & SMA / 75Ω: BNC & F-type	50Ω: BNC & SMA / 75Ω: BNC & F-type
Insertion Loss		<1.5 dB (full band)	<1.5 dB (full band)
Flatness	Full band	± 0.40 dB	± 0.40 dB
	Any 36MHz	± 0.15 dB	± 0.15 dB
Return Loss	Typical	17 dB	17 dB
	Minimum	14 dB	14 dB
Isolation		80 dB minimum between any 2 modules	80 dB minimum between any 2 modules
BUC Voltage		48V via port 1. Tolerance ±1% typ.	12 to 24 V in 0.5 V steps
BUC Load		Up to 3A Maximum. Overcurrent protection: Current limited to 3A. Trip & restart.	Up to 3A Maximum. Overcurrent protection: Current limited to >3A. Trip & restart.
10 MHz Pass		Switchable on/off to port 1	Switchable on/off to port 1
Input RF power		+27 dBm absolute maximum	+5 dBm absolute maximum
DC Consumption		146W max load / 2W no load	54W max load / 3W no load
RF Power Detect		Range -25 dBm to +25 dBm total power across band	Range -50 dBm to -10 dBm total power across band
Control & monitoring		Remote voltage / tone selection, BUC current monitoring & RF power in monitor	Remote voltage / tone selection, BUC current monitoring & RF power in monitor
Alarms		BUC current & RF power in - via chassis Ethernet / HMI / Web browser interface	BUC current & RF power in - via chassis Ethernet / HMI / Web browser interface
Weight / Module Finish		0.18kg / Machined Aluminium	0.18kg / Machined Aluminium