

# INDOOR POWER SYSTEM

## Overview

LNPS 48600A Power System is a highly reliable and DSP full digital controlled communication power system with high power density and high performance. Designed for addressing the global customer demands, LNPS 48600A comes in 2m cabinet, including 15 rectifiers, with total capacity of 600A. This product has merits such as high efficiency, high reliability, ultra-low EMI and swift maintenance, fully meeting the -48V DC power requirements of medium-large mobile communication base stations, medium exchanges, transmission relay stations, micro-wave communication stations, and satellite communication stations.

- Working environment temperature -20~50°C
- Multiple-level surge protection. Compliant with UL, CE, applicable to residential areas
- Hot-swappable, for easy online maintenance



## System Features

- Indoor Power Supply System and Cabinet, ODM or OEM for customer
- Maximum 600A@58V DC output in single cabinet
- The cabinet meets the requirement of antiseptic, moisture and mildew proof
- Extra-wide input voltage range (90Vac~280Vac) and strong adaptability to grid
- Highly smart, with monitoring, remote control, remote communication and remote configuration functions

## Application

- Power supply for BSC/RNC
- BTS/Node B
- Nodes
- Fixed line tandem offices

## Configuration

Item	LNPS48600A	LNPS48300A
Max Capacity	600A	300A
Rectifier Module	LR48/2000	LR48/2000
Output Voltage	48V	48V

## Dimension and Weight

Item	W × D × H (mm)	Weight (kg)
LNPS48600/2000	600 × 600 × 2000	162
LNPS48300/2000	600 × 600 × 2000	150

# OUTDOOR POWER SYSTEM

## Overview

LNPS48300A /O outdoor power system is designed for different climate conditions, being equipped with customized design heaters and thermal management suitable for a specified temperature range and humidity, which can significantly save cooling cost and site rental.

LNPS 48300A/O outdoor power system has excellent reliable performance and top quality outdoor protection cabinet, providing stable and reliable power supply for various outdoor communication devices.

- Integrated outdoor base stations
- Outdoor distributed base stations
- Outdoor network access points



## System Features

- Integrated solution, reducing difficulty of site selection and operational
- Wide input voltage range, from 90to 280Vac, adaptable to various and poor power grids
- Reliable and highly efficient heat exchange technology, operational normally under ambient temperature of  $-40^{\circ}\text{C} \sim +55^{\circ}\text{C}$
- IP55 protection class
- Smart battery management
- RS232 port for remote monitoring
- Alarming and protection functions

## Application

- Outdoor UMTS/GSM/CDMA base stations;



## Configuration

Item	LNPS 48200A/O	LNPS 48300A/O
Max Capacity	200A	300A
Rectifier Module	GPR4530D	GPR4830D
Output Voltage	48V	48V
Dimension W × D × H (mm)	600 × 600 × 1600	600 × 600 × 1600

# INTEGRATED POWER SYSTEM

## Overview

LNPS48 300A/INT Integrated power system is customized design for space and rental saving, the integrated system adopts modular design, rectifier cabinet and battery cabinet can be separate, which can be flexibly composed of different capacity DC power systems, 2-4 strings of 12V/150Ah batteries can be installed in the cabinets.

## System Features

- Compact structure, saving occupied space and rental
- Flexible structure to satisfy different requirements, the rectifier cabinet and battery cabinet are design to be separate, the power cabinet and battery cabinet can be placed in parallel or vertical, suitable for different needs.
- High-efficiency module and hibernation function, saving electricity cost.
- Hot-swap and online capacity expansion
- Front access design for easy installation and maintenance
- Ultra-low EMI, suitable for residential environment



## Application

- UMTS/GSM/CDMA base stations
- Broadband access stations
- Transmission hub stations

## Dimension and Weight

Item	W × D × H (mm)	Weight (kg)
System with 2 battery shelves	600×600×1600	105
System with 4 battery shelves	600×600×2000	110



## Configuration

Item	LNPS48 200A/INT	LNPS48 300A/INT
Max Capacity	200A	300A
Rectifier Module	GPR4830D	GPR4830D
Battery Shelves	1~3 banks 12V150Ah	2~4 banks 12V150Ah

# LIANNET MINI SHELTER SYSTEM

## Overview

LIANNET Mini-shelter is a cabinet which is used for outdoors and provides mechanical and environmental protections for the communication equipments inside it. It has the following merits: high integration, flexible intension, easy configuration, strong environmental adaptation and free of person-entry maintenance. LIANNET Mini-shelter was developed for easing operators' pressure in site acquisition, meeting operators' requirements for energy saving and flexible expansion. As an innovative installation solution for site equipment, it not only has a large housing capability like traditional shelter, but also adopts independent compartment temperature control method as outdoor cabinet.






## System Features

- ALL-IN-ONE encapsulation for wireless, transmission, rectifier, battery, monitor and distribution
- Integration reduces CME cost. Compare to traditional room, mini shelter costs Lower and builds faster
- Small footprint, less rental cost, compared with traditional shelters, its covers area is less than 60%.
- High adaptability. For city, suburb, mountain, highway
- Modular design, modular function, convenient and flexible configuration based on customer's require
- Easy installation and maintenance, Reduce the implementation and maintenance cost
- Cooling mode: Heat Exchanger, Fan, TEC optional

## Application

- Outdoor UMTS/GSM/CDMA base stations
- Sites with limited space and not suitable for building construction
- Stations that require shared power sources

## Configuration

Equipment Cabinet HEX type	Equipment Cabinet Fan type	Equipment/Battery HEX & TEC type	Battery Cabinet TEC type
Dimension: 906*906*2260mm(W*D*H) or customized			
			

# LIANNET CUSTOMIZED POWER SYSTEM

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## Overview

Due to the different country and region with various environment and climate conditions, the operators have their own use custom and requirement. To fulfill diversified requirements and scenarios, LIANNET provides customized products and solutions for operators with ODM and OEM. All customized products and solutions are strictly following customer's standard and requirement with high reliability, efficiency and smart energy features

with enough spare space for other equipment

## System Features

- Compact structure, saving occupied space and rental
- Integration reduces CME cost with Lower costs and faster builds
- High-efficiency module and hibernation function, saving electricity cost
- Large housing capability for wireless, transmission, rectifier, battery, monitor and distribution inside
- Full front access for easy installation and maintenance
- Perfect lightning and surge protection at AC side, DC side and signal interfaces
- Ultra-low EMI, suitable for residential environment
- System capacity range from 90A~600A

## Application

- 3G, GSM, CDMA mobile base stations
- Sites with limited space and not suitable for building construction
- Small and medium exchanges, rural telephone and access networks
- Transmission relaystations
- Communication equipment rooms and wireless base stations of railway intermediate stations



# LIANNET EMBEDDED SYSTEM

## Overview

LIANNET BDPE4860CR consists of 19"1U rack, Rectifier, Monitoring. The system provides -53.5VDC (-42~-58VDC) directly to the load and maintains the float voltage of the backup battery connected in parallel. The rectifiers with constant power characteristic supply the full power of 800W or 1600W over the specified output voltage range. Such a performance, as well as the optimum usage of space, technologically advanced rectifiers, choice of the ideal controller. Wide range of options, short assembly time are the key factors of success of this versatile power system.

- strong grid adaptability
- Controller and Rectifier support hot pluggable facilitates for future extensions



## System Features

- Standard 19" 1U
- Minimize space needed for power in embedded applications
- Full interface with AC input , DC output and battery connection with easy user operation
- Hot-swappable, Full front access
- Wide operating temperature range (-20 to +55°C)and strong environment adaptability
- Full function for system controller with battery management ,load management ,rectifier management , energy management ,and monitor function
- High efficiency , >92% efficiency reduces power consumption for lower operating costs
- Compliant with global standards delivers quality ,performance and reliability no matter what the application or location demands
- Extra-wide input voltage range (90~280Vac) and

## Application

- UMTS/GSM/CDMA base stations
- Broadband access stations
- FTTX stations
- Transmission hub stations
- Satellite microwave stations
- Data communication device

## Specification

Item	19" 1U rack
Max Capacity	800W/1600W
Rectifier Module	GRP4815D or GRP4830D
Dimension W × D × H (mm)	482.6×240×44
Weight (Kg)	9.6kg

# LIANNET EMBEDDED SYSTEM

## Overview

LIANNET GPE4890 consists of 19"2U rack, Rectifier, Monitoring. The system provides -53.5VDC (-42~-58VDC) directly to the load and maintains the float voltage of the backup battery connected in parallel. The rectifiers with constant power characteristic supply the full power of 800W or 1600W over the specified output voltage range. Such a performance, as well as the optimum usage of space, technologically advanced rectifiers, choice of the ideal controller. Wide range of options, short assembly time are the key factors of success of this versatile power system.

## System Features

- Standard 19" 2U,Optional GPE4890 or GPE4890A
- Adoption of active power factor compensation technology with power factor  $>0.98$
- Wide operation range of AC input voltage:90~280Vac
- Hot-swappable, Full front access
- Wide operating temperature range (-20 to +55°C)and strong environment adaptability
- Full function for system controller with battery management ,load management ,rectifier management ,energy management ,and monitor function
- High efficiency ,  $>92\%$  efficiency reduces power consumption for lower operating costs
- Compliant with global standards delivers quality ,performance and reliability no matter what the application or location demands
- Input over/under voltage protection
- Output over voltage/current protection

- Output short current protection
- Auto current sharing
- Controller and Rectifier support hot pluggable facilitates for future extensions



GPE4890



GPE4890A

## Application

- Small scale program controlled exchanges
- Access network
- Transmission equipment
- Mobile communication
- Satellite communication ground station
- Microwave communication

## Specification

Item	19" 1U rack
Max Capacity	4185W
Rectifier Module	GRP4815D or GRP4830D
Dimension W × D × H (mm)	482.6×255×44
Weight (Kg)	14.5kg

# LIANNET EMBEDDED SYSTEM

## Overview

LIANNET GPE48150A consists of 19"2U rack, Rectifier, Monitoring. The system provides -53.5VDC (-42~-58VDC) directly to the load and maintains the float voltage of the backup battery connected in parallel. The rectifiers with constant power characteristic supply the full power of 800W or 1600W over the specified output voltage range. Such a performance, as well as the optimum usage of space, technologically advanced rectifiers, choice of the ideal controller. Wide range of options, short assembly time are the key factors of success of this versatile power system.

- Output short current protection
- Auto current sharing
- Controller and Rectifier support hot pluggable facilitates for future extensions

## System Features

- Optional standard 19" 3U
- Adoption of active power factor compensation technology with factor  $>0.98$
- Wide operation range of AC input voltage:90~280Vac
- Hot-swappable, Full front access
- Wide operating temperature range (-20 to +55°C)and strong environment adaptability
- Full function for system controller with battery management ,load management ,rectifier management ,energy management ,and monitor function
- High efficiency ,  $>92\%$  efficiency reduces power consumption for lower operating costs
- Compliant with global standards delivers quality ,performance and reliability no matter what the application or location demands
- Input over/under voltage protection
- Output over voltage/current protection



## Application

- Small scale program controlled exchanges
- Access network
- Transmission equipment
- Mobile communication
- Satellite communication ground station
- Microwave communication

## Specification

Item	19" 1U rack
Max Capacity	8125W
Rectifier Module	GRP4815D or GRP4830D
Dimension W × D × H (mm)	482.6×253×132
Weight (Kg)	23.5kg



# LIANNET RECTIFIER

## Overview

GPR4815D & GPR4830D rectifier is optimized for the demanding power needs of wireless communications, enterprise and broadband access equipment. Requiring only 1U (44mm) of rack height, these compact rectifiers can provide up to 800Watts/1600Watts of power and operate up to 75°C. The small size can free up space to reduce system size.



## Module Features

- Low rectifier / Subrack height minimize space needed for power in embedded applications. DSP (Digital Signaling Processor) control, fewer components optimized operation and active load sharing for increased reliability.
- Compliant with global standards delivers quality performance and reliability no matter what the application or location demands.
- High efficiency, >94% efficiency reduces power consumption for lower operation costs
- Hot pluggable facilitates future extensions
- Wide input voltage range operates in the most demanding environments where input voltage changes
- Wide temperature operating range -40°C to +75°C meets the harshest climatic environment requirement.

## Specification

- 800W/1600W@Vout>48VDC
- CE certified
- Wide input voltage range: 80~300Vac
- Input voltage frequency range: 45~65Hz
- Wide operating temperature range: -40°C~+75°C (Deratde output at +45°C above)
- Relative humidity: ≤90%RH
- Altitude: ≤2500m
- Efficiency: 92%
- Power factor: 0.98

## Dimension and Weight

Item	Dimension(H×W×D) mm	Weight (Kg)
GPR4815D	41.6×116.5×208	1.2
GPR4830D	41.6×116.5×208	1.5

## Specifications

Input					
Parameter	Min.	Type	Max.	Unit	Remarks
Input Voltage Range	90	220	280	Vac	
Input Frequency	45	50	65	Hz	Rated load
Input Current			6.8	A	
Power Factor	0.98				Rated input/rated load

Output					
Parameter	Min.	Typ.	Max.	Unit	Remarks
Output Voltage Range	36	53.5	58	Vdc	
Output Current Range	0	15		A	176~280Vac Input
Regulation			±1	%	
Weighted Psophometric Noise			2	mV	
Wide Frequency Noise Voltage			50 20	mV	(3.4KHz~150KHz) (150KHz~30MHz)
Ripple (Vp-p)			200	mV	Rated input/output, with 0.1uF film capacitor and 10uF high frequency electrolyte capacitor, oscilloscope band width of 20MHz.
Output Power	0	800		W	176-280V input, see remark 1
	0	400		W	90-<176V input, see remark 1
Output Efficiency	>92			%	220V AC input
	>83			%	110V AC input

# LIANNET MONITORING

## Overview

The LM500 controller is the local control unit used in the -48V/24V DC power system. It realizes the data sample, data record, alarm management, battery management, load management, and operating interface of the DC power system. It also has the RS232 or Ethernet interface for site monitor. The LM500 also has special functions to maximize the customer's using value like Energy saving function, battery mid voltage measurement, auto battery test function, inner web browser, intelligent programmable logic control (PLC) function. The LM500 is designed for Global telecom application, withstands high telecom standard and requirement, high reliability and availability.



## Module Features

- All function integrated in the controller( Ethernet function selectable)
- 1Ux2U size with 219mm depth back gold finger interface with stand hot plug facility.
- Compliant with global standards delivers quality performance and reliability no matter what the application or location demands
- Flexible and scalable to satisfy customer different requirement
- Sophisticated float and boost charge management to prolong the battery life
- Compatible with -48V and +24V DC power system
- Wide temperature operating range (-40° C to +65° C) meets the harshest climatic environment requirements

## Dimensions and Weight

Item	Dimension(H×W×D) mm	Weight (Kg)
LM500	42X88X219	0.8

# LIANNET OPzV GEL BATTERY

## Overview

OPzV series is Valve Regulated Lead Acid battery adopting immobilised GEL and Tubular .Plate technology, offering high reliability and stable performance .The OPzV series is designed and manufactured according to DIN standards, with die-casted positive grid and patented Active material formula, they exceed the DIN standard values. They offer 20+ years design life in float service at 25 °C and are more suitable for cyclic use under extreme operating conditions.

Suitable for power supply in telecommunication, photovoltaic / wind energy storage and UPS applications.

## Feature

- Capacity range (C10): 200Ah—3000Ah
- Floating design life: 20 years at 25 °C
- Cycle life: 1500 at 80%DOD and 3500 at 25%DOD
- Self discharge rate  $\leq 2\%$  month
- High charge acceptance performance:
- Wide operation temperature :  $-40^{\circ}\text{C}\sim+75^{\circ}\text{C}$
- Storage life :After fully charged, it can be storage about 2 years at 20 °C
- Good deep discharge recovery performance
- Electrolyte : GEL electrolyte use import silica, special technician make it in a gel immobilized state , more safe than AGM type battery special additives makes it very stable , lower internal resistance and no stratification
- Positive plate : Tubular type, with die-casting Pb-Ca grid, it has very good corrosion resistance and very long service life.
- Negative plate :Pasted flat type radial grid designed, good high rate discharge performance;
- Separator : PVC-SiO<sub>2</sub> separator imported from Europe, low internal resistance, high

pore rate and long life

- Flooded electrolyte design : Contain more electrolyte like a flooded battery, space between plates and separators are full of electrolyte thus means good heating capacity and avoid “thermal runaway”
- Safety valve , has good sensitivity safe and reliable , equipment with double flame arrester/acide filter
- Battery case: Made of high strength ABS and durable design



## Application

- Telecommunication
- Photovoltaic/Wind Energy
- UPS
- Solar power system
- Power storage plant
- Military

## Compliant Standards

- IEC60896-21/22-2004
- DIN43539-T5
- IEC61427-2005
- YDT/T1360-2005
- Passed ISO9001, ISO14001, OHSAS18001, UL, CE certificate

# LIANNET DEEP CYCLE GEL BATTERY

## Overview

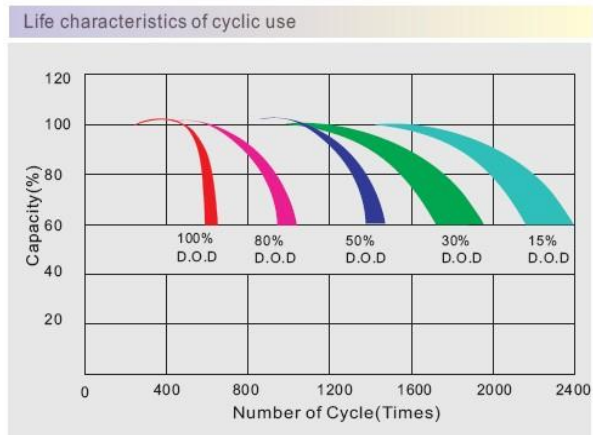
DG (Deep Cycle GEL) series is designed for frequent cyclic charge and discharge applications under extreme environments. By using strong grids, high purity lead and patented Gel electrolyte, DG series offers excellent recovery after deep discharge under frequent cyclic discharge, and can deliver 400 cycles at 100% DOD. Suitable for solar, CATV, marine, RV and deep discharge UPS etc.

## Feature

- Capacity range (C20) : 40Ah—3000Ah
- Voltage class: 2V/6V/12V
- Long design life: 12years for 6V/12V 18years for 2V
- Low self-discharge rate:  $\leq 2.5\%$  per month
- High sealed reaction efficiency:  $\geq 98\%$
- High specific energy density
- Excellent charge acceptance
- Wide operation temperature  $-40^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$
- Grid: patent primary and secondary grid structure design;
- Positive plate: Pasted flat type, high temperature and humidity formation technics;
- Separator: high porosity PE separator with glass fibre good cyclic characteristics and lower resistance;
- Battery container: High strength ABS(UL94-HB) and UL94-V0 is optional;
- Post sealing: patent double layer post sealing
- Safety Valve narrow operate pressure range and equipment with explosion-proof; Arrester and acid filter.

## Application

- Telecommunication
- Photovoltaic/Wind Energy
- UPS
- Solar power system
- Cable TV



## Compliant Standards

- IEC60896-21/22-2004
- DIN43539-T5
- IEC61427-2005
- YDT/T1360-2005
- Passed ISO9001, ISO14001, OHSAS18001, UL, CE certification

