MORNSUN®

5G Telecommunication

One-stop solutions of power supplies

Isolated DC/DC Converter

AC/DC Brick Power Supply

Power Supplies for Servers

PoL Power Supply

mornsun website

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About MORNSUN

Strong R&D capabilities
1600+ IPRs & Patents , 700+R&D engineers

Fast delivery
48+SMT Production line, 80000+m^2 Factory area

Timely after-sales service
Quick respond from FAE team


Manufacturing Center in Huaihua


R&D Center in Guangzhou

- Established: 1998
- Employees: 4300+
- Organizational structure: Headquarters in Guangzhou, 4 Subsidiaries, 6 R&D Centers
- Certifications:

Headquarters in Guangzhou

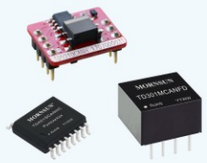
CONTENT


Enclosed Switching Power Supplies


DIN Rail Power Supplies


AC/DC Converters


DC/DC Converters


CAN/485 Isolated Transceiver Modules

Telecom Industry Overview

One-stop power solutions for Telecom

City A

Base Station

City B

Base Station

Bearer Network

Telecom Optical Transmission Equipment

OTN Device

PTN Device

Bearer Network

Fronthaul, Middlehaul, Backhaul

Telecom Room

Bearer Network

Telecom Room

Bearer Network

Backbone Network

Access Network

Macro Site, Micro Site, Repeater

Equipment on Base station

PoE Switch

Antenna on Base station

Core Network

Network transmission equipment, Server

Special Communication System

Cloud Server

Data Center

Product recommendation

Isolated DC/DC Converter

VCB/F Series

Non-isolated DC/DC Converter

PoL Power Supply

Power Supply for Server

LMS Series

AC/DC Brick Power Supply

LBH/F Series

Key Specifications for Telecom Power Supply

01 Meets DOSA standard with brick packages

In the 5G Telecom industry, there are a series of work and costs because of the PCB redesign and recertification led by a change of key materiel. Therefore, products in universal standard always are the selection, specially DOSA standard packages, such as 1/4 brick, 1/8 brick, and 1/16 brick.

1/4 brick power supply
57.9 x 22.9 x 10.4mm

1/8 brick power supply
57.9 x 36.8 x 8.1mm

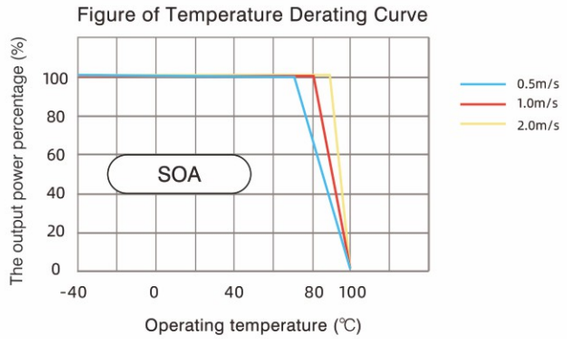
1/16 brick power supply
33.02 x 22.86 x 10.4mm

02 Wide operating temperature range

In practice, the environment temperature generally ranges from -40℃ to +70℃ and is higher in internal of devices because of the power supplies and some components would heat up. In this case, only a power supply with a wider temperature range can meet the actual requirements. Mornsun's telecom power supplies meet the operating temperature requirements up to 100℃.

Operating temperature
-40℃ to +85℃/-40℃ to +100℃

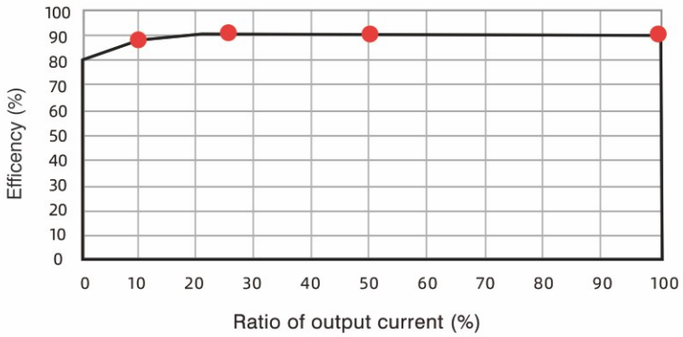
Figure of Temperature Derating Curve



03 Higher efficiency requirement

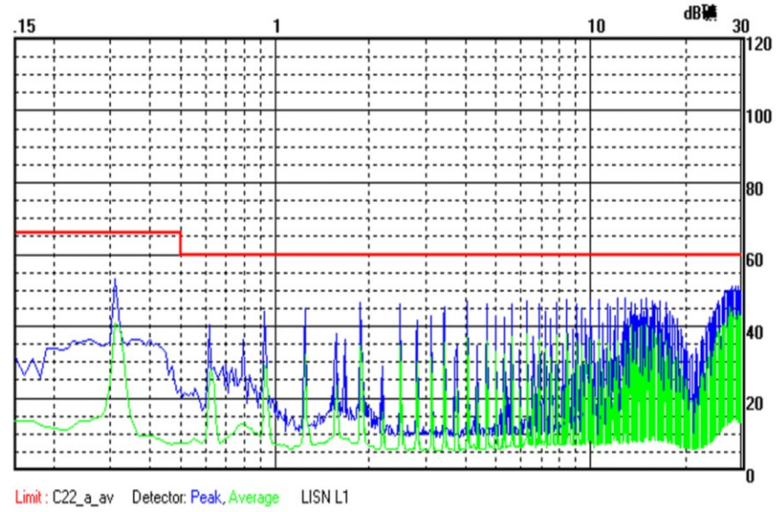
The 5G data flow is unbalanced and changes with time, it means that the actual load range of the power supply can vary unpredictably from light to full load, so high efficiency is required at both full and light loads. Mornsun's telecom power supplies adopt frequency conversion and active clamp technology, effectively improving the conversion efficiency under all load, the average efficiency is greater than 90% in the POL of 10%/25%/50%/100%.

Efficiency VS Output Load



04 Outstanding EMC performance

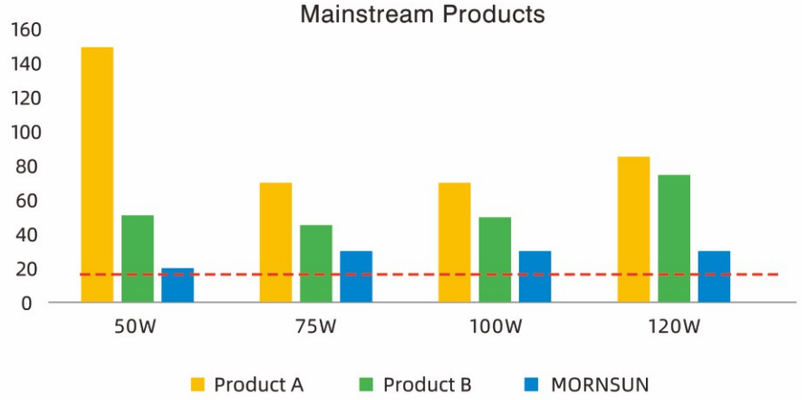
EMC is a challenge that all industries will encounter, it is very important to choose a power supply with outstanding EMC performance.Mornsun has a professional EMC design team and a complete test platform, making EMC design runs through the whole product development and design process and has strict control procedures to ensure that each batch of products are compliant with EMC requirement.



05 Low standby power consumption to save energy

The standby energy consumption is a kind of energy waste, and its reduction should be considered in the system design. Mornsun adopts FM technology for its products, making it under no-load conditions turn to "green mode" and the switching frequency low down to realize the energy saving.

Power Consumption Comparison Figure of Mainstream Products

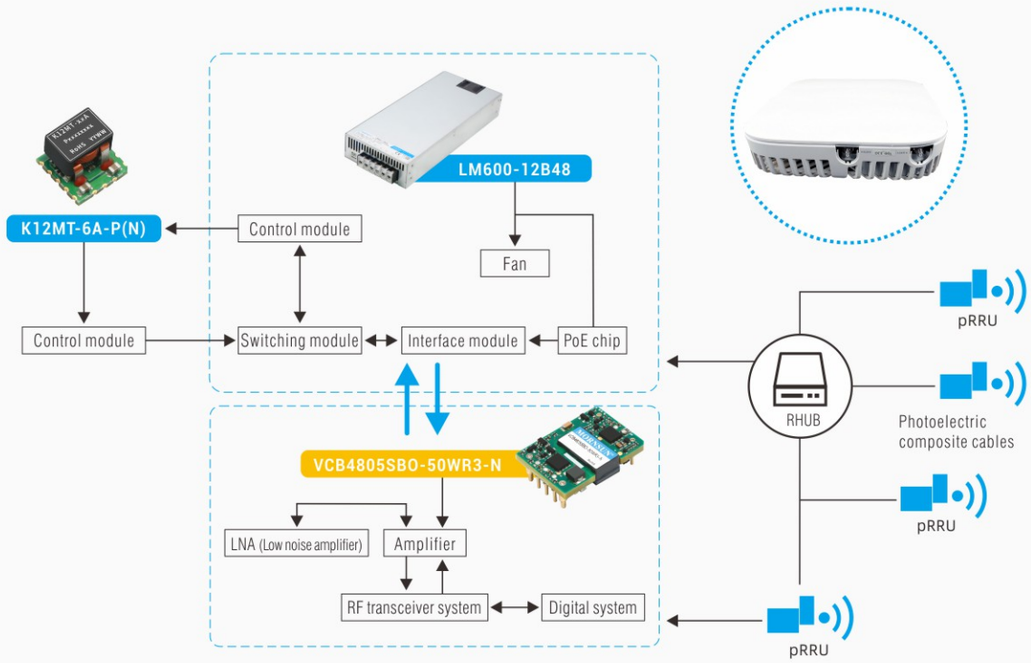


Access Network

Typical application and advantages for Telecom power supply

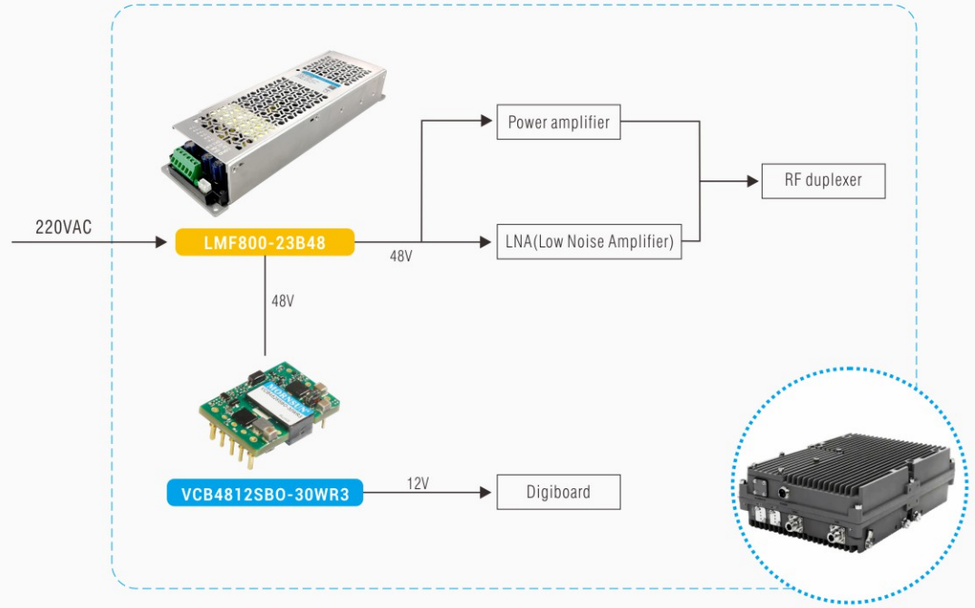
Access Network---**5G Small Base station**

Small base stations mainly provide wireless signal transceiver functions for the 5G industry. A miniature and high power density power supply is required to convert the voltage to 12VDC to supply power to interface module and amplifier. Mornsun provide 30-100W 1/16-brick DC/DC converter VCB Series with 36-75VDC wide input voltage.



Access Network---**Repeater**

A Repeater is a device used to extend the coverage of a 5G network by amplifying and retransmitting signals from a nearby base station.
Repeaters are usually build in harsh outdoor environments. MORNSUN provides the compact LMF800-23B48 that can be used at 60℃ with full load and adapt to voltage fluctuation.



▷ Advantages of VCB4805SBO-50WR3-N

- Wide input voltage range of 36-75VDC
- High efficiency up to 90%
- Isolation voltage: 1500VDC
- Input low-voltage, output short-circuit, and over-current protections
- Wide operating temperature of -40℃ to +85℃
- Universal 1/16-brick package, comply with DOSA standard

▷ Advantages of LMF800-23B48

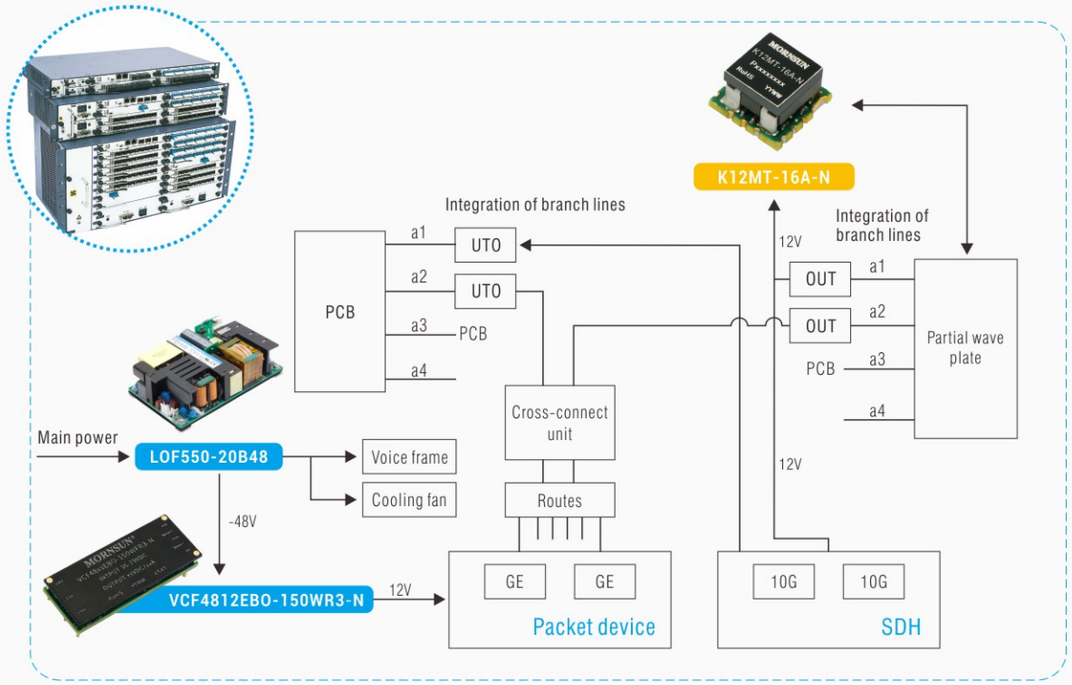
- Wide input voltage range: 90-300VAC/150-380VDC
- High efficiency up to 94%
- Surge current meets 5kA
- Output short-circuit, over-current, and over-temperature protections
- AC OK, DC OK Function
- Meets the system requirement of without derating @60℃

Bearer Network

Typical application and advantages for Telecom power supply

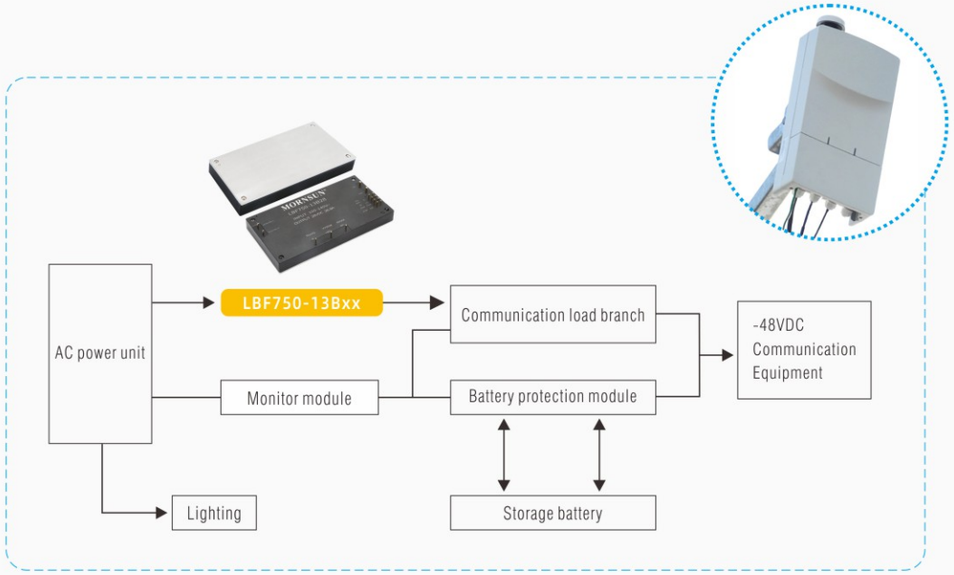
Bearer Network---**OTN Devices**

Optical Transport Network (OTN) is a technology used to provide high-speed, low-latency transport of data over optical fiber networks. The main function of OTN is to enable the efficient and reliable transmission of large amounts of data over long distances.
Mornsun offers the 33-66W K12MT series, which supply step-down voltages for various loads, speed up the start-up, and simplify the system-level design.



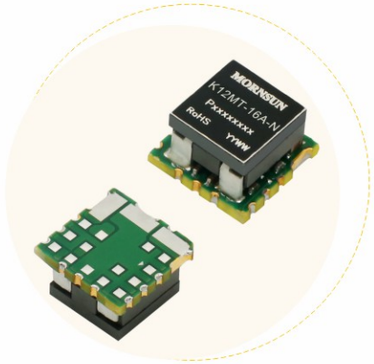
Bearer Network---**5G Cell Site**

The Fronthaul RAN connects hundreds of end-user devices for rapid data exchange, and due to its short wavelength, multiple small cell sites need to be installed to cover the outdoor service area. The LBF750-13Bxx, an AC/DC Brick power supply, can greatly meet the requirements of a small cell site with the advantages of small size, potting encapsulation, wide operating temperature, and conduction heat dissipation design.



▷ Advantages of K12MT-16A-N

- High efficiency up to 92%
- Wide input voltage range: 4.5-14.4VDC
- Adjustable output voltage range: 0.6-3.63VDC
- Fast transient response
- SENSE, TRIM, PGOOD Function



▷ Advantages of LBF750-13Bxx

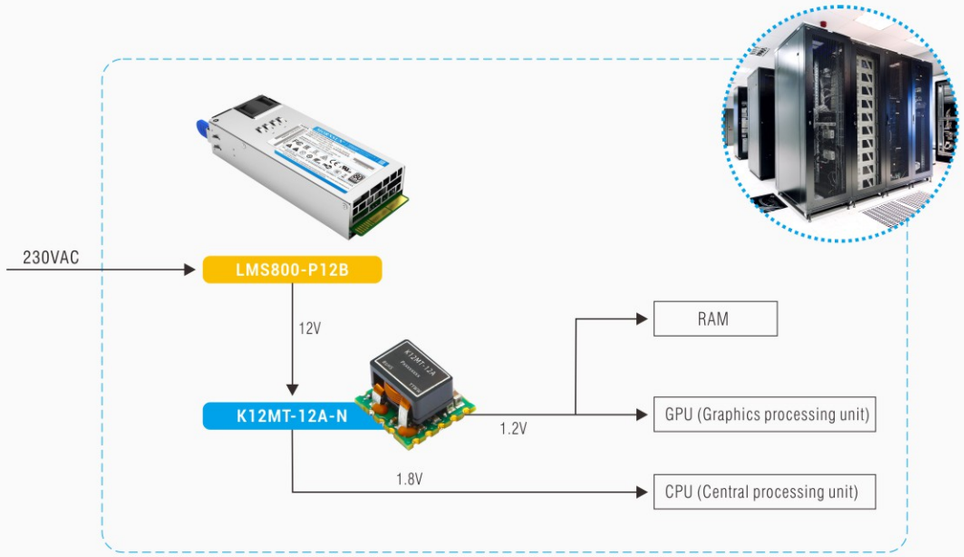
- Wide input voltage range: 85-305VAC/120-430VDC
- Baseplate temperature range: -40℃ to +100℃
- 5-year warranty, 3000VAC isolation voltage
- Remote control, AUX auxiliary power supply
- Designed to meet UL/IEC/EN62368-1 standards
- Input under-voltage, over-temperature protection, output short circuit, over-voltage, and over-current protections

Core Network

Typical application and advantages for Telecom power supply

Core Network---**Data Center**

Data center is a globally collaborative network of specific devices used to deliver, display, and store data information over the Internet infrastructure.
Mornsun's LMS800-P12B series is AC/DC power supply specialized for servers, it supports a hot plug, cooling fan, and intelligent backup function, is suitable for the harsh environment of the server room.



▷ Advantages of LMS800-P12B

- Wide input voltage range: 90 - 264VAC, accepts AC & HVDC wide voltage range input
- 80 PLUS Platinum efficiency
- N+M Intelligent redundancy N+M≤4
- Active current sharing function
- PMBus / I2C communication function
- Black box function

Isolated DC/DC Converter VCB/F Series (3-1300W)

DOSA

Features:

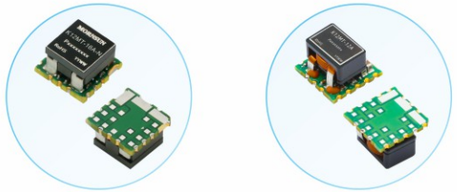
- Operating temperature range of -40℃ to +85℃ / -40℃ to +100℃
- High efficiency up to 93%
- Widely used in communication, medical, industrial control, electric power, instrumentation applications
- Input under-voltage, output short-circuit, over-current protections
- EN62368 approved

Product Parameter

Series	Power	Input voltage range	Isolation voltage	Output voltage (VDC)	EMC performance		Operating temperature
VCB_SO-3WR3	3W	36-75 (48VDC)	1500VDC	5,12,15,24	CE meets CLASS B RE meets CLASS B ESD meets Contact ±4KV	RS meets 10V/m EFT meets ±2KV Surge meets ±2KV CS meets 3 Vr.m.s	-40℃ to +85℃
VCB_SO-6WR3	6W			5,12,15,24			
VCB_SBO-10WR3	10W			5,12,15,24			
VCB_SBO-20WR3	20W			3.3,5,12,15,24,28			
VCB_SBO-25WR3	25W			24			
VCB_SBO-30WR3	30W			5,12,15,24			
VCB_SBO-40WR3	40W			5,12,24,28			
VCB_SBO-50WR3(-N)	50W			5,12	CE meets CLASS A RE meets CLASS A ESD meets Contact ±4KV		
VCB_SBO-75W(F)R3(-N)	75W			5,12,28	CE meets CLASS A RE meets CLASS A ESD meets Contact ±6kV/Air ±8KV		
VCB_SBO-100W(F)R3(-N)	100W			5,12,28	CE meets CLASS B RE meets CLASS B ESD meets Contact ±6KV/Air ±8KV		
VCB_EBO-100W(F)R3(-N)	100W			5,12,15,24,28	CE meets CLASS A RE meets CLASS A ESD meets Contact ±6KV		-40℃ to +100℃
VCF_EBO-100W(F)R3(-N)	100W		2250VDC	3.3,5,12,24			
VCF_EBO-120W(F)R3(-N)	120W						
VCF_EBO-150W(F)R3(-N)	150W						
VCB_QBO-200WR3(-N)	200W		1500VDC	5,12,15,24			-40℃ to +85℃
VCB_EBO-240WR3(-N)	240W			10.8,12	CE meets CLASS B RE meets CLASS B ESD meets Contact ±6KV (400W: ±8KV)		
VCB_EBO-300WR3(-N)	300W						
VCB_EBO-400WR3(-N)	400W						
VCF_QBO-400W(F/H)R3(-N)	400W		2250VDC	12,15,24,28	CE meets CLASS A/B RE meets CLASS A/B ESD meets Contact ±6KV/Air ±8KV	CS meets 10 Vr.m.s	
VCB_QBO-800WR3A(D)-N	800W	40-60 (48VDC)	1500VDC	10.8,12	CE meets CLASS B RE meets CLASS B	–	
VCB_QBO-1300WR3A(D)-N	1300W	45-60 (48VDC)		10.8,12			

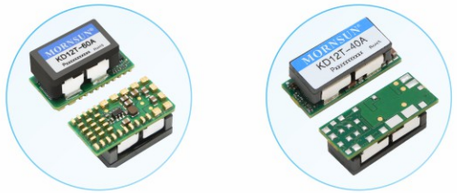
Notes: 1. Product model suffix plus "F" for the heat sink package.
2. Use"F" suffix in "F/H" is for added aluminum baseplate, and "H" suffix for heat sink mounting.
3. "N" means negative logic.

Non-isolated DC/DC Converter PoL Power Supply (6-60A)



K12MT Series

- ± 1% High output voltage precision
- Compact size: 12*12mm



KD12T Series

- PMBus function supports configuration and monitoring
- Output tracking and power sorting functions
- Fixed switching frequency

Product Parameter

Series	Input voltage (VDC)		Output voltage (VDC)	Output current (A) (Min./Max.)	Eff (%) (Min./Typ.)	CapacitiveLoad (μF)Max.		Dimension (mm) (LxWxH)
	Rated	Max.				1mΩ≤ESR<10mΩ	ESR≥10mΩ	
K12MT-6A-P(N)	12 (4.5-14.4)	15	0.6-5.5	0/6	91/94	1000		12.20 × 12.20 × 8.70
K12MT-12A-P(N)				0/12	92/95			
K12MT-16A-P(N)			0.6-3.63	0/16	87/92	330		12.20 × 12.20 × 8.40
KD12T-40A	12 (4.5-14.4)	15	0.6-4.5	0/40	90/95	10000		33.03 × 13.46 × 10.60
KD12T-60A	12 (7.5-14.4)			0/60	87/92	5000		25.40 × 12.70 × 12.96
K12T-6A-P(N)	12 (8.3-14)	15	0.75-5.5	0/6	90/94	1000	3000	20.30 × 11.40 × 6.60
K12T-10A-P(N)				0/10	93/96	5000	6000	33.00 × 13.50 × 8.30
K12T-16A-P(N)				0/16	92/95			
K12T-20A-P(N)	12 (8-14)		0.6-5.0	0/20	92/94			33.00 × 13.50 × 9.90

Notes: 1. "P" indicates that the ON/OFF pin is positive logic control, "N" indicates that the ON/OFF pin is negative logic control.
2. Exceeding the maximum input voltage may cause permanent damage.

120-550W High Power Density Power Supply LOF Series

Features:

- Active PFC function
- Output short circuit, over-current, over-voltage, over-temperature protections
- The base plate with conformal coating
- Operating altitude up to 5000m
- Low leakage current < 0.1mA
- Meets IEC/EN/UL62368-1, IEC/EN60335-1, IEC/EN61558-1, GB4943-1, IEC/EN/ES60601-1 standards

Product Parameter

Series	Power (W)	Output voltage (VDC)	Safety parameters	EMC Performance	Markings	Dimension (mm)(LxWxH)
LOF120-20Bxx	140 (Air cooling) (10CFM)	12,15,19,24, 27,36,48,54	Input-output: 4kVAC Input-enclosure: 1.5kVAC Output-enclosure: 1.5kVAC Input-output: 2 × MOPP Input-PE: 1 × MOPP Output-PE: 1 × MOPP Leakage current: ≤0.1mA	CE meets CLASS B RE meets Category I, CLASS B Category II, CLASS A (LOF120/225/350) RE meets CLASS B (LOF450/550/750) ESD meets Contact ±8kV/Air ±15kV RS meets 10V/m EFT meets ±2kV (LOF120/450/550/750) EFT meets ±4kV (LOF225/350) Surge meets line to line ±2kV/ line to ground ±4kV CS meets 10Vr.m.s	EN/IEC/UL62368-1, IEC/EN/ES60601-1, EN60335-1, IEC/EN61558-1, GB4943.1, CAN/CSA-C22.2 No.60601-1:14, EN60601-1-2 Edition 4	76.20 × 50.80 × 31.00
LOF225-20Bxx	140 (Air cooling) 225 (13CFM)					101.60 × 50.80 × 25.40
LOF350-20Bxx	180/200 (Air cooling) 300/325/350 (20.5CFM)					127.00 × 76.20 × 25.40
LOF450-20Bxx	250 (Air cooling) 400/450 (25CFM)	12,15,18,19, 24,27,36,48, 54	Input-output: 4kVAC Input-enclosure: 2kVAC Output-enclosure: 1.5kVAC Input-output: 2 × MOPP Input-PE: 1 × MOPP Output-PE: 1 × MOPP Leakage current: ≤0.1mA (LOF350) Leakage current: <0.5mA (LOF450/550/750)		EN/ES60601-1, IEC/EN62368-1, EN60335-1, GB4943.1	127.00 × 76.20 × 38.50
LOF550-20Bxx	310/320 (Air cooling) 500/550 (25CFM)					127.00 × 76.20 × 40.50
LOF750-20Bxx	400/450 (Air cooling) 700/750 (25CFM)	12,15,24,27, 36,48,54				127.00 × 76.20 × 43.00

Notes: 1. LOF120/225/350 series products with shell are available, named LOF120/225/350-20Bxx-C.
2. LOF450/550 series products with shell are available, named LOF450/550-20Bxx-C/CF.

550-1300W
AC/DC Power Supplies for Servers LMS Series

Product Parameter

Series	Power (W)	Input voltage range	Output voltage/current		Fan Type	Efficiency	Operating temperature	Dimension (mm)(LxWxH)
LMS550-P12B	550	90-264VAC/ 180-320VDC	Main output: 12V/45A	Auxiliary: 12V/3A	Suction cooling	80 PLUS platinum	-5℃ to +55℃	185.00 × 73.50 × 40.00
LMS800-P12B	800		Main output: 12V/65A					
LMS1300-P12B	1300		Main output: 12V/107A					

150-1000W
AC/DC Brick Power Supplies LBH/F Series

Product Parameter

Series	Power (W)	Input voltage range	Output voltage (VDC)	Eff (%)(Typ.)	EMC Performance	Dimension (mm)(LxWxH)
LBH150-13Bxx	150	85-305VAC/ 120-430VDC	12,24,28,48,54	92	CE meets CLASS A RE meets CLASS A	63.14 × 60.60 × 12.70
LBH300-13Bxx	300		12,24,28	92		
LBF750-13Bxx	750		12,24,28,48,54	89-92		116.80 × 61.00 × 12.70
LBF1000-13Bxx	1000		28	92		160.00 × 100.00 × 13.40

200-800W AC/DC Enclosed Power Supplies for Base Station LM(F) Semi-potted Series

Product Parameter

Series	Power (W)	Input voltage range	Output voltage (VDC)	Operating temperature	Over-voltage protection	Dimension (mm)(LxWxH)
LMF200-23BxxUH	200	85-305VAC/ 120-430VDC	5,12,24,28,36,48	-40℃ to +70℃	105%-200% Io, Delay protection, delay time 1s, self-recovery after the abnormality is removed	194.00× 55.00 × 26.00
LMF350-23BxxUH	350			-40℃ to +85℃	110%-200% Io, Delay protection, delay time 1s, self-recovery after the abnormality is removed	220.00 × 62.00 × 31.00
LMF500-23BxxUH	500		5,12,24,28,30, 36,48,55		>110% Io	232.00 × 81.00 × 31.00
LMF750-23BxxUH	750		12,24,28,36,48		110%-170%Io, Constant current protection, self-recovery	237.00 × 100.00 × 41.00
LMF800-23Bxx	800	90-300VAC/ 150-380VDC	30,48,58		⩾120%Io, Hiccup, self-recover	272.00 × 80.00 × 44.00
LM550-12D2812-40	550	176-285VAC/ 240-400VDC	12/28	-40℃ to +85℃	⩾110%Io, Hiccup, self-recover	232.00 × 81.00 × 34.00

MORNSUN®

15-960W AC/DC
DIN Rail Power Supply

High performance · High-reliability · Fast delivery

High-end (240-960W)

LIMF/LIHF Series

- Full load at 60℃
- Efficiency up to 95%
- Remote monitor & control
- Excellent EMC performance
- 200%/600% peak load capacity

LITF Series

- Input voltage up to 600VAC
- Low inrush current, conformal coating
- 150% peak load capacity

3-Phase (240-960W)

Economical (15-960W)

LI/LIF Series

- Economical, high cost-effective
- Multiple certifications & protections
- Plastic & metal package