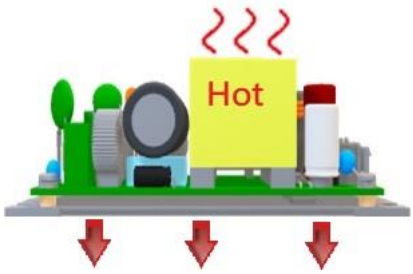
Newsletter – Introduction to Cincon 1-inch Low Profile LFM Series

In the realm of electronic system design, the prevailing trend is to enhance functionalities while simultaneously reducing size. This imperative extends to power supply design, where the challenge lies in amplifying power output within smaller dimensions while efficiently managing thermal dissipation. In this article, it will discuss some of the critical challenges and how Cincon's new generation AC-DC 1 inch low profile PSUs, "LFM series", address those obstacles.

Challenges of Power Density in Natural Convection:

For a typical type of AC-DC open frame power supply, it is designed to be installed on the system chassis by four pillars at the corner. The heatsink would cover the top of PSU for heat dissipation on transformer, mosfet and inductor components etc. By combining airflow within the system and heatsink, the overall power density of the PSU could be increased effectively through proper cooling measures.

Nevertheless, fan-based cooling raises concerns regarding long-term reliability and the potentially loud noise generated during operation. The option of eliminating fans from the system emerges, but this necessitates finding an alternative solution for heat dissipation. Hence, the inclusion of conduction cooling power supply concepts in the design methodology has been introduced to enhance power ratings under natural convection conditions. However, challenges persist in terms of overheating specific components like magnetic components.



Size Limitation:

As system engineers prioritize compact system designs, the available space for the power supply becomes limited. The pursuit of higher power capabilities within smaller form factors has led to an increased demand for slim-type power supply units (PSUs) that can seamlessly integrate with the system mechanisms.

Harsh Environment:

Harsh environments encompass extreme temperature differentials, shock and vibration, moisture, dust, and even exposure to outdoor environment etc. all of which pose threats to reliability.

Higher Efficiency:

Higher efficiency not only saves energy lost but also reduces the heat problem on the PSU. This has been the general goal for power supply design.

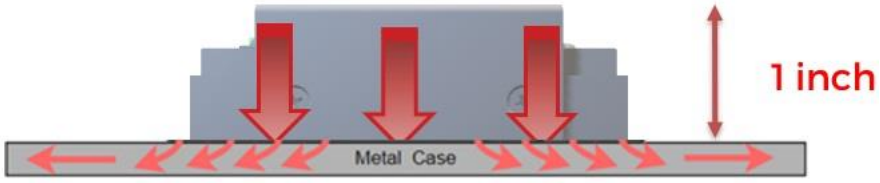
Cincon's Solution – The LFM Series:

Cincon's LFM series represents the pinnacle of AC-DC power supply innovation, offering solutions to the above challenges:

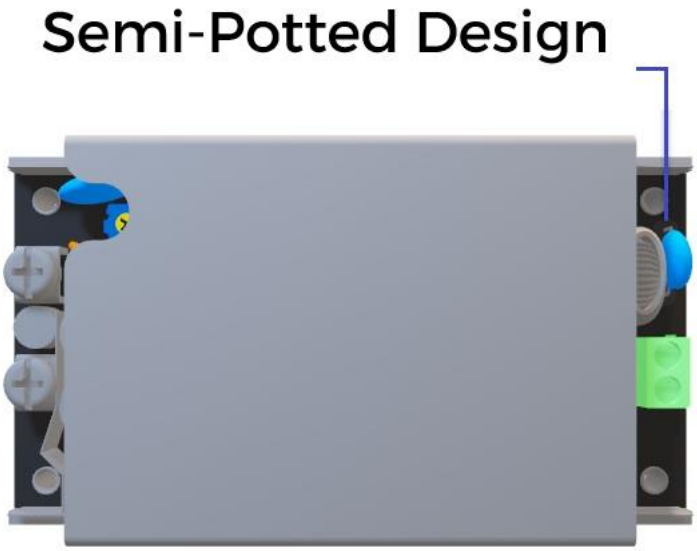
a. Size: The LFM series boasts a slim 1-inch height, catering to space-constrained environments applications.

b. Heat Dissipation: Maximize thermal performance with an enhanced

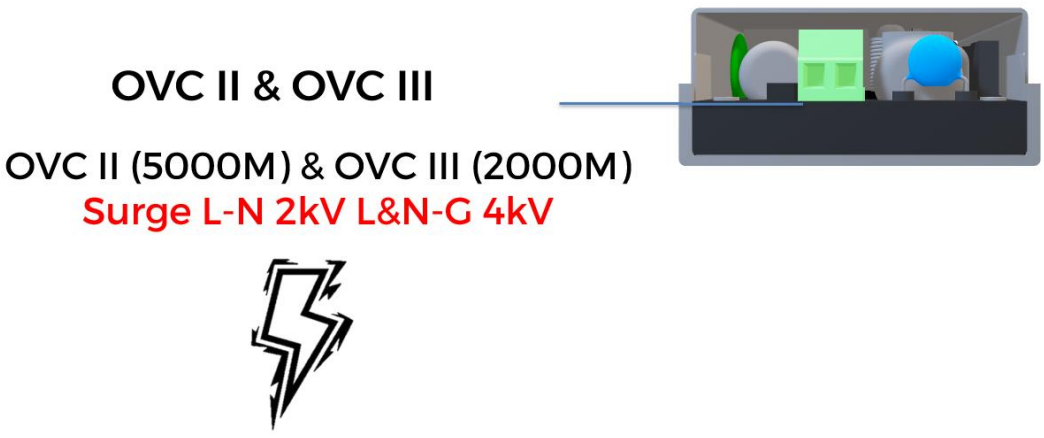
conduction cooling design, utilizing potting material and the low profile advantage to conduct heat from the units to the baseplate.



c. Semi-Potting: Facilitates heat dissipation while safeguarding PCBA components from moisture and dust.



d. Specification Update: LFM series PSUs comply with Medical/ITE safety standards. It also compliant with OVC III requirements and Surge to 4kV



e. Efficiency: LFM series achieves high efficiency level up to 95%.

f. Harsh environment: LFM series could be operated between -40°C~90°C wide temperature range, which is suitable to adapt variance environments. Semi-potting also helps to consolidate the structure for shock and vibration conditions. In addition, the use of semi-potting further reinforces the structure to withstand shocks and vibrations.

Suitable Applications:

1. Industrial Automation: The LFM series' compact size and robust thermal management make it ideal for integration into industrial automation systems. These systems often operate in demanding environments with varying temperature extremes, vibration, and dust exposure. The LFM series' resilience ensures reliable power delivery in such conditions, contributing to the uninterrupted operation of critical industrial processes.

2. Medical Equipment: With stringent safety and reliability requirements, medical equipment necessitates power supplies that can withstand harsh operating conditions while maintaining stable performance. The LFM series is suitable for use in medical devices such as diagnostic equipment, patient monitoring systems, and surgical instruments.

3. Telecommunications Infrastructure: Telecommunication networks rely on robust power supplies to ensure continuous connectivity and communication services. The LFM series' high efficiency and compact design make it a suitable choice for telecommunications infrastructure, including base stations, cell towers, and networking equipment deployed in outdoor environments where exposure to moisture, dust, and temperature variations is common.

4. IPC application: The LFM series is well-suited for Industrial PC (IPC) applications due to its rugged construction, compact size, efficient thermal management, protection against environmental hazards, compliance with safety standards, and high efficiency. Its conduction cooling design maximizes thermal performance, while features such as semi-potting protect against moisture and dust ingress. Additionally, the LFM series meets safety standards and offers high efficiency, making it an ideal choice for energy-efficient IPC systems.

Conclusion:

Cincon's LFM series represents an advancement in AC-DC power supply technology, offering innovative solutions to the challenges posed by the evolving demands of modern electronic systems. With its compact size, efficient thermal management, and compliance with industry standards, the LFM series is poised to meet the needs of diverse applications across industries. Whether in industrial automation, medical equipment, telecommunications infrastructure, and IPC application, the LFM series delivers reliable power performance in harsh

environments, empowering innovation, and progress in the electronic systems landscape.

Related Products:

Series	Power	Input Voltage	Output Voltage	Eff.	Features	Dimension (inch)
Industrial						
LFM200S	200W	85~264Vac 115~370Vdc	12V, 15V, 24V, 28V, 30V, 36V, 48V, 54V	94%	Low Profile OVC II & OVC III Class I	3.09x2.30x1.0
LFM300S	300W	85~264Vac	12V, 15V, 24V, 28V, 30V, 48V, 54V	94%	Low Profile OVC II & OVC III Class I	4.09x2.28x1.0
LFM420S	420W	85~264Vac 120~370Vdc	12V, 15V, 24V, 28V, 30V, 36V, 48V, 54V	94.5%	Low Profile OVC II & OVC III Class I	5.09x3.29x1.0
LFM550S	550W	85~264Vac 115~370Vdc	12V, 15V, 24V, 28V, 30V, 36V, 48V, 54V	95%	Low Profile OVC II & OVC III Class I	5.09x3.29x1.0

LFM750S	750W	85~264Vac 120~370Vdc	12V, 15V, 24V, 28V, 30V, 48V, 54V	94%	Low Profile OVC II & OVC III Class I	6.09x3.29x 1.0
Medical						
LFM200M	200W	85~264Vac 115~370Vdc	12V, 15V, 24V, 28V, 30V, 36V, 48V, 54V	94%	Low Profile 2MOPP Class I	3.09x2.30x1.0
LFM300M	300W	85~264Vac	12V, 15V, 24V, 28V, 30V, 48V, 54V	94%	Low Profile 2MOPP Class I	4.09x2.28x1.0
LFM420M	420W	85~264Vac 120~370Vdc	12V, 15V, 24V, 28V, 30V, 36V, 48V, 54V	94.5%	Low Profile 2MOPP Class I	5.09x3.29x1.0
LFM550M	550W	85~264Vac 115~370Vdc	12V, 15V, 24V, 28V, 30V, 36V, 48V,	95%	Low Profile 2MOPP Class I	5.09x3.29x1.0

			54V			
LFM750M	750W	85~264Vac 120~370Vdc	12V, 15V, 24V, 28V, 30V, 48V, 54V	94%	Low Profile OVC II & OVC III Class I	6.09x3.29x 1.0