



The Advantages of Designing with Configurable Power Supplies

MEAN WELL USA/Kai Li

With the rapid advancement of technology, electrical systems are becoming more complex, and requirements for power supplies are also becoming more demanding. Since power supply is the heart of the electrical system, selecting the correct power supply is one of the most crucial steps in designing an efficient and reliable system. A reliable configurable power supply is the best solution for powering an intricate high-end electrical system, because of the tremendous advantages brought about by design flexibility, system optimization, and manufacturer support.

One of the advantages of designing with a configurable power supply is flexibility. Most configurable power supplies comprise of a front-end and multiple output modules. The modules are configured based on customer need, so the configurable power supply has the capability to be suitable for a wide range of applications. The flexibility of configurable outputs is especially valuable during the R&D phase for complex systems that require many different voltage channels. In case the output power requirement is changed mid-design for a certain voltage, the output modules may be re-configured to accommodate the changes. Instead of having to source a more suitable power supply, the system designer may simply slot in a different module. The tremendous amount of time saved by configurable power supplies may be used to improve other aspects of the system and allow the end-product to reach the market faster. The capability to re-configure the outputs also allows for a smoother system design change or power upgrade processes after product release.

Another advantage of designing with a configurable power supply is the optimization of the system to achieve higher efficiency and reliability. Since configurable power supplies are designed with centralized power controls in mind, the power distribution of the end system may be monitored and controlled from a single access point, allowing the simplification of wiring to and from each point of load. Since the front-end is typically the only connection to the AC grid, the AC power wiring is also greatly simplified versus using multiple AC-DC power supplies, which in turn saves manufacturing cost and installation time for the end system. In comparison to equivalent system with multiple AC-DC power supplies, a configurable power supply system will have much fewer components due to having a single AC-DC stage in the front-end. A lower component count means the system will have a higher mean time between failure and less likely to fail statistically speaking. In terms of EMI performance and leakage current considerations, most configurable power supplies, such as the MEAN WELL NMP, have been tested as a complete system to ensure compliance to the latest medical and ITE safety and EMI standards. The pre-evaluation can save end system designer a lot of time from EMI debugging and leakage current design headaches, especially for medical systems that have to utilize multiple output channels. Overall, the configurable power supply will allow the optimization of the system for both better performance and easier design process.



The final advantage for designing with configurable power supplies is manufacturer support, which can be an extremely valuable asset for system designers dealing with intricate systems. In addition to providing high performance and reliable configurable power supplies, a world-class standard power supply manufacturer, such as MEAN WELL, can provide the customer with reliable technical support and assembly services worldwide. Please contact Arrow sales representative for product specification and purchase detail.