



PCDM



Small Size,  
Low Profile



High Temp  
Operation



Low  
Weight



## Portable Network Test Equipment

# High Performance, Lightweight AC to Load Solution

### The Customer's Challenge

The telecom sector has grown and developed rapidly over recent years, trying to keep pace with consumers' insatiable demands for ever more bandwidth on ever faster voice and data networks. All while meeting increasingly stringent quality of service demands.

In this dynamic network environment test equipment has had to evolve to meet the more exacting performance testing needs, and ensure conformance to changing industry standards. At the same time capabilities have had to be developed to reduce testing time because of the excessive pricing pressures from operators.

One test equipment manufacturer was looking at ways of developing equipment with enhanced functionality in a smaller, lighter solution for improved portability. To maximize the market potential the company needed to be able to address the needs of growth regions where reliable operation at high ambient temperatures was necessary.

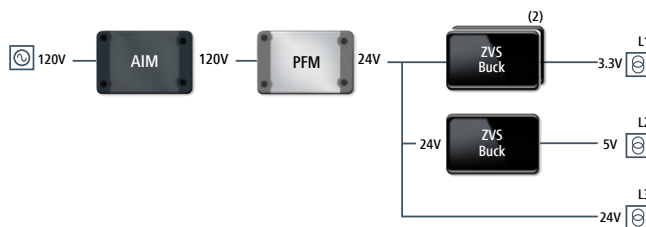


### The Solution

A PFM AC-DC Converter module (measuring 111 x 36 x 9.4mm and weighing 148g) was used to convert the mains voltage to a 24V bus. As no derating is required for the PFM at low line input, this enabled one solution to be developed for worldwide use.

These innovative lightweight products are five times thinner than traditional power supplies, giving the design engineers unprecedented flexibility and ease of use. When combined with the three ZVS Buck Regulators (10 x 14 x 2.6mm and 0.8g each) that were used to supply the 5V and 3.3V rails, a complete very low profile AC-DC to load power supply was developed in a footprint of just 59.3cm<sup>2</sup>.

[Link to Whiteboard »](#)



### The Results

When systems are powered from AC mains, the conventional AC-DC power supply can be large, inefficient and often requires forced-air cooling. The high derating temperatures, the ability to conduction cool, and the efficiency of the PFM and Buck Regulators meant that no fans were required, even in high ambient temperature environments. This dramatically improved system reliability and provided the reduced size and weight to the level necessary for a truly portable system.

By using the Power Component Design Methodology the customer was able to design and analyze the one-vendor solution very quickly. There were no surprises, as all critical factors like efficiency, size and losses could be checked immediately by using online tools.

### Product Family Key Specifications

#### PFM Isolated AC-DC Converters with PFC

Input Voltages	Universal rectified: 85 – 264V <sub>RMS</sub>
Output Voltage	24 and 48V isolated, regulated outputs
Output Power	400W
Efficiency	Up to 92%
Power Density	≥ 127W/in <sup>3</sup>
Dimensions	PFM 4414: 111 x 36 x 9.4mm PFM 4914: 125 x 36 x 9.4mm

#### Cool-Power ZVS Buck Switching Regulators

Input Voltages	12V <sub>IN</sub> nominal (8 to 18V <sub>IN</sub> ) 24V <sub>IN</sub> nominal (8 to 36V <sub>IN</sub> ) 48V <sub>IN</sub> nominal (36 to 60V <sub>IN</sub> )
Output Voltage	Wide output range (1 – 16V)
Output Power	8 , 9 , 10 , and 15A versions
Efficiency	Up to 96.5%; Light load and full load high efficiency performance
Dimensions	10 x 14 x 2.56mm