



Distributed Antenna System – AC-DC

Low Profile AC-DC Solution for Flexible Installation



Small Size,
Low Profile



High
Efficiency



Conduction
Cooling

The Customer's Challenge

Smart phone users are becoming ever more demanding, expecting fast data networks, and reliable voice services wherever they are. Distributed antenna systems have been developed to allow service providers to provide that 100% coverage inside large buildings and across multiple floors.

A network of small antennas installed throughout an area or building, connected to a common source, distributed antenna systems can support multiple frequency bands and service providers. Complex and extensive as they are, installation costs can be more than half of the total cost of a system. Especially as building owners and architects want 0% visibility.

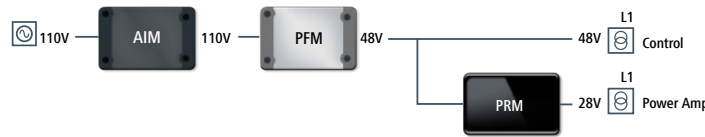
One manufacturer was looking for a way of powering their antennae in a small package, minimizing the heat generated to allow operation at high ambient temperatures without fans.



The Solution

A PFM isolated AC-DC converter (110.6 x 35.5 x 9.4mm) was used to convert the AC voltage to a 48V rail. A PRM regulator (32.5 x 22.0 x 6.73mm) provides the adjustable 28V output to allow optimization of the power amplifier efficiency.

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The Results

Using Vicor power components the design team was able to develop a very low profile, small size and light weight AC-DC solution in a footprint of just 63.3cm², ensuring they were able to meet their size and profile targets for 'invisible' installation.

The new solution's improved efficiency and conduction cooling reduced the heat generated in the system itself. This allowed operation at high ambient temperatures without the need for derating or additional mechanical cooling, further reducing the size of the system, and removing unreliable and noisy fans. The products' low noise ZVS switching topology reduced EMI and associated filter size.

Product Family Key Specifications

PFM Isolated AC-DC Converters with PFC

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

PRM Regulator Module

Input Voltages	48V (36 – 75V)
Output Voltages	48V
Output Power	Up to 600W
Efficiency	Up to 97%
Dimensions	Full Chip: 32.5 x 22 x 6.73mm Half Chip: 22 x 16.5 x 6.73mm