



## Industrial Welding Laser

# Maximizing Laser Speed & Accuracy Through Innovative Power Solutions



Low Weight



Factorized Power



Small Size, Low Profile



High Efficiency

### The Customer's Challenge

For industrial laser welding manufacturers, accuracy delivered consistently over time is the fundamental requirement of their customers. At the same time, their equipment needs to deliver a high welding speed (and so throughput), to offset the investment cost of their equipment.

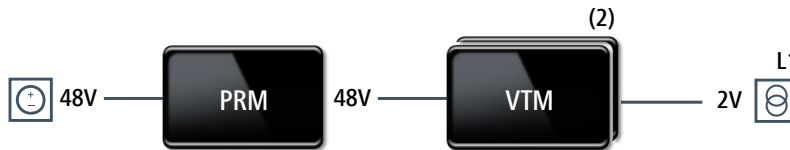
One of our customers was looking at designing a new system to allow them to deliver higher levels of both speed and accuracy. They recognized that the size and density of the power solution at the tool head has a significant impact on performance. The heat generated by the welding meant that cooling of the high power components at the tool head was a challenge.



### The Solution

A solution based on Vicor's Factorized Power Architecture (FPA) was implemented, with a PRM regulator module (weighing 15g; measuring 32.3 x 21.8 x 6.48mm) and two VTM current multipliers at the point-of-load (each weighing 14.5g; measuring 32.3 x 21.8 x 6.48mm, providing the industry's highest power density). High efficiency and easy thermal management simplified the cooling.

[Link to Whiteboard »](#)



### The Results

With Factorized Power Architecture the DC power distribution bus is regulated by a pre-regulator module (PRM), and then the voltage is isolated and stepped down at the point of load by a voltage transformation module (VTM). The FPA approach offers a number of solutions to challenges faced by power system designers. In this application the ability to separate the functions of a traditional DC-DC converter enabled the placement of the PRM (the regulation) away from the print head, and the VTM could be placed at the point-of-load to minimize size and weight of the power solution at the tool head. Locating the VTM close to the load improved voltage regulation and the speed of response of the print head.

### Product Family Key Specifications

#### PRM™ Regulator Module

Input Voltages	48V, (36 – 75V)
Output Voltage	48V
Output Power	Up to 600W
Efficiency	Up to 97%
Dimensions	32.5 x 22.0 x 6.73mm

#### VTM™ Current Multiplier

Input Voltages	0 – 60V
Output Voltage	0 – 55V
Output Power	Up to 135A
Efficiency	Up to 96%
Dimensions	32.5 x 22.0 x 6.73mm