



## Home Energy Storage

# The Future of Home Energy



Bidirectional



Small Size,  
Low Profile

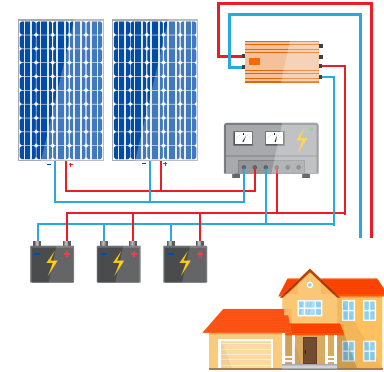


High  
Efficiency

### The Customer's Challenge

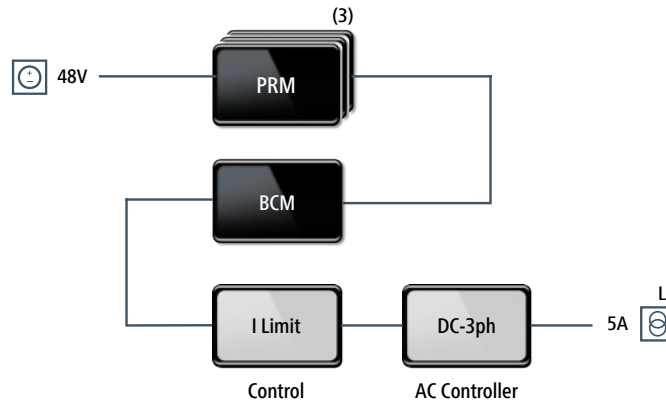
The variability of the renewable power sources for home energy (depending on sun or wind as they do) means batteries are needed to balance the system and either store excess power from the grid or supply power back to the grid as necessary. As this is an immature market and standards are yet to be set, different grid and battery voltages and AC or DC solutions are being used. However, they all need bidirectional converters to transfer power between the grid and the batteries.

One home energy system manufacturer was looking for a flexible system, which could be adapted to optimize for different requirements. High efficiency, small size, low cost, and bi-directional power (regulation and transformation) were all critical requirements.



### The Solution

Vicor's bidirectional BCM bus converter module can build the bridge between the different grid and battery voltages. In this specific application the BCM offers the bidirectional transformation and isolation functionality to create a high voltage from a 48V battery. The regulation was made with three PRM Regulators in parallel on the low voltage side. This guaranteed that the input voltage of the AC inverter stays within the specified limits.



### The Results

The reverse mode capability of the BCMs is unique in the market, they are easy to use, and in combination with PRMs they offer a fully functional low voltage to high voltage converter. Due to the bidirectional capability of the BCMs, and by adding either a switching matrix around the PRMs or another set of PRMs in the opposite direction, the system can also work in reverse mode and charge the battery from the high voltage grid. The small size and the high efficiency enabled the integration of the complete solution into a very flat housing, which can be either mounted on or hidden behind walls.

### 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

#### BCM® High Voltage Bus Converter Module

Input Voltages	260 – 410V 330 – 365V 360 – 400V
Output Voltage	From 8.1 – 51.3V
Output Current	Full Chip: Up to 28A 6123 ChiP: Up to 125A
Efficiency	Up to 98%
Dimensions	Full ChiP: 32.50 x 22.00 x 6.73mm 6123 ChiP: 63.34 x 22.80 x 7.26mm