

# Powerbox reveals breakthrough coreless power conversion technology for high magnetic field applications

**Press Release**  
**January 24, 2017**

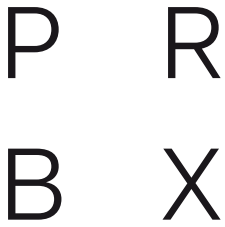
**Powerbox, one of Europe's largest power supply companies and a leading force for four decades in optimizing power solutions for demanding applications, has announced the release of its new coreless technology platform to power medical and industrial equipment operating in very high magnetic field environments such as magnetic resonance imaging or particle accelerators. Using the latest technology in high-frequency switching topologies and digital control with proprietary firmware to optimize efficiency and voltage regulation, Powerbox's GB350 buck-converter module is the first building block in its category that is able to operate safely when exposed to high radiation magnetic fields of 2 to 4 Tesla. GB350 delivers an output power of 350W and when higher power levels are required it can be paralleled using an interleaving mode thus reducing EMI.**

Medical and industrial applications such as magnetic resonance imaging (MRI) and particle accelerators (PA) generate high magnetic fields to induce the RF energy required to activate the hydrogen nuclei in the case of imaging, or to accelerate particles in research and industrial equipment.

Modern MRI systems usually generate 1.5 to 4 Tesla, making conventional power supplies using ferrite material useless due to inductance saturation as a result of the MRI magnet disturbing the energy transfer. To prevent parasitic saturation, power supplies are traditionally positioned outside the shielded operation room. Installing the power supplies remotely requires long cables with subsequent power losses, and it is also a big challenge to power the latest generation of measuring equipment that require stable and tightly regulated voltages under fast transient load conditions.

To reduce energy consumption and to guarantee the level of quality required by integrated equipment, systems manufacturers are now integrating local power supplies near to the load. However, placing equipment directly in the radiated magnetic field requires an innovative power solution known as 'coreless power units' and a state of the art switching power stage.

Designed to respond to this demand and to guarantee the highest efficiency and tightly regulated output voltage at any load-condition, Powerbox's GB350 coreless power unit is fully controlled by a digital processor that manages the complete power unit from switching parameters (e.g. dead-time and duty-cycle optimization) to output voltage characterization. To guarantee a high level of flexibility and the possibility to re-profile the power unit characteristics when equipment manufacturers upgrade new hardware or implement a software revision, the GB350 micro-controller can be programmed with optimized configuration files downloaded through the digital interface.



## POWERBOX Mastering Power

“Combining the latest technology in digital power and very advanced coreless energy transfer, the GB350 is an important component of the Powerbox Custom Power Solution toolbox,” said Tomas Isaksson, Chief Technology Officer at Powerbox. “With more than 3,500 Custom Power projects delivered to market, it is very important to rely on a strong platform portfolio, reducing time to market in demanding applications such as medical magnetic resonance imaging.”

The standard GB350 platform delivers a nominal current of 50A and preset output voltages of 6.8, 3.3 or 1.6V. As part of the Powerbox Custom Power Solution toolbox, other output voltages are available on request.

The GB350 has a switching frequency of 600kHz. Equipment installed within the magnetic field often require higher power levels than 350W and also very low EMI. With a switching frequency of 600kHz and its 4 phase interleave mode, the GB350 has a resultant output frequency of 2.4MHz. This allows easier filtering and extremely fast regulation response times. The unit also includes EMI shielding to lower radiated emission.

As part of Powerbox's Custom Power Solution Toolbox, the GB350 and products based on that technology are tested, verified and qualified in accordance to end customers' specifications.

### **About Powerbox**

*Founded in 1974, with headquarters in Sweden and operations in 15 countries across four continents, Powerbox serves customers all around the globe. The company focuses on four major markets - industrial, medical, transportation/railway and defense - for which it designs and markets premium quality power conversion systems for demanding applications. Powerbox's mission is to use its expertise to increase customers' competitiveness by meeting all of their power needs. Every aspect of the company's business is focused on that goal, from the design of advanced components that go into products, through to high levels of customer service. Powerbox is recognized for technical innovations that reduce energy consumption and its ability to manage full product lifecycles while minimizing environmental impact.*

### **For more information**

Visit [www.prbx.com](http://www.prbx.com)

Please contact Patrick Le Fèvre, Chief Marketing and Communications Officer

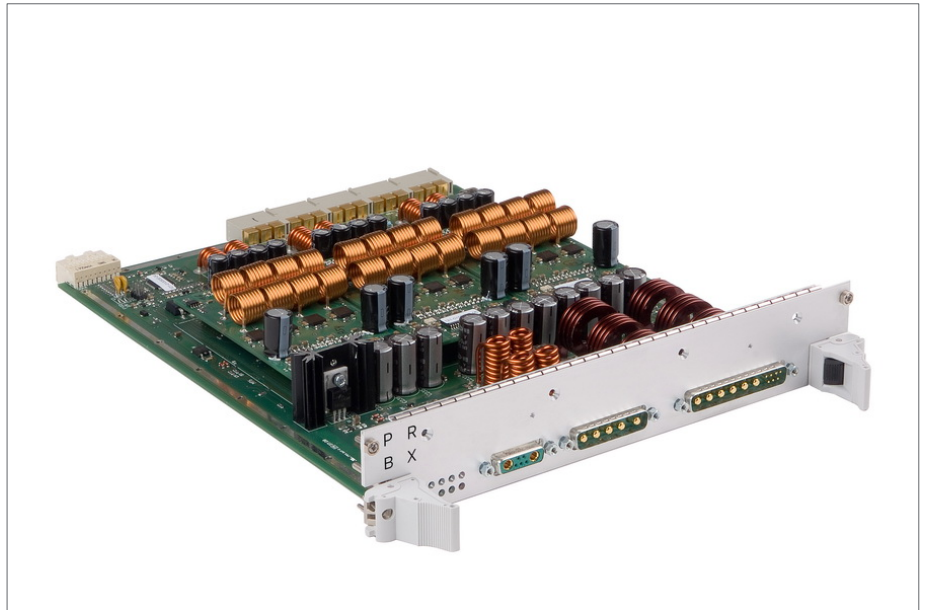
+46 (0) 158 703 00

[marcom@prbx.com](mailto:marcom@prbx.com)

Ref: PRBX-PR-17001

P R  
B X

POWERBOX  
Mastering Power



Three phase coreless power supply using three GB350 modules