



Press Release

A Novel Family of Power Management ICs based on Digital Technology for Lighting and Building Control Applications

Nes Ziona, Israel, May 2007 – Systel, is a mixed-signal semiconductor specialist in the field of Digital Configurable Power Management ICs, providing innovative solutions for the power electronics market. At LightFair International, Javits Convention Center, New York, May 8-10, Systel will premiere and demonstrate the technology of its IDC2000 ICs family and Evaluation Kit for applications in lighting and energy saving building control systems at Booth 1764. This will include multi-channel ballast functionality never previously seen, deploying different lamps per channel, each driven separately, from PC or via wall control using power line communication as well as on the spot configuration of the IDC2000 using the PDK design tools. Both ballast and wall control evaluation units are powered by Systel's IDC2000.

These ICs are a family of novel single chip controllers, a concept based on Systel's Universal Power Management Mixed-Signal SoC Controller (UPMC) technology. The UPMC proprietary architecture is a breakthrough System-on Chip **digital based concept** for Power Control and Power Management evolved by Systel during decades of research and development. Its IDC2000 implementation, the second generation of its digital power controller ICs, and applications in the **lighting and building control** field are based on broadly patented technology and methods containing all the required end-product functions for its field, including street lighting.

In **Lighting**, the IDC2000 IC family is able to implement almost any type of power topology and control function that a designer could imagine to create newly featured high performance networkable/dimmable and non-networkable multi-lamp electronic ballasts at the lowest market price.

A single IDC2000 IC enables innovative multi-channel topologies for dimmable or non-dimmable multi-lamp and multi-fixture ballast solutions (central ballast). A ballast with this multi-channel topology can operate any combination and type of linear or compact fluorescent, LED or HID lamp, with each lamp individually controllable and protected for full On-or-Off control or dimming to the lowest level determined by the design. Lamps will be driven by the highest standards and specifications envisioned by the designers. In PLC dimmable multi-fixture configurations each fixture can be controlled separately and use different types of lamps, located at varying distances without affecting light quality, at a price competing with that of simple non-dimmable ballasts.

Major Advantages of Networkable/Dimmable and Non-Dimmable Ballasts with IDC2000

- Remote control options: PLC, RF, DALI, DMX etc.
- Drives any combination of lamp types
- ZVS of half bridges
- Customizable Programmable Startup
- Individual Lamp or Channel Control
- Individual Lamp or Channel Protection
- High Spec. Lamp Life Parameters
- Flexible Lamp Control
- Negligible flicker/high light quality
- Customized Dimming down to 0.1%
- Enables customization of a variety of different dimming techniques
- Multi-Channel/Multi-Fixture Ballast
- Up to 8 individual lighting channels
- Supports Different Power Topologies
- Emergency Operation
- Energy Savings / Load Shedding
- Enables variety of PFC methods
- Interfaces to light and occupancy sensors
- Allows Infringement-free Design
- Graphic User Interface Design Tools
- Low Cost / High Performance
- Shortest Time to Market
- Achieve Optimum Design in Days
- Code-free Configurability/Flexibility



IDC2000 communication interfaces: For a negligible cost due to its unique approach of sharing functions, the IDC2000 incorporates all the communication interfaces such as an embedded two-way power line communication modem based on Direct Series Spread Spectrum (DSSS) method.

The IDC2000 can accommodate the DALI interface and also includes RF and standard serial communication interfaces and accepts DC control. The PLC modem developed by Systel has the following main specifications:

- Input sensitivity of 10mV
- Carrier frequency 100 to 200KHz
- 2000 to 4000 bits/sec
- 10^{-10} BER versus 6dB S/N

To support its power line communication method, Systel created the PLC-Link™, a proprietary protocol, to deploy a decentralized system concept, interoperating with BMS at management level, with excellent specifications like an execution time of 32ms for a system with many more addressable devices (up to 65,000 per distribution panel) than a centralized system (handling about 2,500). This protocol allows the implementation of all the DALI commands and more to control HVAC components. The DALI protocol or others may be used with the embedded PLC modem instead of the PLC-Link Protocol by using preamble or zero-cross signal synchronization as well.

In building control, taking advantage of the IDC2000's features the designer can develop smart systems based on PLC deploying all control strategies to achieve maximum attainable energy savings. The IDC2000 is highly applicable for all the active components of the building control system (ballasts, master and local controllers, multiple networkable sensors, remote controllable actuators to drive HVAC and other devices) each acting as a networkable node without additional wiring. Uniquely, the IDC2000 allows \$2 daylight sensor implementation, smart load shedding without affecting user comfort, such as modifying air conditioner settings at the local controller, even shutting down individual lamps within a fixture providing an ROI of less than 2 years in both retrofit and new buildings

In residential applications in which savings are a relevant factor, the IDC2000's features with embedded power line modem will provide highly competitive solutions that cannot be outrivaled in cost and performance, together with robust and smart control at the level of individual elements.

In other lighting fields, such as flat panel backlight applications with fluorescent and LED lamps, the unique multi-channel IDC2000 platform features with its synchronization capability to external signals will allow the industry to develop solutions with the highest envisioned performances and algorithms at the lowest cost.

Configuration Method: Systel's IDC2000 parametrical tuning configuration provides an exceptionally short time to market. The user friendly GUI tools, such as the PDK-L3, developed by Systel for fluorescent lighting, can "mold" the IDC2000 to almost any power topology and create any control algorithm desired by the designer, including debugging the end-product in a fraction of the time required by other types of controllers. The IDC2000 was built from the ground up to provide an unprecedented single chip solution allowing previously unaffordable applications with the highest specifications, while exhibiting the most advantageous cost performance ratio achieved in the industry.

The IDC2000 platform based on Systel's UPMC digital technology, a truly different IC power controller concept, was created as a Generic Configurable Architecture allowing designers to create their own unique "Customized ASIC" solution for Lighting and Building Control in an incredibly short time.

SYSTEL Development and Industries Ltd

Lev Hanevet Building, 5 Golda Meir St., Science Park, Nes Ziona, Israel

Phone: +972 (0)8 9313010, Fax: +972 (0)8 9313011, marketing@systelpower.com

More information can be found at Systel's website: www.systelpower.com