

Enabling PowerBus™

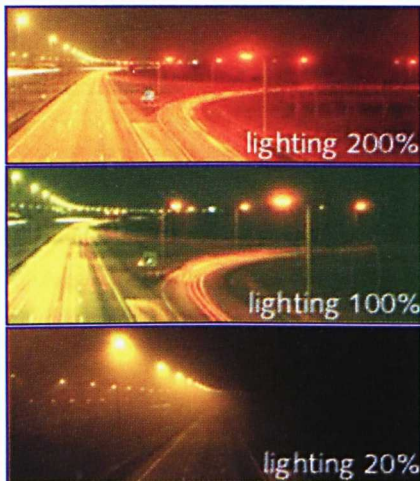
For Dynamic Dimming Powerline Communication on Remote Monitoring Street Lighting Intelligent Distribution Management (RMS-IDMTM)



The Power line communication (PLC) technology offering high speed and low cost communication over the powerline opens up significant business opportunities for power utilities by reducing their investment costs and creating new revenue streams.

In street lighting application, lighting systems can be upgraded via a range of approaches, from retrofitting lamps and ballasts to state-of-the-art controls such as occupancy sensors and lighting management systems. Advanced controls can reduce lighting energy consumption by up to 50% in existing street lightings and buildings and at least 35% in new installation street lighting and buildings. One particular control technology has emerged that deserves special attention: the RMS-IDM™ Intelligent Distribution Lighting Management System from Masers Digital Sdn Bhd will be a pioneer system to be used in Malaysia across the country. For years, lighting management systems have been restricted to dividing a building into zones and automatically turning the lights in each zone on and off on a programmable schedule.

The system chosen for this project was Microcontroller Dimming Ballast electronic control gear, complete with MasersBus power line modem, Photoelectric control (PECU), Vehicle Detector Interface and the MasersBus Gateway for street lighting control system developed by Masers Digital Sdn. Bhd. PowerBus PLC incorporates a high frequency microcontroller dimming electronic ballast for high pressure sodium lamps from 70W to 400W. This means that it can offer reductions in gear losses, an improvement in power factor and longer lamp life. Dimmable down to 30%, the system requires no external igniter and maintains constant lamp power within a stable spectrum. Built-in features also include an intelligent controller and two-way remote communication facility.



Lamp Power 100%
No Dimming

Lamp Power 50%
Dimming 50%

Lamp Power 20%
Dimming 80%

RMS-IDM™ Dimming Technology Application using PLC

Powerbus protocol, combines with Microcontroller Dimming Ballast to provide a total street lighting management system. This allows for activated lighting, dimming control by time and traffic flow, with peak

saving and tele-metering capabilities. Luminaires can be individually controlled, faults identified and maintenance data recorded to ensure complete and constant control of the lighting operation.

Enabling PLC, lighting management systems are proliferating that provide automatic shut-off but also facility wide dimming of high-intensity discharge (HID) fixtures—resulting in excellent flexibility, energy savings and a way to reduce peak demand use and associated high cost. RMS-IDM™ enables corporations such as local and highway authority and national electricity board to save energy by eliminating waste via facility wide dimming and switching. RMS-IDM™ also provides strong value-adds inherent in the technology, including energy measurement, power monitoring, and potential power factor improvement. Command instructions, which are programmable to customize lighting to facility use, and feedback information, which can be used for analysis and maintenance, are managed by RMS-IDM™'s software with local or remote Internet-based access; a single circuit up to multiple buildings can be managed by one laptop or workstation PC. What is most revolutionary about RMS-IDM™, however, is that these benefits are achievable in such an economical and simple package relative to other lighting management systems. No special ballasts or complex network of wiring are required, avoiding significant cost, compressing installation time, simplifying commissioning and minimizing business disruption. RMS-IDM™ is elegant in the level of capability delivered from so few components, resulting in an excellent cost-benefit ratio.

In addition, PLC allows power utilities to save billing cost through value added services like street lighting application, remote monitoring and demand side management. Masers Digital's PLC technology opens windows of new business opportunities especially for power utilities. Using its existing power grid infrastructure, cost of entry into the communications and networking markets would be affordable, and rapid market penetration possible. This business leverage would bring power utilities increased revenue stream and profits from a totally different services market. As a result, RMS-IDM™ is ideal for gaining intelligent lighting control in street lighting as well as other new PLC application in internet access, telecommunication and utilities.

For further information, kindly contact:

Assoc. Prof. Dr. Norman Mariun
UPM Design Laboratory
Department of Electrical and Electronic Engineering
Faculty of Engineering
Universiti Putra Malaysia
43400 UPM, Serdang, Selangor
Malaysia

Tel: +603 8946 6322, Fax: +603-8946 6327

E-mail: norman@eng.upm.edu.my