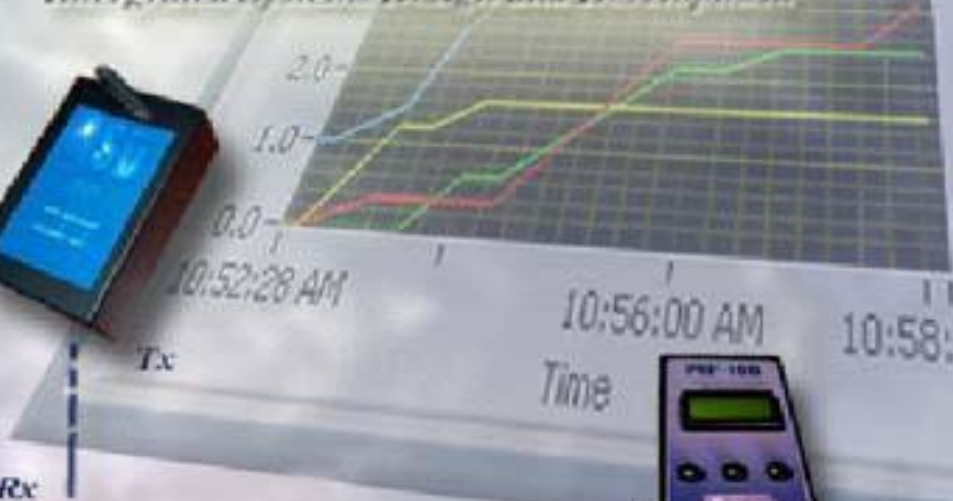


# ASD

## Automation Systems & Diagnostics

*Integrated Systems Design and Development*



# P.C.M.

*Power Consumption Management*

Monitoring residential & industrial energy use on a large scale can be an overwhelming and cumbersome task. What is required is an automated system for collecting data on several appliances within several residences or offices, and somehow transmitting this data to a central control station (CCS) that has the necessary tools to receive and analyze it.

Automation Systems & Diagnostics, Inc. is no stranger to energy consumption monitoring and energy auditing projects. We have worked with the United Nations Development Program (UNDP) on this issue, among others, and we have performed energy audits on many hospitals, schools and factories. ASD has developed its own line of power consumption monitoring (PCM) products, both hardware and software. Integrating these tools together, ASD can provide you with a fully functional power consumption management scheme.

## **POWER CONSUMPTION MANAGEMENT (PCM)**

ASD's power consumption management (PCM) strategy stresses the exposure of hidden power leakages. To this end, it is important to monitor all the major appliances in a home and be able to recall the data and consumption history of each one. This is done through a multiple of measurement modules (PM<sup>2</sup>, voltage, timer, temperature and humidity). Plus, using a detailed data capture method from the main power line to the house and multiple data points inside the house. Finally, state-of-the-art analytical software. Continuous measurement and analysis will give an early warning to avoid hefty electrical utility bills. In addition to the residential use, this system is also applicable to offices and industrial areas.

## **THE PM<sup>2</sup>-100 MODULE**

The PM<sup>2</sup>-100 is a light, portable device developed by ASD to monitor single appliances with single phase mode.



This micro-controller driven device has an accuracy of 0.2% (IEC 62053-22), built-in communication capability, and outputs the Kilowatt and Kilowatt-Hour. It saves the watt-hour in a non - volatile memory.

Using several PM<sup>2</sup>-100 units, each one connected to an appliance which is to be monitored, such as lights, heaters, A/Cs and all types of home or industrial appliances. ASD's PCM system relies on these PM<sup>2</sup> units, communicating locally with a communication module through power lines at a baud rate of 1.2kbps (EN50065-1). The user's PC reads from units according to a user defined schedule. The communication module transfers schedules to the corresponding units. Finally, analytical CCS phase. Data transfer between the communication module and the remote CCS occurs through the telephone line modem with rate of 33.6Kbps. This remote communication occurs on daily basis through an automatic dial -up procedure. ASD's PCM software package will be provided.

The PM<sup>2</sup> unit isn't only a measurement one, but it serves as a control unit as well. The schedule transferred to each unit via communication module, shall define the operation of the relative appliance. PM<sup>2</sup> units are available as measurement units or as measurement and control units.

## **THREE PHASE MEASUREMENT AND CONTROL UNIT**

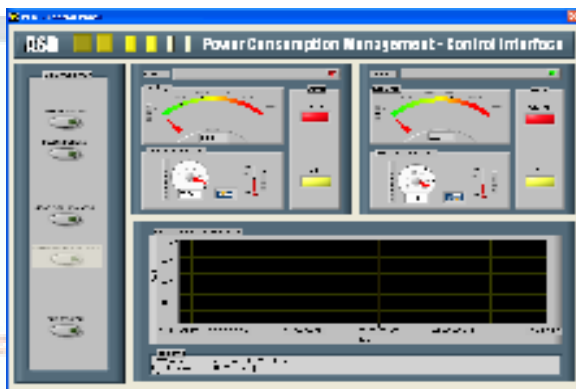
Taking all details into consideration, ASD designed another light portable device to monitor appliances with three phase mode. As PM<sup>2</sup>-100, this unit is applicable to residential & industrial areas. It's also available as a measurement unit or as a measurement and control unit.

The unit interacts with the whole system exactly as PM<sup>2</sup> units. It communicates locally and remotely with the communication module and CCS via the same links and specifications.



# Power Consumption Management

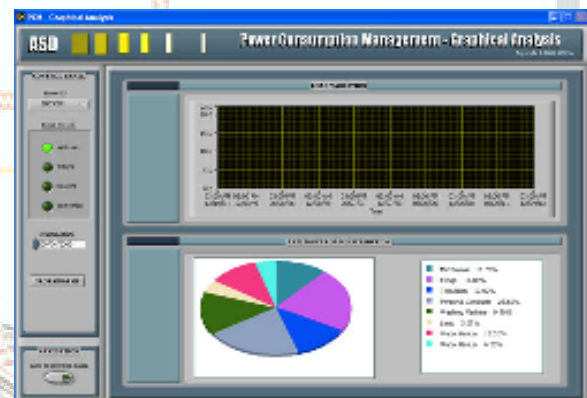
# ASD



A graphical analysis package is provided to make visual sense of the numeric data. The operator can choose to compare and contrast the consumption of different appliances within the home, over a given period of time, as seen in the pie chart (right).

Another useful plot is the total consumption for that particular home over a given period of time. This can be a day, a week, a month, or even a whole year's worth of online energy consumption data.

New locations and the appliances being monitored within them can be added to the PCM system from a configuration screen. These may also be edited at any time. The software will store a comprehensive file on the residence being monitored, complete with locations, area, number of residents, insulation, utility tariff information, utility transformer ID and meter information, and much more. The operator has the flexibility to identify new appliances for the system and to define which PM<sup>2</sup> units are connected to which appliances.



In the device details screen (below), the operator can delve into the specifics of which devices are available in the home, and he/she can also monitor the consumption of each one individually. A status bar indicates all incoming communication from the collection of communication modules. A schematic drawing the home being monitored can also indicate the location of each of the appliances in the home.

ASD continually strives to meet your demands, in a genuine effort to improve the efficiency and performance of our utilities and institutions. ASD can customize its products and software to meet specific demands; in some cases this PCM package has been augmented by humidity / temperature-to-power-consumption comparison reports, added statistical search and sort packages, and the like.



## CONTACT INFORMATION

Automation Systems & Diagnostics, Inc.  
1021 Davis Drive  
Apex, NC 27523

Phone: 919-842-2613  
Fax: 919-380-1054

Website: [www.ASDpower.com](http://www.ASDpower.com)  
Email: [ASD@ASDpower.com](mailto:ASD@ASDpower.com)