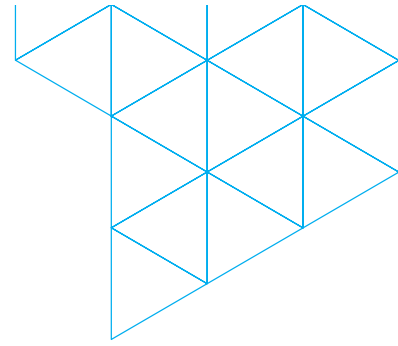


# CRISTAL

## Energy Management Solutions

Smart  
Energy  
Solutions

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# Energy Management Solutions

## An Introduction to Energy Management Systems

How Does Cristal Controls' Energy Management System Work?

Energy-related costs can have a potentially disastrous impact on corporate profits. But it doesn't have to be that way, especially when today's energy control technology is so affordable and accessible.



And although peak demand periods are in large part responsible for high electricity bills, companies can now control—and even dispense with—many electrical applications, maintaining identical levels of comfort while reducing outlay thanks to new energy management systems like the LS-2010 from Cristal Controls.

An effective energy management system allows users to apply the three fundamentals underlying all aspects of energy conservation: regulation, peak-period programming, and load shedding. Once those have been controlled, considerable savings can be realized without reducing productivity.

## Significantly Reduce Energy-Related Expenses During Peak Periods Thanks to Cristal Controls' Breakthrough LS-2010 Energy Management System

The simplest application of the LS-2010 system would be to network precision thermostats in such a way as to direct electrical heating to those areas where it's most needed at any given time within a single building.



But the LS-2010 system is even more highly versatile. Firstly, the user determines which electrical applications are of primary importance. In a supermarket, for example, this would be the energy required for freezers and refrigerators to function optimally. For a manufacturer, it would be the power supply to the production line. The LS-2010 ensures that such essential applications are given priority and that they receive sufficient power. In the event of a peak in demand, the system would automatically, even if momentarily, reduce the supply of less important applications, such as water-heaters. This is what is referred to as load shedding.

## Energy Management Solutions

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But many other variables can be included within a controlled system, as well. We can, for instance, adjust the temperature inside the building to take into account the outside temperature. More precisely still, it's even possible to automatically decrease room temperature when the number of occupants declines during any given time period, such as an apartment kitchen overnight or unoccupied hotel rooms during the day. Cristal Controls' LS-2010 energy management system allows building operators to attribute various types of consumption schedules for each zone, thereby achieving even greater savings.

### **Cristal Controls Energy Management Systems Offer:**

#### **Savings and Comfort**

Cristal Controls systems allow you to save 25% to 35% on your electricity bills, without sacrificing comfort. Moreover, load shedding reduces the use of electrical appliances, thus increasing their lifespan AND reducing energy costs.

#### **Peak Control and Load Shedding**

Cristal Controls' LS-2010 energy management system controls demand during peak periods and helps you remain within budget. It allows you to achieve significant savings and benefit further from off-peak rates.

#### **Multiple Control Possibilities**

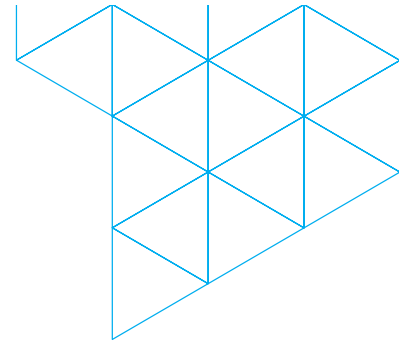
The LS-2010 allows you to control all heating, ventilation, air conditioning, and lighting appliances, as well as industrial heating requirements.

#### **Cristal Controls "On-Watch" Option: An Ideal System for Safety in Retirement Homes**

We know how safety is fundamental to retirement homes. That's why we developed the On-Watch option, specifically designed for such facilities. On-Watch allows people in distress to send an alarm signal when necessary. Because it uses the same network as the thermostat system, On-Watch combines safety with savings, due to its seamless integration with our energy control system.

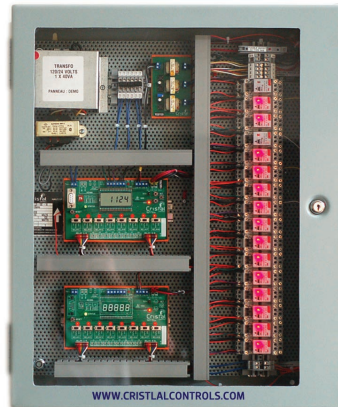
#### **Integration of Energy Management and Lighting Control Systems**

A lighting control system can easily be integrated with Cristal Controls' LS-2010 energy management system. Their compatibility makes both the ideal choice for controlling all of your building's electrical applications.



## Low Cost Peak Control System

## LS-100



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### Description

The LS-100 is a simple peak control manager. It can be programmed using the master card buttons or using a PC. Once fully programmed, the LS-100 controls outputs in order to respect the desired set point.

- ▶ 8 outputs (Dry Contact)
- ▶ RS/232 Modbus communication
- ▶ Integrated time-clock
- ▶ (AUTO/ON/OFF) bypass switch
- ▶ Load cycling (4 modes)
- ▶ 12 set points (1 per month)
- ▶ Set-point adjustment according to outdoor temperature
- ▶ Expandable to 16 outputs

**Low Cost Peak Control System****LS-100**

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**Applications**

- ▶ The LS-100 has been designed to monitor and control the maximum consumption of any building. It will shed all necessary loads in order to conform to the desired consumption level.
- ▶ To offer maximum control over the shedding, the LS-100 offers 3 output selections: priority, cyclic or unused.
- ▶ The LS-100 also offers a shedding pattern that takes into consideration the outdoor temperature. For example, if it becomes colder than a pre-selected outdoor temperature, the LS-100 will increase the permissible consumption level to accept a new heating load into the pre-established energy management strategy.
- ▶ The LS-100 has an integrated calendar that can use 12 different consumption set points (1 per month)
- ▶ The basic LS-100 has 8 outputs, but can be expanded to 16 outputs by adding an 8-output control card.

**Technical Specifications****Power supply**

- ▶ Dedicated 120-1-60 circuit

**Inputs**

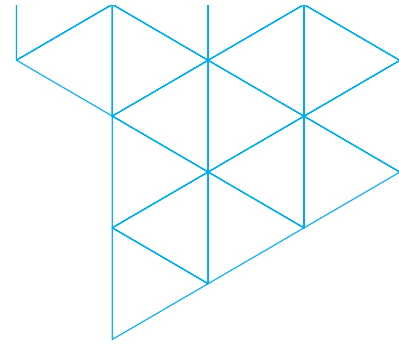
- ▶ Outdoor sensor
- ▶ Model Cristal Controls OS-100 (10K@25C)
- ▶ Working range: -44 °C to 35° C, 1°C resolution
- ▶ One 0-5 Vdc current transformer for each phase

**Outputs**

- ▶ 8 or 16 x interface relays 5 amp 120-1

**Communication**

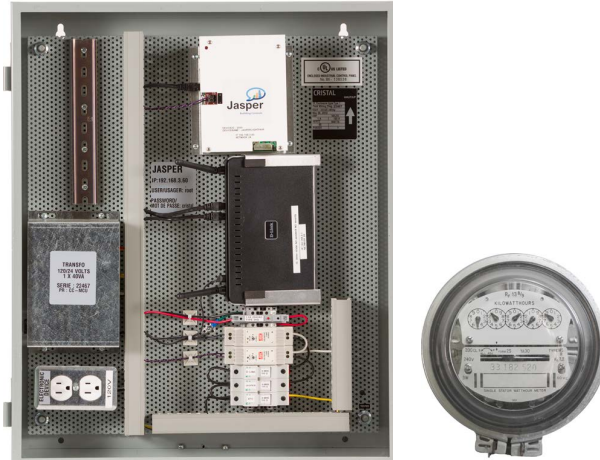
- ▶ RS-232 modbus RTU for setup



## Peak and Energy Control Manager

## LS-2010

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### Description

The LS-2010 is Cristal Controls' most advanced peak and energy control manager. The LS-2010 is programmed with a Web application using Explorer, Safari or any recognized Web access. Once fully programmed the LS-2010 controls the outputs in order to respect the desired consumption set point, local temperature and schedules

- ▶ Up to thousands outputs (Dry contact, Pulse, Thermostats or I/O Boards)
- ▶ Internet/Ethernet communication
- ▶ Integrated time scheduler
- ▶ Load cycling
- ▶ 12 set points (1 per month)
- ▶ Emergency generator management
- ▶ Multiple data collection
- ▶ Reports & curves creation in different formats
- ▶ Real time accessibility
- ▶ Set point adjustment bas on outdoor temperature
- ▶ Unlimited outputs
- ▶ Wireless ready with Winet relays

**Peak and Energy Control Manager****LS-2010**

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**Applications**

- ▶ The LS-2010 has been designed to monitor and control a building's maximum consumption.
- ▶ The LS-2010 will shed the necessary loads in order to respect the desired consumption.
- ▶ In order to offer maximum control over shedding, the LS-2010 offers output selections (refer to technical documentation).
- ▶ The LS-2010 also offers a shedding pattern that takes into consideration the outdoor temperature. For example, when it is colder than a pre-selected outdoor temperature, the LS-2010 will increase the allowable consumption level in order to accept new heating load into the energy management strategy.
- ▶ The LS-2010 has an integrated calendar in order to use 12 different consumption set points (1 per month).
- ▶ The basic LS-2010 has 8 outputs but can also be expanded by increments of 8 or assisted with the CCTHV intelligent Thermostats.

**Technical specifications****Power supply**

- ▶ Dedicated 120-1-60 circuit

**Inputs**

- ▶ Cristal Outdoor sensor OS-100
- ▶ Working range: -44 C to 35 C with 1 C resolution
- ▶ One 0-5 Vdc current transformer for each phase
- ▶ Jasper integrated Current and Voltage reader
- ▶ Intelligent Current and Voltage reader

**Outputs**

- ▶ Depending on the application

**Panel size**

- ▶ NEMA-1: 36"x24"x4,62"