# SMARTCOOL™

## Energy Saving Module (ESM)™


* Image is 75% of actual size

### Features

**Compatible with existing controls**

**No risk to current equipment or contents**

**Maintains temperature performance**

**Verifiable reduction of operating costs**

### Highlights

**Average 15% Reduction in kWh Consumption**

**Set & Forget Technology**

**Easily Verifiable Savings**

### Applications

Energy consumption is a major operating cost for businesses. The ESM™ can reduce these costs by saving energy on air conditioning and refrigeration systems without affecting temperature or humidity. This improves the bottom line for any business while also providing substantial environmental benefits. Cold storage facilities, process cooling, data centers, mini-marts, supermarkets, telecom facilities, commercial real estate, hotels, shopping malls and hospitals are just a few of the businesses where the ESM™ can save money.

**Air Conditioning Units**

- Maintains occupant comfort levels
- Installs on any A/C unit and can optimize up to 8 compressors with one ESM™

**Refrigeration Units**

- Maintains set temperature within refrigerated space
- Compatible with any refrigeration system and can optimize up to 8 compressors with one ESM™

Smartcool's unique proprietary software reduces compressor runtime and energy usage by as much as 30%, saving companies money and increasing profitability

Digital display shows continuous monitoring of the system including status and level of savings being achieved


24 pin male connector in each side of the SIMs enable direct connection of up to 4 SIMs to each LNC

Key pad allows for configuration of the local network, access to data and selection of manual bypass


Multiple ESM™ units can be networked via the RS 485 Communication Port

Lap top or modem can be connected via the RS 232 Communication Port for remote network access


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# SMARTCOOL™

## Compressor Optimization

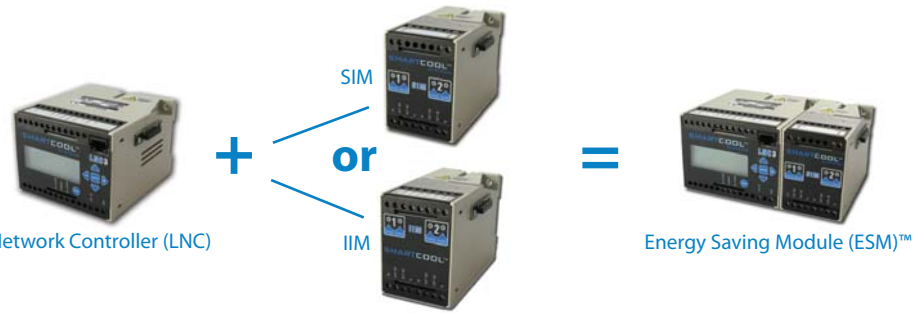
The ESM™ is a green technology that reduces the electricity consumption (kWh) and maximum demand (KW) of air conditioning and refrigeration compressors.

Rather than replacing existing equipment, the ESM™ works in conjunction with existing controls in order to ensure that compressors work at maximum efficiency, while maintaining preset temperatures, without causing over-cycling.

The ESM™ enables businesses to reduce the electricity usage of refrigeration and air conditioning compressors by 15% to 30%. A client installing this unique technology can expect a 2 to 3 year payback period.

## Operation

The ESM™ is compatible with any air conditioning or refrigeration system, including large chillers and rack systems. An ESM™ configured with SIM units is compatible with the majority of cooling systems. The IIM extends the compatibility of the ESM™ to include large chillers and complex refrigeration systems, including those with screw and centrifugal compressors. The ESM™ wires directly into the control circuit between the existing control device and the compressor. Energy savings are easily monitored locally on the display, or remotely via a modem. The ESM™ can be manually bypassed at any time if desired and will always fail to safe. Energy consumption of the compressors is reduced without any impact on the temperature or humidity of the controlled space.




Network Controller (LNC) + Energy Saving Module (ESM)™

## Configuration

The ESM™ is available with two separate configurations: with the SIM and with the IIM. Either module can connect directly to a Network Controller (LNC), which can have up to 4 SIMs or 2 IIMs in series. The System Interface Module (SIM) and Intelligent Interface Module (IIM) are interchangeable to make the ESM™ a highly versatile device.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## Case Study

| | |
|---|---|
| Facility : | Dairy processing facility |
| Equipment: | 11 refrigeration & 2 A/C units |
| ECO³™ Equipment: | Nine ESM™ units configured with SIMs |

**17.43%**
kWh Savings

**166,413 kWh**
Annual kWh Reduction

**25 months**
Return on Investment

## Standards Compliance

| | |
|---|---|
| Quality Assurance: | Complies with ISO 9001 |
| North America: | Complies with UL 916 & UL C22.2 No 205-M1983 |
| Europe (CE): | Complies with EN60730 (IEC 730) & EN60950: 2000<br>Complies with EMC directive EN55022, EN55024, 89/336/EEC & 93/68/EEC |
| Australia: | Complies with AS2064, AS3100 & AS3260 |

| Specifications | LNC | SIM & IIM |
|---|---|---|
| Operating Voltage | 24 VAC 6 watts. | 24 VAC to 240 VAC |
| Optimization Inputs | 0 - 10VDC, 4 - 20mA, PT100 | N/A |
| Number of Channels | N/A | 2 |
| Contact Rating | N/A | 3 Amps |
| Alarm Contacts | Voltage Free Rated 30V 1 Amp. | N/A |
| Liquid Crystal Display | Back Lit, Four Line Display | N/A |
| Enclosure | IP20 | IP20 |
| Dimensions | Height 2.95″<br>Width 3.94″<br>Depth 4.33′ | Height 2.95″<br>Width 2.17″<br>Depth 4.33′ |
| Environment | -20° to 131°F | -20° to 131°F |

*The specifications of the IIM are the same as the SIM, with the exception of outputs where the IIM has 2 x 12 VDC coils and 2 analog outputs (0-10V, 4-20mA).

Organizations

ENERGY STAR PARTNER

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HARDI

Flex your POWER

Corporate Recognition

2007 venture 50

Deloitte. Technology Green 15

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