

Light Energy Saving Ltd.

Talking Energy, Thinking Energy, Saving Energy

Multi Switch Module

Multi Switch Module is a device for use in lighting applications that have several downstream circuits from 1 LES. It is designed to accept switching requests after the LES has entered 'Savings Mode' allowing additional lighting loads to be added to the LES.



Features

- Requires no changes to customers existing lighting infrastructure.
- Accepts 6 signals on basic unit.
- Can be expanded to accept more signals in groups of 4, 6 or 12.
- Can be programmed to do other functions e.g. time clock, timer, counter etc.
- Needs no interface relays.

Basic Method of Operation

A voltage reference signal is connected to each input from either the individual circuit command switch or from the contactor of each lighting circuit way.

Upon receiving the first signal the Multi Switch Module will give a relay output that can be used to operate a master contact (if required) and at the same time give a relay contact to the 'Energy Saving Mode' of the LES.

Upon receiving each subsequent input signal, this will open the relay output to the 'Energy Saving Mode' command of the LES and re-close this output after 5 seconds.

The LES will go to full voltage output and will then return to 'Energy Saving Mode' after the normal delay time has expired.

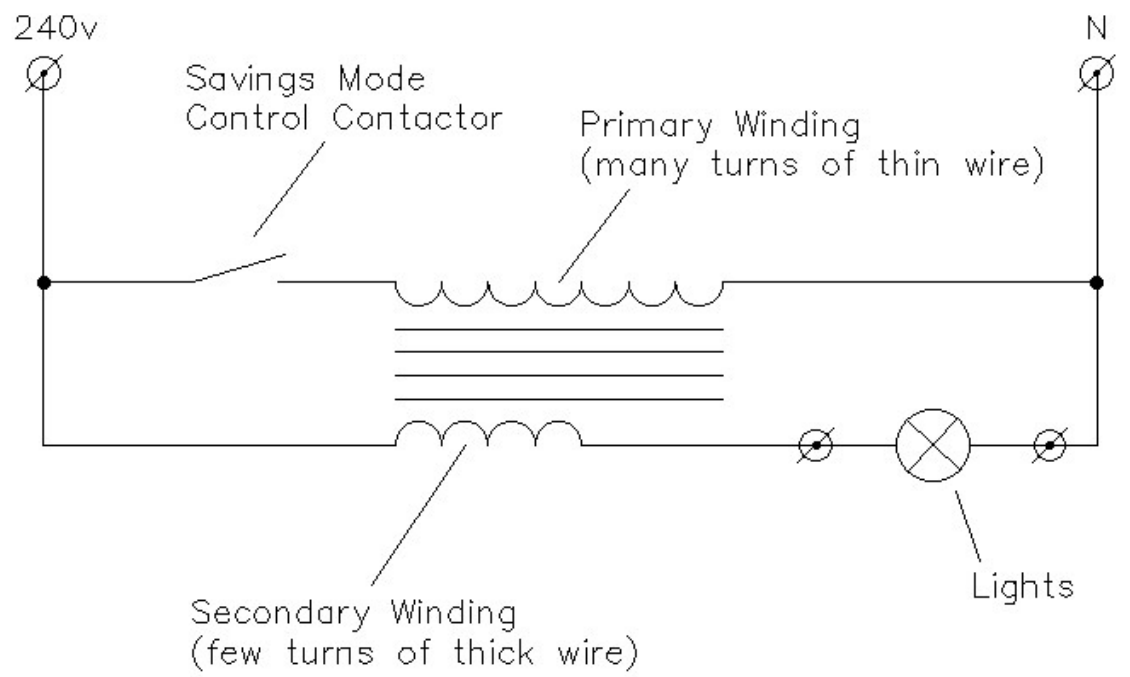
Removal of any input signal will have no effect except for the removal of the last remaining signal.

When the last remaining signal is removed, all relay outputs are opened.

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SUBJECT TO CHANGE WITHOUT NOTICE



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LES-B

Light Energy Saver TYPE B

LES-B is a 3 phase 4 wire advanced microprocessor controlled energy saving controller specifically designed for use with HID light units such as High Pressure Sodium, Metal Halide, Mercury Vapour and Fluorescent Lamps.

Features

- Totally self-contained microprocessor control.
- Built-in programmable timer, under and over voltage protection.
- Requires no changes to customers existing lighting infrastructure.
- Provides up to 40% reduction in Energy Cost.
- Built-in Bypass facility.
- No Harmonic Distortion with pure Sine Wave Output.
- More than 98.5% Efficient.
- Built-in winding over temperature trip
- Increases lamp life by up to 300%.
- Modular design with minimal maintenance.
- CE and IEC approved to 60439-1
- Approved by OSRAM



Range

- LES-B-20A 400V 3ph. 4W 20A per phase

Un-enclosed Dimensions: 275mm W x 500mm H x 270mm D

- LES-B-30A 400V 3ph. 4W 30A per phase

Un-enclosed Dimensions: 275mm W x 500mm H x 270mm D

- LES-B-50A 400V 3ph. 4W 50A per phase

Un-enclosed Dimensions: 275mm W x 500mm H x 270mm D

- LES-B-80A 400V 3ph. 4W 80A per phase

Un-enclosed Dimensions: 275mm W x 500mm H x 270mm D

- LES-B-100A 400V 3ph. 4W 100A per phase

Un-enclosed Dimensions: 388mm W x 711mm H x 291mm D

- LES-B-125A 400V 3ph. 4W 125A per phase

Un-enclosed Dimensions: 388mm W x 711mm H x 291mm D

- LES-B-160A 400V 3ph. 4W 160A per phase

Un-enclosed Dimensions: 388mm W x 711mm H x 291mm D

- LES-B-220A 400V 3ph. 4W 220A per phase

Un-enclosed Dimensions: 630mm W x 711mm H x 350mm D

Technical Specification

Input voltage	400V (3x230VAC)
Output voltage	Input voltage less 10%
Frequency	50-60Hz
Energy saving	Above 20%
Power Range (Capacity)	3 x 20A up to 3 x 220A
Control Voltage	230VAC $\pm$ 15%
Min output voltage protection	170-230V
Fault Lamp	LEDs
Insulation	2.5kV
Ambient temp.	-20°C to +50°C
Operation mode	Under Voltage protection
Standard	CE, EN60439-1 (safety approval)
Communications protocol	Optional RS232, RS485

Method of Operation

All LES-B units are designed for installation within the contactor supply cable to the distribution boards of the lighting system.

The LES-B is usually mounted next to, as far as is practicable, the lighting distribution board.

Protection

The supply and load are protected by suitably rated Miniature Circuit Breakers.

The LES-B is equipped with thermal trips on the windings of the coils that will trip the supply on over temperature alarm.

Under and over voltage is a preset parameter of the microprocessor and will activate an alarm and in the case of under voltage will prevent the unit from going into 'Energy Saving' mode.

The LES-B is fitted with an manual bypass facility.

OPERATING PRINCIPLE

After the power is supplied to the controller and if the 'ON' command exists, the controller supplies full voltage to the system.

Providing the 'Energy Saving' contact is enabled, the programmed delay time will commence, which is fixed at 6 minutes.

After the timer expires the LES-B is in Energy Saving' mode and the output voltage is reduced by approximately 10% (e.g. if the input voltage is 230V, the output voltage will be 207V).

In the case of power failure, after the power returns (restart), and all the control signals ('ON' & 'Energy Saving') are still present, the controller provides full voltage to the system and energy saving will begins after the time delay as mentioned above.

If, during energy saving mode, it becomes necessary to restart some or all lamps, this can be achieved by opening the connection to terminals 3 & 4 (disable 'Energy Saving' mode).

The unit will now supply full voltage until the 'Energy Saving' mode is enabled and the timer has elapsed.

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LES-S7

Light Energy Saver TYPE S7 Seven Step Controller 195V-250V ($\pm 2.5V$)

LES-S7 is a 3 phase 4 wire advanced microprocessor controlled energy saving controller specifically designed for use with HID light units such as High Pressure Sodium, Metal Halide, Mercury Vapour and Fluorescent Lamps where a specific line voltage is desired. **LES-S7** is designed to provide a reduced voltage regulated output based upon a desired set point by switching in up to seven voltage steps of + or – 2.5V below the supply voltage.

Features

- Totally self-contained microprocessor control.
- Built-in timer, under and over voltage protection.
- Requires no changes to customers existing lighting infrastructure.
- Provides up to 40% reduction in Energy Cost.
- No Harmonic Distortion with pure Sine Wave Output.
- Built-in winding over temperature trip.
- Modular design with minimal maintenance.
- Regulates voltage reduction by seven step controls to + or – 2.5V of the set value.
- Increased data acquisition functions for Voltage, Current, kW, kWhrs, Cos Φ , etc.
- Remote control and diagnostics via GSM protocol for optional GSM modem.
- Built-in digital display for electronic management system and parameters.
- Approved by OSRAM
- Built-in Bypass facility.
- CE and IEC approved to 60439-1
- Fully assembled from the factory.
- More than 98.5% Efficient.
- Increases lamp life up to 300%



Range

- | | |
|---|---|
| • LES-S7-30A 400V 3ph. 4W 30A per phase | Enclosed Dimensions: 600mm Wx1200mm Hx300mm D |
| • LES-S7-50A 400V 3ph. 4W 50A per phase | Enclosed Dimensions: 600mm Wx1200mm Hx300mm D |
| • LES-S7-80A 400V 3ph. 4W 80A per phase | Enclosed Dimensions: 600mm Wx1200mm Hx300mm D |
| • LES-S7-100A 400V 3ph. 4W 100A per phase | Enclosed Dimensions: 600mm Wx1600mm Hx300mm D |
| • LES-S7-125A 400V 3ph. 4W 125A per phase | Enclosed Dimensions: 600mm Wx1600mm Hx300mm D |
| • LES-S7-160A 400V 3ph. 4W 160A per phase | Enclosed Dimensions: 600mm Wx1600mm Hx300mm D |
| • LES-S7-220A 400V 3ph. 4W 220A per phase | Enclosed Dimensions: 600mm Wx1800mm Hx300mm D |

Method of Operation

All LES-S7 units are designed for installation within the contactor supply cable to the distribution boards of the lighting system.

The LES-S7 is usually mounted next to, as far as is practicable, the lighting distribution board.

Technical Specification

Input voltage	460V (3x265VAC)
Output voltage	195V to 250V to preset point
Frequency	50-60Hz
Energy saving	Above 20% typically 35%
Power Range (Capacity)	3 x 30A up to 3 x 220A
Control Voltage	230VAC $\pm$ 15%
Min output voltage protection	170-230V
Fault Lamp	LEDs
Insulation	2.5kV
Ambient temp.	-20°C to +50°C
Operation mode	Fully Programmable
Standard	CE, EN60439-1 (safety approval)
Communications protocol	Optional RS232, RS485, GSM

Protection

The supply and load are protected by suitably rated Miniature Circuit Breakers.

The LES-S7 is equipped with thermal trips on the windings of the coils that will trip the supply on over temperature alarm.

Under and over voltage is a preset parameter of the microprocessor and will activate an alarm and in the case of under voltage will prevent the unit from going into 'Energy Saving' mode.

The LES-B is fitted with an isolator that has OFF/ON/BYPASS positions.

OPERATING PRINCIPLE

After the power is supplied to the controller and if the 'ON' command exists, the controller supplies full voltage to the system.

Providing the 'Energy Saving' contact is enabled, the programmed delay time will commence, which is adjusted at the commissioning stage, from 0-15min.

After the timer expires the LES-S7 is in 'Energy Saving' mode and the output voltage is reduced in stages until the output voltage is within + or – 2.5V of the preset point.

In the case of power failure, after the power returns (restart), and all the control signals ('ON' & 'Energy Saving') are still present, the controller provides full voltage to the system and the voltage will reduce in stages and energy saving will begin after the time delay as mentioned above.

If, during energy saving mode, it becomes necessary to restart some or all lamps, this can be achieved by opening the connection to terminals 3 & 4 (disable 'Energy Saving' mode).

The unit will now supply full voltage until the 'Energy Saving' mode is enabled and the timer has elapsed and will then again reduce the voltage in stages until the output voltage is again within + or – 2.5V of the preset point.