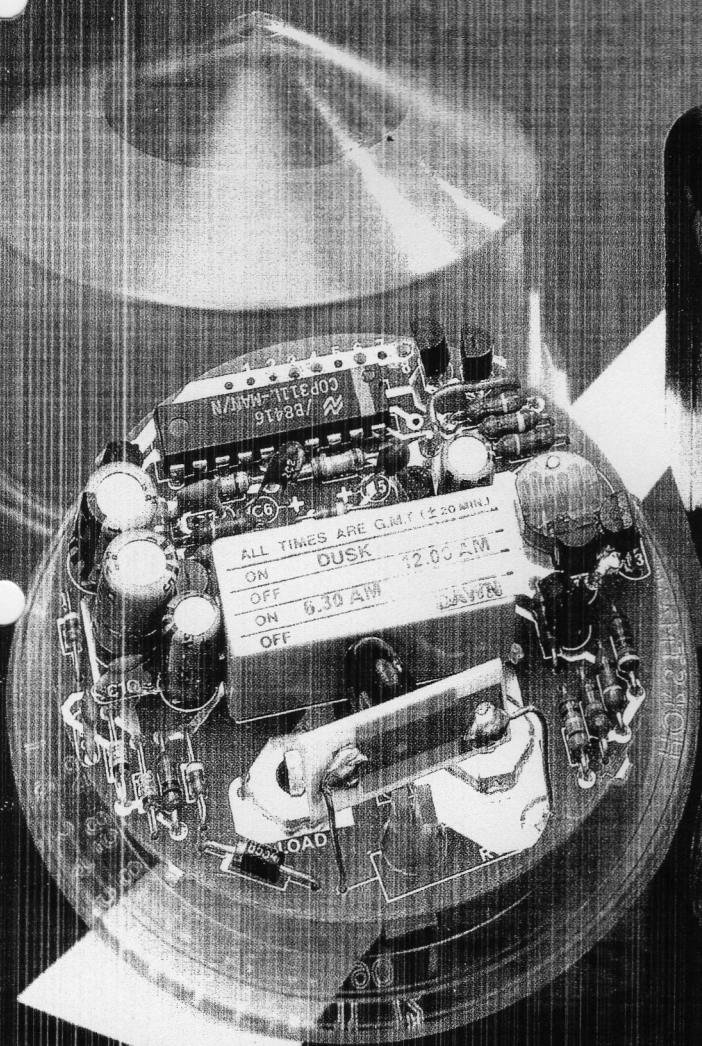


Horstmann Timers and Controls

Street Lighting Controls

- Reliable, flexible control with low maintenance
- Thermal, electronic-thermal and electronic models
- One or two-part units
- Sealed against moisture and dust

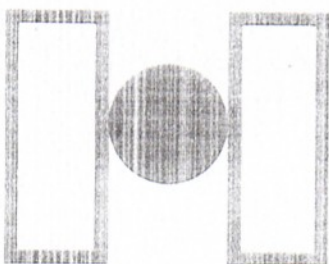


Horstmann- lighting the way for over 80 years

Horstmann introduced energy automation into Britain in 1904 with the first street lighting time control. As technology has advanced – from clockwork to microprocessors – Horstmann have continued their pioneering tradition.

Today's range of street lighting controls includes the EL 160, among the most sophisticated in the world. But Horstmann also manufacture simpler units – thermal, electronic/thermal and electronic – that have been developed to operate reliably and economically, whatever the environment.

The Horstmann range of single and two-part controls fully satisfies the needs of today's street lighting engineers and local authorities – conserving energy as well as controlling it, and matching budgets as well as operating specifications.



Thermal controls

These basic units comprise a cadmium sulphide cell connected in series with a thermal relay.

During daylight hours, the resistance of the cell is low enough to allow sufficient current to flow in the heater of the thermal relay to open the switch contacts.

When ambient illumination falls below the required value the heater current is reduced until it is no longer sufficient to hold open the switch.

Protection against switching in transient light conditions – caused by cloud or car headlights, for example – is provided by the slow response of the thermally operated load switch.

Single part units

Both the T14 and T16 are available with either glazed (non-encapsulated) cell units or with hermetically sealed encapsulated cell units. Those with encapsulated cells are identified by the suffix "E".

Special design attention has been given to making these units capable of long service even in harsh, overseas environments. Included are special sealing against dust as well as damp, and the use of cell calibration materials which are resistant to heat and bright sunlight.

For conditions where severe voltage transients are commonplace units are available with surge suppression, identified by the suffix "S".

All units can be fitted to the lantern in any horizontal plane; Northern/Southern orientation is not required.

These switches incorporate cell unit and switch gear in a single assembly, for mounting on top of the street lantern. A bracket with socket for wall-mounting is also available. The three-pin plug fits standard NEMA sockets.



T14, T14E and T14ES:

Switching ratio 1:2 (on-off)
Load rating 1000 W; 0.85 pf
Normal setting 55 LUX
Capacitive load should not exceed 50 microfarads

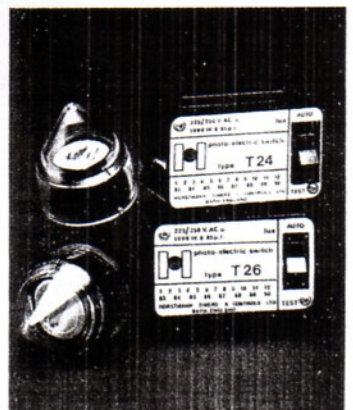
T16, T16E and T16ES:

Switching ratio 1:1.5 (on-off)
Load rating 1000 W; 0.85 pf
Normal setting 55 LUX
Capacitive load should not exceed 50 microfarads

Two-part units

These units comprise a sensor head with encapsulated cell which is fitted to the lantern top and the switch gear which is fitted into the column base for easy maintenance access.

The small size of the sensor head proves a considerable advantage when space is limited on the lantern top. The head does not require orientation, and is housed in a Neoprene retainer fitted with a moulded Oroglas cell cap. The retainer is stepped to be a force fit in a 13mm (0.5 inches) hole. The switch unit, housed in a plug-in moulded case, is fitted with a test switch.



T24

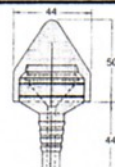
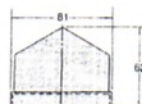
Switching ratio 1:2 (on-off)
Load rating 1000 W; 0.85 pf
Normal setting 55 LUX
Capacitive load should not exceed 50 microfarads

T26

Switching ratio 1:1.5 (on-off)
Load rating 1000 W; 0.85 pf
Normal setting 55 LUX
Capacitive load should not exceed 50 microfarads

Dimensions

Measurements shown in mm.



Electronic thermal controls

The ET series of controls comprise a miniature cadmium sulphide cell, an electronic control circuit and a thermal relay.

By using an electronic measuring and amplifying circuit, these controls provide greater accuracy in initial calibration and more stable and reliable long-term performance.

The electronic circuit also introduces fractional switching ratios for reduced burning hours without reduced lighting standards. Although they cost more than simple thermal switches, electronic thermal units reduce spending on running and maintenance.

A built-in delay eliminates random switching caused by transient lighting changes.

For conditions where there is a risk of severe voltage transients, units with surge suppression can be supplied, identified by the suffix "S"

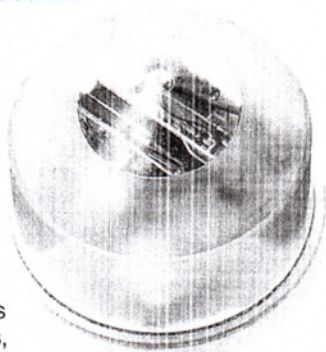
The ET10 incorporates photocell unit and switch gear in one assembly, mounted, without need for North/South orientation, on top of the street lantern. Like all Horstmann single-part units, it has a three-pin plug to fit the standard NEMA socket, and is designed to form a waterproof seal between socket and unit.

Single-part unit

ET10, ET10S:

Switching ratio 1:0.5 (on-off)
Load rating 1000 W; 0.85 pf
Normal setting 70 LUX

Capacitive load should not exceed 50 microfarads



Two-part unit

A conveniently small sensor head is fitted to the lantern top, and switch gear in the column base. The head requires no orientation and is housed in a Delrin retainer fitted with a moulded cap of tough polycarbonate. The retainer is threaded to fit a 13mm (0.5 inches) diameter hole. The switch unit is housed in a plug-in moulded case, and is fitted with a test switch.



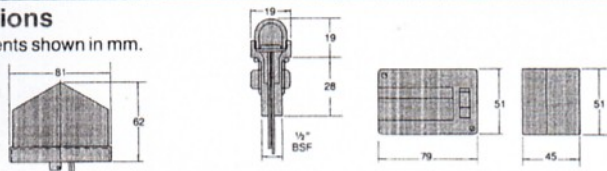
ET22

Switching ratio 1:0.5 (on-off)
Load rating 1000 W; 0.85 pf
Normal setting 70 LUX

Capacitive load should not exceed 50 microfarads

Dimensions

Measurements shown in mm.



Electronic controls

The EL series of controls use microprocessor technology to provide all-night operation or any one of up to 57 different factory-set part-night options.

Part-night control is not new: sixty years ago Horstmann built ingenious clockwork devices to provide it, but demand for them was reduced by low energy costs and cheap photoswitches.

Today's high costs call for units which can save energy and lamp replacements, coupled with high accuracy and reliability and low maintenance.

Horstmann electronic controls include a sophisticated "midnight finding" facility which automatically compensates for seasonal variations in dawn and dusk times.

On their first night of operation they respond as conventional photoswitches, turning lights on as darkness falls and off again in the morning.

A memory/calculating circuit measures the period of darkness, calculates midnight and turns the light off at the selected time.

Each night the measurement and midnight calculation is repeated. Only one complete night's operation is needed to load the memory. A power failure results in only one night's full lighting.

Savings on maintenance, lamps and energy are substantial.

For areas where public security and safety require constant lighting alternate street lights can be fitted with the units.

The EL units switch loads through a relay under microprocessor control. By ensuring that the relay contacts operate at virtually zero mains voltage the generation of adverse transients is minimised, increasing lamp gear life expectation. So unit use is advantageous even in all-night mode.

Using a sealed load switching relay, all the EL units offer the ultimate in long-term reliability without drift.

Factory-set, part-night programme options

Both EL units can be set for all-night operation or using one option from each of the following groups:

(Times indicated are GMT \pm 20 minutes. Add one hour for BST)

Group A (off options)

All night operation

11.30 p.m. 1.30 a.m.
12.00 p.m. 2.00 a.m.
12.30 a.m. 2.30 a.m.
1.00 a.m.

Group B (on options)

No early morning on

4.00 a.m. 6.00 a.m.
4.30 a.m. 6.30 a.m.
5.00 a.m. 7.00 a.m.
5.30 a.m.

Single-part unit

EL 160:

Switching ratio 1:0.5 (on-off)
Load rating 400 W; 0.85 pf
Normal setting 70 LUX

Capacitive load should not exceed 50 microfarads

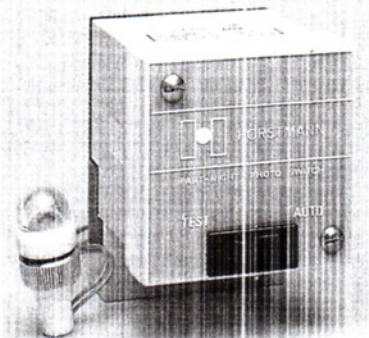
The single-part EL160 is the latest model in the range with pre-set multi-option control. Designed for standard NEMA plug-in mounting on the lantern, it offers an inverse switching ratio and relay output.

Two-part unit

EL26

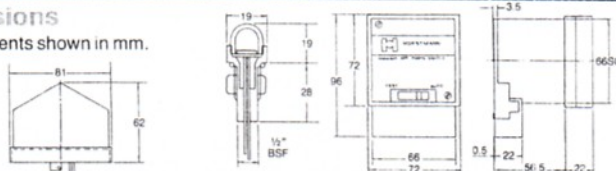
Switching ratio 1:0.5 (on-off)
Load rating 400 W; 0.85 pf
Normal setting 70 LUX

The sealed cadmium sulphide detector head measures light levels to determine normal lamp on/off times, passing the information to a column-base plug-in control unit which has a test switch.



Dimensions

Measurements shown in mm.



Electrifiash 1 and 2

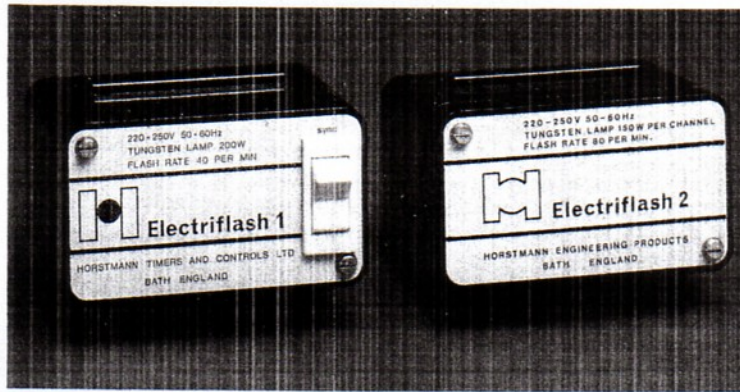
(for pedestrian crossing beacons and warning signals)

These units are entirely electronic for long-term reliability without maintenance. The design means the load is only switched on as the supply voltage passes through zero. This eliminates radio frequency interference and reduces the inrush current of tungsten lamps, thereby increasing their life.

The Electrifiash 1 is designed for pedestrian crossing beacons and has a single output with a flashing rate of 40 per minute.

A switch is fitted to allow for synchronisation with another beacon.

The Electrifiash 2 is intended for alternate flashing of a pair of lamps and has a flash rate of 80 per minute on two alternate lamp circuits.



Dimensions: 79mm wide x 51mm high x 45mm deep.

Ordering information

Thermal controls

Type	Description	Nominal Switching Ratio	Load Rating 240v at 0.85 pf	Normal Lux Setting
T14	One part thermal	1:2	1000 watts	55
T14E	One part thermal with encapsulated cell	1:2	1000 watts	55
T14ES	One part thermal with encapsulated cell and surge protection	1:2	1000 watts	55
T15ES	One part thermal with encapsulated cell, surge protection, flying leads and screw fitting	1:2	1000 watts	55
T16	One part thermal with close switching ratio	1:1.5	1000 watts	55
T16E	One part thermal with encapsulated cell	1:1.5	1000 watts	55
T16ES	One part thermal with encapsulated cell and surge protection	1:1.5	1000 watts	55
T24	Two part thermal with encapsulated cell	1:2	1000 watts	55
T26	Two part thermal with encapsulated cell and close switching ratio	1:1.5	1000 watts	55

Electronic thermal controls

Type	Description	Nominal Switching Ratio	Load Rating 240v at 0.85 pf	Normal Lux Setting
ET10	One part electronic/thermal with inverse switching ratio	1:0.5	1000 watts	70
ET10S	One part electronic/thermal with surge protection	1:0.5	1000 watts	70
ET22	Two part electronic/thermal with encapsulated cell	1:0.5	1000 watts	70

Electronic controls

Type	Description	Nominal Switching Ratio	Load Rating 240v at 0.85 pf	Normal Lux Setting
EL160	One part electronic part-night with variable 'off' and early a.m. 'on' times	1:0.5	400 watts	70
EL26	Two part electronic part night with variable 'off' and early a.m. 'on' times	1:0.5	400 watts	70

Electrifiash 1 and 2

Electronic flasher unit: MK 1	40 flashes/minute	Load Rating 240v at 0.85 pf 200 watts tungsten load 150 watts per channel tungsten load
Electronic flasher unit: MK 2	80 flashes/minute	

General specification

Standard Operating Voltage	: Electronic Units 200/250V, 50 Hz. Thermal/ Electronic Thermal Units 200-225 or 225-250V, 50/60 Hz
Operating Temperature Range	: -15°C to +55°C Ambient.
Operating Light Level	: Switches are supplied set to 55 or 70 Lux but most can be factory preset in the range 10-120 Lux.
Switch Ratio	: As detailed in Ordering information above.
Switch Rating	: As detailed in Ordering information above.



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