

Kildare County Council Specification - Flashing Beacon School Signs Specification

These programmable solar and mains powered amber flashing beacons are for use on School Warning signs, provided in the vicinity of schools.

The sign shall be provided in conjunction with a 900mm x 1200mm Warning sign. The flashing beacons provide a highly visible warning to motorists

Flashing Beacon Unit:

The dimensions of the Flashing beacon unit shall be 600mm x 287.5mm x 35mm. The flashing amber windows are 200mm diameter at 280mm centres. The LED's shall be protected by a polycarbonate cover.

The unit shall be manufactured, using 3mm engineering grade aluminium. The unit shall be manufactured to TSRGD regulations and has Highways Agency Type Approval to TR 2163C. The unit shall be impact resistant, UV resistant, with black non-reflective powder coated finish.

The LED flashing PCB board shall be manufactured to ensure low power consumption thereby maximising the potential of the solar / battery installation. The LED's shall flash intermittently during the pre-programmed times as controlled by the digital timer.

LED Requirements:

- Highly luminous emission.
- 15, 23 or 30 degree viewing angle.
- InGaN flip chip technology with protective diode.

Maximum Ratings

- DC Forward current (mA) 30
- Peak forward current (mA) 100
- Average forward current (mA) 30
- Power dissipation (mW) 120
- Junction Temp. (0C) 130
- Operating Temp. range (0C) -40 to +85
- Storage Temp. range (0C) -40 to +100

Battery Box Unit & Battery:

The battery shall be provided in a lockable box that is rated to IP66, the solar regulator, digital timer and battery shall be all housed together. The box is then housed on to the post behind the sign for ease of access.

The charge control shall be a solid-state control unit which regulates the battery charge and discharge rates.

Battery Box Requirements:

- Single door enclosure rated to IP66.
- External mechanical impact resistance: IK 10.
- Door shall be easily removable and reversible with double thickness 20mm return fold for rigidity with a 120 degree opening.
- Provide a 3mm double bar lock.
- Provide one piece folded and welded body, double plate thickness gutter shaped front profile, flat rear panel.
- Polyurethane door seal.
- Textured 100% polyester powder paint finish, colour grey RAL 7032.

Battery Requirements:

- 100 amp / hour at 12 volts.
- AGM deep cycle gel energy battery
- 400 cycles at 75% D.O.D.
- Deep discharge recovery
- Totally sealed.
- Maintenance free.
- Un-spillable.
- Safe to transport.
- Flame retardant.
- Corrosion resistant.

Digital Programmable Timer Requirements:

The timer used to control the sign shall be Theben 641S solid-state control module or similar approved. It shall be capable of being programmed manually through buttons on the timer face or through software installed on a PC or laptop and then transferred to the sign by means of a small memory card. The programs that are generated using the software shall be able to be saved and re-used/alterd etc. for any other requirements.

- 10 standard week programs with ascending priority e.g. for different programs (public holidays, holidays, seasons).
- Software shall have a database available containing holidays that can be loaded as appropriate.
- Date correction for holidays in succeeding years, integrated calendar until 2070. Simple programming possible by means of ten key keyboard or PC.
- Simulation of the program on PC with an overview for the entire year for all channels. Manual switching shall be possible by means of override and permanent switching.
- High battery reserve with lithium cell.

Digital Timer Requirements:

- 24hr/7d/year programming.
- 324 memory locations.
- 1.5 year power reserve.
- 1 second programmable.
- 1 x switching holiday setting 1....7 days.
- 1 changeover switch.
- Nominal current at 250V is 16 (10) A
- Weight of unit 500g.
- IP rating of IP20

Solar Panel Modules:

Two solar panels shall be provided, which are utilised with the sign are manufactured by Kyocera or similar approved manufacturer. Polycrystalline solar modules shall be provided to attain high levels of efficiency.

The solar cells that make up the panel are of a standard size 15cm x 15.5cm shall achieve over 16% efficiency, providing a high annual yield of energy from the photovoltaic system.

The cells shall be embedded between a reinforced glass covering (hailstone resistance complying with IEC 61215, tested by TUV) and EVA foil, and shall be sealed with PET foil backing. The laminate shall be set in a sturdy aluminium frame for ease of assembly. The back of the junction box shall be equipped with by-pass diodes that eliminate the risk of the individual solar cells overheating (hot spot effect).

Single Panel Modules:

- Length (mm) 526
- Width (mm) 625
- Depth / incl. Junction box (mm) 36/54
- Weight (kg) 4.5
- Connection type Screw Terminals
- Junction box (mm) 120x180x46
- IP Code IP65

Performance at 1000 W/m2 @25 degrees:

- Max. Power (W) 43
- Max. System voltage (V) 750
- Max. Power voltage (V) 17.4
- Max. Power current (A) 2.48
- Open circuit voltage (V) 21.7
- Short circuit current (A) 2.65