

Section 1: Introduction

Low Energy Designs produce efficient and effective LED based lighting products for commercial, retail and industry purposes. Each product may contain specific details on its operation and fitting, while this manual gives overall guidance and information on handling the product and the basic precautions required.

Section 2: Warranties

Products of Low Energy Designs Limited manufacture are guaranteed against mechanical, electrical, and physical defects for a period of two years from the date of shipment and are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made. A longer guarantee can be purchased separately at the time of sale.

Low Energy Designs Limited will correct by repair or replacement, at its option, equipment or parts which fail because of mechanical, electrical or physical defects, provided that the goods have been properly handled and stored prior to installation, properly installed and properly operated after installation, and provided further that the Buyer gives Low Energy Designs Limited written notice of such defects after delivery of the goods to Buyer. Low Energy Designs Limited reserves the right to examine goods upon which a claim is made. Said goods must be presented in the same condition as when the defect therein was discovered. Low Energy Designs Limited further reserves the right to require the return of such goods to establish any claim.

Low Energy Designs Limited Obligation under this guarantee is limited to making repair or replacement within a reasonable time after receipt of such written notice and does not include any other costs such as the cost of removal of a defective part, installation of a repaired product, labour or consequential damages of any kind, the exclusive remedy being to require such new parts to be furnished. Low Energy Designs Limited liability under no circumstances will exceed the contract price of goods claimed to be defective. Any returns under this guarantee are to be on a transportation charges prepaid basis.

This is Low Energy Designs Limited sole guarantee and warranty with respect to the goods; there are no express warranties or warranties of fitness for any particular purpose or any implied warranties of fitness for any particular purpose or any implied warranties other than those made expressly herein. All such warranties being expressly disclaimed.

Section 3: Disclaimers

This manual could contain technical inaccuracies or typographical errors. Low Energy Designs Limited reserves the right to revise this manual from time to time in the contents thereof without obligation of Low Energy Designs Limited to notify and person of such revision or change. Details and values given in this manual are average values and have been compiled with care. They are not binding, however, and Low Energy Designs Limited disclaims any liability for damages or detriments suffered as a result of reliance on the information given herein or the use of products, processes or equipment to which this manual refers. No warranty is made that the use of the information or of the products, processes or equipment to which this manual refers will not infringe any third party's patents or rights. The information given does not release the buyers from making their own experiments and tests.

Section 4: Safety

This section contains general safety instructions for using your Low Energy Designs equipment. Some safety instructions may not apply to the equipment in this manual. Task-and equipment-specific warnings are included in other sections of this manual where appropriate. Note all warnings and follow all instructions carefully. Failure to do so may result in personal injury, death, or property damage. To use this equipment safely,

- Observe all safety regulations. To avoid injuries, always remove power prior to making any wire connections and touching any parts.
- Read and become familiar with the general safety instructions provided in this section of the manual before installing, operating, maintaining, or repairing this equipment.
- Read and carefully follow the instructions given throughout this manual for performing specific tasks and working with specific equipment.
- Store this manual within easy reach of personnel installing, operating, maintaining, or repairing this equipment.
- Follow all applicable safety procedures required by your company, industry standards, and government or other regulatory agencies.
- Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.

Safety Symbols

Become familiar with the safety symbols presented in this section. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or property and equipment damage.



WARNING: Failure to observe this warning may result in personal injury, death, or equipment damage.



WARNING: Risk of electrical shock. Failure to observe this warning may result in personal injury, death, or equipment damage.



WARNING: Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage.



WARNING: Wear safety goggles. Failure to observe may result in serious injury.



CAUTION: Failure to observe may result in equipment damage.

Qualified Personnel

The term qualified personnel is defined here as individuals who thoroughly understand the equipment and its safe operation, maintenance, and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations and have been trained to safely install, operate, maintain, and repair the equipment. It is the responsibility of the company operating this equipment to see that its personnel meet these requirements.

Intended Use



WARNING: Use of this equipment in ways other than described in this manual may result in personal injury, death, or property and equipment damage. Use this equipment only as described in this manual.

Low Energy Designs cannot be responsible for injuries or damages resulting from nonstandard, unintended applications of its equipment. This equipment is designed and intended only for the purpose described in this manual. Uses not described in this manual are considered unintended uses and may result in serious personal injury, death, or property damage. Unintended uses may result from taking the following actions:

- Making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine Low Energy Designs replacement parts
- Failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards
- Using materials or auxiliary equipment that are inappropriate or incompatible with your Low Energy Designs equipment
- Allowing unqualified personnel to perform any task.

Section 5: Installation

Read the installation section of all system component manuals before installing your equipment. A thorough understanding of system components and their requirements will help you install the system safely and efficiently.




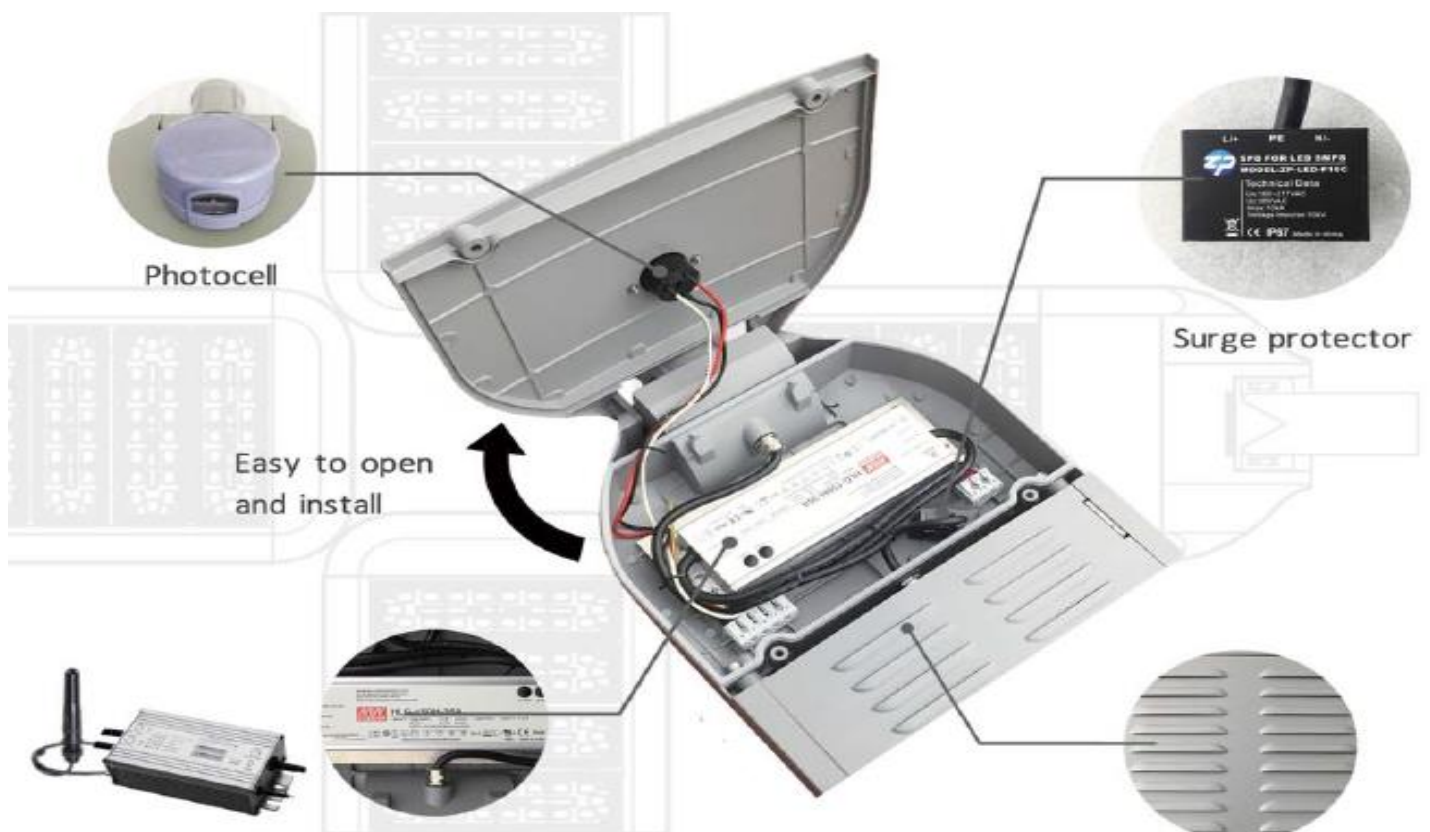
WARNING: Failure to follow these safety procedures can result in personal injury or death.

- Allow only qualified personnel to install Low Energy Designs auxiliary equipment. Use only approved equipment. Using none approved equipment in an approved system may void agency approvals.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Follow all instructions for installing components and accessories.
- Access to the Electrical connection points is via access LID, via the release of the securing clips.
- Install all electrical connections to local code.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.

- Any exposed outside electrical cable should be of UV Safe type to avoid hardening and cracking of the insulation over time. If exposed cable cannot be avoided, then it is suggested to use a good quality Vinyl or Rubber Tape that is resistant to weather, UV rays and corrosion as insulation
- Route electrical wiring along a protected path. Make sure moving equipment will not damage them.
- Protect components from damage, wear, and harsh environment conditions,
- Allow ample room for maintenance, accessibility, and cover removal.
- Protect equipment with safety devices as specified by applicable safety regulations.
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning.
- Mounting brackets should be secured to the fitment at 25 nm torque via the rear mounting holes.
- Equipment should be mounted in accordance with the mounting bracket instructions, supplied separately
- Cable Connectivity is via the External Cable gland (5.0mm to 9.0mm diameter) to the Terminal block as shown below. Connect with a suitable three core PVC cable that complies with IEC 60227 52 / UL 94V0 and secure firmly with the cable stay.

Cables are attached to each location:

 Earth / N = Neutral / L = Live



Section 6: Operation

Only qualified personnel, physically capable of operating the equipment and with no impairments in their judgment or reaction times, should operate this equipment.

Read all system component manuals before operating this equipment. A thorough understanding of system components and their operating will help you operate the system safely and efficiently.

- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects of pneumatic valves.
- Never operate equipment with a known malfunction.
- Do not attempt to operate or service electrical equipment if standing water is present.
- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
- Never touch exposed electrical connections on equipment while the power is ON.

Section 7: Malfunction and Repair

Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.

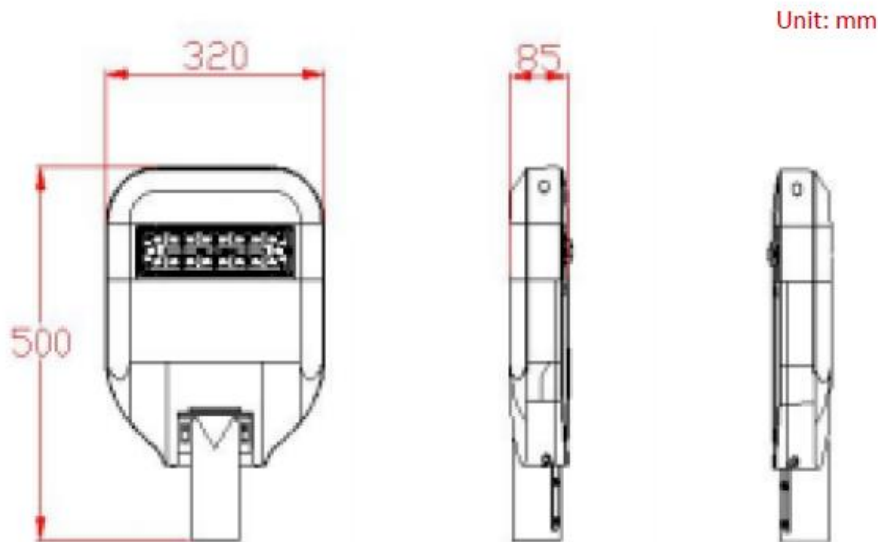
- Disconnect and lock out electrical power.
- Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in its manual.

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks. Only persons who are properly trained and familiar with Low Energy Designs equipment are permitted to service this equipment.

- Do not change lamps or components or make adjustments inside equipment with the light circuits ON.
- Never perform work on energized electrical conductors or equipment, except for measuring voltage or current and software upgrades.
- Always use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in your equipment manuals.
- Do not service or adjust any equipment unless another person trained in first aid is present.

- Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
- Use only approved Low Energy Designs Limited replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.
- Check mounting systems periodically to ensure their effectiveness.
- Do not attempt to service electrical equipment if standing water is present. Do not service electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with electrical equipment.

Section 8: Dimensions & Specifications



Product	Input Voltage	Rated Power	Weight	Dimensions
Norrskan 1-2	100 – 277V AC 50-60Hz	55 watts	5.6kg	500*320*85mm
Norrskan 3-4		120 watts	7kg	575*320*85mm

Environment Working Temperature -40 to +60 degrees C

System Efficiency > 120 lm/watt

IP Rating 67

Power Factor > 95

Section 9: Disposal

This product should be disposed of inline with applicable regulation and in conformance with WEEE and RoHS needs.

RoHS Compliance

The levels of environmentally sensitive, persistent biologically toxic (PBT), persistent organic pollutants (POP), or otherwise restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended through April 21, 2006.

Note: *Please retain this booklet for future reference*

Section 10: Contact Details

Any requests for information or claims should be address in writing to the following address:

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