

# Sustainable Energy Solutions



Energy Efficiency & Sustainability through innovative technologies

## **SOLAR POWERED LIGHTING with 4G / HD CAMERA**

PROPOSAL FOR

QUOTE NO -



## **SUMMARY**

| <b>CSE - NH 100</b>  | <b>QTY</b> |
|--|------------|
| 1. 40 WATT - 6000 Lumens<br>100 Watt / 18V Monocrystalline Solar Panel<br>LED Quantity - 105 pcs<br>Lifespan - 50,000 hours<br>Light Control Voltage 6V<br>LiFePO4 Battery - 420 Wh /18V | 1          |
| 2. 4G Camera with Mounting and Contol box<br>SD Card Slot - 256GB (not included in supply)<br>4G Card Slot - Aвалиable (4G Card/ plan not included)                                      | 1          |
| 3. Hot Dip Galvanised Pole - Hinged Base<br>Dia 76mm x 6000mm long<br>with Base Plate welded   | 1          |
| 4. Reinforced base with Bolt Assembly  | 1          |
| 5. Hoisting winch<br>(minimum One unit required)   | 1          |
| 6. PORTABLE BASE (CONCRETE)<br>Client to advise if portable base is required / preferred. POA  |            |

| <b>CSE - NH 150</b> |   | <b>QTY</b> |
|---------------------|---|------------|
| 1.                  | 50 WATT - 7200 - 7500 LUMENS<br>150 Watt / 18V Monocrystalline Solar Panel<br>LED Quantity - 105 pcs<br>Lifespan - 50,000 hours<br>Light Control Voltage 6V<br>LiFePO4 Battery - 575Wh /18V | 1          |
| 2.                  | 4G Camera with Mounting and Contol box<br>SD Card Slot - 256GB (not included in supply)<br>4G Card Slot - Avaliable (4G Card/ plan not included)  | 1          |
| 3.                  | Hot Dip Galvanised Pole - Hinged Base<br>Dia 76mm x 6000mm long<br>with Base Plate welded   | 1          |
| 4.                  | Reinforced base with Bolt Assembly  | 1          |
| 5.                  | Hoisting winch<br>(minimum One unit required)   | 1          |
| 6.                  | PORTABLE BASE (CONCRETE)<br>Client to advise if portable base is required   |            |

## KEY FEATURES

- ✓ **SOLAR POWERED LED LIGHT with LITHIUM BATTERY**
- ✓ **5 DAY BATTERY STORAGE CAPABILITY**
- ✓ **HD CAMERA PTZ (pan, tilt, zoom)**
- ✓ **4G COMPATIBLE**
- ✓ **5X ZOOM FUNCTION**
- ✓ **REMOTE VIEWING & CAMERA ADJUSTMENT**
- ✓ **MULTIPLE CAMERAS CAN BE ADDED & MONITORED**
- ✓ **REAL TIME VIDEO RECORDING & PLAY BACK**
- ✓ **RECORD TO HDD**
- ✓ **256 GB MICRO SD CARD SLOTS FOR DAILY/WEEKLY RECORDING**



Specification are subject to change without notice, due to constant improvement in product design



date / time

Recorded image of a site

## **KEY FEATURES**



**CE RoHS FC CQC IP65**

- Wireless application-Integrated solar panel, LED, lithium battery, micro-controller and other accessories into one system, simple and stylish.
- Micro-computer controlled-Combine light control system and time control system perfectly, ensure whole system more energy-efficient.
- Easy installation-No power required, no cables required, easy installation in 5 minutes.
- Solar panel angle adjustable-Adjustable in vertical and horizontal direction, ensure maximum efficiency of solar energy conversion.
- Good heat dissipation-Solar panel, battery and light body do not connect directly, they will not conduct heat to each other, to support good heat dissipation and long lifetime.
- Extreme light-Light efficiency reach 160lm/w, at same illumination, lower watt available.
- Lithium battery-Adopt lithium battery to replace traditional gel battery, longer lifetime.
- Modular design-All components are modular design and in standardized production. Battery can be easily replaced if needed.
- Low cost-Compared with traditional solar led lights, much lower cost, easy to transport.

## KEY FEATURES

- Low voltage driving, meet the Europe standard of CE RoHS FCC.
- No Hg, Pb or other hazardous materials, no radiation, human safety.
- IP65 grade, TVS lightning protection.
- Long lifetime of whole lamp, low maintenance costs.

## DETAILS

### Monocrystalline



- 18% photoelectric conversion efficiency
- Tempered glass cover
- 20-25 years lifetime

### High lumen led chip



- 45mil led chip, 160lm/w
- ≥50000hrs lifetime
- ≥70Ra CRI

### Smart Controller



- Unique design
- Combine light control and time control perfectly, ensure whole system more energy efficient
- Smart control, saving more and system works stably

### LiFePO4 Battery



- High capacity
- No pollution and stable
- 5-8 years lifetime, ≥2000 times charge & discharge
- High temperature resistance








### High quality body



- Patented design
- Aluminum alloy, solid and firm
- Zinc plated, anti-rust corrosion
- Variety of installation methods

## ADJUSTABLE SOLAR PANEL ANGLE - TO SUIT SITE CONDITIONS



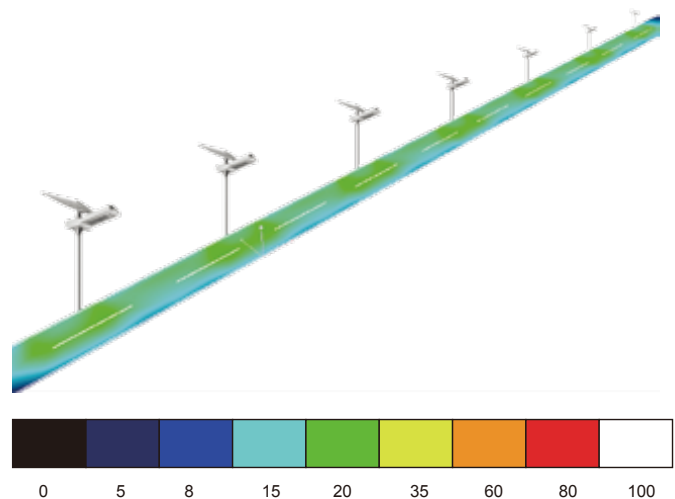
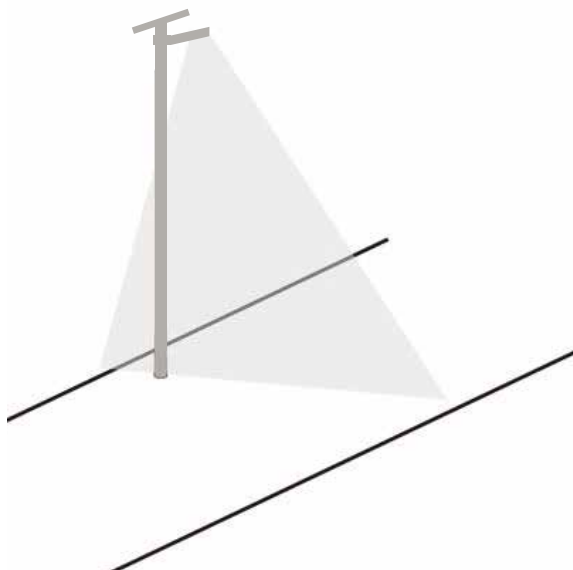
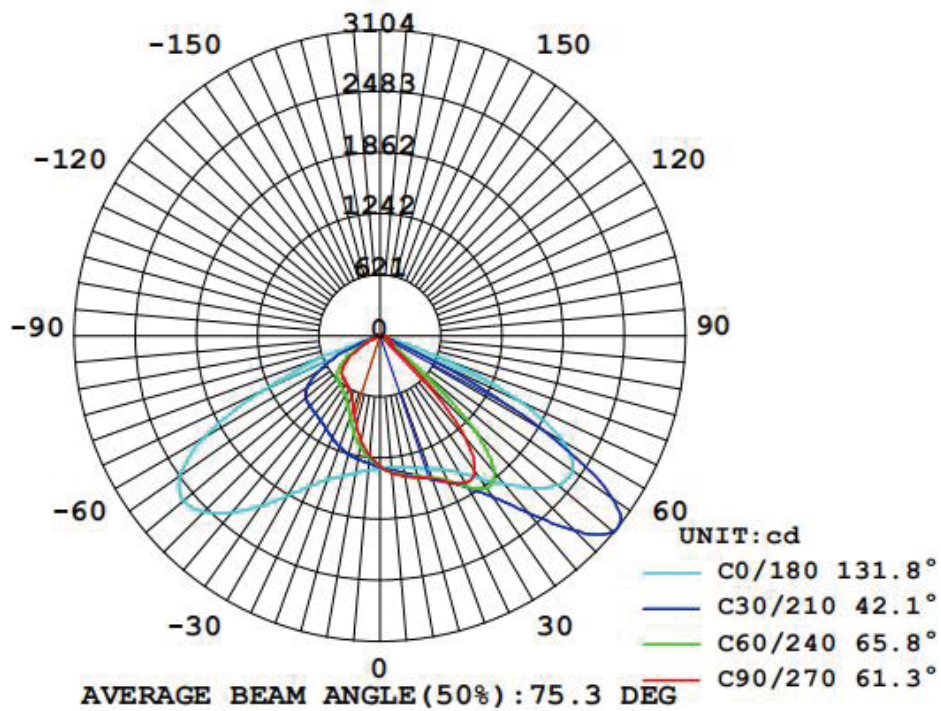
|  |   |  |  |
|--|---|--|--|
| <br>Unique Integrated Design    | <br>Power Control                | <br>LiFePO4 Battery | <br>Microwave Motion Sensor |
| <br>Light Efficiency Management | <br>Adjustable Solar Panel Angle |  | <br>Control Mode Management |

### SPECIFICATION

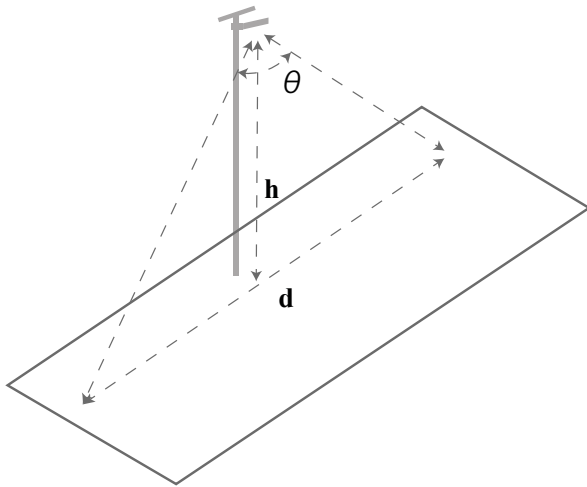
|                 | Type                          | CSE -NH100                                   | CSE - NH150    | CSE - NH 200   |
|-----------------|-------------------------------|--|----------------|----------------|
| SOLAR PANEL     | Solar Panel (Monocrystalline) | 100W / 18V                                   | 150W/18V       | 200W /18V      |
|                 | Panel Efficiency              | 19 - 20%                                     | 19 - 20%       | 19 - 20%       |
| LITHIUM BATTERY | Lithium Battery (LiFePO4)     | 424WH / 12.8V                                | 610WH / 11.1V  | 808WH / 22.2V  |
|                 | Charge Cycles                 | 2000   | 2000           | 2000           |
| LAMP HEAD       | Luminous Flux                 | 5000 - 5600 lm                               | 7000 - 7500 lm | 8400 - 9600 lm |
|                 | Lamp Power                    | 40W  | 50W            | 60W            |
|                 | LED Qty                       | 105 PCS                                      |                |                |
|                 | LED Chip                      | BRIDGELUX - 160 lm/watt                      |                |                |
|                 | Colour Temperature            | 3000 - 6000K                                 |                |                |
|                 | CRI                           | ≥ 70Ra                                       |                |                |
|                 | Lamp Head                     | Aluminium Alloy                              |                |                |
|                 | Elevation Angle               | 12° (attention to Dialux use)                |                |                |
|                 | Lifespan                      | 50,000 hours                                 |                |                |
| SYSTEM          | Light Control Voltage         | 5V   |                |                |
|                 | Light Distribution            | Batwing lens with polarised light            |                |                |
|                 | Beam Angle                    | X axis 140° Y axis 50°                       |                |                |
|                 | Battery Storage (days)        | 5 - 7 Rainy Days                             |                |                |
|                 | Sensor Activation (distance)  | 5 - 10m                                      |                |                |
|                 | Sensor time                   | 20 - 30s                                     |                |                |
|                 | Operating Temperature         | - 20°C ; +60°C                               |                |                |
| INSTALLATION    | Pole Top Diameter             | 76mm   |                |                |
|                 | Mounting Height               | Light - 5m ; Camera 4.5m                     |                |                |
|                 | Spacing between poles         | 10 - 15 (CSE NH100) and 20m (for CSE NH 150) |                |                |



## LUMINOUS INTENSITY DISTRIBUTION CURVES



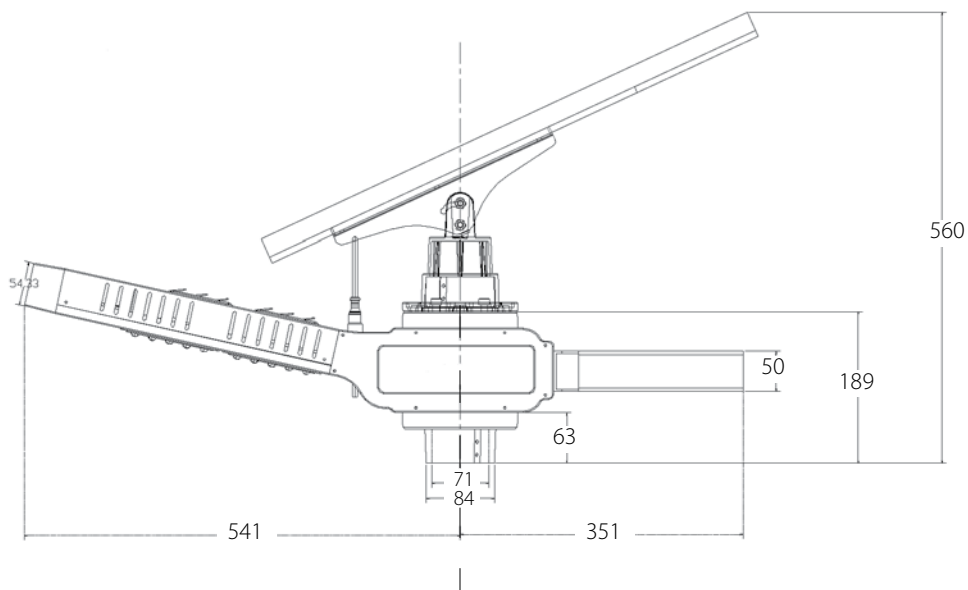
## MOTION SENSOR FUNCTION



| $\theta$ (Angle) | <b>h</b> (Height) | <b>d</b> (width) |
|------------------|-------------------|------------------|
| $65^{\circ}$     | 6m                | 10m              |

1. Sensor area tested from a person at the average height of 1.6~1.7m, walking speed for 1.0~1.5 m per second. If testing standard different, sensor area will be different.
2. Sensor functions are greatly influenced by metal environment, so pls install it far away metal block.
3. Sensor against the metal block in front of it.
4. Sensor can get through glasses, wood board, plasterboard and other non-metallic object.
5. Sensor should be installed under 6m height.

## DIMENSIONS



## 4G CAMERA - KEY FEATURES



### LOW POWER CONSUMPTION

Normal working power during day 4 Watt / Night 12Watts



### ROTATING ANGLE OF CAMERA

Horizontal : 0° - 355°; Vertical: 0° - 90°



### HIGH RESOLUTION

1.3 million pixels (1280 x 960 P)



### WIFI and 4G enabled

Wireless connection



### EASY CONNECTION by MOBILE PHONE OR PC

Mobile connection from "CamHi" software  
PC connection from "HiP2P Client" software

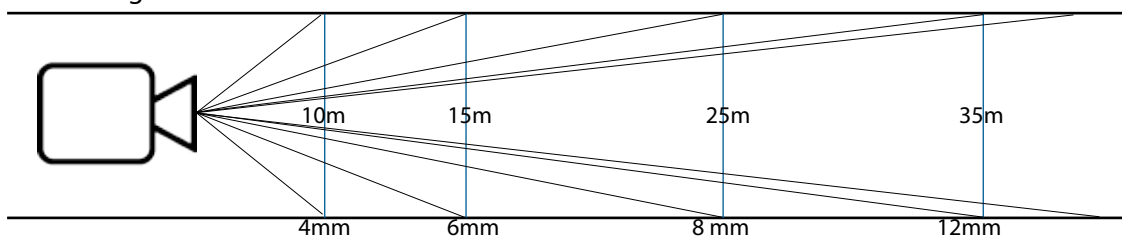


### 5X OPTICAL AUTO ZOOM

Zoom range: 2.7 - 13.5mm

| Focal Length     | 4mm   | 6mm | 8mm   | 12mm  |
|------------------|-------|-----|-------|-------|
| Monitoring Angle | 69.9° | 50° | 38.5° | 26.2° |
| Monitoring Area  | 10m   | 15m | 25m   | 35m   |

Monitoring Area



## 4G CAMERA - KEY FEATURES



1/2.8 Inch SONY Exmor  
Capture movement image has no serration



Support the Digital Wide dynamic,  
both to improve the dynamic range,  
prevent the movement of the shadow



Intelligent 3D noise reduction adaptive  
static and motion scene



Support digitally reduce shake, reduce the  
impact of wind or vibration on the image



Support lens edge correction to make  
image center and edge perfect



High signal-to-noise ratio the image is clear



Embedded Web Server, support IE preview  
video, parameter configuration, equipment  
upgrade, user permission management



Realizing each frame will not leak out

## 4G CAMERA - KEY FEATURES



## 4G IP CAMERA - PARAMETERS

|                  |                       |   |
|------------------|-----------------------|---|
| Basic parameter  | Size                  | 4 inch  |
|                  | Material              | Aluminium Alloy   |
|                  | Power                 | Silent: 1.8W    Rotating: 6W  |
|                  | Input voltage         | DC12V   |
|                  | Working Temperature   | -40°C~70°C  |
|                  | Waterproof            | IP66  |
|                  | Mounting height       | 3-4 m   |
| Camera parameter | Imaging sensor        | 1/2.8 coms  |
|                  | Effective pixels      | 1.3 million pixels (1280*960)   |
|                  | Horizontal resolution | 1.3 million pixels (1280*960) ≥1500 TV lines  |
|                  | Video format          | 25fps@1280*960  |
|                  | Minimum illumination  | 0.5 Lux@F1.6 (Colorful)<br>0.09 Lux@F1.6 (black and white)<br>0 Lux@F1.6 (IR mode)                  |
|                  | Optical ratio         | 5X automatically  |
|                  | Focal length          | 2.7-13.5mm  |
|                  | Field angle           | 81.1°-26.2°   |
|                  | Rotating angle        | Horizontal:0°~355°, vertical: 0°~90°  |
|                  | A-B points scan       | set arbitrary   |
|                  | A-B points scan speed | Three speeds adjustable   |
|                  | Inspection group No.  | 8 groups (8 preview pages each group)   |
|                  | Preview pages         | 128 pages   |
| IR LED           | IR LED qty            | Adopt Φ14=6 high power IR LED light, the monitoring range can reach more than 60 meters             |
|                  | IR LED Control        | Automatically switch low beam light or high beam light according to focal length of camera at night |
| Video            | Video Coding          | H.264.;MPEG4  |
|                  | Stream Type           | Main Stream: 1080P, Sub Stream: D1, CIF   |
|                  | Resolution            | 1280*960  |
| SD card storage  | 2Mbit/s code rate     | 128GB support recording 7 days  |
|                  | 1Mbit/s code rate     | 64GB support recording 7 days   |
|                  | 512Kbit/s code rate   | 32GB support recording 7 days   |

## 4G IP CAMERA - PARAMETERS

|         |                             |  |
|---------|-----------------------------|--|
| Network | Network type                | FDD-LTE, TDD-LTE, WCDMA/HSPA+, TD-SCDMA, GSM/GPRS/EDGE<br>LTE B1/B3/B8/B38/B39/B40/B41 |
|         | Working frequency           | WCDMA 2100/900MHz、TD-SCDMA B34/B39   |
|         |                             | TD-SCDMA B34/B39   |
|         |                             | GSM/GPRS/EDGE: 900/ 1800MHz  |
|         |                             | FDD-LTE/TDD-LTE: upload 50M / download 150Mbps   |
|         | Upload/download speed ratio | HSPA+: upload 5.76M / download 21Mbps  |
|         |                             | TD-SCDMA: upload 2.2Mbps / download 2.8Mbps  |
|         | USIM/SIM                    | Micro SIM card   |
|         | WiFi mode                   | Protocol: 802.11b/g/n, Max bit rate 72Mbps   |
|         | WiFi frequency              | 2412MHz-2472MHz  |
|         | WiFi security mode          | Open, WPA-PSK, WPA2-PSK  |

### Note:

1. This system do not include memory card.
2. Recommend brand of memory card is samgsung or kingston.

## TRAFFIC DATA OF 4G SIM CARD

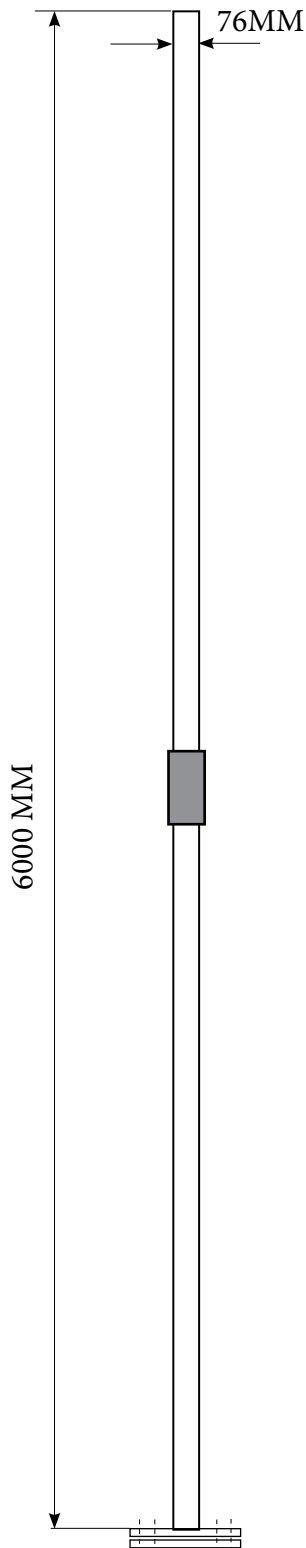
| Image quality | minute    | hour     | day       |
|---------------|-----------|----------|-----------|
| LD            | 800K-1M   | 48M-60M  | 1.1G-1.4G |
| SD            | 1M-1.5M   | 60M-90M  | 1.4G-2.4G |
| HD            | 1.5M-2.5M | 90M-150M | 2.4G-3.6G |

**Remark:** 1G=1024M      1M=1024kb

1. It will not use data if you do not connect to camera for monitoring.
2. Reset resolution through Cellphone or PC, traffic per minute is different according to different resolution as above.
3. Traffic per day is less than 500kb if do not use monitoring function the whole day.
4. Network operators may use different signal in different area, please recommend the best operator in local.
5. Please choose the right network operator with the right traffic plan.



## POLE DIMENSIONS



## POLE PARAMETERS

### Description

Our fixed poles offer a simple yet cost effective solution for temporary or permanent installations where a lowerable pole may not be necessary. They are available in medium duty variant that are suitable for a range of scenarios such as industrial, construction and public access areas.

### Specifications

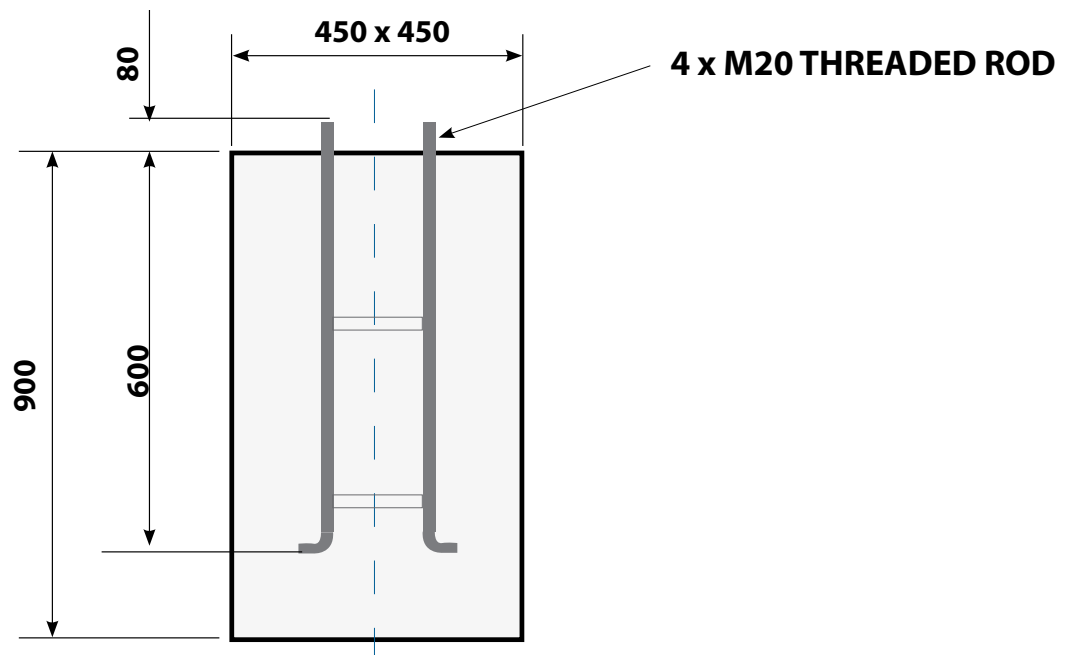
|                             |   |
|-----------------------------|---|
| Product                     | : CSE -MD-55                                  |
| Pole Height                 | : 6.0m  |
| Pole Construction           | : Split type                                  |
| Weight                      | : 41kg (approx)                               |
| Pole Diameter               | : 76.1mm diameter                             |
| Maximum Load Capacity       | : 30kg* (max)                                 |
| Overall Shipping Dimensions | : 3350 x450x450                               |
| Wind Region                 | : A,B   |
| Hoist Winch                 | : Supplied on request<br>(highly recommended) |

\*to be confirmed with engineering





## FOOTING DETAILS



## PORTABLE CONCRETE BASE

Portable Concrete Base provides you the flexibility to move the light and camera to desired locations in large construction sites. Details provided on request.

## Single Portable Concrete Base

**If portability is your major concern, then a concrete base is the ideal choice. Designed to be portable yet sturdy, this base is suitable for a range of solar lights - and you can pack it up and take it with you as soon as it's no longer needed.**



The single portable concrete block is designed for a range of portable solar lights, with a distinctive and practical design. Mobility isn't an issue thanks to the intuitive construction and built-in options for lifting.

- ✓ Strong construction
- ✓ Built-in galvanised fork ports
- ✓ Heavy duty lifting lugs
- ✓ Built-in ferrules for base plate mounting
- ✓ Strengthened with reo-bars running throughout

## PORTABLE CONCRETE BASE

# Double Portable Concrete Base

**For an even stronger solution to your portable solar light needs, then the double concrete base should be your number one choice. Made to suit a range of solar street lights this durable base can stand up to the harshest conditions and high winds.**



The double portable concrete block is designed for a range of portable solar lights, complimenting the single block model. It has been developed to withstand the B and C wind rated categories throughout Australia.

- ✓ Strong construction
- ✓ Built-in galvanised fork ports
- ✓ Heavy duty lifting lugs
- ✓ Built-in ferrules for base plate mounting
- ✓ Strengthened with reo-bars running throughout

## WARRANTY

3 Years manufacturer's warranty for any manufacturing defect .  
Contact Crystal Solar Energy for details.





**CSE SUSTAINABLE SOLUTIONS**

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