OPERATION MANUAL



SOLAR TOWER

Revision #0 (16/07/25)

THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

INTRODUCTION

This manual provides information and procedures to safely operate and maintain the SOLAR TOWER. For your own safety and protection from physical injury, carefully read, understand, and observe the safety instructions described in this manual. The information contained in this manual was based on machines in production at the time of publication.

DO NOT MODIFY or use this equipment for any application other than which it was designed for.

Keep a copy of this manual with the unit at all times. Operators manual for solar controller, inverter, battery charger and backup generator were also supplied with the unit at the time of shipment from the factory. The manual provides detailed operation and maintenance procedures.

Unit Model Number:_____

Unit Serial Number: _____

TABLE OF CONTENTS

1.SAFETY 1
1.1 SAFETY NOTES 1
1.2 OPERATING SAFETY 1
1.3 SERVICE SAFETY 2
1.4 RISK ASSESSMENT MATRIX 3
1.5 JOB SAFETY ANALYSIS 4
2.UNIT GENERAL INFORMATION 6
2.1 LOCATION OF UNIT NAMEPLATE 6
2.2 DIMENSIONS 7
2.3 SAFETY SYMBOL SUMMARY 8
3.OPERATING INSTRUCTION 9
3.1 SOLAR TOWER SET UP 9
3.2 DEPLOY THE OUTRIGGERS MANUALLY 10
4.MAINTENANCE 11
4.1 PRECAUTIONS 11
4.2 DAILY INSPECTION 11
4.3 REGULAR MAINTENANCE 11
4.4 ORDERING SPARE PARTS 11
5.DIAGRAM 12

1.SAFETY

1.1 SAFETY NOTES



This is the safety alert symbol.It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

This manual contains **DANGERS**, **WARNINGS**, **CAUTIONS**, **NOTICES** and **NOTES** which must be followed to prevent the possibility of improper service, damage to the equipment, personal injury or death. The following formatting options will apply when calling the readers attention to the **DANGERS**, **WARNINGS**, **CAUTIONS**, **NOTICES** and **NOTES**.

⚠ DANGER

Indicates a hazardous situation which, if not avoided,
will result in death or serious injury.

⚠ WARNING

Indicates a hazardous situation
which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Indicates a hazardous situation which, if not avoided,
may result in property or equipment damage.

Note: Notes contain additional information important to a procedure and will be found within the regular text body of this manual.

1.2 OPERATING SAFETY



Before using the SOLAR TOWER, be sure you read and understand all of the instructions! This equipment was designed for specific applications; DO NOT modify or use this equipment for any application other than which it was designed for. Equipment operated improperly or by untrained personnel can be dangerous! Read the operating instructions and familiarize yourself with the location and proper use of all instruments and controls. Inexperienced operators should receive instruction from someone familiar with the equipment before being allowed to operate or set up the SOLAR TOWER. The following points should be practiced at all times:

- The area immediately surrounding the SOLAR TOWER should be dry, clean, and free of debris.
- Position and operate the SOLAR TOWER on a firm, level surface.
- NEVER operate a unit in need of repair.
- Lower tower when not in use, or if high winds or electrical storms are expected in the area.
- Make certain tower is well grounded and securely fastened to a good earthen ground.
- When the mast is raising, make sure area above camera is open and clear of overhead wires and obstructions.
- Keep area beside tower clear of people while raising and lowering mast!
- Tower must be leveled and outriggers extended before raising tower. Outriggers must remain ex- tended while tower is up.
- If for any reason any part of mast hangs up or winch cable develops worn while raising or lowering

tower,STOP immediately and replace it.

- NEVER remove safety pin or pull mast locking pin while tower is up!
- NEVER use tower if insulation on electrical cord is cut or worn through.
- If used in dense crowds, please set up guards 5 meters away from the unit.
- NEVER take power directly from the batteries.
- If not being used for a long time, please turn off the breaker for the batteries.
- During mast extending, once the hole for locking pin aligns, stop operating the manual/electric winch.
- During solar charge process, do not unplug each panels and the connectors for solar input on the tower. It will lead to severe personal injury and equipment damage.
- NEVER put conductive metal objects on the batteries.
- Do not forget to insert the safety locking pin when cranking up the outrigger.

1.3 SERVICE SAFETY



This unit includes solar modules and batteries which are with high voltage circuits capable of causing serious injury or death. Only a qualified electrician should troubleshoot or repair electrical problems occurring in this equipment.

- Before servicing SOLAR TOWER, make sure the breakers for solar modules, batteries and camera are turned OFF. Disconnect the solar panels and batteries.
- NEVER allow water to accumulate around the base of the tower.
- NEVER wash the unit with a power washer or high pressure hose.
- Please wear goggles and insulating gloves, using insulation wrench to replace the batteries.
- NEVER disassemble and repair the mast in uneven place. The mast must be hung and installed with equipment.
- NEVER replace the tyres and outriggers or adjust and fix the brake system in uneven place.
- NEVER replace the manual (electric/hydraulic cylinder) winch when the mast is extending.
- Make sure slings, chains, hooks, jacks, and other types of lifting devices are attached securely and have enough weight-bearing capacity to lift or hold the equipment safely. Always remain aware of the position of other people around you when lifting the equipment.

1.4 RISK ASSESSMENT MATRIX

Step 1- Determine the Probability of an Event Occurring

PROBABILITY	COMMENT
5	Almost Certain: Experience or available data strongly suggests event may occur
4	Likely: Experience or available data suggests that a similar hazard has caused a comparable event elsewhere
3	Possible: Might occur at some time but not supported by data
2	Unlikely: Improbable under normal conditions
1	Rare: Unforeseeable or may occur in exceptional circumstances

Table1

Step 2- Determine the Consequence of the Event

Consequence	Safety	enviroment	quality	FINANCIAL
Catastrophic: 20	Fatality	Toxic release off-site with detrimental effects	Total rejection of product	Loss of > 70% of margin
Major: 10	Lost Time Injury, requiring notification to the Regulatory Authority	Offsite release with no detrimental effects. Notification to statutory authorities is required;	Major re-work	Loss of 31 – 70% of margin
Moderate: 6	Medical Treatment required	On site release contained with outside assistance.	Substantial re-work	Loss of 11 – 30% of margin
Minor: 3	First Aid treatment	On-site release immediately contained	Minor re-work	Loss of 1 – 10% of margin
Insignificant: 2	Insignificant	Incident confined to low risk area with no environmental impact	Minimal rework of product	Loss of <1% margin

Table 2

Step 3- Calculate the Risk

PROBABILITY	SEVERITY				
	CATASTROPHIC ‘20	MAJOR ‘10’	MODERATE ‘6’	MINOR ‘3’	INSIGNIFICANT ‘2’
Almost Certain ‘5’	HIGH(100)	HIGH(50)	HIGH(30)	Medium(15)	Medium(10)
Likely ‘4’	HIGH(80)	HIGH(40)	Medium(24)	Medium(12)	Low(8)
Possible‘3’	HIGH(60)	HIGH(30)	Medium(18)	Low(9)	Low(6)
Unlikely‘2’	HIGH(40)	Medium(20)	Medium(12)	Low(6)	Low(4)
Rare‘1’	Medium(20)	Medium(10)	Low(6)	Low(3)	Low(2)
NOTE: A Risk Factor between 10 and 100 requires a Risk Assessment and training before activity commences.					

Table 3

1.5 JOB SAFETY ANALYSIS

Table 4

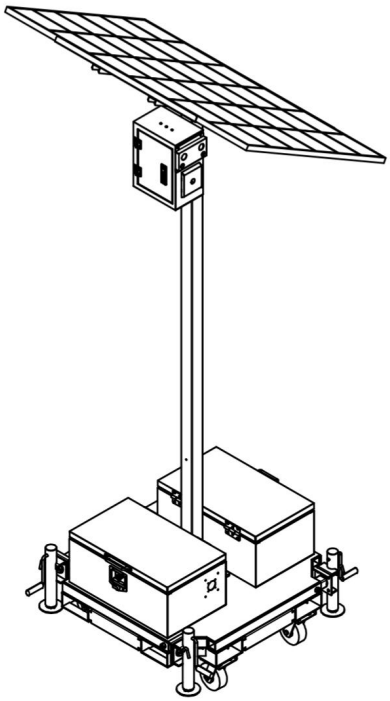
Task	Type of Expos ure	Hazard(s)	Rating	Controls
1	**Set Up** Operation Environment.	Setting up Lighting Tower may be hindered by obstacles that could introduce higher risk factors. i.e. overhead obstructions, contact with overhead wires.	8	Ensure operating area is assessed and all foreseeable risks are controlled (overhead electric wire, even surface)
2	**Set up** Ground Condition.	Stabiliser legs not able to support unit sufficiently.	21	Ensure unit is set up on firm level ground. Level unit before use.
3	**Set up** Use of Outrigger.	Unit over turning during set up. Lighting Tower becomes unstable as wind strength increases.	3	Lower and lock Outrigger into position before raising Lighting Tower Mast.
4	**Set up** Lowering of manual Outrigger (if fitted).	Spring pin for actuating manual Outrigger may become encrusted with dirt and mud. Drop down Outrigger may become crush point for operator or other's feet.	18	Ensure spring pins are clean and free of dirt and mud before attempting to actuate. Stand clear of rear drop down Outrigger when lowering stabilizer legs.
5	**Start up** Raise Mast.	The wire rope broke, causing the lighthouse to fall rapidly during its ascent. The manual crank slipped and injured the operator.	20	Ensure the mast wire rope is intact and has no cracks, and the winch wire rope is not entangled. Ensure the handle is fixed to the manual winch with a hexagonal screw and there is no risk of it falling off Shake the handle to raise the mast. After the mast is fully raised, use the fixing pin to insert it into the mast to prevent the mast from falling suddenly
6	**Operating** Light Condition.	The light is bright and may cause slight damage to the eyes	3	Do not look directly at the LED light when turning on the LED light switch or adjusting the light brightness.
7	**Operating** Electrical Energy.	Battery voltage 12v.	7	Avoid using in wet areas. Check all wiring and cables before use.
9	**Operating** Wind Gusts (for LED).	Wind gusts in excess of 32.6m/s may cause Lighting Tower mast to become unstable.	7	Do not use Lighting tower mast if wind gusts in excess of 32.6m/s are expected or forecast.

10	**Shutdown** Battery switch	If the lighting tower is not used for a long time and the battery switch is not turned off, it will cause a power shortage and make it difficult to start the product.	18	Turn off the battery switch when stop using the lighting tower.
11	**Shutdown** Down Mast.	The mast may get stuck if the lighthouse is not level.	9	Keep the lighthouse level before retracting the mast. Ensure that the wire rope and winch are not damaged.
12	**Shutdown** Raising Outrigger.	Solar towers may capsize in windy weather and on uneven ground.	13	Before raising your support leg, ensure the ground is flat and there are no strong winds.
13	**Moving** Lifting unit.	Unit may fall if not secured correctly.	7	Lift with using all 4 lifting points only or forklift pockets where available.
14	**Hazard** Battery contains battery acid.	Dangerous chemical may cause acid burns. Battery short circuit overheating can cause explosion	18	Take care when topping up or checking battery. Observe MSDS requirements.
15	**Hazard- Training**	Lack of proper training on the use and set up of tower may cause injury to un-qualified operators.	4	Obtain training from univ or refer to operating manual.

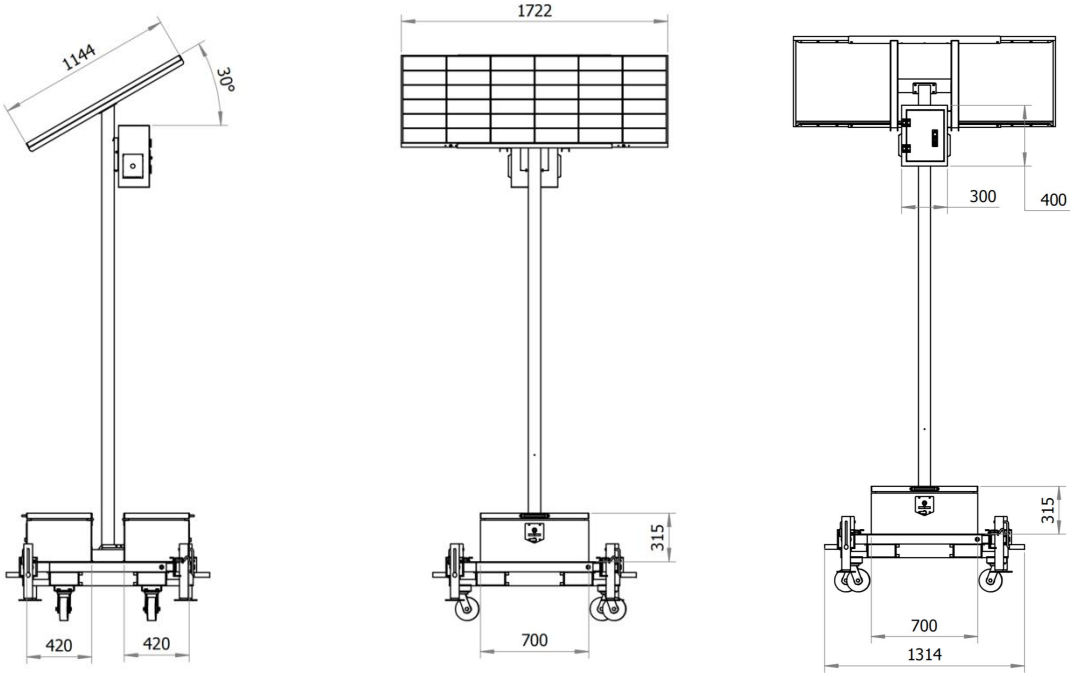
2.UNIT GENERAL INFORMATION

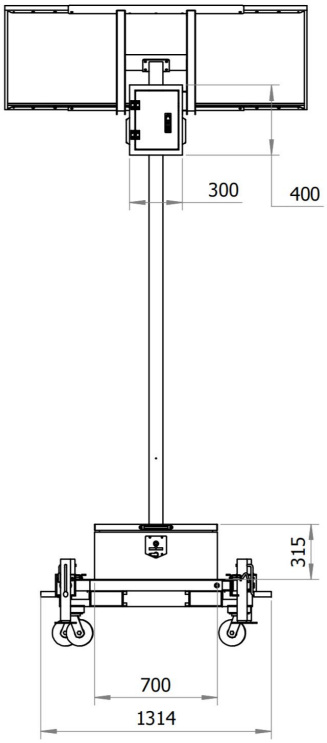
2.1 LOCATION OF UNIT NAMEPLATE

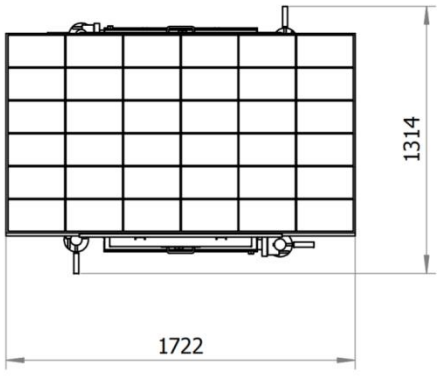
Refer to the locations illustrated below to find the unit ID plate. Important information, such as the unit serial number, GVWR and GAWR for your tower are found on the plate. Record the information from the plate, so it is available if it is lost or damaged. When ordering parts or requesting technical service information, you may be asked to specify this information.



2.2 DIMENSIONS







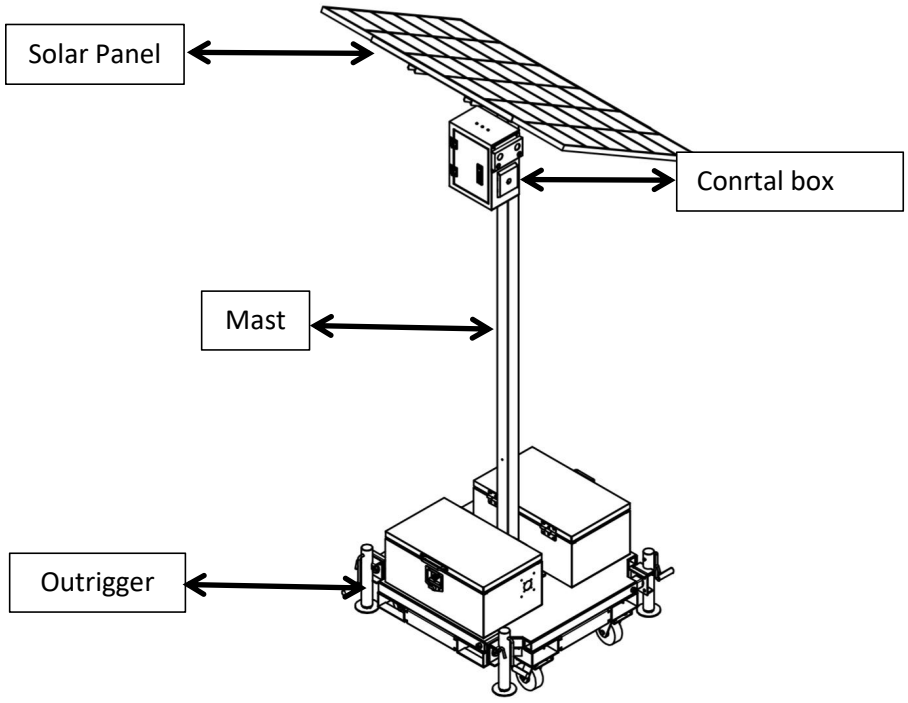
2.3 SAFETY SYMBOL SUMMARY

This equipment has been supplied with numerous safety and operating decals. These decals provide important operating instructions and warn of dangers and hazards.



3.OPERATING INSTRUCTION

3.1 SOLAR TOWER SET UP



1. Ensure the area immediately surrounding the solar tower should be dry, clean, and free of debris.

⚠ WARNING

The tower extends up to 3m. Make sure the area above the tower is open and clear

2. Transport the solar tower by forklift and place and operate the solar tower on a firm, level surface.
3. Pull out and lower the Outrigger to keep the lighthouse level and stable.
4. Adjust the angle of the solar panel so that it faces the sun (the recommended angle is the local latitude).
5. Open the control box, turn on the battery switch, turn on the solar panel and battery circuit breakers,
6. Close the control box and lock it.

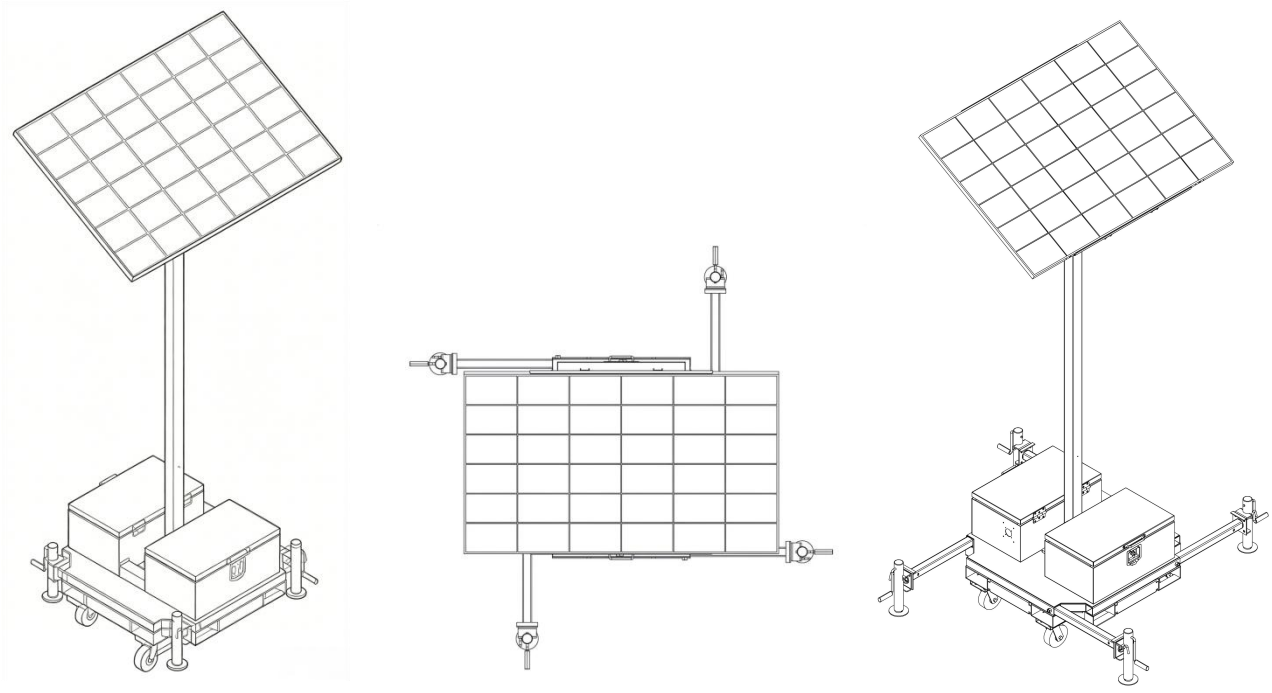
3.2 DEPLOY THE OUTRIGGERS MANUALLY

1. Check the outrigger legs and connection pins for excessive wear, bending, or damage. Ensure all locking pins are free from debris and can move smoothly.
2. Check the hydraulic/pneumatic components (if applicable) and electrical wiring for leaks, damage, or fraying.

⚠ WARNING

Do not deploy the outriggers on soft, uneven, or unstable ground. This may cause the unit to tip over, resulting in serious personal injury or death. Always deploy on firm, level ground.

3. Remove the transport locking pins from each outrigger leg.
4. While ensuring that no one is standing in the swing path of the legs, manually pull each outrigger leg outwards until it reaches the fully deployed position.
5. Insert and secure the locking pin into the designated hole on each outrigger leg to lock it in place. Ensure the pin is fully seated.
6. Adjust the outrigger jackscrews/feet to firmly contact the ground. Level the unit using the built-in level indicator.



CAUTION

Never operate the equipment with outriggers only partially deployed or unlocked. This will lead to sudden collapse of the unit, causing severe equipment damage and personal injury or death.

4.MAINTENANCE

4.1 PRECAUTIONS

Do not carry out any change or modification to any part of the solar tower or its electric system.
Do not carry out any maintenance when the battery is running.

4.2 DAILY INSPECTION

When the solar tower is in regular use, the following items should be checked daily:

– Check that the solar panels are clean and unobstructed. If necessary, clean the solar panels with a soft cloth or sponge and a cleaning solution of mild detergent and warm water.

– Make sure that the photocell is clean.

– Check the battery charge:

• Do not allow batteries to fully discharge. If the red battery-charge LED on the control panel is lit, charge the batteries immediately. See also “Battery charging”.

• Ensure batteries are fully charged before using the solar tower.

– Inspect all exposed wiring for damage, worn insulation and cuts.

– Inspect the winch cable for wear and damage.

– If the solar tower is vertical, verify the vertical-lock pin is engaged and secure

– Repair or replace worn and damaged components immediately. Never use any equipment that is damaged or in need of repair.

4.3 REGULAR MAINTENANCE

The following items should be checked regularly:

– Battery voltage should be checked once a week, to ensure the charging system is keeping the batteries charged. During winter, where sunlight is less intense, battery voltage should be checked more often.

– At least once a year, visually inspect battery terminals and cables for signs of corrosion,especially in hot temperatures.

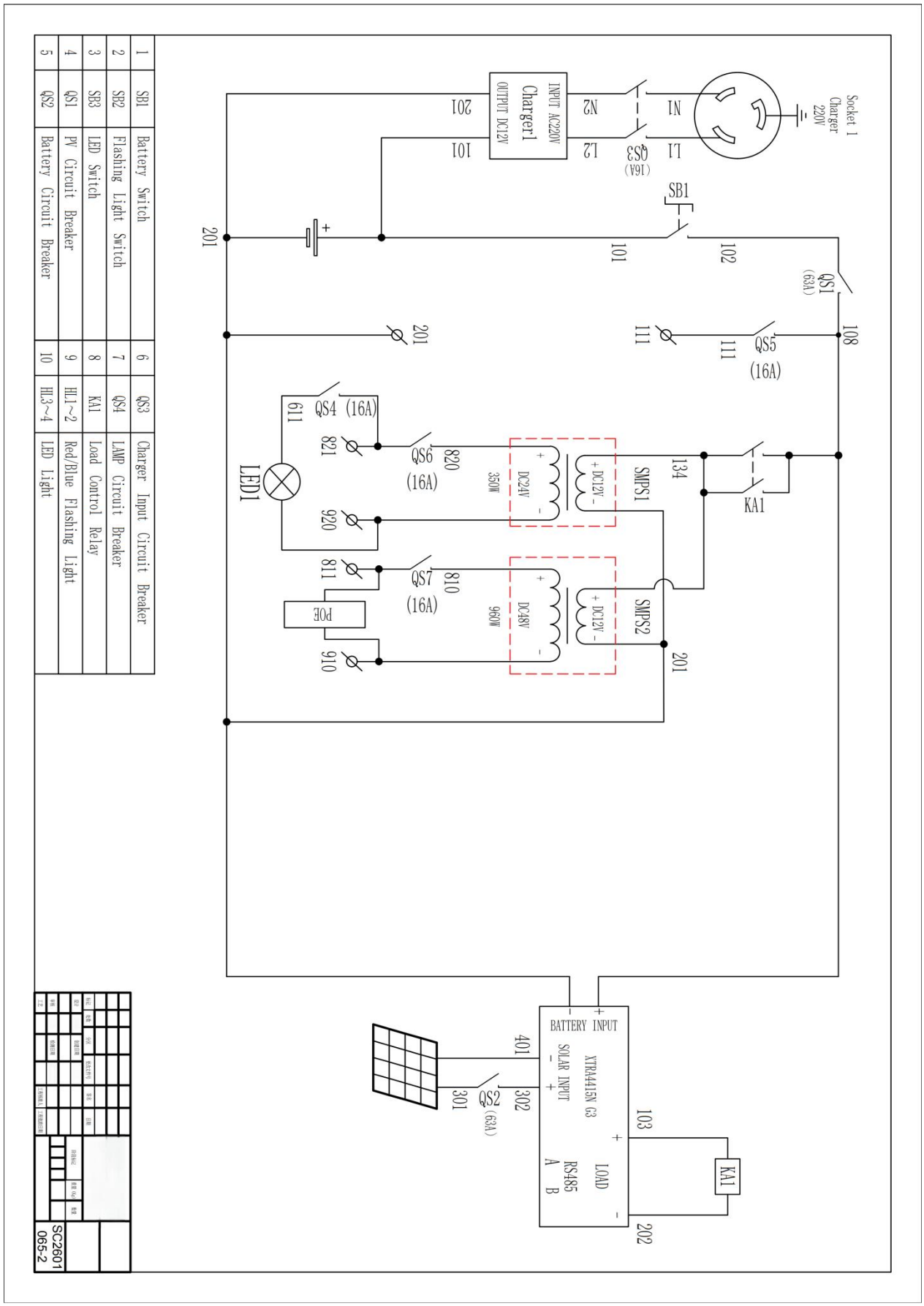
4.4 ORDERING SPARE PARTS

It is possible to order spare parts for the solar tower by making reference to the parts as mentioned in the enclosed Parts List manual.

Always quote the part number, the designation and the quantity of the parts required, as well as the type

and the serial number of the machine.

5.DIAGRAM



1	SB1	Battery Switch	6	QS3	Charger Input Circuit Breaker
2	SB2	Flashing Light Switch	7	QS4	LAMP Circuit Breaker
3	SB3	LED Switch	8	KA1	Load Control Relay
4	QS1	PV Circuit Breaker	9	HL1~2	Red/Blue Flashing Light
5	QS2	Battery Circuit Breaker	10	HL3~4	LED Light