Sundaya

the Meaning of Light

English

User Manual

S4

Sundaya

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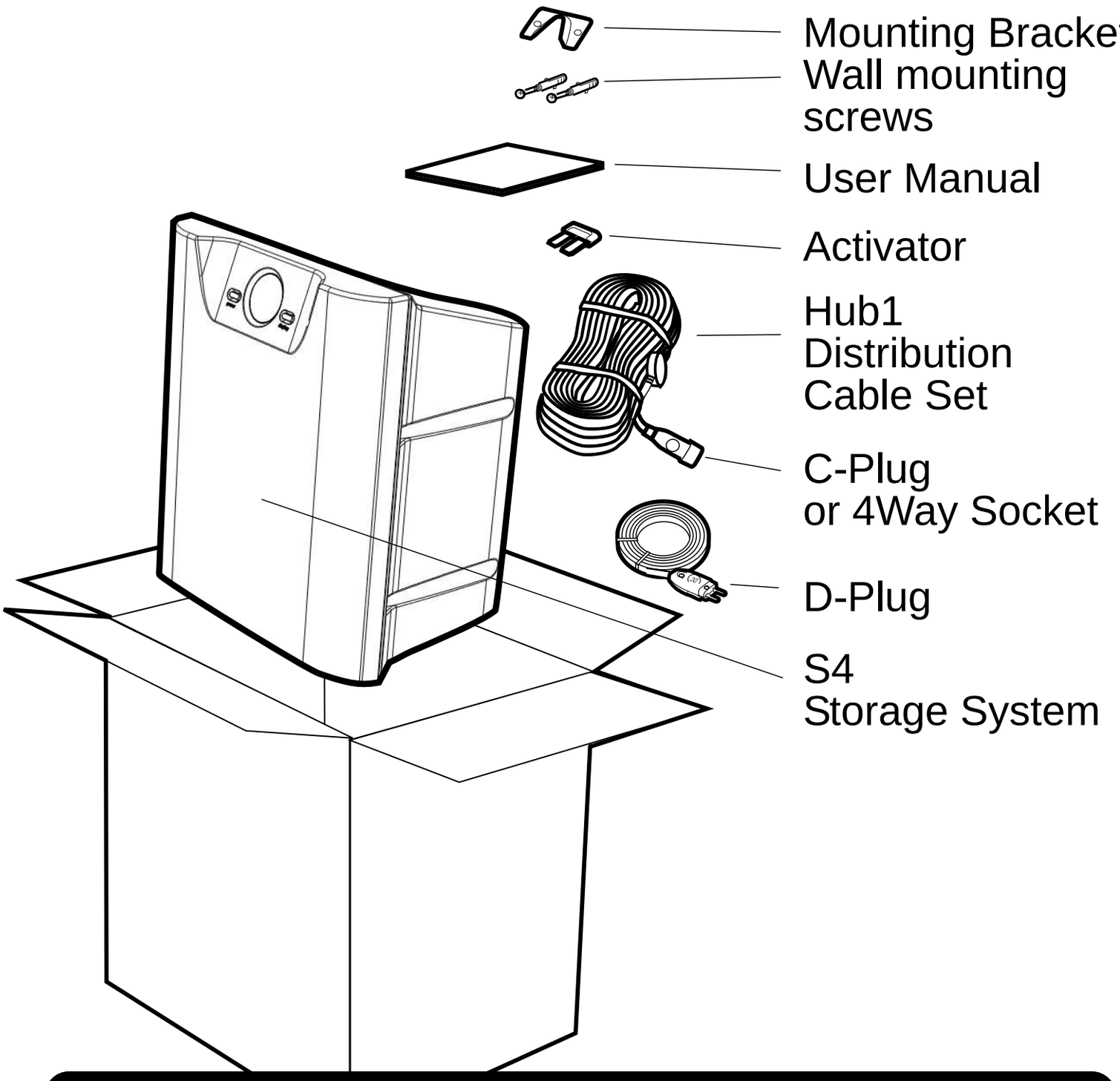
Contents

Out of the box



Warning: Please read this manual carefully before use and installation of the system.

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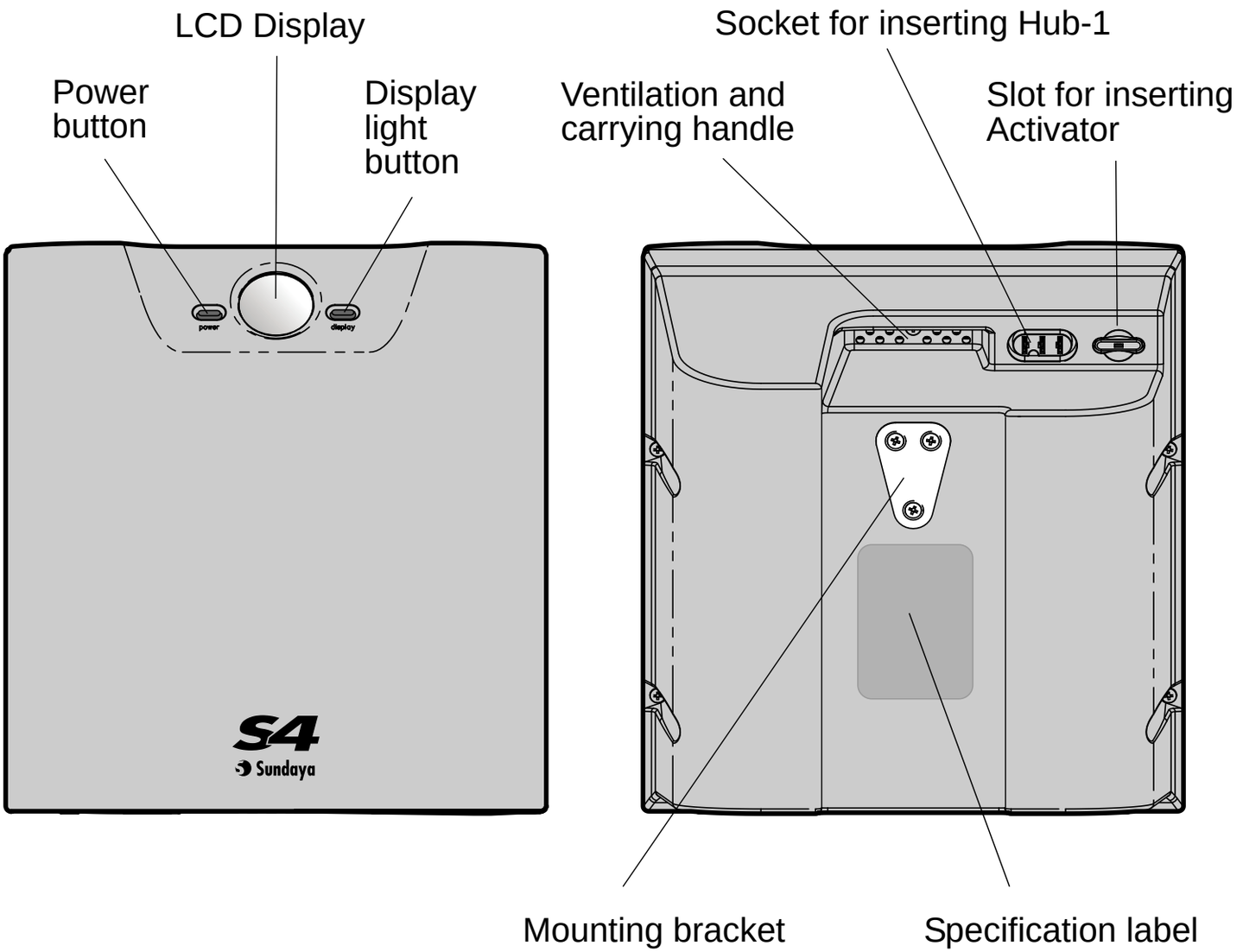
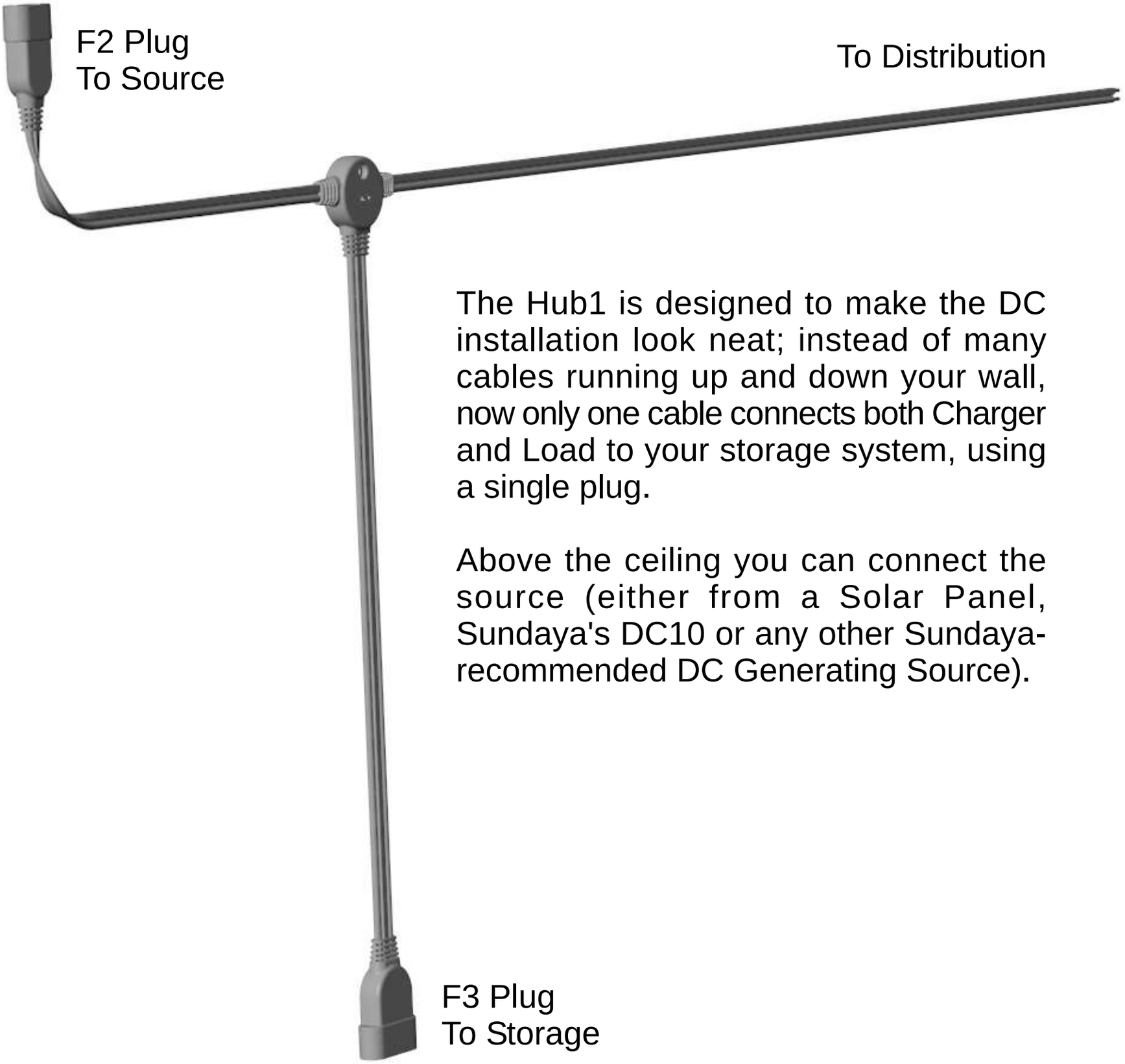
Item Descriptions

The S4 (Sundaya Smart Storage System) is a plug and play wall mountable sealed lead acid storage system of 480 Wh or 660 Wh capacity with a state of the art micro-processor based smart energy management system. The unit has a clear LCD display that displays battery state of charge and charge/discharge or rest mode. The unit is also equipped with an alarm to warn user when battery is 1 hour to forced disconnect.





The Hub1 is designed to make the DC installation look neat; instead of many cables running up and down your wall, now only one cable connects both Charger and Load to your storage system, using a single plug.

Above the ceiling you can connect the source (either from a Solar Panel, Sundaya's DC10 or any other Sundaya-recommended DC Generating Source).

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Installation

The installation of S4 consists of the following steps:

1. **Selection of suitable location**
2. **Installation of wall mounting bracket**
3. **Installation of Hub 1 cabling system**
4. **Starting up the system**

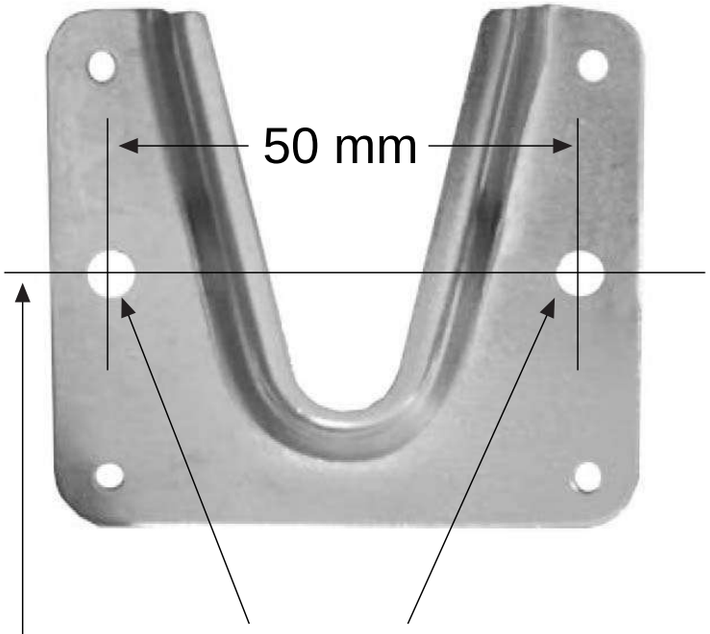
Step 1 : Selection of suitable location.

With DC low voltage systems it is important to locate the Storage System close to the appliance that consumes most power.

If you for example intend to use your S4 for powering lights and a computer or TV; then the most power consuming loads will be the TV or computer, and thus the S4 must be located as near as possible to this appliance in order to prevent unnecessary voltage drop in long cables.

Step 2 : Installation of Wall Mounting Bracket.

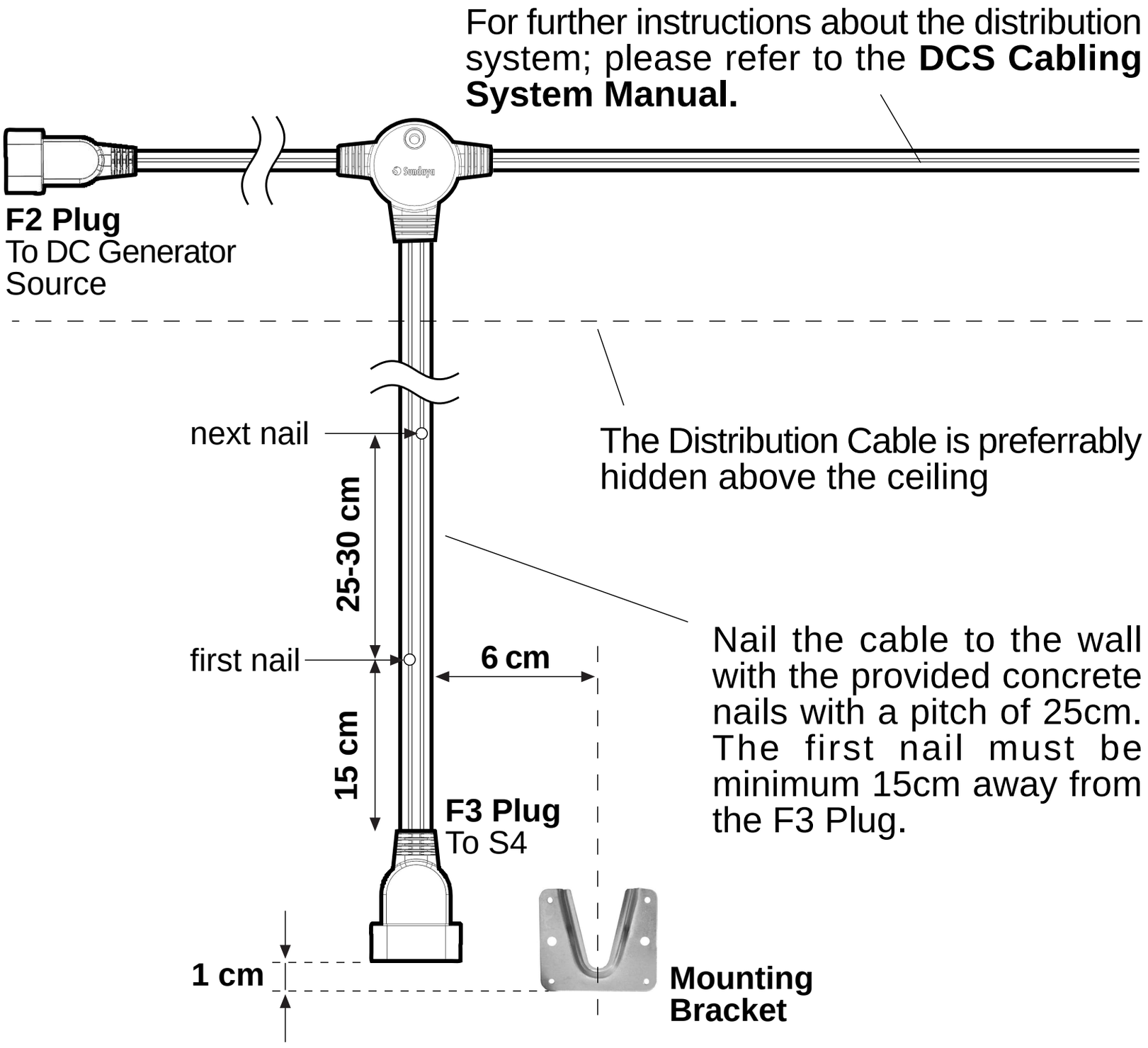
The S4 can be either put on a table or mounted on a wall. In case you mount the unit on the wall it is important to make sure that the quality of the wall is strong enough to support the weight of the unit. In case you are not convinced about the wall strength then we recommend to use bolts that go all the way through the wall to mount the S4 Mounting Bracket.



• 90 cm

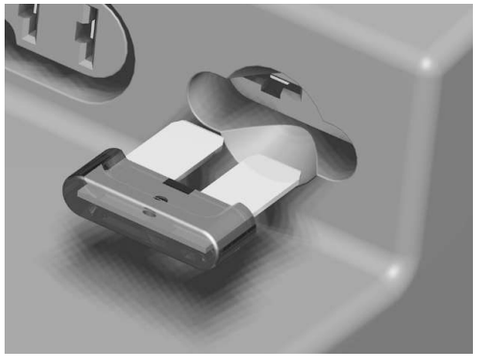
It is recommended to mount the S4 at least 90 cm from the floor level to keep it out of children’s reach.

Step 3: Installation of Hub1 Cabling System.



Step 4: Starting up the System.

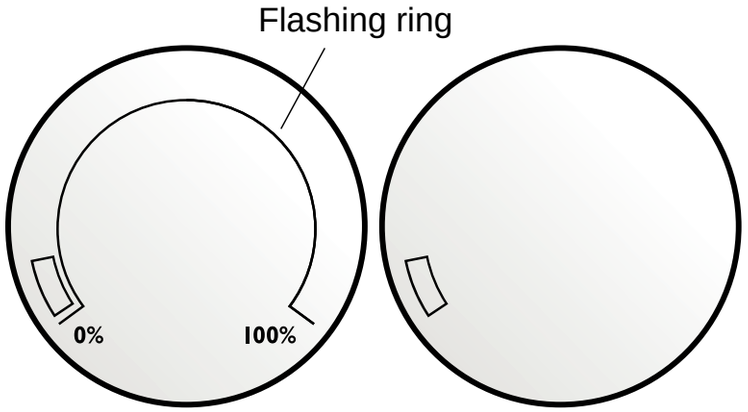
After the Cabling System and DC Generator Source have been installed; you can prepare the S4 to get connected. The first thing to do is to insert the activator in the back of the S4.



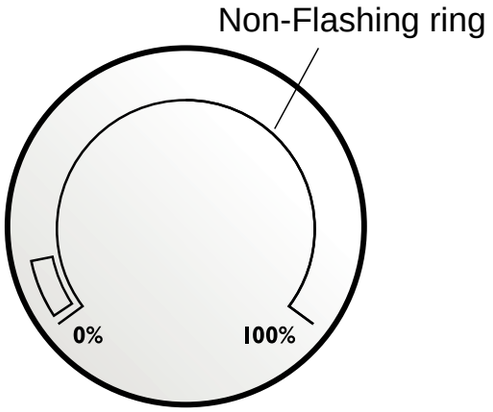
When you insert the activator; the unit will make a short beep; and the LCD display will power up.

The LCD will not display 100% state of charge right away; Please read the next paragraph on Operation to understand the working of the display

Before connecting the S4 to the Cabling System please make sure that the power switch is turned off. The condition of power switch can be detected from the display(when 0%-100% ring is blinking than power switch is in OFF mode. When 0%-100% is stable; the power switch is in ON mode)



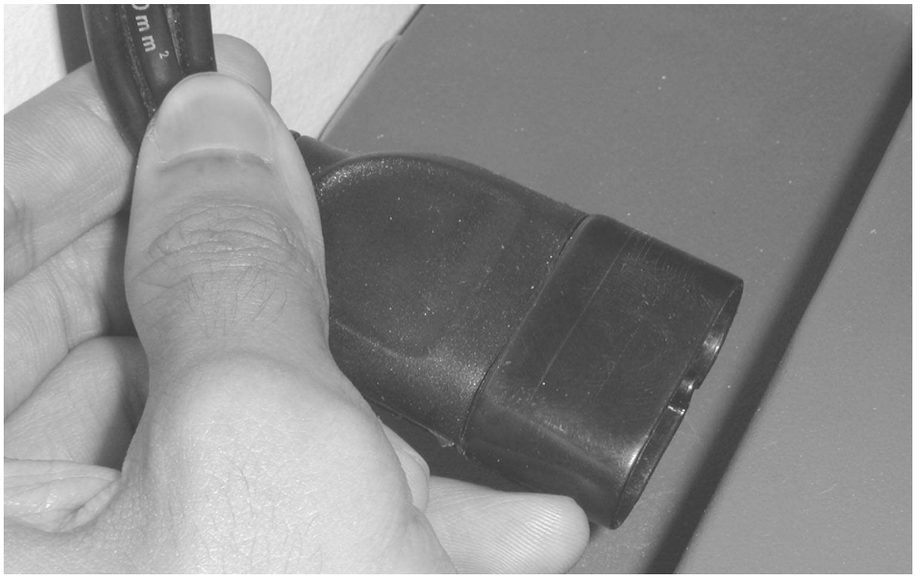
BLINKING > OFF



STABLE > ON

The power switch is an electronic switch that changes condition after pressing and holding for 3 seconds. From Off to On, or from On to Off depending on the condition prior to pressing the button.

Hang the S4 into the wall bracket and plug the F2 plug into the socket on the back of the S4.



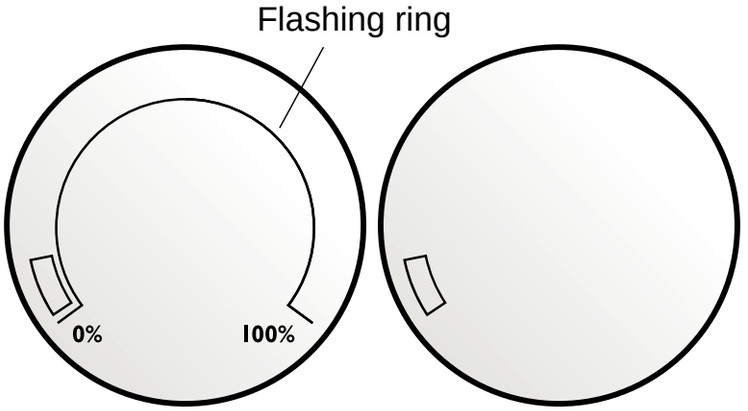
Then switch on the power button and test if all lights and appliances are working.

For operation of the S4 you must understand the following:

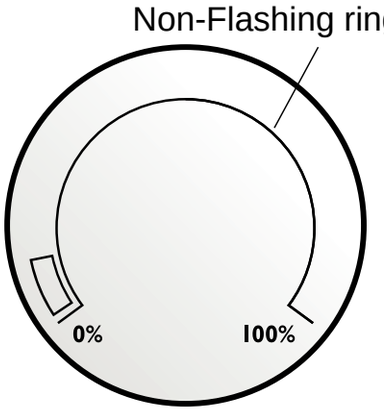
1) **Switch the master-switch**
2) **Monitoring the Battery Status**
3) **Warning from Buzzer**
4) **Save energy**

Switch the master switch.

The master switch is an electronic switch that changes condition after you press and hold it for 3 seconds. The current condition can be determined by observing the status of the **0%-100% ring**;



BLINKING > OFF



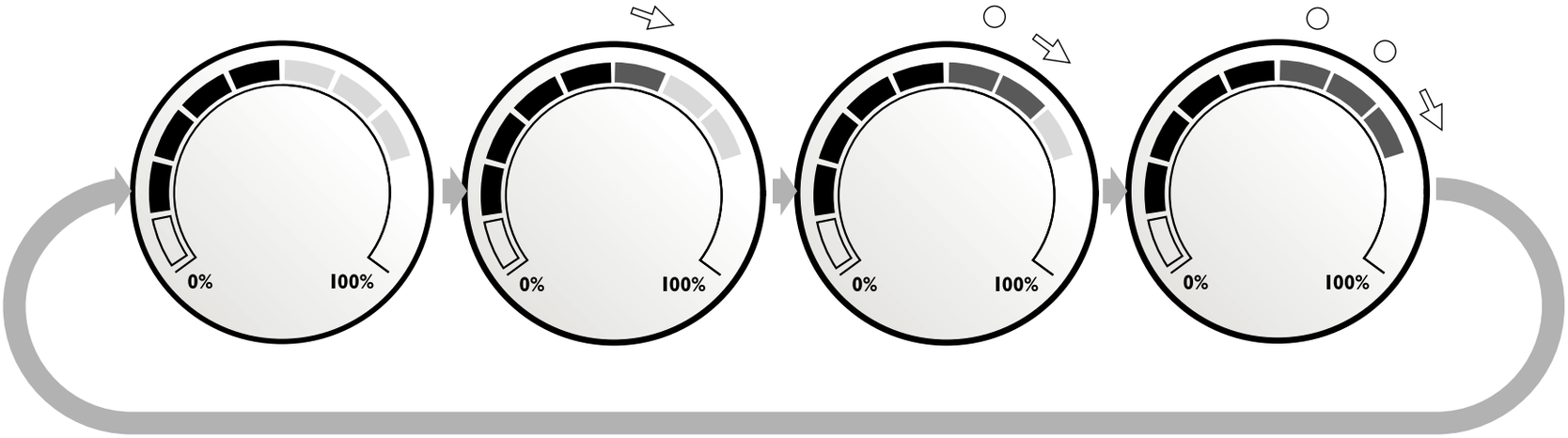
STABLE > ON

Monitoring the Battery Status.

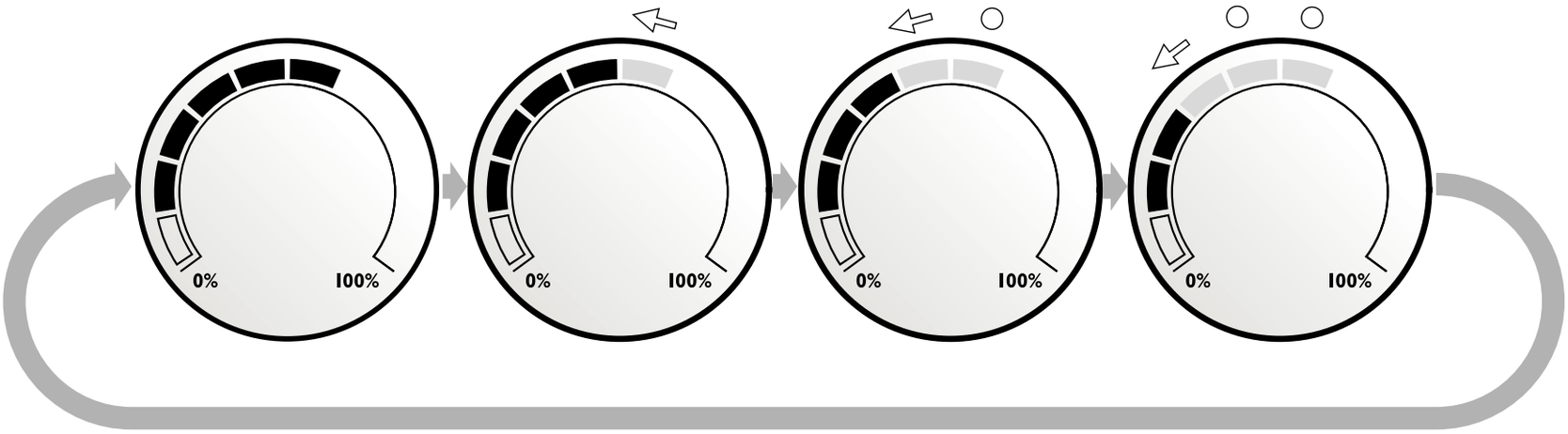
The Battery State of Charge of the S4 is displayed in 10 segments of 10%. If 3 segments are activated it means that the battery condition is 30%, 7 segments > 70% etc.

Besides the state of charge; the segments also indicate if battery is being charged, discharged or stationary.

If segments are walking up; it means that current into the S4 is bigger than outgoing current (battery is being charged).



If segments are walking down; it means that current going out of S4 is bigger than the current going in (battery is being discharged).



If the segments are standing still then it means current in and out are exactly the same or that no current is flowing at all (no charge and no discharge).

Warning from Buzzer.

The S4 has a buzzer to warn the user for certain conditions as follows:

1) Short Circuit or Overload
2) Only 10% of battery capacity is left for use.

Save Energy.

The S4 has an intelligent battery management system to make sure that the optimum life and performance can be achieved from the system. In order to achieve a long life of battery; it is important that the battery reaches a full charge minimum once in 10 days. The S4 electronics stores the condition of the battery of past 10 days and determines how much is available for use at present on the LCD screen. In case the battery has been used at low state of charge for several days; the electronics will reduce the electricity consumption by displaying less capacity on the display and cutting off load earlier even though still some charge is left in the battery.

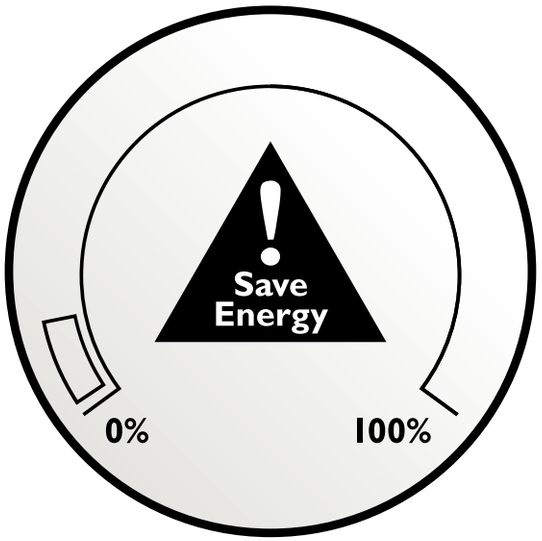
The charge left in battery has to be conserved in order to achieve a full charge in the days to come. Effectively this means that the display can show for example 30% although the real capacity is 80%. However 50% is not available for use; because the past 10 days operation of unit was not good and thus 50% needed to be conserved to be able to reach full charge in the days to come.

In case the full charge is achieved; the electronics will gradually make more capacity available for use again.

It can be the case that the display shows 50% although the battery has been fully charged already. Only if for 4 days in a row the battery condition is managed well, the display will give 100% capacity.

It is recommended to always manage the electricity consumption very efficiently sothat the battery is always healthy and can supply for long hours in case of emergencies or when electricity is most needed without cutting off.

The LCD will indicate with the “Save Energy” sign when battery has been insufficiently healthy in the past few days.



RESET:
In case you are not sure the display is indicating a proper State of Charge; you can reset the display by switching off and on again the master-switch.

Maintenance & Repairs

The S4 is designed to be completely maintenance-free, but of course it is recommended to regularly clean the S4 outer casing so that no dust or dirt builds up on the casing or display.

You can use a damp cloth for cleaning; DO NOT USE thinner or other solvents that can damage plastic surface.

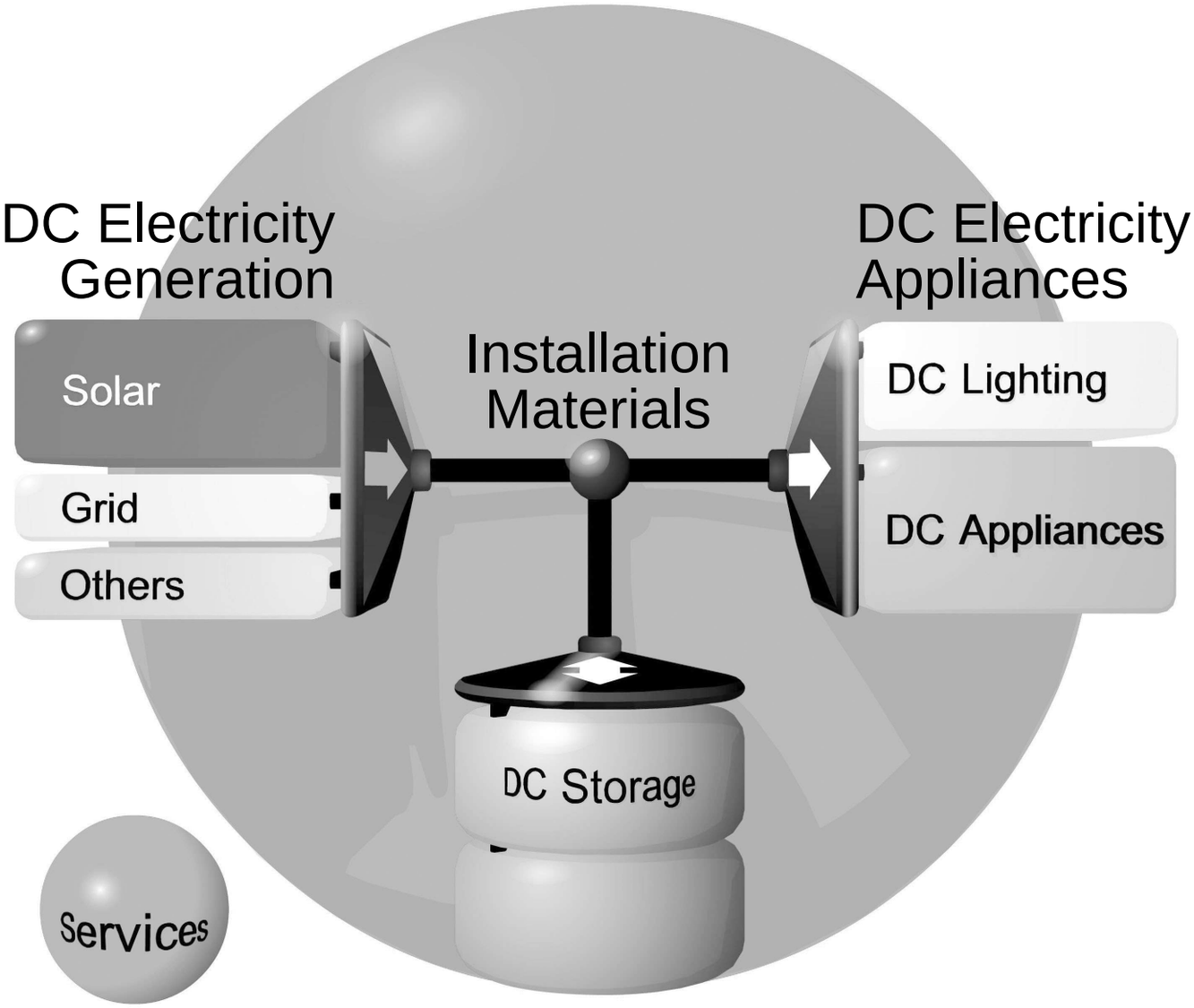
The S4 has no serviceable parts inside; in case electronics or battery have failed; spare parts are available for replacement.

1)	Battery 480 Wh	Order Code : 12-9408
2)	Battery 660 Wh	Order Code : 12-9409
3)	S4 Electronic Circuit 10A	Order Code : 12-9405

The replacement can be done at Sundaya authorized service agents or by DIY; the instructions for replacement of parts are included with the spare parts.

In case of DIY the warranty seal will be broken and no further warrantee can be provided.

The Sundaya System



Sundaya product categories are grouped as: System, Generator, Storage, Installation Materials, Lighting and Appliances. The overall categories are further supported by our Services.

As we have an integrated total solution comprising the different areas, the Sundaya System thus can provide you with the most efficient Decentralized Power solutions to your electrical needs.

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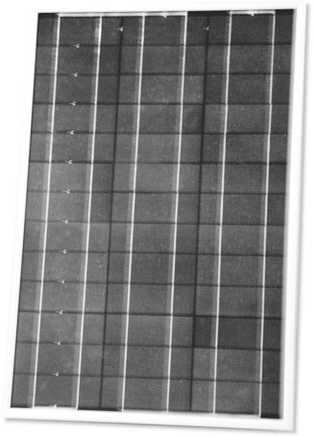
Sundaya Product Categories

DC Electricity Generation



PV Module

Our PV modules come pre-cabled for easy Plug and Play with the rest of the Sundaya System components. All you need to do is plug the module cable to the Hub1 that comes with the S4.

DC10

The DC10 converts AC power from 150-270V AC to 12V DC, for charging the S4 or S3 and simultaneously powering the DC Appliances. When AC power is available, the Storage System will not be discharged. Only when AC power for whatever reason is not available, power is supplied by the Storage System.

DC Storage

Our futuristic, intelligent, portable and wall-mountable DC Storage.

It comes in a beautifully designed sealed casing, giving protection to its user, as well as complementary to the house interior.

S4

Ideal for DC lighting, DC computers, DC audio equipment, DC televisions or any appliance that operates on 12V DC. Its controller is equipped with a custom microprocesor, constantly monitoring to protect the battery against overcharge, overdischarge and usage abuse, thanks to the FHI™ algorithm in the microprocessor's program. It makes sure that once every ten days the battery gets a chance to recharge back to full capacity.

The intuitive LCD at the front panel tells you the condition of the battery, whether it is charging, discharging, etc. A buzzer warning tells you if the battery is running low. Available in 480 and 660Wh capacity.

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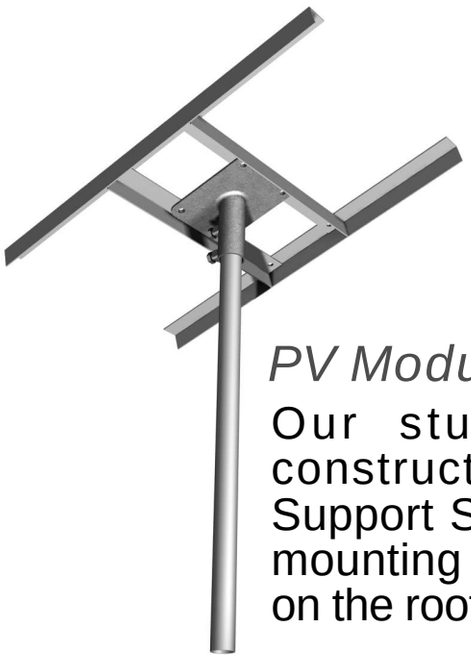
Installation Materials

T-Con

To make a cross joint between cables, just sandwhich them between two halves of a T-Con and then tighten the contact screws.



PV Module Support

Our sturdy and well constructed PV Module Support Structures makes mounting your PV Module on the rooftop an easy task.

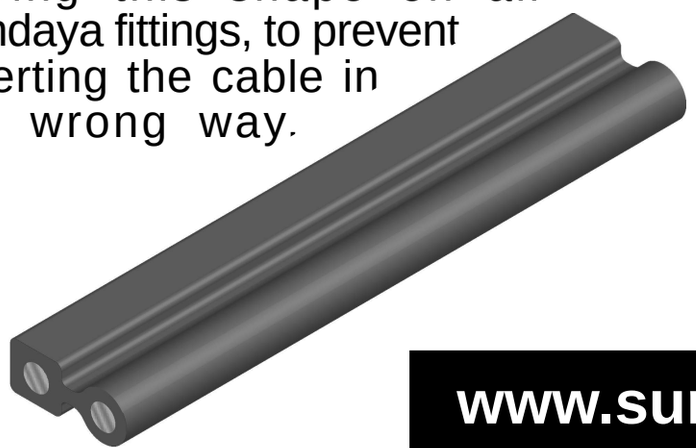
S-Con

The S-Con is like the T-Con, but used to connect a switch (Pull-On, wall switch, etc.) that will toggle the current flow to the opposite branch of the cross joint.

DCS Cable

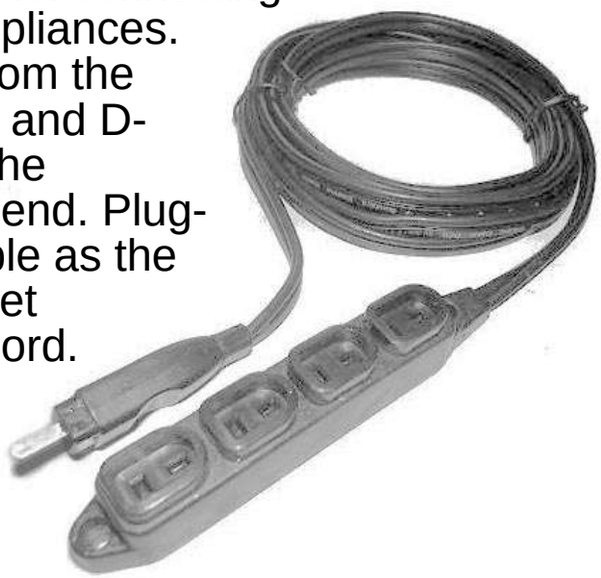
Unlike AC, wiring on a DC system has polarity, positive-negative, and it is dangerous if you connect them in the wrong way. So we designed a special cable that has a unique cross section shape. Impossible to switch polarities.

Cables have to go through windows having this shape on all Sundaya fittings, to prevent inserting the cable in the wrong way.



Plug-C D-Plug

This is a uniquely shaped pair of plugs for connecting your DC appliances. Plug-C is from the supply side and D-Plug is on the appliances end. Plug-C is available as the 4Way Socket extension cord.



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DC Lighting

A Light

The first and most famous creation of Sundaya. Often copied but never rivalled. Introduced in 1994, this 12VDC light has now proven its reliability of more than 10 years. Millions installed in homes worldwide. Exists in 6W and 10W, producing an undistinguishably similar brightness of 210 lumen and 280 lumen respectively.

MultiLight

Waterproof lamp for outdoor heavy weather conditions. The double-U CFL tubes are housed in an assembly of unbreakable handle and polycarbonate cover, mounted together with strong nylon screw rings and rubber gaskets. Available in 5W, 7W and 10W, producing 175, 245 and 350 lumen brightness respectively.

Lumi

Our small but beautiful 0.5W/2W incandescent lamp, ideal for bedroom or corridor night light. Consumes very little power. Available in 3 shades: red, purple and white.

Ulux

Our top of the line high efficiency CFL with a lifetime of over 10,000 hours. Comes in a two-piece assembly allowing replacement of the triple-U tubes. The base has an integrated preheat inverter that helps extend lifetime and increase its brightness.
The brightness ranges from 120 lumen for the Ulux3, to 800 lumen for the Ulux18.

Ulite

Economical CFL lights with a lifetime above 8,000 hours. The Ulite has an integrated instant start inverter.
Available in 3W, 6W and 9W, producing brightness of 120, 240 and 360 lumen respectively.

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e17 range

Apollo

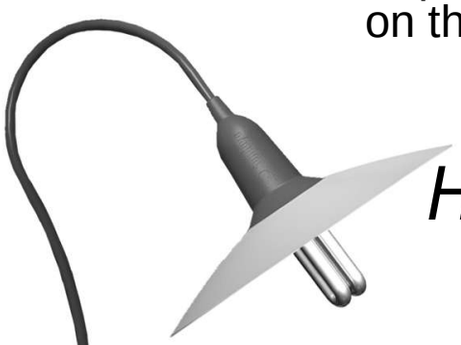
Extender

To prevent accidents in households where both 12VDC and 220VAC installations co-exists, Sundaya has developed a special DC standard armature range, with a fitting size that is in between the most common E27 and E14 AC standard. All Sundaya Lamp fittings are standardized for 12VDC using the E17 fitting.

The E17 range is unique because with only a few components and various shades you can build any lamp for any lighting purpose you require in your home, office or shop, on the ceiling wall or table.

Skirt

Pointer



Halo

Tablo

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DC Appliances

LCD TV
For home entertainment and as a window to the world.
LCD TVs operate in 12V DC and allows low power consumption for long hours of viewing. These flat screen TVs do not take up much space in your home, caravan or shop.

DC Computing
You can make a quantum leap by using DC powered computers, or by installing the Sundaya ATX 12VDC internal power supply in your existing desktop computer.

If you have power from the grid, you can combine power sources by putting a DC10 to charge your DC storage while powering your DC PC, so that when grid power is out, power will be automatically drawn from your S3 or S4, allowing you to continue working for many hours longer.

DC Radio, VCD, CD and Cassette Player
Music, movies and news, accessible to you for your enjoyment in areas without electricity. The DC VCD player and DC LCD TV will provide you hours of entertainment.

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General Specifications

Product name	:	S4 (Sundaya Smart Storage System)
Product Type	:	S4.480, S4.660
Product description	:	12VDC Electricity Storage System with integrated smart electricity management electronics.

Electrical Specifications

S4 Type	:	S4 480	S4 660
Nominal System Voltage	:	12 VDC	12 VDC
Charge Input Voltage Range	:	13.5-14.5 VDC	13.5-14.5 VDC
Maximum Charge Current	:	10 Amp	10 Amp
Load Output Voltage Range	:	11.5-14.5 VDC	11.5-14.5 VDC
Maximum Load Current	:	10 Amp	10 Amp
Maximum Storage Capacity	:	480 Watthours	660 Watthours
Controller Efficiency	:	98 %	98 %
Controller Software	:	Forced Health Improvement (FHI)®	
Ambient temperature allowed :			
Operating Temperature	:	-10°C to +55°C	
Storage temperature	:	-40°C to +85°C	
Enclosure protection class	:	IP55	
Other functionality	:	- Electronic overload / short circuit protection, - Reverse polarity protection - Surge protection	
Indicator model	:	LCD Display Panel	
Power consumption (on/off)	:	0.1 A (max) / 0 A	
Battery low Condition (0%)	:	11.65 +/- 0.05 V	
Battery Full Condition (100%)	:	12.55 +/- 0.05 V	
Indicator for Battery State of Charge	:	(0 - 100%) LCD Displays State of Charge (10 steps) with push button Power switch and Display switch.	

Mechanical Specifications

Enclosure Materials	:	ABS	ABS
Standard battery	:	40 Ah	55 Ah
Nett generator weight (w/o battery)	:	1.24 kg	1.24 kg
Gross weight (inc.Sundaya dry battery)	:	17 kg	19 kg
Gross weight (with box)	:	19kg	21 kg
Product dimensions (LxWxH)	:	275 x 206 x 295 mm	
Packaging Dimensions (LxWxH)	:	280 x 210 x 360 mm	

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