solidlights

User Manual
1103
1303
1203D

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www.solidlights.co.uk

Contents

1. Introduction

Thank you for purchasing a Solidlights product. Although Solidlights are simple to install and use, this manual will help you get the most from your light. Please read it carefully.

This manual covers a variety of Solidlights products and accessories. Not every section will be relevant to the light you have purchased.

Solidlights are some of the most advanced lights available today, with features such as:

- High efficiency LED light source and optics, capable of doing the same job as halogen bulbs up to four times as powerful
- Multiple brightness settings
- Automatic low battery warning, battery saver and cut-off
- Rugged construction: no glass parts to break
- LEDs rated to last 20,000 hours
- Weatherproof housing
- Versatile mounting options
- A choice of models for Lithium Ion rechargeable batteries or dynamo power

You can find additional information on the internet at

http://www.solidlights.co.uk/

including details of a comprehensive range of accessories and parts.

Getting Started

If your light was supplied in a kit with a battery, please note that the battery will need to be charged before first use. Refer to the 'Battery' section later in this manual for instructions.

While the battery is charging is a good time to read about fitting the light and operating it.

2. Specifications

Model 1103

Total power: 3 Watts, spot beam

Power source: battery

Dimensions: 62mm x 40mm x 37mm/2.4" x 1.6" x 1.4" (without bracket)

Weight: 108g/3.9oz excluding battery

Run time (with Solidlights battery 10030): full power 3 hours 45 minutes + 10 minutes reserve

Model 1303

Total power: 10 Watts, combined spot and flood

Power source: battery

Dimensions: 62mm x 66mm x 37mm/2.4" x 2.6" x 1.4" (without bracket)

Weight: 162g/5.7oz excluding battery

Run time (with Solidlights battery 10030): full power 1 hour 20 minutes + 20 minutes reserve

Model 1203D and 1203DR

Total power: up to 6 Watts, spot

Power source: hub dynamo or battery

Dimensions: 62mm x 47mm x 37mm/2.4" x 1.9" x 1.4" (without bracket)

Weight: 150g/5.3oz excluding dynamo

Standlight time: approx 5 minutes

Dynamo compatibility: Schmidt SON and Shimano NX30, NX32, 3D70, 3N70

3. Fitting the Light

Handlebar mounting

Your light is supplied with a quick-release handlebar mounting bracket. Attach the bracket to the handlebars in a convenient location using the thumbscrew.

In choosing a location, you might want to leave space for strapping a battery pack on to the handlebars as well.

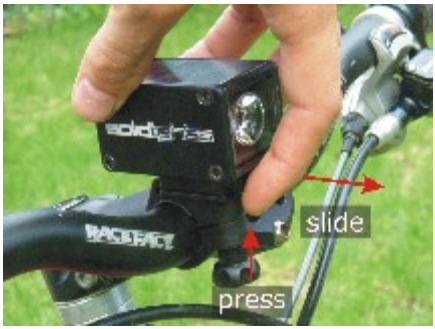
> Make sure the thumbscrew is towards the front of the bike.

You can use the supplied rubber strips to get a good fit on the handlebars. Don't try to fix the bracket to a tapered section of the bars: it will tend to slide sideways and come loose. Aim for a snug fit, but not too tight. It's advisable for the bracket to be able to move slightly if the light gets knocked hard, to avoid the risk of damage.

Fitting the light to the bracket

To attach the light to the bracket, slide it on to the bracket from the front. It will click into place.

> Each time you fit the light to the bracket, take a moment to check that the bracket's thumbscrew is properly tightened.



To remove the light from the bracket, hold the button underneath the front of the light and slide the whole light forwards. It should slide off the bracket easily.

Fitting the battery

If you are using a battery, attach it in a convenient location. The Solidlights battery pack is very small and light, so it will fit in a wide variety of places, depending on the frame and handlebar design. Some popular ones are:

Underneath the handlebars

On the stem

Under the frame's top tube

On the front of the head tube

Wherever you choose, make sure you loop any excess cable up so that it can't get tangled in other parts of you or the bike.

Fork crown mounting

The 1203D and 1203DR are available with an adapter for fork crown mounting. This adapter is also available separately as part number 40047.

Assemble the adapter and light to your bracket using the M6 screw and nut. Since the walls of brackets vary in thickness, two washers are provided to fill any space if required. In the case shown they are not necessary.

Make sure there is enough thread showing on the screw to allow the nut to get a secure grip.

NOTE: THE BRACKET IN THE PHOTO IS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND IS NOT INCLUDED WITH THE LIGHT.

Once the bracket is fitted to the bike, the angle of the light can be adjusted by slackening either of the fixing screws, adjusting, and retightening. Ensure that all fixings are firmly tightened to prevent the light becoming loose during riding.

Helmet mounting

The 1103 is particularly suitable for helmet mounting, and is supplied with an adjustable helmet mounting bracket. This bracket is also available as an optional accessory for the larger 1303.

The angle at which the helmet mount holds the light is adjustable by loosening the thumbscrews at each side. Adjust it to the desired angle and tighten the screws again.

3. Fitting the Light

To fit the bracket to a helmet, thread the Velcro strap through some convenient vent holes in the helmet, being careful not to snag any of the helmet's pads. Put the end of the strap through the loop at the opposite side

of the bracket, and pull it tight, fastening the Velcro to itself.

There are two ways of attaching the light to the helmet. Choose whichever is most convenient for you and your helmet.

Light and battery on helmet

The first is to mount the light towards the front of the helmet, using the adjustment in the bracket to aim the beam to a useful position. The weight of the light can then be counter-balanced by strapping the battery to the rear of the helmet using its Velcro strap. This leaves no trailing wires and keeps the profile of the helmet low, out of the way of overhanging branches and other hazards.

Light on helmet, battery elsewhere

The second method, which is useful if it's not convenient to attach the battery to the helmet, is to mount the light in a balanced position on the top of the helmet and keep the battery somewhere else, for example in the top of a rucksack or attached to a rucksack's shoulder strap.

Changing Brackets

The mounting bracket, either helmet or handlebar, is attached to the light using a single screw. To change brackets, simply remove the screw using a cross-head screwdriver, remove the old bracket, fit the new one, and replace the screw.

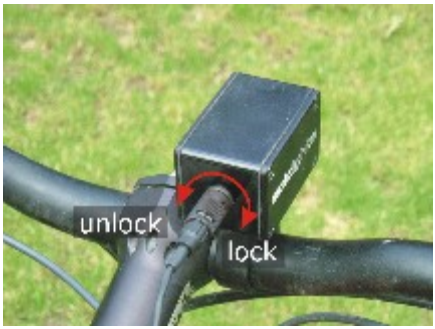
There may be a rubber pad under the handlebar bracket: take care not to lose it.

> Do not operate the light with the bracket mounting screw removed for more than a few minutes. It is important for cooling the LEDs.

4. Using the Light – Battery Models

Wiring up

Attach the power cable from the battery to the light. The connector has a twist-lock action and will only fit one way round. Make sure the holes in the battery socket are lined up with the pins on the light. The connector should slide in quite easily – don't force it and risk bending the pins.



The barrel on the outside of the connector turns clockwise by just less than quarter of a turn to lock.

Battery Test Function

The battery test is activated each time a battery is plugged into the light. It indicates the amount of charge in the battery by flashing a series of short 'blinks' on the light. They have the following meaning:

Number of blinks	Battery charge
5	Full, or 100%
4	80%
3	60%
2	40%
1	20%
None	Nearly empty

Notes

The battery test function is only available on battery Solidlights sold after June 2006.

This indication is only meaningful using the standard Solidlights Lithium Ion battery. Other batteries may give misleading results.

Use of the Solidlights battery doubler cable may indicate slightly less charge than is really available.

Extremes of temperature, especially below-freezing cold, will also affect the reading.

Switching on and off

The light has just one control: the red button on the side. It's designed to avoid accidentally getting switched on and running your batteries down, and avoid accidentally getting switched off and plunging you into darkness on the trail.

To switch the light on, press and hold the button once for about a second or so. The light will come on at maximum brightness.

When the light is on, momentary presses will cycle through the brightness settings: low – medium – high – low – medium – high and so on.

To switch the light off, press and hold the button once for about a second or so.

Long press to switch on or off Short press to change brightness.

The standard brightness settings are:

Model 1103: 0.75W, 1.5W and 3W

Model 1303: 1W, 3W and 10W.

The run time will be much longer in the lower power settings than at full brightness, so using them will really help to conserve battery capacity on long rides.

If the battery gets disconnected while the light is on, the light will come back on at the same brightness when the battery is reconnected.

Battery Warnings

When the battery charge begins to get low, the light will flash brightly three times and then switch to its lowest brightness setting as a warning and to conserve the remaining battery power. By pressing the button, you can switch back to a higher brightness setting, but the low battery warning will probably happen again.

Once the low battery warning has happened, the light will continue to work at low power for 10-20 minutes depending on the model and battery type.

When the battery gets exhausted, the light will flash brightly three times and then switch off to protect the battery from excessive discharge.

Hints

To avoid flat-battery frustration, if you're not going to use the light for a few hours, disconnect it from the battery pack. Although the background current drain of the light is small, it will run the battery down over a period of a week or more.

5. Using the Light – Dynamo Model

Wiring up

Install the power cable from the hub dynamo to a convenient location on the bike. The cable is supplied with the correct connector for either a Schmidt SON or Shimano hub. Additional cables and handlebar brackets are available if the light is to be used on more than one bicycle.

The Schmidt hub has two tags. Fit one terminal from the cable to each tag: it does not matter which way round they are connected.

The Shimano hub has a single connector which will only fit one way round.

Ensure that the cable cannot snag on the hub, wheel or any other part of the bike. Use the supplied cable ties to hold it securely in place. Test the full range of motion of the handlebars to ensure that there is no stress on the cable at any point.

Attach the power cable from the battery to the flying lead on the light. The connector has a twist-lock action and will only fit one way round. Make sure the holes in the socket are lined up with the pins on the light. The connector should slide in quite easily – don't force it and risk bending the pins.

The barrel on the outside of the connector turns clockwise by just less than quarter of a turn to lock.

Switching on and off

The light has just one control: the black button on the side. It's designed to be easy to operate even with gloved hands.

The button cycles through the light's three operating modes: off, on and flashing.

To switch on the light for the first time, start the dynamo generating power by pushing the bike along or spinning the front wheel, and press and release the button. The light requires very little power to start working: walking pace is enough. Take care when operating the button: distractions while riding a bicycle can be dangerous.

> The button will only work when the light has power: either when the dynamo is generating power, or when the standlight is operating.

If power is lost while the light is on (the dynamo stops and the standlight is discharged), the light will retain the same setting (off, on or flashing) when power returns. This is a convenient feature which gives the ease-of-use of a mechanical switch with the robustness and reliability of an electronic one.

Standlight

The 1203D contains an internal energy storage device which charges up whenever power is available, even when the light is switched off. The speed at which it charges depends on the power available, but typically 5 minutes of riding (roughly 1 mile/1.6km) is enough to charge it up a useful amount.

When the dynamo stops generating power, the light automatically switches to a low-power mode and runs from the stored energy. Fully charged, it will provide useful light for 5-10 minutes at a brightness sufficient to warn other road users of your presence, or even perform tasks such as reading a map or fixing a puncture.

Available Power

The advanced electronics in the 1203D continuously monitor the power generated by the dynamo and adjust the brightness of the two LEDs to make best use of it.

Although both LEDs are lit at all times, their brightness is being adjusted to suit the power available from the dynamo. Note: early versions of the

1203D lit first one LED, then the other. This behaviour has now changed so that both are lit at all times.

The above speeds will vary slightly depending on the exact wheel, tyre and dynamo combination in use. Occasionally a momentary change in light output may be noticeable as the light readjusts itself. This is quite normal.

Battery-powered use

Although primarily intended to be used with a dynamo, the 1203D can also be powered from a battery (not supplied). The available power depends on the battery voltage:

Battery voltage below 6.5V: Standlight power only

Battery voltage 6.5V – 20V: Both LEDs fully lit, power 6W

An adapter cable (part number 40025) is available to allow a Solidlights Lithium Ion battery to be used. Alternatively, a cable with bare wire ends (part number 40024) is available to allow custom wiring.

> Note that the 1203D does not contain low-battery warning or cutoff features other than reducing to standlight power at 6V. Before using it with your battery, check that the battery will not be damaged by over-discharge if the light is left on.

Connecting a rear light

It is possible to connect a rear light if and only if the 1203D is fitted with a 4-pin connector, which plugs into a wiring loom for connection to the dynamo and the rear light.

2-pin connectors (standard)

4-pin connectors (allow rear light)

> Do not attempt to connect a standard dynamo rear light to a 1203D without the special 4-pin wiring loom. Because the 1203D allows the dynamo to generate more power than it would for a standard headlamp, the excess voltage is likely to cause damage to the rear light and result in unsatisfactory performance from both front and rear lights. Always use the correct wiring loom to avoid this.

Wiring up the rear light is simple. The connections on the wiring loom are labelled "Dynamo" and "Rear light".

The rear light will switch on and off at the same time as the front light. This means that the rear light will flash if the front light is flashing. However, if the rear light includes a standlight of its own, it will not flash. Note that the front light's standlight will not power the rear light after the bicycle has stopped.

Rear lights and frame connections

Most rear dynamo lights have one of their wires internally connected to the bicycle frame. The 1203D requires a 2-wire connection to the rear light and to the dynamo. If both the dynamo and rear light have a connection to the frame, both front and rear lights will be dim and tend to flicker, and damage to the 1203D may result.

This is never a problem with the Schmidt hub dynamo, because it does not have a connection to the frame. However, Shimano hub dynamos do have a frame connection. If you wish to use a rear light with the Shimano hub dynamo, it will need a minor modification. For full details of this modification for various rear lights, please see the Solidlights website at

http://www.solidlights.co.uk/

6. Battery and Charger

Solidlights Battery Pack 10030

Capacity: 7.5V, 2.2Ah

Operating temperature: charge 0°C to +50°C, discharge -20°C to +60°C

Technology: Lithium Ion rechargeable

Dimensions: 90mm x 42mm x 26mm

Weight: 133g

Lead length: 500mm

The battery pack is designed to be simple to mount to many convenient places. The red part is a special non-slip silicone rubber pad which both helps to prevent damage to surfaces and stops the battery sliding around. The Velcro strap can be wrapped round objects up to around 70mm in diameter.

The special elastic battery bag is the ideal place to tuck in any spare cable length to avoid tangles.

> Do not use the battery pack to power anything other than a Solidlights product.

If a single battery pack does not give enough run time for you, a cable (part number 40012) is available which will allow two batteries to be connected to the same light unit, roughly doubling the run time. This cable contains special safety features which balance the load on the batteries. Do not attempt to connect multiple batteries together in any other way: doing so could permanently damage the batteries or cause a fire. See section 8, "Battery Doubler Cable", later on in this manual for more details.

Charging

> Use only the correct Solidlights charger for this battery. Use of an incorrect charger could permanently damage the battery or the charger, or cause a fire.

The Solidlights battery charger is a small, light unit using the latest switch-mode technology for maximum energy efficiency. It is compatible with mains power from 100 to 240 Volts, and so will work all over the world. It is supplied with a mains cable suitable for your country, but its socket will accept a standard 2-pin mains cable of the type normally used with radios and cassette players (IEC 320-C7, often known as 'figure-of-eight') so obtaining a mains cable with the correct plug to be used safely when travelling in another country should be straightforward.

The charger is easy to use. To charge the battery:

1. Disconnect the charger from the mains supply
2. Wait a few seconds until the light goes out
3. Connect the battery to the charger
4. Connect the charger to the mains.

The indicator light on the charger will light up either red or green. Red means that the battery is charging. Green means that it is fully charged, and charging has stopped.

> If the sequence of operations above is not followed, charging may not start correctly.

A full charge will take 3-4 hours. However, 80% charge will be reached in about 90 minutes, which is useful to know if you're in a hurry. There is no need to completely discharge the battery before charging it: the combination of the Lithium Ion technology and the intelligent charger will prevent any damage to the battery.

> The battery pack contains a safety cut-out circuit. In certain rare circumstances, this may be activated, especially if the battery pack has been allowed to get very wet when not in use. To reset the cut-out, simply follow the charging procedure described above.

Storage

If the battery is going to be stored unused for more than a few weeks, discharge it to about half charge, for example by running an 1103 for about 2 hours or a 1303 for about 45 minutes. This will ensure optimum storage conditions for the battery and maximise its life. Charge the battery normally after storage.

7. Caring for the Light

The light is designed to be rugged and should withstand most outdoor conditions. It contains no glass parts, so it should not be damaged by accidental impacts such as being dropped on to rocks.

The light is not designed to be 100% waterproof, but will withstand continuous rain or brief immersion in water such as being dropped in a river.

If water does get into the light, it is normally detectable as condensation inside the clear front window. If the light is still operating normally, leave it switched on so that the heat it generates naturally can help to dry it out. In severe cases of water ingress, remove the four screws from the side panel without the button and remove it. Leave the light in a warm place such as an airing cupboard to dry. When reassembling the light, do not overtighten the screws.

It IS completely safe to operate the light off the bike or indoors. Although the light may get very warm to the touch, the 1303 contains an automatic temperature regulator to prevent overheating.

8. Battery Doubler Cable

The battery doubler cable, part number 40012, is designed to allow two Solidlights Lithium Ion batteries to be connected to one Solidlights light unit, effectively doubling the run time. The cable contains special protection circuitry which ensures that charge is drawn evenly from the batteries and prevents damage to them.

The cable is simple to use. Plug a battery into each of the male connectors, and plug the female end into a light. Switch the light on and power will be drawn from both batteries.

Hints and Tips

The cable is designed for use with the 1303 (10 Watt) light unit. Using the cable with the 1103 (3 Watt) unit may not achieve a full doubling of run time.

If you are using only one battery, remove the battery doubler cable to maximise the run time.

It is not possible to charge the batteries through the battery doubler cable. Although no damage will result, the batteries will not charge. Disconnect the batteries from the doubler cable to charge them.

Typical Run Times

Light unit: 1303 (10 watt)

Batteries: 10030 (7.2V 2.2Ah Lithium Ion)

Run time with one battery: full power 1 hour 20 minutes + 20 minutes reserve

Run time with two batteries and doubler cable: 2 hours 45 minutes + 30 minutes reserve

These run times assume fully charged batteries in good condition at 20°C.

9. Contact

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