

1 Welcome to Full Beam Ltd.

Thank you for investing in one of our high performance lights. You are now the proud owner of a well-engineered piece of kit suitable for all kinds of mountain biking and road riding.

Before using your high performance light, please read the quick start guide or this full manual for a better understanding of its full functionality.

In using this light you will experience a whole new world of adrenalin-filled night riding. Your only limit will be your own ability as this light is so bright you'll be tearing down the trails as fast as you would in daylight.

"With a Full Beam light on your bars there is no need for a helmet light" as this unit has both the 'throw' to see over fifty metres down the trail AND enough 'spill' to illuminate your periphery letting you see round corners with ease.

The proof is in the pudding and we are confident you will be more than satisfied by the performance of your new light.

So without further ado, happy night riding, get to your nearest big trail and unleash the beast!

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3 Safety & System Care

3.1 Safety Warning

This is a high performance, high power system so care must be taken when using this system.

Do not look directly into the light at close range.

Do not use any other battery or components from any other manufactures' light system as they are likely to be incompatible with this system and subsequently cause damage to either the LED lamp or the battery.

When using this light system on the road, especially around other road users, please only use the low power setting. It is also advisable to keep the beam pointing low.

The battery comes supplied only partially charged. Remember to charge before first use.

3.2 Battery Care

The battery bag/pouch that comes as part of this system is weatherproof, very rugged and has been designed to protect the battery from the elements. The battery contained within is a high capacity Lithium-Ion pack with in-built balance and protection circuitry and it will last up to 500 recharges.

Please adhere to the following points to maximise the life of your battery and ensure safety.

- Do not puncture, strike, or place heavy items on top of the battery.
- Do not completely immerse the battery bag in water.
- Use only the charger provided to charge your battery.
- Never charge the battery when the temperature is below 5 deg C.
- Store the battery in a cool dry place and never let it exceed 60 deg C.
- It is not recommended to leave the battery in a car on a hot sunny day.
- Do not store for long periods of time in a fully discharged state.
- If not being used for a period of longer than a week, it is recommended you store the battery partially charged.
- Keep out of reach of small children and animals.
- Do not ingest any part of the battery or light system.
- Please dispose of a damaged battery at your local battery recycling point.

3.3 Lamp Unit Care

The LED lamp unit is extremely tough with a toughened scratch-proof glass front and will survive many a wipe-out, but please take note of the following points:

- Try not to drop the light onto a hard surface such as concrete or metal.
- Clean the lens with a wet cloth or paper towel.
- You can spray the light to clean it as long as the cable is still plugged in at the back.
- The lamp connector and switch are IP67 rated to 1m of water but it is recommended you do not completely immerse the unit in water for long periods of time.
- Unplug the cable from the light when not in use to prevent accidental turn on.

4 Set-up and Getting Started

4.1 Charging the Battery

Unpack all the items from the box/case. Before attaching the light system to your bike for the first time you will need to fully charge the battery. It is supplied only partially charged. The charger comes as standard with a UK mains plug. If you are using the charger in a non-UK socket you will need a suitable adapter for the country you are using it in. It will work with any voltage between 110v-240v AC.

Plug the charger into a mains socket. Open the battery bag and plug the charger into battery socket. The charger has an LED indicator on the back:

Red = Battery charging.

Amber = Battery final stage trickle charge.

Green = Fully charged battery or battery not yet connected.

Blinking LED = faulty battery; the charger will not charge a defective battery.

Enduro batteries take around 3-4 hours to fully charge; less for a partially discharged one.

Race batteries take around 2-3 hours from flat, less when partially discharged.

4.2 Battery Self Protection

All our batteries have built in protection circuits:

- Built in short circuit protection
- Protect the battery pack from deep-discharge
- Protect the pack from over charging

In addition the circuitry balances cell voltages in the battery pack to optimise full capacity of all the cells.

If you cause any of the protection features to self-protect the battery pack, it is possible to reactivate it. Ensure there is no sign of visible damage to the pack, that it is dry and that the connector is not contaminated. Plug the charger into the mains and connect the battery, disconnect the battery then reconnect and allow to charge. If this fails the battery should be disposed of responsibly and a replacement pack can be purchased from your regional dealer or directly from Full Beam.

4.3 Attaching the light to your handlebars

The handlebar mount fits standard (1 in.) and oversize (1¼ in.) handle bars. Use the rubber spacer provided with standard sized bars.

Situate the light as close to the stem as possible to ensure the beam is as central as possible. Avoid fitting the light to a tapered section as this may cause the light to come loose under vibration

The light also rotates so you can adjust the horizontal angle – a steady even pressure with the light fitted to the bars will change the direction the light points in. If you fit the light on the flat part of the bar next to the stem you will not need to adjust this angle.

4.3.1 1st Generation Plastic Mounts

Unscrew the knob and flip open the mount, fit over the bars and tighten up the knob. It only needs to be tight enough to stop the light rotating under vibration which is usually about finger tight. Do not over tighten.

4.3.2 2nd Generation Aluminium Mounts

Unscrew the knob and flip open the mount, fit over the bars and tighten up the knob. Try about finger tight, then close the cam lock. Ensure the cam lock is fully closed and required a firm push to put it home. If this is not the case release the cam lock and adjust the knob accordingly.

4.4 Attaching the light to your Helmet

4.4.1 Vented Helmets

Nightfire comes with a custom machined acetyl mount which can be secured on vented helmets with the supplied o-rings. Find a stable place on the helmet for the mount, select the correct size o-ring for your helmet, hook it on the mount, loop through a vent or two and hook back over the mount. Posts are provided on the front and back of the mount as well as the sides to suit different helmet configurations.

4.4.2 Full Face Helmets

The rubber feet on the mount can be removed and 3M™ VHB™ tape can be used to secure the mount to your helmet. Please be aware this is regarded as a semi-permanent installation to the Very High Bond nature of the tape. It is therefore advisable to double check the position of the light on the helmet before sticking it in place.

4.5 Attaching the battery bag to your bike

Once the battery is fully charged, unplug it from the charger.

Plug the light lead into the battery and coil any excess cable neatly in the battery bag next to the battery. Fold over the weather flaps on the bag and leave a little more cable than needed to reach the light unit.

The battery bag is very versatile, comes with 3 clips, can be situated in many positions and is compatible with various frame geometries. The standard cable is 1m long.

For most mountain bikes the usual place to situate the battery pack will be between the top tube and downtube as shown in the pictures below. If you have sealed brake or gear cables it is recommended that you pass the clips OVER the cable. If they are standard cables, pass the clip between the cables and the frame by gently lifting them. Tighten up the straps so the bag cannot move but do not introduce too much strain into the straps.



If you want to ride with the pack beneath your saddle, attach it to the seat rails and seat tube; you may require a longer cable dependent upon the bike size and geometry. See below.



Night-Nemesis, Nightfire & X12 Manual



Now plug the lead into the back of the light, with the cable pointing downwards. Screw the connector on about 3 rotations. Finger tight is sufficient to achieve a good water seal.



Nightfire owners should note the orientation of the connector is towards 3 o'clock when viewing the light from the rear, this is to give more clearance of the cable on the helmet.

Use the Velcro cable ties provided to keep the cable tidy and to prevent it snagging on any parts of your body or tree branches on the trail.

You are now ready to switch your light on!

5 Using Your Light

5.1 Normal Operation

A simple click of the button turns the light on.

It is operated and cycled through the various modes by 'clicking' and 'pressing' the button. A click is defined as being a touch of the button less than 0.2 sec and a press is longer than 0.5 sec.

Once you have clicked the light on, further clicks will toggle between medium and high power. These are the most commonly used power settings whilst riding. If you want to use the low mode, press the button for longer than 0.5 sec and the lamp will dim to its lowest setting. To go back to medium or high power just click the button. To turn the light off, hold your finger on the button for longer than 2 seconds or 2.5 seconds if in medium or high power level.

Your light can be configured to run with different modes and power. For details see the section on configuring your light.

5.2 Flashing Mode (strobe mode)

The light can be operated in strobe mode.

To activate strobe mode from off, press and hold the button down to power up the light. Strobe mode is now activated. As with normal mode you can cycle through the power levels by clicking or pressing.

The light is turned off in the same way – by pressing and holding the button for at least 2 seconds.

It is recommended that you do not use strobe mode at the medium or high power levels as this will be too distracting to other road users. However for emergency purposes, you may wish to activate strobe mode in high power to alert someone as to your whereabouts as it can be seen from many miles away but uses less power.

X12 light systems are driven by two separate control circuits which causes the strobe timing of each bank of 6 LEDs to operate independently. This is a feature of this light.

5.3 Low Battery Indication

All our lights feature intelligent battery monitoring to advise the rider when it is close to home time. When indicated, the rider can switch to a lower power level to extend their ride. For more on this see the section on hints and tips.

5.3.1 Night-Nemesis and X12

In the centre of the button on the light there is a battery state indicator LED. This will tell you what state of charge your battery is in and if you are getting close to running out of charge. It works as follows:

LED On: Battery has about 20% charge left

LED Single Flashes: Battery has about 10% charge left

LED Double Flashes: Battery is about to cut power, minutes left, use lowest power setting.

5.3.2 Nightfire

Due to Nightfire being designed primarily for use on a helmet, the low battery indication is communicated to the rider by flashes of the lights main beam.

The frequency of the flashes of the beam increase as the battery nears depletion.

5.4 Intelligent System Functions

Your Night Nemesis light system has a number of intelligent functions designed to protect all the components from damage due to misuse or adverse operating conditions and will extend the longevity of the system. The following outlines all of the protection systems incorporated.

5.4.1 Battery Safety Features:

- Short circuit protection with self-resetting electronic fuse (reset by charger).
- Overcurrent protection in the event of an overload.
- Under-voltage cut-off to protect cells against deep discharge.
- Under-voltage trip fuse to prevent use of a deeply discharged battery (reset by charger).
- Under-voltage cut-off to protect battery in the event of a faulty charger.
- Over-temperature sensor to protect against an overheating battery.
- Balance function to ensure battery cells all have correct state of charge.

5.4.2 LED light safety features:

- LED temperature sensing – power to LEDs will drop to medium if the unit becomes too hot.
- Low battery voltage sensing cut-off to protect battery from deep discharge.
- Electronic thermal protection to protect the electronics in the light.
- Charger Safety Features:
 - Overvoltage protection to prevent overcharging of the battery.
 - Faulty battery detection to prevent dangerous charging of an unsafe battery.
 - Current limit to prevent too rapid charging of battery.

The above protection systems are all idle until a condition occurs to activate any of them.

Thermal protection will activate when your light system has been stationary for too long on high power and the light automatically dims. This is intentional and facilitated in order to protect the LEDs from overheating.

If your light unit does not turn on then it is likely that battery protection has activated. In this instance simply plug the battery into the charger for a full charge and the fail condition will reset allowing normal use of the system afterwards.

6 Configuring Your Light

Most Full Beam lights are user configurable. This means you can choose to run the light in different modes with different levels and change the power levels at which it operates these modes at. You may independently change these 3 different parameters i.e. you do not have to change them all together. You have independent control over the following:

- Mode of Operation – 2,3 or 5 power mode
- Mode Level selection – Lower Levels Brightness'
- Power Level – Maximum Brightness

This gives you the control to perfectly tailor the light output and run-times to your needs.

Your light is configured using the button on the light with a series of clicks and presses to navigate through and select options in a menu system.

Please refer to the graphical chart available on the www.full-beam.com website.

Refer to the tables in the Specification Section for the different brightness and run-time settings that are configurable on your light system.

Caution: Night-Nemesis X12 owners should ensure that both banks of LEDs acknowledge each click/press of a programming procedure. If they become out of sync then the battery should be disconnected and programming should be started again. Continuing to program the light in this state will result in the pair of driver circuits becoming configured differently resulting in unusual behaviour.

7 Hints and Tips

We'd now like to share with you some hints, tips and techniques for getting the most out of your light system. If this is your first high power bicycle light you will need how to learn how to use it to best effect.

7.1 Positioning the LED light unit

Your Night-Nemesis probably puts out more light than you've ever had before on the handlebars, so make the most use of it. With the light on Medium power slightly loosen the bar clamp and rotate the light until the brightest part of the beam hits the ground at a distance of around 10-20m. You will find that there is so much side-spill from the light that the ground is well lit directly in front of the bike. On full power you will now have total coverage.

Positioning the brightest part of the beam too close in front of you will result in you getting glare from the ground being too bright and losing 'throw' performance.

7.2 Battery Pack Positioning

Although the battery is only about 400g some may notice the extra weight on their bike. If you want handling of the bike to be least effected by the weight, situate it as close to the seat-tube as possible as this is where your centre of gravity is.

7.3 Use your Low and Medium power often

When not travelling over particularly technical terrain or when climbing, use your Medium or Low power level often. This will conserve battery life greatly.

However a very important benefit is often missed. The human eye can increase its sensitivity by up to 10,000 times in the dark so your eye will automatically adjust to any given light level. For example if you have been climbing on the flat using medium power, the sensitivity of your eye is adjusted for a lower light level. Then, when you switch to high power, say on a fast descent, because your eye has higher sensitivity, the light increase and contrast increase appears massive when you switch levels, compared to if you were to leave it on high power all the time. This is a subtle benefit but one often missed by many people when using lights of this power.

A secondary benefit is that the light will generally run cooler when switching between levels and operate more efficiently, producing more light when returned to full power.

7.4 Using your light on High Power

As long as you are moving at over 5mph the light will happily run at full power until the battery pack is depleted. However if you were to stop, because there is no cooling air travelling over the light unit, after about 5 minutes the thermal protection will kick in and switch the light to medium power. This is perfectly safe and a normal mode of operation.

However it is normally advisable not to leave the light on full power for too long when stationary. If the thermal protection does activate, switch the unit off or wait a minute and you will be able to select high power again.

7.5 What to do when your low battery warning kicks in

When your low battery warning light comes on solid you still have approximately 20% battery power left. If you were in high power when the light came on you can switch the light to medium and still get around another 2 hours of Run-Time.

If your battery warning blinks once and you are on high power, you have around 10% battery power remaining; you will still have up to an hour Run-Time if you switch to medium power.

If your battery warning blinks twice you are almost out of power and will only run for 1 minute longer. It is recommended that you switch immediately to LOW power and head for home! You will still have around an hour Run-Time on low in this instance.

7.6 Battery Life and Charging

All batteries have some degree of self discharge. The rate of self discharge increases with higher temperatures. So to get the most out of your battery, either charge it fully just prior to use or keep it in a cool dry place until you need to use it.

Also, in the extreme cold you may find the capacity reduces slightly. So try not to use the battery after it has been stored outside in the cold – let it warm up a bit. DO NOT force it to get warmer by blowing it with a hot air gun or putting it on a radiator.

Note your LI-ION battery will still have 80% capacity when run at 0 deg C and will operate down to -30 deg C with a reduced capacity.

8 Warranty

Full Beam Ltd. guarantees our products are free from design, material and workmanship issues for the period of one calendar year from the date of purchase. Full Beam Ltd. shall have the option to choose to repair or replace the item or refund the customer if this is not viable.

Damage as the result of misuse, abuse, neglect, using incompatible accessories or as the result of accidental damage (such as a crash) is not covered. Units returned which are outside of warranty will be surveyed and a report given to the user with a quote for repair, if a repair is possible.

9 Specifications

This manual covers a range of the Full Beam light systems.

All our lights are designed, machined from 6000 Series aircraft-standard aluminium, assembled & tested in the UK.

Please refer to the figures below which detail features specific to your system.

9.1 Night-Nemesis

7 LED Lamp unit

Cree XP-G R5 bin LEDs

Custom electronic LED driver

Standard power 22.8W (2100 Lumens)

Configurable up to 30.5W= Over 2500 Lumens

690g with included Enduro Battery & Bag

		Power Table 1	Power Table 2	Power Table 3	Power Table 4	Power Table 5	Power Table 6	
Level 1	Light Output	125	125	125	125	125	125	(Lumens)
	Run-Time (Race)	36	36	36	36	36	36	(Hours)
	Run-Time (Enduro)	72	72	72	72	72	72	(Hours)
	Power	0.8	0.8	0.8	0.8	0.8	0.8	(Watts)
Level 2	Light Output	200	300	400	350	425	500	(Lumens)
	Run-Time (Race)	17	13	8.5	9.5	8	7.25	(Hours)
	Run-Time (Enduro)	34	26	17	19	16	14.5	(Hours)
	Power	1.4	2	2.9	2.5	3	3.4	(Watts)
Level 3	Light Output	350	525	675	675	800	875	(Lumens)
	Run-Time (Race)	9.5	7	5	5	4.25	3.75	(Hours)
	Run-Time (Enduro)	19	14	10	10	8.5	7.5	(Hours)
	Power	2.4	3.6	5.3	5.2	6.2	7	(Watts)
Level 4	Light Output	550	800	975	1200	1400	1550	(Lumens)
	Run-Time (Race)	6.5	4.25	3.25	2.8	2.3	2.15	(Hours)
	Run-Time (Enduro)	13	8.5	6.5	5.6	4.6	4.3	(Hours)
	Power	4	6.2	8.5	10.8	13.2	14.5	(Watts)
Level 5	Light Output	900	1200	1625	2100	2400	2550	(Lumens)
	Run-Time (Race)	3.85	2.8	2.05	1.45	1.2	1.1	(Hours)
	Run-Time (Enduro)	7.7	5.6	4.1	2.9	2.4	2.2	(Hours)
	Power	7.3	10.8	15.5	22.8	27.7	30.5	(Watts)

Night-Nemesis, Nightfire & X12 Manual



9.2 Nightfire

7 LED Lamp unit

Cree XP-G R5 bin LEDs

Custom electronic LED driver

Standard power 15.5W (1600 Lumens)

Configurable up to 30.5W = Over 2500 Lumens

385g with included Race Battery & Pouch

		Power Table 1	Power Table 2	Power Table 3	Power Table 4	Power Table 5	Power Table 6	
Level 1	Light Output	125	125	125	125	125	125	(Lumens)
	Run-Time (Race)	36	36	36	36	36	36	(Hours)
	Run-Time (Enduro)	72	72	72	72	72	72	(Hours)
	Power	0.8	0.8	0.8	0.8	0.8	0.8	(Watts)
Level 2	Light Output	200	300	400	350	425	500	(Lumens)
	Run-Time (Race)	17	13	8.5	9.5	8	7.25	(Hours)
	Run-Time (Enduro)	34	26	17	19	16	14.5	(Hours)
	Power	1.4	2	2.9	2.5	3	3.4	(Watts)
Level 3	Light Output	350	525	675	675	800	875	(Lumens)
	Run-Time (Race)	9.5	7	5	5	4.25	3.75	(Hours)
	Run-Time (Enduro)	19	14	10	10	8.5	7.5	(Hours)
	Power	2.4	3.6	5.3	5.2	6.2	7	(Watts)
Level 4	Light Output	550	800	975	1200	1400	1550	(Lumens)
	Run-Time (Race)	6.5	4.25	3.25	2.8	2.3	2.15	(Hours)
	Run-Time (Enduro)	13	8.5	6.5	5.6	4.6	4.3	(Hours)
	Power	4	6.2	8.5	10.8	13.2	14.5	(Watts)
Level 5	Light Output	900	1200	1625	2100	2400	2550	(Lumens)
	Run-Time (Race)	3.85	2.8	2.05	1.45	1.2	1.1	(Hours)
	Run-Time (Enduro)	7.7	5.6	4.1	2.9	2.4	2.2	(Hours)
	Power	7.3	10.8	15.5	22.8	27.7	30.5	(Watts)

Night-Nemesis, Nightfire & X12 Manual



9.3 Night-Nemesis X12

12 LED Lamp unit

Cree XP-G S2 bin LEDs

Custom electronic LED driver

Configurable up to 52W= Well Over 4000 Lumens

695g with included Enduro Battery & Bag

		Power Table 1	Power Table 2	Power Table 3	Power Table 4	Power Table 5	Power Table 6	
Level 1	Light Output	250	250	250	250	250	250	(Lumens)
	Run-Time (Enduro)	32	32	32	32	32	32	(Hours)
Level 2	Light Output	400	550	700	700	900	1000	(Lumens)
	Run-Time (Enduro)	15h	13h30	11h30	11h30	8h	7h30	(Hours)
Level 3	Light Output	600	850	1100	1100	1400	1500	(Lumens)
	Run-Time (Enduro)	11h	8h20	7h	7h	6h	5h30	(Hours)
Level 4	Light Output	1100	1500	2250	2800	3200	3300	(Lumens)
	Run-Time (Enduro)	11h	5h30	4h30	2h30	2h10	2h05	(Hours)
Level 5	Light Output	1500	2000	3000	3750	4350	4500	(Lumens)
	Run-Time (Enduro)	5h30	3h40	2h25	1h45	1h35	1h25	(Hours)

9.4 Night-Nemesis X12 (2013)

12 LED Lamp unit

Cree XP-G2 LEDs

Custom electronic LED driver

Configurable up to 52W = Well Over 4500 Lumens

695g with included Enduro Battery & Bag

		Power Table 1	Power Table 2	Power Table 3	Power Table 4	Power Table 5	Power Table 6	
Level 1	Light Output	300	300	300	300	300	300	(Lumens)
	Run-Time (Enduro)	32	32	32	32	32	32	(Hours)
Level 2	Light Output	525	750	900	900	1100	1200	(Lumens)
	Run-Time (Enduro)	15h	11h30	9h	9h	8h	7h	(Hours)
Level 3	Light Output	700	1000	1200	1200	1500	1600	(Lumens)
	Run-Time (Enduro)	11h	8h20	7h	7h	6h	5h30	(Hours)
Level 4	Light Output	1250	1700	2300	2950	3600	3800	(Lumens)
	Run-Time (Enduro)	7h	5h	4h	2h10	2h	1h50	(Hours)
Level 5	Light Output	1800	2400	3300	4200	4800	5100	(Lumens)
	Run-Time (Enduro)	5h30	3h40	2h25	1h45	1h35	1h25	(Hours)

9.5 Enduro Battery

14.8v LI-ION

5.2Ah capacity

PCM voltage, balance and temperature protection

390g

9.6 Race Battery

14.8v LI-ION

2.6Ah capacity

PCM voltage, balance and temperature protection

200g

9.7 UK Mains Charger

16.8v LI-ION 4 cell charger

2A constant current charger

LED state of charge indicator

100-240V AC mains input with UK plug