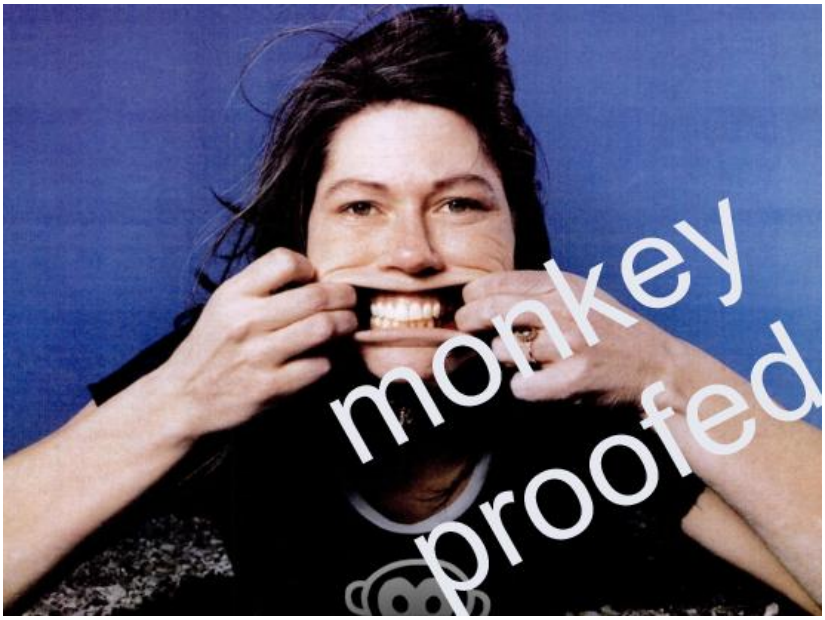
Rude Nora 4 – Monkey Manual



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Nora4 Overview

Nora4 has two main LEDs. A high intensity **spot** LED and a wide angle **flood** LED. In normal operation the lamp has **4 light settings** as factory default.

Nora4 also has a low output 'moon' setting (flood LED at very low output) for maximum run time, and battery charge level indication using 5 green indicator LEDs (plus flood LED blinks 1-5 times).

Nora4 can be programmed using infrared remote control. From **1-9 light settings** can be specified, and the level of light provided by each setting can be configured by the user. The **spot** and **flood** LEDs can be operated separately or blended together. Each LED can be operated at **low, medium, medium plus, high** and **maximum**, offering a choice from 26 possible light combinations.

The Nora4 caving lamp operates from 3.7v li-ion battery configurations, including individual unprotected 18650 batteries and / or battery packs. Battery holders (for individual batteries) have electronic protection built in. 3.7v li-ion battery packs can also be accommodated. For further information on range of battery option see **www.littlemonkeycaving.co.uk**.

Batteries can be removed from battery box for charging in a proprietary 18650 battery charger, or can be charged using the battery holder in conjunction with our Nora micro USB charger. Other 3.7v battery arrangements are feasible depending on battery box configuration, including a 21700 cell, or e.g. multiple parallel wired 18650 cells.

Nora4 Operation

Nora4 is operated by the sealed push switch on the top rear of the lamp body. In normal operation, the switch can be operated in two distinct ways, ***<short push>*** or a ***<long push>*** (push and hold).

The available light settings are in a continuous forward loop, **1 to 4**, and **off**. Each of the settings can be selected in turn, by pressing the switch ***<short push>***.

The **factory default light settings** are;

1. **low flood** (60 hours) - progression in smaller passages
2. **medium flood** (20 hours) - general progression around cave
3. **maximum spot** (2 hour) - route finding in very large passages etc
4. **medium plus flood & medium spot** (8 hours) - progression in larger cave
5. **off** (effectively zero battery consumption)

- *run times based on **7000mAh battery pack**.*

In order to avoid cycling through subsequent light settings, Nora4 can be **turned off** from any setting with a long switch press ***<long push>***.

Note - when initially connected to the battery, Nora4 will turn on in moon mode (flood LED at very low level). The next press of the switch (short or long) ***<push>*** will turn the lamp off, and the green smd LEDs will indicate battery charge level.

Nora4 has effectively zero battery consumption when switched off, so there is no particular requirement to disconnect batteries. However it is always best practice to do so when not in use for more than a few days.

Moon Mode and Battery Charge Level Indicator

Moon mode is provided by the main flood LED, offering a very low light (approx. 5 lumen) for ultimate duration (200+ hours). Well suited to underground camp, expedition, small passage caving, and emergency. Moon mode can be selected by a long switch press ***<long push>*** from lamp **off** setting.

The next press of the switch (short or long) ***<push>*** will turn the lamp back off. At this point the green smd LEDs will display level of battery charge for a few seconds, and the flood LED will blink 1 to 5 times. 5 green LEDs and 5 blinks indicate full charge, with 1 LED and 1 blink indicating very flat (for li-ion batteries). The blinks are visible underground, on the back of your hand, such that battery condition can be determined without removing your helmet.

Low Battery Charge

If battery charge is low, then Nora4 will reduce the power of the main LEDs, with the middle green smd indicator LED on. This will be apparent at higher light output settings first, when battery is under greater load! Nora4 operation will otherwise continue as normal, and user can switch freely through lamp settings.

When battery charge is very low, Nora4 will briefly blink the main LEDs, and step down to very low flood output. Nora4 has been configured to deliver a low light from fundamentally flat battery packs for some time, therefore minimizing the risk of being left without light. However, at this point you might consider changing battery!

Ultimately, li-ion batteries will shut down at a set low voltage level (typically around 2.7v) to prevent damage. In event of battery protection circuitry failure, Nora4 incorporates an additional layer of protection to ensure that batteries will not be over discharged. Recharge flat batteries asap to prevent damage.

Thermal Management

While operating, Nora4 continually monitors lamp temperature. If lamp gets too hot then main LEDs will blink and the power will be reduced to allow lamp to cool. The green smd indicator LED will scroll (not visible with helmet on) while under thermal regulation. Lamp function is not locked, and simply changing light setting will restore full operation, though be aware that unless a lower light setting is used for a few minutes in order to provide time for the lamp to cool, then thermal management may quickly reactivate. In reality, you are probably only likely to see this if running continuously for extended periods, using high settings and in warm environments, as the Nora4 provides an effective heat sink.

Nora4 Programming

Nora4 can be easily configured to individual requirements, using infrared remote control. To program lamp, point the controller at Nora4 front window. The receiver is within the lamp housing.

Programming is possible when Nora4 is initially connected to a battery, and with lamp **switched off**. If programming function is required, it is necessary to press the main switch on back of lamp before connecting battery. If no programming activity has occurred for 5 minutes, the programming link is disabled, in order to protect your settings.

When the remote is operated (and programming window open), the green smd LEDs will indicate programming activity. The middle green LED indicates that a button push on remote has been received by lamp. The left and right green LEDs indicate selection of a valid function, and dancing green LEDs indicates that a change has been confirmed.

Number of Light Settings

Nora4 has **4 factory default light settings**. This can be modified from **1 to 9 settings** depending on your requirement. To select the desired number of light settings enter **#** followed by the number of settings required and OK to confirm, ***<#(number of settings 1-9)OK>***.

If the number of light settings selected is less than the current number, then any settings no longer required will be taken from the end of the current sequence. For example, if lamp is currently configured with 6 settings, and 3 settings are selected, settings 4-6 will be removed.

Any additional settings will be added to the end of the current sequence. These will be set at **low flood**, unless they have previously been programmed, in which case they will be set at the last stored configuration.

Configuring a Light Setting

Nora4 allows the light level of each setting to be modified to individual requirement. To modify a light setting, enter ***** followed by the number of the specific setting you wish to modify ***<*(setting number 1-9)>***. This will only respond to the number of light settings currently specified (as described above). For example, if the lamp currently has 4 light settings, then only buttons 1-4 on remote controller will respond.

When a valid light setting is selected, use the arrow buttons on the remote to select the desired level of light for each LED. The level of the **spot** LED is set using the ***<up>*** and ***<down>*** arrows, and the level of the **flood** LED is set using the ***<left>*** and ***<right>*** arrows. Either of the LEDs can be set as off, but not both. When you have selected the desired light levels of spot and flood LEDs, then enter ***<OK>*** to confirm. This procedure can be repeated for any specified light setting.

The spot and flood LEDs can each be operated at 5 light output levels, **low, medium, medium plus, high** and **maximum**. The LEDs can be operated separately or blended together in any combination of these levels (see table below), with the exception of maximum setting. Maximum setting is restricted to either flood LED only or spot LED only, as a combination of both at this level of output rather misses the point!

While using the arrow buttons to select light level of the LEDs, the green indicator LEDs will show the selected power level (0-5 LEDs illuminated). The flood and spot LEDs also light up at significantly lower levels than during actual lamp operation! These levels are simply representative of the 5 power settings of each LED, set at lower level in order to protect your vision when programming. However, even at these lower levels direct eye exposure should be avoided.

(default settings 1-4)	**off – spot**	**low spot**	**medium spot**	**medium plus spot**	**high spot**	**maximum spot**
off - flood	n/a	50 lumen 60 hours	140 lumen 20 hours	200 lumen 12 hours	525 lumen 4 hours	**800 lumen 2 hour (3)**
low flood	**70 lumen 60 hours (1)**	120 lumen 30 hours	210 lumen 16 hours	270 lumen 10 hours	595 lumen 4 hours	n/a
medium flood	**170 lumen 20 hours (2)**	220 lumen 16 hours	310 lumen 10 hours	370 lumen 8 hours	695 lumen 3.5 hours	n/a
medium plus flood	250 lumen 12 hours	300 lumen 10 hours	**390 lumen 8 hours (4)**	450 lumen 6 hours	725 lumen 3 hours	n/a
high flood	675 lumen 4 hours	725 lumen 4 hours	815 lumen 3.5 hours	875 lumen 3 hours	1200 lumen 2 hour	n/a
maximum flood	1000 lumen 2 hour	n/a	n/a	n/a	n/a	n/a

*max. regulated light outputs,& approx. run times based on **7000mAh battery pack**.*

Monkey Mode ….. for Monkeys !!

Monkey Mode simplifies the operation of Nora4, for people who just want things fairly simple, or monkeys! To select Monkey Mode, enter ***<*(0)OK>***.

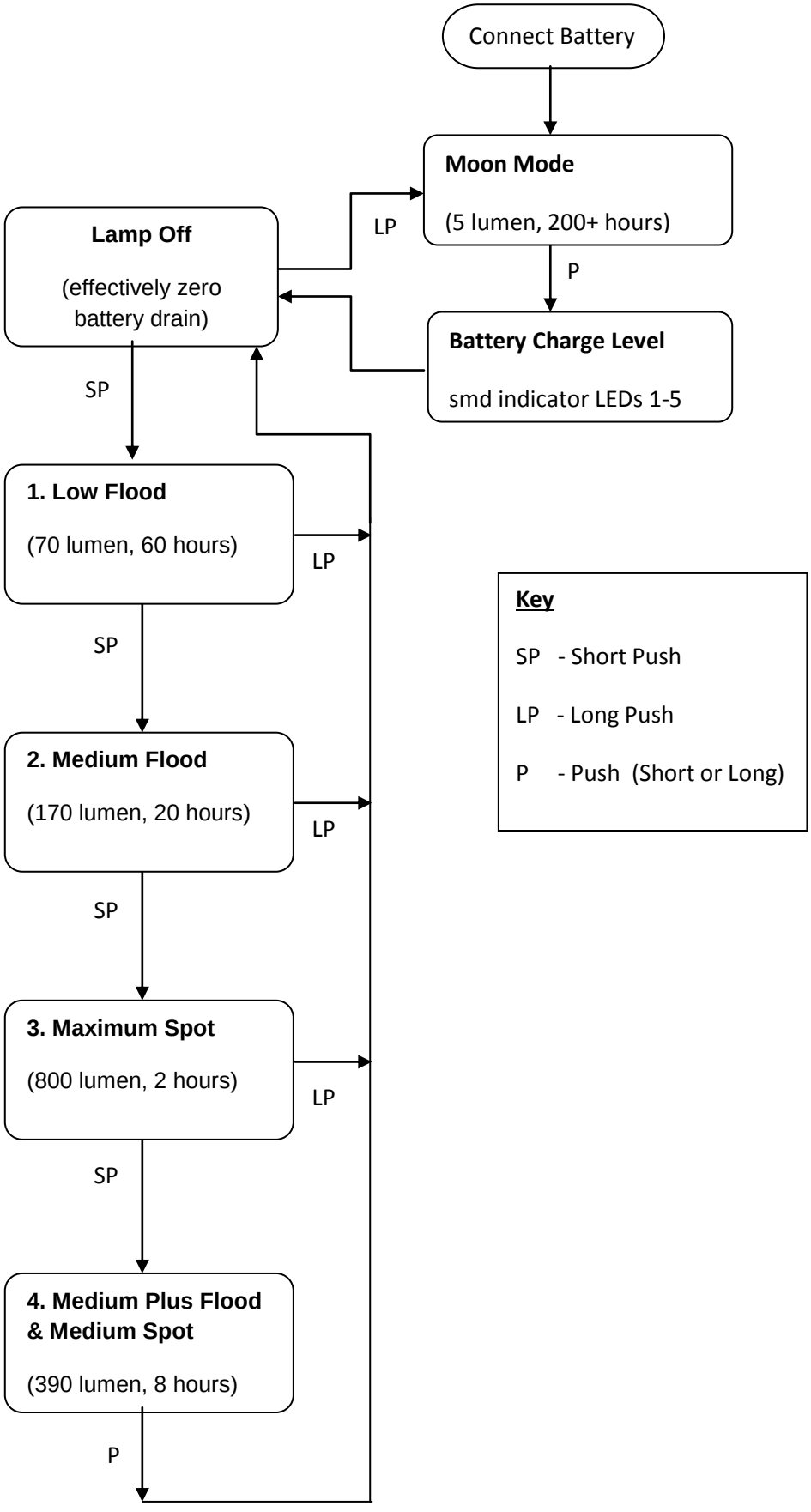
Monkey Mode allows a maximum of 4 light level settings (default settings 1-4 from above table), selected in a forward loop. There is no **off** setting at end of loop. To switch off Nora4, **<long push>.** When switched off the green indicator LEDs will show battery charge for a few seconds, 1-5 LEDs. The Moon Mode and battery charge level indicator blinks are disabled.

The number of light settings can still be specified from 1-4, and the desired level of light output set for each. To exit Monkey Mode and restore Nora4 to normal operation (at last stored setting), enter ***<*(0)OK>***. On exit, Nora4 will retain (to memory) any changes made to Monkey Mode settings.

Restore Factory Default Settings

If at any point you get in a pickle, then enter ***<#(0)OK>*** to restore Nora4 to factory default settings.

Nora4 Operation Flow Chart



Nora4 Fitting Guidance

Nora4 is designed to be helmet mounted. Fitting is fairly intuitive. The standard alloy lamp bracket requires 3 holes drilled in the front of the helmet (4.5mm). When drilling, take care not to damage cradle etc, on inside of helmet. The lamp bracket can be used as a template. Position of lamp bracket is personal preference, and helmet type dependant. If possible, position lamp high enough to avoid interference with peripheral vision. Orientate lamp and mark position of lamp bracket central fixing hole, drill helmet, and attach bracket to helmet. M4 stainless steel hex screws & lock nuts are provided for this. Mark other 2 bracket holes, twist bracket to one side (or remove completely) and drill helmet. When fixing bracket to helmet, nuts should be on the outside. The extending arms of the alloy lamp bracket will need to be adjusted to suit lamp and accommodate curved helmet profile. They can be bent carefully by hand as required.

The standard Nora4 / Edna2 battery box can be attached with shock cord (suggested 4mm) or two cable ties. This will require up to 4 suitably positioned holes drilled in helmet, depending on preferred fixing method and helmet design. See Little Monkey website for other battery boxes.

The lamp can now be fitted to the lamp bracket. Nora has been designed for cable to run inside the helmet, though many arrangements are possible. The lamp housing and cable can typically be threaded under the rim of the helmet, behind the cradle inside the helmet and back and out at the front of the helmet, though many arrangements are possible

The lamp is fitted to the bracket with 2 off M5 cap head screws. The M5 stainless spring washers fit between the screw heads and the bracket, the M5 stainless washers fit between the bracket and the lamp body. Orientate lamp to desired angle and lock up both screws, using 4mm hex key. To maintain good water integrity, high viscosity silicone grease can be used on battery box O ring and front window O ring.

The battery box is opened at the opposite end to the cable gland. Battery and lamp connectors are polarized so correct polarity is ensured. Battery connections should be made outside of the box, and battery pack orientated in battery box, with wires and connectors typically orientated down inside wall of box (opposite side to cable entry). Take reasonable care when fitting battery in order that wires do not get trapped / damaged, and individual batteries are orientated correctly in Nora battery holders. The battery holder has li-ion protection circuitry. Take care not to damage this. The cable gland end of the battery holder can be opened for service / maintenance purposes.

The Modification of Helmets for Caving

By necessity helmets have to be modified in order that they can effectively be used for caving or adapted to suit the requirements of a particular task within the caving environment. Invariably holes will need to be drilled in the shell so that lamp brackets or reserve lamps can be fitted. Cavers drill helmets; as they principally use these to mount lamps and protect from light bumps.

If holes are drilled in sensible positions and kept to a minimum they are unlikely to have an adverse effect on the overall strength or protection offered by the helmet shell, but obviously this can't be guaranteed. Drilling holes into a helmet shell technically invalidates its certification as Personal Protective Equipment (PPE) and may have an adverse effect on the amount of protection provided by it, so anyone who modifies or uses a modified helmet must be aware of, and fully accept, the potential incurred risks of the modification beforehand and during subsequent use.

Li-ion Batteries

Knowing some fundamentals li-ion batteries will help to ensure that you maximise the life of your cells. While li-ion batteries are fairly robust, they are potentially susceptible to damage particularly from severe impact, temperature and water ingression. Our lamps have been designed to best protect the battery, while maintaining a practical helmet mounted solution for underground use. If carrying spare batteries, take care to avoid severe impact and water as they will potentially break. A hard case waterproof container is probably advisable.

We do not take responsibility for injury to persons or damage to property from cells or chargers. These should be used and charged under supervision, stored safely, appropriately maintained and correctly disposed of if there is any suspicion that they have been damaged or are defective.

Battery Charging

Although the charging algorithm for li-ion cells is relatively complex, this is typically sorted out by the charger and battery protection circuitry. Consequently, chargers are invariably simple plug in and go solutions. Red light charging, green light fully charged, with automatic charging shut off. Li-ion batteries can be part discharged or part charged without consequence. There is fundamentally no rapid high current charge option for li-ion cells (though they will reach 80% charge fairly quickly). Although charging is automatically shut off on completion, it is always advisable to disconnect battery packs from chargers when charging has finished.

Battery Storage

The capacity of li-ion batteries is reduced with age. The chemical process that relates to this is accelerated with increased temperature and charge level. To realise maximum battery life, cell packs should be stored around half charge and in a cool and dry environment (around 15 degC, do not freeze). Under no circumstances should battery packs be left discharged for an extended period, in order to avoid self discharge below 2.5v and permanent damage.

Battery Compatibility

Nora4 operates from 3.7v li-ion, and is not compatible with high voltage li-ion battery arrangements, typically ranging from 7.4v to 14.8v, connection to which could result in damage. Always ensure correct battery polarity, to avoid potential damage to lamp.

- Li-ion Battery Summary
- Avoid getting batteries wet
- Avoid severe impact. Do not puncture.
- Store batteries somewhere cool, around 15 degrees C
- Store batteries part charged, around 50% is good
- Do not store batteries discharged (as deep self discharge will kill them)
- Do not store batteries connected to lamp
- Use a Little Monkey charger, or a suitable equivalent
- Keep a watch on general battery condition (avoid damage to leads and connector)

- Do not use or charge a potentially damaged battery
- Dispose of dead battery packs at suitable recycling facility
- Do not short circuit or reverse polarity batteries
- Keep away from children and monkeys

High Power LEDs

Nora4 lamps use high power LEDs which are fairly bright! Do not look at LEDs in operation. Eye injury can result. Be especially careful of this when programming light settings. Do not shine you light into other people's eyes, particularly at close range. For more information, see Cree website.

Warranty

Nora4 has a standard 1 year warranty against defects in material and manufacture. If your product or accessories fails to operate to specification during the Warranty period we will arrange for your product to be repaired or at our discretion replaced. This warranty is subject to reasonable wear and tear (in our opinion) and correct use and maintenance of the product as applicable. We will not provide warranty repair / replacement if the problem, in our opinion, resulted from use outside the product specification, modifications or alterations, incorrect connection, operation or fitting where applicable, external damage due to accident, impact/ abrasion, poor storage, poor maintenance, use of non approved parts, wear and tear parts (e.g. front window). We will always endeavour to keep any costs due to damage to an absolute minimum.

Nora4 has been designed for 'wet caving' including submersion (not diving), operating effectively in a hostile environment, i.e. caves, and be as robust / reliable / practical as possible for this purpose. As a consequence it will get battered and while we appreciate that it is entirely feasible to break things occasionally, any such damage is beyond the scope of the product warranty. Expect to pay for any damage related repairs. We advise against pressure washing or rough submerged washing where it could be possible to force moisture past the switch seal. If water, even the smallest amount is forced in to the lamp, you will note condensation behind front window when lamp is operated. If you notice this, then remove front window (with hex key provided) and run on a medium setting to warm lamp and burn off moisture, before reassembling.

Disclaimer

Caving is not without risks. We would not presume to tell you how to kit up and use your equipment. What we will say is that the Nora4 is not, and should not be considered as, Personal Protective Equipment (PPE). How you interpret any guidance that we give on the use of our products and how you use our equipment is entirely at your own risk. Caving is a rigorous activity that is harsh on equipment. Nora4 has been designed to be safe, robust and best withstand the demands of caving, while remaining practical as a tool for this purpose. This does not mean that it cannot be broken. Lights can fail without warning, and we take no responsibility for any consequence of this. Always carry a reliable and accessible independent backup light source for any light crucial activity / function. Good caving practice is your own responsibility. We do not take responsibility for any accident, injury, liability or cost, to yourself or that you may cause to anyone else, or to any property. This applies to caving or any other function for which you choose to use and place reliance upon our product. We are aware that our lights are often used for cave diving. Information relating to the scope of this activity will be published on the little monkey website.

Please note that you personally assume full responsibility for the risk of property damage, bodily injury or death which may occur from the use of this product in any manor whatsoever. If you are not able, or not in a position to, assume this responsibility, or take the risk, then do not use this product. We are not responsible for the consequences (direct, indirect or accidental) or any other type of damage befalling or resulting from the use of this product. If you are not entirely comfortable with the above, then do not purchase or use any of our products.

About Us

Nora4 is designed and manufactured by us, trading as Customduo. We are based in Cheddar, in the Mendip Hills, a significant UK caving region. To contact us or view latest version of Nora4 manual, product guidance and terms & conditions, please visit website **www.littlemonkeycaving.co.uk**