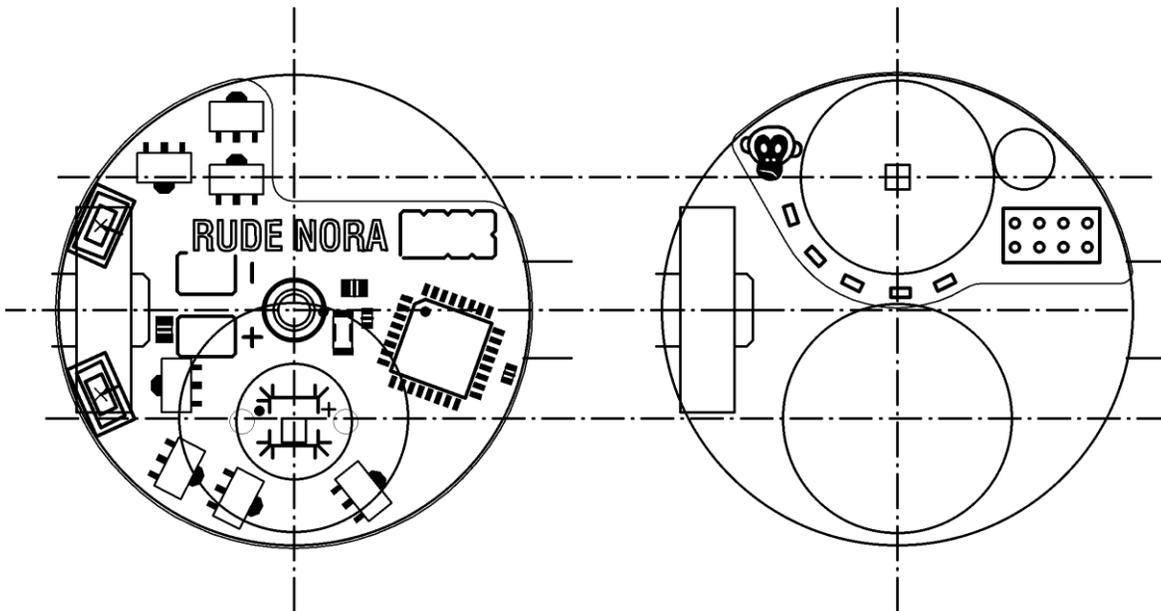# Rude Nora 2xs – Manual

Nora 2xs Overview

Nora 2xs has two LEDs. A focused **spot** LED and a wide angle **flood** LED, operated by the switch on the side of the lamp body.

In standard operation Nora 2xs has 4 **default settings**, in a continuous loop, each of which can be programmed to desired level by the user. The number of power settings can be configured by the user, from 1-10 settings.

Each LED can be operated at five power levels; **v.low** (50mA), **low** (150mA), **medium** (350mA), **high** (700mA) and **super high** (2000mA). The **spot** and **flood** LEDs can be operated separately or together in any combination of these power settings. Note - the combination of super high flood and super high spot is restricted to 1500mA of each (3000mA total).

Nora 2xs also has a **moon mode** (flood - extra low) for maximum duration with **battery charge level indication**, and a **grand gallery mode** (spot – very high), easily accessed and useful for momentary route finding in very large passages etc.

Nora 2xs Operation

Nora 2xs enters **operating mode** when connected to the battery pack, on the first of the light settings (4 default settings, but with up to 10 settings available).

The available settings are in a continuous loop. By turning the switch forward (and releasing) or backward (and releasing) each of the settings can be selected. Forward switching goes forward through settings, and conversely backward switching goes backwards through settings.

The **programmed factory default settings** are;

1. **low flood** (low 150mA)
2. **medium flood** (350mA)
3. **medium flood & low spot** (500mA total)
4. **high flood** (700mA)
5. **off** (last mode in forward switching sequence)

A number of **additional switch operations** are also possible, as follows;

… switch held forwards from 'lamp on' settings

If the switch is held forwards and not released, then (after 1 second) the **spot** LED will be turned on at full power, **grand gallery** mode. It will remain on until switch is released; up to a maximum of 10 seconds, after which the lamp will automatically return to the previous setting 1-4 from which it was selected.

If not required, **grand gallery** mode can be switched on / off in configuration menu. If **grand gallery** mode has been turned off, then the middle 3 coloured indicator LEDs will blink (when holding switch forwards) to indicate that this function is blocked. Nora 2xs will simply continue to operate in current mode 1-4.

Note – Nora 2xs can also be configured so that **grand gallery** mode can be selected from the lamp **'off'** position, if **moon mode** setting has been disabled (see configuration menu 2).

… switch held forwards or backwards from 'lamp off' setting

In the last position (position 5 for factory default settings) Nora 2xs is switched **off**. If the switch is held forwards (for 2 seconds) Nora 2xs will select **moon mode**. Once released, the coloured indicator LEDs will display the **battery charge state** (1 to 5 indicator LEDs will be illuminated). The flood LED will also blink the corresponding number of times so that battery condition can be determined without removing your helmet (easily visible on the back of your hand). On completion of this sequence of flashes, the indicator LEDs will turn off and the lamp will remain on in **moon mode** - for ultimate battery duration. The next operation of the switch (in either direction) will turn the lamp off.

Note - moon mode / battery charge indicator function can be switched on / off in configuration menu 2. If this feature has been turned off, then holding switch forward from 'off' position will instead select **grand gallery** mode.

… switch held backwards from 'lamp on' settings

If switch is held backwards (for a few seconds) then **programming** mode will be accessed (see programming) allowing each individual setting to be modified; unless this function has been locked to protect your settings.

Note – if **programming mode** has been locked - turned off, then the middle 3 coloured indicator LEDs will blink (when holding switch backwards) to indicate that this function is locked. Nora 2xs will simply continue to operate in current mode 1-4.

Low battery indication

If battery pack charge is getting low, then Nora 2xs will automatically blinks the main LEDs to indicate this, a few seconds after a new setting has been selected. Following this brief warning, operation will continue as normal - potentially with reducing power output (as battery is now low). At this point you might consider using a lower power setting, or changing battery pack. Alternatively, you might prefer to disable low battery indication, and this can be switched on / off in configuration menu 2.

Note - Nora 2xs is configured so that low battery indication will be apparent proportionally sooner when using increasingly high power settings.

Thermal monitoring

While operating, Nora 2xs continually monitors lamp temperature. If lamp gets too hot then lamp will blink and reduce power. Power reduction is discreet. Lamp function is not locked, and simply changing mode will reset lamp and restore full range of LED settings.

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 Nora 2xs heat sink is very effective.

Nora 2xs Programming

Nora 2xs allows any of the light settings to be modified to individual requirement. To modify any of the light combinations;

- Select the light setting that you wish to modify
- Hold switch backwards for 5 seconds
- Indicator LEDs will do a little dance
- You can now select the power setting for each LED, spot and flood
- Turn switch forward, on-off-on-off etc, to select desired power level of **spot**
- Turn switch backwards to select desired power level of **flood**
- (Selected power levels for flood / spot are shown by coloured indicator LEDs)

Note – Main LEDs run at reduced power levels while programming in order to help avoid user 'blinding'.

Once desired setting has been identified, allow lamp to run for about 5 seconds, at which point it will store the new setting, indicator LEDs will do a little dance, and lamp will automatically return to **operating mode**. This can be repeated for any setting, excluding the **moon mode** and **grand gallery** settings which are modified separately (or deactivated) in configuration menu 2.

Tip - as lamp always starts in mode 1 when battery is initially connected, we recommend that you keep this setting 'low', then in the highly unlikely event of intermittent battery connection or critical switch failure, then a usable level of light with good duration should remain available, which might prove important.

Tip – while programming, covering main LEDs will allow you to see the coloured indicator LEDs, without 'blinding' yourself. The indicator LEDs will show the selected level of spot and flood, 0-5.

Tip - when changing between power settings (in normal operating mode) the indicator LEDs will briefly blink to show the selected setting number 1-5 (and 2 blinks on indicator corresponding indicator LED for modes 6-10). If the main LEDs are covered, then this brief blink is visible through front window, and can be useful to determine which of your power settings you wish to re-program.

Nora 2xs Configuration

Factory default is 4 light settings, but this can be modified from 1-10 combinations depending on your requirement, in **configuration menu 1**. Also available, **configuration menu 2** will allow you to alter several other characteristics of the Nora 2xs set up.

Configuration menu 1 - modify number of light settings.

To enter configuration menu 1, and modify the number of light settings, turn and briefly hold the **switch forwards** while connecting the battery. As soon as the switch is released, the coloured indicator LEDs will do a little dance. You can now operate the switch forward and backward to increase or decrease the number of settings between 1 and 10. The indicator LEDs display the number of settings – 1 to 5 are shown by the appropriate number of LEDs being lit, 6 to 10 are shown by the corresponding indicator LEDs blinking.

Once you have selected the desired numbers of settings then simply wait 5 seconds, the indicator LEDs will do a little dance and lamp will automatically go to **operating mode**, at mode 1.

Any additional settings will be added at the end of the current sequence (before the off position), and provisionally set at **v.low flood** 50mA – until individually programmed. Conversely, any removed light settings will be taken from the end of your current operating mode sequence (i.e. from directly below the 'off' position).

Configuration menu 2 - additional functions

To enter configuration menu 2 and modify other settings (listed below), turn and briefly hold the **switch backwards** while connecting the battery. As soon as the switch is released, the coloured indicator LEDs will do a little dance. You can now operate the switch forward and backward to select functions 1-6 below, indicated by 1-5 of the indicator LEDs being illuminated (option 6 is indicated by all 5 indicator LEDs being illuminated). After 5 seconds of inactivity, the indicator LEDs will briefly do a little dance and the lamp will move to the corresponding configuration function below.

Once you have selected the required level for any of the settings below, then simply wait 5 seconds, the indicator LEDs will do a little dance and lamp will go to **operating mode**, at mode 1.

1. **Programming lock**

This function turns the programming mode off / on, to protect your lamp settings from being inadvertently altered. Switch up to unlock, and outside 2 indicator LEDs will illuminate. Switch forward to lock and middle 3 indicator LEDs will illuminate. If programming mode has been locked, then holding switch will simply step to next mode when switch is released. (Manufacturer default setting – locked).

2. **Battery fuel gauge**

Blocks battery fuel gauge indicator LEDs from illuminating when lamp is switched off. Switch up to turn off, and outside 2 indicator LEDs will illuminate. Switch forward to turn on and middle 3 indicator LEDs will illuminate. If this feature is activated, then indicator LEDs will show battery charge level for a few seconds, whenever the lamp is turned off. (Manufacturer default setting – off).

3. **Moon mode**

Sets moon mode to **1. off, 2. 15mA** or **3. 30mA**. Switch up/down to illuminate appropriate number of indicator LEDs. (Manufacturer default setting – 15mA).

4. **Grand Gallery mode**

Sets grand gallery mode to **1. off, 2. 700mA,** or **3. 2000mA**. Switch up/down to illuminate appropriate number of indicator LEDs. (Manufacturer default setting – 2000mA).

5. **Low battery charge indication**

Switch on / off low battery warning (indicated by a double blink on changing between settings). Switch up to turn off, and outside 2 indicator LEDs will illuminate. Switch forward to turn on and middle 3 indicator LEDs will illuminate. (Manufacturer default setting – on).

6. **Restore factory default settings** (all 5 indicator lights on)

Wait for 8 seconds and lamp will automatically restore Nora 2xs factory default settings.

Nora 2xs Fitting Guidance

The Nora 2xs is designed to be helmet mounted. Fitting is fairly intuitive. Allen keys supplied.

The standard alloy lamp bracket requires 3 holes to be 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. The central bracket hole is offset and is intended to be orientated above the side holes. Orientate lamp and mark position of lamp bracket central fixing hole, drill helmet, and attach bracket to helmet with nut on the outside. M4 stainless steel allen 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.

Fitting the battery box (with 2 off M3x30mm) allen screws and nuts supplied, requires 2 holes drilled in rear of helmet (3.5mm diameter) approximately 49mm apart to suit the battery box mounting holes. Screw heads should be on the inside of the helmet, and nuts on the outside. Battery box should be orientated so that bottom of box is above the helmet rim.

Alternatively, the battery box can be attached with the two releasable cable ties (included) or with suitable shock cord. The battery box has 2 grooves to accommodate this and requires that 4 suitably positioned holes are drilled in helmet. High tack foam tape (supplied) can be used in recess on rear face of battery box if required.

The lamp can now be fitted to the lamp bracket, but firstly the cable and lamp can be threaded under the rim of the helmet, behind the cradle inside the helmet and back and out at the front of the helmet.

If you wish to drill 2 holes in helmet (one front and one at back) to thread cable, then the cable can be removed from the battery box by carefully releasing the front portion of the battery box gland (11mm spanners required), and removing the small red connector (in the battery box). The rear section of the gland is bonded in place and should not be disturbed. The red connector can be removed using a tiny pointy thing to release the two pins, and carefully pulling out red / black silicone wires. If removing red plug then **take care to reconnect polarity correctly**, to avoid potential damage to lamp. **Pin 1 is black (negative)** and **Pin 2 is red (positive)**. The connector is labeled, but you need good eyesight.

The lamp is now fitted to the bracket with 2 off M5 screws. The M5 stainless spring washers fit between the screw heads and the bracket, the M5 black nylon washer fit between the bracket and the lamp body. Orientate lamp to desired angle and lock up both screws.

To maintain good water integrity, high viscosity silicone grease can be used on battery box O ring and front window O ring. Front window can be removed with allen key supplied. If necessary, tension of battery box spring clips can be micro adjusted by loosening clasp plates on battery box lid with allen keys supplied. Do not disturb allen screws holding spring clips to battery box, as these are bonded.

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 down inside wall of box (opposite side to cable entry). Battery is best inserted with wires from heat shrunk battery pack positioned to the bottom of the box. Take reasonable care when fitting battery pack that battery and lamp wires do not get trapped / damaged. We suggest using Nora vinyl stickers (supplied) to mark battery pack and charger, in order to avoid any potential mix ups with similar equipments.

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 battery packs

Nora 2xs uses high capacity and quality li-ion battery packs, professionally manufactured with appropriate protection circuitry. Our cell packs are produced in an industry standard flat pack configuration; no fancy layouts to tie you into our product.

Knowing some fundamentals about your battery pack will help to ensure that you maximise the life of the packs. While li-ion battery packs 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 packs in operation, while maintaining a practical helmet mounted solution for underground use. If carrying spare packs take care to avoid severe impact and water as they will potentially break. A hard case waterproof container is advised.

Note - li-ion battery packs will shut down at a set low voltage level (around 2.75v). However, Nora 2xs has been designed to deliver a very long tail of low light from fundamentally flat battery packs, minimizing the risk of being left without light.

Battery pack charging

Although the charging algorithm for li-ion cells is relatively complex, this is sorted out by the Nora charger and battery pack circuitry, and consequently the charger is a simple plug in and go solution. Red light, charging. Green light, fully charged and automatic charging shut off. Battery packs can be part discharged or part charged without consequence. There is no rapid high current charge option for li-ion packs. We recommend using the 1.5 Amp Nora charger. Do not use chargers in excess of this rating. Although charging is automatically shut off on completion, it is always advisable to disconnect battery packs from chargers when charging has finished.

Battery pack 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

The Nora 2xs is compatible with 3.7v li-ion, and 3 series cell NiMh / alkaline. The Nora is not compatible with high voltage li-ion packs, 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.

Battery pack summary

- Avoid getting battery packs wet, it will kill them
- Avoid severe impact. Do not puncture.
- Store battery packs somewhere cool, around 15 degrees C
- Store packs part charged, around 50% is good
- Do not store packs discharged (as deep self discharge will kill them)*
- Do not store packs connected to lamp
- Use Nora 2xs charger, or a suitable equivalent
- Keep a watch on general battery pack condition (avoid damage to leads and connector)
- Expect to purchase a new pack if it dies
- Do not use or charge a potentially damaged battery pack
- Dispose of dead battery packs at suitable recycling facility
- Do not short circuit or reverse polarity batteries
- Keep away from children

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.

High power LEDs

Nora 2xs uses high power LEDs and is 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 **www.cree.com/xlamp_app_notes/led_eye_safety**.

Warranty

Nora 2xs 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. Nora 2xs front window). We will always endeavour to keep any costs due to damage to an absolute minimum.

Nora 2xs has been designed to operate 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. Battery packs in particular are sensitive and subject to damage from misuse, impact, temperature and most significantly water ingress / moisture. Although in reality fairly robust (we see very few failures), battery packs / chargers are only covered by warranty if defects in materials or manufacture can be demonstrated to our satisfaction, and limited to a 3 month period from purchase. Nora battery packs / chargers are professionally manufactured, and as distributers we will only undertake very minor repairs to these items. E.g. we may replace a damaged connector, but will not open a charger or battery pack to exchange a moisture damaged protection circuit. Your safety is our priority.

The Nora 2xs is designed to be as waterproof as possible, and could likely achieve a significant depth rating. We are aware that our lights are often used for cave diving. However, please note that the Nora 2xs is not depth rated, not guaranteed for this, and any such activity is entirely at your own risk. Nora 2xs is not a diving light. Damage due to water ingress is not covered, regardless of circumstance. It is your responsibility to keep water out, by good care and maintenance. Ensure glands, seals and closures are well maintained. We will keep you appraised (on website) as to any diving related issues that we are made aware of from anyone choosing as their own decision to use our products in this manner. Any depth pressure testing that we carry out and publish should only be considered as indicative of the performance that the product might achieve under ideal conditions, and not as license to use the product in this manner.

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 Nora 2xs 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. Nora 2xs 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.

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

Rude Nora 2xs 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 Nora 2xs manual, terms and conditions, visit websites www.littlemonkeycaving.co.uk or www.customduo.co.uk.