Night Magic Blades 325, 425 and 470mm with 32 Red/Green LED's

Features

- Able to draw pictures on the helicopter rotor disk while rotating between 50 to 2000rpm
- The pictures are stable even with rpm changes in flight
- Each blade memory has a capacity of 240 graphic images
- The rotor blades do not require any special wiring or electronic upgrade of your helicopter
- The synchronization, controlling, power and image electronics are all contained within each blade
- Each rotor blade is comprised of 32 bright LED's (pure red on the top, pure green on bottom, and one white LED at the tip of each blade)

The basic package of rotor blades include one pair of blades (325mm, 425mm or 470mm), one infrared transmitter (IRT2), communication and charger USB Dongle v0.4, and three jumpers to turn the blades on.

Warning!!!

- **THIS PRODUCT IS NOT A TOY**
- **The manufacturer and seller assume no liability for the operation or the use of this product. Improper use of this product can result in serious injury or even death. Intended for use only by adults with experience flying remote control helicopters. After the sale of this product we cannot maintain any control over its operation or usage.**
- **The manufacturer and seller accept no responsibility for damage or injury during use.**
- **The manufacturer and seller recommend this product is not used indoors, or during any other high risk activity.**
- **The manufacturer and seller take no responsibility for the LiPo battery inside of the blade if charging was not provided using the supplied USB dongle or if the batteries were allowed to discharge completely. Always keep the battery at least 60% charged.**

Blade Operation and Flying

The Night Magic Blades have a connector on the leading edge. This connector allows image programming, switching ON the blades, and battery charging. To switch ON the blades, the jumper must be plugged into pins 1 and 2 (counted from the blade root, see the figure below). If the jumper connector is inserted into the wrong pins, the blade electronics and battery will not be damaged. However, never use a three-pin connector jumper (as used by some other manufactures) - the blade electronics and battery could be damaged.

When the blades are turned on, the white LED at the tip flashes once followed by all the diodes flashing once, and then one LED lights up indicating battery voltage. The voltage range increases from the first diode nearest to the blade root - LED 1 - indicating 3.3V up to the last diode - LED 32 - indicating 4.25V. If the battery voltage drops to the pre-configured threshold voltage during flight (default 3.4V), the blade will display "LOW BATTERY" for 10 seconds and then LED 1 and LED 32 will be activated for two minutes to enable a safe landing. Next, all LED's will turn off, but the blade electronics are still drawing current from the blade battery. The blade MUST be turned OFF (jumper removed) and connected to the blade battery charger (dongle). With poor battery performance (the battery has been deeply discharged), and the battery voltage decreases down to 2.7V, all LED's will turn off immediately. Please don't forget to remove the jumper and charge the battery. If the LED's begin to flash shortly after turning the blade on, the battery voltage is below the configured threshold voltage (default 3.4V), and it is strongly recommended to charge the blade battery immediately.

The blade battery voltage is shown in the status bar of the Night Magic Blades Manager ("NMBM") software application. In case of internal battery failure, it is possible to power the blade using our external battery box mounted under the blade grip. The battery voltage threshold can be changed using the NMBM application via the ***Hardware menu ->Startup settings***.

Picture Synchronization and IR Transmitter

The Night Magic Blades include an integrated synchronization module which can maintain a stable image at various revolution speeds. The range of rotor speed is theoretically 50 to 3500 rpm - but please notes the maximal permitted rpm for these blades is 2000! Use above this speed may lead to failure of the blade and your helicopter!

The synchronization electronics are based on an infrared transmitter and receiver. The infrared transmitter (IRT2) is usually mounted on the helicopter tail boom or frame, depending on helicopter construction. The IRT2 can be powered directly from the receiver, or battery. The allowed voltage range for the IRT2 is 3.3 to 15V (and a current of 30mA).

To ensure proper synchronization, it is important to direct the IRT2 beam between blade LED 2 and LED 3 (counted from the blade root - see the figure below). To make the IR beam visible, try viewing using the digital camera in your mobile phone. Digital cameras are sensitive to IR radiation and the beam is easily observed. The infrared beam has a radiation angle of 20 degrees. This means the point of blade synchronization is shifted from the center of the beam. The exact point of synchronization can be corrected by entering an offset value for sensor position into the NMBM software. All new blades are shipped with an offset angle of -10 degrees (an offset of 10 degrees before the blade reaches the tail boom).

To set the exact offset required, it is recommended to enable the option "Display scanning light effect" in the NMBM software. Wait until the "scanning light effect" starts to move, and then gradually rotate the blade clockwise toward the IRT2 until the "scanning light effect" stops to move. This indicates the IR receiver has been triggered by the IR transmitter. Next, measure the angle of the blade from the helicopter tail boom, and enter this angle in the NMBM application. This process ensures you will see images in flight exactly as you can see them in the NMBM application.

Battery Care and Charging

There is a battery contained within each blade and when fully charged is able to power the blade for over 30 minutes. The battery has a capacity of 100mAh for 325mm and 280mAh for 425 and 470mm blade size. The battery charger is integrated with the communication module (dongle). The preset charge current is 100mA (see the back of the dongle). If the computer USB port is unable to supply the battery charger with, use a better quality or shorter USB cable. Never charge 325mm, 425mm and 470mm blade with 500mA – This destroys blade internal battery!!!

To charge the battery connect the dongle to a USB port (or USB wall adapter) using a good quality USB cable and then plug a USB Dongle into the blade (see the figure below). A solid red LED on the dongle indicates charging. When the LED goes off (or flashing at one second intervals) indicates that the battery is fully charged and charging is complete. The LED fading or random switching off of the red LED, signals low voltage in the USB cable or the computer USB port. It is normal for the dongle to be warm during the charging process. The charging process is interrupted during reading or writing of data to the blade, as indicating by a flashing green LED on the dongle. The charging process is automatically restored after the blade read/write is finished.

Night Magic Blades Manager and Dongle Driver Installation

The Night Magic Blades Manager application is compatible with Windows XP, Server 2003, Vista, Server 2008, Windows 7 and Server 2008 R2 (x86 and x64) operating systems with .NET Framework 2.0 or later installed. If you don't have .NET Framework 2.0 installed please download this from the Microsoft web site and install it before installing the Night Magic Blades Manager application. We are also preparing a version of the Night Magic Blades Manager to run on the MAC. This will eventually be available for download from our website.

The Night Magic Blades Manager application should be downloaded from our website as a zip file "NightMagicBladesManagerSetup.zip". Next extract this zip file to your hard disk, and run setup.exe and follow the installation wizard instructions.

To install the USB dongle driver, run "USBDongleV0.4 Drivers Install" from the Night Magic Blades program menu (under your start menu) on your computer. Connect the dongle to a USB cable and plug this into a USB port on your computer. If you have an internet connection, this driver can be safely updated from the Microsoft update website.

Night Magic Blade Manager

The NMBM application provides communication with the Night Magic Blades. Basic functions include pictures organization, playlist management, basic drawing, importing images created in other graphic applications, configuration changes, firmware updating, blade identification, and data storage. The night magic blade memory can store 240 pictures. The sequence of displayed picture depends on the programmed playlist. It is possible to create simple pictures displayed for certain duration, or complex animations (for example, Batman's wings flapping). The duration of the picture interchange can be varied in the range of 0.1 second up to 999 seconds, and is only active when the blades reach the configured synchronization threshold.

NMBM has two main screens, the Pictures Editor and Playlist Editor. Switching between these is accomplished using the menu ***View->Pictures*** or ***View->Playlist***.

The **Pictures Editor** reflects picture storage in the Night Magic Blades. This storage has 240 positions. Numbers in the ***Pictures Editor*** indicate on which position of the blade memory a picture is stored. To begin, it is better to read all used picture positions from the Night Magic Blades to the ***Picture Editor.*** When you choose menu ***Hardware->Read*** pictures you can read pictures from only a particular range. On the right side of the panel are thumbnails of read pictures. To edit them, select one, and then on the left side are toolbox commands. ***Reading*** or ***Writing*** only one selected picture from or to the blade can be done using the command ***Read picture*** above the thumbnails. Writing pictures to the Night Magic Blades replaces previous storage without asking.

The **Playlist Editor** describes the sequence of presentation of stored pictures. The playlist is divided into lines and each line is one clip of selected pictures using the same parameters. Clips are on the left upper side of the editor.
Each clip has following parameters:

- Repeat count – describes how many times this picture clip will run (range 1 to 255)
- Picture duration – describes how long will each picture in the clip will be displayed on the rotor (range from 0.065 second to 999 seconds)

Each clip can have multiple pictures selected from the picture storage. When you select one clip (on left upper side) you can see its selected pictures on the bottom of the editor. To add a new one just double-click (or drag and drop) the selected picture from ***Pictures*** (on the left upper side) to the bottom line. In the middle is a preview window of created clips or the whole playlist. The blue ***Play*** button plays only the selected clip and green ***Play*** button plays the whole playlist.

It is possible to add playlist clips or change, delete or modify their picture sequence in order to achieve the desired effect of displayed pictures. After a successful playlist setup and preview, you can write the playlist separately via command ***Write playlist*** in the playlist toolbox. In flight, the playlist will repeat forever. The number of playlist clips is limited by the total content of the playlist. The NMBM application will notify you is the playlist is excessively large.

The Night Magic Blades firmware is upgradable using the NMBM. New firmware versions might eliminate not yet discovered errors or upgrade the program possibilities. The newest firmware versions will be published on our website.

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http://www.nightmagicblades.com

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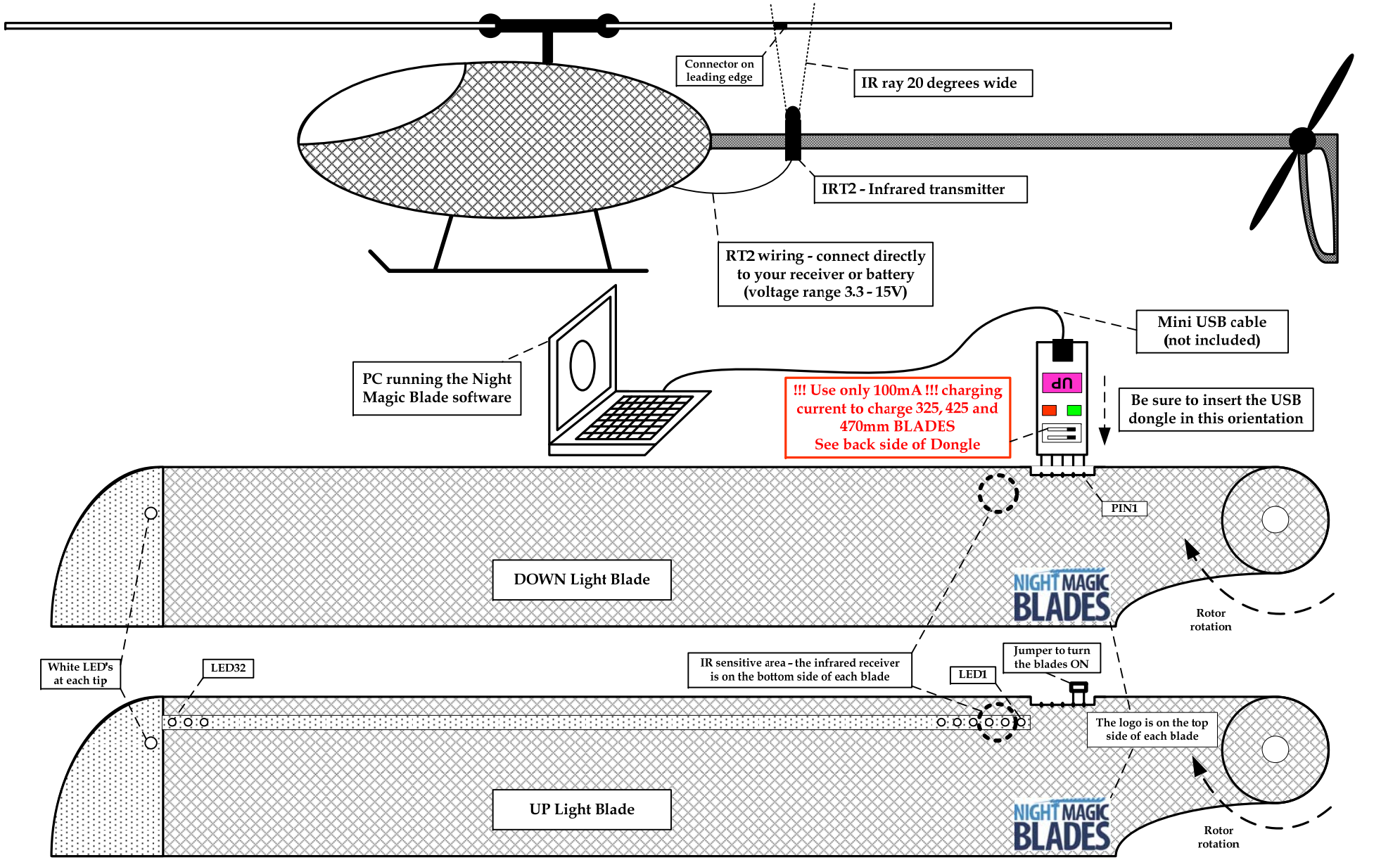

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Night Magic Blades 525 and 550mm with 48 Red/Green LED's

Features

- Able to draw pictures on the helicopter rotor disk while rotating between 50 to 2000rpm
- The pictures are stable even with rpm changes in flight
- Each blade memory has a capacity of 240 graphic images
- The rotor blades do not require any special wiring or electronic upgrade of your helicopter
- The synchronization, controlling, power and image electronics are all contained within each blade
- Each rotor blade is comprised of 48 bright LED's (pure red on the top, pure green on bottom, and one white LED at the tip of each blade)

The basic package of rotor blades include one pair of blades (525mm or 550mm), one infrared transmitter (IRT2), communication and charger USB Dongle v0.4, and three jumpers to turn the blades on.

Warning!!!

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- **The manufacturer and seller assume no liability for the operation or the use of this product. Improper use of this product can result in serious injury or even death. Intended for use only by adults with experience flying remote control helicopters. After the sale of this product we cannot maintain any control over its operation or usage.**
- **The manufacturer and seller accept no responsibility for damage or injury during use.**
- **The manufacturer and seller recommend this product is not used indoors, or during any other high risk activity.**
- **The manufacturer and seller take no responsibility for the LiPo battery inside of the blade if charging was not provided using the supplied USB dongle or if the batteries were allowed to discharge completely. Always keep the battery at least 60% charged.**

Blade Operation and Flying

The Night Magic Blades have a connector on the leading edge. This connector allows image programming, switching ON the blades, and battery charging. To switch ON the blades, the jumper must be plugged into pins 1 and 2 (counted from the blade root, see the figure below). If the jumper connector is inserted into the wrong pins, the blade electronics and battery will not be damaged. However, never use a three-pin connector jumper (as used by some other manufactures) - the blade electronics and battery could be damaged.

When the blades are turned on, the white LED at the tip flashes once followed by all the diodes flashing once, and then one LED lights up indicating battery voltage. The voltage range increases from the first diode nearest to the blade root - LED 1 - indicating 3.3V up to the last diode - LED 48 - indicating 4.25V. If the battery voltage drops to the pre-configured threshold voltage during flight (default 3.4V), the blade will display "LOW BATTERY" for 10 seconds and then LED 1 and LED 48 will be activated for two minutes to enable a safe landing. Next, all LED's will turn off, but the blade electronics are still drawing current from the blade battery. The blade MUST be turned OFF (jumper removed) and connected to the blade battery charger (dongle). With poor battery performance (the battery has been deeply discharged), and the battery voltage decreases down to 2.7V, all LED's will turn off immediately. Please don't forget to remove the jumper and charge the battery. If the LED's begin to flash shortly after turning the blade on, the battery voltage is below the configured threshold voltage (default 3.4V), and it is strongly recommended to charge the blade battery immediately.

The blade battery voltage is shown in the status bar of the Night Magic Blades Manager ("NMBM") software application. In case of internal battery failure, it is possible to power the blade using our external battery box mounted under the blade grip. The battery voltage threshold can be changed using the NMBM application via the ***Hardware menu ->Startup settings***.

Picture Synchronization and IR Transmitter

The Night Magic Blades include an integrated synchronization module which can maintain a stable image at various revolution speeds. The range of rotor speed is theoretically 50 to 3500 rpm - but please notes the maximal permitted rpm for these blades is 2000! Use above this speed may lead to failure of the blade and your helicopter!

The synchronization electronics are based on an infrared transmitter and receiver. The infrared transmitter (IRT2) is usually mounted on the helicopter tail boom or frame, depending on helicopter construction. The IRT2 can be powered directly from the receiver, or battery. The allowed voltage range for the IRT2 is 3.3 to 15V (and a current of 30mA).

To ensure proper synchronization, it is important to direct the IRT2 beam between blade LED 2 and LED 3 (counted from the blade root - see the figure below). To make the IR beam visible, try viewing using the digital camera in your mobile phone. Digital cameras are sensitive to IR radiation and the beam is easily observed. The infrared beam has a radiation angle of 20 degrees. This means the point of blade synchronization is shifted from the center of the beam. The exact point of synchronization can be corrected by entering an offset value for sensor position into the NMBM software. All new blades are shipped with an offset angle of -10 degrees (an offset of 10 degrees before the blade reaches the tail boom).

To set the exact offset required, it is recommended to enable the option "Display scanning light effect" in the NMBM software. Wait until the "scanning light effect" starts to move, and then gradually rotate the blade clockwise toward the IRT2 until the "scanning light effect" stops to move. This indicates the IR receiver has been triggered by the IR transmitter. Next, measure the angle of the blade from the helicopter tail boom, and enter this angle in the NMBM application. This process ensures you will see images in flight exactly as you can see them in the NMBM application.

Battery Care and Charging

There is a battery contained within each blade and when fully charged is able to power the blade for over 30 minutes. The battery has a capacity of 280mAh. The battery charger is integrated with the communication module (dongle). The preset charge current is 100mA (see the back of the dongle). If the computer USB port is unable to supply the battery charger with, use a better quality or shorter USB cable. Never charge 525mm and 550mm blade with 500mA – This destroys blade internal battery!!!

To charge the battery connect the dongle to a USB port (or USB wall adapter) using a good quality USB cable and then plug a USB Dongle into the blade (see the figure below). A solid red LED on the dongle indicates charging. When the LED goes off (or flashing at one second intervals) indicates that the battery is fully charged and charging is complete. The LED fading or random switching off of the red LED, signals low voltage in the USB cable or the computer USB port. It is normal for the dongle to be warm during the charging process. The charging process is interrupted during reading or writing of data to the blade, as indicating by a flashing green LED on the dongle. The charging process is automatically restored after the blade read/write is finished.

Night Magic Blades Manager and Dongle Driver Installation

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Night Magic Blade Manager

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NMBM has two main screens, the Pictures Editor and Playlist Editor. Switching between these is accomplished using the menu ***View->Pictures*** or ***View->Playlist***.

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The **Playlist Editor** describes the sequence of presentation of stored pictures. The playlist is divided into lines and each line is one clip of selected pictures using the same parameters. Clips are on the left upper side of the editor.
Each clip has following parameters:

- Repeat count – describes how many times this picture clip will run (range 1 to 255)
- Picture duration – describes how long will each picture in the clip will be displayed on the rotor (range from 0.065 second to 999 seconds)

Each clip can have multiple pictures selected from the picture storage. When you select one clip (on left upper side) you can see its selected pictures on the bottom of the editor. To add a new one just double-click (or drag and drop) the selected picture from ***Pictures*** (on the left upper side) to the bottom line. In the middle is a preview window of created clips or the whole playlist. The blue ***Play*** button plays only the selected clip and green ***Play*** button plays the whole playlist.

It is possible to add playlist clips or change, delete or modify their picture sequence in order to achieve the desired effect of displayed pictures. After a successful playlist setup and preview, you can write the playlist separately via command ***Write playlist*** in the playlist toolbox. In flight, the playlist will repeat forever. The number of playlist clips is limited by the total content of the playlist. The NMBM application will notify you is the playlist is excessively large.

The Night Magic Blades firmware is upgradable using the NMBM. New firmware versions might eliminate not yet discovered errors or upgrade the program possibilities. The newest firmware versions will be published on our website.

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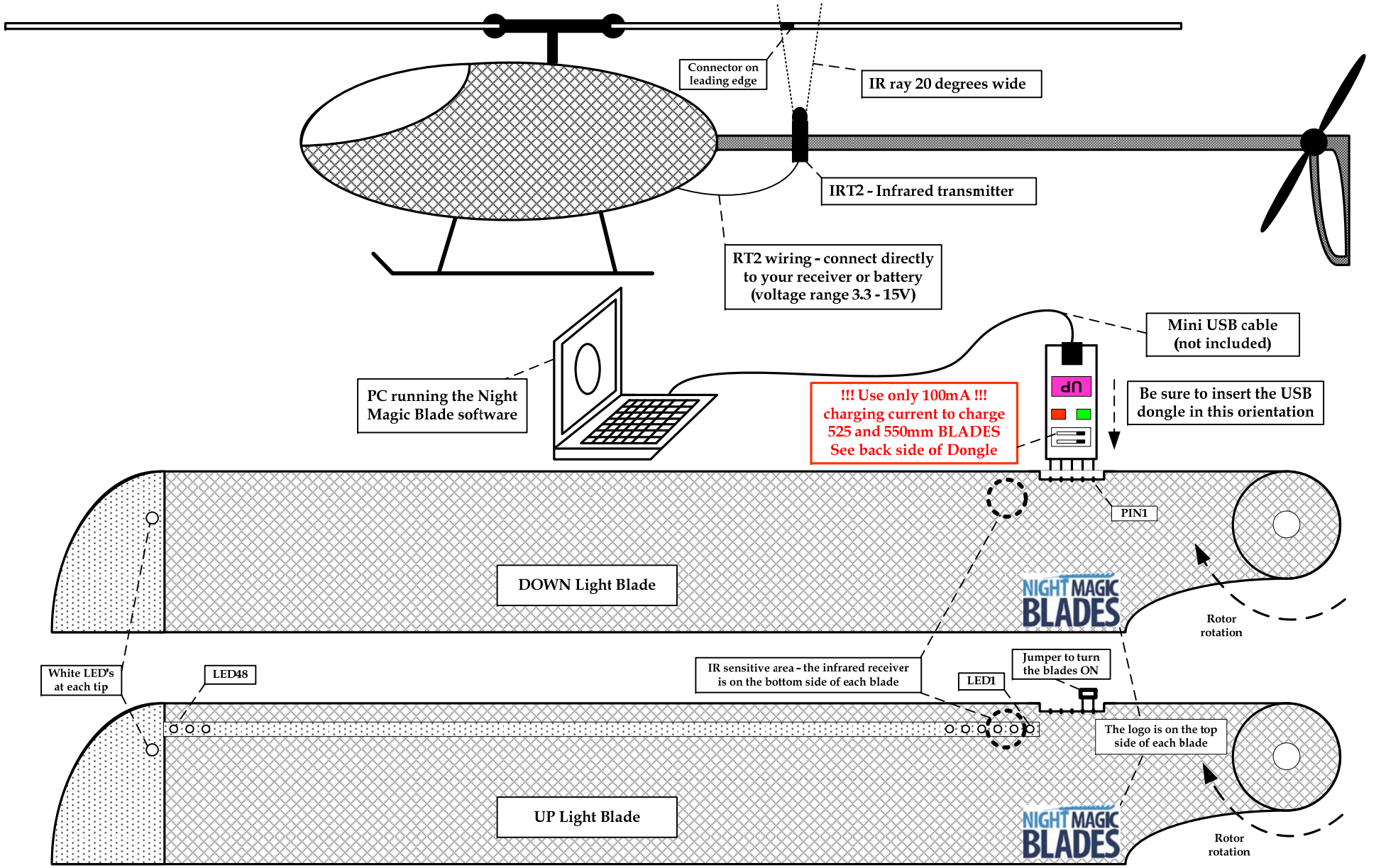

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Night Magic Blades 600, 620, 690, 710mm with 64 Red/Green LED's

Features

- Able to draw pictures on the helicopter rotor disk while rotating between 50 to 2000rpm
- The pictures are stable even with rpm changes in flight
- Each blade memory has a capacity of 240 graphic images
- The rotor blades do not require any special wiring or electronic upgrade of your helicopter
- The synchronization, controlling, power and image electronics are all contained within each blade
- Each rotor blade is comprised of 64 bright LED's (pure red on the top, pure green on bottom, and one white LED at the tip of each blade)

The basic package of rotor blades includes one pair of blades (600mm, 620mm, 690mm or 710mm), one infrared transmitter (IRT2), communication and charger USB Dongle v0.4, and three jumpers to turn the blades on.

Warning!!!

- **THIS PRODUCT IS NOT A TOY**
- **The manufacturer and seller assume no liability for the operation or the use of this product. Improper use of this product can result in serious injury or even death. Intended for use only by adults with experience flying remote control helicopters. After the sale of this product we cannot maintain any control over its operation or usage.**
- **The manufacturer and seller accept no responsibility for damage or injury during use.**
- **The manufacturer and seller recommend this product is not used indoors, or during any other high risk activity.**
- **The manufacturer and seller take no responsibility for the LiPo battery inside of the blade if charging was not provided using the supplied USB dongle or if the batteries were allowed to discharge completely. Always keep the battery at least 60% charged.**

Blade Operation and Flying

The Night Magic Blades have a connector on the leading edge. This connector allows image programming, switching ON the blades, and battery charging. To switch ON the blades, the jumper must be plugged into pins 1 and 2 (counted from the blade root, see the figure below). If the jumper connector is inserted into the wrong pins, the blade electronics and battery will not be damaged. However, never use a three-pin connector jumper (as used by some other manufactures) - the blade electronics and battery could be damaged.

When the blades are turned on, the white LED at the tip flashes once followed by all the diodes flashing once, and then one LED lights up indicating battery voltage. The voltage range increases from the first diode nearest to the blade root - LED 1 - indicating 3.3V up to the last diode - LED 64 - indicating 4.25V. If the battery voltage drops to the pre-configured threshold voltage during flight (default 3.4V), the blade will display "LOW BATTERY" for 10 seconds and then LED 1 and LED 64 will be activated for two minutes to enable a safe landing. Next, all LED's will turn off, but the blade electronics are still drawing current from the blade battery. The blade MUST be turned OFF (jumper removed) and connected to the blade battery charger (dongle). With poor battery performance (the battery has been deeply discharged), and the battery voltage decreases down to 2.7V, all LED's will turn off immediately. Please don't forget to remove the jumper and charge the battery. If the LED's begin to flash shortly after turning the blade on, the battery voltage is below the configured threshold voltage (default 3.4V), and it is strongly recommended to charge the blade battery immediately.

The blade battery voltage is shown in the status bar of the Night Magic Blades Manager ("NMBM") software application. In case of internal battery failure, it is possible to power the blade using our external battery box mounted under the blade grip. The battery voltage threshold can be changed using the NMBM application via the ***Hardware menu ->Startup settings***.

Picture Synchronization and IR Transmitter

The Night Magic Blades include an integrated synchronization module which can maintain a stable image at various revolution speeds. The range of rotor speed is theoretically 50 to 3500 rpm - but please notes the maximal permitted rpm for these blades is 2000! Use above this speed may lead to failure of the blade and your helicopter!

The synchronization electronics are based on an infrared transmitter and receiver. The infrared transmitter (IRT2) is usually mounted on the helicopter tail boom or frame, depending on helicopter construction. The IRT2 can be powered directly from the receiver, or battery. The allowed voltage range for the IRT2 is 3.3 to 15V (and a current of 30mA).

To ensure proper synchronization, it is important to direct the IRT2 beam between blade LED 2 and LED 3 (counted from the blade root - see the figure below). To make the IR beam visible, try viewing using the digital camera in your mobile phone. Digital cameras are sensitive to IR radiation and the beam is easily observed. The infrared beam has a radiation angle of 20 degrees. This means the point of blade synchronization is shifted from the center of the beam. The exact point of synchronization can be corrected by entering an offset value for sensor position into the NMBM software. All new blades are shipped with an offset angle of -20 degrees (an offset of 20 degrees before the blade reaches the tail boom).

To set the exact offset required, it is recommended to enable the option "Display scanning light effect" in the NMBM software. Wait until the "scanning light effect" starts to move, and then gradually rotate the blade clockwise toward the IRT2 until the "scanning light effect" stops to move. This indicates the IR receiver has been triggered by the IR transmitter. Next, measure the angle of the blade from the helicopter tail boom, and enter this angle in the NMBM application. This process ensures you will see images in flight exactly as you can see them in the NMBM application.

Battery Care and Charging

There is a battery contained within each blade and when fully charged is able to power the blade for over 30 minutes. The battery has a capacity of 450mAh, and typically a ten minute flight will discharge around 20% of this capacity. The battery charger is integrated with the communication module (dongle). The preset charge current is 500mA, and can be changed to 100mA (see the back of the dongle). If the computer USB port is unable to supply the battery charger with 500mA, use a better quality or shorter USB cable, or switch the charge current to 100mA (doing this will extends the charge time).

To charge the battery connect the dongle to a USB port (or USB wall adapter) using a good quality USB cable and then plug a USB Dongle into the blade (see the figure below). A solid red LED on the dongle indicates charging. When the LED goes off (or flashing at one second intervals) indicates that the battery is fully charged and charging is complete. The LED fading or random switching off of the red LED, signals low voltage in the USB cable or the computer USB port. It is normal for the dongle to be warm during the charging process. The charging process is interrupted during reading or writing of data to the blade, as indicating by a flashing green LED on the dongle. The charging process is automatically restored after the blade read/write is finished.

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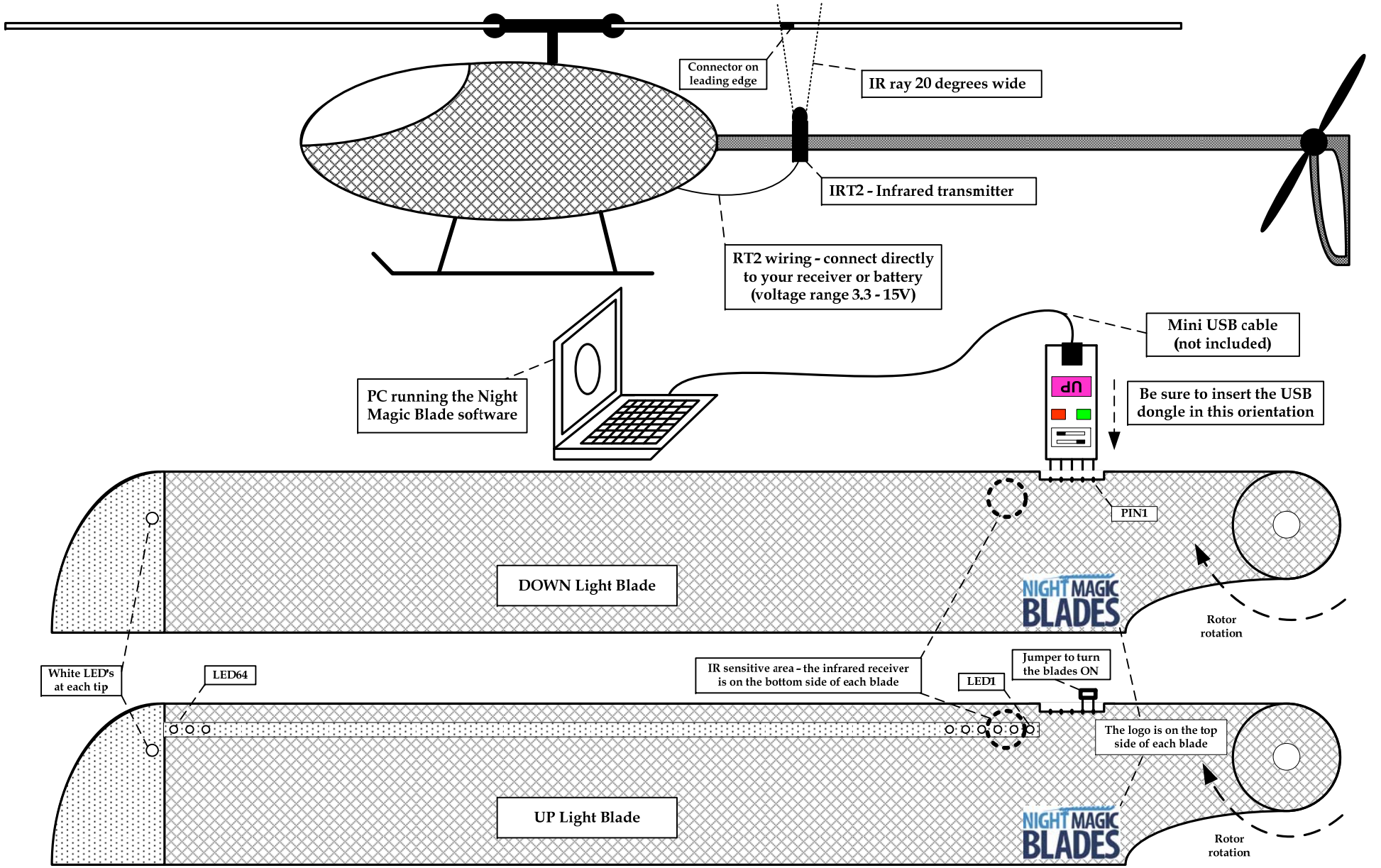

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Night Magic Blades 600, 620, 690 and 710mm with 64 Orange/Blue LED's

Features

- Able to draw pictures on the helicopter rotor disk while rotating between 50 to 2000rpm
- The pictures are stable even with rpm changes in flight
- Each blade memory has a capacity of 240 graphic images
- The rotor blades do not require any special wiring or electronic upgrade of your helicopter
- The synchronization, controlling, power and image electronics are all contained within each blade
- Each rotor blade is comprised of 64 bright LED's (orange on the top, blue on bottom, and one white LED at the tip of each blade)

The basic package of rotor blades includes one pair of blades (600mm, 620mm, 690mm or 710mm), one infrared transmitter (IRT2), communication and charger USB Dongle v0.4, and three jumpers to turn the blades on.

Warning!!!

- **THIS PRODUCT IS NOT A TOY**
- **The manufacturer and seller assume no liability for the operation or the use of this product. Improper use of this product can result in serious injury or even death. Intended for use only by adults with experience flying remote control helicopters. After the sale of this product we cannot maintain any control over its operation or usage.**
- **The manufacturer and seller accept no responsibility for damage or injury during use.**
- **The manufacturer and seller recommend this product is not used indoors, or during any other high risk activity.**
- **The manufacturer and seller take no responsibility for the LiPo battery inside of the blade if charging was not provided using the supplied USB dongle or if the batteries were allowed to discharge completely. Always keep the battery at least 60% charged.**

Blade Operation and Flying

The Night Magic Blades have a connector on the leading edge. This connector allows image programming, switching ON the blades, and battery charging. To switch ON the blades, the jumper must be plugged into pins 1 and 2 (counted from the blade root, see the figure below). If the jumper connector is inserted into the wrong pins, the blade electronics and battery will not be damaged. However, never use a three-pin connector jumper (as used by some other manufactures) - the blade electronics and battery could be damaged.

When the blades are turned on, the white LED at the tip flashes once followed by all the diodes flashing once, and then one LED lights up indicating battery voltage. The voltage range increases from the first diode nearest to the blade root - LED 1 - indicating 3.3V up to the last diode - LED 64 - indicating 4.25V. If the battery voltage drops to the pre-configured threshold voltage during flight (default 3.4V), the blade will display "LOW BATTERY" for 10 seconds and then LED 1 and LED 64 will be activated for two minutes to enable a safe landing. Next, all LED's will turn off, but the blade electronics are still drawing current from the blade battery. The blade MUST be turned OFF (jumper removed) and connected to the blade battery charger (dongle). With poor battery performance (the battery has been deeply discharged), and the battery voltage decreases down to 2.7V, all LED's will turn off immediately. Please don't forget to remove the jumper and charge the battery. If the LED's begin to flash shortly after turning the blade on, the battery voltage is below the configured threshold voltage (default 3.4V), and it is strongly recommended to charge the blade battery immediately.

The blade battery voltage is shown in the status bar of the Night Magic Blades Manager ("NMBM") software application. In case of internal battery failure, it is possible to power the blade using our external battery box mounted under the blade grip. The battery voltage threshold can be changed using the NMBM application via the ***Hardware menu ->Startup settings***.

Picture Synchronization and IR Transmitter

The Night Magic Blades include an integrated synchronization module which can maintain a stable image at various revolution speeds. The range of rotor speed is theoretically 50 to 3500 rpm - but please notes the maximal permitted rpm for these blades is 2000! Use above this speed may lead to failure of the blade and your helicopter!

The synchronization electronics are based on an infrared transmitter and receiver. The infrared transmitter (IRT2) is usually mounted on the helicopter tail boom or frame, depending on helicopter construction. The IRT2 can be powered directly from the receiver, or battery. The allowed voltage range for the IRT2 is 3.3 to 15V (and a current of 30mA).

To ensure proper synchronization, it is important to direct the IRT2 beam between blade LED 2 and LED 3 (counted from the blade root - see the figure below). To make the IR beam visible, try viewing using the digital camera in your mobile phone. Digital cameras are sensitive to IR radiation and the beam is easily observed. The infrared beam has a radiation angle of 20 degrees. This means the point of blade synchronization is shifted from the center of the beam. The exact point of synchronization can be corrected by entering an offset value for sensor position into the NMBM software. All new blades are shipped with an offset angle of -20 degrees (an offset of 20 degrees before the blade reaches the tail boom).

To set the exact offset required, it is recommended to enable the option "Display scanning light effect" in the NMBM software. Wait until the "scanning light effect" starts to move, and then gradually rotate the blade clockwise toward the IRT2 until the "scanning light effect" stops to move. This indicates the IR receiver has been triggered by the IR transmitter. Next, measure the angle of the blade from the helicopter tail boom, and enter this angle in the NMBM application. This process ensures you will see images in flight exactly as you can see them in the NMBM application.

Battery Care and Charging

There is a battery contained within each blade and when fully charged is able to power the blade for over 30 minutes. The battery has a capacity of 450mAh, and typically a ten minute flight will discharge around 20% of this capacity. The battery charger is integrated with the communication module (dongle). The preset charge current is 500mA, and can be changed to 100mA (see the back of the dongle). If the computer USB port is unable to supply the battery charger with 500mA, use a better quality or shorter USB cable, or switch the charge current to 100mA (doing this will extends the charge time).

To charge the battery connect the dongle to a USB port (or USB wall adapter) using a good quality USB cable and then plug a USB Dongle into the blade (see the figure below). A solid red LED on the dongle indicates charging. When the LED goes off (or flashing at one second intervals) indicates that the battery is fully charged and charging is complete. The LED fading or random switching off of the red LED, signals low voltage in the USB cable or the computer USB port. It is normal for the dongle to be warm during the charging process. The charging process is interrupted during reading or writing of data to the blade, as indicating by a flashing green LED on the dongle. The charging process is automatically restored after the blade read/write is finished.

Night Magic Blades Manager and Dongle Driver Installation

The Night Magic Blades Manager application is compatible with Windows XP, Server 2003, Vista, Server 2008, Windows 7 and Server 2008 R2 (x86 and x64) operating systems with .NET Framework 2.0 or later installed. If you don't have .NET Framework 2.0 installed please download this from the Microsoft web site and install it before installing the Night Magic Blades Manager application. We are also preparing a version of the Night Magic Blades Manager to run on the MAC. This will eventually be available for download from our website.

The Night Magic Blades Manager application should be downloaded from our website as a zip file "NightMagicBladesManagerSetup.zip". Next extract this zip file to your hard disk, and run setup.exe and follow the installation wizard instructions.

To install the USB dongle driver, run "USBDongleV0.4 Drivers Install" from the Night Magic Blades program menu (under your start menu) on your computer. Connect the dongle to a USB cable and plug this into a USB port on your computer. If you have an internet connection, this driver can be safely updated from the Microsoft update website.

Night Magic Blade Manager

The NMBM application provides communication with the Night Magic Blades. Basic functions include pictures organization, playlist management, basic drawing, importing images created in other graphic applications, configuration changes, firmware updating, blade identification, and data storage. The night magic blade memory can store 240 pictures. The sequence of displayed picture depends on the programmed playlist. It is possible to create simple pictures displayed for certain duration, or complex animations (for example, Batman's wings flapping). The duration of the picture interchange can be varied in the range of 0.1 second up to 999 seconds, and is only active when the blades reach the configured synchronization threshold.

NMBM has two main screens, the Pictures Editor and Playlist Editor. Switching between these is accomplished using the menu ***View->Pictures*** or ***View->Playlist***.

The **Pictures Editor** reflects picture storage in the Night Magic Blades. This storage has 240 positions. Numbers in the ***Pictures Editor*** indicate on which position of the blade memory a picture is stored. To begin, it is better to read all used picture positions from the Night Magic Blades to the ***Picture Editor.*** When you choose menu ***Hardware->Read*** pictures you can read pictures from only a particular range. On the right side of the panel are thumbnails of read pictures. To edit them, select one, and then on the left side are toolbox commands. ***Reading*** or ***Writing*** only one selected picture from or to the blade can be done using the command ***Read picture*** above the thumbnails. Writing pictures to the Night Magic Blades replaces previous storage without asking.

The **Playlist Editor** describes the sequence of presentation of stored pictures. The playlist is divided into lines and each line is one clip of selected pictures using the same parameters. Clips are on the left upper side of the editor.
Each clip has following parameters:

- Repeat count – describes how many times this picture clip will run (range 1 to 255)
- Picture duration – describes how long will each picture in the clip will be displayed on the rotor (range from 0.065 second to 999 seconds)

Each clip can have multiple pictures selected from the picture storage. When you select one clip (on left upper side) you can see its selected pictures on the bottom of the editor. To add a new one just double-click (or drag and drop) the selected picture from ***Pictures*** (on the left upper side) to the bottom line. In the middle is a preview window of created clips or the whole playlist. The blue ***Play*** button plays only the selected clip and green ***Play*** button plays the whole playlist.

It is possible to add playlist clips or change, delete or modify their picture sequence in order to achieve the desired effect of displayed pictures. After a successful playlist setup and preview, you can write the playlist separately via command ***Write playlist*** in the playlist toolbox. In flight, the playlist will repeat forever. The number of playlist clips is limited by the total content of the playlist. The NMBM application will notify you is the playlist is excessively large.

The Night Magic Blades firmware is upgradable using the NMBM. New firmware versions might eliminate not yet discovered errors or upgrade the program possibilities. The newest firmware versions will be published on our website.

For more information about using your Night Magic Blades, visit the support section on our website. Here you will also find useful video tutorials.

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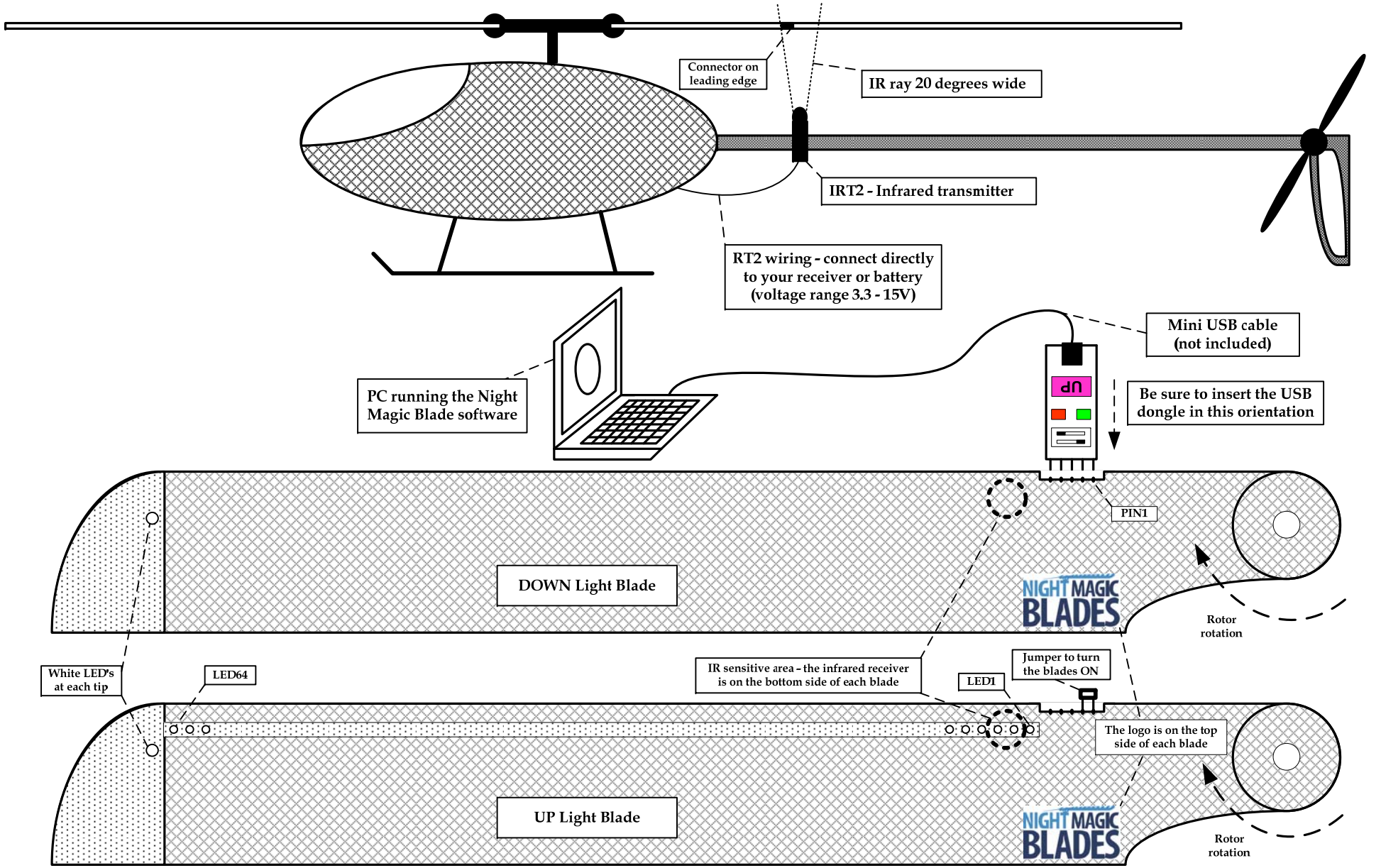

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