Motoryoke BigBee

MB-D1

Software version 4.56

Functional description

Fabrication and marketing
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Last updated on: 15/10/19 Rev.: 1.06

Caution! Operate the device only after having read and understood operating instructions (page 4)!

Table of content

Safety- and operating instructions

Before opening the housing disconnect the device from the mains !!!

Do **not** try in any case to **touch** the electronic through openings, also with any objects. This can cause an **electrical accident** that can lead to death!

Please note: The **switching** or rising/falling from one input voltage range to another during operation can lead to damage of the device!

When using a **generator**, first start the generator and wait for stable mains supply voltage! After that switch on the power supply

When using a generator, leave the device switched off until the mains voltage and frequency of the generator is stable. Starting the generator with switched on device will damage the device!!!

The motoryokes are tested by the german trade association (*Berufsgenossenschaft*). The devices conform with BGV C 1 and **correspond** to the newest safety regulations.

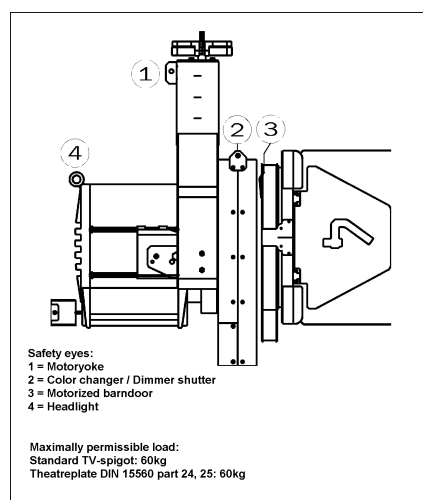Never exceed the maximal possible **load of the mounting point**. (Rigg etc.)

Make sure that the **maximum load** of the fastening spigot will not be exceeded.

Never exceed the **maximum load** of the motoryoke. It is written on the identification plate.

The Motoryoke must only be operated in the **operating position** provided for this purpose. Operating position is vertically hanging down, fastening spigot on the top or vertically standing, spigot on bottom.

Make sure that all fixtures of the yoke are **tightened**. Observe the torque of the screws or nuts.

Fast the headlight and all accessories like color changer, dimmer shutter and barndoor with **safety belts**. See picture:

Safety eyes:
1 = Motoryoke
2 = Color changer / Dimmer shutter
3 = Motorized barndoor
4 = Headlight

Maximally permissible load:
Standard TV-spigot: 60kg
Theatreplate DIN 15560 part 24, 25: 60kg

Make sure that the safety belts have the right diameter. For weights up to 60 kg a belt of 10mm diameter is necessary for the one way method and a belt of 6mm is necessary for the two way method.

One way safety belt   Two way safety belt
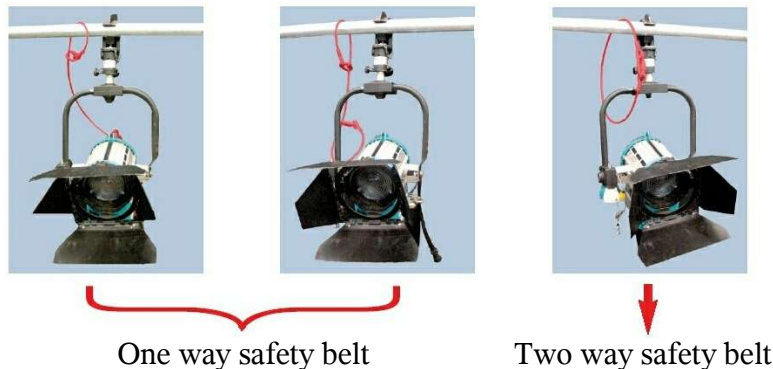
The user is **responsible** for the correct use of safety parts!

Make sure that all parts which are mounted on the headlight are right **tightened**.

Lever forces must not have an effect on the Motoryoke. This means that the installed motoryoke must not be **shifted** or **bended**! It is also forbidden when fastening spigot is opened.

Do not push, pull or drag
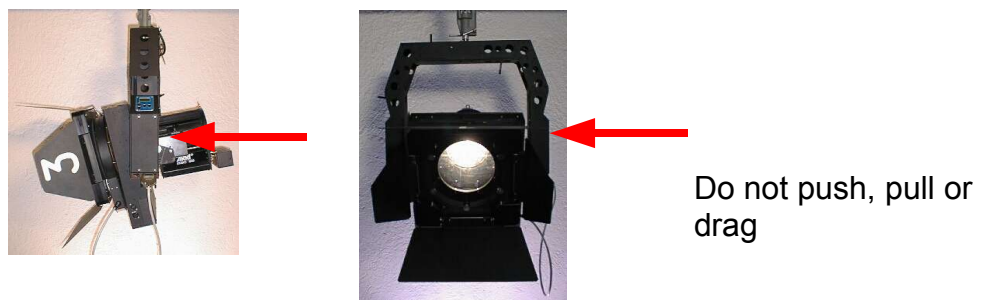
That applies also to the **transport**. It is absolutely forbidden to hang up the yoke on its spigot when transported!
If you want to use a transport **carriage**, it must be certified by Licht-Technik!

The fastening spigot must be **checked visual** once a year. The spigot must be in right angel to the housing. This must be checked in **front** and **side** view. A **protractor** can be a help.

90°

Furthermore, the **spigot** itself and the **surface** of the yoke must not be deformed. Make sure that the spigot is not loose or unformal.
If the spigot is visibly **damaged** or deformed the motoryoke must not be used anymore. The device has to be sent to Licht-Technik.

A safety device that was **once loaded** or is visibly damaged **must not** be used anymore!
When working on the motoryoke, it must be **switched off** or the power line must be interrupted. Make sure that the Motoryoke cannot be moved by the control panel.

The operator must make sure that **no person** is in the swivelling range of the motoryoke. Inform your coworker and colleagues that the motoryoke is behaving like a work robot. When the position is changed at the control panel the device is trying to move on this position. There is the danger of being bruised and get frightened.

Admissible ambient **temperature**: 0..45 degree Celsius.
The motoryoke must not be **lit directly** by the lamp. Limit the range of rotation (TILT axle) so that the headlight **does not shine** on the motoryoke.

Check the whole swivelling range of the headlight. The manufacturers of the lamps specify **minimum permissible distances** to inflammable materials. Make sure that these distances are attended in every position of the lamp.
The manufacturers of the lamps specify maximum **inclination**. HMI headlights are not allowed to operate with the ignition electronic on the top.

The motoryoke must be kept **dry**. In case of water condensation a waiting period of up to 2 hours is necessary until acclimatisation is reached.

If **knobs** for manual moving are mounted, they can only be used if the motoryoke is in power off condition. If the device is switched on and the knobs are rotated manually the motors and/or gearboxes can be damaged.

Make sure to mount the lamp in the weight balancing point. The motoryoke must only be operated with balanced tilt, otherwise the motor and/or gearbox can be damaged.

Observe the right cabling. The cable-loop must be wide enough and the correct cable-route must be observed. The cables with the safety belt are last fixed left beside the safety hole of the motoryoke. The cable package is routed over the mounting bridge and under the pipe of the rigg:

Wrong routed cables can lead to defective cables, because of the mechanic and thermic influence!

Check the complete pan moving range before starting the equipment by turning by hand! Too short cable loops can block the pan axis!

Never use the standard DMX-IN and the special control IN at the same time. Only one can be used!

When it has to be assumed that a **safe operation** is no longer possible, the equipment must be switched off immediately and be **secured against unintended** operation.

This is the case when

- – the equipment shows visible damages
- – the equipment is no longer functional
- – parts of the equipment are loose or slackened
- – connecting lines show visible damages

Attention:
Before starting the equipment the user must check the usefulness of the device for its intended use.

We reject every **liability**:

- – Damages and indirect damages or every kind of costs, which result from the use of Licht-Technik products.
- – Any damages which result from negligence, improper use and setup, wrong setting into operation and use, ignoring of valid safety regulations, unsuitable use, bad maintenance of Licht-Technik products.

Quick start guide

Follow the description **step by step** to mount the lamp and program the yoke!
For **cable connections**, please refer to section *cabling, page 16*.

Assembling position:

First, the yoke must move to build-in position. The yoke can stand on the floor or hang in a rigg. Connect power cable, but let it switched off. Push the UP button and switch on. This is the indicator for the electronic, that a lamp will be mounted.
If you are using the focus drive, connect it but do **not** mount it to the focus knob of the lamp. No DMX-signal is needed. At the moment **NO** lamp is necessary!

Press the **UP** button and **power up** the yoke.
Wait until "adjust" is indicated. Release the button.
The electronic moves the axes including focus (if used and connected) to the build-in position.

Wait until "ready" is shown.
The yoke is ready to mount the lamp.
Power off the yoke or switch it off

Mounting direction:

Front is the side with the Licht-Technik logo. **Back** is the side with the connectors.
Mount the lamp so that the light is in the front.

Mounting the lampholders (each side one):

lampholder

connection system

Mount the lampholders with one screw

Tighten the screw

Check position for balance point!

Ready mounted lampholders

Make sure that the original lampholder is about in middle position. Check if the lamphead is nearly in weight balance!

Assembling the yoke:

Lift the yoke over the lamp. Better get help from another person. Get the locking pin ready.

Adjust the yoke in width

Insert the locking pin.

Ready mounted lamp

Assembling focus drive:

If the lamp has a mechanical focus **position indicator**, move the drive by hand to about middle position.

If **no** mechanical focus **position indicator** is existing, count the windings of the knob from end to end. Divide this number by two and find the middle position this way.

Count the **total** windings to find the approximate **middle** position. Adjust the drive by hand to this encountered position
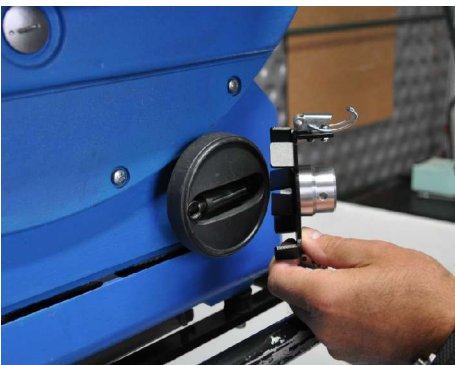
Mount the focus drive **adapter**

Close the **retainers**
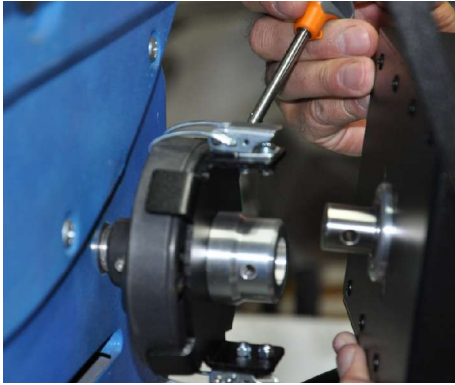
Mount the **motorbox**. Insert the **bolt**
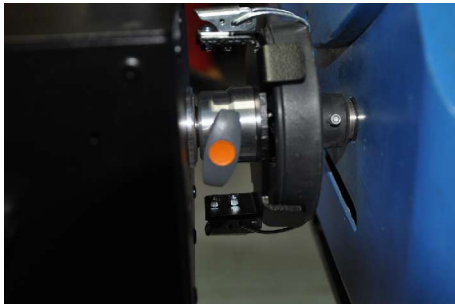
Focus spindle connection

Use the **holding system** to fix the motorbox on the lamp

Ready mounted focus

Power on the yoke! (No button pushed!)

<u>Programming and adjusting the 0% and 100% focus position:</u>

Use **P03** (detailed description on page 28) for **automatic** adjustment of this two positions:

Press **MENU**, select P03 with the **UP** and/or **DOWN** key.
When P03 is indicated press **MENU** again to gain access.
Press **MENU** again to start the adjustment move

The focus drive moves now from 0% position to 100% position to find the **endstops**.

The device is now **ready** for operation.

Set the pan **middle position** mechanically and roughly of pan axis like illustrated on page 21.

Program the pan **middle position** exactly at the display, refer to *programming the middle position* on page 29

Program the **moving range** of the **PAN**-axle with P11. Refer to *PAN-axle moving range, page 20.*

We recommend that the **tilt programmings** should **not** be changed by the user. It is much more difficult than the pan axis and harder to understand. Better use and never change the factory settings. With that you can move the lamp on tilt a little bit to the top and 90° to the bottom.

Identification

The motoryokes are **identified** by a number on the identification plate as follows:

MB – XX

MB   =   Motoryoke. On every motoryoke identification plate.

XX   =   ST: Type: Studio yoke
           R: Type: tube yoke
           SH: Type: Show yoke
           D1:   Type: Flexible in width

The Licht-Technik Motoryoke

The motorised yoke of Licht-Technik is a **versatile**, **precise** and **powerful** device for headlight positioning.

Since 1991 the company Licht-Technik designs motoryokes for film, TV and theatre houses. We only use the best components of the world-wide leading companies. The **aluminium** housings are characterised by high stability, high quality and low dead weight. The devices are manufactured on own **CNC** controlled machines and can guarantee a continuously **high quality standard**. Noise is optimised sequentially. We manufacture the Motoryokes in cooperation with our customers.

The control is made by the **DMX-512 USITT**-interface. The rough and fine positioning and the speed for each main-axis (PAN/TILT) can be controlled. As an option a focus unit and/or a motorized barndoor can be controlled by DMX.

The Motoryokes can be offered with the following **options**:

Focus unit:
With the focus unit the headlight-focus can be driven by DMX. The positioning takes place in 256 steps (1 DMX channel). The speed is fixed. Therefore no DMX-channel for speed has to be set.

Rotation unit:
With the rotation unit the headlight can be rotated by DMX. The positioning takes place in 256 steps (1 DMX channel). The speed is fixed. Therefore no DMX-channel for speed has to be set.

The built in **32-Bit Processor** provides a high throughput of the computer, quick positioning and uncomplicated handling. Even when triggering several motoryokes the precise control system provides a high synchrony of the movement.

Because of the absolute value device, the motoryoke does not perform any **initialisation runs** after power up.

The lighted **LCD display** (the light can be switched off) leads the user in plain text instructions through the various programming steps. The instructions are available either in english or german language.

The motoryoke has a mechanical and electronical **torque delimitation** on the PAN and TILT axle. The mechanical torque limitation is realised with a friction **clutch** and prevents a personal injury of people working on the yoke. Furthermore the drives and gearboxes will not be damaged when moving the yoke in case of power off.

The **electronical torque delimitation** switches off the motors in case of blocking (e.g. blocking because of moving onto a wall or decoration). The display shows an appropriate error message.

The **controlling** of the two main axles (PAN and TILT) is done with 2 DMX-channels per axle. With only one channel (8-Bit) a resolution of 256 steps could be realised. With two channels (16-Bit) a resolution of **65536 steps** is possible. The first channels of each axle represents the rough position information (at 360° range of rotation about 1.4 degrees per step). The second channel represents the fine position information. The speed of the motoryoke is determined with one channel (PAN and TILT together) or with two channels (PAN and TILT separated).

The DMX-standard in lighting

Because of many problems with **analogue** data-signals from the control panels to the dimmers the DMX-standard was developed in 1990. DMX only needs **two** wires to control up to 512 dimmers digitally. On the other hand, the old analogue method needs one wire for every dimmer. Many kilometers of cable have been saved.

The DMX-signal is based on the industrial **RS485** interface. It is designed for maximum lengths up to 1200m. Normally this length is under condition in theatre or studio **not possible** (strong electrical fields because of the HMI lamps). As a result of internal tests we recommend a maximum length of **200m** (only DMX line, 5pin). On every DMX transmitter a maximum of 32 DMX receiver can be connected. All devices must be connected in a **row** (cabling from A to B, from B to C, from C to D etc.). The last device in such a row must be terminated with a resistor (470 Ohm). If more than 32 devices should be connected a booster or **splitbox** must be inserted.

A **splitbox** is a device with one DMX input and several DMX outputs. The signal is refreshed. Thus it is possible to use different DMX lines.

The reliability of data transmission was increased because of using DMX. One of the greatest advantages is universally usefulness. Now devices from different manufacturers can be controlled by every control panel.
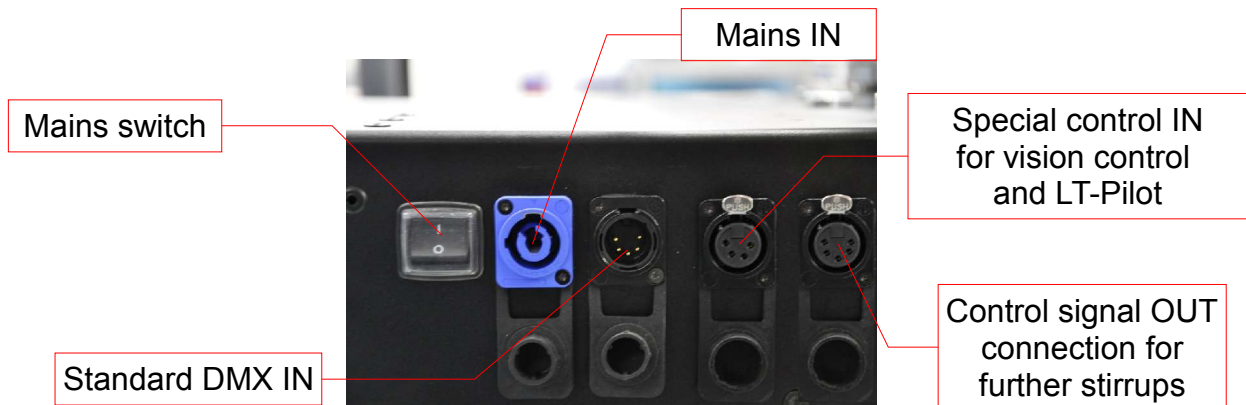
Cabling

Make sure that the motoryoke is **switched off** before cabling!

For pinout of cables refer to *technical data, page 43.*

Connectors top:
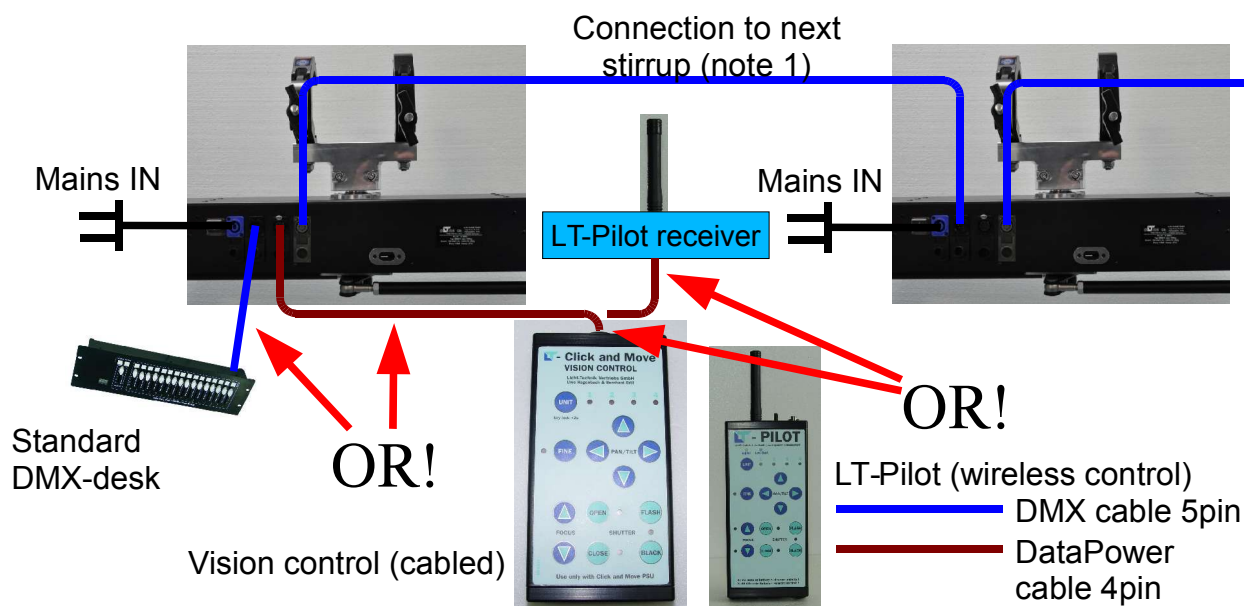

Mains IN

Mains switch

Special control IN
for vision control
and LT-Pilot

Standard DMX IN

Control signal OUT
connection for
further stirrups

Never use the standard DMX-IN and the special control IN at the <u>same</u> time. Only one can be used!

Cabling:

Connection to next stirrup (note 1)

Mains IN

LT-Pilot receiver

Mains IN

Standard DMX-desk

OR!

OR!

Vision control (cabled)

LT-Pilot (wireless control)

DMX cable 5pin

DataPower cable 4pin

(1)Maximum 4 units if Vision Control or LT-Pilot is used!
DMX addressing and unit button assignment

If you are using a **standard DMX** desk please refer to the **DMX channel layout** described on page 25!

If the Vision Control or the LT-Pilot is used the following addresses must used and parameters must be set:

	Unit 1	Unit 2	Unit 3	Unit 4
DMX first address stirrup	1	21	31	41
DMX address Dimmer Shutter (optionally)	8	9	10	11

The following menus must be programmed (please refer to the corresponding manuals):

Motorized yoke: P01 =   DMX address see above
                        P02 = 1   Focus/Rotation module on (if used and connected)
                        P03 = 0   Motorized barndoor off
                        P27 = 1   Speed channels for pan and tilt seperately
                        P38 = 0   Focus moving direction = normal.

Dimmer Shutter: P01 =   DMX address see above
                        P15 = 3   Single channel mode

Connectors bottom:
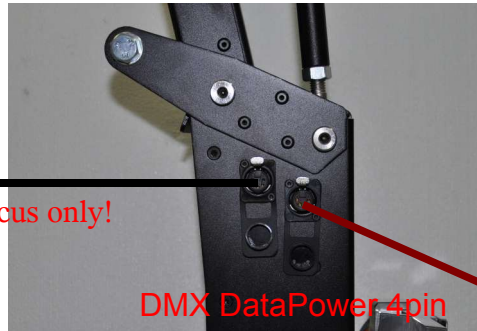
Shutter
Color changer
etc.

Focus only!

DMX DataPower 4pin

Caution!!
Make large enough **loop** at the data- and lamp cable. Make sure that there is enough space in cabling over the entire moving range of the yoke. The cables must neither be **stretched** nor **bended**!

The cables are fixed with cable fixers. The clips are mounted on the back side of the yoke. It is possible to connect a Licht-Technik color changer and/or a dimmer-shutter.

Getting started

Assemble the lamp like illustrated in **quick setup guide** on page 8.

Setup the motoryoke on the desired place **according** to the *operating and safety instructions, page 4.*

Mount **Focus unit** if used. Refer to *Quick start guide, page 8.*

Set the **middle position** mechanically and roughly of pan axis like illustrated on page 21.

Cable the motoryoke like illustrated in *cabling, page 16.*

Switch on the motoryoke. After testing its internal program memory and the control it shows the overall operating hours. Now the motoryoke is moving to the programmed position. The second display line shows the DMX-address and value of the PAN-axle.

Caution!
Make sure that the motoryoke is not moved by the **control panel** before programming. Otherwise the motoryoke will move during programming if the position is changed at the panel!

If the focus unit is used program *P02 Focus unit on/off*, page 27 to 1. If not program it to 0.

Program the **middle position** exactly at the display via P05, refer to *programming the middle position* on page 29.

Program the **moving range** of the **PAN**-axle. Refer to *P11, PAN-axle moving range, page 31.*

Normally not necessary, but possible is the programming of the **TILT moving range**. Refer to *TILT-axle moving range,* page *22.*

If you are using a control desk with **joystick**, **vision control** or **LT-Pilot** the speed channel setup in P27, page 36, must be programmed to 1!
If you are using a standard DMX desk P27 **can** be programmed to 1 or 0. Decide for yourself how you want to control the speed.

Further **programming possibilities** like DMX addressing are specified on the following pages.

Tip:
When the motoryoke is in **programming mode**, all moving orders are ignored. Make sure that the device is in operating mode after programming, otherwise it will not move! Press two times the OK key for leaving the programming mode!

PAN – axis moving range

Basically:
The PAN-axle is the axle which moves the lamp **horizontally**.

The **moving range** of the main axles can be adapted individually. For the PAN-axle are two parameters required. The **middle position** and an **angle** in which the motoryoke should move. If an angle of 90 degrees is programmed, the motoryoke moves from its middle position 90° to the left and 90° to the right. The whole moving range is 180°.
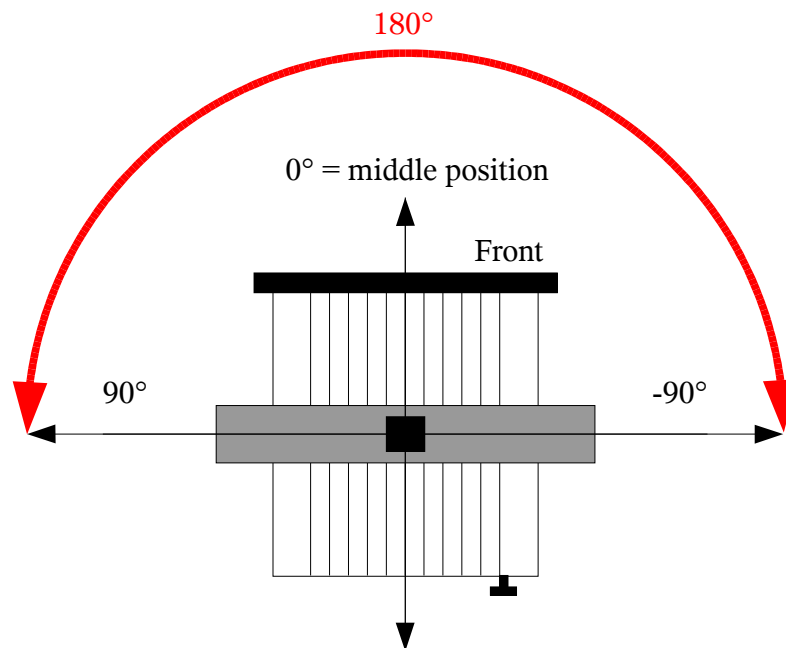
If an angle of 45° is programmed, the yoke will move 45° to the **left** and **right**. The moving range is 90°.
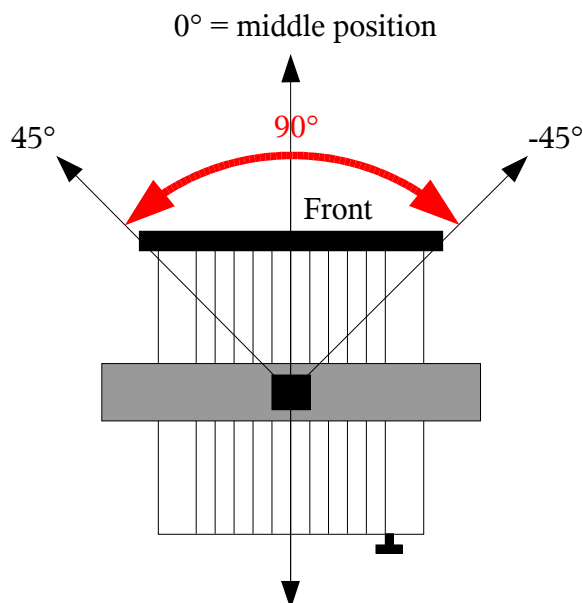
This setup is useful when the motoryoke is hanging in a **corner** for example.

Setting the PAN middle position:

The middle position normally is the position in which the lamp is **used most**.

You should start with the pan axis in the **current adjusted** middle position. If you do not know if this is the case, power up the device and set the DMX-channel for position to 50%. Do not forget to set the speed value to 100%. Channels are 1 (position) and 5 (speed) at factory presettings.

Let yoke move onto this positions. After that the middle position can be set. Exert the **tripping lever** (see picture). Turn the yoke **carefully** on its arms onto the desired middle position. Keep the tripping lever hold until desired position is reached.
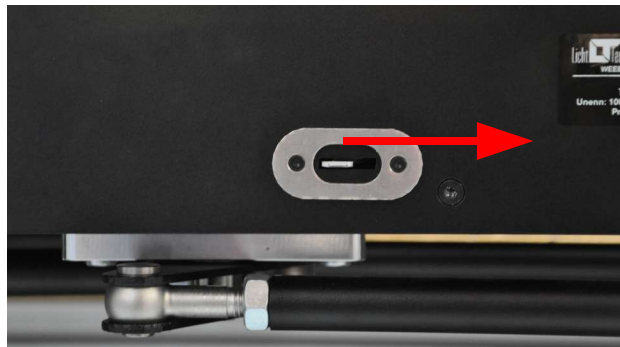
Pan tripping lever

For understanding: Because of exerting the tripping lever, the motoryoke remains **internally** on its middle position. The absolute value device does not join in turning anymore. You turn the yoke around this internal middle position.

Testing of the new setting: Change the DMX-value of the PAN-axle for a few seconds, after that set it back to 50%. The motoryoke moves to its new middle position. The rough position is now programmed. In menu P05, PAN-axle middle position, page 29 the fine adjustment can be done.

The **moving angle** can be set in menu *P11, PAN-axle moving range, page 31*. It can be in a range within 1 and 185°. Recommended is 90°.

Caution !!

Check the **entire moving** range of the lamp:

The lamp-manufacturer specify **minimum distances** to inflammable materials. Never fall below the minimum distance in no position of the lamp!

Make sure that no cable will be **broken**, **bended**, **stretched** or **damaged** anyhow by reason of turning the motoryoke!

TILT – axis moving range

Basically:

The TILT-axle is the axle which moves the lamp **vertically**.

Normally the factory presettings are **suitable** and nothing must be set. The lamp can be moved from vertically down to a few degrees on the top.

The 0-degree position represents the **horizontal even** position of the lamp. From this position a **positive** moving range and a **negative** moving range is defined. The positive range is much smaller than the negative range. This is the reason why it can not be determined where the 50% DMX position is.

TILT moving range is in opposite to the PAN moving range asymmetric. It is set in two menus. (P12, page 32 and P13 page 33).
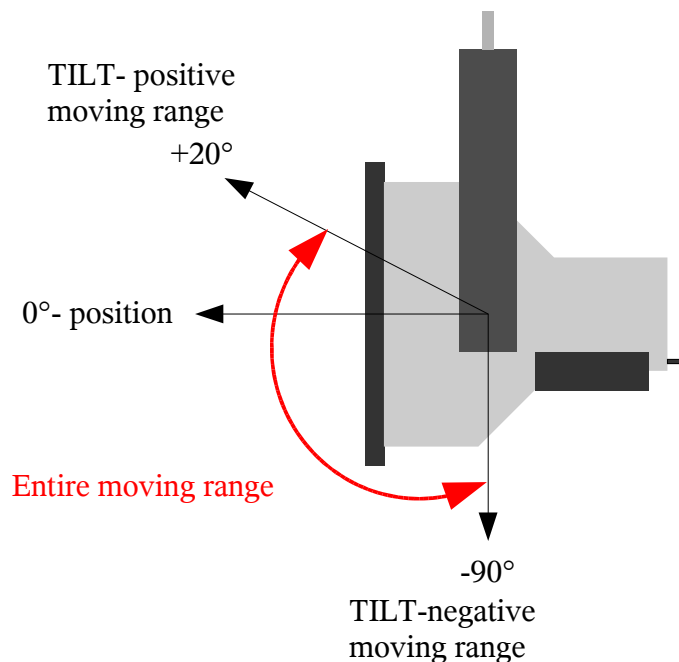
If a correction must be made do proceed with the following steps:

Use menu *P06, TILT-axle 0-position, page 30*, to move the yoke onto 0-position. When the value is changed one time (up or down), the yoke starts moving on this position.

Wait until the motoryoke **does not move** anymore.

Now it is possible to set a new 0-position **roughly** by exerting the tripping lever. To **fine** adjust use *P06, TILT-axle 0-position, page 30.*

Using the tilt tripping lever:

Move the lever on the back side of the yoke. Hold and move the lamp onto the desired 0-position. Now use P06, *TILT-axle 0-position, page 30* to fine adjust the new 0-position.
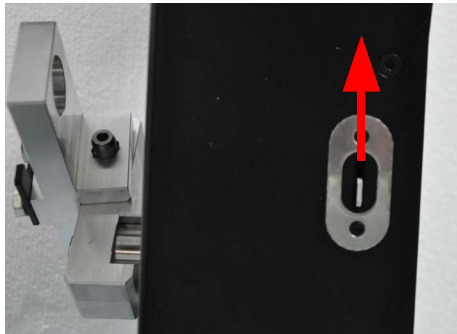
Now the **angles** for the moving range in P12 and P13 can be set. New reference point is the 0-position from before.

Do not forget to press **two** times the **OK** key to get back to working level after programming.

Check the complete new moving range with the **DMX-signal.**

Caution !!

Check the entire **moving range** of the lamp:

The lamp-manufacturer specify **minimum distances** to inflammable materials. Never fall below the minimum distance in no position of the lamp!

Check that the **motoryoke** will not be illuminated when lamp is on top position.

Make sure that no cable will be **broken**, **bended**, **stretched** or **damaged** anyhow by reason of turning the motoryoke!

Headlights generally must **not** be operated with the ignition electronic on the top. Observe the specifications of the lamp manufacturer!

User interface

Moving text with type of device, software-version and telephone number

1. DMX-address

Value of the 1. DMX-address

UP key

OK key

DOWN key   MENU key
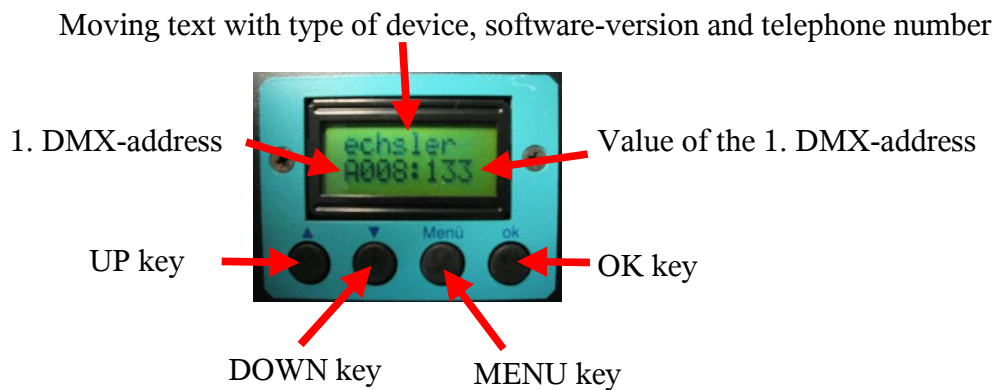
In normal operating mode the **LCD-display** indicates different information. The first line shows the Licht-Technik moving text with details on type of device, software version and telephone number. The second line indicates the first DMX-address and its incoming value (8-Bit, 0..255). For the motoryoke, this address is the PAN-address.

With the four **keys** the device can be programmed. Instruction for this, is on the following pages.

Display lighting ON/OFF

In normal operation mode the LCD backlight is switched off to avoid a disturbing light. Only if an error occurs or during programming the light will be switched on automatically. The user can also switch it on manually to see what is indicated.

Condition: Motoryoke is on working level

Operation:

depress. Display lighting **ON**

depress again. Display lighting **OFF**

DMX channels motoryoke

The following chapters require the **DMX-channel assignment** of the motoryoke. Please note the difference which is programmed in *P27, PAN/TILT DMX speed channel setup, page 36*. This menu determines if the speed is given by **one** or by **two** channels. Therefore, the motoryoke requires between 5 (without optional components) and 12 DMX-channels.

If a **Joystick, Vision-control** or **LT-Pilot** is used, P27 (*page 36*) has to be set to 1. If a standard-DMX desk is used both possibilities are possible. Choose the one you want but keep the channel layout in mind!

Channel	Motoryoke (P27=0)	Motoryoke (P27=1)
1	Rotation PAN rough	Rotation PAN rough
2	Rotation PAN fine	Rotation PAN fine
3	Rotation TILT rough	Rotation TILT rough
4	Rotation TILT fine	Rotation TILT fine
5	**PAN/TILT speed**	**PAN speed**
6	Focus (optional)	**TILT speed**
7	Motorized barndoor, leaf 1 (optional)	Focus (optional)
8	Motorized barndoor, leaf 2 (optional)	Motorized barndoor, leaf 1 (optional)
9	Motorized barndoor, leaf 3 (optional)	Motorized barndoor, leaf 2 (optional)
10	Motorized barndoor, leaf 4 (optional)	Motorized barndoor, leaf 3 (optional)
11	Motorized barndoor, rotation (optional)	Motorized barndoor, leaf 4 (optional)
12	-----	Motorized barndoor, rotation (optional

The **first** address (PAN rough) is set in menu *P01, DMX-address motoryoke, page 26*. All other addresses **follow** after this first address according to this table.

Examples:

1. Motoryoke with **all** optional components and P27 set to 1 (like right column in table). The next free DMX-channel would be number **13**.
2. Motoryoke **without** any additional components and P27 set to 0. Next free channel would be channel **6**.
3. Motoryoke with motorized **barndoor**, but without Focus unit and P27 set to 0. The next free channel is number **12**. Address **6** is unused and could be used by other devices which require only one channel.

Please note!

Color changer, dimmer shutter and the combined device „MagVader" are controlled by their **own** electronic. These devices are completely independent regarding the electronical control!

P01 DMX-Address motoryoke

At this point the **first** DMX-address of the motoryoke can be adapted to the desired DMX-address of the light mixing panel. This address represents the PAN-DMX-address. All other addresses follow this address. Refer to *DMX-channels motoryoke, page 25*.

Range of values: Address 1..512

Operation:
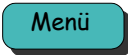
Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: Menu P02: Focus module on/off
▲ ▼	depress	... until Menu P01 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired DMX address.
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.

P02 Focus unit ON/OFF

At this point an optional **Focus** module can be switched ON or OFF. If a Licht-Technik focus unit is mounted set this menu to 1, on the other hand if no focus module is mounted set this menu point to 0. The speed of the focus is fixed, so no speed channel has to be set.

Range of values: 0:   No focus module installed
                       1:      Focus module installed

Operation:
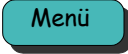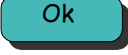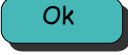
Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: Menu P01: DMX address motoryoke
▲ ▼	depress	... until Menu P02 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired value
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.

P03 Focus unit auto adjust (0% and 100%)

At this point the 0% and 100% position can be adjusted. The yoke automatically moves the focus drive from one endpoint to the other.

Range of values: invalid

Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: Menu P01: DMX address motoryoke
▲ ▼	depress	... until Menu P03 is displayed.
Menü	depress	The second line displays the currently adjusted value.
Menü	depress	The measurement of the endpoints starts, wait until the end
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.
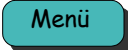
P05 PAN-axis middle position

With this function the **PAN-axis fine adjustment** of the middle position can be made. Please read first chapter *PAN-axis moving range, page 20*. This function can only be used for **fine** adjustment.

Range of values: 2000..2100 unit (value of the absolute value device)

Recommended value: 2048

Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: menu P01: DMX address motoryoke
▲ ▼	depress	... until Menu P04 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired value. The motoryoke moves to the indicated position.
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.
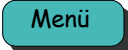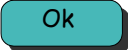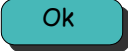
P06 TILT-axis 0-position

With this function the **TILT-axis fine adjustment** of the 0-position can be made. Please read first chapter *TILT-axis moving range, page 22*. This function can only be used for **fine** adjustment.

Range of values: 2000..2100 unit (value of the absolute value device)

Recommended value: 2048

Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: Menu P01: DMX address motoryoke
▲ ▼	depress	... until Menu P06 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired value. The motoryoke moves to the indicated position.
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.

P11 PAN-axis moving range
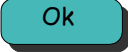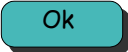
At this point the **PAN-axis moving range** can be programmed. The moving range has as reference point the PAN-axis middle position which can be set in P05, *PAN-axis middle position, page 29*. For example: If this menu is programmed to 90°, the motoryoke moves 90° to the left **and** 90° to right from middle position.

Before programming this point read chapter *PAN-axis moving range, page 20* and *P05 PAN-axis middle position, page 29*!

Range of values: 10..182 degrees

Recommended value: 45°

Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: Menu P01: DMX address motoryoke
▲ ▼	depress	... until Menu P11 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired moving range
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.

Caution !!

Check the **entire moving** range of the lamp:

The lamp-manufacturer specify **minimum distances** to inflammable materials. Never fall below the minimum distance in no position of the lamp!

Make sure that no cable will be **broken**, **bended**, **stretched** or **damaged** anyhow by reason of turning the motoryoke!

P12 TILT-down (negative) moving range

At this point the **TILT-down moving range** can be set. For the TILT-axis the moving ranges (up and down) must be programmed individually. The negative moving range is defined as the „direction bottom" range. The moving ranges have the 0-position as reference point. This point can be set in *P06, TILT-axis 0-position, page 30*.

Before programming this point read chapter TILT-*axis moving range, page 22* and *P06, TILT-axis 0-position, page 30*!

Range of values: 10..182 degrees

Recommended value: 90°

Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: Menu P01: DMX address motoryoke
▲ ▼	depress	... until Menu P12 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired moving range
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.

Caution !!

Check the entire **moving range** of the lamp:

The lamp-manufacturer specify **minimum distances** to inflammable materials. Never fall below the minimum distance in no position of the lamp!

Check that the **motoryoke** will not be lit when lamp is on top position.

Make sure that no cable will be **broken**, **bended**, **stretched** or **damaged** anyhow by reason of turning the motoryoke!

Headlights generally must **not** be operated with the ignition electronic on the top. Observe the specifications of the lamp manufacturer!

P13 TILT-up (positive) moving range

At this point the **TILT-up moving range** can be set. For the TILT-axis the moving ranges (up and down) must be programmed individually. The positive moving range is defined as the „direction top" range. The moving ranges have the 0-position as reference point. This point can be set in *P06, TILT-axis 0-position, page 30*.

Before programming this point read chapter TILT-*axis moving range, page 22* and *P06, TILT-axis 0-position, page 30*!

Range of values: 10..182 degrees

Recommended value: 20°

Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: Menu P01: DMX address motoryoke
▲ ▼	depress	... until Menu P13 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired moving range
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.

Caution !!

Check the entire **moving range** of the lamp:

The lamp-manufacturer specify **minimum distances** to inflammable materials. Never fall below the minimum distance in no position of the lamp!

Check that the **motoryoke** will not be lit when lamp is on top position.

Make sure that no cable will be **broken**, **bended**, **stretched** or **damaged** anyhow by reason of turning the motoryoke!

Headlights generally must **not** be operated with the ignition electronic on the top. Observe the specifications of the lamp manufacturer!

P14 Focus/rotation unit 0%-value adjustment

At this point the **position of the focus or the rotation unit for 0% DMX-value** can be set.

This function is only available, when focus module is switched on. This can be done in menu *P02, Focus module ON/OFF, page 27.*

Caution!
The 0%-value must be **smaller** than the the 100%-value! (P14 smaller than P15)

You have the possibility to set this value automatically. When depressing the menu button again (see operation), the Focus unit moves to the mechanical stop and stops moving. Now the focus unit should be moved 20 values by depressing the UP-key. This is to avoid a crash during normal moving.

Caution!
Do **not** use the auto-adjustment function with the rotation!

Range of values: 10..4000 units (value of the absolute value device)

Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: Menu P01: DMX address motoryoke
▲ ▼	depress	... until Menu P14 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired value **or**
Menü	depress	for automatic movement to the mechanical stop. Corrections with UP/DOWN keys are still possible.
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.

P15 Focus/rotation unit 100%-value adjustment

At this point the **position of the focus or rotation unit for 100% DMX-value** can be set.

This function is only available, when focus module is switched on. This can be done in menu *P02, Focus module ON/OFF, page 27.*

Caution!
The 100%-value must be greater than the 0%-value! (P15 greater than P14)

You have the possibility to set this value automatically. When depressing the menu button again (see operation), the Focus unit moves to the mechanical stop and stops moving. Now the focus unit should be moved 20 values from the stop by depressing the DOWN-key. This is to avoid a crash during normal moving.
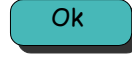
Caution!
Do **not** use the auto-adjustment function with the rotation!

Range of values: 10..4000 units (value of the absolute value device)

Operation:

| Menü | depress | You are now on menu level. The last adjusted menu point is displayed, e.g.:
Menu P01: DMX address motoryoke |

| ▲ ▼ | depress | ... until Menu P15 is displayed. |

| Menü | depress | The second line displays the currently adjusted value. |

| ▲ ▼ | depress | Adjust the desired value
 or |

| Menü | depress | for automatic movement to the mechanical stop. Corrections with UP/DOWN keys are still possible. |

| Ok | depress | You are back on menu level. |

| Ok | depress | The equipment is ready for operation. |

P27 Speed PAN/TILT setup

At this point the number of **speed channels** can be set. The speed for PAN and TILT axis can be programmed to one channel for both axis or to two channels. One for each axis.
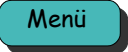
When using the Licht-Technik control panels with Joystick, vision conrtrol or LT-Pliot this Parameter must be set to 1.

Caution!
The **order of DMX-channels** is changed with this function! Refer to *DMX-channels motoryoke, page 25*.

Range of values: 0: Speed PAN and TILT together. One DMX-channel.
1: Speed PAN and TILT separated. Two DMX-channels.

Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: Menu P01: DMX address motoryoke
▲ ▼	depress	... until Menu P27 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired value.
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.

P30 Displaying the DMX-value

This function assists you in **checking** the values transmitted by the light mixer panel. At this point you can quickly detect whether the motoryoke is triggered with the **correct** values. It is possible to check all 512 DMX channels. Note that the value of the address programmed in this menu will be indicated in normal operation. After power up the programmed address in menu P01 (page 26) will be displayed.

Range of values: Address 1..512

Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: menu P01: DMX address motoryoke
▲ ▼	depress	... until Menu P30 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired address.
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.

P32 Selecting the user language

At this point you can choose in which language the texts and messages should be displayed.

Range of values: 0 = German
                             1 = English

Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: menu P01: DMX address motoryoke
▲ ▼	depress	... until menu P32 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired language.
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.
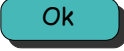
P35 Unit number Netspider

With this function you can set the **unit number** for Netspider systems.

Range of values: 0..9999

Operation:
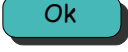
Menü depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: menu P01: DMX address motoryoke
▲ ▼ depress	... until menu P35 is displayed.
Menü depress	The second line displays the currently adjusted value.
▲ ▼ depress	Adjust the desired unit number.
Ok depress	You are back on menu level.
Ok depress	The equipment is ready for operation.

P36 Interchanging PAN moving direction

With this function the **PAN moving direction** can be set.

Range of values: 0 = normal (standard)
                                 1 = reverse direction

Recommended value: 0
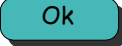
Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: menu P01: DMX address motoryoke
▲ ▼	depress	... until menu P36 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired direction.
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.
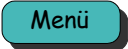
P37 Interchanging TILT moving direction

With this function the **TILT moving direction** can be set.

Range of values: 0 = normal (standard)
                          1 = reverse direction

Recommended value: 0
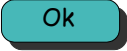
Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: menu P01: DMX address motoryoke
▲ ▼	depress	... until menu P37 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired direction.
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.
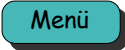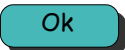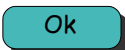
P38 Interchanging Focus moving direction

With this function the **Focus moving direction** can be set.

Range of values: 0 = normal (standard)
1 = reverse direction

Recommended value: 0

Operation:

Menü	depress	You are now on menu level. The last adjusted menu point is displayed, e.g.: menu P01: DMX address motoryoke
▲ ▼	depress	... until menu P38 is displayed.
Menü	depress	The second line displays the currently adjusted value.
▲ ▼	depress	Adjust the desired direction.
Ok	depress	You are back on menu level.
Ok	depress	The equipment is ready for operation.

Technical data

Weights and dimensions Motoryoke:

Weight:	79 lbs (36 kg)
Total load:	220,5 lbs (100 kg)
Total weight:	300 lbs (136kg)
Width:	min: 31,5" (0,8m), max: 57" (1,45m)
Height:	46,5" (1,18m)
Depth:	7" (0,18m)
Adjustable width for headlight:	12" (0,30m) to 39" (1,00m)
Mains IN:	100 – 240V AC, Max: 100W
Moving range pan (max):	360°
Moving range tilt (max):	180°
Speed pan (max)	6°/s
Speed tilt (max)	1,5°/s
Memory precision:	< 0,3°
Protection:	IP54
Connected loads motoryoke:	24 V DC, max. 4,2 A, 100,8W
Mainboard fuse:	6.3 A slow blow
Connected loads rotation:	24 V DC, max. 2,5 A, 60W
Weight rotation:	8,6 kg, 18,95 lbs

Pin assignment:

Data-IN Power-OUT: 4pin XLR connector screened

Housing:	Screen	
PIN 1:	0 V (GND)	min. cross section 0,75mm²
PIN 2:	DMX-Data –	min. cross section 0,25mm²
PIN 3:	DMX-Data +	min. cross section 0,25mm²
PIN 4:	+24 V DC	min. cross section 0,75mm²

The DMX wires must be twisted pair and shielded separately.

Data line: 5pin XLR connector screened

Housing:	Screen	
PIN1	digital GND	cross-section min. 0,25 mm²
PIN2	Data-	cross-section min. 0,25 mm²
PIN3	Data+	cross-section min. 0,25 mm²
PIN4	not connected	cross-section min. 0,25 mm²
PIN5	not connected	cross-section min. 0,25 mm²

Focuscable: 7pin XLR connector min. cross section: 0,25 mm² screened.
PIN 1: Motor -
PIN 2: Motor +
PIN 3: Potentiometer 1
PIN 4: Potentiometer 2
PIN 5: Potentiometer 3
PIN 6: Data1
PIN 7: Data2
Screen connected to housing of XLR-connector

Readjustment of motoryoke axis

Caution!

Only for **Licht-Technik trained personal**!

These works can only be done in a **well equipped workshop**. It is absolutely **forbidden** to do these works on **ladders** or **lifts**!

If a potentiometer has to be changed or disassembled, an adjustment of the potentiometer is necessary, please follow these instructions:

Readjustment PAN-axis:
1. Move the **powered off** motoryoke onto **middle** position of the PAN-moving range.
2. Put the Potentiometer onto the **half** printed resistor value. Check it with an Ohmmeter.
3. **Install** the Potentiometer.
4. Set the DMX-value for PAN-axis to **50%**.
5. Switch on the motoryoke **without DMX-Signal** (disconnect DMX-IN cable at power-supply/splitbox). Thus the motoryoke remains on its momentary position.
6. Set the **middle** position for PAN-axis(*P05, PAN-axis middle position, page 29*) to 2048. (default value).
7. Connect the **DMX-signal** again.
8. The motoryoke moves to **50%** DMX-position. Now the adjustment of the PAN-axis middle position can be set. (*PAN – axis moving range, page 20*).
9. Maybe the moving range **angle** must be readjusted. Refer to *PAN – axis moving range, page 20* and *P11 PAN-axis moving range, page 31.*
10. Check the both **end-positions** via the light mixing panel.

Readjustment TILT-axis:
1. Move the **powered off** motoryoke onto **middle** position of the TILT-axis moving range (at default-value about 45 degrees to bottom).
2. Put the Potentiometer onto the **half** printed resistor value. Check it with an Ohmmeter.
3. **Install** the Potentiometer.
4. Set the DMX-value for TILT-axis to **50%**.
5. Switch on the motoryoke **without DMX-Signal** (disconnect DMX-IN cable at power-supply/splitbox). Thus the motoryoke remains on its momentary position.
6. Set the **middle** position for PAN-axis(*P05, PAN-axis middle position, page 29*) to 2048. (default value).
7. Connect the **DMX-signal** again.
8. The motoryoke moves to **50%** DMX-position. Now the adjustment of the TILT-axis middle position can be set. Use menu *P06 TILT-axis 0-position, page 30* and *TILT – axis moving range, page 22.*
9. Maybe the moving range **angle** must be readjusted. Refer to *TILT – axis moving range,page 22 and P12 TILT - down moving range, page 32* and *P13 TILT- up moving range,page 33.*
10. Check the both **end-positions** via the light mixing panel.

Readjustment Focus-axis:

1. **Disconnect** the 5pin XLR-cable from the motoryoke to the focus unit.
2. Move the Focus of the Headlight onto middle position of the moving range. If no knobs for manual moving are installed, the focus motor must be driven by a 12-20V DC power supply. The focus unit must not be connected to the control unit!! (disconnect 5pin cable to the yoke).
3. Put the Potentiometer onto the **half** printed resistor value. Check it with an Ohmmeter. You can do that on the installed potentiometer by turning the toothed wheel. You have to lift it a little bit to disconnect the mechanical toothwheel connection.
4. Switch on the motoryoke **without DMX-Signal** (disconnect DMX-IN cable at power-supply/splitbox). Thus the motoryoke remains on its momentary position.
5. Set the two endpositions with *P14, Focus unit 0%-value adjustment, page 34* and *P15 Focus unit 100%-value adjustment, page 35.*
6. Connect the **DMX-signal** again.
7. Check the both **end-positions** via the light mixing panel.

Factory presettings

Menu	Description	Value
P01	DMX-address motoryoke	1
P02	Fokus module ON/OFF	0/1 (individual)
P03	Focus module auto adjustment endpoints	invalid
P05	PAN-axis middle position	individual
P06	TILT-axis 0-position	individual
P11	PAN-axis moving range	90 degree
P12	TILT-down (negative) moving range	90 degree
P13	TILT-up (positive) moving range	20 degree
P14	Focus unit 0% value adjustment	individual
P15	Focus uinit 100% value adjustment	individual
P27	Speed PAN/TILT setup	0 (1 channel)
P30	Displaying DMX-value	1
P32	Selecting the user language	1 (englisch)
P35	Unit number Netspider	0
P36	Interchanging PAN-moving direction	0
P37	Interchanging TILT-moving direction	0
P38	Interchanging Focus-moving direction	0

Maintenance

By regular maintenance a significant increase of **lifetime** and **reliability** can be achieved.

Regular maintenance increases safety significant!!

We recommend a maintenance once a year.

Obligatory are the following points:

1. Checking the fixing parts:

The fastening spigot must be **checked visual**. The spigot must be in right angel to the housing. This must be checked in **front** and **side** view. A **protractor** can be a help.
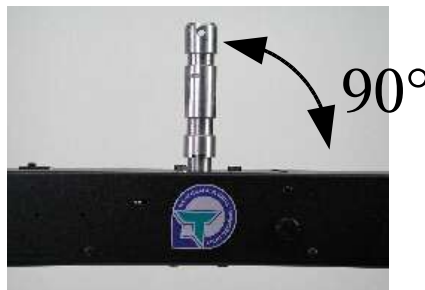
Furthermore, the **spigot** itself and the **surface** of the yoke must not be deformed. Make sure that the spigot is not loose.
If the spigot is visibly **damaged** or deformed the motoryoke must not be used anymore. The device has to be sent to Licht-Technik.

2. Checking the safety elements

Check the safetybelts and further safetyelements like shackles, rings, lugs, chains:

– Are the belts not frayed out?
– Are the threads of the shackles okay? Are the screws easy to turn?
– Are there no visible damages at the safety elements?
– Do the belts not rasp on other parts?

3. Checking the cables and supply lines

– Check the cables visibly for damages.
– Check the entire moving range of PAN and TILT, if the cables are not **broken**, **bended**, **stretched** or **damaged** anyhow**.**
– Are the cables not porous?

4. Checking the screw connections of the lamp fixings

− Check all clamping bolts if they are well fixed.

Following maintenance is **recommended**:

− Remove dust, especially on electronical parts. Electronic is very sensitive for dust and reacts with strange behaviour!
− Keep focus spindle inside the lamp turnable with *Loctite 8151 ™.*
− Fatten the potentiometer-toothwheel with temperature stable bearing fat. Recommended: Use a brush to put the fat on it. Do not use to much. A few grams are enough.

Error messages

Only Licht-Technik trained personal is authorised to work on the motoryoke!

Error	Description	Possible reasons	Possible solutions
E20	DMX-Signal missing	Defective supply line (data power) to the motoryoke. (Pin2 and/or 3 broken) Defective supply line to the splitbox (Pin2 and/or 3 broken)	Check the DMX-signal cables. The LED „DMX ok" at the splitbox must light DMX mixing panel not ready

Error	Description	Possible reasons	Possible solutions
E21	DMX-Signal interchanged	Defective supply line (data power) to the motoryoke. (Pin2 and/or 3 interchanged) Defective supply line to the splitbox (Pin2 and/or 3 interchanged)	Check the DMX-signal cables. The LED „DMX ok" at the splitbox must light.

Error	Description	Possible reasons	Possible solutions
E23	DMX-noise	Too much cable length. Bad signal quality.	Check the DMX signal cables. Check the DMX-connections Use a terminating resistor

Error	Description	Possible reasons	Possible solutions
E28	EEPROM error. Program memory test failed	Aging Electrostatic charge	No solutions. Inform Licht-Technik

Error	Description	Possible reasons	Possible solutions
E29	RAM Error. Working memory test failed	Aging Electrostatic charge	No solutions. Inform Licht-Technik

Error	Description	Possible reasons	Possible solutions
E30	PAN-motor blocked	Cable to motor broken	Check connections/solder joints
E31	TILT-motor blocked	Cable to potentiometer broken	Check connections/solder joints
		Potentiometer defective	Change potentiometer
		Motor defective	Change motor
		Yoke is blocked mechanically	Remove blocking
		A foreign object is in/at the drive	Remove object
		Motor/potentiometer connections interchanged when replaced.	Check connections
			Inform Licht-Technik

Error	Description	Possible reasons	Possible solutions
E32	Focus Motor blocked	Focus axis blocked	Check easy movement of the axis. Put some fat on axis (Loctite™ 8151)
		Moving range in P14, P15 not correct	Set correct values
		Focus motor defective	Change motor
		Focus potentiometer defective	Change potentiometer
		Connection cable to Focus module defective	Check connections and possible short circuits
			Inform Licht-Technik

Malfunctions

- No display after power up.

The device houses a slow-blow fuse for feeble currents of 6.30 A protecting the equipment of wrong polarities on the supply line. When the fuse is blown, cable and polarity have absolutely be checked (pin1 = 0 V, pin 4 = +24V).

- No error message but motoryoke does not move

- Check DMX-addressing (*P01, DMX-Address motoryoke, page 26*).
- Is the speed-channel not set to 0? Check it with the DMX-tester in P30, page 37

- No error message but the Focus module does not move

- Is the focus-module switched on? Check *P02, Focus module ON/OFF, page 27.*
- Is the focus-cable well connected?
- Check the incoming DMX-values with the DMX-tester in *P30, page 37.* The focus-channel is start-channel (*P01, page 26*) + 4 or 5 (depends on *P27, page 36*). Refer to *DMX-channels motoryoke, page 25.*

Warranty

The warranty for our products is 2 years. It comprises any repair of failures – free of charge – which can be proved to result from defects of fabrication.

Warranty expires when:

- the device was modified or attempted to be repaired
- damages were caused by the intervention of foreign persons
- damages are due to non-compliance with the operating instructions
- the device was connected to an incorrect voltage or incorrect type of current
- the device was incorrectly operated or when damages were caused by negligent handling or misusage

All maintenance and servicing works related to the product must be carried out by the company *Licht-Technik. Licht-Technik* shall not assume any liability for losses or damages of any kind being the results of inexpert servicing.

Further information

This document and the information contained therein are subject to copyright and neither the whole nor any part of it may, and this is also valid for the described product, be reproduced, copied or recorded in any form without the prior written authorization of *Licht-Technik Vertriebs GmbH*.
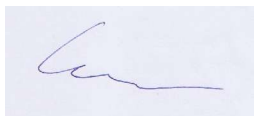
The products of *Licht-Technik GmbH* are subject to constant development. Therefore *Licht-Technik* reserves the right to modify components, motors and also technical specifications any time and without prior notice.
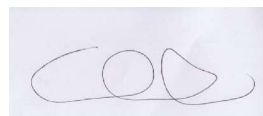
EC Declaration of Conformity

1.	**Type of device/product**	Motoryoke BigBee with Focus drive
2.	**Name and address of manufacturer**	Licht-Technik Vertriebs GmbH Osterwaldstraße 9-10 80805 München
3.	**The manufacturer is responsible for this declaration**	
4.	**Item of declaration**	MB-D1, MB-F-16-V1, MB-F-16-V2

5.   The described item is conform to the following guidelines/regulations

RICHTLINIE 2014/30/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit

RICHTLINIE 2014/35/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die Bereitstellung elektrischer Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen auf dem Markt

RICHTLINIE 2006/42/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 95/16/EG (Neufassung)

RICHTLINIE 2011/65/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 8. Juni 2011 zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten
WEEE Reg.Nr.: DE 69311325

6.   Applied and conform to harmonized standards in particular

DIN EN 55015; VDE 0875-15-1:2016-04 - Grenzwerte und Messverfahren für Funkstörungen von elektrischen Beleuchtungseinrichtungen und ähnlichen Elektrogeräten
(CISPR 15:2013 + IS1:2013 + IS2:2013 + A1:2015); Deutsche Fassung EN 55015:2013 + A1:2015

DIN EN 61547; VDE 0875-15-2:2010-03 Einrichtungen für allgemeine Beleuchtungszwecke – EMV-Störfestigkeitsanforderungen (IEC 61547:2009); Deutsche Fassung EN 61547:2009

DIN EN 60598-1; VDE 0711-1:2015-10 – Leuchten – Teil 1: Allgemeine Anforderungen und Prüfungen
(IEC 60598-1:2014, modifiziert); Deutsche Fassung EN 60598-1:2015

DIN EN 60204-1:2014-10; VDE 0113-1:2014-10 Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen (IEC 44/709/CDV:2014); Deutsche Fassung EN 60204-1:2014

7.   A test report is available from company Licht-Technik Vertriebs GmbH

8.   This declaration is invalid if the device is changed techically and/or unintended use.

Signed for   Licht-Technik Vertriebs GmbH

Place and date of description   München 18.9.2017

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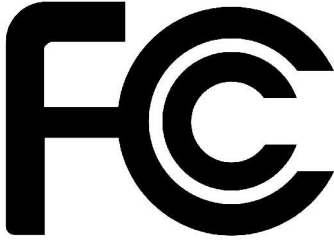Uwe Hagenbach (Geschäftsführer)   Bernhard Grill (Geschäftsführer)

FCC Declaration of Conformity

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Munich, 1.9.2015

Uwe Hagenbach / Bernhard Grill (Managing directors)