OPTOTRONIX

FINEST SCALE LIGHTING TECHNICS.

LIGHT CONTROL UNIT

Manual

Index of Contents

Pay attention to notes marked with a ! <u>before</u> first operation of the lighting-system!

With the **SkyFire LCU** you purchased a high-quality and modern lighting system. We hope you enjoy lighting up your aircraft and ask you to read the following instructions carefully.

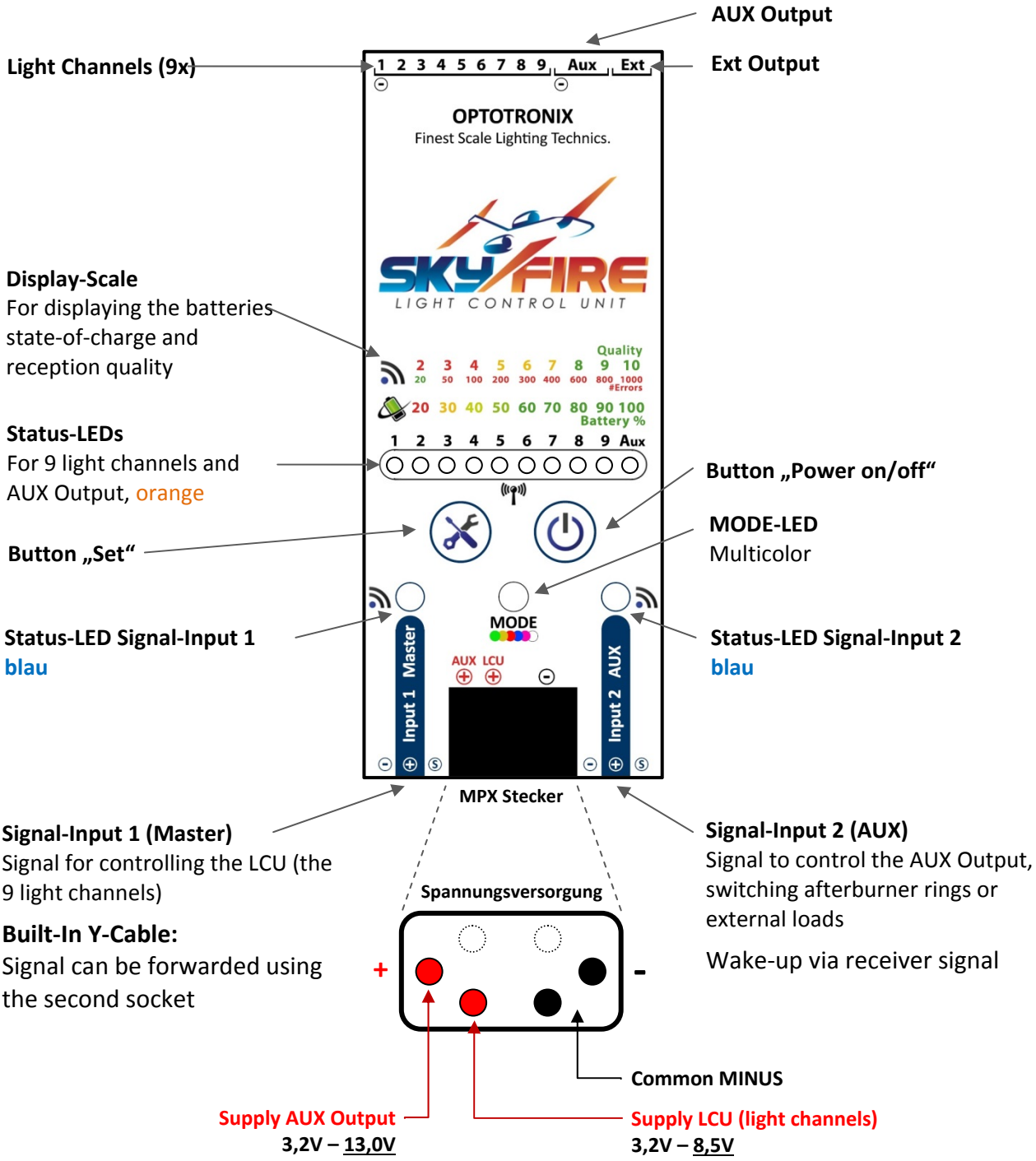
Technical Data

Dimension	91x38mm
Height	7mm
Weight	23g
Supply LCU	3,2V … 8,5V (1s/2s Lipo, 2s LiFePO, NiMh, BEC)
Supply AUX	3,2V … 13,0V (1s/2s/3s Lipo, 2s/3s LiFePO, NiMh, BEC)
Quiscent Current	< 2µA (< 18mAh / Jahr)
Signal Inputs	2x, galvanically separated, with puls-booster
Outputs	9x light channels (permanent / flash / beacon) 1x AUX (afterburner / other external loads)
Output power LCU	3A / output (max. 12A system current)
Output power AUX	8A
Stand-Alone Mode	Yes
Battery Protection	Yes
Battery State of Charge	Yes
Wake-Up via Receiver	Yes
FailSafe Lighting Funktion	Yes
Programmable	- on every output: function, point of time & activation point - **R**eception **Q**uality **O**bservation RQO - batterietype (Lipo, LiFePO, NiMH, BEC)

Features

- 9 outputs (permanent / flash / beacon)
- 1 AUX-output (afterburner or other external loads up to 8A)
- 1 EXT-output for optional accessories
- 3A / output (max. 12A total current)
- 10 different flash sequences @ 3 different points of time
- 4 beacon functions (imitation of Rotating Beacon)
- Afterburner simulation, 10 different random generated afterburner effects
- Alternatively external loads with up to 8A current can switched on / off on the AUX output
- Every Output fully programmable
    - Activation Point
    - Flash Sequence
    - Time span
    - Automatic detection of switch direction
- Observation of reception quality and signal errors
    - Including emergency-light-function as a live signal during flight
    - Displays reception quality using a LED bar
    - Using Dual-Receivers: optimize the location of each receiver / antenna
- Adaptive (learns behaviour of transceiver)
- Permanent Lipo / LiFe battery guarding with battery-test function and savety shut-down
- galvanically isolated from receiver for max. savety
- Signal-Input with Pulse-Booster
- Stand-Alone Mode (e.g. for exhibition and showroom) at push of button
- Shielded, very lightweight fibre glas housing!

Interface and handling



MODE-LED Color	Meaning:
GRÜN	Operation Mode, state of charge > 40%
ORANGE	Operation Mode, state of charge < 40%
ROT	Operation Mode, state of charge critical
BLAU	Operation Mode, display RQO
PINK	Stand-Alone Mode (showroom mode)
WEISS	Start programming-mode

Connection of power supply and receiver

The **SkyFire LCU** allows the connection of 1s/2s Lipo batteries, 2s LiFePO batteries, 3-6s NiMH batteries or a BEC with a voltage between 3.2 V and 8.5 V **to supply the LCU as well as the 9 light channels**. The corresponding supply pin of the MPX connector is marked with **"+LCU".**

The operation of the light channels is most efficient at 1s Lipo (low heating of the resistors and very low system weight).

The additional **AUX output** can be supplied with the same voltage. For this, simply connect the same battery to the appropriate supply pin, marked with "**AUX"**. Then the 9 light channels and AUX output carry the same voltage.

However, it is possible to connect a separate battery of higher voltage up to 13.0 V to the supply pin of the AUX output (1s /2s / **3s** Lipo batteries, 2s / **3s** LiFePO batteries, 3 - **9s** NiMh batteries or a BEC with a voltage between 3.2 V and 13.0 V). This allows operation of afterburner rings, 12V LED strips or other external consumers with higher voltages, while it would not make sense for the light channels 1-9 due to the low voltage level of individual LEDs.

IMPORTANT: Voltages up to 13.0 V supply must only be connected to the AUX output (+AUX) and not to the LCU itself (+ LCU)!
The maximum operating voltage of the LCU itself (+ LCU) is 8.5 V

Do not connect any other battery technologies than those listed above to the **SkyFire LCU.**

The battery type used must be absolutely programmed when installing the SkyFire LCU to allow a reliable deep discharge and battery test function, see "Programming Mode"! After programming, the **SkyFire LCU** monitors the battery and protects against deep discharge. In addition the battery condition can be checked using the battery test function.

If the voltage of the programmed battery is critical, the **SkyFire LCU** turns off after a fast, **red** Flash sequence of the MODE LED (**Error**) and can only be put back into operation by again pressing the power button

If different batteries with different voltage levels are connected to the supply of the LCU and the AUX output, **both batteries will be monitored** after successful programming**!**

The following instructions must be observed for safe operation.
- All connecting cables should be routed in such a way that they do not come in contact with moving or hot parts of the model (e.g. servos, rods or silencers).
- The **SkyFire LCU** must be protected from humidity and moisture.

Battery recommendation

The following battery capacities are recommended for one hour of continuous operation, under the assumption that one LED is connected to each output in continuous operation. If several LEDs are used in flash mode or have a shorter battery life, a smaller capacity can be chosen.

LEDs connected to outputs	Rec. capacity for >1h operation
Standard LEDs (20-30mA)	**300 mAh**
Power LEDs (~60mA)	**550 mAh**
1Watt Power LEDs (350mA)	**3000 mAh**
3Watt Power LEDs (700mA)	**6000 mAh**

Connection of the battery

The battery is connected through a MPX high-current connector to the **SkyFire LCU**. It should be noted that different batteries with different voltage levels can be connected to the various PLUS-Pins (See schematic on page 4).

If a battery with MPX high current socket and conventional occupancy is connected (all PLUS-pins of the connector are soldered to the battery PLUS), LCU and AUX output will automatically operate at the same voltage.

Pay attention to the correct polarity: **PLUS = RED, MINUS = BLACK.** The MPX connectors to be used are labelled with **+ and -** . The correct polarity must be checked again before the first start up.

The **SkyFire LCU** is **not reverse polarity protected**!

Connection of the receiver

For the operation of the LCU, connect the **signal input 1 (Master)** to the receiver using the supplied patch cable (**yellow - red - brown**)

If desired, also connect the **signal input 2 (AUX)** to the receiver.

To get familiar with the functioning of the **SkyFire LCU**, you can connect it to a servo tester, of course.

The signal inputs are galvanically completely isolated from the receiver circuit so that perturbations via the connection cable to the receiver are excluded.

If the receiver signal is detected and has no errors, the **blue LEDs** of the signal inputs light up permanently.

If there is no signal (no receiver connected or invalid signal/ faulty cable) **the Blue LEDs** of the affected signal input do not light up .

If the **blue LEDs** of the signal inputs flash, the quality of reception should be checked (see page 10).

If there is no signal for about 30min, the **SkyFire LCU turns off** and can only be put back into operation by valid signal at **signal input 2 (AUX).**

LED - Outputs

Assignment of outputs

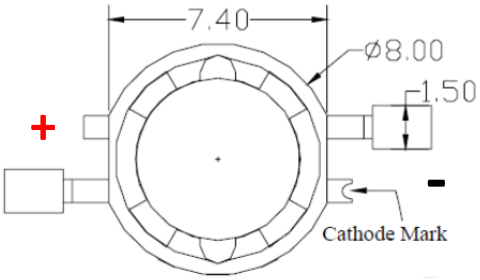
The **SkyFire LCU** provides a total of 9 light channels (each **Plus / Minus**). The input voltage (of the used battery) is located directly at the outputs. Through this the maximum flexibility in the design of the lighting system and the selection of LED-types is ensured.
The outputs have a joint Plus-rail, i.e. PLUS lines can be connected together in the wing area.

The following diagram shows the output assignment:

Outputs										
1	2	3	4	5	6	7	8	9	AUX	EXT
-	-	-	-	-	-	-	-	-	-	
+	+	+	+	+	+	+	+	+	+	

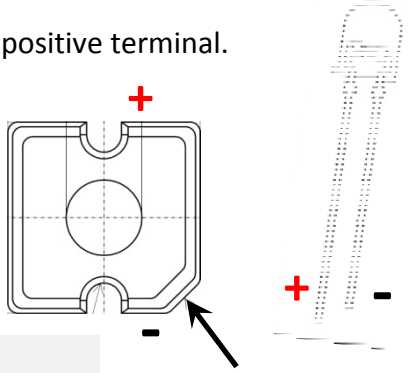
Connection of LEDs

The **SkyFire LCU** enables the operation of all common types of LEDs with matching series resistor whereby each output can be loaded with a current of up to 3 A. Multiple LEDs can be connected in parallel to an output, while each LED requires its own resistor.



The opposite graph shows the polarity of SEOUL 1W / 3W power LEDs: Next to each pole is a small brass stub. This is notched on the minus side and not on the plus side.

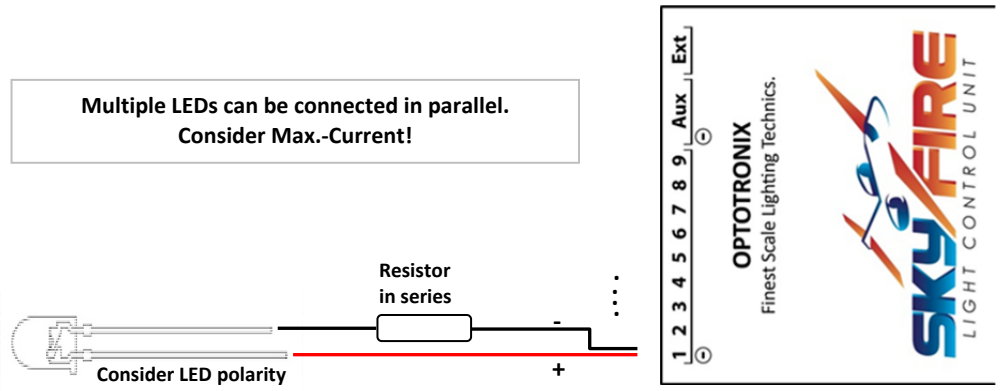
Using Typical 3mm / 5mm LEDs, the longer connection is the positive terminal.



Using typical Superflux LEDs you recognize the negative terminal at the flattened corner. Four connections are available here only for stability reasons, plus and minus are each present in duplicate, but must be connected to the power supply once.

If several LEDs are connected in parallel to an output, the **PLUS lines can be combined** .

Due to the large current carrying capacity of **SkyFire LCU** the outputs are designed as socket (female), so that a short circuit is not possible through accidental contact. The connection of LEDs takes place via the provided pin bar. For easy soldering of the lines, insert the bar into the socket of the **SkyFire LCU**.
Nevertheless, if the contact via separate plugs for each channel light is preferred, the optional available connector kit can be used.



Only connect LEDs to the **SkyFire LCU**, **if the outputs have been programmed.** This prevents fusing of the LEDs which might have only been designed for flash mode (possible higher current) at an output which is still programmed to continuous light.

Connecting afterburner rings and and external consumers

The **SkyFire LCU** allows the connection of voltage controlled afterburner rings to AUX output for **afterburner simulation** in EDF and turbine models. Also self-developed afterburner rings, individual LEDs or 12V LED strips can be controlled with an after burner effect, as long as they can be operated at a voltage of 3.2 V - 13.0 V (AUX output). The maximum current of AUX output is 8A, so it is also possible to connect several afterburner rings in parallel.
A total of 10 different, original, full-randomly generated afterburner effects are available.

It is also possible, **to switch external consumers** through **AUX output**. For this, it is programmed to on/off operation instead of afterburner simulation.

The **maximum switchable current of AUX output is 8A.**

Resistor Table

The required resistor for your desired LED Type can be gathered from the following table. The values can be used both for operation directly at a battery and for operation at the **SkyFire LCU**. Also pay attention to the required power-rating of the resistor.

For choosing the supply generally consider: The voltage should be as small as possible, because LEDs do not need more than 3,5V (red/ yellow only 2,4V). Everything above that voltage has to be converted into heat in the series-resistor. That is why the operation at 3,6V/4,8V (3s/4s NiMh) or 3,7V (2s Lipo) has to be preferred.

Leuchtmittel Illuminant	Versorgung Supply	4s NiMh	5s NiMh	1s Lipo	2s Lipo
LEDs (3mm - 5mm - SuperFLUX – BlitzLED) **Weiß / Grün / Blau / Violett**		75	130	27	200
LEDs (3mm - 5mm – SuperFLUX – BlitzLED) **Rot / Gelb / Orange**		120	160	68	240
3-Chip SuperFlux LEDs **Weiss**		22	39	7,5	56
3-Chip SuperFlux LEDs **Rot / Grün**		43	62	20	91
10mm 4-Chip Power LEDs **Weiß / Warmweiß / Grün**		22	39	7,5	56
10mm 4-Chip Power LEDs **Rot**		36	56	22	68
SEOUL 1Watt **Weiß / warmweiß / Grün**		4,7	8,2	1,5	12
SEOUL 1Watt **Rot**		8,2	12	4,7	18
SEOUL 3Watt **Weiß / Warmweiß / Grün**		2,7	4,7	1,0	6,8
SEOUL 3Watt **Rot**		4,7	6,8	2,7	8,2
Legende		0,5Watt	2Watt	3Watt	4Watt

Operation of SkyFire LCU

Start sequence

If you press the power button ⏻ of the **SkyFire LCU**, you will always observe the following behavior of the 10 orange status LEDs:

⇄	**1x flash light sequence**	The electronic is started.
	Pause	1sec of pause.

Now the **SkyFire LCU** is ready to operate. The outputs can now be activated through a switch or proportional slide of your transmitter or alternatively via a servo-tester. **When exactely** the outputs should be activated, this must be defined in **programming mode** .

Battery test

The battery test function can be started at any time by briefly pressing the Set button . During the battery test (about 3 seconds) the connected model lighting is disabled. The following behaviour is seen:

Traffic light sequence

The **MODE LED** changes for 3 seconds between colours **green** - **Orange** - **red** . This illustrates the actual battery test ("charging-status traffic light effect")

Displaying charging status

Using the 10 orange Status LEDs the battery charge-status is displayed. The scale of state of charge is used for illustration:

The voltage of the battery can be read through the 10 orange Status LEDs **of SkyFire LCU.** If all 10 LEDs light up, the battery is fully charged (charge-status scale: 100%).
The **MODE LED** jumps to **green** if the state of charge is > 40%, to **Orange** if the state of charge is <40%.

If the battery voltage falls under a critical threshold voltage for several seconds (depending on the connected and programmed battery type), the **SkyFire LCU** turns off completely, in order to avoid a deep discharge of the battery and thus to prevent damage and can only be put back into operation by pressing again the power button .

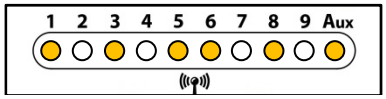
Check reception quality

If the monitoring of the reception quality (**R**eception **Q**uality **O**bservation, RQO) was activated and programmed, the **SkyFire LCU** permanently monitors the signals of the receiver and warns of reception problems.

Press the Set button . After the battery test function (MODE LED shows traffic light sequence **green** - **Orange** - **red**) the reception quality is displayed (MODE LED will light **blue**). The following behavior must be seen after displaying charge-status:

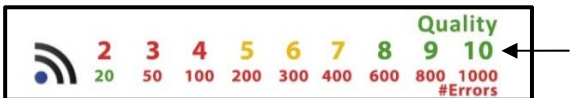
Scan-Sequence

The **MODE LED** lights up **blue** now. A blue lighting generally shows that reception data is displayed now.
The orange Status LEDs in the middle light up above the antenna icon, the remaining status LEDs display "emitting radio waves" in order to clarify that the RQO status is showed.



Display Quality

Using the 10 orange Status LEDs, the quality of reception is now displayed on a scale from 1 to 10. For illustration the reception-quality-scale is used:

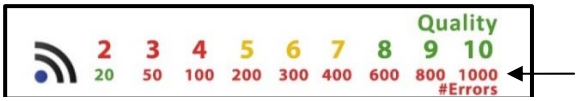


The quality should generally be in the green zone (8 to 10), otherwise the receiving system should be checked and optimized. The limit value 8 corresponds to a signal failure of <1 sec over the entire period of (flight) operation.

Display signal failures

If desired, press the set button briefly again during the display of reception quality (see above) .

Again the 10 orange Status LEDs show the antenna sequence, but quickly flashing, the MODE LED light is **red**. This illustrates, that now the signal failures (error frames) will be displayed. For illustration the Error-Frame scale is used:



The little red numbers in the bottom row represent the number of lost signal-frames. The number should generally be less than 50 (after a flight), otherwise the receiving system should be checked and optimized.

A very important and useful feature is the **indication of signal interference during flight**. If the model is in FailSafe-mode due to signal interference, the **SkyFire LCU** steps into the emergency lighting mode. All outputs of the **SkyFire LCU** blink very fast, followed by a short break every 2 seconds. This behavior is exactly of the same length like the fault (the FailSafe phase), but at least 2 seconds.

IMPORTANT:
The display of reception quality and signal failures is an indication for possible optimizations of the receiving system or of its set-up / orientation. The notifications are no guarantee for an optimal reception and safe operation of the receiving system.

Check reception quality with Dual-Receiver systems

If a dual-receiver system is used in the model, connect the two inputs of **SkyFire LCU** to each one of the two receivers. The **SkyFire LCU** recognizes the different measurement results of the two inputs and then displays the quality of reception twice in a row. First, for input 1, then for input 2 (The respective input flashes during the quality display).
This makes it possible to optimize the location of each receiver / antenna in terms of reception quality. To do this, check the receiving quality regularly.

Stand-Alone mode

This "independent operation mode" enables the operation of the lighting model, even if the receiving system is not turned on (e.g exhibitions) may or may not be turned on (e.g. during competitive building rating). In ***Standalone mode*** the MODE LED lights **pink**.

*Activate all outputs through your transmitters which should be constantly active and then keep the Set button pressed for at least 2 seconds. Pressing the button for long will always be confirmed through rapid flashing of the **MODE LED** twice.*

*The **MODE LED** lights permanently **pink,** the **Stand alone mode** is active and the electronics no longer responds to the signal receiver!*

*Leave the **Standalone mode** and also press the Set button for 2 seconds .*

Programming mode

The following explains how simply the **SkyFire LCU** must be programmed.

Starting the programming mode

Connect the power supply and the receiver or servo tester to the **SkyFire LCU.**

Turn on the **SkyFire LCU.** Keep the Set button permanently pressed, **before** the welcoming sequence is completed.

Start of the programming mode is displayed through a 3 second long **white** flashing of the MODE LED and through fast flashing of all orange status LEDs. Release the button again when the flashing starts. You are now in programming mode.

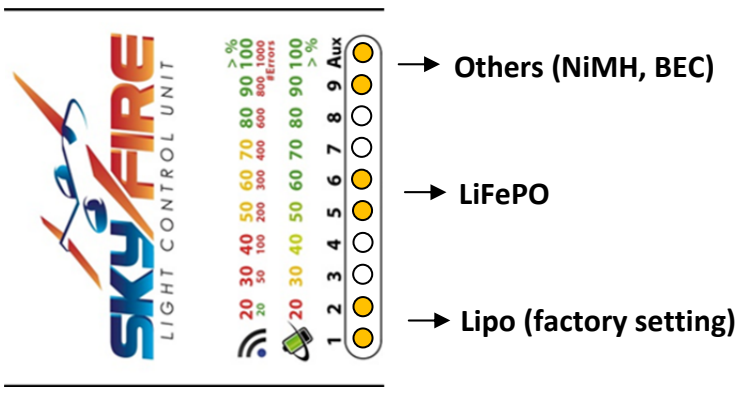
Step 1 - Select battery type

The start of the battery type programming is illustrated by a sequence of traffic lights MODE LED (**green** - **Orange** - **red** , "charging-status traffic light").

At the beginning, you will need to program the battery type to be used (lipo, LiFePO, "Other"). Connect the **charged battery** to the module in the first programming.

By pressing ("zapping") the set button for a short while you can switch between the three variants, for signaling two of the status LEDs light orange. Save the desired type by **pressing the Set button for 2 seconds.** The number of cells used is **automatically detected**.

If you select "Other" (e.g. for BEC supply) no safety shutdown occurs, the battery voltage in 6 levels from 3.2 to 8.5 V is only displayed.



If LCU and AUX output are supplied with different batteries (E.g.: LCU 1s lipo, 2s lipo AUX), this is detected! During the first run, the battery of the LCU (of the light channels) is programed and in a further run, the AUX battery is programed.

If the programming of the battery type is completed, this will be saved immediately. If only the battery type is reprogrammed, you do not have to go through the other programming mode. Turn the **SkyFire LCU** off and on again.

If a programming step, such as the battery type programming should NOT be run / changed, then this programming step can be skipped by waiting 5 seconds without pressing the button.

Step 2 - Programming the light channels

The first orange Status LED starts blinking now and waits for the programming of the activation point and light sequence. By pushing ("zapping") the set button the various continuous light, flash and beacon functions can be selected and the corresponding orange status LED and the LED connected to the light channel display the sequence.

	Activation point	Storing the activation point and light-sequence for each output.

By pressing the Set-button ***you can zap through*** *the flash sequences. Move the switch or the proportional slider on the transmitter to the position at which the selected light channel shall be active. Then save function and activation point by* ***pressing the Set-button*** ***for 2 seconds.***
Pressing the button for two seconds long will always be confirmed through a rapid flashing of the ***MODE LED*** *twice. Repeat this procedure for all* ***9 light channels****.*

For each flash sequence, you can choose if it should flash at the beginning, some time delayed, or long time delayed. This allows you to flash three positions on the model successively.

The following light functions are available in the **SkyFire LCU**:

Nr.	Function	...delayed	...long delayed	Factory Setting:
0	**Permanent Light**			**A5, A6, A7, A8, A9**
1	Single Flash			
2		Single Flash		
3			Single Flash	**A4**
4	Blink (150ms on)			
5		Blink (150ms on)		
6			Blink (150ms on)	
7	Long Blink (300ms on)			
8		Long Blink (300ms on)		
9			Long Blink (300ms on)	
10	Very Long Blink (500ms on)			

11		Very Long Blink (500ms on)		
12			Very Long Blink (500ms on)	
13	Double Flash			
14		Double Flash		**A3**
15			Double Flash	
16	Double-Blink (150ms on)			
17		Double-Blink (150ms on)		
18			Double-Blink (150ms on)	
19	Double Flash + late ignition			
20		Double Flash + late ignition		
21			Double Flash + late ignition	
22	Tripple Flash			
23		Tripple Flash		
24			Tripple Flash	
25	Strobo Flash			**A1, A2**
26		Strobo Flash		
27			Strobo Flash	
28	Special Flash Effect			
29		Special Flash Effect		
30			Special Flash Effect	
31	**Beacon** fast (Simulating rotation beacon using dimming effect!)			
32	**Beacon** medium (Simulating rotation beacon using dimming effect!)			
33	**Beacon** slow (Simulating rotation beacon using dimming effect!)			
34	**Beacon 40% dimmed + Flash**			

IMPORTANT

Connect flashing lights / beacons beginning at output 1 and landing lights backwards starting from the output no. 9. The **SkyFire LCU** thereby detects whether the direction of switching of the transmitter channel is correct and adjusts it if necessary fully automatically.
The programmed flash sequences and activation points are not stored until all channels are programmed!

If the programming of all 9 channels is completed, the changes are saved immediately. If otherwise no changes should be made, you do not need to go through the further programming mode. Turn the **SkyFire LCU** off and on again.

If a programming step is NOT suppsed to be carried out / modified, this step can be skipped through 5 sec. wait without pressing of the button.

Step 3 - Programming the pause time

In this step, all outputs and orange Status LEDs light up as they were programmed in advance. By pressing ("zapping") the set button the pause time between the flash sequences can now be changed in 5 steps, so that the flash sequences can be individually optimized for each model aircraft.

*By pressing the Set-button for short **you can zap** through the pause-time options. The MODE LED flashes quickly **Orange** at different rates in order to illustrate the speed. Save the desired pause time **by pressing the Set button for 2 seconds.***

Step 4 - Programming the AUX output

The orange Status LED No. 10 "**AUX**" lights up and waits for programming the activation point and light function. Proceed exactly the same way as in the programming of the 9 light channels.
In contrast to the 9 light channels, the AUX output offers long-term operation (on / off operation) or 9 different afterburner simulations.

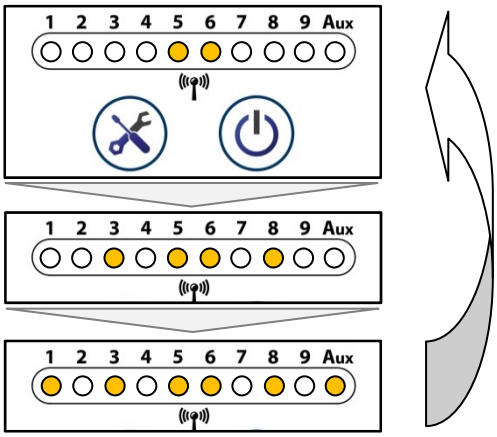
The following functions are available in the AUX output of the **SkyFire LCU** :

Nr.	Function
0	**On / Off Operation** (switching external loads)
1	**Afterburner Effect** – random flickering – without dimming up
2	**Afterburner Effect** – random flickering – slowly dimming up
3	**Afterburner Effect** – random flickering – fast dimming up
4	**Afterburner Effect** – random flickering – very fast dimming up
5	**Afterburner Effect** – random flickering – backfire and slowly dimming up
6	**Afterburner Effect** – random flickering – backfire and fast dimming up
7	**Afterburner Effect** – random flickering – multiple backfires
8	**Afterburner Effect** – random flickering – slowly dimming up in 2 phases
9	**Afterburner Effect** – random flickering – fast dimming up in 2 phases
10	**Afterburner Effect** – proportional dimming to the throttle – Backfire and flickering

If the programming of the AUX output is complete, the changes are saved immediately. If otherwise no changes should be made, you do not need to go through the further programming mode. Turn the **SkyFire LCU** off and on again.

Step 5 - Programming the reception-quality monitoring

In this step, the monitoring of the reception quality (RQO) is activated and programmed. The orange Status LEDs in the middle light up above the antenna the remaining status LEDs display "emitting radio waves" in order to illustrate the RQO programming. The MODE-LED lights up continuously **blue** (Display of the RQO-mode).



To enable the monitoring of the reception quality (RQO), the **FailSafe mode** of the lighting channel of the receiver must be activated! As signal level for the FailSafe Mode, the "smallest" possible Level (**<950µs**) or the "highest" possible Level (>2100µs) shall be programmed in the transceiver.
It is important that the FailSafe Level is smaller (respectively bigger) than the smallest (respectively highest) point of activation of the light channels, otherwise the normal operation mode could not be distinguished from the Failsafe Operation.

The MODE LED continuously lights up **blue** (RQO display mode) and flashes once per second shortly **red** or **green** **:**

- **Red flashing** means that the **actual signal value of the receiver is not suitable as a fail-safe signal** because this value is in the range of pre-programmed activation points of the light channels OR it is NOT <950µs or >2100µs.

If you exit the programming mode now with Status "red", the monitoring of the reception quality is switched OFF!

- **Green flashing** means that the **actual signal value of the receiver is suitable as a fail-safe signal**.

If you exit the programming mode now with Status "green", the monitoring of the reception quality is switched ON!

*Change the **FailSafe Level** in the transceiver (recommendation: <-100%) until the MODE LED **flashes green.***
*Save the FailSafe level and then activate the reception-monitoring mode **by pressing the Set button** **for 2 seconds.***

If the **receiver-monitoring mode** (RQO) shall be deactivated, terminate the programming mode by turning off the LCU (if the reception-monitoring was previously not active) or directly disable the receiver monitoring by *pressing the Set button* (MODE LED shines **red**).

After finishing the programming mode, **the SkyFire LCU** restarts.

DONE - The SkyFire LCU is now fully programmed and can be used.

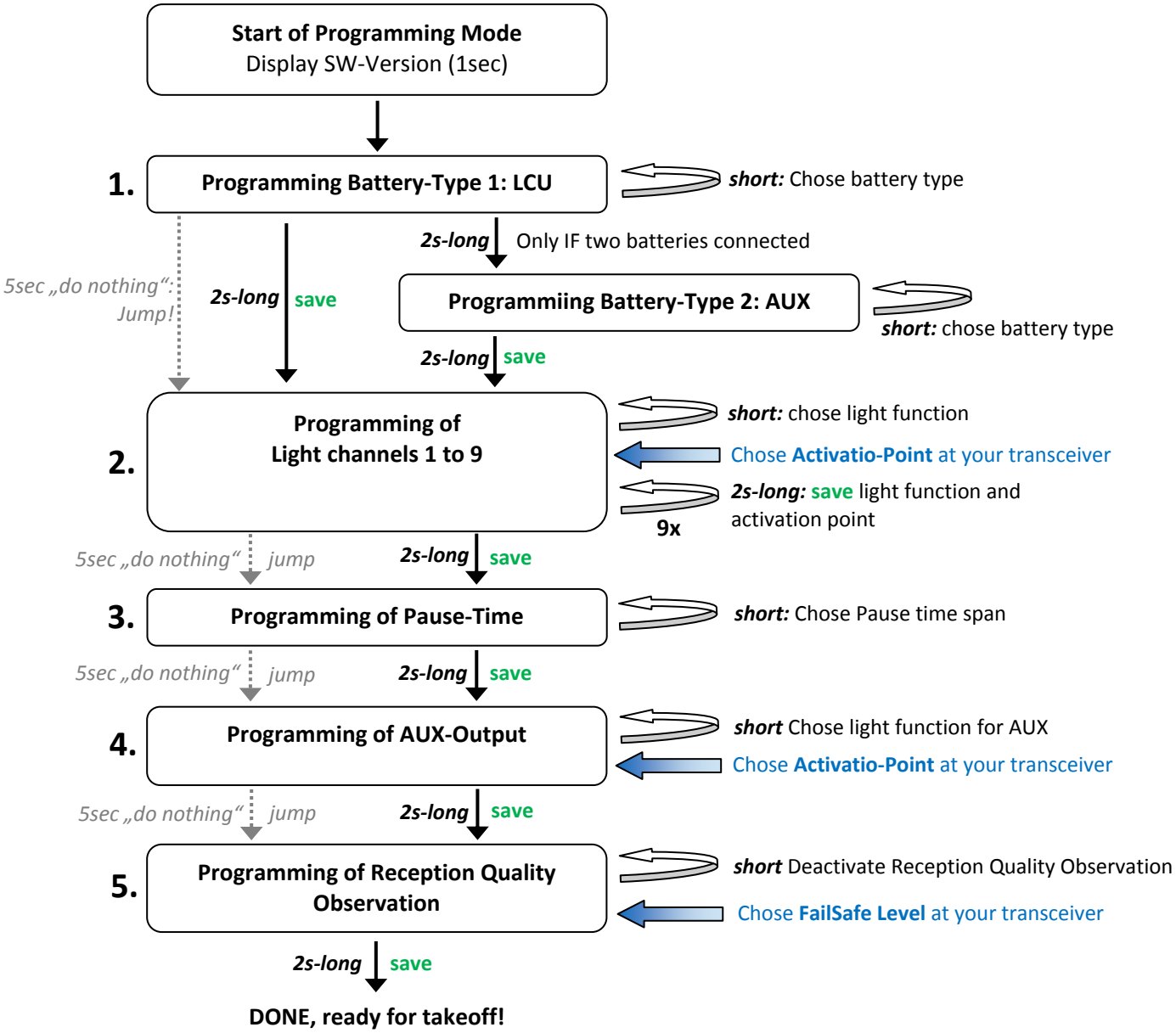
Reset to factory settings

The **SkyFire LCU** can be easily reset to factory settings.

*Turn on the **SkyFire LCU.** Keep the button pressed till the welcoming flash light sequence is ended. Since this lasts 2 seconds you have enough time after connecting the battery to press the button and hold. The start of the programming mode is indicated by a 3 second long, very fast flashing of all LEDs. Keep the button **permanently pressed also during this sequence** until the **SkyFire LCU** restarts again and the welcoming sequence shows again. You can now release the button. The settings are reset to factory settings.*

Overview Programming Mode

This is an overview about the different steps of programming mode:



Overview Button Functions

	Operating Mode	Programming Mode
Short push	Battery Test	Choose function
Pushing 2 seconds[1]	Stand-Alone Mode	Save, edit next output

Overview MODE-LED Sequences

MODE-LED Color	Meaning:
GREEN	Operation Mode, state of charge > 40%
ORANGE	Operation Mode, state of charge < 40%
ROT	Operation Mode, state of charge critical
BLAU	Operation Mode, Showing RQO status
PINK	Stand-Alone Mode (showroom mode)
WEISS	Start Programming Mode
GREEN 3x blink	Confirmation for *2-second-long-push*
GREEN 1x short flash	Standby Mode, no signal > 5min
ROT 20x kurz blitzend	Safety-shutdown, battery empty

Overview Signal-LED Sequences

	Meaning
Permanent ON	Signal active and valid
Blinking ON / OFF	Signal quality not ideal, show status via Set-button
Flasing fast	Signal quality very bad, show status via Set-button

Transceiver Range Test

Before using the **SkyFire LCU** the first time in a model, you have to do a transceiver range test just as for every new built in electronic.

The distance of the **SkyFire LCU** to the receiver has to be maximized, just as for every built in electronic.

[1] *The 2-second-long-push always will be confirmed by flashing the **blue Info LED** three times.*

Warranty and legal information

Optotronix issues a 24-month warranty for the SkyFire LCU. There is no right to repair, Optotronix reserves the right to share in case of warranty the device against an equivalent product if a repair is not possible.
This warranty expires when the module takes damage resulting from misuse, because the manufacturer has no influence on adherence to the manual, proper installation, use, maintenance and operation, no liability is assumed for the non-proper operation of the SkyFire LCU. The customer himself is responsible, because this product is installed into the corresponding model without checking of the manufacturer. For consequential damages, caused by a proven defect in the operation of SkyFire LCU we assume no liability. Further claims are excluded. The product is used only for model aircrafts.
The SkyFire LCU has been suppressed by constructive measures. Negative influences on the quality of receiving cannot be completely ruled out. Therefore, before each use a trouble-free function should be checked. A receiver range test has to be carried out. General advise for RC-models: the distance of an electronic module and the cables which are laid in the model to the receiver and the antenna should be maximized!

Hacker Motor reserves the right to amend this document without prior notice. We assume no responsibility for possible mistakes contained in this manual or for damages resulting from the provision of these instructions.

Hacker Motor GmbH
Schinderstrassl 32
D-84030 Ergolding

shop@hacker-motor-shop.com

WEEE-Reg.-Nr. DE 55352581
VerpackV Reg.-Nr.: DE4145467607355

Developed & made in Germany.

Welcome to your new and multifunctional lighting electronic:

9 light channels
3A each

Display Scale
For displaying the batteries state-of-charge and reception quality

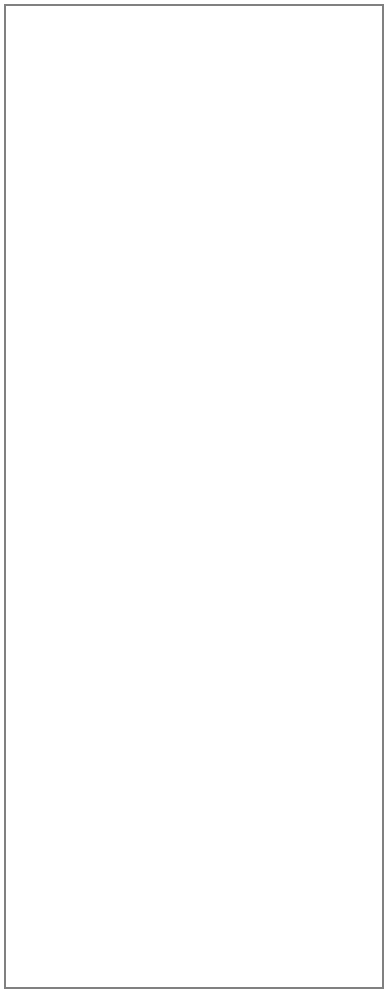
Status-LEDs
For 9 light channels and AUX output, orange

Button „Set“

Status-LED Signal-Input 1
blue

Signal-Input1 (Master)
Signal for controlling the LCU (the 9 light channels)

Y-Cable



SUPPLY
LCU and AUX can be supplied by two different batteries

AUX Output
8A

Ext Output
Optional accessoires

Button „Power on/off“

MODE-LED
Multi-Color

Status-LED Signal-Input 2
blue

Signal-Input 2 (AUX)
Signal to control the AUX output, switching afterburner rings or external loads

Wake-up via receiver signal

Exclusive distribution:

RC Electronic by EMCOTEC embedded controller technologies