Light Scape GT-1 Quick User Guide

I. Overview

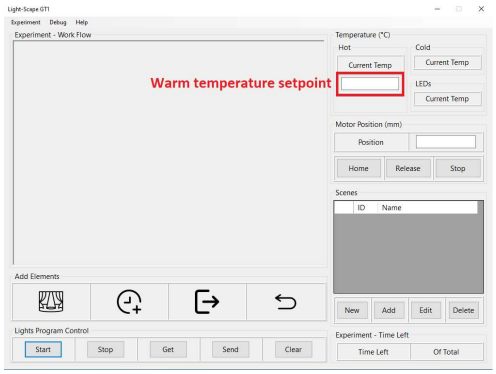
This document summarizes the steps for regular use of the Light Scape GT-1 gradient table.

For more details, see the product's technical documentation.

II. Using the instrument

1. Temperature setup

a. Warm Temperature



Inside the *Temperature – Hot* box, use the text box to type in the desired temperature for the warm side, then hit *Enter* to confirm.

Temperature range: $Ambient\ +\ 5\ °C$ … 40 °C

Temperature resolution: 0.1 $°C$

b. Cold temperature

Using the *KSMv3.exe* chiller dedicated software, go to *Settings* page, select "Ext".

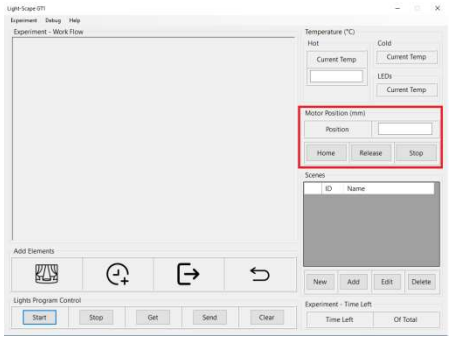
Select appropriate power for the liquid pump.

Temperature range: $-3\ °C$ … $Ambient - 5\ °C$

Caution! Chilling liquid freezes at $-15\ °C$. Avoid cooling the liquid below $-5\ °C$.

Note: Allow for approx. 1h in order for the temperatures to stabilize and for the gradient to form.

2. Motor action



- At instrument power up the motor position is unknown. Press the *Home* button to initialize motor position. This takes the motor to the highest position.
- Type in the desired position, and hit *Enter*. This is the distance between the table top and the LEDs.

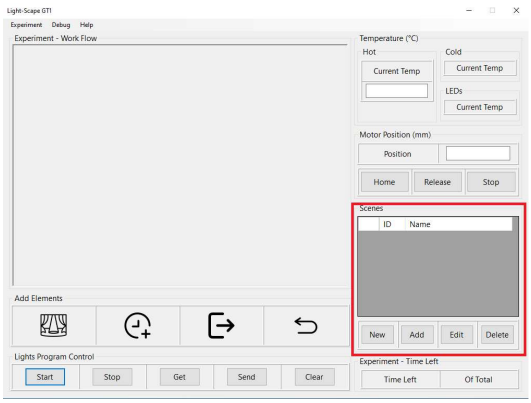
Position range: 25 *mm* – 200 *mm*

Position resolution: 1 *mm*

Button	Description
Home	Initialize the motor position. Sends the LEDs to the maximum distance of 200 mm from the table top. Use this after each power up.
Release	Clear an internal fault or error condition and allow the motor to receive commands. Does not cause the motor to move. Caution when using this. This function is for exceptional cases only and not intended for normal operation.
Stop	Acts as an emergency stop for the motors. Immediately stops the movement of the motors. Causes an internal fault condition. Caution when using this. This function is for exceptional cases only and not intended for normal operation.

3. Light setup

In order to configure the LEDs, use the *Scene* box.The RGB state of the LEDs at a given time constitutes a static scene.

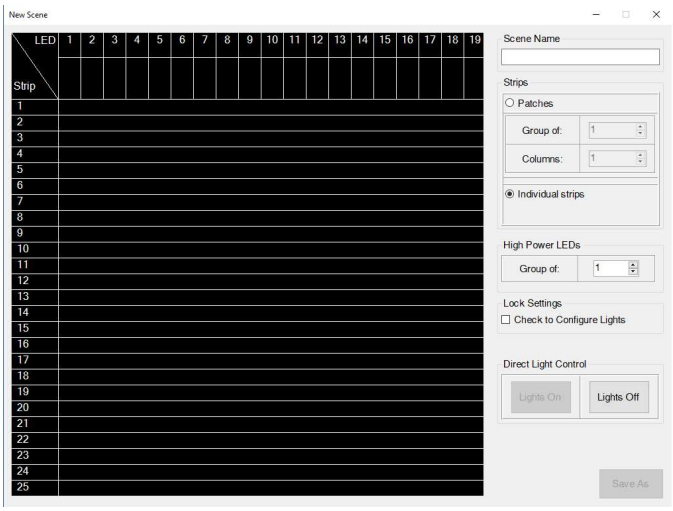


Button	Description
New	Open *Scene Definition* window.
Add	Opens a dialog to add one or multiple scenes saved on PC.
Edit	Open *Scene Definition* window, to edit the selected scene. To select a scene, select its entire row from the scene list. If multiple scenes are selected, this button has no effect.
Delete	Deletes the selected scenes from the scene list. To select one or more scenes, select their entire rows from the scene list.

Note: All scenes in the list are sent to the MCU controlling the LEDs. Remove scenes which are not used in the experiment from the scene list.

Configuring the lights

- Configure the geometry
    - Under *Strips*, select *Individual strips* or *Patches* – this configures the grouping of the strip LEDs
    - Under *High Power LEDs* select the grouping.



The geometry of the lights schematic will update after each change.

RGB intensities are configurable for each group of LEDs formed by this configuration.

- Check the *Check to Configure Lights* check box. This locks the geometry in place, allowing for RGB intensities setup.
- Left click on a group to configure RGB values in the range 0 – 255. This will open up a color selecting dialog.
- After selecting RGB values, the group will take on that selected color. Low RGB values may not be visible on screen.

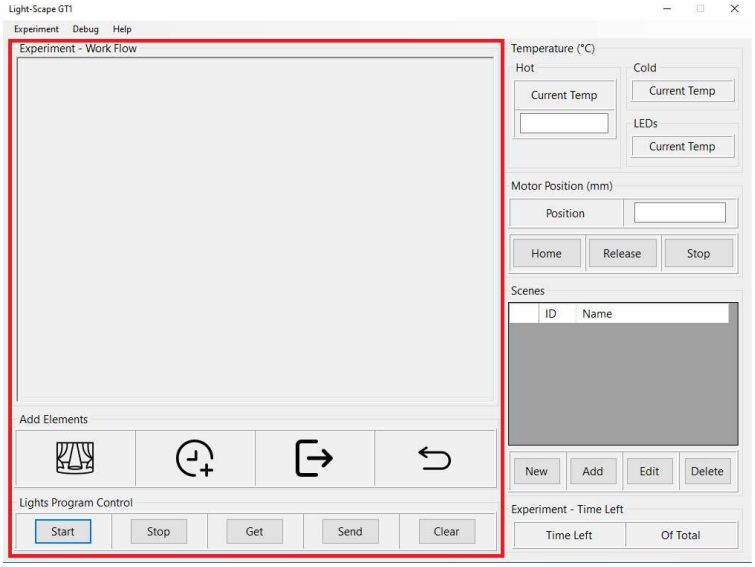
Lights On button – turns on the lights on the table according to the defined geometry.

Lights Off button – turns off the lights on the table.

- Under the *Scene Name* text box, give the defined scene a suggestive name. If no name is given, a random name will be assigned.

Save As button saves the defined scene as a *.scn* file on PC, then closes the configuration window.

4. Defining an experiment



There are four items which can be added to the experiment work flow:

- Scene
- Delay
- Loop Start
- Loop End

The experiment follows the items added in *Experiment – Work Flow* from left to right.

To add an element to the experiment, left click one of the pictograms in *Add Elements* region.

To remove an element from the experiment, right click the pictogram or the region around the pictogram of the specific element inside the *Experiment – Work Flow* region.

To insert an element before an existing element inside the *Experiment – Work Flow*:

- Select the element before which to insert a new element by double-clicking its pictogram or region around the pictogram inside *Experiment – Work Flow*
- Add one or more new element by clicking the corresponding pictograms in *Add Elements*
- Deselect the highlighted element by double clicking it again.

Element parameters:

Program Element	**Description, parameters**
Scene	Adds a scene to the experiment from the scene list in *Scenes* by ID. Transition time in hours, minutes, and seconds represents the time in which the lights transition from the previous old scene to this new scene. Each color channel (R, G and B) transitions linear from the old value to the new value within the set time. If the transition time is set to zero, then the new scene is displayed immediately.
Delay	Add a delay in hours, minutes and seconds. This acts as a "hold on" time for the current scene.
Loop Start	Marks the start of a loop. It has no parameters
Loop End	Marks the end of a loop. It has the number of loops as parameter. Zero marks infinitely looping.

After all elements in the Work Flow are iterated, the experiment stops and the lights turn off.

Caution! The software does not check for correct loop definition. Behavior is not warranted in case of incorrect loop placement (eg. *Loop End* without *Loop Start*, unbalanced loops, etc.).

For the loop logic, the same logic as in mathematical parentheses applies. There can be nested loops, etc. as long as they are logically correct.

Note: The Experiment Work Flow is stored in the volatile memory of the MCU, and will be lost on power down. To save it, use *Save As* to store it as a file on the PC.

This will save the *Experiment – Work Flow*, and the scene list from *Scenes*. The temperatures and motor position will NOT be saved.

Button name	Description
Start	Starts the light program stored in the instrument's MCU
Stop	Stops the light program and turns off the lights
Get	Retrieves the light program stored in the instrument's MCU
Send	Sends the light program in *Experiment – Work Flow* to the instrument's MCU
Clear	Clears the program in *Experiment – Work Flow*. Has no effect on the MCU

To run a new experiment:

1. Open an existing experiment file, or define a new experiment
2. Click the *Send* button (by omitting this step, the experiment from the MCU will not be updated to the one defined on the PC).
3. Click the *Start* button

III. Steps Overview

1. Check instrument and power up
2. Set motor position
3. Set cold / warm temperatures and allow gradient to form
4. Define or load experiment
5. Run experiment