

VISO Reference

CALI-T50

User guide



Last edited 9 June 2017

VISO
SYSTEMS

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Safety information

Warning! This product is not for household use.

Read this manual before installing and operating the Cali T50, follow the safety warnings listed below, and study all the cautions in the manual.

Preventing electric shocks



Make sure the power supply is always grounded.

Use a source of AC power that complies with the local building and electrical codes, that has both overload and ground-fault protection.

If the controller or the power supply are in any way damaged, defective, wet, or show signs of overheating, disconnect the power supply from the AC power and contact Viso Service for assistance.

Do not install or use the device outdoors. Do not spray with or immerse in water or any other liquid.

Do not remove any covers or attempt to repair the controller or the power supply. Refer any service to Viso.

	<p>Disposing of this product</p> <p>Viso products are supplied in compliance with Directive 2002/96/EC of the European Parliament and of the Council of the European Union on WEEE (Waste Electrical and Electronic Equipment), as amended by Directive 2003/108/EC, where applicable.</p> <p>Help preserve the environment! Ensure that this product is recycled at the end of its lifetime. Your supplier can give details of local arrangements for the disposal of Viso products.</p>
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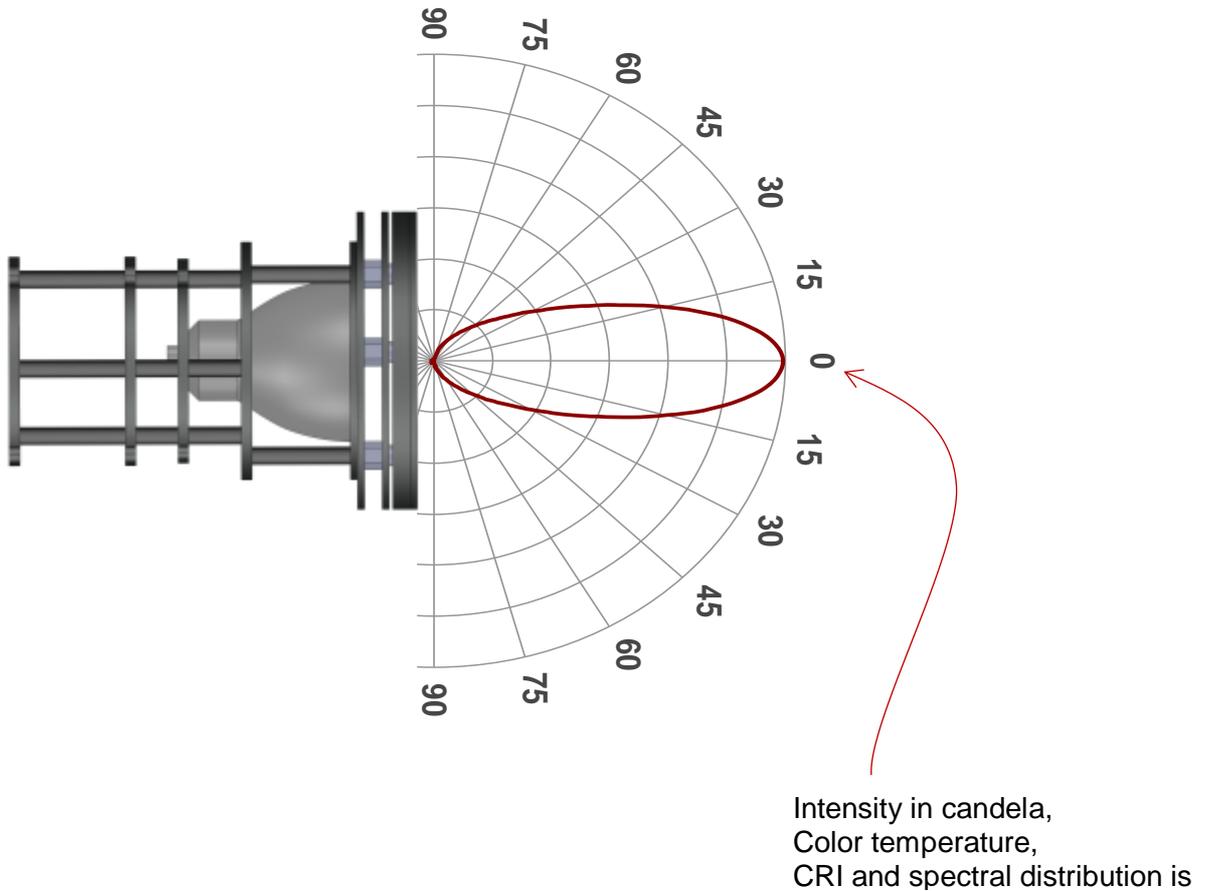
Introduction

About this document

These guidelines describes how to use the Cali T50 as a reference light source and how to do custom calibrations on Viso Systems goniometer products.

About the Cali T50

The CALI-T50 is and irradiance reference lamp which means it is a directional lamp with intensity and spectra defined in one point in front of the lamp as shown below..

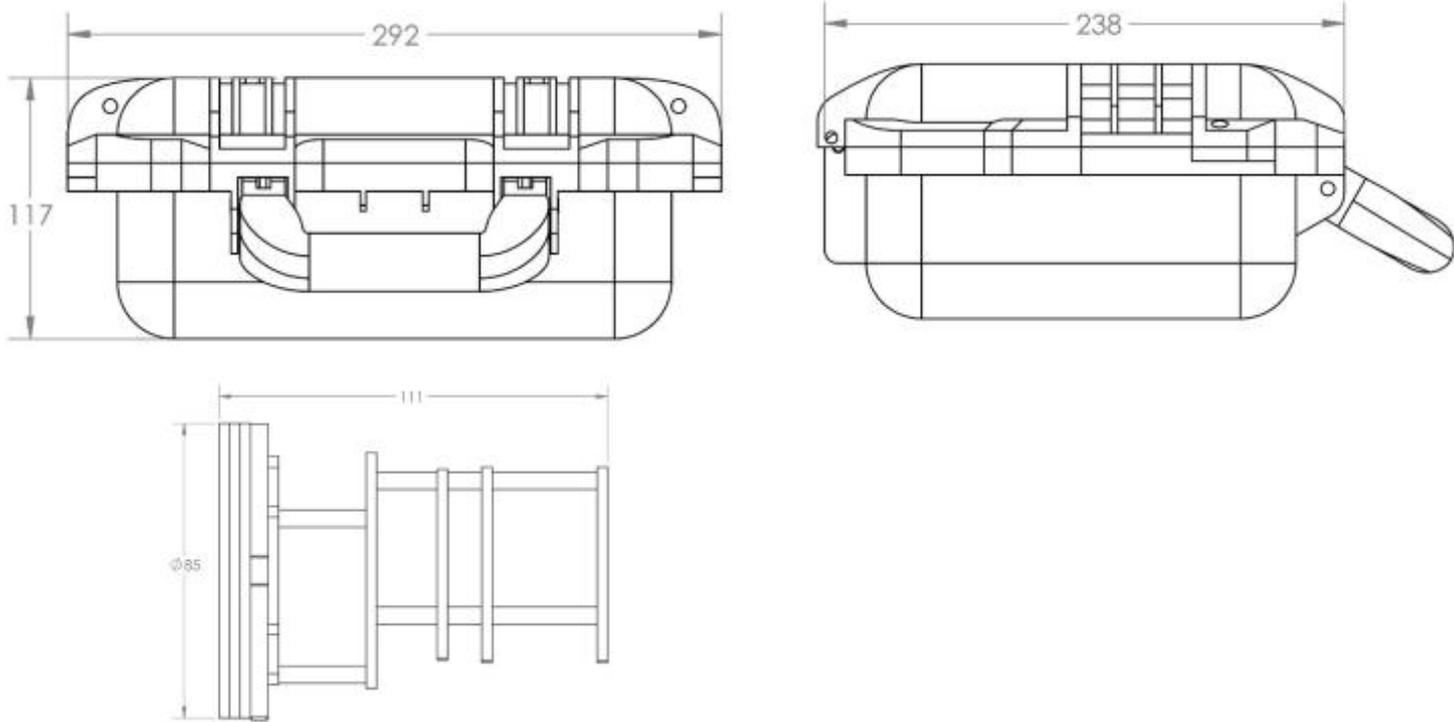


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Dimensions



Shipping Packages

	Shipping packages Weight	Shipping dimensions	
1.	Cali T50	40 x 30 x 25 cm	2 Kg

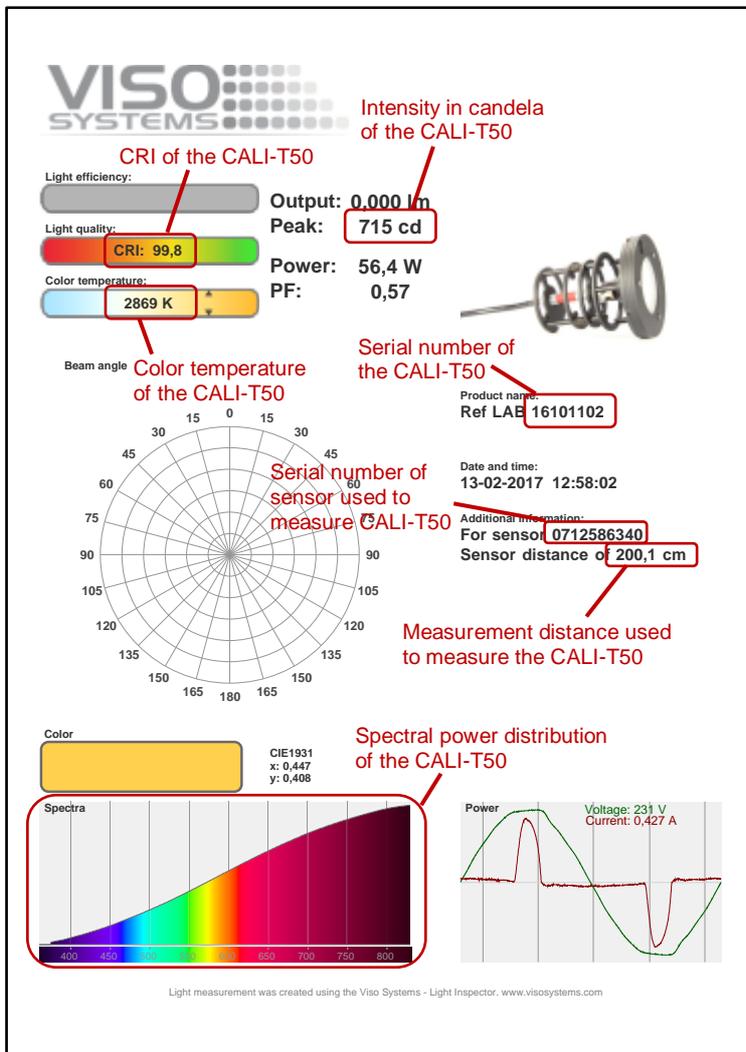
**Total shipping weight: 2 kg.
The shipment is done in 1 package.**

Contents

The Viso reference lamp is delivered in a smart suitcase along with two cables.



The CALI-T50 comes with a certificate as shown below.

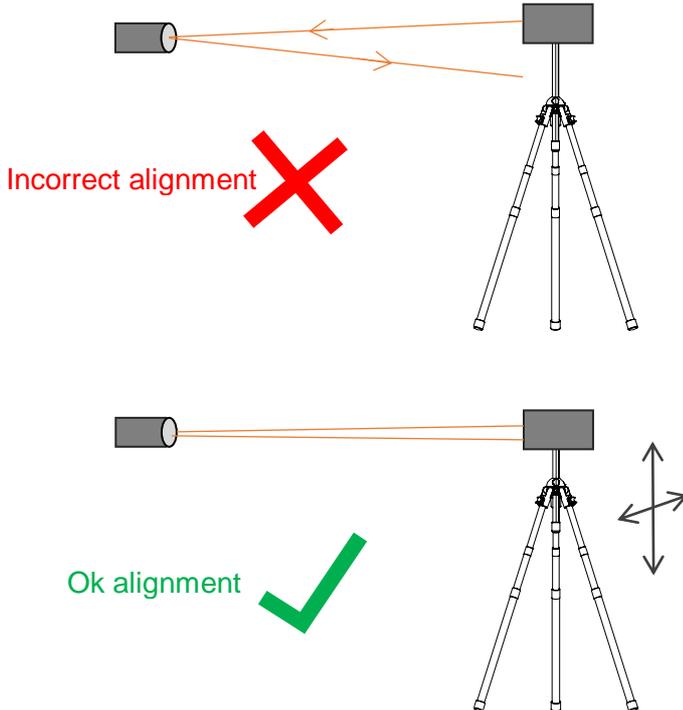


Aligning the sensor

The very first step is to mount the reference lamp into the setup as shown in the pictures.



Then place the sensor approximately two meters away (*recommended to use approximate same distance as defined on certificate*) from the setup with the reference lamp. Make sure the sensor is aligned with the lamp. Shoot the laser towards the lamp glass and catch the reflected beam in the same area of its origin, or within a 4 cm area. Such a procedure puts both the sensor and the lamp in alignment. The pictures below explain the process:



Measuring distance

When the sensor is aligned relative to the lamp, you can measure the precise distance between the two components. It should be between 190 and 210 cm (referring to the certificate). Activate the by pressing the 'Laser on' button on the back of the sensor and target the laser beam towards the little white point above the lamp area and press the 'Measure distance' as shown below.



The glass surface of the lamp produces a lot of internal reflections of the laser beam, and it complicates the exact distance calculation. The precise distance determination is essential in achieving the best results. That is why a fixed white target point was designed above the lamp luminous area.

After the distance has been measured to the point the laser back to the centre of the glass.

Connect power

To turn on the lamp simply plug in the lamp to the box socket, and then connect the box to the power supply, as shown in the pictures below.



The lamp needs to ramp up, and there is an indicator with a mini instruction on the box. The blue flashing indicator means the lamp is ramping up, a constant blue colour defines the lamp is ramped up, whereas the red colour of the indicator means there is an error.

Then the lamp needs to stabilise for at least 30 minutes, after which it is ready for measurement.

Make reference measurement

The most typical is to make a reference measurement where you simply test the if the measured data matches the certificate to verify that sensors calibration is intact.

When the lamp is warmed up simply turn on the spectrometer by clicking on the spectra icon. 

If the spectra is over saturated just click on the red oversaturation label to get the system readjust the spectrometer to remove the saturation.

**Over saturated
click to auto set**

The CALI-T50 is an irradiance lamp and does not have a lumen value but only candela and photometric values at one point, so you cannot make a complete measurement where the lamp is moved. Just turn on the spectrometer and check if the live values matches those of the certificate that came with the Viso Cali T50. To save a live measurement, simply click the save button and save it to the log.

Remember, most likely there will be some fluctuation in values and accuracy which can be seen below.

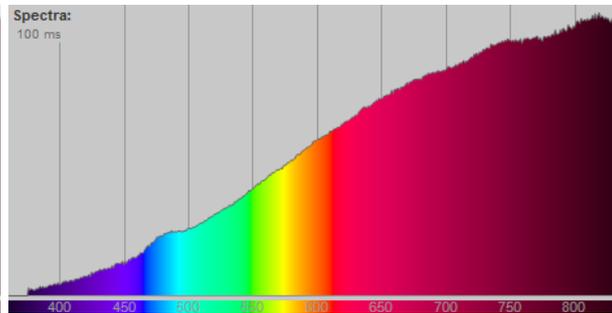
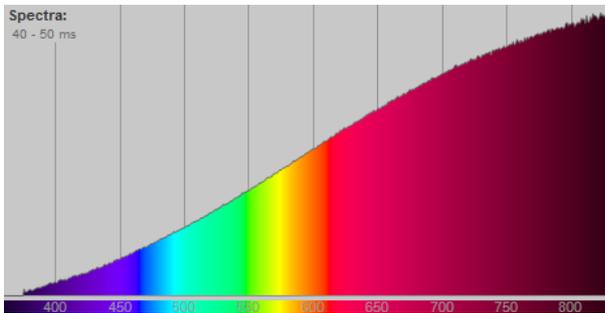
Candela accuracy +/- 4% (including sensor) *for example for 700 cd (672-728)*

Color temperature accuracy +/- 35K

Check the spectra is relative smooth as on the certificate.

GOOD

BUMBY



Calibrating sensor

The main purpose of the CALI-T50 is to check if your calibration is intact, as CALI-T50 was measured using your sensor before the sensor was shipped.

But the CALI-T50 can also be used to re-calibrate your sensor. All the Viso products has two memory areas where calibration data can be stored. The first memory area contains the factory calibration and cannot be edited. But second area contains the custom calibration and can be changed by the user as many times as desired.

Before a calibration can be made you must have a lamp file (.Imp) for the CALI-T50 lamp. This lamp file is normally not included with the CALI-T50 but by sending an email to Viso with the serial number can you get the file.

The lamp file specifies the CALI-T50 in $\mu\text{W}/\text{cm}^2/\text{nm}$ at 0.5m for each wavelength, making it possible to make a full spectral and intensity calibration of the sensor.



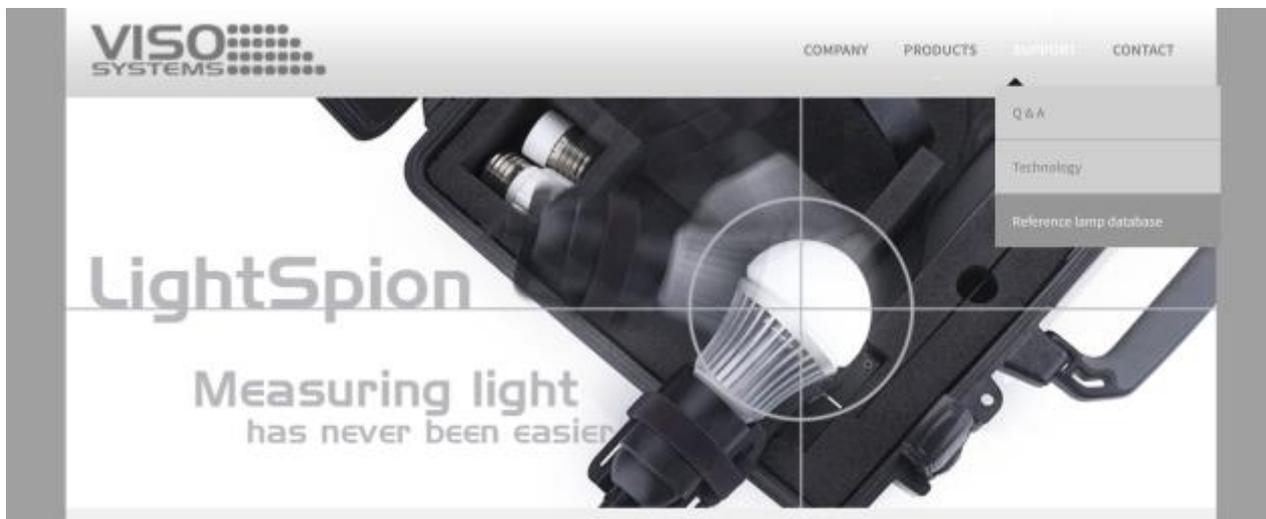
Serial number:
15010705

Download fixture file or PDF

To do a calibration it is necessary to use the correct fixture file for the Viso Cali. After the Cali T50 has been measured by Viso Systems, all the data are uploaded to our server, so it is always available to download.

To download the fixture file or report, go to:

Visosystems.com – Support – Reference lamp database



Type in the serial number from the Cali T50 case or lamp, in the reference lamp database and press submit. When your lamp is found you can download the .fixture file by pressing the link. Here you also find the certificate document in pdf for the Cali T50

Reference lamp database

Here can you load the photometric information for your reference lamp.

Use the serial number of the reference lamp hand written on the front of the power supply or reference lamp having the following format 11031601.

Or

Use the serial number of the product or sensor to get the reference lamp data which is a 10 digit number. The product or sensor serial number can be located by going into the Light Inspector software and select Help->Calibration information.

Serial number (e.g. 11031601):

Search time 2017-06-23 11:07:51

Found 3

[Ref LAB 16120903 - 3493873288.fixture](#)

[Ref LAB 16120903 - 3493873288.lmp](#)

[Ref LAB 16120903 - 3493873288.pdf](#)

LabSensor calibration

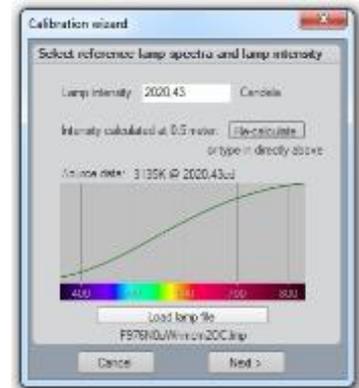
ATT

Before recalibrating the LabSensor the CALI-T50 must be **aligned**, **distance measured** and **warmed up** as described in previous chapters, and make sure you have your lamp file ready (.Imp)

Follow the 5 steps to make a correct calibration:

Step 1. Open the Viso Light Inspector software connected to the LabSpion via USB and select *Setup -> Spectrometer calibration*. Then select custom calibration and click on the new button.
Note: The primary factory calibration will not be lost, and you can always return it.

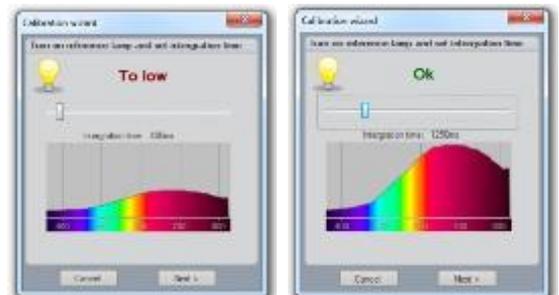
Step 2. Select "Load lamp file" to load the calibration source spectrum. The system will automatically calculate the intensity of the source in candela based on the lamp file at a distance of 0.5m. If the measurements are done at a different distance, then click on the re-calculate button. If you don't know the lamp distance but know the intensity value in candela simply insert it directly into the candela box.



Step 3. Make sure the calibration source has been turned on for at least 30 min so the output is stable.



Step 4. Click next and set the integration time to a maximum possible value to ensure the highest resolution and thereby the best calibration quality. Click next.



Step 5. To make a dark measurement cover the sensor or turn off the calibration source so the dark reference spectra can be measured. Click next and the calibration is finished.



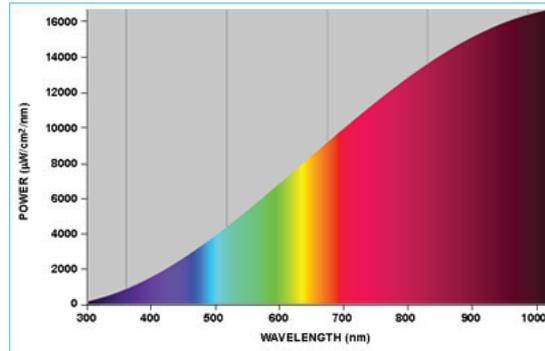
When you close the calibration dialog you will be asked if you want to save the calibration to the device. When selecting 'yes' the custom calibration will be saved inside the device. You can always switch back to the factory calibration at any time.

Restart the Viso Light Inspector software and check the new calibration is stored correctly by going into Setup-Calibration.

LightSpion Calibration

The LightSpion is delivered pre-calibrated but it is possible to make a custom calibration of the photo spectrometer if desired. This could be necessary if the LightSpion is to be certified by an official agency, which will perform its own calibration and afterwards issue certification documents.

To make a custom calibration a calibration source must be used, the spectrum of which in a directional point at a certain distance is known. Such a spectrum is usually specified as power in $\mu\text{W}/\text{cm}^2/\text{nm}$, as shown below.



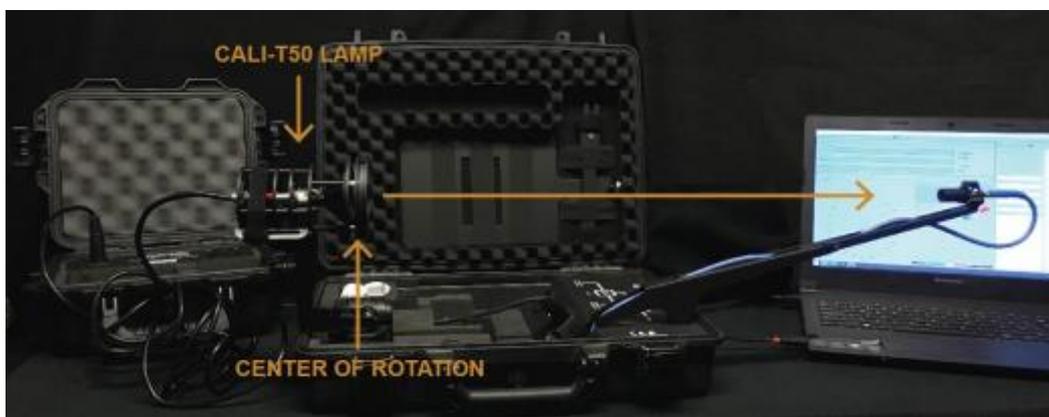
Calibration sources can be obtained from a number of suppliers, in this example will we use the CALI-T50 from Viso Systems which is a tungsten irradiance lamp. The spectrum of the calibration source is usually provided in a .Imp file (lamp file).

NOTE! Making a custom calibration does not delete the Viso factory calibration. You can always switch between factory and custom calibration at any time. These steps shows how to make a custom calibration.

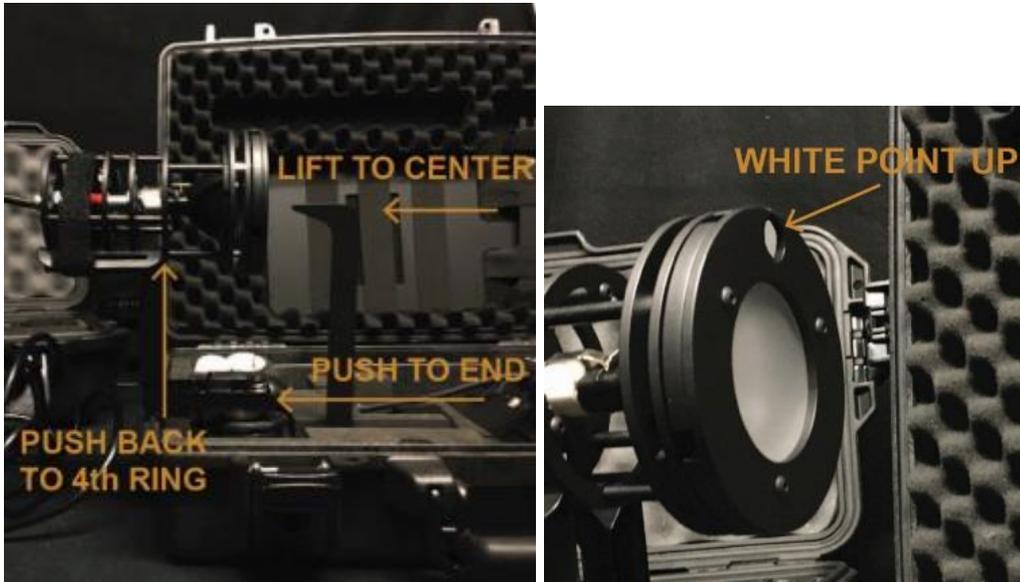


IMPORTANT: Calibration must be made in a dark environment, with non-reflective surfaces.

Step 1. Place the calibration lamp at the centre of the rotation motor and make sure it is lifted to the right height by using the alignment tool.



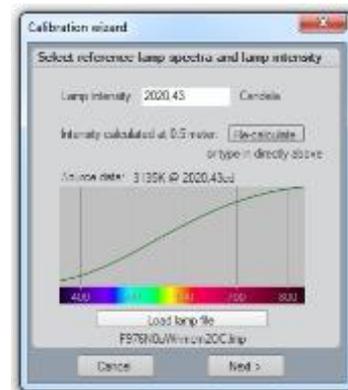
The lamp must be pointed directly towards the sensor. Sometime is might be necessary to unplug RJ45 cable to the motor to enabling precise alignment.



Step 2. Open the Viso Light Inspector software connected to the LightSpion via USB and select *Setup -> Spectrometer calibration*. Then select custom calibration and click on the new button. Note: The primary factory calibration will not be lost, and you can always return it.



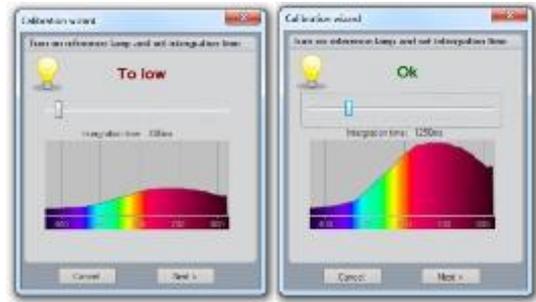
Step 3. Select "Load lamp file" to load the calibration source spectrum. The system will automatically calculate the intensity of the source in candela based on the lamp file at a distance of 0.5m. If the measurements are done at a different distance, then click on the re-calculate button. If you don't know the lamp distance but know the intensity value in candela, simply insert it directly into the candela box.



Step 4. Make sure the calibration source has been turned on for at least 30 min, so the output is stable.



Step 5. Click next and set the integration time to a maximum possible value to ensure the highest resolution, and thereby the best calibration quality.



Step 6. Click next and cover the sensor or turn off the calibration source, so the dark reference spectra can be measured and click next and the calibration is then finished.



When you close the calibration dialog will you be asked if you want to save the calibration to the device. When selecting yes the custom calibration will be saved inside the device. You can switch back to the factory calibration at any time.

Restart the Viso Light Inspector software and check the new calibration is stored correctly by going into Setup->Calibration.