

FURALED

DUALPORT COUPLING

Quick Start

The FuraLED dual port coupling houses two UV LEDs (typically 340nm and 385nm for Fura-2, although a Fura-8 variant is available), photodiodes providing optical feedback for each channel, excitation filters and a dichroic mirror to split the two wavelengths.

Each LED has individual focus (Z), and XY adjustments to optimise output when connected to your microscope.

This short guide details how to align your FuraLED coupling. For general power supply operation, please refer to the OptoLED user manual.

For the purpose of this Quick Start, all words in **bold blue** refer to parts labelled in diagrams throughout this document.



1) Attach the coupling to your microscope

Cairn microscope adapters are either supplied to couple onto an existing epi-illuminator or are used in place of the epi-illuminator as a 'direct' coupling.

- a. If attaching to your existing epi-illuminator, a male bayonet coupling is normally supplied, which attaches to your microscope epi-illuminator via a large grub screw.

2) Align and focus the 340nm LED at the back focal plane of the objective

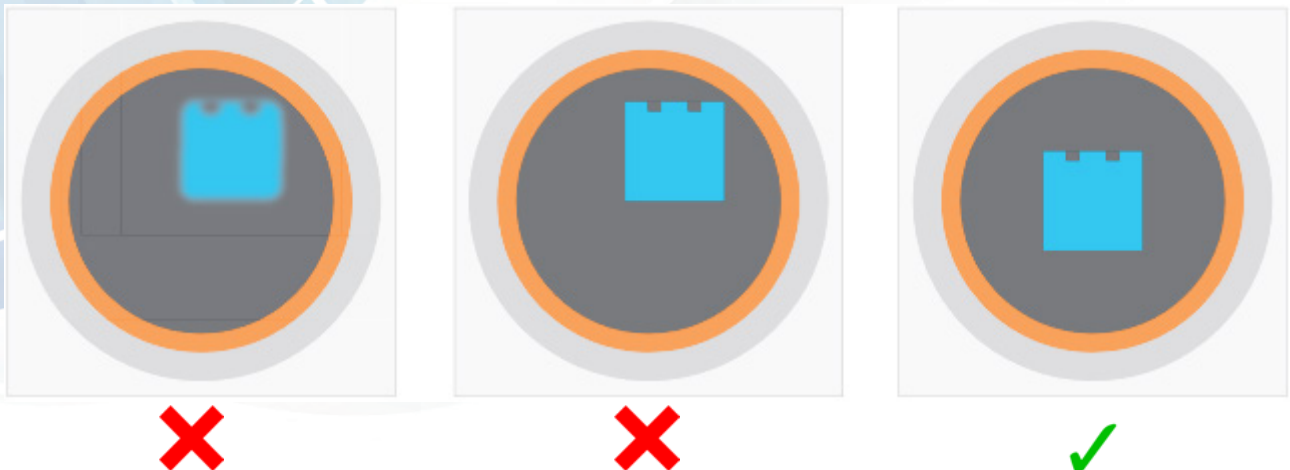
**** IMPORTANT SAFETY NOTE - UV LEDs ARE NOT VISIBLE BY EYE AND WILL CAUSE DAMAGE IF LOOKED AT DIRECTLY.**

ALWAYS VIEW THE LED LIGHT BY SHINING AT A PIECE OF WHITE PAPER AND VIEW THE FLUORESCENCE AT A LOW POWER **

- a. Move to a blank objective position on the objective nosepiece, remove any cover caps and place a small piece of white paper in this position. Alternatively, place a centering tool in the light path.
- b. Ensure your Fura-2 cube is in place in your microscope.
- c. Turn on the 340nm LED channel on the OptoLED controller
- d. Using the 2.5mm allen key (provided), turn the **340nm LED focus** until the image of the LED comes into sharp focus on the paper, please refer to Figure 1 below.
- e. Using the same 2.5mm allen key, centre the position of the 340nm LED using the **340nm**

3) Repeat the steps above for X, Y and Z adjustment for the 385nm LED

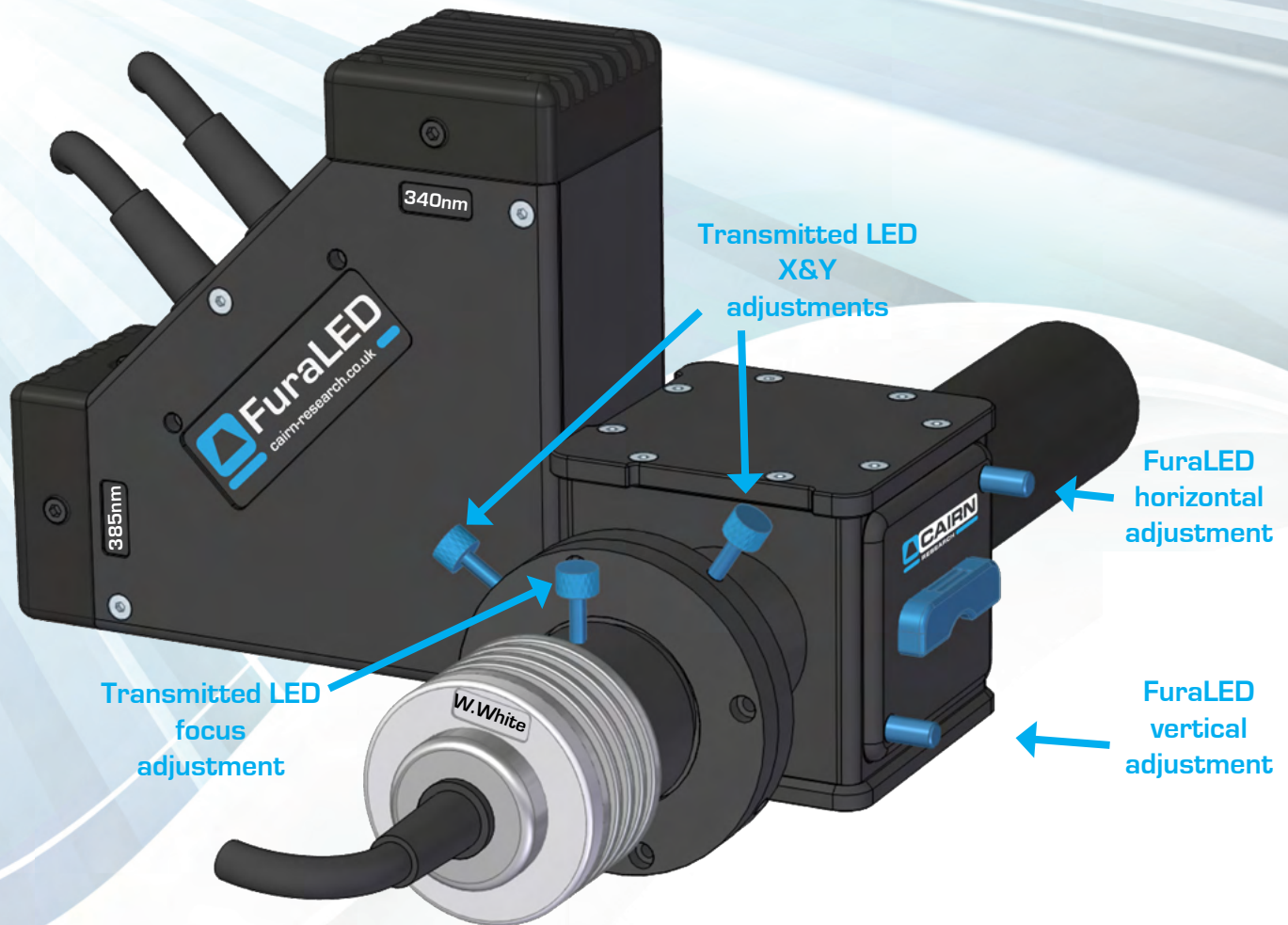
Figure 1



Once the FuraLED channels have been aligned and focussed, the coupling should not need further adjustment unless removed from the microscope. We recommend periodically checking the alignment to ensure your illumination is optimal.

Coupling variation – FuraLED in reflected position of dual port coupling

When configured with an additional transmitted (longer wavelength) channel, the FuraLED coupling is reflected via a dichroic mirror (typically 400LP). The same adjustments are present for each UV channel, along with an additional mirror adjustment for both UV LEDs (if required) and X,Y,Z adjustments for the transmitted channel.



- 1) Align the 340nm and 380nm channels on the FuraLED as per the previous instructions
- 2) Perform any final positional adjustment (moving both UV LEDs equally) via the dichroic mirror
 - a. Adjust the **FuraLED horizontal and vertical adjustments** on the dual port coupling. These may be via blue thumb screws (as in the image above) or using the 1.5mm allen key supplied with current dual port couplings.

3) Focus and align the transmitted LED

- a. Loosen the blue thumb screw which locks off the **transmitted LED focus adjustment** and slide the LED head in Z within the coupling until the image of the LED comes into sharp focus on the piece of paper (or centering tool). Lock off this position by securing the thumb screw. A notch is present in the LED housing to help locate this lock off screw and prevent the LED being fully pulled out of the coupling.
- b. Adjust the position of the transmitted LED using the **transmitted LED X and Y adjustment** thumb screws until centred.

Please contact us if you have any questions or issues during setup or operation
(tech@cairn-research.co.uk)