

Brightfield LED Illumination

LED Illumination device
Manual Version 2.2



FM 61600

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Thank you for purchasing this product from Prior Scientific – we’re confident it will be a reliable and useful addition to your microscopy system. Please take the time to read and understand this manual before using this product – it contains not only important operating instructions but also vital safety information. This product must be used only as specified in this manual. If you wish to use it differently, contact Prior Scientific beforehand. Please do not hesitate to contact us with any comments or questions regarding this product.

Please note that this manual covers the LDB 100 F and LDB 101F. Therefore, some functionality discussed in this document may not be applicable to your exact model.

SAFETY INFORMATION

SECTION I

It is important to follow these safety warnings to avoid potential injury or damage. Please read and understand these warnings, operating instructions and specifications before using the Brightfield. If you have any questions do not hesitate to contact Prior Scientific. If you intend to use this unit in a manner not specified by Prior in this manual, contact Prior beforehand.

SAVE THIS MANUAL AS IT CONTAINS IMPORTANT INFORMATION AND INSTRUCTIONS.

- Use the Brightfield only as specified by Prior Scientific. Failure to do so may both damage the unit or impair the intrinsic protection offered by the unit.
- It is safe to use this unit in an ambient temperature from 5 to 40°C with relative humidity to 80% up to 31°C decreasing linearly to 50% RH at 40°C.
- **Do not** expose this unit to water or moisture when energised. **Do not** allow moisture to penetrate openings in the case. If this occurs allow the unit to dry out unpowered before switching on again.
- **Do not** expose this product to extremely hot or cold temperatures, or to open flames.
- **Do not** allow liquids to spill, or objects to fall, on the unit.
- **Do not** replace detachable mains supply cords by inadequately rated cords.
- **Do not** cover or impede ventilation to the unit.
- **Do not** stare into the light output of the LED Units.
- **DANGER – Never alter the AC cord or plug. The power cord set must be an appropriately rated and approved cord set in accordance in the regulations of the country it is used in. If the supplied plug adapter is not the correct fitting for your geographic area or if you are unsure about the relevant regulations, please contact your supplier for advice**
- Only use the supplied AC/DC adapter with this product. **Never substitute another adapter.** Should the adapter be in any way faulty or damaged **contact your supplier.**
- Install the system in such a way that the rear power switch is easily accessible.
- Make sure the unit is unplugged before connecting or disconnecting the components.
- **Do not** attempt to disassemble the product – it contains no consumer serviceable components and trying to disassemble the unit will void the warranty and may damage the unit. Service should be performed only by authorised service centres.
- Only the exterior of this product should be cleaned, using a slightly damp, lint free cloth.
- **BE AWARE – SURFACE MAY GET HOT DURING OPERATION.**

IDENTIFYING YOUR SYSTEM

SECTION 2

There are two variants to the Prior Brightfield LED system. The LDB100F system is powered directly from the ProScan system using the active shutter connectors. The power and control are provided by the shutter cable from the Prior controller to the LED body. You must have a Prior controller to use this version of the Brightfield LED. The LDB101F comes with a standalone power supply, which allows the unit to be operated without the need for the Prior controller. It is powered directly from the mains supply.

NOTE: CONNECT ALL PARTS BEFORE POWERING ON THE UNITS

2.1 Identifying all the parts of the LDB100F

The LDB100F consists of:

Main LED body (1)

Microscope Adapter (1)

Control Pot (1)

Shutter cable (1).

2.2 Identifying all the parts of the LDB101F System

The LDB101F consists of:

Main LED body (1)

Microscope Adapter (1)

Control Pot (1)

24 Volt power supply and mains cable (1).

CONTACT YOUR SUPPLIER IMMEDIATELY IF ANY COMPONENTS ARE MISSING OR ARRIVE DAMAGED.

OPERATING YOUR SYSTEM

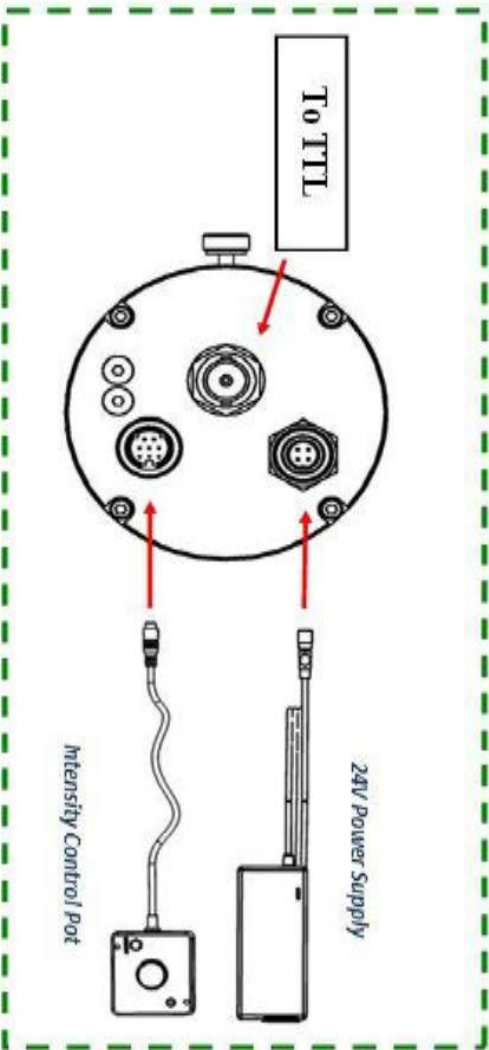
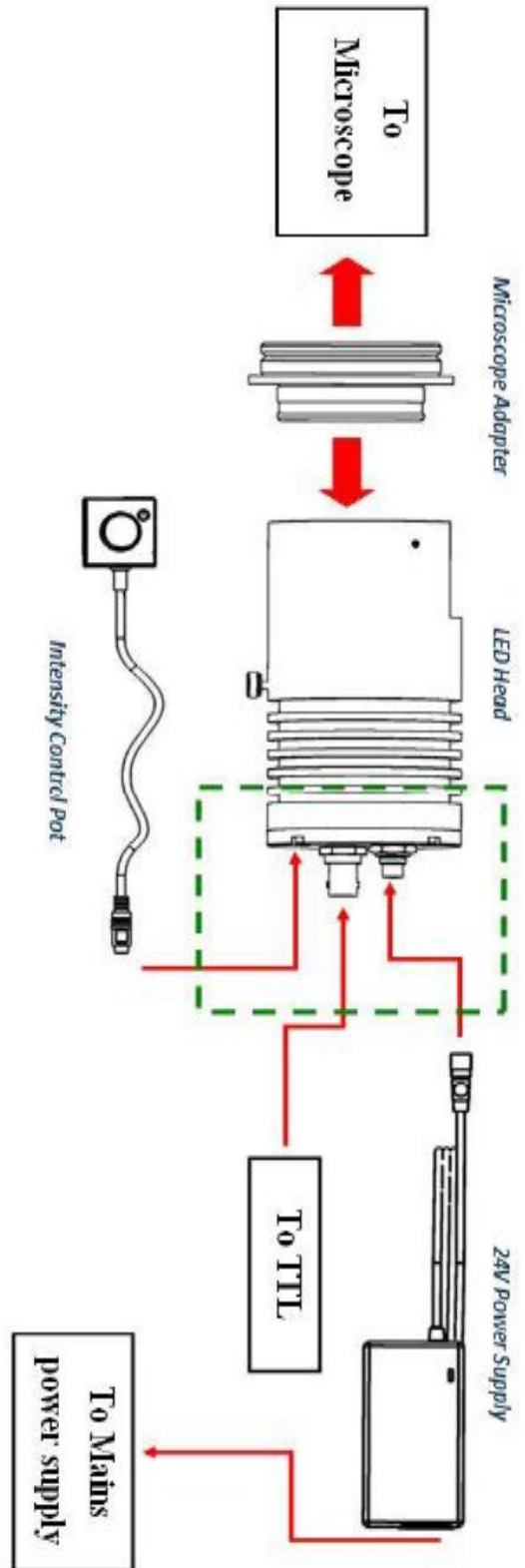
SECTION 3

The Brightfield LED can be controlled either manually, or by using (3rd party) software. Both variants are supplied with a manual intensity control pot, which is turned clockwise to increase intensity and anticlockwise to decrease intensity. The LED can also be turned on and off via an integrated toggle switch on the intensity control pot.

3.1 The Brightfield LED as a standalone lightsource

- This option only allows for manual control of the LED via the Intensity control pot.
- Connect Intensity Control Pot to the socket on the LED Head.
- Connect the 24 V power supply to the socket on the LED head, and plug in the mains cable.
- Turn on mains switch to provide power to the LED head, and intensity control pot.
- The on/off button on the Intensity Control Pot assembly maintains the on or off condition before and after the cycling of mains power. The power indicator LED will be lit if the toggle switch is in the ON position. If the mains power is on and the power indicator is off please press the ON/OFF toggle switch to make the control pot active.
- Use the Intensity Control Pot to set the light levels required.
- The 550 nm flip in filter can be moved at any time to filter the LED output if your application requires it.





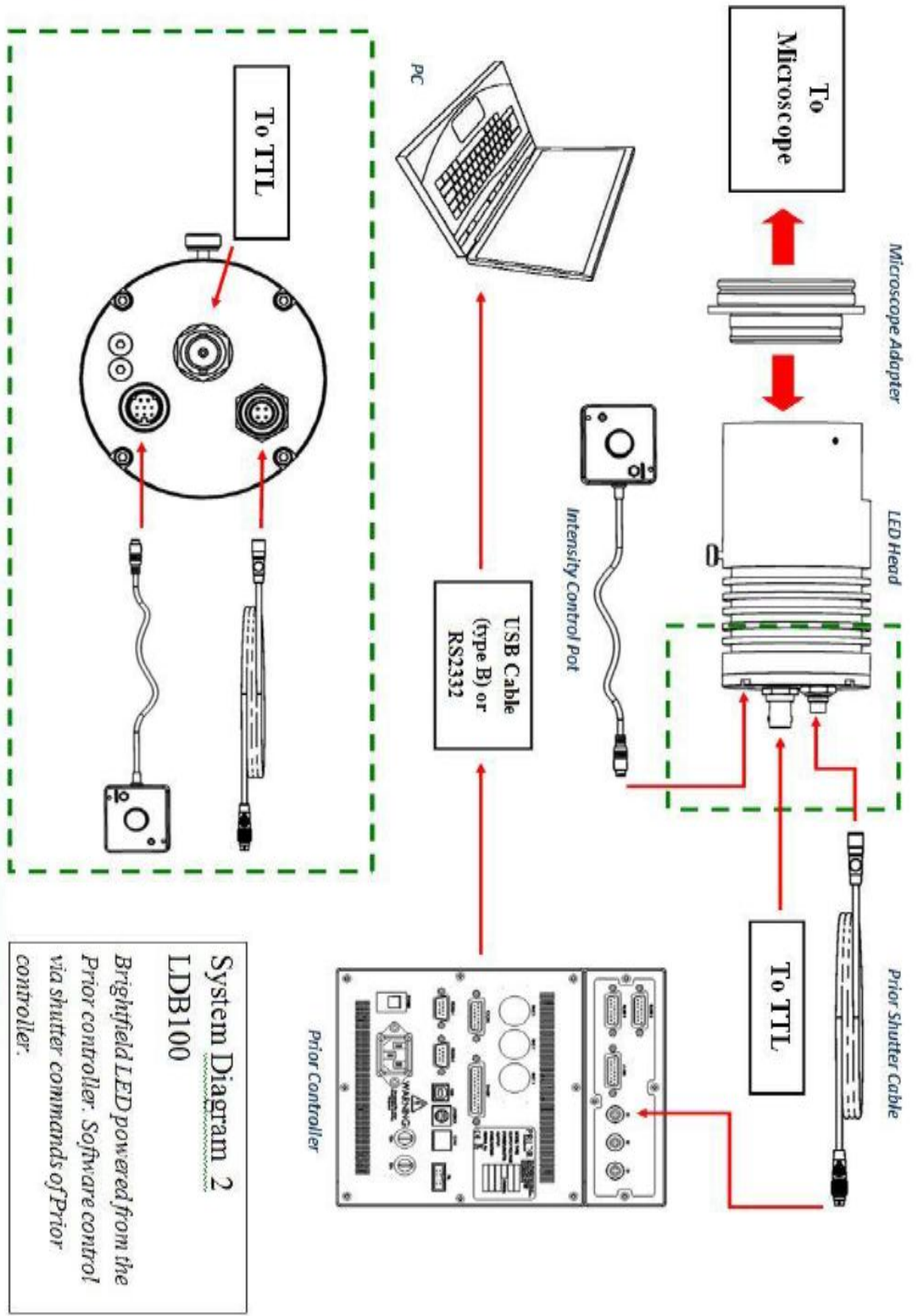
System Diagram 1
LDB101
Brightfield LED powered directly from mains supply. Use this set up for manual control only.

The Prior LDB100/101 will fit Nikon T₁, 80i, 90i microscopes without the need for a microscope adapter.

3.2 The Brightfield LED with a ProScan

Using this set up allows for either manual control of the LED via the intensity control pot or via software control through the Prior Controller. Through software control the LED can be turned on and off via the standard Prior shutter commands. LED illumination intensity cannot be adjusted via software control.

- Connect the Intensity Control Pot to the socket on the LED head.
- Connect one end of the Prior shutter cable to the socket on the LED head and the other end to an available shutter port on the back of the controller. Make a note for the shutter port for use in any software control of the system.
- Turn on the Prior controller to give power to the LED head and intensity control pot.
- The on/off button on the Intensity Control Pot assembly maintains the on or off condition before and after the cycling of mains power. The power indicator LED will be lit if the toggle switch is in the ON position. If the mains power is on and the power indicator is off please press the ON/OFF toggle switch to make the control pot active.
- Use the intensity control pot to set the light levels required.
- The 550 nm flip in filter can be moved at any time to filter the LED output if your application requires it.

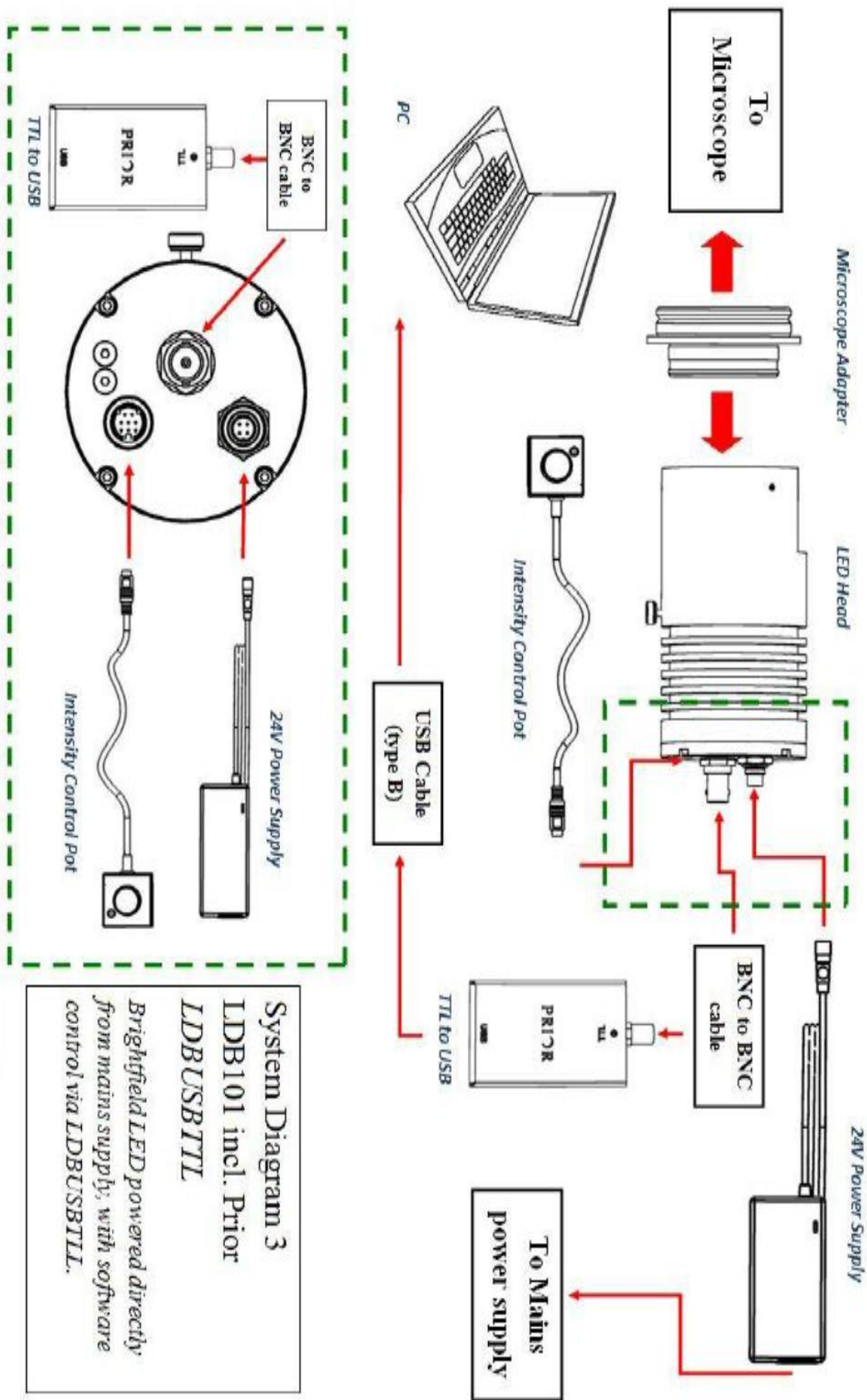


The Prior LDB100/101 will fit Nikon Ti, 80i, 90i microscopes without the need for a microscope adapter.

System Diagram 2
LDB100
 Brightfield LED powered from the Prior controller. Software control via shutter commands of Prior controller.

3.3 The Brightfield LED with a Prior LDBUSBTTTL converter.

- Using this set up allows for either manual control of the LED via the intensity control or via software control through the LDBUSBTTTL converter. The LDBUSBTTTL emulates a ProScan controller with one shutter port. Through the standard Prior commands the LED can be turned on and off, but the LED illumination intensity cannot be adjusted via software control.
- Connect Intensity Control Pot to the socket on the LED head.
- Connect a BNC-BNC cable to the TTL port on the LED Head, and the other end to the TTL socket on the LDBUSBTTTL.
- Connect the USB (Type B) cable to the LDBUSBTTTL and the other to a free USB port on a PC.
- Turn on the mains switch to give power to the LED head and the Intensity Control Pot.
- The on/off button on the Intensity Control Pot assembly maintains the on or off condition before and after the cycling of mains power. The power indicator LED will be lit if the toggle switch is in the ON position. If the mains power is on and the power indicator is off please press the ON/OFF toggle switch to make the control pot active.
- The 550 nm flip in filter can be moved at any time to filter the LED output if your application requires it.



The Prior LDB100/101 will fit Nikon TL, 80i, 90i microscopes without the need for a microscope adapter.

System Diagram 3
LDB101 incl. Prior
LDBUSBTTL
Brightfield LED powered directly from mains supply, with software control via LDBUSBTTL.

3.4 Adjustments

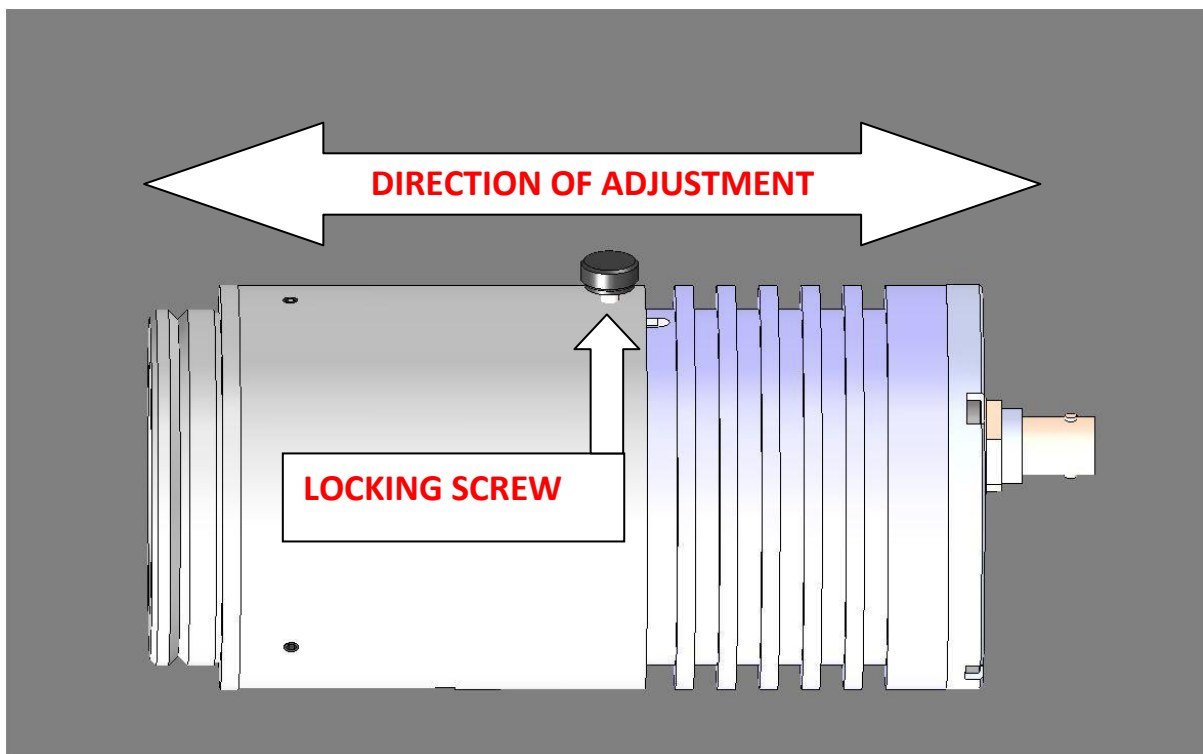
The Brightfield LED can be adjusted to obtain an even illumination.

Turn on the LED.

Loosen the locking screw.

Move the head back and forth along the direction of travel until an even illumination is achieved.

Tighten the locking screw.

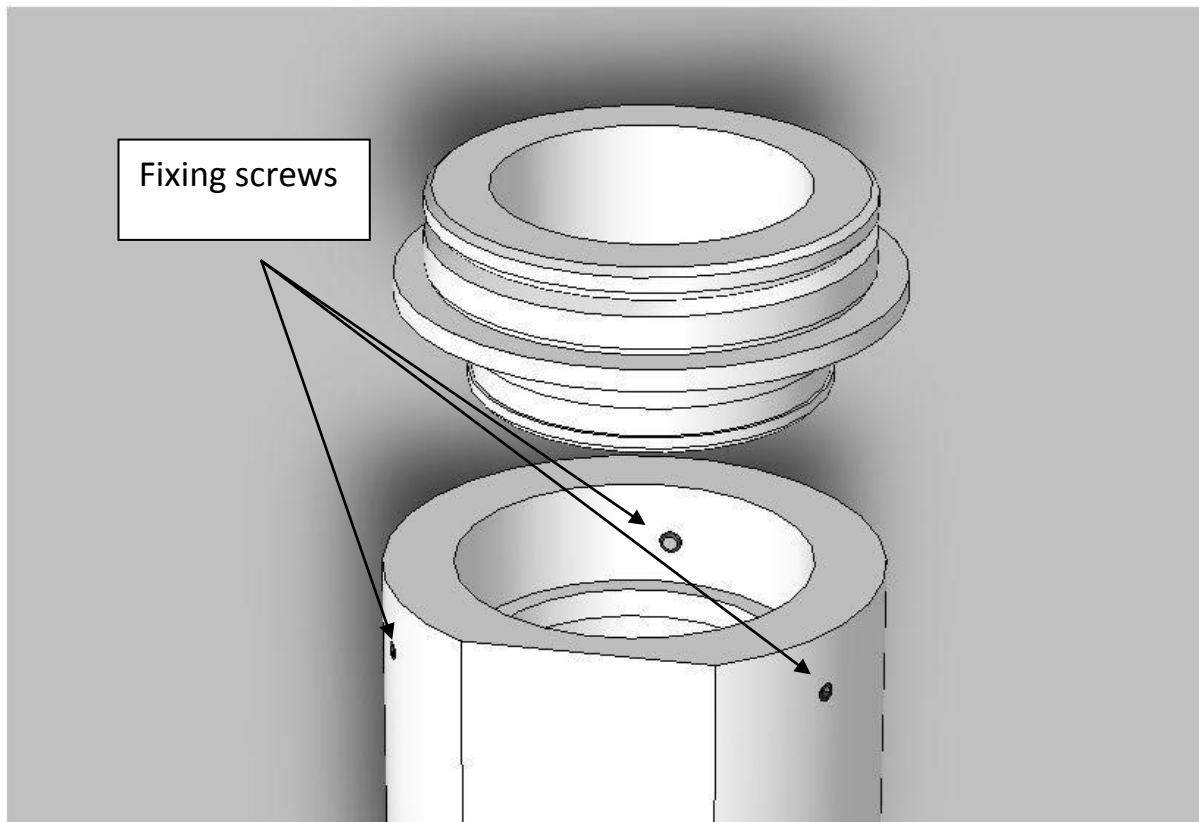


3.5 Changing the microscope adapter.

Loosen the 3 fixing screws.

Remove the adapter and replace with a new one.

Tighten the 3 fixing screws.



3.6 – Connecting the LDBUSBTTTL to a PC

The LDBUSBTTTL emulates a Prior ProScan controller with one shutter connected and can be set up in 3rd party software as such. It may require a driver to be installed, which can be obtained by going to www.prior.com, navigating to the Downloads section, and downloading PL200/ESI0ZE USB Drivers.

If you are using Windows 7 simply connect the LDBUSBTTTL device to the PC via the cable, and the necessary installations should happen instantly. If you're using an older version of Windows, please contact Prior Scientific for advice.

If no communication occurs, check that the correct com port is selected. Open the control panel from the start menu, open "system" or Right-click on **My Computer** and select **Properties**. Click on the **Hardware** tab. Click **Device Manager**. Select **Expand Ports (COM & LPT)**. You should see **Prior Communication Port -> COM device (COM n)** listed, where n is the COM number assigned to the port.

SOFTWARE COMMANDS

SECTION 4

Commands can be entered on a Terminal Emulation Program, e.g. Prior Terminal (available as a free download from www.prior.com). Please contact Prior for information on using this program, or download the ProScan III manual from www.prior.com.

Commands are terminated with a Carriage Return code <CR> (the 'ENTER key of the pc keyboard') with the exceptions of 'I', 'K', and '#' in compatibility mode.

One or more of the following delimiters separates commands from arguments.

COMMA
SPACE
TAB
EQUALS
SEMICOLON
COLON

You can use the following commands if connected via the ProScan. The Brightfield LED uses the same command set as the Prior Shutter.

Command	Argument	Response	Description
?	None	Test string	<p>Reports information about the peripherals currently connected to the controller. The final line of information is always a line saying END; so the readout should be read until END is seen. This allows for the addition of extra fields of information without affecting the function of the software. A typical readout is shown below.</p> <pre> PROSCAN INFORMATION DSP_1 IS 4-AXIS STEPPER VERSION 2.7 DSP_2 IS 2-AXIS STEPPER VERSION 2.7 DRIVE CHIPS 010111 (F2 F1 A Z Y X) 0 = Not Fitted JOYSTICK ACTIVE STAGE = H101/2 FOCUS = NORMAL FILTER_1 = NONE FILTER_2 = HF110-10 SHUTTERS = 001 (S3 S2 S1) 0 = Not Fitted AUTOFOCUS = FITTED VIDEO = NONE END </pre>
8	s,c	R (If LED is not fitted, E,20 will be returned)	Turns on or off the LEDs (value 1,2, or 3). If c = 0 the LED is on. If c = 1 the LED is off
8	s	c (if LED is not fitted, E,20 will be returned)	Returns the status (c) of the LEDs
Shutter	s	0,1	<p>Prints information about LED 's'. The information end is always a line saying END. This allows for the addition of extra fields of information without effecting application software. Users should always read lines until the END is seen in order to maintain compatibility.</p> <p>Example</p> <pre> SHUTTER_1=NORMAL DEFAULT_STATE=CLOSED END </pre>

If you are connected via the Prior LDBUSBTTTL the following commands may be used.

Command	Argument	Response	Description
?	None	Text string	<p>Reports information about the peripherals currently connected to the controller. The information end is always a line saying END This allows for the addition of extra fields of information without effecting application software. Users should always read lines in until the END is seen.</p> <p>A typical response from LDBUSBTTTL is shown below</p> <pre> PROSCAN INFORMATION DSP_1 IS NOT FITTED DSP_2 IS 3 AXIS STEPPER VERSION 0.0 DRIVE CHIPS 111000 JOYSTICK NOT FITTED STAGE = NONE FOCUS = NONE FOURTH = NONE FILTER_1 = NONE FILTER_2 = NONE SHUTTERS = 001 LED = 0000 AUTOFOCUS = NONE VIDEO = NONE HARDWARE REV A END </pre>
VER	None	Test string	Returns the version of the code fitted to the unit. Eg. USBTTLinterfaceV1.3
8	s,c	R (If LED is not fitted, E,20 will be returned)	Turns on or off the LED s (value '1') If c = 0 the LED is on If c = 1 the LED is off
8	s	c (if LED is not fitted, E,20 will be returned)	Returned the status c of the LED s

REPLACEMENT, REPAIRS, RETURNS AND SPARE PARTS

SECTION 5

The Brightfield LED contains no user serviceable parts. Attempting to repair or disassemble the unit will void the warranty and likely damage the unit. If the unit is not working, first contact either your distributor or Prior Scientific directly. If you wish, or are advised to, return your unit, a RMA number must first be obtained by contacting Prior Scientific. Do not attempt to return this unit before such a number is obtained.

A number of spare parts are available from Prior Scientific.

W228 – Shutter Cable

W4114 – 24 Volt power supply

LM317 – Intensity Control Pot

LM685 – Olympus Microscope Adapter

LM686 – Leica Microscope Adapter

LM687 – Zeiss Microscope Adapter

Please note that the Prior LDB100F/101F will fit Nikon Ti, 80i and 80i microscopes without the need for an additional adapter.

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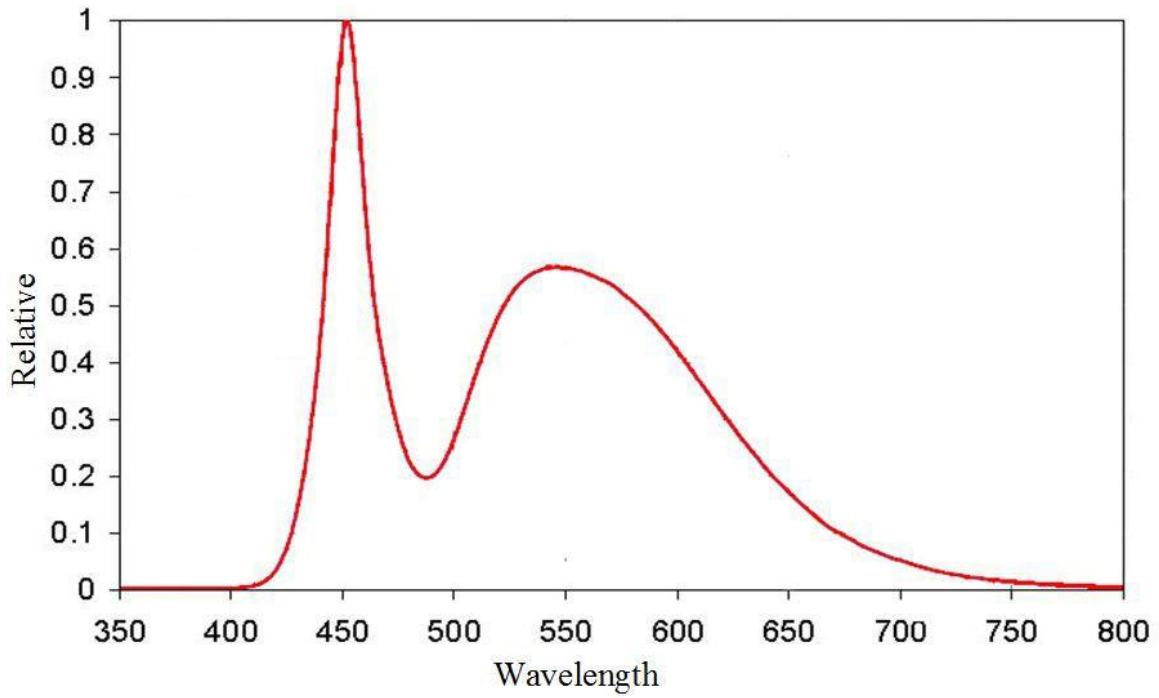
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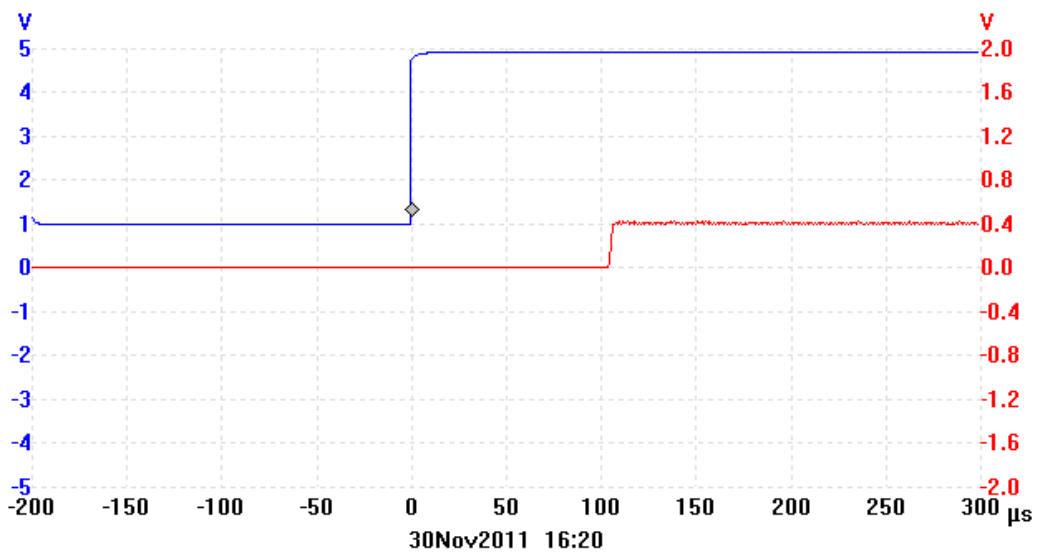
TECHNICAL SPECIFICATIONS

SECTION 6

Relative spectral distribution



TTL Switching time



All specifications in this manual are subject to change without specification.

Please feel free to contact us regarding any questions, comments or suggestions.

Prior Scientific manufactures a wide range of products designed for a huge range of microscopy applications, from automated systems to illuminators, sample holders, filter wheels, and robotic slide loaders. Contact us or visit www.prior.com to find out more.