

User Manual



GIA®




FacetBrightTM NXT
Device

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Safety Information

- a. Only trained technicians and those under the instruction of a trained technician should attempt to open the device enclosure and/or service the FacetBright™ NXT device.
- b. Only use the 100W rated USB-C power supply provided by GIA.
- c. Inspect the power supply and cord for any wear, cracks, or breaks before each use. Do not use broken power supplies or cords with this product.
- d. Ensure that the power supply is safely grounded/earthed. Use a three-wire grounding type plug with a third pin (ground). This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace the outlet.
- e. The power supply and cord can be a tripping hazard. Always route the power supply and cord away from walkways.
- f. Ensure that the FacetBright™ NXT device is located where it is not likely to come in contact with moisture or spray of fluids.
- g. Only use the FacetBright™ NXT device on sturdy, level surfaces.
- h. Ensure that there is sufficient space (>10cm) on all sides of the FacetBright™ NXT as to not block the air vents, and to allow access to all the device's controls.
- i. When moving the FacetBright™ NXT device, grasp the device with both hands from the base. Do not attempt to grasp and move the device from the spectroscopy holder, the fiber light, or the power cord.
- j. Users' eyes will have varying sensitivity to light. Certain precautions should be taken when using the FacetBright™ NXT device to ensure that the user is not adversely affected by the light sources. Precautions include but are not limited to:
 - a. When viewing samples with the FacetBright™ NXT device, start at the lowest light intensity and increase light source intensity as needed.
 - b. When using the FacetBright™ NXT device, the user should maintain awareness of bodily sensation, especially in the eyes. If the user experiences eyesight fatigue, blurred vision, nausea, dizziness, excessive tearing, or headache, pause use immediately.
- k. Do not look directly into the fiber light output.
- l. Always operate the FacetBright™ NXT device with dry, clean hands.

What is the FacetBright™ NXT?

The FacetBright™ NXT is a multi-function light source for educational uses. This device features two modes: transmission and fiber LED illumination, and white and amber LED illumination for use with a refractometer. Each mode can be selected with a switch, and brightness can be adjusted according to the user's needs and preference.



Figure 1. FacetBright™ NXT Device

Device Layout and Nomenclature

Front View



Back View



Front View

1. Refractometer LED output
2. Mode selector switch
3. Rotary knob
4. Spectroscope holder clamp
5. Iris adjustment

Back View

6. USB-C power input
7. Power switch
8. Fiber light port

Included Accessories

9. Spectroscope holder plug
10. Spectroscope holder
11. Spectroscope adapters
12. Fiber light port cover
13. Fiber light
14. Fiber light end caps
15. Power adapter and cable
16. Hex keys
17. Stone holder

Standard Operating Procedure

This section provides detailed instructions on how to properly operate the FacetBright™ NXT device.

4.1. Installing the Fiber Light

- a. Remove the fiber light port cover (12) using the included 3mm hex key (16) to undo the screws. Retain the screws.
- b. Remove the fiber light end caps (14) and insert the fiber light (13) into the port (8).
- c. Secure the fiber light with the screws and tighten with the hex key.

4.2. Turning on the FacetBright™ NXT

- a. Insert the USB-C plug from the power adapter (15) into the USB-C power input (6) on the FacetBright™ NXT. Connect the power adapter to main power.
- b. Turn on the device using the power switch (7) on the back of the device.

4.3. Refractometer Mode

- a. Slide the mode selector switch (2) towards the front of the device to select the refractometer mode. The refractometer LED (1) will now illuminate.
- b. Press the rotary knob (3) to toggle between the white and amber LEDs.
- c. Rotate the rotary knob (3) to adjust the brightness of the LED.

4.4. Transmission/Fiber Light Mode

- a. Slide the mode selector switch (2) towards the back of the device to select the transmission/fiber light mode. The transmission LED will now illuminate.
- b. Press the rotary knob (3) to toggle between the transmission LED and the fiber LED.
- c. Rotate the rotary knob (3) to adjust the brightness of the LED.

4.5. Adjusting the Fiber Light Position

- a. Gently bend the fiber light (13) to the desired position.

4.6. Adjusting the Transmission LED Iris

- a. Slide the iris adjustment (5) from side to side to reach the desired aperture size.

4.7. Using the Spectroscope Holder

- a. Using the supplied hex wrench, remove the screw securing the spectroscope holder plug (9) from the FacetBright device.
- b. Remove spectroscope holder plug (9) from the device.
- c. Remove the thumb screw holding the spectroscope arm to the spectroscope arm base.

IMPORTANT: The spectroscope arm base has two upstanding walls; one wall is thicker than the other wall.

- d. Align the 'thicker' upstanding wall on the spectroscope arm base closer to the iris in the center of the FacetBright device.
- e. Align the two locating pins on the bottom of the spectroscope arm base with the holes in the FacetBright device and push down into position.
- f. Using the hex wrench and the screw that was used to secure the spectroscope holder plug (9) to the FacetBright device, tighten the spectroscope arm base to the FacetBright device.

IMPORTANT: The spectroscope holder arm has a long groove along one side.

- g. With the groove facing outward (away from the iris in the center of the FacetBright device), insert the spectroscope arm into the spectroscope arm base.
- h. Align the three holes of the spectroscope arm base and spectroscope arm, install the thumb screw to attach the spectroscope arm back to the spectroscope arm base (do not tighten completely).
- i. Adjust the tilt of the spectroscope arm to the desired position and tighten the thumb screw to secure it in place.
- j. Align the thumb screw on the end of the spectroscope holder clamp (4) with the groove in the spectroscope arm, slide the spectroscope holder clamp (4) over the spectroscope holder arm.
- k. Adjust the height of the spectroscope holder clamp (4) to the desired position and tighten the thumb screw to secure it in place.
- l. Loosen the thumb screw in the middle of the spectroscope holder clamp (4) and insert the correct spectroscope adapter (11).
- m. Insert a spectroscope into the adapter at the desired height and tighten the thumb screw on the spectroscope holder clamp (4) to secure it in place.

4.8. Sleep Mode

- a. After the system has been inactive for 5 minutes, the sleep mode LED will turn on until the system becomes active again.

Technical Specifications

5.1. Weight and Dimensions

- a. Approximate weight: 3.75 lbs without stone holder and power supply
- b. Approximate body dimensions: Width x Length x Height: 6.67" x 12" x 9.5"
- c. Iris dimensions: Aperture diameter: 0.07" – 1.39"
- d. Refractometer window: Window diameter: 0.47"
- e. Fiber light attachment: Length: 19"

5.2. Light sources

- a. Light Source Properties

LED name	CRI	CCT	Min. Power type. (mW)	Max. Power type. (mW)	Center Wavelength (nm)	Center Wavelength (nm)
Transmission LED	≥95	2750 – 2850K	25 – 50	250 – 360	—	
Fiber LED (output port)	≥95	2550 – 2850K	10 – 20	115 – 140	—	—
Broadband Refractometer LED	—		0.5 – 0.6	25 – 35	—	300*
Amber Refractometer LED	—		0.25 – 0.30	1.9 – 3.0	590	≥25

Table 1. Light Source Properties

(*) The broadband LED source has multiple emission peaks within the visible spectrum, with most radiation contained between 400-700 nm

5.3. Device Power

- a. Input Voltage: DC 20V
- b. Input Current: 5A Max
- c. Power Consumption: typical power consumption is in the range of 0.05 – 1.0 Watts
- d. Mains supply voltage fluctuations up to +/- 10% of the nominal voltage

Important

6.1. Maintenance and Care

Cleaning the FacetBright™ NXT Device:

- a. Use commercially available dry air dusters for cleaning most particles off the device. Do not use canned air as propellant as this can leave a film on the FacetBright™ NXT Device.
- b. Wipe gently with a piece of cleaning paper or a low-shedding, non-abrasive, soft wipe.
- c. For surface spots/stains, use a dilute neutral detergent and a soft, clean cloth if necessary.
- d. Do not use solvents (acetone, isopropyl alcohol, etc.) to clean the FacetBright™ NXT device. Solvents may damage the device.

Maintenance:

- a. Do not try to disassemble the FacetBright™ NXT device without the aid of a trained technician, as this could result in poor performance or malfunction.
- b. When the FacetBright™ NXT device is not in use, power off the device.
- c. Avoid tight bending or kinking of the fiber light used for topside illumination, as doing so could decrease the performance of the device.
- d. For indoor use only. Store and use the FacetBright™ NXT device in a dry place with ambient temperature of 5° C to 40° C.
- e. If a fault occurs: A fault can cause electric shock or injury. Unplug the device from the power outlet and contact qualified service personnel if the following conditions occur:
 - i. The power cord or plug is damaged or frayed.
 - ii. Liquid has been spilled into the microscope.
 - iii. The device has been exposed to water
 - iv. Contact GIA Instruments at instrumentsupport@gia.edu or +1 760-603-4200

6.2. Warranty Information

Limited Warranty

- a. Subject to the exclusions, limitations, and conditions set forth below, Gemological Institute of America, Inc. and affiliates ("GIA") warrants to the original purchaser of the GIA® FacetBright™ NXT instrument (hereinafter, the "FacetBright™ NXT") that it will be free from defects in material and workmanship (each "defect" and a FacetBright™ NXT with a defect is said to be "defective"), when subjected to normal, proper, and intended usage by properly trained and informed users, for twelve (12) months from the date of shipment of the FacetBright™ NXT to the original purchaser (the "Warranty Period").

Limitation of Use

- a. The result from using the FacetBright™ NXT should not be considered analogous to or a substitute for information provided by GIA on a GIA Report and should not be represented or interpreted as the opinion of GIA.
- b. **GIA does not warrant that the FacetBright™ NXT is error-free or will accomplish any particular result.**

Sole and Exclusive Remedy

- a. For any defective FacetBright™ NXT that is returned to GIA by the original purchaser during the Warranty Period in compliance with the process specified below, GIA will, at GIA's option, repair or replace the defective FacetBright™ NXT. A replacement may be a new or refurbished FacetBright™ NXT, at the sole discretion of GIA, and any such replacement will continue to be subject to the warranty provided by the manufacturer, if any.
- b. **The foregoing remedy shall be the sole and exclusive remedy in the event of a defective FacetBright™ NXT.**

Exclusions from the Limited Warranty

- a. A FacetBright™ NXT will not be deemed defective and GIA will not have any obligation to repair or replace a FacetBright™ NXT as a result of any one or more of the following: (i) normal wear and tear, (ii) accident, disaster, or event of force majeure, (iii) misuse, fault, or negligence of or by any user or other person, (iv) use of the FacetBright™ NXT in a manner for which it was not designed, (v) causes external to the FacetBright™ NXT such as, but not limited to, power failure, electrical power surges, exposure to fire, water, other liquids, excessive humidity or temperature, (vi) improper storage or handling of the FacetBright™ NXT, or (vii) use of the FacetBright™ NXT in combination with equipment or materials not supplied by GIA.
- b. **Any maintenance, repair, other service, modification, alteration, or other tampering with the FacetBright™ NXT (including but not limited to opening or attempting to open the FacetBright™ NXT or any part of the FacetBright™ NXT, or any attempt at self-repair of the FacetBright™ NXT, etc.) that is performed by any person or entity other than GIA without GIA's prior written approval, or the use of any replacement part(s) not supplied by GIA, shall immediately void and cancel all warranties with respect to the affected FacetBright™ NXT.**

FacetBright™ NXT Warranty Claim Process

- a. If the original purchaser of the FacetBright™ NXT believes that it is defective, the original purchaser shall promptly contact GIA technical service at +1 760 603 4200 or instrumentsupport@gia.edu. The original purchaser will be required to provide to the GIA customer service representative the FacetBright™ NXT product model number and serial number, the date of purchase, and detail of the alleged defect and as necessary additional information to support the alleged defect and use of the FacetBright™ NXT. After (a) GIA's review of the information provided by the original purchaser, (b) GIA's confirmation that the Warranty Period has not yet expired, and (c) GIA's belief that the FacetBright™ NXT is likely defective, GIA will provide the original purchaser a Return Material Authorization ("RMA"). An RMA may include specific handling and labeling instructions and the original purchaser will comply with such instructions.
- b. If the FacetBright™ NXT is returned to GIA without an RMA or without the proper handling and labeling, the delivery of the FacetBright™ NXT may be refused by GIA.
- c. After receipt of an RMA from GIA, the original purchaser may return the allegedly defective FacetBright™ NXT to GIA to the address specified by the GIA customer service representative with all shipment, insurance, and applicable costs prepaid by the original purchaser. If the FacetBright™ NXT is being returned within the thirty (30) day period after the original shipment of the FacetBright™ NXT to the original purchaser and it is in fact defective, then GIA will reimburse the original purchaser the reasonable shipment and insurance costs. If the FacetBright™ NXT is being returned more than thirty (30) days after shipment of the FacetBright™ NXT to the original purchaser and the FacetBright™ NXT is in fact defective, then GIA may, in its sole discretion, reimburse the original purchaser the reasonable shipment and insurance costs.
- d. Any returned FacetBright™ NXT must be packaged in the original packaging or in packaging that is described in the RMA or is otherwise approved in writing (email sufficient) in advance by GIA and which adequately protects the FacetBright™ NXT during shipment to GIA or GIA may refuse the delivery. Any loss or damage to the FacetBright™ NXT that occurs during shipment to GIA will be at the original purchaser's sole risk.
- e. If the returned FacetBright™ NXT is defective, then GIA will provide one of the remedies set forth above. Replacement parts included by GIA in a repaired FacetBright™ NXT may be new or refurbished, at the sole discretion of GIA. All parts that are replaced shall become the property of GIA.
- f. Shipment to the original purchaser of the repaired or replacement FacetBright™ NXT shall be at GIA's cost and expense. Any loss or damage to the FacetBright™ NXT that occurs during return shipment by GIA to the original purchaser will be at GIA's sole risk.
- g. If GIA determines that a FacetBright™ NXT returned to GIA is not defective or is not covered by the limited warranty set forth above, the original purchaser shall pay or reimburse GIA for all costs of investigating and responding to such request at GIA's then-prevailing time and materials rates, including but not limited to the cost of shipping and applicable transport fees of the FacetBright™ NXT to the original purchaser.
- h. If GIA provides repair services or replacement parts that are not covered by the limited warranty, the original purchaser shall pay GIA for such services and parts at GIA's then-current rates and prices.

Disclaimer of all Other Warranties

- a. **Except for the limited express warranty set forth above, GIA, its suppliers, and its licensors and manufacturers make no other representations, warranties, guarantees or conditions, whether express, implied, statutory or otherwise, written or oral, with respect to the FacetBright™ NXT or with respect to the results that will or will not be achieved using the FacetBright™ NXT. The FacetBright™ NXT is provided “as is”. All implied warranties are hereby disclaimed, including without limitation all implied warranties and conditions of merchantability, fitness for a particular purpose, non-infringement of third-party intellectual property rights, and any warranties arising from course of dealing, usage, trade, or any other manner.**

Limitation of Liability

- a. **To the full extent permitted by applicable law, neither GIA nor any of its suppliers or licensors or manufacturers shall be liable to the original purchaser or any other person or entity for any indirect, special, consequential, exemplary, incidental, reliance, or punitive damages, lost revenues, profits or business, or the cost of procurement of substitute goods or services arising from or related to the FacetBright™ NXT, the use of the FacetBright™ NXT, or the results or output from the FacetBright™ NXT, even if an authorized representative of GIA is aware of or is advised of the possibility or likelihood of any such damages or amounts.**
- b. **To the full extent permitted by applicable law, in no event shall GIA's total cumulative liability to the original purchaser or any other person or entity arising from or related to the FacetBright™ NXT, the use of the FacetBright™ NXT, or the results or output from the FacetBright™ NXT exceed the price paid to GIA for the FacetBright™ NXT or if no purchase price was paid to GIA, then the sum of one hundred U.S. Dollars (US \$100).**
- c. **The terms in this section (limitation of liability) and in the sections related to the warranty made by GIA (including but not limited to remedies, warranty exclusions, and warranty disclaimers) shall apply (a) to the maximum extent permitted by applicable law, (b) regardless of the nature of the claim or theory of liability, whether based on breach of contract, tort (including, without limitation, strict liability and negligence), breach of warranty, or any other theory of liability, and (c) even if a limited remedy fails of its essential purpose. Some states do not permit the limitation/exclusion of damages in certain circumstances and so portions of the foregoing limitation/exclusion of damages may not apply in all circumstances.**

- d. **The terms in this section (limitation of liability) and in the section entitled “sole and exclusive remedy” are an essential basis of the bargain between the parties.**
- e. If you have any questions concerning use and care of your product, available accessories, or service, please call +1 760 603 4200 or email instrumentsupport@gia.edu. Or please write to GIA Instruments, World Headquarters, The Robert Mouawad Campus, 5345 Armada Drive, Carlsbad, CA 92008, USA. Don't forget to visit our website at GIA.edu for customer support service and our catalog online at <https://store.gia.edu/> for the latest available products and accessories.

6.3. Troubleshooting

- a. If the device powers off unexpectedly, switch the device off using the power switch. Wait 10 seconds, then switch the device on and attempt normal operation. If the issue persists, contact instrumentation support.
- b. If any of the functions are not working as described in this manual (light source “brown outs,” flickering light source, unresponsive controls, etc.), power off and unplug the FacetBright™ NXT device. Before proceeding, make sure that the power supply is rated for 100W, 20V/5A DC. After confirming the power supply rating, proceed with plugging in and powering on the FacetBright™ NXT device and resume standard operation. If the issue persists, contact instrument support.