C-BLUE One

Quick Start Manual

C-BLUE One_Quick Start_20210601

Thank you for choosing C-BLUE One!

C-BLUE One features and performances are described in detail in its User Manual, that you can find on the USB key provided with your camera or on your First Light Library : https://www.first-light-imaging.com/my-library/
For any question please contact our support team at support@first-light.fr

1. WARNINGS

⚠️ *Your camera contains fragile components, handle it with care.*

⚠️ *Do not open the camera, your warranty will be void.*

⚠️ *Always use the supplied power unit.*

⚠️ *Always follow the instructions of use.*

2. SYMBOLS AND INDICATIONS

Please read this Quick Start guide and the following definitions carefully to understand the potential dangers and the precautions to take.
Please refer to the User Manual if a WARNING symbol is marked on the camera.

CE	The CE marking indicates the conformity of the camera to the European legislation
===	This pictogram indicates a direct current operation
📖	This pictogram invites the user to refer to the instructions / user manual
🏠	This pictogram refers to indoor use
⏚	This pictogram refers to Protection class category 1
RoHS	This pictogram indicates that the product is compliant with the RoHS limitation

3. DISPOSAL

In case of disposal, do not throw your camera in waste disposal and send it back to First Light Imaging.

4. WARNINGS

4.1. General warnings

The equipment must be plugged on an electrical wiring compliant with the relevant standards in the country (in France: NFC 15-100). This wiring must be protected from overcurrent, overvoltage, and ground defaults.

Connected equipment's must be compliant with the EN 60950-1 Ed.2006 standard, or to their own standards.

The power cable plug serves as a disconnection device and should be easily accessible.

Do not place the equipment close to a heating source or a humidity source.

The security of the system which integrates the equipment is the responsibility of the system assembler only.

For your safety, the equipment must be TURNED OFF AND UNPLUGGED before any technical intervention.

The security provided with this equipment is only guaranteed with a use in accordance with the specified purpose. Only use the provided (MEAN WELL USA Inc, model GST60A12-P1J) power supply.

5. TECHNICAL AND OPERATIONAL SPECIFICATIONS

Power requirements	Voltage	100 – 240 VAC
	Frequency	50 – 60 Hz
Dimensions	Length	154.3 mm
	Width	76.2 mm
	Height	64.1 mm
	Weight	1.1 kg
Operation conditions (non-condensing condition)	Maximum temperature	50°C
	Minimum temperature	-10°C
	Humidity	Non-condensing
Storage conditions	Maximum temperature	70°C
	Minimum temperature	-10°C
	Humidity	Non-condensing

6. CONTENTS OF PACKAGE*

6.1. C-BLUE One Camera Pack

Item name	Quantity	Picture
Camera	1	
Power supply	1	
Power cable	1	
USB key with User manual + Demo software + Test report	1	
Quick start Manual	1	

6.2. Accessories

Please note that accessories can be ordered separately. Please contact your sales representative for details and pricing of our different accessory packs.

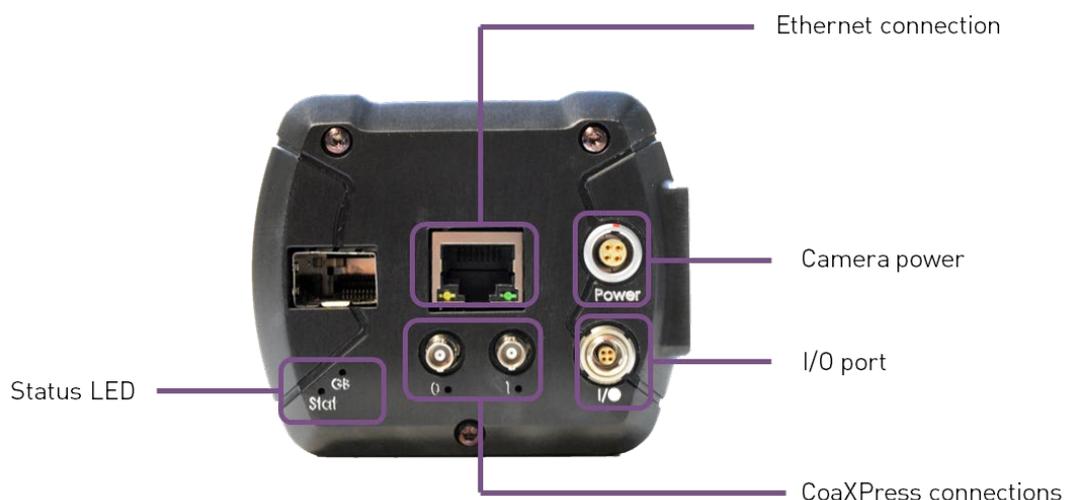| Item name	Quantity	Picture
CoaXPress® cables	2	
Cooling plate	1	
Quick coupling set	1	

* Items may differ from pictures.

7. CAMERA DESCRIPTION AND START UP

Please refer to the following figure and follow the order listed below, before connecting your camera:

7.1. Data connection

7.1.1.   Overview

Control and data acquisition are done through CoaXPress® 2.0 connection.
The C-BLUE One camera needs two CoaXPress® links for normal operation.

7.1.2.   Connectors

The CoaXPress® protocol uses 75 Ω coaxial cables. The CoaXPress® 2.0 interface requires two cables with male HD-BNC connectors (also known as Micro BNC).

7.1.3.   Recommended frame grabbers

C-BLUE One is compatible with CoaXPress® 2.0 framegrabbers.

However, please note that our cameras have been developed and tested with specific grabbers, and we highly recommend using these grabbers.
▪   Matrox Rapixo CXP Dual/Quad
▪   Euresys Coaxlink Duo CPX-12

For more information, please refer to the C-BLUE One User Manual.

7.2. Ethernet connection

Please refer to the User Manual.

7.3. I/O port

Not supported.

8. POWER SUPPLY CONNECTION

The camera is powered either when power is applied on LEMO® connector or when both CoaXPress® cables are plugged to a PoCXP compliant frame grabber.

If the LEMO® connector is powered after the camera has been powered using PoCXP, the camera will automatically switch to external power supply, without rebooting, and PoCXP will no longer be used.

9. POWERING UP/DOWN

9.1. Power ON and camera connection:

The camera is powered either when power is applied on LEMO® connector or when both CoaXPress® cables are plugged to a PoCXP compliant frame grabber.

The camera complies with the PoCXP device requirements defined in the CoaXPress® Version 2.0 standard, meaning that a PoCXP compliant grabber should automatically detect the PoCXP feature of the camera and power it up automatically.

Note: Some grabbers can be configured to disable automatic PoCXP detection. If the camera does not power up when connected to a PoCXP compliant grabber, please check that the PoCXP discovery is enabled.

The external power supply has precedence over PoCXP, meaning that the camera will be powered using the LEMO® power supply if powered.

If the LEMO® connector is powered after the camera has been powered using PoCXP, the camera will automatically switch to external power supply, without rebooting, and PoCXP will no longer be used.

Note: Dynamically switching from external power supply to PoCXP is not supported. The camera may continue to run, or may reboot, depending on various factors (actual power consumption, frame grabber configuration….)

9.2. Power OFF and camera disconnection:

Please use the register "DeviceShutdown" before unplugging the camera. The shutdown is recommended (specially to store the latest logs), however, the direct switch off does not damage the camera.

Unplug all power cables (CXP cables or LEMO® connector power cable).
If you use LEMO® cable, first unplug the power supply from the line plug, then unplug the LEMO® CONNECTORS cable from the camera.

10. CAMERA CONTROL

10.1. First Light Imaging Graphical User Interface software

The Graphical User Interface (GUI) demo software is provided in the USB key supplied with the C-BLUE One camera, or available in Your Library on the website. It is a dedicated interface developed by First Light Imaging which allows to control almost all the parameters of the camera. Please refer to the GUI user manual.

10.2. Software Development Kit

A Software Development Kit (SDK) is also provided with your camera.
It will allow developers to code their own interface to control the camera. The source code of a demo software is provided in C/C++, and additional example codes are provided in several languages.
Please refer to the SDK User Manual.

10.3. Camera status

Once the camera is properly powered up the system boots and the camera is ready to operate.
A white or purple diode signal, visible through the camera's body holes, confirms the operability.

Camera status	Led color	Indication
No power	⚪	Off
System booting	🟠	Solid orange
Powered, but nothing connected	🔴⚪	*Flash_1 red*
Connection detection in progress, PoCXP active	🔴🟢	*AlternateFlash_12_5* green/ orange Shown for a minimum of 1s even if the connection detection is faster
Connection detection in progress, PoCXP not in use	🟠⚪	*Flash_12_5* orange Shown for a minimum of 1s even if the connection detection is faster
Device / Host connected; data being transferred	🟢	Solid green
Error during data transfer (e.g., CRC error, single bit error detected)	🔴⚪	500 ms red pulse In case of multiple errors, there shall be at least two green *Flash_12_5* pulses before the next error is indicated.
Connection test packets being sent	🟠🟢	AlternateFlash_0_5 green / orange

11. C-BLUE One OPERATION

C-BLUE One can operate in full frame or in cropping mode.

11.1. Integration/readout function

The minimum frame rate of 0.036 frame/s, allows a maximum exposure duration up to 27.665 s.
The full frame acquisition (1608x1104) at full sensor speed is in 8 bits: 662.1 frame/s and in 12 bits: 481 frame/s).

11.2. Sensitivity scale mode

Signal can be integrated in low or high gain corresponding to high and small integration capacity, respectively.

The modification of the integration capacity impacts the dynamic of the signal and thus implies a change of the noise level.

The sensor has an additional gain up to 48 dB gain in low gain capacity and high gain capacity modes:
- 0 dB to 24 dB : Analog Gain (0.1 dB step)
- 24.1 dB to 48 dB : Digital Gain (0.1 dB step)

Analog gain has the advantage to reduce noise. When digital gain is applied, pixels values are multiplied without any effect on noise value.

12. PRECAUTIONS

C-BLUE One is a high end scientific instrument and should not be exposed to shocks, extreme temperatures, humidity, dusty environment, and static shocks.

If this equipment is used in a manner not specified by the manufacturer the protection provided by the equipment may be impaired and the warranty will not be applicable.

Your C-BLUE One is an electronic equipment that requires precaution regarding static shocks.
Electrostatic Discharge (ESD) is dangerous for the camera. We recommend you follow these rules:

- Any electronic equipment that must be connected to C-BLUE One should be fitted with appropriate protection on all power lines.

- Any connected equipment should be powered off before removing any connection between the computer and C-BLUE One.

13. MAINTENANCE

13.1. Cleaning of window

The camera is cleaned in a controlled environment before shipping.
To avoid having to clean the window, make sure you protect the camera from dirt and finger marks. Always cover the camera with a cap.
The window can be cleaned with a dry and soft cloth. Please avoid touching the glass window.
You can also use a clean cloth dampened with ethanol and gently wipe the window.
Never use an unclean cloth to wipe the window of the camera.

13.2. Storage

When not in use, please store your camera in a dry place, in its box. Please refer to the user manual.

14. CONTACTS

14.1. For the USA:

FIRST LIGHT IMAGING Corp.
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Cambridge, MA 02138
USA

Tel.: + 33 4 42 61 29 20
E-mail: support@first-light.fr
Website: www.first-light-imaging.com

14.2. For the rest of the world:

FIRST LIGHT IMAGING SAS
Europarc Sainte Victoire, Bât. 5
Route de Valbrillant, Le Canet
13590 Meyreuil
France

Tel.: + 33 4 42 61 29 20
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