Balor Quick Start Guide

OXFORD INSTRUMENTS | **ANDOR**

Balor sCMOS
ANDOR
an Oxford Instruments company

2 Unpack the Camera

Camera	Essentials			Cables		
Balor Camera	Anti-Static Strap	CoaXPress Card (with ext. trigger input)	Coolant Pipes (hose inserts)	CoaXPress Cable	2x Country Specific Power Cord	Power Supply 1 x 15 V (Camera) 1 x 24 V (Cooler)
	Documentation scan or visit: **andor.oxinst.com/welcome**	Software (copy supplied)		Trigger Cable 1 x BNC to D-type	Trigger Cable 1 x BNC to SMB	

1 Prepare your Facility

⚠ Handle the camera and accessories with care.

⚠ Observe anti-static precautions when installing the controller card and camera.

⚠ Ensure 100 mm clearance around camera and power supply vents (Do **not** block vents when operating on benchtop).

⚠ Operation of the camera close to intense pulsed sources (e.g. plasma and X-ray sources) may compromise performance.

⚠ Keep dry, <70% humidity non-condensing.

⚠ Use correct power supply and cables.

⚠ Store between -10°C and 50°C. Operate between -30°C and 30°C.

❄ Liquid chiller unit must be attached and running (ensure liquid is flowing) before powering on the camera (Liquid Cooled Only variant).

Refer to the user manual for further information

3 Install SDK3 and CoaXPress Drivers

You must have administrator access on your PC to perform this installation.

These instructions cover installation of both Andor Solis and Andor SDK if ordered. A copy of the software is provided within the camera box. Additionally, the latest software files are available to download on request, please sign in or create an account at andor.oxinst.com/downloads

Windows: Switch on the PC, run the setup exe from the supplied copy or the downloaded file: e.g. AndorSDK3Setup-<version>.exe

1. Confirm the version of software (minimum is v3.14.x).

2. Follow the on screen prompts.

3. Select the installation directory when prompted.

4. If prompted for camera type select **Balor**.

5. On the final window click on "Install". Continue to follow the on screen prompts.

6. To complete the installation, when prompted select "Yes, restart the computer now" and click on the finish button.
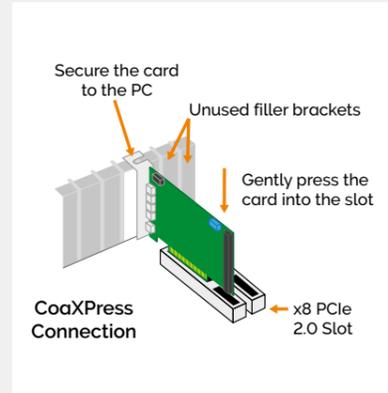
Linux:

For detailed instructions on how to install the SDK3 and CoaXPress drivers on Linux please refer to Section 1.5.2 in the Andor Software Development Kit Manual, available at andor.oxinst.com/downloads

④ Install the CoaXPress (PCIe) Card

⏻ ⚠ **Ensure your PC is powered off. Ensure anti-static precautions using anti-static strap provided. Keep all screws safe.**

1. Unplug all cables from the rear of the computer.
2. Open the PC enclosure to gain access to the expansion slots.
3. Locate a suitable PCIe slot:
   - **use a minimum of x8 PCIe 2.0 slot,** if you are unsure which slot is correct, please consult the PC user manual.
4. Remove the filler bracket corresponding to the slot you intend to use.
5. Remove the CoaXPress card carefully from its protective ESD packaging and insert the card connector fully into the expansion slot.
6. Ensure the card's mounting bracket is flush with any other mounting or filler brackets to either side of it, then secure the controller card in place.
7. Replace the computer cover and secure with mounting screws if applicable.
8. Reconnect any accessories you were using previously.

Notes:
- Andor does not support any other CoaXPress frame grabber than that provided with the system.
- Ensure sleep mode functions of the PC are deactivated.

Secure the card to the PC
Unused filler brackets
Gently press the card into the slot
CoaXPress Connection
x8 PCIe 2.0 Slot

Checking & Setting BIOS options (for PCs not supplied by Andor)
Enter the BIOS menu when starting PC. For Dell workstations, press F12 at start-up and select System Setup in the One Time Boot Menu. For Dell workstations 3 options in the Performance menu of the BIOS need to be checked/set:
- C-States Control – Disable C-States.
- Intel Speed-step – Disable Speed-step.
- Memory Node Interleaving – Set from NUMA to SMP. Note: This option is only available on larger workstations with 2 physical processors and may have a different name- ensure that NUMA is disabled.

⑤ Camera Cooling Guidelines

When Liquid Cooling:
Before operation, the camera must be connected via its 2 coolant pipes to a re-circulating cooler or other liquid cooling system. Always use coolant that is above the dew point of the ambient environment to prevent condensation from occurring. Refer to the Hardware Guide for dew point information.
- **Coolant temperature:** We typically advise use of coolant temperature up to 16°C. However, to ensure non-condensing conditions in humid environments higher temperatures may be necessary.
- **Recommended coolant:** water or water/glycol mix depending on the ambient environmental temperature during operation.
- Ensure that all liquid coolant has been expelled from the camera after operation if it is to be stored.
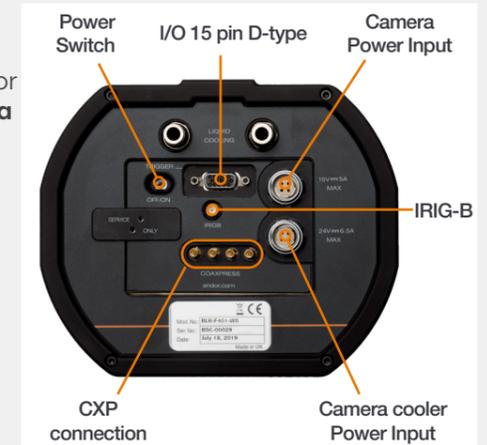
When air cooling (Flexi model only):
- Ensure that ventilation slots are not obstructed when in air cooled mode.

⑥ Connect the Camera and Switch it on

Please refer to the Balor Hardware Guide for mounting instructions. Ensure that the power to the camera and PC is switched OFF.

1. Connect the cooling system (if using liquid cooling):
   - The cooling system must be connected via its 2 coolant pipes and running before the camera is switched on.
   - Ensure that the camera is operating within the environmental conditions stated in the hardware guide.
2. Insert the 15V DC power cable (aligning the RED dots) into the power connector at the rear of the camera until you hear a click. To remove, pull the connector metal sleeve back. Never forcibly insert or remove connector.
3. Now repeat step 2 for the 24 V DC Camera cooler power cable.
4. Connect the CXP cable between the CoaXPress card and the camera.
5. If using an external trigger source, connect trigger cable to SMB connector on the mounting bracket of the **CoaXPress card or directly to the camera if using the D-type connector.**
6. Turn ON the PC.
7. Switch the camera ON using the ON/OFF switch You should hear an audible confirmation, i.e a long beep followed ~40 seconds later by the sequence of a short beep then two short beeps. The beeps may not be audible in a noisy environment.
8. Please note that you should not start your application until the camera is fully initialized. Note this could take 40 s from when the camera is switched ON. Launch your camera control software.
9. Check the acquisition settings and adjust as required.
10. Note that camera system temperature may take up to 10 minutes to stabilize, confirm the temperature status in the software. Start acquiring data.

Power Switch
I/O 15 pin D-type
Camera Power Input
IRIG-B
CXP connection
Camera cooler Power Input

❓ Troubleshoot

Camera buzzer does not sound on start-up
- The camera buzzer should be audible momentarily (as a long beep) when the camera is switched to ON. Note that camera buzzer volume is low.
- If this does not occur, ensure that power is connected to the camera and the ON/OFF switch is set to ON.

Camera buzzer does not beep two times to indicate the software has initialized
- Note that camera buzzer volume is low.

Camera temperature has not stabilized
- Check the temperature status in the software.
- If using water cooling check the water chiller is functioning correctly, otherwise check air vents are clear.
- The system may take up to 10 minutes for temperature to stabilize.

Camera is not recognized by PC
- Ensure camera is switched to ON (the camera must be powered up before the software is started).
- Check that the camera cables are securely and correctly connected between the camera head and the CoaXPress card on the PC.
- Check that the CoaXPress card and drivers have been installed properly. Green lights should illuminate on the CoaXPress card.

Please see the Hardware Guide for further information on Troubleshooting.

Online access to technical documentation and software downloads is available at:
andor.oxinst.com/downloads