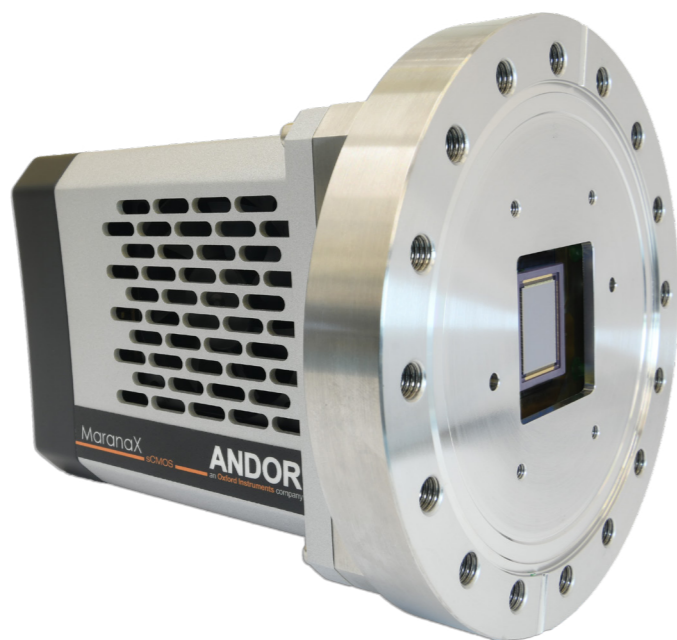


# Marana-X Quick Start Guide

For Marana-X-11 and Marana-X-6 models



## 2 Unpack the Camera

Camera	Essentials			Cables		
<p>Marana-X Back-illuminated sCMOS Camera (model as ordered)</p>	<p>USB 3.0 PCIe Card</p>	<p>CoaXPress Card (with ext. trigger input)*</p>	<p>Anti-Static Strap</p>	<p>USB 3.0 Cable</p>	<p>CoaXPress Cable*</p>	<p>Country Specific Power Cord</p>
<p>Documentation scan or visit: <a href="http://andor.oxinst.com/welcome">andor.oxinst.com/ welcome</a></p>	<p>Software (copy supplied)</p>	<p>Coolant Pipes (hose inserts)</p>	<p>Trigger Cable 1 x BNC to D-type</p>	<p>Trigger Cable* 1 x BNC to SMB</p>	<p>Power Supply</p>	

\*CoaXPress models only

## 1 Prepare your Facility



Handle the camera and accessories with care.



REMOVE PROTECTIVE COVER BEFORE USE. Take care during installation as delicate components are exposed. Camera must be attached to a vacuum chamber and pumped down to  $<10^{-4}$  mBar before being connected to a power supply and turned on.



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.



Use correct power supply and cables.



Ensure chamber mounting flange is DN100CF and gasket is present between mating knife edges before securing camera



Keep dry,  $<70\%$  humidity non-condensing.



Store between  $-10^{\circ}\text{C}$  and  $50^{\circ}\text{C}$ . Operate between  $0^{\circ}\text{C}$  and  $30^{\circ}\text{C}$



Cooling options information:  
Min. temp with air cooling:  $-25^{\circ}\text{C}$ .  
Min. temp with water/liquid cooling:  $-45^{\circ}\text{C}$ .  
If using water/liquid cooling the coolant system must be connected and coolant temperature set above the dew point before the camera is switched on. Refer to the hardware guide for more information (see Appendix C for dew point information).

## 3 Install Software (Solis or SDK3)

**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](http://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 for SDK and v4.31x for Solis)
2. Follow the on screen prompts.
3. Select the installation directory when prompted.
4. If prompted for camera type select **Marana**.
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](http://andor.oxinst.com/downloads)



## 4 Install the USB 3.0 or CoaXPRESS PCIe Card



Ensure your PC is powered off.



Ensure anti-static precautions and use the anti-static strap provided to prevent potential damage. Keep all screws safe.

Ensure you run Marana-X using either the USB3 or CoaXPRESS connection NOT both.

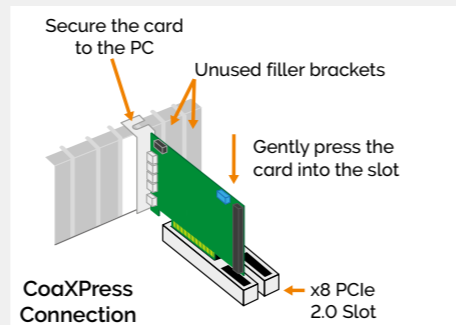
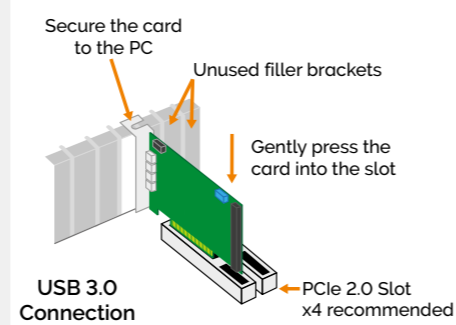
1. Unplug all cables from the rear of the computer.
2. Open the PC enclosure to gain access to the expansion slots.
3. Locate a suitable PCIe slot, x4, x8 x16 PCIe recommended for USB3 and x8 and x16 PCIe recommended for CXP (note that x1 slots may be shared with other devices resulting in reduced system performance).

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 controller 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:

- Use only the cables supplied by Andor.
- Do not connect any other device to the cards as this may interfere with normal camera operation or performance (USB only).
- Camera operation with PCIe cards not supplied by Andor cannot be guaranteed.
- Windows 8 and 10 will install their own driver that works with the USB3 card.
- When using a CoaXPRESS connection, please ensure sleep mode functions of the PC are deactivated.



### Checking & Setting BIOS options (only when using CXP on 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.



## Best Practice Guidelines

### Contamination & Damage

When not in use, the sensor chamber should be covered and sealed. Due to the exposed nature of the sensor, extreme care should be taken with the camera, as damage can easily occur through mishandling or by contamination. If the sensor becomes contaminated, due to accident or misuse, please contact Andor immediately for advice on cleaning.

### Vacuum Operations

Ensure that the vacuum environment to which the camera is fitted is free of water vapour and other contaminants. Care should also be taken to control pressure change, as sudden pressure changes can potentially cause damage to the sensor assembly.

### Cooling Guidelines

**Condensation:** It is strongly advised that the camera should not be used in a condensing atmosphere. If used in a condensing atmosphere, the sensor MUST be protected and the use of a cold finger is strongly recommended.

## 5 Connect the Camera and Switch it on

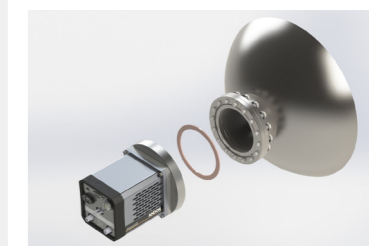


Ensure that the Camera ON/OFF switch is in the OFF position AND your PC is switched OFF.



It may take 10-15 minutes to reach target cooling temperature depending on camera cooling/environmental parameters.

1. Use the DN100CF (ConFlat) 6"O.D. flange to mount the camera to a mating flange with fixed with blind threaded holes. The mating flange should have through holes with adequate clearance for the mounting bolts. **Please see section 3.2 of the Hardware Guide for further information on camera mounting.**



Expanded view of mounting components

2. 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.
- Coolant temperature: should be no greater than 16°C to achieve max cooling.
- Coolant must be above the dew point of the ambient environment to prevent condensation from occurring.

3. Insert the 15 V DC power cable into the power connector at the rear of the camera, ensure the orientation is correct. NEVER forcibly insert the connector.

4. Connect the appropriate supplied cable between the connector on the camera and the corresponding slot on the PCIe card (USB3 or CXP).

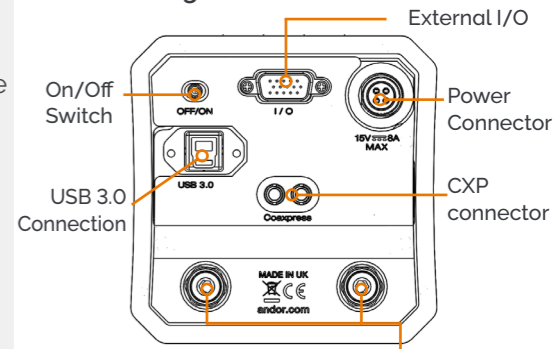
5. If required, connect the I/O expander cable to the I/O 15 way D type connector, please see the manual for more information

6. For CXP only - to externally trigger the camera over CoaxPress rather than directly to the camera, connect the BNC to SMB cable from the trigger source to the SMB connector on the mounting bracket of the CoaxPress card.

7. Switch the camera ON using the ON/OFF switch. You should hear an audible confirmation (a long beep, followed by two short beeps).

8. Turn ON the PC. Start your software. Check the acquisition settings and adjust as required. Start acquiring data.

### Power and Signal Connections



Water Connectors compatible with supplied hose inserts - suitable for 6 mm Bore soft PVC hose (x2)

Note: CoaXPRESS functionality only available on CoaXPRESS variants.

## ? Troubleshoot

### Camera buzzer does not sound on start-up

- The camera buzzer should be audible momentarily (a long beep) when the camera is switched to ON.
- If this does not occur, ensure that power is connected to the camera and the ON/OFF switch is set to ON.

### Camera is not recognized by PC

- Ensure camera is switched to ON (The camera must be powered up - with double beep before the software is initiated).
- Check that the camera cable(s) are securely and correctly connected between the camera and the PCIe card in the PC (as described in section 4).
- Check that the PCIe card and drivers have been installed properly (Devices and printers) in Windows, Control Panel. The camera will show under the Devices list.

Please see section 6.2 of the Hardware Guide for further information on Troubleshooting.

Online access to technical documentation is available at: [andor.oxinst.com/downloads](http://andor.oxinst.com/downloads)