5 Easy Steps to Configure Sona with NIS-Elements
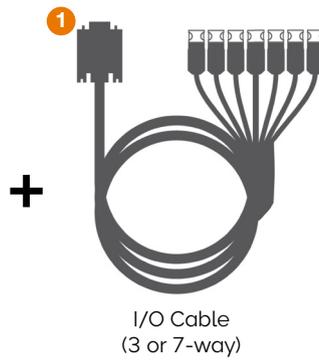
andor.oxinst.com

Covers Sona Models
4.2B-11, 4.2B-6, 2.0B-11,
USB 3.0 connection

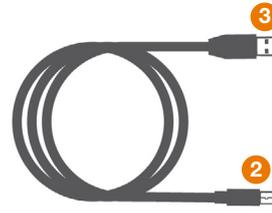# Single Sona with NIS-Elements

Setup

+

I/O Cable
(3 or 7-way)

+

USB3 Cable

+

StarTech PEXUSB3S25
USB3 card in hp Z440.

Sona back panel

Step 1

Install the USB3 interface card into the host computer (StarTech Product ID: PEXUSB3S25)

Optional - TTL PFI (NIDAQ card) ↔ Aux_Out_1 (Camera) The exposure signal (All rows) is programmed by Elements to be on the Aux_Out_1 I/O signal. It is required for TTL based acquisitions. Note: standard 3-way I/O cable includes AUX_OUT_1 signal.

Step 2

To install NIS driver for Sona, select in Cameras section in NIS installer manufacturer Andor and on the right pane Andor Sona/Neo/Zyla. If Andor Sona/Neo/Zyla camera driver is selected, Andor SDK files and Windows USB3 drivers are installed.
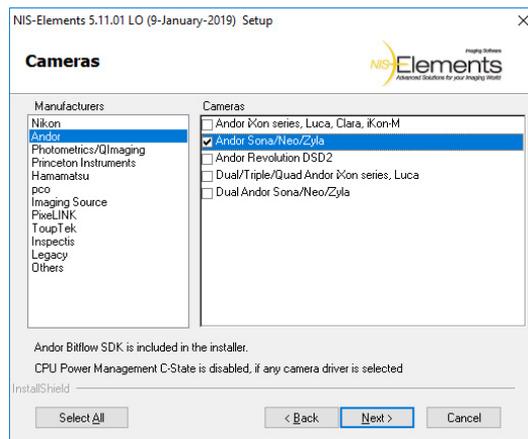

Step 3
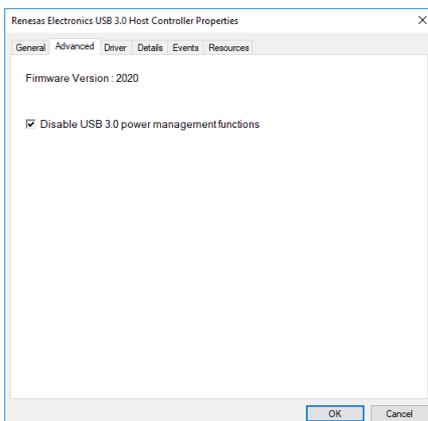
Go to your device manager. Go to the Sona driver in the device manager. Turn off the Power Management on your platform. It includes BIOS and Windows Power Management Settings. In Windows Device Manager disable USB 3.0 power management functions on Renesas Electronics USB 3.0 Host Controller
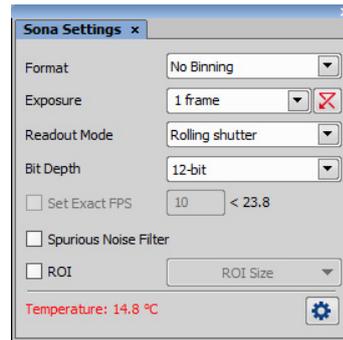

Step 4

Sona driver selection Once your NIS session starts and a grabber selection dialog appears, choose Andor Sona/Neo/Zyla from the drop-down menu. Press OK.
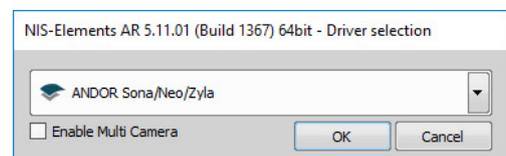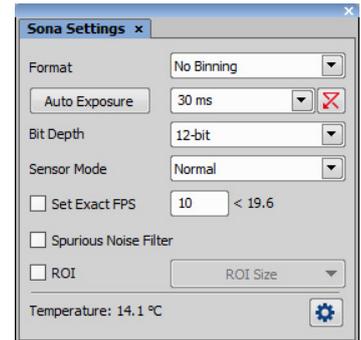
Single Sona with NIS-Elements

Sona Pad: Control pad for the camera is now accessible from menu View Acquisition Controls Sona Settings or by key combination CTRL+ALT+C.
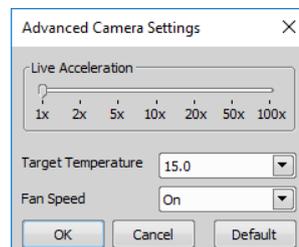

Sona pad

Sona pad
(Advanced GUI)

Advanced Options

Advanced settings for the camera are accessible via Sona pad Settings…

Predefined ROIs

NIS-Elements provides several predefined centered ROI for different portsizes:

32 mm (2048x2048)
25 mm (1608×1608)
22 mm (1416×1416)
18 mm (1160×1160)

and typical resolutions:

2048x2048
1024×1024
512×512
256×256

Predefined ROIs can be accessed via:
Sona pad → ROI → ROI Size

Frame Rate

To reach maximum frame rate these parameters have to be considered:

1. Exposure. Press a button [1 frame] next to the exposure drop-down menu in the pad. This value corresponds to the longest exposure that will run the camera in the highest possible frame rate for the current settings
2. ROI size and position (Commands ROI), the speed depends on the height of the ROI; faster speed is achieved if the ROI is defined in the center of the chip

Measured values (Fast Time lapse to Memory and Disk) are in the brackets and were measured with the following camera settings: Exposure: 1 frame / Bit Depth: 12bit / Predefined ROI (in the center)

Array Size		
1024 × 1024	512 × 512	256 × 256
95 (95)	190 (189.6)	378 (377.8)

TLL Based Acquisition

Triggered acquisition, JOBS → Triggered Task and Illumination Sequence are supported

HW Timestamp

NIS uses Andor SDK functions to get timestamps. Timestamps are available e.g. in nd2 data set in Image → Properties → Recorded data. The source of the timestamps is the camera clock.
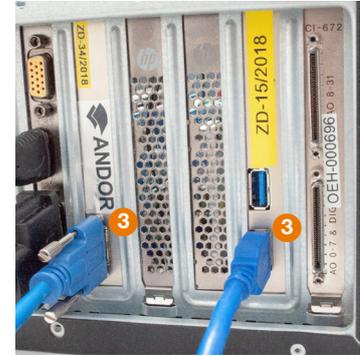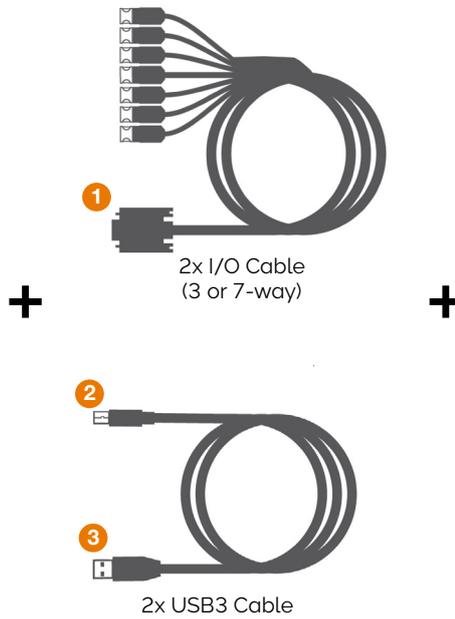
Dual Sona with NIS-Elements

Primary and Secondary Sona to PC Wiring

Primary Sona

Secondary Sona

+

2x I/O Cable
(3 or 7-way)

2x USB3 Cable

+

2x StarTech PEXUSB3S25 USB3
cards in hp Z440

Primary: PC card #1/camera interface – USB

Secondary: PC card #2/camera interface – USB

Sona Primary to Secondary Wiring

AUX OUT 1

NIDAQ PFI.O (optional)

TRIGGER

AUX OUT 1

TRIGGER

ARM

ARM

Primary Sona
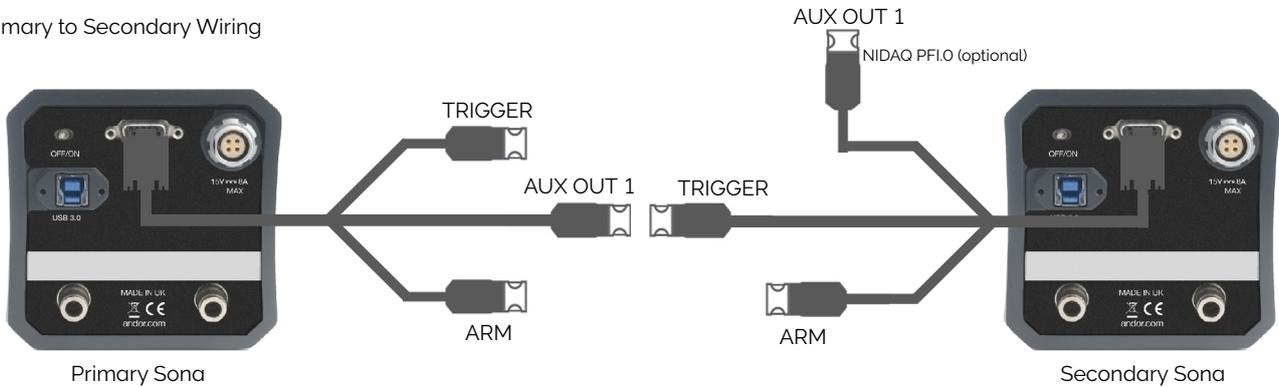
Secondary Sona

TTL Wiring

1. BNC cable connection between Primary Aux Out 1 and Secondary Trigger
2. Optional BNC cable connection between Secondary Aux Out 1 with PFI NI-DAQ connector

Step 1 Basic – USB3.1 Gen1- Both primary and secondary cameras are connected to a separate StarTech PEXUSB3S25 USB3 card.

Optional - TTL PFI (NIDAQ card) ↔ Aux_Out_1 (Camera) The exposure signal (All rows) is programmed by Elements to be on the Aux_Out_1 I/O signal. It is required for TTL based acquisitions. Note: standard 3-way I/O cable includes AUX_OUT_1 signal.

Dual Sona with NIS-Elements

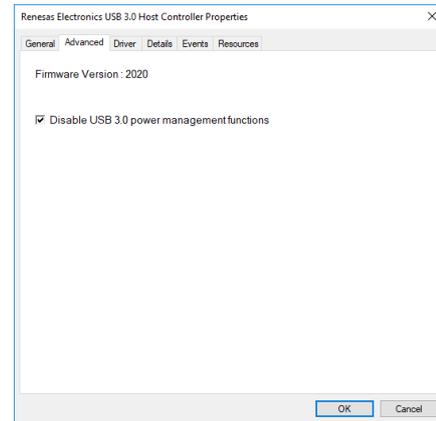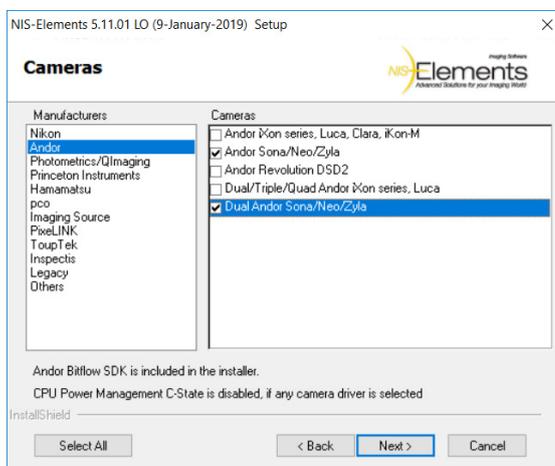Go to your device manager. Go to the Sona drivers in the device manager. Turn off the Power Management on your platform. It includes BIOS and Windows Power Management Settings. In Windows Device Manager disable USB 3.0 power management functions on Renesas Electronics USB 3.0 Host Controller

Step 3
Installation: In NIS installer, section Cameras select manufacturer Andor and on the right pane Dual Andor Sona/Neo/Zyla. If Dual Andor Sona/Neo/Zyla camera driver is selected, Andor SDK files and Windows drivers are installed.

Step 4
Start Up Sona Driver Selection Once your NIS session starts and a grabber selection dialog appears, choose Andor Sona/Neo/Zyla from the drop-down menu. Press OK.
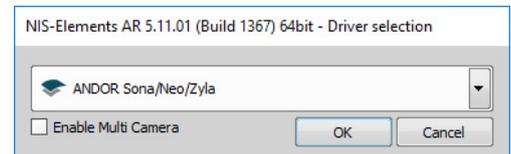
After loading the Andor driver you have to select [Dual Andor Sona] in Acquire → Andor driver → HW Unit
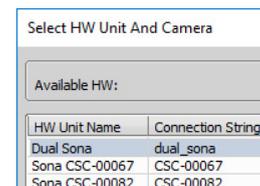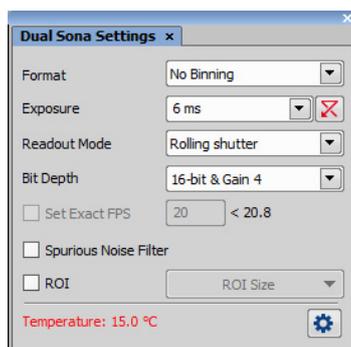
Step 5
Dual Sona pad: Control pad for the camera is accessible from the menu View → Acquisition Controls → Dual Sona Settings or by shortcut key CTRL+ALT+C.

Dual Sona with NIS-Elements: Advanced Settings

Dual Sona configuration: Advanced settings for the camera are located at Sona Settings → Configure

Primary/Secondary Assignment: In Advanced Setup dialog, primary and secondary cameras are identified using serial number (SN).

Flip, Rotate: Typically, dual Sona setups uses two-camera adaptor like Andor TuCam or Cairn DualCam, it means that one camera (the one that collects the reflected light of the mirror in the adaptor) has flipped image. Select Flip Image of the Secondary camera (Do not use Flip in camera Light Path)
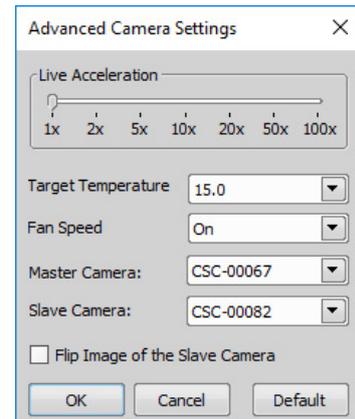
Predefined ROIs

NIS-Elements provides several predefined centered ROI for different portsizes:

32 mm (2048x2048)
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and typical resolutions:

2048x2048
1024×1024
512×512
256×256

Predefined ROIs can be accessed via: Sona pad → ROI → ROI Size

TLL Based Acquisition

All fast acquisition, based on TTL signal: Triggered Acquisition (View → Acquisition Controls → Triggered Acquisition), Triggered experiment in JOBs and Illumination Sequence (View → Acquisition → Controls → Illumination Sequence) are supported.

HW Timestamp

NIS uses Andor SDK functions to get timestamps. Timestamps are available e.g. in nd2 data set in Image → Properties → Recorded data. The source of the timestamps is the camera clock.

Frame Rate

To reach maximum frame rate these parameters have to be considered:

1. Exposure. Press a button [1 frame] next to the exposure drop-down menu in the pad. This value corresponds to the longest exposure that will run the camera in the highest possible frame rate for the current settings
2. Bit Depth Select 12 bit for fastest scan
3. ROI size and position (Commands ROI), the speed depends on the height of the ROI; faster speed is achieved if the ROI is defined in the center of the chip

Measured values (Fast Time lapse to Memory and Disk) are in the brackets and were measured with the following camera settings: Exposure: 1 frame / Bit Depth: 12bit / Predefined ROI (in the center)

Array Size		
1024 × 1024	512 × 512	256 × 256
95 (94.4)	190 (189)	378 (375)

Synchronisation

The exposure of the first row of a primary camera (Aux_Out_1) is used to trigger the secondary camera. Secondary camera runs in Bulb mode. Exposure of the primary camera has to be longer than 1 frame

Basic Features

Feature	Single Sona	Dual Sona
Binning 1×1, 2×2, 3x3, 4x4, 8x8	Yes	Yes
Bit Depth	12, 16	12, 16
Spurious Noise Filter	Yes	Yes
1 frame calculation the longest exposure & the highest possible frame rate	Yes	Yes
Pre-calculated pixel calibration 11 μm × 11 μm	Yes	Yes
Predefined ROI 25 mm (1608x1608), 22 mm (1400x1400), 18 mm (1160x1160) 1024x1024, 512x512, 256x256	Yes	Yes
A user defined FPS (Advanced GUI)	Yes	Yes
Sensor Mode (Advanced GUI)	Yes	Yes
Triggered Mode internal HW trigger Strobe (Advanced GUI)	Yes Yes	Yes Yes
Selectable Fan Speed (Off, Low, Medium, On)	Yes	Yes
Set Target Temperature	Yes	Yes
Fast Flip, Rotate 180	No	-
Support Primary/Secondary Alignment	-	No
FPGA timestamps	Yes	Yes
Default Camera Settings Trigger (Live, Fast TimeLapse) Trigger (ND Acquisition-NoDelay) Sensor Mode	Internal SW trigger Overlapped	Internal SW trigger Overlapped
Exposure-end SW event (ND Acquisition → Close Active Shutter when idle)	Yes	Yes
Triggering support in NIS Triggered Acquisition/JOB task Triggered Acquisition Illumination Sequence	Yes Yes	Yes Yes
Multi Camera support e.g. single Sona and Zyla	Yes	-
Multi Camera support e.g. dual Sona and Zyla	-	Yes
Support for Triple/Quad Sona driver	No	No

Compatibility Summary

Feature	Single and Dual Sona
Supported OS	Win 10 (64-bit)
NIS version	v5.2
USB3.1 Gen1 card **StarTech PEXUSB3S25 USB3 card**	
Renesas Electronics USB 3.0 Host Controller driver **Device Manager →** **Universal Serial Bus controllers →** **Renesas Electronics USB 3.0 Host Controller →**	v3.0.23.0 (download available on StarTech web site)
Renesas Host Controller firmware	v2020 (download available on StarTech web site)
Andor sCMOS cameras driver **Device Manager →** **Universal Serial Bus devices →** **Sona**	v1.0.0.0
Andor SDK	v3.14.3.30009 or later
Sona firmware	v18.10
NIS Installer **Local Options required** **Andor SDK embedded** **Andor USB3 Windows driver embedded** **Disable CState embedded**	No Yes Yes Yes

Software Licenses

Dual Sona	Interface	Licenses	Product Code	Package
Basic Integration	Win 10 (64bit)			AR/BR/D
Single Sona Pad 1-D Acquisition				
Triggered Aquisition	USB + TTL	RT Acquisition	MQS42780	AR
Illumination Sequence	USB + TTL	6D + RT Acquisition + Illumination Sequence	MQS42560 + MQS42780 + MQS42930	AR
Triggered Experiment in JOBs	USB + TTL	6D + RT Acquisition + JOBs Editor	MQS42560 + MQS42780 + MQS43130	AR

Dual Sona	Interface	Licenses	Product Code	Package
Basic Integration	USB + TTL	Dual Camera	MQS41450	AR
Dual Sona pad 1-D Acquisition				
Triggered Aquisition	USB + TTL	Dual Camera RT Acquisition	MQS42780	AR
Illumination Sequence	USB + TTL	Dual Camera + 6D + RT Acquisition + Illumination Sequence	MQS41450 + MQS42560 + MQS42780 + MQS42930	AR
Triggered Experiment in JOBs	USB + TTL	Dual Camera + 6D + RT Acquisition + JOBs Editor	MQS41450 + MQS42560 + MQS42780 + MQS43130	AR

Help and Support

Please see our range of technical documentation available at: andor.oxinst.com/downloads please create an account to request access to software files.

If you require further help please contact our customer support team at andor.oxinst.com/support

Further help on third party software compatibility can be found in our third party software compability matrix.