

Specifications: M2590, M2590-NIR, C2590

Supported Features	M2590, M2590-NIR	Nano-C2590	
Resolution	2592 x 2048		
Sensor	OnSemi Python5000 P1 (5.1M)		
Pixel Size	4.8 μm x 4.8 μm		
Shutter type	Full frame electronic global shutter function		
Full Well charge	10ke (max)		
Firmware option (Field programmable)	Standard Design Monochrome (factory default)	Standard Design Bayer (factory default)	RGB-Output Design
Max. Internal Frame Rate Full Resolution (2592 x 2048)	51.8 fps (Fast Readout Enable) 24.7 fps (Normal Readout Enable)		
Maximum Sustained Frame Rate Output (with TurboDrive v1)*	42.7 fps (8-bit) 24.9 fps (10-bit)		N/A
Maximum Sustained Frame Rate Output (without TurboDrive)	22 fps (8-bit)		5.5 fps (RGBA) 8.7 fps (RGB) 11 fps (Yuv422) 22 fps (8-bit mono)
Pixel Data Formats	Mono 8-bit Mono 10-bit	Bayer 8-Bit Bayer 10-Bit	RGBA 32-bit RGB 24-bit Yuv422 16-bit Mono 8-bit
Trigger to Exposure Minimum delay (Synchronous Exposure Alignment)	8 μs if exposureAlignment = Synchronous With No Overlap between the new exposure and the previous readout 26.2 μs if exposureAlignment = Synchronous With Overlap between the new exposure and the previous readout		
Trigger to Exposure Minimum delay (Reset Exposure Alignment)	3 μs		
Trigger to Exposure Start jitter (best case with Synchronous Exposure Alignment)	Up to 1 line time		
Trigger to Exposure Start jitter (Reset Exposure Alignment) †	0 μs		
Exposure Time Minimum (see “exposureTimeActual” in Sensor Control)	87 μs (increment steps of 1μs)		
Min. Time from End of Exposure to Start of Next Exposure (second frame)	49 μs – Normal Readout 47 μs – Fast Readout		
Horizontal Line Time:	11.33 μs – Normal Readout 9.33 μs – Fast Readout		
Readout Time	23242 μs – Normal Readout for 2592 x 2048 Add 76μs when overlapping Exposure and Readout 19142 μs μs – Fast Readout for 2592 x 2048 Add 64μs when overlapping Exposure and Readout <i>Specifically: (Horizontal line time at current resolution * number of lines) + (3 * (line time of the 2590 model))</i>		
Auto-Brightness	Yes , with Auto-Exposure and AGC (FPGA Gain)		
Black offset control	Yes (in DN)		

Gain Control	In-sensor Analog Gain (1.0x to 8x) in 11 gain steps (1.0, 1.14, 1.33, 1.6, 2.0, 2.29, 2.67, 3.2, 4.0, 5.33, 8.0) In-sensor Digital Gain (1x to 32x) in 0.01x steps In-FPGA Digital Gain (1x to 4x) in 0.007x steps		
Binning Support	Yes In-FPGA (summing and average, 2x2, 4x4) Yes In- Sensor (averaging 2x2)	No	
Color Correction Support	No		Yes
Decimation Support	No		
Defective Pixel Replacement	Yes, up to 512 positions		
Image Correction	No		
Image Flip Support	Yes, In-Sensor, Vertical Only		
Multi-ROI Support	Yes, in Sensor, up to 16 ROI (mutually exclusive with binning)		
On-Board Image Memory	90MB		
Output Dynamic Range (dB)	62.1 dB (in 10-Bit Pixel Format)		
SNR (dB)	39.8 dB (in 10-Bit Pixel Format)		

*TurboDrive internal limitation of 250MB/sec

† Note: The actual internal minimum exposure may be different than what is programmed. Use the feature "exposureTimeActual" from the [Sensor Control](#) category to read back the actual sensor exposure. The exposure start sensor event is delayed 4 μ s from the actual start.

Firmware Files for Models 1280, 1930, 2590

The latest firmware files for all Nano models are available on the Teledyne DALSA support web site:
<http://www.teledynedalsa.com/imaging/support/downloads/firmware/>

The firmware files for these models are listed below. The xx denotes the build number.

M1280, M1930, M2590

- Standard
 "Genie_Nano_OnSemi_Python_0.3M-0.5M-1.3M-2M-5M_Mono_STD_Firmware_5CA18.xx.cbf"

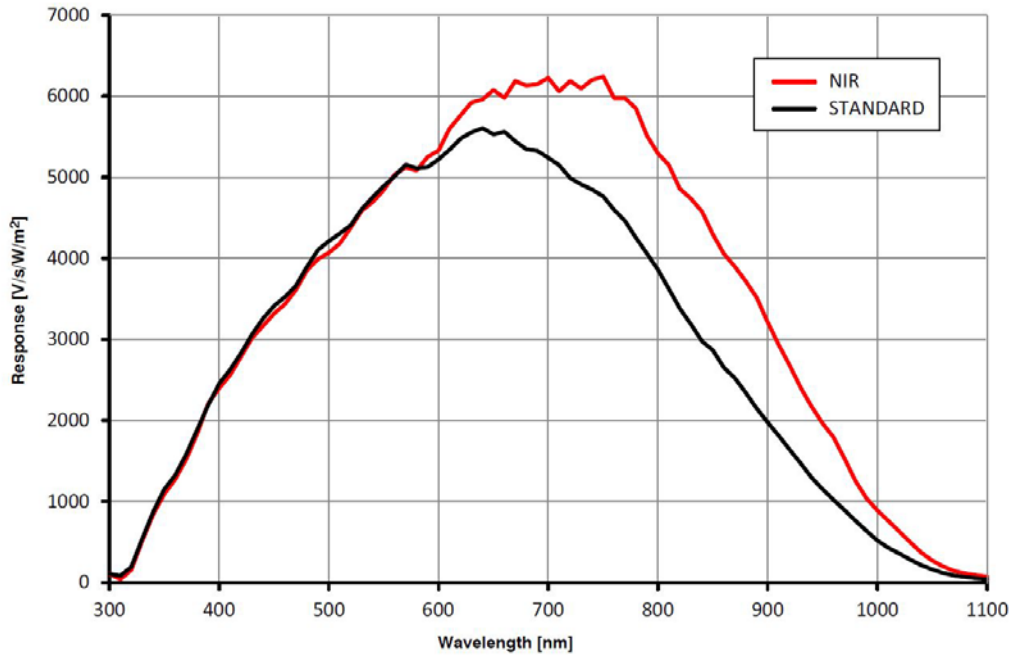
C1280, C1930, C2590

- Bayer Output
 "Genie_Nano_OnSemi_Python_0.3M-0.5M-1.3M-2M-5M_Bayer_STD_Firmware_6CA18.xx.cbf"
- RGB Output
 "Genie_Nano_OnSemi_Python_0.3M-0.5M-1.3M-2M-5M_RGB_Output_Firmware_6CA18.xx.cbf"

Spectral Response (Python 4.8 μm series)

Model specific specifications and response graphics for the On-Semi Python (VGA to 5M) series are provided here. The response curves describe the sensor, excluding lens and light source characteristics.

On-Semi Python Series (with 4.8 μm pixels) — Monochrome and NIR



On-Semi Python Series (with 4.8 μm pixels) — Monochrome and Color

