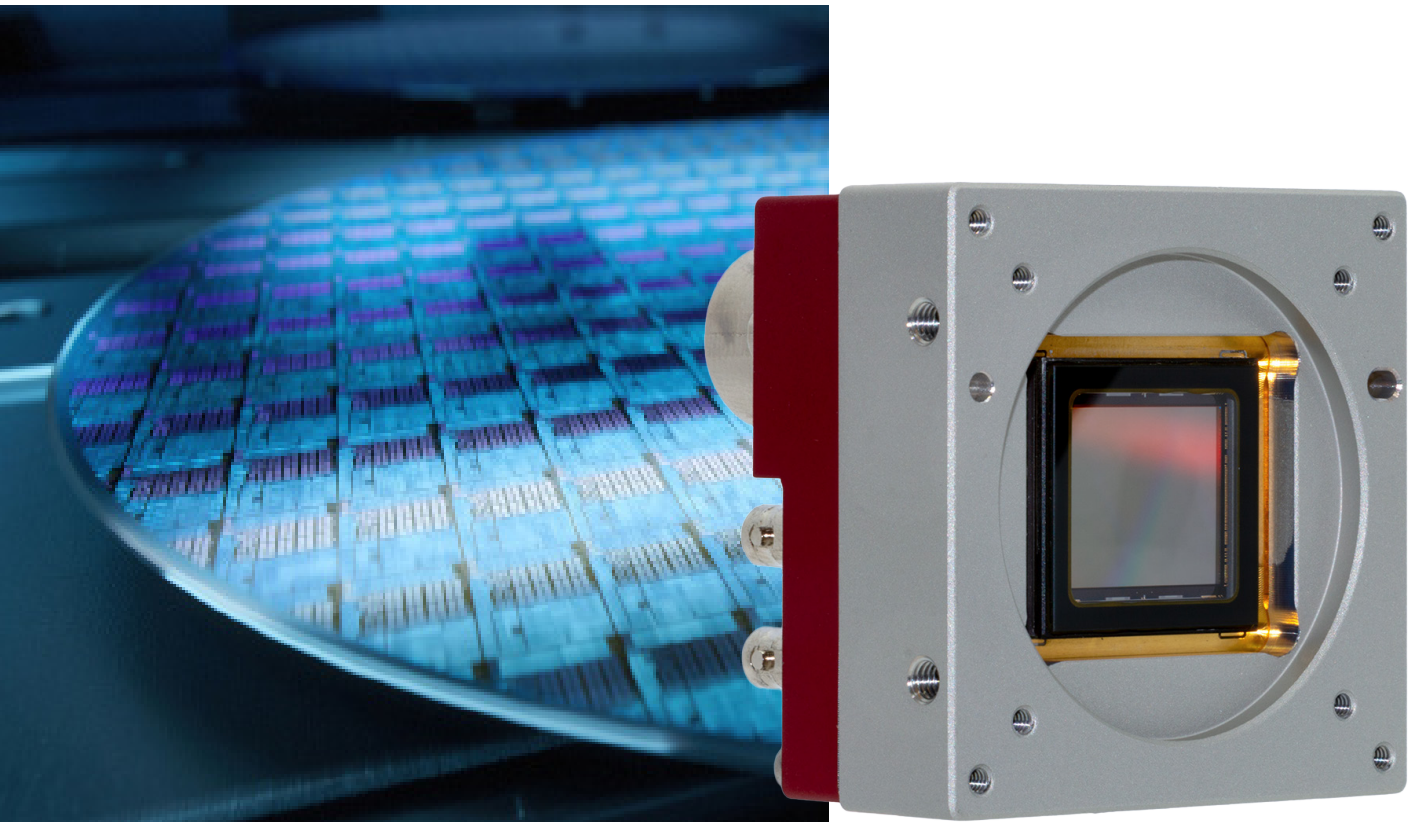
TELEDYNE | Teledyne Adimec

MACHINE VISION PRODUCT PORTFOLIO



What We Offer:

Low power design and optimized thermal management
Our cameras provide high resolution and high frame speeds. The low power design and optimized thermal management keep the camera temperature in control under these challenging conditions. The result is a stable image quality with increased throughput and detection capabilities for inspection systems.

Repeatability for tool matching
Tool matching is an important aspect in machine vision. Teledyne Adimec's extensive camera qualification and production calibration ensure camera performance to support interoperability between cameras. We perform 100% testing on all cameras with a strict acceptance test procedure to support the copying of application recipes.

Application optimized image
Image correction data and algorithms are implemented in all Teledyne Adimec cameras resulting in the optimized image for your application. Dark and bright field corrections are designed specifically for each sensor to enhance the uniformity of the output image. Defect pixels are detected during the acceptance test procedure and corrected in the camera to provide excellent image quality.

Tailored camera modules
Customized camera modules provide the optimal fit to the optical inspection tool and are fully calibrated according to the agreed specification. Standard and customized in-camera corrections guarantee uniformity under all conditions.

Calibrated camera lens assemblies
The camera lens assemblies are tailored to the application, offering the right MTF with the right FoV for the device under test. The camera lens assembly is calibrated as a whole to provide the required absolute pixel response, as well as device-to-device repeatability on performance, uniformity and MTF.

Expert support
Our support team of vision experts offers a full service from technology and lens selection to application integration and calibration support until phase-out of the camera.


Tool matching support


Thermal management


Image calibration


Calibrated camera lens assemblies

What We Offer:

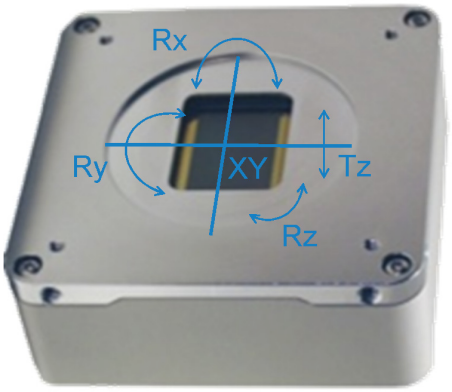
Repeatability and reliability with long lifetime

Camera repeatability refers to a camera's ability to consistently produce the same results, even under varying conditions such as temperature, vibration, or over time. To ensure this consistency, every aspect of camera development and specialized functions are designed to control and maintain overall performance.

Our product quality minimizes tool downtime. During the design phase, all critical factors—such as mechanical design and component selection—are carefully considered to ensure a long operational lifespan.

Active Sensor Alignment

Sensors that are precisely aligned deliver sharper images across the entire field of view, reducing or even eliminating the need for camera-to-lens adjustments. Active sensor alignment, which uses real-time images to help sensor positioning, ensures optimal performance. Teledyne Adimec's latest system, the SPS 3000, provides fully automated, 6-degree-of-freedom sensor alignment and fixation, with a manual load option.



Parameter	Active Alignment	Passive Alignment
XY centering	± 0.050 mm	± 0.16 mm
Rotation	± 1.5 mRad	± 12 mRad
Perpendicularity	± 2 mRad	± 7.5 mRad

Specifications are indicative for what is possible. For individual camera models, specifications might deviate to some extent. Refer to the camera datasheets for actual specifications.

High resolution

Active sensor alignment

Repeatability

Reliability

Customization Services:

Camera lens/filter assembly

For each camera, the option to add a lens or filter can be discussed. Teledyne Adimec has extensive experience in the accurate alignment of camera lens assemblies.

Removable coverglass

Most cameras are available with or without cover glass. Please contact Teledyne Adimec for specific options for your sensor of interest.

Example Applications:

Display inspection

- End of line debris inspection
- Imaging colorimetry

Display module inspection

- MURA/DEMURA

VCSEL inspection

- Time of flight
- Proximity sensor
- Face recognition dot projector

Camera module

- Alignment

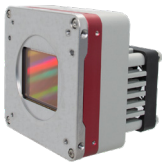
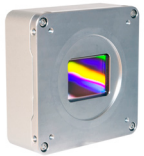
Semiconductor advanced packaging

- Micro bump inspection
- Die flatness
- Critical dimensions

Electronic manufacturing

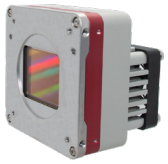
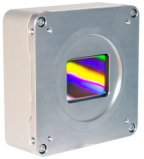
- PCB inspection
- Solder paste

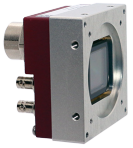
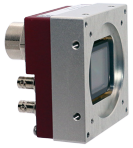
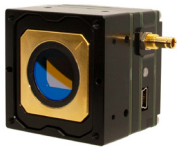
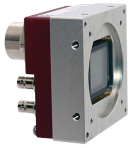
DIAMOND DISPLAY INSPECTION

Camera name	D-152A16-T01	D-103A12-T01	D-65A30-T01	D-65A30			
Sensors	Gpixel GMAX32152	Gpixel GMAX32103	Gpixel GMAX3265	Gpixel GMAX3265			
Reference picture							
Specifications	152 Mp	103 Mp	65 Mp	65 Mp			
Pixel size	3.2 µm x 3.2 µm	3.2 µm x 3.2 µm	3.2 µm x 3.2 µm	3.2 µm x 3.2 µm			
Resolution	16556 x 9200	11264 x 9200	9344 x 7000	9344 x 7000			
Sensor diagonal (sensor size)	60.6 mm (53.0 x 29.4 mm)	46.6 mm (36.1 x 29.4 mm)	37.4 mm (29.9 x 22.4 mm)	37.4 mm (29.9 x 22.4 mm)			
Sensor alignment	Active	Active	Active	Active			
Max frame rate in full resolution	16 fps	12 fps	30 fps	30 fps			
Electronic shutter	Global shutter	Global shutter	Global shutter	Global shutter			
Video interface	CoaXPress	CoaXPress	CoaXPress	CoaXPress			
Monochrome/ Color	Monochrome and color	Monochrome and color	Monochrome and color	Monochrome and color			
	Max throughput (in bright conditions at low gain for applications like De-Mura)						
Noise	4.0 e^{-}** @ 12 bit	4.3 e^{-}** @ 12 bit	5.2 e^{-}** @ 12 bit	5.2 e^{-}** @ 12 bit			
Full well	9.3 ke^{-}** @ 12 bit	9.0 ke^{-}** @ 12 bit	10.5 ke^{-}** @ 12 bit	10.5 ke^{-}** @ 12 bit			
Dynamic range	67.3 dB** @ 12 bit	66.4 dB** @ 12 bit	64.6 dB** (66 dB*) @ 12 bit	64.6 dB** (66 dB*) @ 12 bit			
	Max sensitivity (in low light conditions with high gain for applications like Mura dark)						
Noise	2.8 e^{-}** @ 12 bit	2.8 e^{-}** @ 12 bit	2.5 e^{-}** @ 12 bit	2.5 e^{-}** @ 12 bit			
Full well	2.5 ke^{-}** @ 12 bit	2.5 ke^{-}** @ 12 bit	3 ke^{-}** @ 12 bit	3 ke^{-}** @ 12 bit			
Dynamic range	59.0 dB** @ 12 bit	59.0 dB** @ 12 bit	59.7 dB** @ 12 bit	59.7 dB** @ 12 bit			

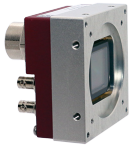
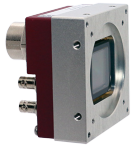
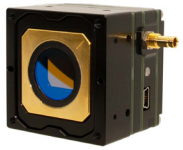
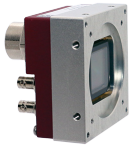
* Sensor specification ** Typical Value

DIAMOND DISPLAY INSPECTION

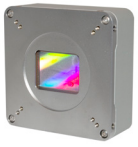
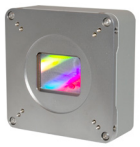
Camera name	D-152A16-T01	D-103A12-T01	D-65A30-T01	D-65A30			
Reference picture							
Functionalities	152 Mp	103 Mp	65 Mp	65 Mp			
Data storage over CXP for calibration data	✓	✓	✓	Optional			
Defect pixel correction	✓	✓	✓	✓			
Multi-exposure	-	-	On request	✓			
Frame Averaging	✓	✓	✓	-			
Region of interest	✓	✓	✓	✓			
Multiple Band ROI Readout	-	-	-	-			
Dark field correction	✓	✓	✓	✓			
Pixel based dark field correction	✓	✓	✓	✓			
Long exposure pixel based dark field correc-tion	✓	✓	✓	✓			
Bright field correction	✓	✓	✓	✓			
Low Frequency Flat Field Correction	✓	✓	✓	✓			
Conversion gain cali-brated	✓	✓	✓	✓			
Sensor temperature stabi-lization via TEC	✓	✓	✓	-			
Sensor temperature stabi-lization via fan (on/off)	✓	✓	✓	-			
UART over CXP Interface	✓	✓	✓	-			
I/O functionality (e.g. trigger)	✓	✓	✓	✓			
Factory set and user sets	✓	✓	✓	✓			

	DIAMOND SWIR				DIAMOND UV		
Camera name	**D-5A130**	**D-3A170**	**D-1.2A150**		**D-8A195**		
Sensors	**Sony IMX992**	**Sony IMX993**	**SCD Cardinal 1280**		**Sony IMX487**		
Reference picture							
Specifications	5.2 Mp	3.2 Mp	1.3 Mp		8 Mp		
Pixel size	3.45 µm x 3.45 µm	3.45 µm x 3.45 µm	10 µm x 10 µm		2.74 µm x 2.74 µm		
Resolution	2560 x 2048	2080 x 1544	1280 x 1024		2856 x 2848		
Sensor diagonal (sensor size)	11.4 mm (8.9 x 7.1 mm)	8.9 mm (7.2 x 5.3 mm)	16.4 mm (12.8 x 10.2 mm)		11.1 mm (7.8 x 7.8 mm)		
Sensor alignment	Passive	Passive	Passive		Passive		
Max frame rate in full resolution	130 fps	170 fps	150 fps		194 fps		
Electronic shutter	Global shutter	Global shutter	Global Shutter		Global shutter		
Video interface	CoaXPress	CoaXPress	CoaXPress		CoaXPress		
Monochrome/ Color	SWIR	SWIR	SWIR		UV		
	Max throughput (in bright conditions at low gain for applications like De-Mura)						
Noise	Export control***	Export control***	Export control***		T.B.D.		
Full well	Export control***	Export control***	Export control***		T.B.D.		
Dynamic range	Export control***	Export control***	Export control***		T.B.D.		
	Max sensitivity (in low light conditions with high gain for applications like Mura dark)						
Noise	Export control***	Export control***	Export control***		T.B.D.		
Full well	Export control***	Export control***	Export control***		T.B.D.		
Dynamic range	Export control***	Export control***	Export control***		T.B.D.		

* Sensor specification ** Typical Value ***Value(s) will be disclosed after obtaining an Export License. For more information contact your local Teledyne Adimec Office.

	DIAMOND SWIR				DIAMOND UV		
Camera name	**D-5A130**	**D-3A170**	**D-1.2A150**		**D-8A195**		
Reference picture							
Functionalities	5.2 Mp	3.2 Mp	1.3 Mp		8 Mp		
Data storage over CXP for calibration data	-	-	-		-		
Defect pixel correction	✓	✓	✓		✓		
Multi-exposure	-	-	-		-		
Frame Averaging	-	-	-		-		
Region of interest	✓	✓	✓		✓		
Multiple Band ROI Readout	Optional	Optional	-		-		
Dark field correction	✓	✓	✓		-		
Pixel based dark field correction	✓	✓	✓		-		
Long exposure pixel based dark field correction	-	-	-		-		
Bright field correction	✓	✓	✓		-		
Low Frequency Flat Field Correction	✓	✓	-		Optional		
Conversion gain calibrated	✓	✓	-		✓		
Sensor temperature stabilization via TEC	-	-	✓		-		
Sensor temperature stabilization via fan (on/off)	-	-	-		-		
UART over CXP Interface	-	-	-		-		
I/O functionality (e.g. trigger)	✓	✓	-		✓		
Factory set and user sets	✓	✓	✓		✓		

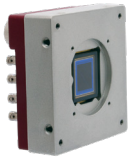
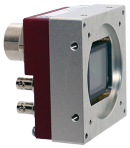
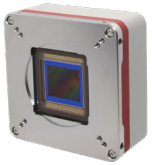
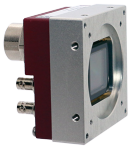
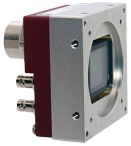
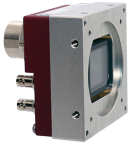
SAPPHIRE

Camera name	S-65A70	S-49A70	S-25A80	S-25A70	S-25A30		
Sensors	Gpixel GMAX3265	Gpixel GMAX3249	ON Semi PYTHON 25K	ON Semi VITA 25K	ON Semi VITA 25K		
Reference picture							
Specifications	65 Mp	49 Mp	25 Mp	25 Mp	25 Mp		
Pixel size	3.2 µm x 3.2 µm	3.2 µm x 3.2 µm	4.5 µm x 4.5 µm	4.5 µm x 4.5 µm	4.5 µm x 4.5 µm		
Resolution	9344 x 7000	7008 x 7000	5120 x 5120	5120 x 5120	5120 x 5120		
Sensor diagonal (sensor size)	37.4 mm (29.9 x 22.4 mm)	31.7 mm (22.4 x 22.4 mm)	35 mm (23.0 x 23.0 mm)	32.5 mm (23.0 x 23.0 mm)	32.5 mm (23.0 x 23.0 mm)		
Sensor alignment	Active	Active	Active	Active	Active		
Max frame rate in full resolution	70 fps	70 fps	80 fps	70 fps	30 fps		
Electronic shutter	Global shutter	Global shutter	Global shutter	Global shutter	Global shutter		
Video interface	CoaXPress	CoaXPress	CoaXPress	CoaXPress	Camera Link		
Monochrome/ Color	Monochrome and color	Monochrome and color	Monochrome and color	Monochrome and color	Monochrome and color		
	Max throughput (in bright conditions at low gain for applications like De-Mura)						
Noise	7.4 e^{-}** @ 10 bit	7.4 e^{-}** @ 10 bit	14 e^{-}	34 e^{-}	34 e^{-}		
Full well	10.5 ke^{-}** @ 10 bit	10.5 ke^{-}** @ 10 bit	10 ke^{-}** (12 ke^{-}*)	13 ke^{-}** (22 ke^{-}*)	13 ke^{-}** (22 ke^{-}*)		
Dynamic range	61.5 dB** @ 10 bit	61.5 dB** @ 10 bit	57 dB** (59 dB*)	52 dB** (56 dB*)	52 dB** (56 dB*)		
	Max sensitivity (in low light conditions with high gain for applications like Mura dark)						
Noise	3.9 e^{-}** @ 10 bit	3.9 e^{-}** @ 10 bit	Only one mode	Only one mode	Only one mode		
Full well	3 ke^{-}** @ 10 bit	3 ke^{-}** @ 10 bit	Only one mode	Only one mode	Only one mode		
Dynamic range	57.7 dB** @ 10 bit	57.7 dB** @ 10 bit	Only one mode	Only one mode	Only one mode		

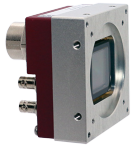
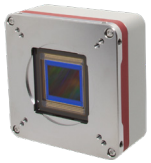
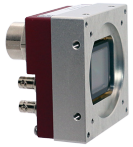
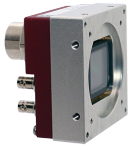
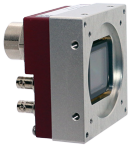
* Sensor specification ** Typical Value

	SAPPHIRE						
Camera name	**S-65A70**	**S-49A70**	**S-25A80**	**S-25A70**	**S-25A30**		
Reference picture							
Functionalities	65 Mp	49 Mp	25 Mp	25 Mp	25 Mp		
Data storage over CXP for calibration data	Optional	Optional	Optional	Optional	-		
Defect pixel correction	✓	✓	✓	✓	✓		
Multi-exposure	-	-	-	-	-		
Frame Averaging	-	-	-	-	-		
Region of interest	✓	✓	✓	✓	✓		
Multiple Band ROI Readout	✓	-	✓	✓	✓		
Dark field correction	✓	✓	✓	✓	✓		
Pixel based dark field correction	✓	✓	-	-	✓		
Long exposure pixel based dark field correction	-	-	-	-	-		
Bright field correction	✓	✓	✓	✓	✓		
Low Frequency Flat Field Correction	✓	✓	✓	✓	✓		
Conversion gain calibrated	✓	✓	-	-	-		
Sensor temperature stabilization via TEC	-	-	-	-	-		
Sensor temperature stabilization via fan (on/off)	-	-	-	-	-		
UART over CXP Interface	-	-	-	-	-		
I/O functionality (e.g. trigger)	✓	✓	✓	✓	✓		
Factory set and user sets	✓	✓	✓	✓	✓		

QUARTZ

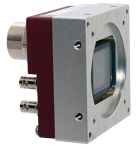
Camera name	Q-25A150	Q-24A95	Q-21A230-PA	Q-20A105	Q-16A140	Q-12A175	Q-12A180
Sensors	Gpixel GMAX0505	Sony IMX530	Gpixel GSPRINT4521	Sony IMX531	Sony IMX532	Sony IMX535	AMS OSRAM CMV12000
Reference picture							
Specifications	25 Mp	24 Mp	21 Mp	20 Mp	16 Mp	12 Mp	12 Mp
Pixel size	2.5 µm x 2.5 µm	2.74 µm x 2.74 µm	4.5 µm x 4.5 µm	2.74 µm x 2.74 µm	2.74 µm x 2.74 µm	2.74 µm x 2.74 µm	5.5 µm x 5.5 µm
Resolution	5120 x 5120	5328 x 4608	5120 x 4096	4512 x 4512	5328 x 3040	4128 x 3008	4096 x 3072
Sensor diagonal (sensor size)	18.1 mm (12.8 x 12.8 mm)	19.3 mm (14.6 x 12.6 mm)	29.5 mm (23.04 x 18.43 mm)	17.5 mm (12.4 x 12.4 mm)	16.8 mm (14.6 x 8.3 mm)	14.0 mm (11.3 x 8.2 mm)	28.2 mm (22.5 x 16.9 mm)
Sensor alignment	Passive	Passive	Active	Passive	Passive	Passive	Active
Max frame rate in full resolution	150 fps	94 fps	230 fps	108 fps	140 fps	177 fps	180 fps
Electronic shutter	Global shutter	Global shutter	Global shutter	Global shutter	Global shutter	Global shutter	Global shutter
Video interface	CoaXPress	CoaXPress	CoaXPress	CoaXPress	CoaXPress	CoaXPress	CoaXPress
Monochrome/ Color	Monochrome and color	Monochrome and color	Monochrome and color	Monochrome and color	Monochrome and color	Monochrome and color	Monochrome and color
	Max throughput (in bright conditions at low gain for applications like De-Mura)						
Noise	4.4 e^- @ 10 bit	2.2 e^{-**} @ 12 bit	5.6 e^{-**} @ 12 bit	2.2 e^{-**} @ 12 bit	2.2 e^{-**} @ 12 bit	2.2 e^{-**} @ 12 bit	14.8 e^{-**} (13 e^{-*})
Full well	6.0 ke^- @ 10 bit	9.5 ke^{-**} @ 12 bit	15.3 ke^{-**} @ 12 bit	9.5 ke^{-**} @ 12 bit	9.5 ke^{-**} @ 12 bit	9.5 ke^{-**} @ 12 bit	9.9 ke^{-**} (13.5 ke^{-*})
Dynamic range	62.7 dB** @ 10 bit	70.1 dB** @ 12 bit	68.7 dB** @ 12 bit	70.1 dB** @ 12 bit	70.1 dB** @ 12 bit	70.1 dB** @ 12 bit	56.5 dB** (60 dB*)
	Max sensitivity (in low light conditions with high gain for applications like Mura dark)						
Noise	3.6 e^- @ 10 bit	T.B.D.	3.3 e^{-**} @ 12 bit	T.B.D.	T.B.D.	T.B.D.	10.1 e^{-**}
Full well	4.8 ke^- @ 10 bit	T.B.D.	7.0 ke^{-**} @ 12 bit	T.B.D.	T.B.D.	T.B.D.	2.5 ke^{-**}
Dynamic range	62.5 dB** @ 10 bit	T.B.D.	66.5 dB** @ 12 bit	T.B.D.	T.B.D.	T.B.D.	47.9 dB**

* Sensor specification ** Typical Value

	QUARTZ						
Camera name	**Q-25A150**	**Q-24A95**	**Q-21A230-PA**	Q-20A105	**Q-16A140**	**Q-12A175**	**Q-12A180**
Reference picture							
Functionalities	25 Mp	24 Mp	21 Mp	20 Mp	16 Mp	12 Mp	12 Mp
Data storage over CXP for calibration data	✓	✓	✓	✓	✓	✓	Optional
Defect pixel correction	✓	✓	✓	✓	✓	✓	✓
Multi-exposure	-	-	-	-	-	-	-
Frame Averaging	-	-	-	-	-	-	-
Region of interest	✓	✓	✓	✓	✓	✓	✓
Multiple Band ROI Readout	Optional	Optional	-	Optional	Optional	Optional	✓
Dark field correction	✓	-	-	-	-	-	✓
Pixel based dark field correction	✓	-	✓	-	-	-	✓
Long exposure pixel based dark field correc-tion	-	-	-	-	-	-	-
Bright field correction	✓	-	✓	-	-	-	✓
Low Frequency Flat Field Correction	✓	Optional	✓	Optional	Optional	Optional	✓
Conversion gain cali-brated	✓	✓	✓	✓	✓	✓	✓
Sensor temperature stabi-lization via TEC	-	-	-	-	-	-	-
Sensor temperature stabi-lization via fan (on/off)	-	-	✓	-	-	-	-
UART over CXP Interface	-	-	✓	-	-	-	-
I/O functionality (e.g. trigger)	✓	✓	✓	✓	✓	✓	✓
Factory set and user sets	✓	✓	✓	✓	✓	✓	✓

	QUARTZ				NORITE		
Camera name	**Q-8A195**	**Q-5A255**	**Q-4A180**		**N-5A100**		
Sensors	Sony IMX536	Sony IMX537	AMS OSRAM CMV4000		ON Semi PYTHON 5K		
Reference picture							
Specifications	8 Mp	5 Mp	4 Mp		5 Mp		
Pixel size	2.74 µm x 2.74 µm	2.74 µm x 2.74 µm	5.5 µm x 5.5 µm		4.8 µm x 4.8 µm		
Resolution	2856 x 2848	2448 x 2048	2048 x 2048		2592 x 2048		
Sensor diagonal (sensor size)	11.1 mm (7.8 x 7.8 mm)	8.8 mm (6.7 x 5.6 mm)	15.9 mm (11.3 x 11.3 mm)		15.8 mm (12.4 x 9.8 mm)		
Sensor alignment	Passive	Passive	Active		Passive		
Max frame rate in full resolution	194 fps	258 fps	180 fps		105+ fps		
Electronic shutter	Global shutter	Global shutter	Global shutter		Global shutter		
Video interface	CoaXPress	CoaXPress	CoaXPress and Camera Link		CoaXPress		
Monochrome/ Color	Monochrome and color	Monochrome and color	Monochrome and color		Monochrome		
	Max throughput (in bright conditions at low gain for applications like De-Mura)						
Noise	2.2 e^{-}** @ 12 bit	2.2 e^{-}** @ 12 bit	13 e^{-}*		14 e^{-}** (10 e^{-}*)		
Full well	9.5 ke^{-}** @ 12 bit	9.5 ke^{-}** @ 12 bit	13.5 ke^{-}*		11 ke^{-}** (10 ke^{-}*)		
Dynamic range	70.1 dB** @ 12 bit	70.1 dB** @ 12 bit	60 dB*		58 dB** (60 dB*)		
	Max sensitivity (in low light conditions with high gain for applications like Mura dark)						
Noise	T.B.D.	T.B.D.	Only one mode		Only one mode		
Full well	T.B.D.	T.B.D.	Only one mode		Only one mode		
Dynamic range	T.B.D.	T.B.D.	Only one mode		Only one mode		

* Sensor specification ** Typical Value

	QUARTZ				NORITE		
Camera name	**Q-8A195**	**Q-5A255**	**Q-4A180**		**N-5A100**		
Reference picture							
Functionalities	8 Mp	5 Mp	4 Mp		5 Mp		
Data storage over CXP for calibration data	✓	✓	-		Optional		
Defect pixel correction	✓	✓	✓		✓		
Multi-exposure	-	-	-		-		
Frame Averaging	-	-	✓		-		
Region of interest	✓	✓	✓		✓		
Multiple Band ROI Readout	Optional	Optional	-		-		
Dark field correction	-	-	✓		-		
Pixel based dark field correction	-	-	✓		-		
Long exposure pixel based dark field correc-tion	-	-	-		-		
Bright field correction	-	-	✓		-		
Low Frequency Flat Field Correction	Optional	Optional	✓		-		
Conversion gain cali-brated	✓	✓	-		-		
Sensor temperature stabi-lization via TEC	-	-	-		-		
Sensor temperature stabi-lization via fan (on/off)	-	-	-		-		
UART over CXP Interface	-	-	-		-		
I/O functionality (e.g. trigger)	✓	✓	✓		✓		
Factory set and user sets	✓	✓	✓		✓		