

# FEATURES CHECK LIST

INDUSTRIAL CAMERAS



















All specifications in this brochure are subject to change without notice. Latest specifications and availability can be found on our website *baslerweb.com*. Please visit *baslerweb.com/manuals* for the detailed camera User's Manual and *baslerweb.com/thirdparty* for information on third party software.

	GiG	0 N	Gia		US3°			SB I O N				
SENSOR FAMILY ACE 2 CAMERA MODELS	SONY PREGIUS a2A1920-51gxBAS a2A1920-51gxPRO SONY PREGIUS S a2A5320-7gxBAS a2A4504-5gxBAS a2A5528-4gxBAS a2A5520-7gxPRO a2A4504-5gxPRO a2A5328-4gxPRO		SONY STARVIS a2A2590-22gxBAS a2A3840-13gxBAS a2A2590-22gxPRO a2A3840-13gxPRO		a2A2590-22gxBAS a2A3840-13gxBAS a2A2590-22gxPRO a2A3840-13gxPRO a2A3840-13gxPRO a2A5320-23uxBA a2A5320-23uxBA a2A5328-15uxBA a2A5320-23uxPR a2A5320-23uxPR a2A5320-23uxPR		S a2A1920-160uxBAS S a2A1920-160uxPRO D		a2A1920-160uxBAS a2A1920-160uxPRO <b>SONY PREGIUS S</b> a2A5320-23uxBAS a2A4504-18uxBAS a2A5328-15uxBAS a2A5320-23uxPRO a2A4504-18uxPRO a2A5328-15uxPRO		a2A2590- a2A3840- a2A2590-	TARVIS -60uxBAS -45uxBAS -60uxPRO -45uxPRO
	mono	color	mono	color	mono	color	mono	color				
Physical Interface and I/O Control												
Configurable Input/Output Lines												
Inputs		1		1		1		1				
General Purpose I/O		2		2		2		2				
Minimum Output Pulse Width	•											
Line Source Signals												
Acquisition Trigger Wait / Frame Burst Trigger Wait	•											
Exposure Active	•	)										
Frame Trigger Wait	•		•	•								
Input Filter	•			•			•					
Serial Communication (UART)	•	•	•	•			•					
Timer Active	•			•				•				
User Output				• •		•		•		•		
Image Acquisition Control												
Acquisition Abort	•		• •			•						
Acquisition Single Frame	• •		•	(								
Acquisition Start	•	•		•				•				
Acquisition Status	•	•	•	•				•				
Acquisition Stop	•	)	•	•		•		•				
Frame Burst Start Trigger	•	•	•	•				•				
Frame Start Trigger		)	•	•	(							
High Speed Burst Mode	•	)	•	•	(							
Trigger Delay	•	)		•	(		(					
Triggered by Hardware	•	)		•	(		•					
Triggered by Software	•		•	•			•	•				
Standard Features												
Auto Function Profile												
Binning Horizontal	•		•		•		•					
Binning Vertical	•		•		•		•					
Black Level		)		•								
Digital Shift		)		•								
Exposure Auto		•		•	(							
Exposure Mode: Timed (Control via API)		•		•								
Exposure Mode: Trigger Width (Control via external trigger)		•		•	(							
Exposure Time		•	•	•				•				
Gain	•	•	•	•	(	D		Ð				
Gain Auto	•	•	•	•				•				
Gamma Correction	•	•	•	•	(	•		•				
Lookup Table (LUT) 12Bit		•	•	•	•			•				
Multiple ROI	•	•	•	•	(	•		•				
Region of Interest (ROI)	•	•	•	•		•	(	•				
Reverse X (Horizontal Mirroring)	•	•	•	•	(	•		•				
Reverse Y (Vertical Mirroring)								•				
Test Images	•	•	•	•	•		•	•				
Ultra Short Exposure Time Mode	•	1		1		1		1				
GigE Vision 2.0								-				
Action Commands (Synchronous Triggering)		•		•								
Precision Time Protocol (IEEE 1588)		•		•								
Scheduled Action Commands		•		•								

<sup>1</sup> Not all models support this feature.

			<b>USP</b> VISION	US3° VISION
SENSOR FAMILY ACE 2 CAMERA MODELS	SONY PREGIUS a2A1920-51gxBAS a2A1920-51gxPRO SONY PREGIUS S a2A5320-7gxBAS a2A4504-5gxBAS a2A5320-7gxPRO a2A5320-7gxPRO a2A4504-5gxPRO a2A5328-4gxPRO	SONY STARVIS a2A2590-22gxBAS a2A3840-13gxBAS a2A2590-22gxPRO a2A3840-13gxPRO	SONY PREGIUS a2A1920-160uxBAS a2A1920-160uxPRO SONY PREGIUS S a2A5320-23uxBAS a2A4504-18uxBAS a2A5328-15uxBAS a2A4504-18uxPRO a2A4504-18uxPRO a2A5328-15uxPRO	SONY STARVIS a2A2590-60uxBAS a2A3840-45uxBAS a2A2590-60uxPRO a2A3840-45uxPRO
Proved Freedom	mono color	mono color	mono color	mono color
Beyond Features Compression Beyond	• Pro	• Pro	• Pro	• Pro
Pixel Beyond	• Pro	• Pro	• Pro	• Pro
	• PI0	• PI0	• PI0	• PIU
Miscellaneous				
Device Information Parameters	•	•	•	•
Device Temperature	•	•	•	•
User Defined Values User Sets (Configuration Sets)	•	•	•	•
	•	•	•	•
Color Creation and Enhancement	_	-	_	_
Balance White (Manual White Balance)	•	•	•	•
Balance White Auto (Automatic White Balance)	•	•	•	•
Brightness	•	•	•	•
Color Adjustment (6 axis Hue/Saturation)	•	•	•	•
Color Transformation (RGB to RGB)	•	•	•	•
Contrast Enhancement	•	•	•	•
Hue/Saturation	•	•	•	•
Light Source Presets	•	•	•	•
sRGB Gamma Correction	•	•	· · · · · · · · · · · · · · · · · · ·	•
PGI	• Pro	• Pro	• Pro	• Pro
Chunks				
Auto Brightness Status	•	•	•	•
CRC Checksum	•	•	•	•
Counter Value	•	•	•	٠
Exposure Time	•	•	•	•
Frame ID	•	•	•	•
Gain	•	•	•	•
Line Status All	•	•	•	•
Timestamp	•	•	•	•
Event Reporting				
Action Late	•	•	•	•
Exposure End	•	•	•	•
Frame Buffer Overrun	•	٠	٠	٠
Frame Start	•	•	•	•
Frame Trigger Missed	•	•	•	•
Overrun	•	•	•	•
Temperature Status Changed	•	•	•	•
Test	•	•	•	•
Pixel Formats				
Mono 8	•	•	•	•
Mono 10	•1	•1	•1	•1
Mono 10p (Mono 10 Packed)	•1	•1	•1	•1
Mono 12	•	•	•	•
Mono 12 Packed (Mono 12 Packed)	•	•	•	•
YCbCr422_8 (YUV422_8)	•	•	•	•
Bayer 8	•	•	•	•
Bayer 10	•1	•1	•1	•1
Bayer 10p (Bayer 10 Packed)	•1	•1	•1	•1
Bayer 12	•	•	•	•
Bayer 12p (Bayer 12 Packed)	•	•	•	•
DCD 0	•	•	•	•

•

•

•

•

<sup>1</sup> For latest information on availability of features, please visit *bas/werweb.com/ace2* Pro = available in ace 2 Pro models only

RGB 8

## FEATURES ACE USB 3.0



SENSORS ACE USB 3.0 CAMERA MODELS	SONY CCD acA640-90ux acA640-120ux acA1300-30ux acA1600-20ux	<b>AMS</b> acA2000-165ux acA2040-90ux	ON SEMI- CONDUCTOR MT9P acA1920-25ux acA2500-14ux	ON SEMI- CONDUCTOR MT9J/F acA3800-14ux acA4600-10ux	<b>PYTHON</b> acA640-750ux acA800-510ux acA1300-200ux	NDUCTOR         PREGIUS           acA720-520ux         acA1240-220ux           A640-750ux         acA1440-220ux           A800-510ux         acA1920-155ux           A1300-200ux         acA1920-40ux           A1920-150ux         acA2040-120ux	
						acA4096-40ux acA4112-20ux acA4112-30ux	
	mono colo	r mono color	mono color	mono color	mono color		mono color
Physical Interface and I/O Control Configurable Input/Output Lines							
Inputs	1	1	1	1	1	1	1
Outputs	1	1	1	1	1	1	1
General Purpose I/O	2	2	2	2	2	2	2
Debouncer	•	•	•	•	•	•	•
Minimum Output Pulse Width	•	•	•	•	•	•	•
I/O Signals							
Frame Burst Start Wait	•	•	•	•	•	•	•
Frame Start Wait	•	•	•	•	•	•	•
Exposure Active Signal	•	•	•		•	•	•
Flash Window Signal			•	•			•
User Output	•	•	•	•	•	•	•
Timer 1 Active	•	•	•	•	•	•	•
Image Acquisition Control							
Frame Burst Start Trigger	•	•	•	•	•	•	•
Frame Start Trigger	•		-	_	• •		_
Triggered by Software	•	•	•	• •		•	•
Triggered by Hardware	•	•	•	• •		•	•
Trigger Delay	•	•	•	•	•	•	•
Acquisition Status	•	•	•	•	•	•	•
Standard Features							
Gain	•	٠	•	•	•	•	•
Gain Auto	•	•	•	•	•	•	•
Black Level	•	•	•	•	•	•	•
Digital Shift	•		•	•		•	•
Region of Interest (ROI)	•	٠	•	•	•	•	•
Binning Horizontal	•	•	•	•	•	•	•
Binning Vertical	•	•	•	•	•	•	•
Decimation Horizontal				•			
Decimation Vertical		•		•			
Scaling Horizontal				•			
Scaling Vertical				•			
Reverse X (Horizontal Mirroring)	•	•	•	•	•	•	•
Reverse Y (Vertical Mirroring)		•			•	•	•
Gamma Correction	•	•	•	•	•	•	•
Exposure Mode: Timed (Control via API)	•	•	•	•	•	•	•
Exposure Mode: Trigger Width		-				-	
(Control via external trigger)	•	•			•	•	
Exposure Auto	•	٠	•	•	•	•	•
Auto Function Profile	•	•	•	•	•	•	•
Lookup Table	•	•	•	•	•	•	•
Test Images	•	•	•	•	•	•	٠
Sequencer	•	٠	•	•	•	•	٠
Stacked ROI					•	•1	
Ultra Short Exposure Time Mode						•2	
Light Control Features						-	
SLP Feature					•	•	•
JLI I CALUIC							•

 $^{\rm 1}$  not available for acA1920-40um/uc, acA2040-55um/uc, acA2440-35um/uc, acA4096-30um/uc, acA4112-20um/uc

<sup>2</sup> not available for acA1920-40ux and acA1920-155ux

# FEATURES ACE USB 3.0



SENSORS ACE USB 3.0 CAMERA MODELS	SONY CCD acA640-90ux acA640-120ux acA1300-30ux acA1600-20ux	acA2040-90ux	ON SEMI-CON- DUCTOR MT9P acA1920-25ux acA2500-14ux	P CONDUCTOR MT9J/F CONDUCTOR acA3800-14ux acA640-750ux acA144 acA4600-10ux acA640-750ux acA142 acA1300-200ux acA192 acA1300-200ux acA204 acA2500-60ux acA204 acA24 acA400 acA41 acA400 acA41		SONY PREGIUS acA720-520ux acA1920-155ux acA1920-155ux acA2040-120ux acA2040-120ux acA2040-55ux acA2440-75ux acA2440-75ux acA4096-30ux acA4096-40ux acA4112-20ux acA4112-30ux	SONY STARVIS acA3088-57ux acA4024-29ux SONY EXMOR R acA5472-17ux
	mono colo	r mono color	mono color	mono color	mono color	mono color	mono color
Miscellaneous							
Remove Parameter Limits	•	•	•	•	•	•	•
User Defined Values	•	•	•	•	•	•	•
Device Information Parameters	•	•	•	•	•	•	•
User Sets (Configuration Sets)	•	•	•	•	•	•	•
Device Temperature					•	•	•
Vignetting Correction						•1	•2
Color Creation and Enhanceme							
(Manual White Balance)	•	•	•	•	•	•	•
Balance White Auto (Automatic White Balance)	•	•	•	•	•	•	•
Light Source Presets	•	•	•	•	•	•	•
Color Transformation	•	•	•	•	•	•	•
Color Adjustment	•					•	
(6 axis Hue/Saturation)	•		•	•	•	•	•
PGI					•	•	• 3 •
Chunks							
Timestamp	•	•	•	•	•	•	•
Counter Value	•	•	•	•	•	•	•
Line Status All	•	•	•	•	•	•	•
CRC Checksum	•	•	•	•	•	•	•
Sequencer Set Active	•	•	•	•	•	•	•
Exposure Time	•	•	•	•	•	•	•
				•	•		
Gain	•	•	•	•	•	•	•
Event Reporting							
Exposure End	•	•	•	•	•	•	•
Frame Start	•	•	•	•	•	•	•
Frame Start Wait	•	•	•	•	•	•	•
Frame Start Overtrigger	•	•	•	•	•	•	•
Frame Burst Start	٠	•	٠	•	•	•	•
Frame Burst Start Wait	٠	•	٠	٠	•	٠	•
Frame Burst Start Overtrigger	٠	•	٠	•	•	•	•
Critical Temperature					•	•	
Over Temperature					•	•	
Pixel Formats Mono 8	•	•	•	•	•	•	•
Mono 10	-		-		•		÷
Mono 10p (Mono 10 Packed)					•		
Mono 12	•	•	•	•		•	•
Mono 12p (Mono 12 Packed)	•	•	•	•		•	•
YCbCr422_8 (YUV422_8)	•		•	•	•	•	-
Bayer 8	•	•	•	•	•	•	•
Bayer 8 Bayer 10	•	•	•	•	•	•	•
Bayer 10p (Bayer 10 Packed)					•		
Bayer 12	•	•	•	•		•	•
Device 10 - (D 10 D	-	-	-				-
Bayer 12p (Bayer 12 Packed) RGB 8	•	•	•	•	•	•	•

<sup>1</sup> not available for acA720-520ux, acA1440-220ux, acA2040-55ux, acA2040-120ux, acA2440-35ux, acA2440-75ux

 $^2$  only available for acA3088-57ux, acA4024-29ux  $^3$  only available for acA5472-17um

# FEATURES ACE GIGE



SENSORS ACE GIGE CAMERA MODELS Physical Interface and I/O Contr Configurable Input/Output Lines Inputs Outputs General Purpose I/O Debouncer Minimum Output Pulse Width Line Source Signals Acquisition Start Wait Frame Start Wait Exposure Active Flash Window User Output Sync User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger Frame Start Trigger	acA640-120gx acA780-75gx acA1300-22gx acA1300-30gx acA1600-20gx mono color rol		acA1300-60gx acA1600-60gx		MT9J/F acA3800-10gx acA4600-7gc	<b>PYTHON</b> acA640-300gx acA800-200gx acA1300-75gx acA1920-48gx acA2500-20gx	acA640-121gm acA720-290gx acA1440-73gx	SONY STARVIS acA3088-16g acA4024-8g; SONY EXMOR R acA5472-5g;
Configurable Input/Output Lines Inputs Outputs General Purpose I/O Debouncer Minimum Output Pulse Width Line Source Signals Acquisition Start Wait Frame Start Wait Exposure Active Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger	acA1300-30gx acA1600-20gx mono color rol 1 1 1	1				acA1300-75gx acA1920-48gx acA2500-20gx	acA1920-40gx acA1920-50gx acA2040-35gx acA2440-20gx acA4096-11gx	EXMOR R
Configurable Input/Output Lines Inputs Outputs General Purpose I/O Debouncer Minimum Output Pulse Width Line Source Signals Acquisition Start Wait Frame Start Wait Exposure Active Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger	1 1 	1		mono color	mono color	mono color		
Configurable Input/Output Lines Inputs Outputs General Purpose I/O Debouncer Minimum Output Pulse Width Line Source Signals Acquisition Start Wait Frame Start Wait Exposure Active Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger	1 1						mono color	mono colo
Outputs General Purpose I/O Debouncer Minimum Output Pulse Width Line Source Signals Acquisition Start Wait Frame Start Wait Exposure Active Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger	1		-					
General Purpose I/O Debouncer Minimum Output Pulse Width Line Source Signals Acquisition Start Wait Frame Start Wait Exposure Active Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger	•	1	1	1	1	1	1	1
Debouncer Minimum Output Pulse Width Line Source Signals Acquisition Start Wait Frame Start Wait Exposure Active Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger			1	1	1	1	1	1
Minimum Output Pulse Width Line Source Signals Acquisition Start Wait Frame Start Wait Exposure Active Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger						1	1	1
Line Source Signals Acquisition Start Wait Frame Start Wait Exposure Active Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger	•	•	•	•	٠	٠	٠	٠
Acquisition Start Wait Frame Start Wait Exposure Active Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger		٠	٠	•	٠	•	•	٠
Frame Start Wait Exposure Active Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger								
Exposure Active Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger	•	•	•	•	•	•	٠	•
Flash Window User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger	•	٠	٠	•	•	•	٠	٠
User Output Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger	•	٠	٠	•		•	٠	٠
Sync User Output Timer Active Image Acquisition Control Acquisition Start Trigger			•	•	•			٠
Timer Active Image Acquisition Control Acquisition Start Trigger	•	•	•	•	•	•	•	•
Image Acquisition Control Acquisition Start Trigger	•	•	•	•	٠	•	•	•
Acquisition Start Trigger	•	•	٠	•	•	•	•	•
Frame Start Trigger	•	•	٠	•	٠	•	•	٠
rame start mgget	•	•	•	•	٠	•	•	٠
Triggered by Software	•	•	•	•	٠	•	•	•
Triggered by Hardware	•	•	•	•	٠	•	•	•
Trigger Delay	•	•	•	•	٠	•	•	•
Acquisition Status	•	•	•	•	٠	•	•	•
GigE Vision 2.0						•	•	•
Standard Features								
Gain	•	•	•	•	•	•	•	•
Gain Auto	•	٠	•	•	•	•	•	•
Black Level	•	٠	•	•	•	•	•	•
DigitalShift	•	•	•	•	•		•	٠
Region of Interest (ROI)	•	•	•	•	•	•	•	•
Binning Horizontal	•	•	•	•	•	•	•	
Binning Vertical	•	•	•	•	•	•	•	•
Decimation Horizontal			•1		•			
Decimation Vertical		٠	•1		٠			
Scaling Horizontal					٠			
Scaling Vertical					•			
Reverse X (Horizontal Mirroring)	•	٠	٠	•	•	٠	٠	•
Reverse Y (Vertical Mirroring)		•				٠	• <sup>2</sup>	•
Stacked Zone Imaging		•						
Gamma Correction	•	٠	•	•	•	•	٠	•
Exposure Mode: Trigger Width	•	•				•	•	
(Control via external trigger)								c.
Exposure Mode Timed (Control vi		•	•					•5
Exposure Auto Auto Function Profile	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	-
Lookup Table (LUT)								•
Test Images	•	•	•	•	•	•	•	•
Sequencer Stacked DOI	•	•	٠	•	•			•
Stacked ROI						•	•	
Ultra Short Exposure Time Mode						•	• 3	
GigE Vision 2.0								
Precision Time Protocol (IEEE 158							• 3	
Action Commands (Synchronous	88)						• 3	•

Scheduled Action Commands

<sup>1</sup> not available for acA1280-60gm/gc <sup>2</sup> not available for acA640-121gm <sup>3</sup> only available for acA720-290gm/gc, acA1440-73gm/gc, acA1920-50gm/gc <sup>5</sup> only available for acA4024-8gx <sup>4</sup> not available for acA1920-40gx and acA1920-50gx <sup>5</sup>

•

•

•

# FEATURES ACE GIGE



SENSORS ACE GIGE CAMERA MODELS	acA640-120gx acA780-75gx				ON SEMI- CONDUCTOR MT9J/F acA3800-10gx	ON SEMI- CONDUCTOR PYTHON acA640-300gx	acA640-121gm acA720-290gx	SONY STARVIS acA3088-16g acA4024-8g;
	acA1300-22gx acA1300-30gx acA1600-20gx			acA2500-14gx	acA4600-7gc	acA800-200gx acA1300-75gx acA1920-48gx acA2500-20gx	acA1440-73gx acA1920-40gx acA1920-50gx acA2040-35gx acA2040-35gx acA2440-20gx acA4096-11gx acA4112-8gx	SONY EXMOR R acA5472-5g;
Light Control Features	mono color r	nono color	mono color	mono color	mono color	mono color		mono color
SLP Feature						•	•1	•
Miscellaneous								
Remove Parameter Limits User Defined Values	•	•	•	•	•	•	•	•
Device Information Parameters	•	•	•	•	•	•	•	•
User Sets (Configuration Sets)	•	•	•	•	•	•	•	•
Device Temperature	-	•		-		•	•	•
Vignetting Correction						-	•2	• 3
								•
Color Creation and Enhanceme sRGB Gamma Correction	ent •	•	•	•	•	•	•	•
Balance White	•	•	•	•	•	•	•	•
(Manual White Balance)	-			-	-			•
Balance White Auto (Automatic White Balance)	•	•	•	•	•	•	•	•
Light Source Presets	•	•	•	•	•	•	٠	•
Color Transformation (RGB to RGB)	•	•	•	•	•	•	•	•
Color Adjustment ( <u>6 axis Hue/Saturation)</u> PGI	•	•	•	•	•	•	•	• 5
Chunks								
Timestamp	•	•	•	•	•	•	•	•
Line Status All	•	•	•	•	•	•	•	•
CRC Checksum	•	•	•	•	•	•	•	•
Trigger Input Counter	•	•	•	٠	•	•	٠	•
Frame Counter	•	•	•	•	•	•	•	•
Sequence Set Index	•	•	•	•	•	•	•	•
Exposure Time	•	•	•	•	•	•	•	•
Gain Raw						•	•	•
Event Reporting								
Exposure End	•	•	•	٠	•	•	٠	•
Frame Start	•	•	•	•	•	•	•	•
Frame Start Overtrigger	•	•	•	•	•	•	•	•
Acquisition Start	•	•	•	•	•	•	•	•
Acquisition Start Wait						•	•	•
Acquisition Start Overtrigger	•	•	•	•	•	•	•	•
Critical Temperature						•	•	
Over Temperature						•	•	
<b>Pixel Formats</b> Mono 8	•	•	•	•	•	•	•	•
Mono 10	-	•		-		•	-	*
Mono 10p (Mono 10 Packed)						•		
Mono 12	•	•	•	•	•		•	•
Mono 12 Packed (Mono 12	•	•	•	•	•		•	•
Packed) YCbCr422_8 (YUV422_8)	•	•	•	•	•	•	•	•
Bayer 8	•	•	•	•	•	•	•	-
Bayer 10	•	•	<b>~</b>	•	•	•		•
Bayer 10 (Bayer 10 Packed)						•		
Bayer 12	•	•	•	•	•	•	•	•
Bayer 12 (Bayer 12 Packed)	•	•	•	•	•		•	•
Sayar Izp (Dayar Iz Facked)								

<sup>1</sup> not available for acA640-121gm

<sup>2</sup> not available for acA640-121gm, acA720-290gx, acA1440-73gx, acA2040-35gx, acA2440-20gx

<sup>3</sup> only available for acA3088-16gx, acA4024-8gx

<sup>4</sup> not available for acA640-121gm

<sup>5</sup> only available for acA5472-5gm

# FEATURES ACE CAMERA LINK

SENSORS	AMS				
ACE CAMERA LINK CAMERA MODELS	acA2000-				
	acA2040	-180KX			
	mono	color			
Physical Interface and I/O Control					
Configurable Input/Output Lines	•				
General Purpose I/O	1				
Debouncer	•				
I/O Signals: Exposure Active Signal	•				
Minimum Output Pulse Width	•				
Image Acquisition Control Trigger Delay	•				
Acquisition Status	•				
Trigger Wait / Trigger Ready Signal	•				
Selectable Camera Link Baud Rate	•				
Color Creation and Enhancement					
Balance White (Manual White Balance)		•			
sRGB Gamma Correction		•			
Color Transformation		•			
Standard Features					
Gain	•				
Black Level	•				
Area of Interest	•				
Gain Auto	•				
Exposure Mode: Timed (Control via API)	•				
Exposure Mode: Trigger Width (Control via external trigger)	•				
Auto Function Profile	•				
Decimation Vertical	٠				
Binning	•				
Reverse X (Horizontal Mirroring)	•				
Reverse Y (Vertical Mirroring)	•				
Lookup Table (LUT)	•				
Remove Parameter Limits	•				
Test Images	•				
Sequencer	•				
Device Information Parameters	•				
Chunks					
Sequence Set Index	•				
Exposure Time	•				
Pixel Formats Mono 8	•				
Mono 10	•				
Mono 12	•				
Bayer GB 8		•			
Bayer GB 10		•			
Bayer GB 12		•			
Adjustable Camera Link Pixel Clock Speed	•				
<b>Miscellaneous</b> User Defined Values					
Remove Parameter Limits	•				
User Sets (Configuration Sets)	•				



SENSOR FAMILY BOOST CAMERA MODELS	boA409	SONY PREGIUS boA4096-93cx boA4112-68cx		<b>DNDUCTOR</b> 00-45cx 00-36cx 00-16cx
	mono	color	mono	color
Physical Interface and I/O Control				
Configurable Input/Output Lines				
Inputs	-	1	1	L
Outputs	_	1	-	L
General Purpose I/O		2	2	
Minimum Output Pulse Width		1		1
Line Source Signals				
Acquisition Trigger Wait / Frame Burst Trigger Wait				
Exposure Active		•		•
Frame Trigger Wait		•		•
Input Filter		•		•
Serial Communication (UART)		•		•
Timer Active		•		•
User Output		•		•
Image Acquisition Control				
Acquisition Abort			•	
Acquisition Start Trigger			•	
Acquisition Status			•	•
Acquisition Single Frame				•
Acquisition Stop		•		•
Frame Burst Start Trigger			•	
Frame Start Trigger	•		•	•
High Speed Burst Mode		1		1
Trigger Delay				•
Triggered by Hardware			•	•
Triggered by Software	•		•	
Standard Features Auto Function Profile		1		1
Binning Horizontal			•	
Binning Vertical			•	
Black Level		-		
Digital Shift				
Exposure Auto		•		•
Exposure Mode: Trigger Width (Control via external trigger)				
Exposure Time				•
Gain		•		•
Gain Auto				•
Gamma Correction		•		•
Lookup Table (LUT) 12Bit	•			
Multiple ROI		1		1
Region of Interest (ROI)			(	•
Reverse X (Horizontal Mirroring)				•
Reverse Y (Vertical Mirroring)	•			
Test Patterns	•		•	•
Miscellaneous				
Device Information Parameters				•
Device Temperature				•
User Defined Values				•
User Sets (Configuration Sets)				•
	-			

<sup>1</sup> For latest information on availability of features, please visit *bas/werweb.com/boost* 

SENSOR FAMILY BOOST CAMERA MODELS	boA409	P <b>REGIUS</b> 96-93cx 12-68cx	ON SEMICO boA450 boA650 boA810	)0-36cx
	mono	color	mono	color
Color Creation and Enhancement				
Balance White (Manual White Balance)		٠		•
Balance White Auto (Automatic White Balance)		$\bullet^1$		$\bullet^1$
Brightness		•		•
Color Adjustment (6 axis Hue/Saturation)		•		•
Contrast Enhancement		•		•
Hue/Saturation		•		٠
Light Source Presets		٠		•
Pixel Formats				
Mono 8			•	
Mono 10	(	1	•	1
Mono 12	(		•	•
YCbCr422_8 (YUV422_8)		•		٠
Bayer 8		•		•
Bayer 10		$\bullet^1$		$\bullet^1$
Bayer 12		•		•
RGB 8		•		•

CoaxPress

<sup>1</sup> For latest information on availability of features, please visit *bas/werweb.com/boost* 





BCON for LVDS

BCON for MIPI

SENSOR FAMILY
DART CAMERA MODELS

Sets Constrainty     DATUSE     DATUSE     DATUSE     DATUSE       DATUSE     Not reaccounce     Story region     FOR UNDS       Datuse     Not sentendence     Story region     FOR UNDS       Lance     Not sentendence     Story region     FOR UNDS       Lance Store Compatible     Story region     Story region     FOR UNDS       Lance Store Compatible     Story region     Story region     FOR UNDS       Lance Store Compatible     Story region     Story region     FOR UNDS       Lance Store Compatible     Story region     Story region     FOR UNDS       Lance Store Compatible     Story region     Story region     Story region       Lance Store Compatible     Story region     Story region     Story region       Lance Store Compatible     Story region     Story region     Story region       Lance Store Compatible     Story region     Story region     Story region       Lance Store Store Store Store Store Store Story region     Store Store Story region     Stor		VIGION				101 2003			
INSR 20 Substrated       •         USS 20 Substrated       •         Physical Interface and I/O Control       •         Debounce       •         Puptical Interface and I/O Control       •         Debounce       •         Puptical Interface and I/O Control       •         Pupti Held Off Time       •         Pupti Held Off Time       •         Pupti Held Off Time       •         VO Signal       •       •         Papowne Active Signal       •       •         Ines Source Signals: User Output       •       •         Irage Acquisition Control       •       •         France Sact Inage       •       •         Irageard by Softwaie       •       •         Irageard by Softwaie       •       •         Recense X (Indicated Mirroring)       •       •         Recense X (Indicated Mirroring)       •       •         Recense Medic Triageard by Softwaie       •       •         Intermode Medic       •       •         Recense X (Indicated Mirroring)       •       •         Recense X (Indicated Mirroring)       •       •         Recense X (Inditacit Mirroring)       •       •		AR0: MT9F <b>e2</b>	onductor 134 9031 V	Sony F				DART BCON FOR MIPI	
LSB 3.0 Subcripted       •         LSB 2.0 Subcripted       •         Debourner       •         Minhum Clupt Puise Width       •         Input Filter Time       •         Ingereat Active Signal       •         Lens Source Signals: User Output       •         Lens Source Signals: User Output       •         Innege Acquisition Control       •         Frame Start Tinger       •         Ingereat by Software       •         Ingereat by Software       •         Calin Acto       •         Back Level       •         Binning Nortical Minroing)       •         Everses V (Vertical Minroing)       •         Everses V (Vertical Minroing)       •         Exposure Acto       •         Exposure Acto       •         Auto Finder Under Co		mono	color	mono	color	mono	color	color	
ICBR 2.0 Backward Comparible         Physical Interface and I/O Control         Debouncer         Debouncer         Iminium Output Pulse Width         Imiguit Filter Time         Imigui	Interface Features								
Physical Interface and I/O Control         Debouncer         Minimum Gubup Puise Width         Input If Ide Time         Input If Ide Off Time         VO Signals         Excourse Active Signal         Extensive Active Signal         Line Sevice Signals: User Output         User Output         Line Sevice Signals: User Output         Tinggered by Herdware         Tinggered by Herdware         Tinggered by Software         Tinggered by Software         Gain Acto         Black Level         Gain Acto         Black Level         Color Control         Frame Set Tingger         Tinggered by Software         Of Inning Horizontal         Denning Vortical         Black Level         Color Contal Minoring)         Reverse X (Unatcal Minoring)		•						_	
Debourcer       •         Input Filter Time       •         Input Filter Time       •         Input Filter Time       •         Input Filter Time       •         (7) Signals       •         Exposure Active Signal       •         User Output       •         User Output       •         Trings Acquisition Control       •         Frame Start Trigger       •         Inggered by Bardware       •         Inggered by Software       •         Triggered by Software       •         Gain Audo       •         Gain Audo       •         Gain Audo       •         Binning Horizontal	USB 2.0 Backward Compatible	•							
Debourcer       •         Input Filter Time       •         Input Filter Time       •         Input Filter Time       •         Input Filter Time       •         (7) Signals       •         Exposure Active Signal       •         User Output       •         User Output       •         Trings Acquisition Control       •         Frame Start Trigger       •         Inggered by Bardware       •         Inggered by Software       •         Triggered by Software       •         Gain Audo       •         Gain Audo       •         Gain Audo       •         Binning Horizontal	Physical Interface and I/O Control							_	
input Filter Time   input Hold Off Time   (Vo Signals   Excosure Active Signal   Excosure Active Signal   Line Source Signals: User Output   Image Acquisition Control   Frame Start Triager   Fringered by Software   Irrigaered by Software   Irrigaered Delay   Acquisition Statu   Standard Features   Gain   Gain Auto   Black Leval   Breack Statu   Standard Features   Gain Auto   Blanck Iveal   Binning Vartical   Preverse Y (Vertical Mirroring)   Gama Correction   Gamma Correction   Exposure Mode: Timed (Control via API)   Exposure Mode: Tinger Control via external trigger)   Itser Patterns   Miser Balances   User Defined Values   Device Information Profile   Exposure Mode: Tinger (Control via external trigger)   Itser Settinger Values   Device Information Profile   Itser Settinger   Device Information Profile   Exposure Mode: Tinger (Values)   Device Temperature   Cotro Creation and Enhancement   Balance White (Manual White Balance)   Pedi   Charte Cattle Mundation White Balance)   Edaklaght Compensation   Contrast Enhancement   Balance White (Manual White Balance)   Pedi   Councer Statle Mode   Source Statle Mode   Source Statle Mode   Source Statle Mode<		•							
Input Hold Off Time       •         VO Signals       Exposure Active Signal       •         Exposure Active Signal       •       •         Ine Source Signals: User Output       •       •         Image Acquisition Control       •       •         Frame Start Integer       •       •         Triggered by Software       •       •         Triggered by Software       •       •         Triggered by Software       •       •         Gain       •       •       •         Gain and the processing hardware       •       •       •         Black Level       •       •       •       •         Reverse X (Horizontal Mirronng)       •       •       •       •       •         Correction       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •		•					•	_	
VO Signals         Exposure Active Signal         Exposure Active Signal         Deer Output         Uer Output         Line Source Signals: User Output         Image Acquisition Control         Frame Start Triager         Fring Pared by Hardware         Triggered by Hardware         Triggered by Software         Triggered by Software         Triggered by Hardware         Triggered by Hardware         Triggered by Software         Cain A Lto         Black Level         Region of Interest (RO)         Blanning Horizontal         Binning Vertical         Breverse X (Vertical Mirroring)         Reverse X (Vertical Mirroring)         Exposure Mode: Tringer Width (Control via external trigger)         Exposure Mode: Tringer Width (Control via external trigger)         Juser Defined Values         User Defined Values         Device Information Parameters								_	
Exposing Active Signal       •         Flash Window Signal       •         User Output       •         User Output       •         Image Acquisition Control         Frime Start (Trigger       •         Triggered by Software       •         Triggered by Software       •         Triggered by Software       •         Triggered by Software       •         Acquisition Status       •         Standard Features       •         Gain       •         Black Level       •         Binning Norzontal       •         Binning Norzontal       •         Binning Vertical       •         Reversex (RCI)       •         Reversex Y (Vertical Mirroring)       •         Reversex Y (Vertical Mirroring)       •         Reversex Y (Vertical Mirroring)       •         Camma Correction       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Exposure Mode: Tinger Width (Cont	Input Hold Off Time							-	
Exposing Active Signal       •         Flash Window Signal       •         User Output       •         User Output       •         Image Acquisition Control         Frime Start (Trigger       •         Triggered by Software       •         Triggered by Software       •         Triggered by Software       •         Triggered by Software       •         Acquisition Status       •         Standard Features       •         Gain       •         Black Level       •         Binning Norzontal       •         Binning Norzontal       •         Binning Vertical       •         Reversex (RCI)       •         Reversex Y (Vertical Mirroring)       •         Reversex Y (Vertical Mirroring)       •         Reversex Y (Vertical Mirroring)       •         Camma Correction       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Exposure Mode: Tinger Width (Cont	1/O Signals							-	
Flash Window Signal       -1       -2       -2         User Output       •       •       •         Line Source Signals: User Output       •       •       •         Image Acquisition Control       •       •       •       •         Frame Start Irigger       •       •       •       •       •         Triggeread by Software       •	· · · · · · · · · · · · · · · · · · ·								
User Output       •         Line Source Signals: User Output       •         Image Acquisition Control       •         Frame Start, Trigger       •         Triggered by Ardware       •         Inggered by Soltware       •         Triggered by Soltware       •         Acquisition Status       •         Standard Features       •         Gain       •         Black Level       •         Branning Horizontal       •         Binning Vertical       •         Binning Vertical       •         Binning Vertical       •         Branning Vertical       •         Branning Vertical       •         Branning Vertical       •         Camma Correction       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Camma Correction       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Obvice Information Parameters       •         User Defined Values       •         Device Information Parameters       •         User Sets (Configuration Sets)       •         Device Information Presets       •         Luder Schrace								_	
Line Source Signals: User Output       •         Image Acquisition Control         Frome Start Trigger       •         Triggered by Mardware       •         Triggered by Software       •         Triggered by Software       •         Standard Features       •         Gain       •         Gain Auto       •         Black Level       •         Region of Interest (ROI)       •         Binning Vertical       •         Reverse X (Horizontal       •         Reverse X (Vertical Mirroring)       •         Gamma Correction       •         Exposure Mode: Timged Width (Control via API)       •         Exposure Mode: Timged Width (Control via API)       •         Exposure Auto       •         Auto Function Profile       •         Gain Configuration Sets)       •         Device Information Parameters       •         User Set (Configuration Sets)       •         Device Information Parameters       •         Lenger White Auto (Automatic White Balance)       •         Hue/Saturation       •       •         Balakingt Compensation       •       •         Auto Function Headeneent       • <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td>								-	
Image Acquisition Control         Frame Start Trigger         Triggered by Jordware         Triggered by Software         Triggered by Software         Triggered by Software         Cadinistion Status         Standard Features         Gain         Gain Auto         Black Level         Black Level         Region of Interest (ROI)         Binning Horizontal         Binning Horizontal         Binning Vertical         Reverse X (Norizontal Mirroring)         Reverse X (Norizontal Mirroring)         Reverse X (Norizontal Mirroring)         Carima Correction         Exposure Mode: Timeg(Control Via API)         Exposure Mode: Timeg (Control Via API)         Exposure Mode: Timeg (Control Via API)         User Defined Values         Device Information Parameters         User Defined Values         Device Information Stats)         Device Information Parameters         Device Information Parameters         Device Information Stats)         Device Information Parameters								_	
Irragered by Hardware       •         Triggered by Software       •         Triggered by Software       •         Acquisition Status       •         Standard Features       •         Gain       •         Black Level       •         Reverse X (Horizontal Mirroring)       •         Reverse X (Vertical Mirroring)       •         Reverse X (Vertical Mirroring)       •         Reverse X (Vertical Mirroring)       •         Exposure Mode: Trigger Width (Control via external trigger)       •'         Test Patterns       •         Device Information Parameters       •         User Defined Values       •         Device Information Parameters       •         User Sets (Configuration Satis)       •         Device Information Parameters       •         User Defined Values       •         Device Information Parameters       •         User Sets (Configuration Satis)       •         Device Information Parameters       •         User Defined Values       •								-	
Triggered by Hardware       •         Triggered by Software       •         Triggered by Software       •         Acquisition Status       •         Standard Features       •         Gain       •         Gain Auto       •         Black Level       •         Region of Interest (ROI)       •         Binning Horizontal       •         Binning Vertical       •         Reverse X (Horizontal Mirroring)       •         Reverse X (Horizontal Mirroring)       •         Garma Correction       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Garma Correction Profile       •         Exposure Mode: Tinger Width (Control via external trigger)       •         User Defined Values       •         Device Information Parameters       •         User Sets (Configuration Sets)       •         Device Temperature       •         Color Creation and Ehancement       •         Balance White Auto (Automatic White Balance)       •         Pol       •       •         Light Source Presets       •       •         Balance White (Manual White Balance)       •       •									
Triggere Delay       •         Acquisition Status       •         Standard Features       •         Gain       •         Gain Auto       •         Black Level       •         Black Level       •         Binning Horizontal       •         Binning Horizontal       •         Reverse X (Horizontal Mirroring)       •         Reverse X (Horizontal Mirroring)       •         Reverse X (Horizontal Mirroring)       •         Gamma Correction       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Auto Function Profile       •         Test Patterns       •         User Defined Values       •         Device Information Parameters       •         User Sets (Configuration Sets)       •         Device Temperature       •         Color Creation and Enhancement       •         Balance White Auto (Automatic White Balance)       •         Huk/Saturation       •         PGi       •         Light Source Presets       •         Balance White (Manual White Balance)       •         Balance White (Manual White Balance)       •         Fightnes								_	
Trigger Delay         Acquisition Status         Standard Features         Gain       •         Gain Auto       •         Black Level       •         Region of Interest (ROI)       •         Binning Horizontal       •         Binning Vertical       •         Reverse X (Horizontal Mirroring)       •         Gamma Correction       •         Exposure Mode: Tinger (Control via external trigger)       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Exposure Mode: Tinger Width (Control via external trigger)       •         Exposure Auto       •         Auto Function Profile       •         Test Patterns       •         User Defined Values       •         Device Information Parameters       •         User Sets (Configuration Sets)       •         Pol       •         Light Source Presets       •							-	-	
Acquisition Status       •         Standard Features         Gain Auto       •         Black Level       •         Region of Interest (ROI)       •         Binning Horizontal       •         Binning Nertical       •         Reverse X (Horizontal Mirroring)       •         Reverse X (Horizontal Mirroring)       •         Garma Correction       •         Exposure Mode: Tinged (Control via API)       •         Exposure Mode: Tinged Width (Control via external trigger)       •         Device Information Profile       •         Device Information Profile       •         Device Information Praneters       •         User Defined Values       •         Device Information Praneters       •         User Sets (Configuration Sets)       •         Device Temperature       •         Color Creation and Enhancement       •         Balance White Auto (Automatic White Balance)       •         Fightness       •         Balance White (Manual White Balance)       • <tr< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td>-</td></tr<>							-	-	
Standard Features         Gain       •         Gain Auto       •         Black Level       •         Binning Vertical       •         Reverse X (Horizontal Mirroring)       •         Reverse X (Horizontal Mirroring)       •         Gamma Correction       •         Exposure Mode: Timed (Control via API)       •         Exposure Mode: Trigger Width (Control via external trigger)       • <sup>1</sup> Test Patterns       •         Miscellaneous       •         User Defined Values       •         Device Information Profile       •         Test Patterns       •         Blance White Auto (Automatic White Balance)       •         Balance White Auto (Automatic White Balance)       •         PGI       •         Light Domenation       •         Balance White (Manual White Balance)       •         B		•			•			-	
Gain       •       •         Gain Auto       •       •         Gain Auto       •       •         Black Level       •       •         Region of Interest (ROI)       •       •         Binning Horizontal       •       •         Binning Vertrical       •       •         Reverse X (Horizontal Mirroring)       •       •         Garma Correction       •       •         Exposure Mode: Timed (Control via API)       •       •         Exposure Mode: Trigger Width (Control via external trigger)       •       •         Auto Function Profile       •       •         Test Patterns       •       •         Device Information Profile       •       •         User Defined Values       •       •         Device Temperature       •       •         Color Creation and Enhancement       •       •         Balance White Auto (Automatic White Balance)       •       •         PGI       •       •       •         Uight Source Presets       •       •       •         Balance White (Manual White Balance)       •       •       •         Antt-Flicker       •       • </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td>								-	
Gain Auto       •         Black Level       •         Region of Interest (ROI)       •         Binning Horizontal       •         Binning Vertical       •         Reverse X (Horizontal Mirroring)       •         Reverse X (Vertical Mirroring)       •         Gamma Correction       •         Exposure Mode: Trigger Width (Control via API)       •         Exposure Mode: Trigger Width (Control via external trigger)       •         Fast Patterns       •         Device Information Parameters       •         User Defined Values       •         Device Information Parameters       •         Device Information Parameters       •         Device Temperature       •         Color Creation and Enhancement       •         Balance White Auto (Automatic White Balance)       •         Hue/Saturation       •         PGI       •         Light Source Presets       •         Balance White (Manual White Balance)       •		•							
Region of Interest (ROI)       • </td <td>Gain Auto</td> <td>•</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td>	Gain Auto	•						_	
Region of Interest (RO) • •   Binning Horizontal • •   Binning Vertical • •   Reverse X (Horizontal Mirroring) • •   Reverse Y (Vertical Mirroring) • •   Garma Correction • •   Exposure Mode: Tinger Width (Control via external trigger) • <sup>1</sup> Exposure Mode: Trigger Width (Control via external trigger) • <sup>1</sup> Exposure Mode: Trigger Width (Control via external trigger) • <sup>1</sup> Exposure Mode: Tringer Width (Control via external trigger) • <sup>1</sup> Exposure Auto •   Auto Function Profile •   Test Patterns •   Øevice Information Parameters •   User Sets (Configuration Sets) •   Device Imperature •   Balance White Auto (Automatic White Balance) •   Hue/Saturation •   PGI •   Light Source Presets •   Balance White (Manual White Balance) •	Black Level	•							
Binning Horizontal       •       •       and respective software. For more details, visit basierweb.com/embedded-vision         Reverse X (Horizontal Mirroring)       •       •       more details, visit basierweb.com/embedded-vision         Gamma Correction       •       •       •       •         Exposure Mode: Tinger Width (Control via external trigger)       •       •       •       •         Exposure Mode: Trigger Width (Control via external trigger)       •       •       •       •         Auto Function Profile       •       •       •       •       •         Test Patterns       •<	Region of Interest (ROI)	•		(					
Balance White Management       Image Service       Ima	Binning Horizontal	•		•					
Reverse Y (Vertical Mirroring) • •   Reverse Y (Vertical Mirroring) • •   Garma Correction • •   Exposure Mode: Trigger Width (Control via external trigger) • •   Exposure Auto • •   Auto Function Profile • •   Test Patterns • •   Miscellaneous User Defined Values •   User Defined Values • •   Device Information Parameters • •   Device Temperature • •   Color Creation and Enhancement • •   Balance White Auto (Automatic White Balance) • •   Hue/Saturation • •   PGI • •   Light Source Presets • •   Backlight Compensation • •   Anti-Flicker • •   Balance White (Manual White Balance) •	Binning Vertical	•		•					
Reverse Y (Vertical Mirroring)       •         Gamma Correction       •         Exposure Mode: Tringer (Control via API)       •         Exposure Audo       •         Auto Function Profile       •         Test Patterns       •         Miscellaneous       •         User Defined Values       •         Device Information Parameters       •         User Sets (Configuration Sets)       •         Device Temperature       •         Color Creation and Enhancement       •         Balance White Auto (Automatic White Balance)       •         PGI       •         Light Source Presets       •         Backlight Compensation       •         Anti-Flicker       •         Contrast Enhancement       •         Balance White (Manual White Balance)       •         Settingth Compensation       •         Anti-Flicker       •         Contrast Enhancement       •         Balance White (Manual White Balance)       •         S-Curve Contrast Mode       •	Reverse X (Horizontal Mirroring)	•							
Exposure Mode: Timed (Control via API)       •         Exposure Mode: Trigger Width (Control via external trigger)       •         Exposure Auto       •         Auto Function Profile       •         Test Patterns       •         Miscellaneous       •         User Defined Values       •         Device Information Parameters       •         User Sets (Configuration Sets)       •         Device Temperature       •         Color Creation and Enhancement       •         Balance White Auto (Automatic White Balance)       •         Hue/Saturation       •         PGI       •         Light Source Presets       •         Backlight Compensation       •         Anti-Flicker       •         Contrast Enhancement       •         Brightness       •	Reverse Y (Vertical Mirroring)	•						-	
Exposure Mode: Trigger Width (Control via external trigger)       1       1         Exposure Auto       •       •         Auto Function Profile       •       •         Test Patterns       •       •         Miscellaneous       •       •         User Defined Values       •       •         Device Information Parameters       •       •         Device Information Parameters       •       •         Device Information Parameters       •       •         Device Temperature       •       •         Color Creation and Enhancement       •       •         Balance White Auto (Automatic White Balance)       •       •         Hue/Saturation       •       •       •         PGI       •       •       •         Light Source Presets       •       •       •         Backlight Compensation       •       •       •         Anti-Flicker       •       •       •         Contrast Enhancement       •       •       •         Brightness       •       •       •         Balance White (Manual White Balance)       •       •       •         S-Curve Contrast Mode       •	Gamma Correction	•						_	
Exposure Auto       •       •         Auto Function Profile       •       •         Test Patterns       •       •         Miscellaneous       •       •         User Defined Values       •       •         Device Information Parameters       •       •         Device Information Parameters       •       •         Device Information Parameters       •       •         Device Temperature       •       •         Device Temperature       •       •         Balance White Auto (Automatic White Balance)       •       •         Hue/Saturation       •       •       •         PGI       •       •       •         Light Source Presets       •       •       •         Backlight Compensation       •       •       •         Anti-Flicker       •       •       •         Contrast Enhancement       •       •       •         Brightness       •       •       •         Balance White (Manual White Balance)       •       •       •         S-Curve Contrast Mode       •       •       •	Exposure Mode: Timed (Control via API)	٠		•				_	
Auto Function Profile       •       •         Test Patterns       •       •         Miscellaneous       •       •         User Defined Values       •       •         Device Information Parameters       •       •         User Sets (Configuration Sets)       •       •         Device Temperature       •       •         Color Creation and Enhancement       •       •         Balance White Auto (Automatic White Balance)       •       •         Hue/Saturation       •       •         PGI       •       •         Light Source Presets       •       •         Backlight Compensation       •       •         Anti-Flicker       •       •         Contrast Enhancement       •       •         Brightness       •       •         Balance White (Manual White Balance)       •       •         Balance White (Manual White Balance)       •       •	Exposure Mode: Trigger Width (Control via external trigger)	•	1				1	_	
Test Patterns••Miscellaneous User Defined Values••Device Information Parameters••User Sets (Configuration Sets)••Device Temperature••Color Creation and Enhancement Balance White Auto (Automatic White Balance)••Hue/Saturation••PGI••Light Source Presets••Backlight Compensation••Anti-Flicker••Contrast Enhancement•Bightness•Balance White Balance)•••	Exposure Auto	•						_	
Miscellaneous         User Defined Values       •         Device Information Parameters       •         User Sets (Configuration Sets)       •         Device Temperature       •         Color Creation and Enhancement       •         Balance White Auto (Automatic White Balance)       •         Hue/Saturation       •         PGI       •         Light Source Presets       •         Backlight Compensation       •         Anti-Flicker       •         Contrast Enhancement       •         Brightness       •         Balance White (Manual White Balance)       •		•						_	
User Defined Values••Device Information Parameters••User Sets (Configuration Sets)••Device Temperature••Color Creation and Enhancement••Balance White Auto (Automatic White Balance)••Hue/Saturation••PGI••Light Source Presets••Backlight Compensation••Anti-Flicker••Contrast Enhancement••Brightness••Balance White (Manual White Balance)••Outrast Mode••	Test Patterns	•						_	
Device Information Parameters••User Sets (Configuration Sets)••Device Temperature••Color Creation and Enhancement••Balance White Auto (Automatic White Balance)••Hue/Saturation••PGI••Light Source Presets••Backlight Compensation••Anti-Flicker••Contrast Enhancement••Brightness••Balance White (Manual White Balance)••	Miscellaneous								
User Sets (Configuration Sets)••Device Temperature•Color Creation and EnhancementBalance White Auto (Automatic White Balance)•Hue/Saturation•PGI•Light Source Presets•Backlight Compensation•Anti-Flicker•Contrast Enhancement•Brightness•Balance White (Manual White Balance)••• <td>User Defined Values</td> <td>•</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td>	User Defined Values	•						_	
Device Temperature•Color Creation and EnhancementBalance White Auto (Automatic White Balance)••Hue/Saturation••PGI••Light Source Presets••Backlight Compensation••Anti-Flicker••Contrast Enhancement••Brightness••Balance White (Manual White Balance)•••		•						_	
Color Creation and Enhancement         Balance White Auto (Automatic White Balance)         Hue/Saturation         PGI         Light Source Presets         Backlight Compensation         Anti-Flicker         Contrast Enhancement         Brightness         Balance White (Manual White Balance)         S-Curve Contrast Mode		•						_	
Balance White Auto (Automatic White Balance)       •       •         Hue/Saturation       •       •         PGI       •       •         Light Source Presets       •       •         Backlight Compensation       •       •         Anti-Flicker       •       •         Contrast Enhancement       •       •         Brightness       •       •         Balance White (Manual White Balance)       •       •         S-Curve Contrast Mode       •       •	Device Temperature							_	
Hue/Saturation       •       •       •         PGI       •       •       •         Light Source Presets       •       •       •         Backlight Compensation       •       •       •         Anti-Flicker       •       •       •         Contrast Enhancement       •       •       •         Brightness       •       •       •         Balance White (Manual White Balance)       •       •       •         S-Curve Contrast Mode       •       •       •									
PGI       •       •       •         Light Source Presets       •       •       •         Backlight Compensation       •       •       •         Anti-Flicker       •       •       •         Contrast Enhancement       •       •       •         Brightness       •       •       •         Balance White (Manual White Balance)       •       •       •         S-Curve Contrast Mode       •       •       •			•		•		•	-	
Light Source Presets••Backlight Compensation•Anti-Flicker•Contrast Enhancement•Brightness•Balance White (Manual White Balance)•S-Curve Contrast Mode•			•		•		•	-	
Backlight Compensation       •         Anti-Flicker       •         Contrast Enhancement       •         Brightness       •         Balance White (Manual White Balance)       •         S-Curve Contrast Mode       •		•			-		•	-	
Anti-Flicker       •       •         Contrast Enhancement       •       •         Brightness       •       •         Balance White (Manual White Balance)       •       •         S-Curve Contrast Mode       •       •			•		•		•	-	
Contrast Enhancement••Brightness•Balance White (Manual White Balance)•S-Curve Contrast Mode•							-	_	
Brightness•Balance White (Manual White Balance)••S-Curve Contrast Mode••							-	_	
Balance White (Manual White Balance)••S-Curve Contrast Mode••								-	
S-Curve Contrast Mode			•		•		•	_	
sRGB Gamma Correction • •	S-Curve Contrast Mode		•		٠		•	-	
	sRGB Gamma Correction		•		•		•		

 $^{\rm 1}$  only for models featuring ON Semiconductor MT9P031 sensor  $^{\rm 2}$  only for models featuring Sony IMX334 sensor

FEATURES DART							
			SB SION		BC	ON for LVDS	BCON for MIPI
SENSOR FAMILY DART CAMERA MODELS	DART USB		DART BCON FOR LVDS		DART BCON FOR MIPI		
DARTCAMERA MODELS	ON Semico AR01 MT9P0 <b>e2V</b> EV76C	34 )31 /	Sony F IMX334 ar		POR		
	mono	color	mono	color	mono	color	color
Pixel Formats							
Mono8	•		•		•		
Mono12	•		•		٠		
Mono12p			•	•			<ul> <li>The feature set depends on the processing hardware</li> </ul>
YCbCr422_8		•		٠		•	and respective software. For
Bayer8		٠		٠		٠	more details, visit
Bayer12		•		•		•	<ul> <li>baslerweb.com/ embedded-vision</li> </ul>
Bayer12p				•			
RGB8		٠		٠		٠	_
BGR8				٠			

### FEATURES PULSE



BASLER CAMERAS	PULSE	
	mono	color
Interface Features		
USB 3.0 Superspeed	•	
USB 2.0 Backward Compatible	•	
Image Acquisition Control		
Frame Start Trigger	•	
Triggered by Software	•	
Acquisition Status	•	
<b>Standard Features</b> Gain		
Gain Auto	•	
Black Level	•	
Region of Interest	•	
Binning Horizontal	•	
Binning Vertical	•	
Reverse X (Horizontal Mirroring)	•	
Reverse Y (Vertical Mirroring)	•	
Gamma Correction (User)	•	
Exposure Control via API	•	
Automatic Exposure Control	•	
Auto Function Profile	•	
Test Images	•	
Miscellaneous User Defined Values	•	
Device Information Parameters	•	
Configuration Sets	•	
Color Creation and Enhancement Balance White Auto (Automatic White Balance)		•
Color Adjustment (6 axis Hue/Saturation)		•
PGI		•
Light Source Presets		•
Backlight Compensation	٠	
Anti-Flicker	•	
Contrast Enhancement	•	
Balance White (Manual White Balance)		•
S-Curve Contrast Mode		•
sRGB Gamma Correction		٠
Pixel Formats Mono8	•	
Monol2	•	
YCbCr422 8	-	•
Bayer8		•
Bayer12		•
RGB8		•

BASLER CAMERAS	BASLER BEAT	SCOUT
Standard Features Configurable Input/Output Lines	•	•
Adjustable Camera Link Pixel Clock Speed	•	
Selectable Camera Link Baud Rate	•	
Adjustable Gain All	•	•
Adjustable Black Level All	•	•
Manual White Balance <sup>1</sup>	•	•
Digital Shift <sup>1</sup>		•
Area of Interest	•	•
Automatic White Balance <sup>1</sup>	•	•
Automatic Gain Control <sup>1</sup>	•	•
Automatic Exposure Control <sup>1</sup>	•	•
Auto Function Profile <sup>1</sup>	•	•
Binning up to 4×4 <sup>1</sup> (Mono)		•
Stacked Zone Imaging <sup>1</sup>	•	
Reverse X (Horizontal Mirroring)	•	•
Reverse Y (Vertical Mirroring)	•	
Lookup Table	•	•
Gamma Correction (User)	•	•
sRGB Gamma Correction <sup>1</sup>	•	•
Enhanced Color <sup>1</sup>	٠	•
User Defined Values	٠	
Remove Parameter Limits		•
Debouncer	•	•
Minimum Output Pulse Width <sup>1</sup>	•	•
Trigger Delay	•	•
Acquisition Status	•	•
Event Reporting		•
Test Images	•	•
Device Information Parameters	•	•
Configuration Sets	•	•
Temperature Readout		•
Trigger Wait / Trigger Ready Signal <sup>1</sup>	•	•
Exposure Active Signal	•	•
Sequencer		•
Chunk Features Time Stamp		•
Trigger Input Counter		•
I/O Line Status		•
CRC Checksum		•
Frame Counter		•
Sequence Set Index <sup>1</sup>		•
Exposure Time		•

 $^{\scriptscriptstyle 1}$  This feature may not be available on all camera versions

BASLER CAMERAS	BASLER BEAT	SCOUT
<b>Software</b> Software Triggering	•	•
Pixel Data Formats Mono 8	•	•
Mono 101	•	
Mono 12	•	
Mono 161		•
Mono 12 Packed <sup>1</sup>		•
YUV 4:2:2 Packed (Ylber 422)		•
YUV 4:2:2 (YUYV) Packed		•
RGB 8 Packed*		•
Bayer GB 81	•	
Bayer RG 81		•
Bayer BG 81		•
Bayer GB 10*	•	
Raw 16	•	
Bayer BG 16 <sup>1</sup>		٠
Bayer BG 12 Packed <sup>1</sup>		٠
Hardware 90° Head Housing		•
Inputs	4	2
Outputs	1	4
Camera Link Tab Geometries	•	
1X3-1Y	•	
1X8-1Y	•	
1X10-1Y	•	

<sup>1</sup> This feature may not be available on all camera versions



NUESTING PROMIET V S O N			
--------------------------	--	--	--

BASLER CAMERAS	RACER	RACER
Standard Features		
Configurable Input/Output Lines	•	•
Selectable Camera Link Pixel Clock Speed		•
Selectable Camera Link Baud Rate		•
Adjustable Gain	•	•
Analog Gain	•	•
Digital Gain	•	•
Adjustable Black Level All (Offset)	•	•
AOI (Area of Interest)	•	•
Offset Shading (DSNU Shading Correction)	•	•
Gain Shading (PRNU Shading Correction)	•	•
Automatic Gain Control <sup>1</sup>	•	•
Automatic Exposure Control <sup>1</sup>	•	•
Automatic Function Profile <sup>1</sup>	•	•
Binning	•	•
Lookup Table	•	•
Gamma Correction	•	•
User Defined Values	•	•
Remove Parameter Limits	•	•
Rotary Encoder Module	•	
Frequency Converter	•	•
Debouncer <sup>1</sup>	•	•
Trigger Delay	•	
Acquisition Status	•	
Event Reporting	•	
Test Images	•	•
Device Information	•	•
Configuration Sets	•	•
Temperature Readout	•	•
Trigger Wait/Trigger Ready Signal <sup>1</sup>	•	•
Exposure Active Signal	•	•
Stamp Features <sup>1</sup>	•	
Error Condition Detection	•	•
Exposure Time Control	•	•
Dark Noise Cancellation	•	•
Chunk Features		
Frame Counter	•	
Timestamp	•	
Input Status @ Line Trigger	•	
CRC Checksum	•	
Trigger Counters	•	
Encoder Counter	•	
<sup>1</sup> This feature may not be available on all camera versior	IS	

<sup>1</sup> This feature may not be available on all camera versions



	Linke Reference	
BASLER CAMERAS	RACER	RACER
Software		
Software Triggering	•	•
Pixel Data Formats		
Mono 8	•	
Mono 12	•	
Mono12 Packed	•	
YUV 4:2:2 Packed	•	
YUV 4:2:2 (YUYV) Packed	•	
8 Bit Output		•
10 Bit Output		•
12 Bit Output		•
Hardware		
Inputs	3	4 <sup>2</sup>
Outputs	2	13
Camera Link Tap Geometries		
1X		•
1X2		•
1X3 <sup>1</sup>		•
1X41		•
1X61		•
1X8		•
1X10		•
1X16 <sup>1</sup>		•
4X21		•

Note: The terminology used here to describe the features on GigE cameras complies with the GigE Vision standard.

Accordingly, the terminology used to describe DCAM compliant cameras may differ. Specifications are subject to change without prior notice.

 $^{\rm 1}$  This feature may not be available on all camera versions

<sup>2</sup> CC1 to CCF4

<sup>3</sup> via Camera Link spare bit

### Basler's Components Enhance Your Vision

An image processing system needs more than just a camera. Only a lens, light source, reliable data transfer and additional components such as frame grabbers, trigger cables, PC cards and power supplies turn a vision system into a functioning unit. High standards must be met in terms of quality, reliability and long-term availability with a good price/benefit ratio.

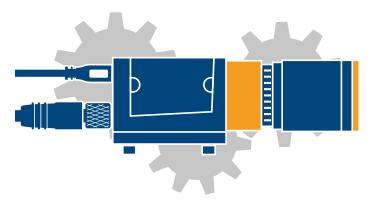
Basler offers a large selection of vision components that match each other perfectly. Carefully selecting compatible and reliable components for our portfolio is our top priority, as we strive to provide the right needs-oriented setup for complex, efficient systems as well as for costeffective solutions.

As a leader in technology, Basler is substantially involved in the development of new standards and offers all of the necessary, perfectly matched vision components from one source. As a result, our customers benefit from the superior reliability of their entire vision system.

### Need Help Selecting the Right Vision Components for Your Application?

Select compatible components for your vision system with the help of our Vision System Configurator: *baslerweb.com/vision-system-configurator* 

Step by step you can pick cameras, lenses, power and data cables as well as other accessories. We ensure that the selected components fit together.



### Basler's Vision Components - Benefits at a Glance

### **Cost savings**

- In-house developments or developments in cooperation with other companies
- Needs-oriented products
- Complexity reduction thanks to perfectly harmonized components
- One-stop shopping
- Single point of contact (spoc)
- Long-term availability

### **High reliability**

- Matching, certified and tested vision components
- Regular function and interoperability tests
- Provision of all required certifications

### Good delivery times & long-term availability

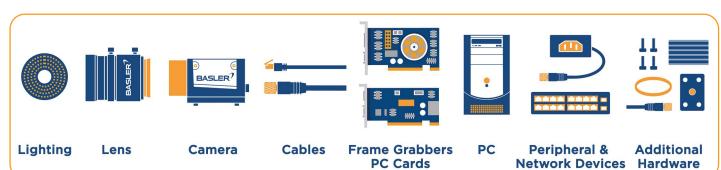
- In-house logistics
- Same deliverability for camera and compatible accessories
- Spare parts supply throughout the entire lifecycle

### Easy system setup & simple integration

- Broad and harmonized product portfolio
- Time-saving tools to configure and select components
- Professional consulting before and after the buying decision

#### For more information, please visit

baslerweb.com/vision-components



### Typical set-up of a camera system

### **Basler Lenses Give Vision Applications the Required Sharpness**

Lenses depict the captured light on a camera's sensor. Combined with a camera and lighting, they are instrumental in determining the image quality. In the worst case, choosing the wrong lens can result in an irretrievable loss in image quality.

When choosing the right lens, the balance between the required imaging performance, i.e. high resolution with optical image quality, and price is of real interest. A very good imaging performance saves processing time in the further image analysis software and in many cases makes the analysis of even finest structures possible in the first place. If a basic imaging performance and average optical errors are acceptable or if these errors can actually be corrected through image processing, cost-efficient lenses are a better choice. Whether there are high standards in terms of image quality or a focus on lower costs due to competitive pressure, Basler offers two product lines for both scenarios. The Standard product line stands for the best price/performance ratio and offers good basic performance. The Premium product line offers optimal imaging quality with much higher optical resolution but without neglecting the cost factor.

Both product lines support popular image circles of sensors available in Basler cameras, from 1/2.5" to 1.1", as well as all common focal lengths. The lenses are equipped with a C-mount and can also be conveniently

used with CS-mount cameras with the help of an adapter.

# For more information, please visit baslerweb.com/basler-lenses





### Need Help Selecting the Right Lens for Your Application?

Find the right lens for your Basler camera! Several suitable lenses for your application are suggested to you based on data such as focal length, angle of view, working distance or object size. Test our convenient Lens Selector: *baslerweb.com/lens-selector* 



### pylon Camera Software Suite

Easy and stable connection of your vision applications with Basler cameras requires the right software in place. The Basler pylon Camera Software Suite consists of reliable, certified drivers for all kinds of camera interfaces, a powerful and easy programming interface, and a comprehensive set of tools for camera set-up.

### Highlights

- Easy connecting of Basler cameras via GenTL standard
- Productivity and fast results with pylon SDKs
- Stable, certified drivers for Windows, Linux, macOS
- Rich choice of supported interfaces

Powerful tools for camera set-up

For more information, please visit *baslerweb.com/pylon* See the pylon highlights in our video:





### CONNECT Easy link to Basler cameras

**Many ways to connect** - With pylon you can connect your application in a standardized way via a pylon GenTL producer, or by writing your own code

using one of the pylon APIs. With the pylon APIs, developers can either use convenient universal functions that encapsulate the GenICam standard, or use functions for access directly via GenICam.

**GenICam and GenTL** – Complex details of these standards are encapsulated by the pylon APIs.

**Rich choice of supported interfaces** – pylon allows connecting your cameras via USB3, GigE Vision, CoaxPress, Camera Link and others. If your application connects via one of the pylon APIs, switching from one interface to another becomes possible with minimal code changes.



# CONFIGURE

### Powerful tools for camera set-up

**Get the best possible image** – pylon provides you with a rich set of powerful tools for getting the best image out

of your Basler camera, such as Vignetting Correction, Sharpness Indicator, Bandwidth Manager and many more.

**Fast access to product documentation** – The pylon Viewer allows easiest centralized access to comprehensive camera feature documentation, including code samples.

**Use the tools in your language** – pylon tools can be used in English, Chinese, Japanese and Korean language.

**Integrated camera emulator** – pylon comes with a camera emulation that allows testing multi-camera connectivity without having to connect any camera.

### DEVELOP High productivity and fast results

**80% time savings** – Studies show that developers using a pylon API finished tasks in only 20% or less of the time that they needed to complete the same

tasks with other comparable APIs.

**Easy to learn** – With the easy-to-learn pylon APIs and context-related developer documentation, even new employees can become productive right away.

**Faster results** – The simple structure of the pylon APIs leads to fast development results, leaving the developers more time for other things.

**Simple deployment** - pylon's copy deployment concept allows installing all necessary pylon components used for your application just by simple file copies.



### RUN Stable operation on all platforms

**Certified drivers, reliable performance** - Tried and used thousands of times, certified, and the performance speak for the stability of the pylon drivers,

which have been optimized continuously for many years.

**Real-time performance** – In comparison studies, pylon demonstrated an outstanding performance with regard to latency and jitter, making pylon suitable for stable image aquisition even in real-time applications.

**Platform-independent** – With the pylon APIs, the target platform of the developed application doesn't play any role. It's very easy to switch from a Windows environment to a Linux ARM environment without major code changes. This makes pylon perfectly suitable for the development of embedded systems.

### **How Does Basler Measure** and Define Image Quality?



Basler is leading the effort to standardize image quality and sensitivity measurement for cameras and sensors. We are giving the EMVA 1288 standard our strongest support because it describes a unified method to measure, compute, and present the specification parameters for cameras and image sensors. Our cameras are characterized and measured in 100% compliance with the EMVA 1288 standard. Measurement reports can be downloaded from our website.

### How Does Basler Ensure Superior Quality and Reliable High Performance?

Our approach to quality assurance is rigorous: we continually audit all facets of our business to ensure powerful performance, increase efficiency and reduce costs for our customers. We are compliant with all major quality standards including ISO 9001, CE, RoHS, and more. To ensure consistently high product quality, we employ several quality inspection procedures during manufacturing.

Every Basler camera is subjected to exhaustive optical and mechanical tests before leaving the factory. We have developed a unique combination of optics, hardware, and software tools that can quickly and efficiently calibrate a camera and measure its performance against a set of standard performance criteria. Regardless of what technology or camera model you choose you can be assured of consistent performance.

### About Basler

Basler is a leading international manufacturer of highquality imaging components for computer vision applications. In addition to classic area scan and line scan cameras, lenses, frame grabbers, light modules, and software, the company offers embedded vision modules and solutions, 3D products, as well as customized products and consulting services. Basler's products are used in a variety of markets and applications, including factory automation, medical, logistics, retail, and robotics. They are characterized by high reliability, an excellent price/ performance ratio, and long-term availability. Founded in 1988, the Basler Group employs around 800 people at its headquarters in Ahrensburg and other locations in Europe. Asia and North America. Thanks to its worldwide sales and service organization and cooperation with renowned partners, it offers solutions that fit for customers from a wide range of sectors.



Arndt Bake CIO/CDO

CEO

Dr. Dietmar Ley Hardy Mehl CFO/COO

Alexander Temme CCO

# FORGET THE PROBLEM SEE THE SOLUTION.

DISCOVER THE FULL SPECTRUM OF BASLER VISION SOLUTIONS.



Seeing the solution can be challenging at times. Let us assist you in discovering the right setup for your application. With our extensive know-how and customer orientation, our vision experts will find the best solution for your imaging requirements.

### **Basler AG**

Germany, Headquarters Tel. +49 4102 463 500 sales.europe@baslerweb.com Basler, Inc. USA Tel. +1 610 280 0171 sales.usa@baslerweb.com

Basler Asia Pte Ltd. Singapore Tel +65 6367 1355 sales.asia@baslerweb.com



©Basler AG, 06/2021

Please visit our website to find further Basler offices and representatives close to you: baslerweb.com/sales