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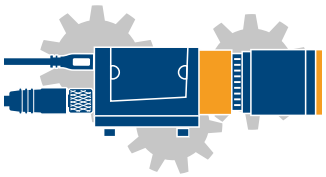
FEATURES CHECK LIST

INDUSTRIAL CAMERAS

USB3 VISION® GiGE VISION® BCON for MIPI CAMERA Link® CoaXPress®

OVERVIEW



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.

SENSOR FAMILY ACE 2 CAMERA MODELS	SONY PREGIUS a2A1920-51gxBAS/PRO SONY PREGIUS S a2A5320-7gxBAS/PRO a2A4504-5gxBAS/PRO a2A5328-4gxBAS/PRO a2A2448-23gxBAS/PRO a2A2840-14gxBAS/PRO a2A4096-9gxBAS/PRO		GPIXEL a2A2600-20gxBAS/PRO a2A4200-12gxBAS/PRO		SONY STARVIS a2A2590-22gxBAS/PRO a2A3840-13gxBAS/PRO	
	mono	**color**	**mono**	**color**	**mono**	**color**
Physical Interface and I/O Control						
Configurable Input/Output Lines						
Inputs		1		1		1
General Purpose I/O		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)		● Pro		● Pro		● Pro
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		●		●		●
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]		
GigE Vision 2.0						
Action Commands (Synchronous Triggering)		●		●		●
Precision Time Protocol (IEEE 1588)		●		●		●
Scheduled Action Commands		●		●		●

[1] Not all models support this feature.
Pro = available in ace 2 Pro models only.

SENSOR FAMILY ACE 2 CAMERA MODELS	SONY PREGIUS a2A1920-51gxBAS/PRO SONY PREGIUS S a2A5320-7gxBAS/PRO a2A4504-5gxBAS/PRO a2A5328-4gxBAS/PRO a2A2448-23gxBAS/PRO a2A2840-14gxBAS/PRO a2A4096-9gxBAS/PRO		GPIXEL a2A2600-20gxBAS/PRO a2A4200-12gxBAS/PRO		SONY STARVIS a2A2590-22gxBAS/PRO a2A3840-13gxBAS/PRO	
	mono	**color**	**mono**	**color**	**mono**	**color**
Beyond Features						
Compression Beyond		● Pro		● Pro		● Pro
Pixel Beyond		● Pro		● Pro		● Pro
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
Chunks						
Auto Brightness Status	●		●		●	
CRC Checksum	●		●		●	
Counter Value	●		●		●	
Exposure Time	●		●		●	
Frame ID	●		●		●	
Gain	●		●		●	
Line Status All	●		●		●	
Timestamp	●		●		●	
Event Reporting						
Action Late	●		●		●	
Exposure End	●		●		●	
Frame Buffer Overrun	●		●		●	
Frame Start	●		●		●	
Frame Trigger Missed	●		●		●	
Overrun	●		●		●	
Temperature Status Changed	●		●		●	
Test	●		●		●	
Pixel Formats						
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		●		●		●
Bayer 10p (Bayer 10 Packed)		●		●		●
Bayer 12		●		●		●
Bayer 12p (Bayer 12 Packed)		●		●		●
RGB 8		●		●		●

Pro = available in ace 2 Pro models only

SENSOR FAMILY ACE 2 CAMERA MODELS	SONY PREGIUS a2A1920-160uxBAS/PRO SONY PREGIUS S a2A5320-23uxBAS/PRO a2A4504-18uxBAS/PRO a2A5328-15uxBAS/PRO a2A2448-75uxBAS/PRO a2A2840-48uxBAS/PRO a2A4096-30uxBAS/PRO		GPIXEL a2A2600-64uxBAS/PRO a2A4200-40uxBAS/PRO		SONY STARVIS a2A2590-60uxBAS/PRO a2A3840-45uxBAS/PRO	
	mono	**color**	**mono**	**color**	**mono**	**color**
Physical Interface and I/O Control						
Configurable Input/Output Lines						
Inputs		1		1		1
General Purpose I/O		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)		● Pro		● Pro		● Pro
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		●		●		●
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] Not all models support this feature.
Pro = available in ace 2 Pro models only.

SENSOR FAMILY ACE 2 CAMERA MODELS	SONY PREGIUS a2A1920-160uxBAS/PRO SONY PREGIUS S a2A5320-23uxBAS/PRO a2A4504-18uxBAS/PRO a2A5328-15uxBAS/PRO a2A2448-75uxBAS/PRO a2A2840-48uxBAS/PRO a2A4096-30uxBAS/PRO		GPIXEL a2A2600-64uxBAS/PRO a2A4200-40uxBAS/PRO		SONY STARVIS a2A2590-60uxBAS/PRO a2A3840-45uxBAS/PRO	
	mono	**color**	**mono**	**color**	**mono**	**color**
Beyond Features						
Compression Beyond		● Pro		● Pro		● Pro
Pixel Beyond		● Pro		● Pro		● Pro
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
Chunks						
Auto Brightness Status	●		●		●	
CRC Checksum	●		●		●	
Counter Value	●		●		●	
Exposure Time	●		●		●	
Frame ID	●		●		●	
Gain	●		●		●	
Line Status All	●		●		●	
Timestamp	●		●		●	
Event Reporting						
Action Late	●		●		●	
Exposure End	●		●		●	
Frame Buffer Overrun	●		●		●	
Frame Start	●		●		●	
Frame Trigger Missed	●		●		●	
Overrun	●		●		●	
Temperature Status Changed	●		●		●	
Test	●		●		●	
Pixel Formats						
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		●		●		●
Bayer 10p (Bayer 10 Packed)		●		●		●
Bayer 12		●		●		●
Bayer 12p (Bayer 12 Packed)		●		●		●
RGB 8		●		●		●

Pro = available in ace 2 Pro models only

SENSORS ACE USB 3.0 CAMERA MODELS	SONY CCD acA640-90uc acA1600-20uc	AMS acA2000-165ux acA2040-90ux	ONSEMI MT9P acA1920-25ux acA2500-14ux	ONSEMI MT9J acA3800-14ux	ONSEMI PYTHON acA640-750ux acA800-510ux acA1300-200ux acA1920-150ux acA2500-60ux	SONY PREGIUS acA720-520ux acA1440-220ux acA1920-155ux acA1920-40ux acA2040-120ux acA2040-55ux acA2440-35ux acA2440-75ux acA4096-30ux acA4096-40ux acA4112-20ux acA4112-30ux	SONY STARVIS acA3088-57ux acA4024-29ux SONY EXMOR R acA5472-17ux

	color	mono	color	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	●	●		●		●		●		●		●	
Gain Auto	●	●		●		●		●		●		●	
Black Level	●	●		●		●		●		●		●	
Digital Shift	●			●		●				●		●	
Region of Interest (ROI)	●	●		●		●		●		●		●	
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	●	●		●		●		●		●		●	
Auto Function Profile	●	●		●		●		●		●		●	
Lookup Table	●	●		●		●		●		●		●	
Test Images	●	●		●		●		●		●		●	
Sequencer	●	●		●		●		●		●		●	
Stacked ROI								●		● [1]			
Ultra Short Exposure Time Mode								●		● [2]			
Light Control Features													
SLP Feature								●		●		●	

[1] not available for acA1920-40um/uc, acA2040-55um/uc, acA2440-35um/uc, acA4096-30um/uc, acA4112-20um/uc
[2] not available for acA1920-40ux and acA1920-155ux

SENSORS ACE USB 3.0 CAMERA MODELS	SONY CCD acA640-90uc acA1600-20uc		AMS acA2000-165ux acA2040-90ux		ONSEMI MT9P acA1920-25ux acA2500-14ux		ONSEMI MT9J acA3800-14ux		ONSEMI PYTHON acA640-750ux acA800-510ux acA1300-200ux acA1920-150ux acA2500-60ux		SONY PREGIUS acA720-520ux acA1440-220ux acA1920-155ux acA1920-40ux acA2040-120ux acA2040-55ux acA2440-35ux acA2440-75ux acA4096-30ux acA4096-40ux acA4112-20ux acA4112-30ux		SONY STARVIS acA3088-57ux acA4024-29ux SONY EXMOR R acA5472-17ux	
	color	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 Enhancement														
Balance White (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	●		●		●		●		●		●		●	
Frame Burst Start Wait	●		●		●		●		●		●		●	
Frame Burst Start Overtrigger	●		●		●		●		●		●		●	
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 10									●					
Bayer 10p (Bayer 10 Packed)									●					
Bayer 12	●		●		●		●				●		●	
Bayer 12p (Bayer 12 Packed)	●		●		●		●				●		●	
RGB 8	●								●		●		●	
BGR 8	●								●		●		●	

[1] 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

SENSORS ACE GIGE CAMERA MODELS	SONY CCD acA640-90gc acA1600-20gc	AMS acA2000-50gx acA2040-25gx	E2V acA1280-60gx acA1300-60gx acA1600-60gx	ONSEMI MT9P acA1920-25gx acA2500-14gx	ONSEMI MT9J acA3800-10gx	ONSEMI PYTHON acA640-300gx acA800-200gx acA1300-75gx acA1920-48gx acA2500-20gx	SONY PREGIUS acA640-121gm acA720-290gx acA1440-73gx acA1920-40gx acA1920-50gx acA2040-35gx acA2440-20gx acA4096-11gx acA4112-8gx	SONY STARVIS acA3088-16gx acA4024-8gx SONY EXMOR R acA5472-5gx

	color	mono	color	mono	color	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		1	
Outputs	1	1		1		1		1		1		1		1	
General Purpose I/O										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	●	●		●		●		●		●		●		●	
Frame Start Trigger	●	●		●		●		●		●		●		●	
Triggered by Software	●	●		●		●		●		●		●		●	
Triggered by Hardware	●	●		●		●		●		●		●		●	
Trigger Delay	●	●		●		●		●		●		●		●	
Acquisition Status	●	●		●		●		●		●		●		●	
GigE Vision 2.0										●		●		●	
Standard Features															
Gain	●	●		●		●		●		●		●		●	
Gain Auto	●	●		●		●		●		●		●		●	
Black Level	●	●		●		●		●		●		●		●	
DigitalShift	●	●		●		●				●		●		●	
Region of Interest (ROI)	●	●		●		●		●		●		●		●	
Binning Horizontal		●		●		●		●		●		●			
Binning Vertical		●		●		●		●		●		●		●	
Decimation Horizontal				●[1]				●							
Decimation Vertical		●		●[1]				●							
Scaling Horizontal								●							
Scaling Vertical								●							
Reverse X (Horizontal Mirroring)	●	●		●		●		●		●		●		●	
Reverse Y (Vertical Mirroring)		●								●		●[2]		●	
Stacked Zone Imaging		●													
Gamma Correction	●	●		●		●		●		●		●		●	
Exposure Mode: Trigger Width (Control via external trigger)	●	●								●		●			
Exposure Mode Timed (Control via API)														●[5]	
Exposure Auto	●	●		●		●		●		●		●		●	
Auto Function Profile	●	●		●		●		●		●		●		●	
Lookup Table (LUT)	●	●		●		●		●		●		●		●	
Test Images	●	●		●		●		●		●		●		●	
Sequencer	●	●		●		●		●		●		●		●	
Stacked ROI										●		●[3]			
Ultra Short Exposure Time Mode												●[4]			
GigE Vision 2.0															
Precision Time Protocol (IEEE 1588)										●		●		●	
Action Commands (Synchronous Triggering)										●		●		●	
Scheduled Action Commands										●		●		●	

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

SENSORS ACE GIGE CAMERA MODELS	SONY CCD acA640-90gc acA1600-20gc	AMS acA2000-50gx acA2040-25gx	E2V acA1280-60gx acA1300-60gx acA1600-60gx	ONSEMI MT9P acA1920-25gx acA2500-14gx	ONSEMI MT9J acA3800-10gx	ONSEMI PYTHON acA640-300gx acA800-200gx acA1300-75gx acA1920-48gx acA2500-20gx	SONY PREGIUS acA640-121gm acA720-290gx acA1440-73gx acA1920-40gx acA1920-50gx acA2040-35gx acA2440-20gx acA4096-11gx acA4112-8gx	SONY STARVIS acA3088-16gx acA4024-8gx SONY EXMOR R acA5472-5gx
	color	mono color	mono color	mono color	mono color	mono color	mono color	mono color
Light Control Features								
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 Enhancement								
sRGB Gamma Correction	●	●	●	●	●	●	●	●
Balance White (Manual White Balance)	●	●	●	●	●	●	●	●
Balance White Auto (Automatic White Balance)	●	●	●	●	●	●	●	●
Light Source Presets	●	●	●	●	●	●	●	●
Color Transformation (RGB to RGB)	●	●	●	●	●	●	●	●
Color Adjustment (6 axis Hue/Saturation)	●	●	●	●	●	●	●	●
PGI						●	●[4]	●[5] ●
Chunks								
Timestamp	●	●	●	●	●	●	●	●
Line Status All	●	●	●	●	●	●	●	●
CRC Checksum	●	●	●	●	●	●	●	●
Trigger Input Counter	●	●	●	●	●	●	●	●
Frame Counter	●	●	●	●	●	●	●	●
Sequence Set Index	●	●	●	●	●	●	●	●
Exposure Time	●	●	●	●	●	●	●	●
Gain Raw						●	●	●
Event Reporting								
Exposure End	●	●	●	●	●	●	●	●
Frame Start	●	●	●	●	●	●	●	●
Frame Start Overtrigger	●	●	●	●	●	●	●	●
Acquisition Start	●	●	●	●	●	●	●	●
Acquisition Start Wait						●	●	●
Acquisition Start Overtrigger	●	●	●	●	●	●	●	●
Critical Temperature						●	●	
Over Temperature						●	●	
Pixel Formats								
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						●		
Bayer 10p (Bayer 10 Packed)						●		
Bayer 12	●	●	●	●	●		●	●
Bayer 12p (Bayer 12 Packed)	●	●	●	●	●		●	●

[1] not available for acA640-121gm
[2] not available for acA640-121gm, acA720-290gx, acA1440-73gx, acA2040-35gx, acA2440-20gx
[3] only available for acA3088-16gx, acA4024-8gx
[4] not available for acA640-121gm
[5] only available for acA5472-5gm

SENSORS ACE CAMERA LINK CAMERA MODELS	AMS acA2000-340kx 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	●	
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	●	
Miscellaneous		
User Defined Values	●	
Remove Parameter Limits	●	
User Sets (Configuration Sets)	●	

CoaXPress®

SENSOR FAMILY BOOST CAMERA MODELS	SONY PREGIUS boA4096-93cx boA4112-68cx		ONSEMI boA4500-45cx boA6500-36cx boA8100-16cx	
	mono	color	mono	color
Physical Interface and I/O Control				
Configurable Input/Output Lines				
Inputs	1		1	
Outputs	1		1	
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)	●		●	
Vignetting Correction	● [1]		● [1]	

[1] For latest information on availability of features, please visit *baslwerweb.com/boost*

SENSOR FAMILY BOOST CAMERA MODELS	SONY PREGIUS boA4096-93cx boA4112-68cx		ONSEMI boA4500-45cx boA6500-36cx boA8100-16cx	
	mono	color	mono	color
Color Creation and Enhancement				
Balance White (Manual White Balance)		●		●
Balance White Auto (Automatic White Balance)		●[1]		●[1]
Brightness		●		●
Color Adjustment (6 axis Hue/Saturation)		●		●
Contrast Enhancement		●		●
Hue/Saturation		●		●
Light Source Presets		●		●
Pixel Formats				
Mono 8	●		●	
Mono 10	●[1]		●[1]	
Mono 12	●		●	
YCbCr422_8 (YUV422_8)		●		●
Bayer 8		●		●
Bayer 10		●[1]		●[1]
Bayer 12		●		●
RGB 8		●		●

[1] For latest information on availability of features, please visit *baslwerweb.com/boost*

FEATURES DART

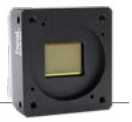
SENSOR FAMILY DART CAMERA MODELS	DART USB onsemi AR0134 MT9P031 e2V EV76C570		DART USB Sony Pregius IMX334 IMX392 IMX548		DART BCON FOR MIPI
	mono	color	mono	color	color
Interface Features					
USB 3.0 Superspeed	●		●		
USB 2.0 Backward Compatible	●				
Physical Interface and I/O Control					
Debouncer	●				
Minimum Output Pulse Width	●				
Input Filter Time			●		
Input Hold Off Time			●		
I/O Signals					
Exposure Active Signal	●		●		
Flash Window Signal	●[1]		●[2]		
User Output	●		●		
Line Source Signals: User Output	●		●		
Serial Communication (TWI)			●		
Image Acquisition Control					
Frame Start Trigger	●		●		
Triggered by Hardware	●		●		
Triggered by Software	●		●		
Trigger Delay			●		
Acquisition Status	●		●		
Standard Features					
Gain	●		●		
Gain Auto	●		●		
Black Level	●		●		
Region of Interest (ROI)	●		●		
Binning Horizontal	●		●		
Binning 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)	●[1]		●		
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			●		
Balance White (Manual White Balance)		●		●	
S-Curve Contrast Mode		●		●	
sRGB Gamma Correction		●		●	

The feature set depends on the processing hardware and respective software. For more details, visit *baslerweb.com/embedded-vision*

[1] only for models featuring onsemi MT9P031 sensor
[2] only for models featuring Sony IMX334 sensor

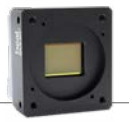
SENSOR FAMILY DART CAMERA MODELS	DART USB				DART BCON FOR MIPI
	onsemi AR0134 MT9P031 **e2V** EV76C570		Sony Pregius IMX334 and IMX392		
	mono	**color**	**mono**	**color**	**color**
Pixel Formats					
Mono8	●		●		The feature set depends on the processing hardware and respective software. For more details, visit *baslerweb.com/embedded-vision*
Mono12	●		●		
Mono12p			●		
YCbCr422_8		●		●	
Bayer8		●		●	
Bayer12		●		●	
Bayer12p				●	
RGB8		●		●	
BGR8				●	

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	●	
Standard Features		
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	●	
Anti-Flicker	●	
Contrast Enhancement	●	
Balance White (Manual White Balance)		●
S-Curve Contrast Mode		●
sRGB Gamma Correction		●
Pixel Formats		
Mono8	●	
Mono12	●	
YCbCr422_8		●
Bayer8		●
Bayer12		●
RGB8		●



BASLER CAMERAS	BASLER BEAT
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[1]	●
Digital Shift[1]	
Area of Interest	●
Automatic White Balance[1]	●
Automatic Gain Control[1]	●
Automatic Exposure Control[1]	●
Auto Function Profile[1]	●
Binning up to 4×4[1] (Mono)	
Stacked Zone Imaging[1]	●
Reverse X (Horizontal Mirroring)	●
Reverse Y (Vertical Mirroring)	●
Lookup Table	●
Gamma Correction (User)	●
sRGB Gamma Correction[1]	●
Enhanced Color[1]	●
User Defined Values	●
Remove Parameter Limits	
Debouncer	●
Minimum Output Pulse Width[1]	●
Trigger Delay	●
Acquisition Status	●
Event Reporting	
Test Images	●
Device Information Parameters	●
Configuration Sets	●
Temperature Readout	
Trigger Wait / Trigger Ready Signal[1]	●
Exposure Active Signal	●
Sequencer	
Chunk Features	
Time Stamp	
Trigger Input Counter	
I/O Line Status	
CRC Checksum	
Frame Counter	
Sequence Set Index[1]	
Exposure Time	

[1] This feature may not be available on all camera versions



BASLER CAMERAS	BASLER BEAT
Software	
Software Triggering	●
Pixel Data Formats	
Mono 8	●
Mono 10[1]	●
Mono 12	●
Mono 16[1]	
Mono 12 Packed[1]	
YUV 4:2:2 Packed (Ylber 422)	
YUV 4:2:2 (YUYV) Packed	
RGB 8 Packed*	
Bayer GB 8[1]	●
Bayer RG 8[1]	
Bayer BG 8[1]	
Bayer GB 10*	●
Raw 16	●
Bayer BG 16[1]	
Bayer BG 12 Packed[1]	
Hardware	
90° Head Housing	
Inputs	4
Outputs	1
Camera Link Tab Geometries	
1X2-1Y	●
1X3-1Y	●
1X8-1Y	●
1X10-1Y	●

[1] This feature may not be available on all camera versions

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[1]	●	●
Automatic Exposure Control[1]	●	●
Automatic Function Profile[1]	●	●
Binning	●	●
Lookup Table	●	●
Gamma Correction	●	●
User Defined Values	●	●
Remove Parameter Limits	●	●
Rotary Encoder Module	●	
Frequency Converter	●	●
Debouncer[1]	●	●
Trigger Delay	●	
Acquisition Status	●	
Event Reporting	●	
Test Images	●	●
Device Information	●	●
Configuration Sets	●	●
Temperature Readout	●	●
Trigger Wait/Trigger Ready Signal[1]	●	●
Exposure Active Signal	●	●
Stamp Features[1]	●	
Error Condition Detection	●	●
Exposure Time Control	●	●
Dark Noise Cancellation	●	●
Chunk Features		
Frame Counter	●	
Timestamp	●	
Input Status @ Line Trigger	●	
CRC Checksum	●	
Trigger Counters	●	
Encoder Counter	●	

[1] This feature may not be available on all camera versions

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[2]
Outputs	2	1[3]
Camera Link Tap Geometries		
1X		●
1X2		●
1X3[1]		●
1X4[1]		●
1X6[1]		●
1X8		●
1X10		●
1X16[1]		●
4X2[1]		●

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.

[1] This feature may not be available on all camera versions
[2] CC1 to CCF4
[3] 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.

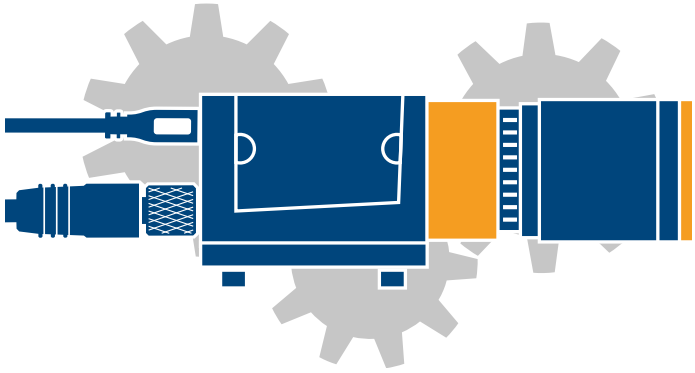
Basler offers a large selection of vision components that match each other perfectly. Carefully selecting compatible and reliable components for our portfolio is our top priority, as we strive to provide the right needs-oriented setup for complex, efficient systems as well as for cost-effective solutions.

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

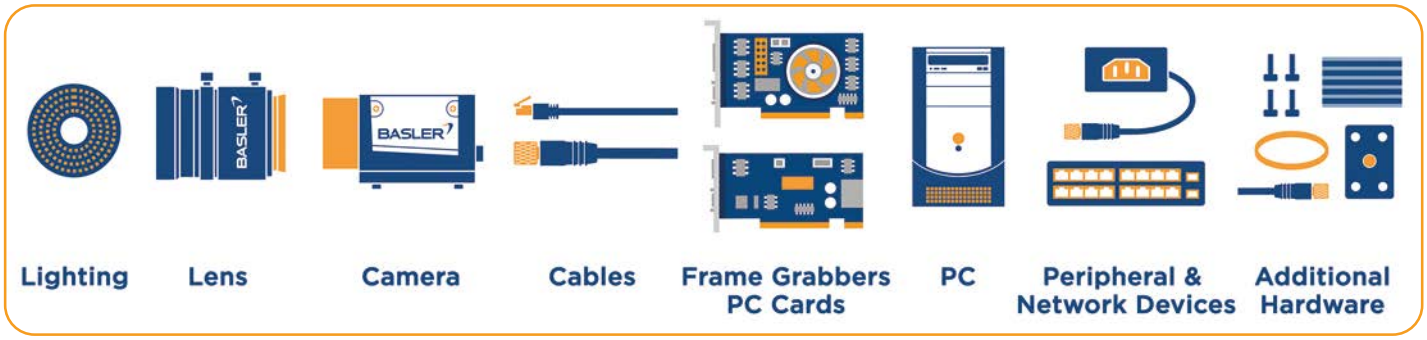
- In-house logistics
- Same deliverability for camera and compatible accessories
- Spare parts supply throughout the entire lifecycle

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

Highlights of the Basler Standard Lenses

- Excellent price/performance ratio
- Solid basic performance
- Suitable for simple vision applications and price-sensitive systems
- Ideal for fast cameras with a low resolution

STANDARD

Highlights of the Basler Premium Lenses

- Designed and tested for the most demanding applications
- Best quality: very high resolution, low distortion, low vignetting
- Optimal for cameras with very high resolutions for the analysis of the smallest structures
- Still cost-optimized

PREMIUM

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.

OTHER INFORMATION

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 high-quality 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 1000 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*
Dr. Dietmar Ley *CEO*
Hardy Mehl *CFO/COO*
Alexander Temme *CCO*

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.

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