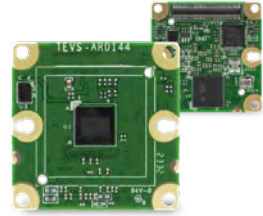


MIPI CSI-2 Sensors

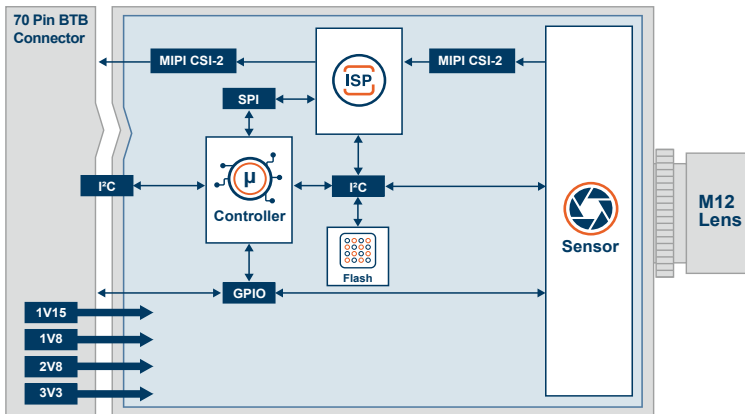
Embedded Vision

MIPI CSI-2 Sensor Series

TechNexion MIPI CSI-2 Sensor Modules are a scalable hardware size and pin compatible family of camera sensors ranging from 1MP to 13MP in rolling or global shutter configurations that can be used in a large variety of applications ranging from robotics, medical, sporting to smart city, infrastructure and embedded industrial applications.



Block Diagram



Sensor Comparison

< 2 MP	5 MP	8 MP	10 ~ 20 MP
 AR0144 Global Color	 AR0521 Rolling Color	 AR0821 Rolling Color	 AR1335 Rolling Color
 AR0145 Global Mono	 AR0522 Rolling Color/Mono	 AR0822 Rolling Color/Mono	
 AR0234 Global Color		 AR0830 Rolling Color/Mono	
 AR0235 Global Mono			

Unified single software driver.

Platform Support

TechNexion TEVS MIPI CSI-2 Sensor Modules are supported on a wide variety of SOC platforms and are available with adaptors to easily connect to silicon vendor evaluation boards.

	i.MX95 i.MX93 i.MX8M Plus i.MX8M Nano / Mini		Jetson AGX Orin Jetson Orin NX Jetson Orin Nano Jetson Xavier NX Jetson Nano
	RZ/V2N RZ/V2H		Sitara AM62 / AM62A Sitara AM67 Sitara AM68 / AM69 Jacinto TDA4VM Jacinto TDA4VH
	Alder Lake-N Meteor Lake		BeagleY-AI BeaglePlay
	Raspberry Pi 4 Raspberry Pi 5		STM32 MP25

RPI15



RPI22



Mini-SAS



Software Enablement

Product drivers, integration guides for TechNexion TEVS MIPI CSI-2 Sensor Modules are available online, thus helping a quick and easy integration and evaluation path.

All TechNexion Embedded Vision products are supported with VizionViewer and VizionSDK, giving your engineering team full control over the camera settings by using C# or Python.



VizionViewer™



VizionSDK

Software SDK Available

Specifications



	TEVS-AR0144	TEVS-AR0145	TEVS-AR0234
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Camera Information

CMOS Sensor	onsemi AR0144	onsemi AR0145	onsemi AR0234
Active Pixels	1280 (H) x 800 (V) = 1MP	1280 (H) x 800 (V) = 1MP	1920 (H) x 1200 (V) = 2.3MP
Pixel Size	3.0 μm x 3.0 μm	2.8 μm x 2.8 μm	3.0 μm x 3.0 μm
Illuminated type	Front Side Illuminated (FSI)	Front Side Illuminated (FSI)	Front Side Illuminated (FSI)
Maximum S/N Ratio	38 dB	38 dB	38 dB
Input Clock Range	48 MHz	48 MHz	48 MHz
Optical Format	1/4" (Diagonal 4.5 mm)	1/4.3" (Diagonal 4.23 mm)	1/2.6" (Diagonal 6.8 mm)
Shutter Type	Global Shutter	Global Shutter	Global Shutter
Chromaticity	Color	Mono	Color
Maximum Frame Rate (YUY2)	1280 x 800 @ 60 fps 1280 x 720 @ 60 fps 640 x 480 @ 60 fps	1280 x 800 @ 115 fps 1280 x 720 @ 115 fps 640 x 480 @ 115 fps	1920 x 1200 @ 60 fps 1920 x 1080 @ 60 fps 1280 x 720 @ 120 fps 640 x 480 @ 120 fps
Output Format	YUV422-UYYV / YUV420 RGB888 / RGB565 / RGB555 JPEG / MJPEG RAW8 / RAW10 / RAW12	YUV422-UYYV / YUV420 RGB888 / RGB565 / RGB555 JPEG / MJPEG RAW8 / RAW10 / RAW12	YUV422-UYYV / YUV420 RGB888 / RGB565 / RGB555 JPEG / MJPEG RAW8 / RAW10 / RAW12

Camera Interface

Module Data Transmission	MIPI CSI-2, up to 4 lanes	MIPI CSI-2, up to 4 lanes	MIPI CSI-2, up to 4 lanes
Communication Interface	I ² C	I ² C	I ² C
Connector	70 Pin Standardized Camera Connector		

Power

Supply Voltage	I/O: 1.8V; Analog: 2.8V; Digital: 1.15V & 3.3V	I/O: 1.8V; Analog: 2.8V; Digital: 1.15V & 3.3V	I/O: 1.8V; Analog: 2.8V; Digital: 1.15V & 3.3V
Power Consumption	1280 x 800 @ 60 fps $\leq$ 486 mW	1280 x 800 @ 115 fps $\leq$ 523 mW	1920 x 1200 @ 60 fps $\leq$ 727 mW
SW Standby Power (Total)	$\leq$ 46 mW Standby	$\leq$ 32 mW Standby	$\leq$ 53 mW Standby
HW Standby Power (Total)	$\leq$ 21 mW Standby	$\leq$ 21 mW Standby	$\leq$ 30 mW Standby

Software Support

Operation System	Linux, Yocto, Android	Linux, Yocto, Android	Linux, Yocto, Android
Software	VizionViewer™	VizionViewer™	VizionViewer™
Development SDK	VizionSDK	VizionSDK	VizionSDK

Environmental and Mechanical

Dimensions	24.5(W) x 24.5(H) x 3.47(D) mm	24.5(W) x 24.5(H) x 3.47(D) mm	24.5(W) x 24.5(H) x 3.56(D) mm
Weight	$\leq$ 3 grams	$\leq$ 3 grams	$\leq$ 3 grams
Operating Temperature	- 30°C to + 70°C	- 30°C to + 70°C	30°C to + 70°C
Certification	Compliant with CE / FCC / RoHS / REACH directives		

Specifications



	TEVS-AR0521	TEVS-AR0522
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Camera Information

CMOS Sensor	onsemi AR0521	onsemi AR0522
Active Pixels	2592 (H) x 1944 (V) = 5MP	2592 (H) x 1944 (V) = 5MP
Pixel Size	2.2 μm x 2.2 μm	2.2 μm x 2.2 μm
Illuminated type	Back Side Illuminated (BSI)	Back Side Illuminated (BSI)
Maximum S/N Ratio	40 dB	40 dB
Input Clock Range	48 MHz	48 MHz
Optical Format	1/2.5" (Diagonal 7.13 mm)	1/2.5" (Diagonal 7.13 mm)
Shutter Type	Rolling Shutter	Rolling Shutter
Chromaticity	Color	Color / Mono
Maximum Frame Rate (YUY2)	2592 x 1944 @ 24 fps 2560 x 1440 @ 32 fps 1920 x 1080 @ 60 fps 1280 x 960 @ 60 fps 1280 x 720 @ 60 fps 640 x 480 @ 120 fps	2592 x 1944 @ 24 fps 2560 x 1440 @ 32 fps 1920 x 1080 @ 60 fps 1280 x 960 @ 60 fps 1280 x 720 @ 60 fps 640 x 480 @ 120 fps
Output Format	YUV422-UYYV / YUV420 RGB888 / RGB565 / RGB555 JPEG / MJPEG RAW8 / RAW10 / RAW12	YUV422-UYYV / YUV420 RGB888 / RGB565 / RGB555 JPEG / MJPEG RAW8 / RAW10 / RAW12

Camera Interface

Module Data Transmission	MIPI CSI-2, up to 4 lanes	MIPI CSI-2, up to 4 lanes
Communication Interface	I ² C	I ² C
Connector	70 Pin Standardized Camera Connector	70 Pin Standardized Camera Connector

Power

Supply Voltage	I/O: 1.8V; Analog: 2.8V; Digital: 1.15V & 3.3V	I/O: 1.8V; Analog: 2.8V; Digital: 1.15V & 3.3V
Power Consumption	2592 x 1944 @ 24 fps $\leq$ 694 mW	2592 x 1944 @ 24 fps $\leq$ 678 mW
SW Standby Power (Total)	$\leq$ 50 mW Standby	$\leq$ 43 mW Standby
HW Standby Power (Total)	$\leq$ 25 mW Standby	$\leq$ 20 mW Standby

Software Support

Operation System	Linux, Yocto, Android	Linux, Yocto, Android
Software	VizionViewer™	VizionViewer™
Development SDK	VizionSDK	VizionSDK

Environmental and Mechanical

Dimensions	24.5(W) x 24.5(H) x 4.3(D) mm	24.5(W) x 24.5(H) x 4.36(D) mm
Weight	$\leq$ 3 grams	$\leq$ 3 grams
Operating Temperature	- 30°C to + 70°C	- 30°C to + 70°C
Certification	Compliant with CE / FCC / RoHS / REACH directives	

Specifications



	TEVS-AR0821	TEVS-AR0822	TEVS-AR1335
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Camera Information

CMOS Sensor	onsemi AR0821	onsemi AR0822	onsemi AR1335
Active Pixels	3848 (H) x 2168 (V) = 8MP	3848 (H) x 2168 (V) = 8MP	4208 (H) x 3120 (V) = 13MP
Pixel Size	2.1 μm x 2.1 μm	2.0 μm x 2.0 μm	1.1 μm x 1.1 μm
Illuminated type	Back Side Illuminated (BSI)	Back Side Illuminated (BSI)	Back Side Illuminated (BSI)
Maximum S/N Ratio	41.8 dB	40.5 dB	37 dB
Input Clock Range	48 MHz	48 MHz	48 MHz
Optical Format	1/1.7" (Diagonal 9.25 mm)	1/1.8" (Diagonal 8.81 mm)	1/3.2" (Diagonal 5.8 mm)
Shutter Type	Rolling Shutter	Rolling Shutter	Rolling Shutter
Chromaticity	Color	Color / Mono	Color
Maximum Frame Rate (YUY2)	3840 x 2160 @ 15 fps 2560 x 1440 @ 30 fps 1920 x 1080 @ 60 fps 1280 x 720 @ 60 fps 640 x 480 @ 60 fps	3840 x 2160 @ 15 fps 2560 x 1440 @ 30 fps 1920 x 1080 @ 60 fps 1280 x 720 @ 60 fps 640 x 480 @ 60 fps	4208 x 3120 @ 10 fps 2560 x 1440 @ 30 fps 3840 x 2160 @ 15 fps 1920 x 1080 @ 60 fps 1280 x 720 @ 120 fps 640 x 480 @ 60 fps
Output Format	YUV422-UYYV / YUV420 RGB888 / RGB565 / RGB555 JPEG / MJPEG RAW8 / RAW10 / RAW12	YUV422-UYYV / YUV420 RGB888 / RGB565 / RGB555 JPEG / MJPEG RAW8 / RAW10 / RAW12	YUV422-UYYV / YUV420 RGB888 / RGB565 / RGB555 JPEG / MJPEG RAW8 / RAW10 / RAW12

Camera Interface

Module Data Transmission	MIPI CSI-2, up to 4 lanes	MIPI CSI-2, up to 4 lanes	MIPI CSI-2, up to 4 lanes
Communication Interface	I ² C	I ² C	I ² C
Connector	70 Pin Standardized Camera Connector		

Power

Supply Voltage	I/O: 1.8V; Analog: 2.8V; Digital: 1.15V & 3.3V	I/O: 1.8V; Analog: 2.8V; Digital: 1.15V & 3.3V	I/O: 1.8V; Analog: 2.8V; Digital: 1.15V & 3.3V
Power Consumption	3840 x 2160 @ 15 fps $\leq$ 1004 mW	3840 x 2160 @ 15 fps $\leq$ 881 mW	4300 x 3120 @ 10 fps $\leq$ 723 mW
SW Standby Power (Total)	$\leq$ 97 mW Standby	$\leq$ 109 mW Standby	$\leq$ 58 mW Standby
HW Standby Power (Total)	$\leq$ 52 mW Standby	$\leq$ 50 mW Standby	$\leq$ 26 mW Standby

Software Support

Operation System	Linux, Yocto, Android	Linux, Yocto, Android	Linux, Yocto, Android
Software	VizionViewer™	VizionViewer™	VizionViewer™
Development SDK	VizionSDK	VizionSDK	VizionSDK

Environmental and Mechanical

Dimensions	24.5(W) x 24.5(H) x 4.43(D) mm	24.5(W) x 24.5(H) x 4.65(D) mm	24.5(W) x 24.5(H) x 3.495(D) mm
Weight	$\leq$ 3 grams	$\leq$ 3 grams	$\leq$ 3 grams
Operating Temperature	- 30°C to + 70°C	- 30°C to + 70°C	- 30°C to + 70°C
Certification	Compliant with CE / FCC / RoHS / REACH directives		

Lens Information



	Focal Length	Aperture	D-FOV	H-FOV	V-FOV	TTL	MOD	Distortion
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TEVS-AR0144

S33	8 mm	F1.6	33.1° ± 5%	28.0° ± 5%	17.4° ± 5%	26.2 mm	0.3 m	<-5.03%
S83	2.85 mm	F2.8	82.6° ± 5%	73.5° ± 5%	50.3° ± 5%	20 mm	0.3 m	<-0.35%

TEVS-AR0145

S31	8 mm	F1.6	31.2° ± 5%	26.3° ± 5%	16.3° ± 5%	26.2 mm	0.3 m	<-5.03%
S78	2.85 mm	F2.8	78.2° ± 5%	69.5° ± 5%	47.1° ± 5%	20 mm	0.3 m	<-0.35%

TEVS-AR0234

S32	12 mm	F2.0	31.8° ± 5%	26.9° ± 5%	16.8° ± 5%	23.2 mm	0.3 m	<-2.50%
S83	3.9 mm	F2.8	82.8° ± 5%	73.4° ± 5%	50.1° ± 5%	22 mm	0.3 m	<1.26%
S128	2.87 mm	F2.8	127.7° ± 5%	110.5° ± 5%	68.6° ± 5%	21 mm	0.3 m	<-20%

TEVS-AR0521

S34	12 mm	F2.0	33.6° ± 5%	26.8° ± 5%	20.1° ± 5%	23.2 mm	0.3 m	<-2.50%
S85	3.9 mm	F2.8	85.2° ± 5%	73.0° ± 5%	58.1° ± 5%	22 mm	0.3 m	<1.26%
S140	2.87 mm	F2.8	140.0° ± 5%	110.5° ± 5%	81.4° ± 5%	21 mm	0.3 m	<-20%

TEVS-AR0522

S34	12 mm	F2.0	33.6° ± 5%	26.8° ± 5%	20.1° ± 5%	23.2 mm	0.3 m	<-2.50%
S85	3.9 mm	F2.8	85.2° ± 5%	73.0° ± 5%	58.1° ± 5%	22 mm	0.3 m	<1.26%
S140	2.87 mm	F2.8	140.0° ± 5%	110.5° ± 5%	81.4° ± 5%	21 mm	0.3 m	<-20%

TEVS-AR0821

S44	12 mm	F2.0	44.0° ± 5%	38.3° ± 5%	21.6° ± 5%	23.09 mm	0.15 m	<2%
S74	6 mm	F2.8	74.4° ± 5%	67.1° ± 5%	40.8° ± 5%	28.6 mm	0.1 m	<0.5%
S119	3 mm	F2.0	118.8° ± 5%	110.7° ± 5%	75.4° ± 5%	29.56 mm	0.3 m	<-5%
S156	3.2 mm	F2.0	156.0° ± 5%	137.2° ± 5%	79.4° ± 5%	44.98 mm	0.3 m	<-32%

TEVS-AR0822

S42	12 mm	F2.0	41.7° ± 5%	36.3° ± 5%	20.5° ± 5%	23.09 mm	0.15 m	<2%
S72	6 mm	F2.8	72.0° ± 5%	64.7° ± 5%	39.0° ± 5%	28.6 mm	0.1 m	<0.5%
S108	3 mm	F2.0	108.6° ± 5%	104.0° ± 5%	72.2° ± 5%	29.56 mm	0.3 m	<-5%
S150	3.2 mm	F2.0	150.0° ± 5%	132.6° ± 5%	77.6° ± 5%	44.98 mm	0.3 m	<-32%

TEVS-AR1335

S85	3.2 mm	F2.4	84.6° ± 5%	70.3° ± 5%	55.2° ± 5%	22 mm	0.3 m	<1.6%
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Don't see what you are looking for ? Talk to us.

Customization

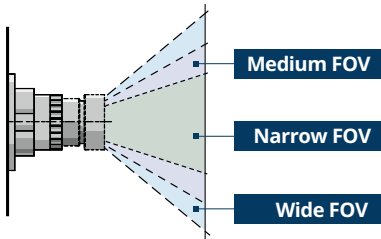
Embedded system design often requires customization to fit the specific target application. Contact your TechNexion sales representative for a consultation if you have questions on one of the following subjects:

Firmware Support

TechNexion MIPI CSI-2 Sensors come with OSP (on sensor profile) support enabling fast boot up and availability of multi camera setups in robotic and industrial embedded applications by providing granular configuration support right inside the camera and completely user definable and configurable with VisionSDK and VisionViewer software.



Custom Lenses



By using a standard S-Mount lens assembly. Our team of optical engineers can assist with precise customization in response to specific requirements to fit your embedded vision project involving FOV, TTL, MOD or mechanical or environmental constraints ensuring optimal performance across a range of use cases.

Optical Light Filters

Searching for a lens with or without an IR-cut filter is as easy as select a standard TechNexion camera sensor. However for custom filters in other light spectrums our optical engineers are standby for a consultation to learn more about your embedded vision project.

