

# TechNexion

INNOVATORS OF TECHNOLOGY



## GMSL Cameras

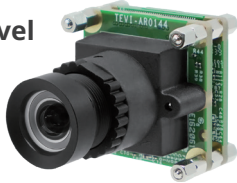
Embedded Vision

# GMSL2 Camera Family

TechNexion GMSL (Gigabit Multimedia Serial Link) cameras are compliant to ISO 20860-1 & 2 and USCAR 18 standards, Fully IP68 waterproof and can be connected with single wire COAX extension cables using FAKRA interconnects to bridge cable distances up-to 15 meters.

We offer a family of GMSL cameras ranging from 1MP to 20MP 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.

Board Level



S-Mount



C-Mount



## Block Diagram

TechNexion GMSL2 cameras are supported with a single software driver implementation on NVIDIA, NXP and Intel official evaluation boards and partner systems.

To learn more about compatibility. Reach out to your TechNexion representative to enable GMSL support on your embedded system.

	i.MX95 i.MX8M Plus
	Jetson AGX Thor Jetson AGX Orin Jetson Orin NX Jetson Orin Nano
	Arrow Lake Panther Lake

## Sensor Comparison

< 2 MP	5 MP	8 MP	10 ~ 20 MP
<b>AR0144</b> Global Color	<b>AR0521</b> Rolling Color	<b>AR0821</b> eHDR Rolling Color	<b>AR1335</b> Rolling Color
<b>AR0145</b> Global Color/ Mono	<b>AR0522</b> Rolling Color/ Mono	<b>AR0822</b> eHDR Rolling Color/ Mono	<b>AR2020</b> Rolling Color / Mono
<b>AR0234</b> Global Color	<b>AR0544</b> Rolling Color/ Mono	<b>AR0830</b> Rolling Color/ Mono	
<b>AR0235</b> Global Color/ Mono			
<b>AR0246</b> eHDR Rolling Color			

Unified single software driver.

## USB to GMSL Adaptors

The ease of usage, benefits and integration of a GMSL camera in embedded systems is often made complex by the lack of GMSL ports and connectors on the system. For those scenarios TechNexion developed a range of framegrabbers that easily plug into a USB port and extend the system with 1 to 4 GMSL interconnects.



1-4 Port



UVC Compliant



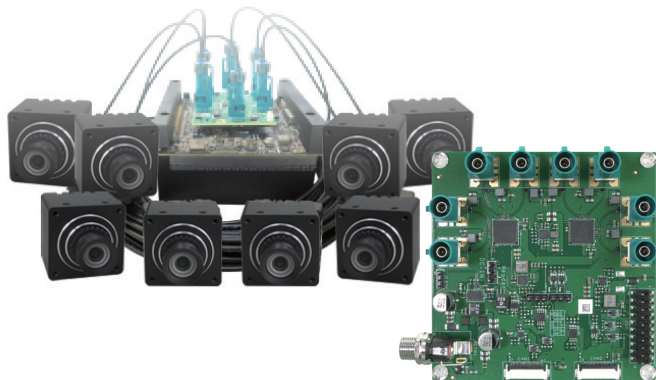
Auto-detect



Plug and Play



## Multi Camera Devkit for NVIDIA



Designed to connect TechNexion GMSL cameras to the NVIDIA® Jetson Orin™ family, including AGX Orin, Orin NX, and Orin Nano development kits.



Jetson AGX Orin  
Jetson Orin NX  
Jetson Orin Nano

## Software Enablement

Product drivers, integration guides for TechNexion GMSL2 cameras 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

	AR0144	AR0145	AR0234	AR0235 <span style="background-color: #f4a460; padding: 2px;">New</span>	AR0246 <span style="background-color: #f4a460; padding: 2px;">New</span>	AR0521	AR0522
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## Camera Information

CMOS Sensor	onsemi AR0144	onsemi AR0145	onsemi AR0234	onsemi AR0235	onsemi AR0246	onsemi AR0521	onsemi AR0522
Active Pixels	1280 (H) x 800 (V) = 1MP	1280 (H) x 800 (V) = 1MP	1920 (H) x 1200 (V) = 2.3MP	1920 (H) x 1200 (V) = 2.3MP	1920 (H) x 1080 (V) = 2MP	2592 (H) x 1944 (V) = 5MP	2592 (H) x 1944 (V) = 5MP
Pixel Size	3.0 μm x 3.0 μm	2.8 μm x 2.8 μm	3.0 μm x 3.0 μm	2.8 μm x 2.8 μm	2.0 μm x 2.0 μm	2.2 μm x 2.2 μm	2.2 μm x 2.2 μm
Illuminated Type	Front Side Illuminated (FSI)	Front Side Illuminated (FSI)	Front Side Illuminated (FSI)	Front Side Illuminated (FSI)	Front Side Illuminated (FSI)	Back Side Illuminated (BSI)	Back Side Illuminated (BSI)
Maximum S/N Ratio	38 dB	37 dB	38 dB	37 dB	39 dB	40 dB	40 dB
Optical Format	1/4" (Diagonal 4.5 mm)	1/4.3" (Diagonal 4.23 mm)	1/2.6" (Diagonal 6.8 mm)	1/2.8" (Diagonal 6.34 mm)	1/4" (Diagonal 4.41 mm)	1/2.5" (Diagonal 7.13 mm)	1/2.5" (Diagonal 7.13 mm)
Shutter Type	Global Shutter	Global Shutter	Global Shutter	Global Shutter	Rolling Shutter	Rolling Shutter	Rolling Shutter
Chromaticity	Color	Color / Mono	Color	Color / Mono	Color	Color	Color / Mono
HDR Support	-	-	-	-	Yes	-	-
Maximum Frame Rate (YUV422-UYYV)	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	1920 x 1200 @ 60 fps 1920 x 1080 @ 60 fps 1280 x 720 @ 120 fps 640 x 480 @ 120 fps	1920 x 1080 @ 30 fps 1280 x 720 @ 30 fps 640 x 480 @ 30 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	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 RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12

## Camera Interface

Serial Link	GMSL2	GMSL2	GMSL2	GMSL2	GMSL2	GMSL2	GMSL2
Serializer	MAX96717	MAX96717	MAX96717	MAX96717	MAX96717	MAX96717	MAX96717
Connector	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code

## Power

Power over Coax	10.8V - 26.4V	10.8V - 26.4V	10.8V - 26.4V	10.8V - 26.4V	10.8V - 26.4V	10.8V - 26.4V	10.8V - 26.4V
Power Consumption	1280 x 800 @ 60 fps UYVY: 12V, 0.11A=1.32W MJPG: 12V, 0.11A=1.32W	1280 x 800 @ 115 fps UYVY: 12V, 0.11A=1.32W MJPG: 12V, 0.11A=1.32W	1920 x 1200 @ 60 fps UYVY: 12V, 0.13A=1.56W MJPG: 12V, 0.14A=1.68W	1920 x 1200 @ 60 fps (TBD)	1920 x 1080 @ 60 fps (TBD)	2592 x 1944 @ 24 fps UYVY: 12V, 0.14A=1.68W MJPG: 12V, 0.14A=1.68W	2592 x 1944 @ 24 fps UYVY: 12V, 0.14A=1.68W MJPG: 12V, 0.14A=1.68W
Standby Power	≤ 0.6W Standby	≤ 0.6W Standby	≤ 0.6W Standby	TBD	TBD	≤ 0.6W Standby	≤ 0.6W Standby

## Software Support

Platform Support	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake
Software	VizionViewer™	VizionViewer™	VizionViewer™	VizionViewer™	VizionViewer™	VizionViewer™	VizionViewer™
Development SDK	VizionSDK	VizionSDK	VizionSDK	VizionSDK	VizionSDK	VizionSDK	VizionSDK

## Optional Accessories

An easy to attach A-Mount bracket for TechNexion board modules and 30mm enclosed cameras.



245-MOUNT-BRACKET-A



245-MOUNT-BRACKET on tripod  
(tripod not included)



300-MOUNT-BRACKET



300-MOUNT-BRACKET on tripod  
(tripod not included)



# Specifications

	26Q4	New			New		26Q2
	AR0524	AR0544	AR0821	AR0822	AR0830	AR1335	AR2020

## Camera Information

CMOS Sensor	onsemi AR0524	onsemi AR0544	onsemi AR0821	onsemi AR0822	onsemi AR0830	onsemi AR1335	onsemi AR2020
Active Pixels	2592 (H) x 1944 (V) = 5MP	2592 (H) x 1944 (V) = 5MP	3848 (H) x 2168 (V) = 8MP	3840 (H) x 2160 (V) = 8MP	3840 (H) x 2160 (V) = 8MP	4208 (H) x 3120 (V) = 13MP	5120 (H) x 3840 (V) = 20MP
Pixel Size	2.2 μm x 2.2 μm	1.4 μm x 1.4 μm	2.1 μm x 2.1 μm	2.0 μm x 2.0 μm	1.4 μm x 1.4 μm	1.1 μm x 1.1 μm	1.4 μm x 1.4 μm
Illuminated Type	Back Side Illuminated (BSI)	Back Side Illuminated (BSI)	Back Side Illuminated (BSI)	Back Side Illuminated (BSI)	Front Side Illuminated (FSI)	Back Side Illuminated (BSI)	Back Side Illuminated (BSI)
Maximum S/N Ratio	TBD	39.9 dB	41.8 dB	40.5 dB	39.9 dB	37 dB	39.9 dB
Optical Format	1/2.5" (Diagonal TBD)	1/4.2" (Diagonal 6.05 mm)	1/1.7" (Diagonal 9.25 mm)	1/2" (Diagonal 8.81 mm)	1/2.9" (Diagonal 6.17 mm)	1/3.2" (Diagonal 5.8 mm)	1/1.8" (Diagonal 8.96 mm)
Shutter Type	Global Shutter	Rolling Shutter	Rolling Shutter	Rolling Shutter	Rolling Shutter	Rolling Shutter	Rolling Shutter
Chromaticity	Color / Mono	Color / Mono	Color	Color / Mono	Color / Mono	Color	Color / Mono
HDR Support	-	-	Yes	Yes	-	-	-
Maximum Frame Rate (YUV422-UYYV)	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	3840 x 2160 @ 15 fps 2560 x 1440 @ 30 fps 1920 x 1080 @ 60 fps 1280 x 960 @ 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	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 3840 x 2160 @ 15 fps 2560 x 1440 @ 30 fps 1920 x 1080 @ 60 fps 1280 x 720 @ 120 fps 640 x 480 @ 60 fps	TBD
Output Format	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12	YUV422-UYYV RGB888 / RGB565 RAW8 / RAW10 / RAW12

## Camera Interface

Serial Link	GMSL2	GMSL2	GMSL2	GMSL2	GMSL2	GMSL2	GMSL2
Serializer	MAX96717	MAX96717	MAX96717	MAX96717	MAX96717	MAX96717	MAX96717
Connector	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code	FAKRA SMB Jack Z-Code

## Power

Power over Coax	10.8V - 26.4V	10.8V - 26.4V	10.8V - 26.4V	10.8V - 26.4V	10.8V - 26.4V	10.8V - 26.4V	10.8V - 26.4V
Power Consumption	2592 x 1944 @ 24 fps	2592 x 1944 @ 24 fps	3840 x 2160 @ 15 fps UYYV: 12V, 0.15A=1.8W MJPG: 12V, 0.14A=1.68W	3840 x 2160 @ 15 fps UYYV: 12V, 0.13A=1.56W MJPG: 12V, 0.13A=1.56W	3840 x 2160 @ 15 fps	4200 x 3120 @ 12 fps UYYV: 12V, 0.13A=1.56W MJPG: 12V, 0.14A=1.68W	TBD
Standby Power	TBD	TBD	≤ 0.6W Standby	≤ 0.6W Standby	TBD	≤ 0.6W Standby	TBD

## Software Support

Platform Support	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake	NVIDIA Jetson AGX Orin NVIDIA Jetson Orin Nano / NX NXP i.MX95 NXP i.MX8M Plus Intel Arrow Lake Intel Panther Lake
Software	VizionViewer™	VizionViewer™	VizionViewer™	VizionViewer™	VizionViewer™	VizionViewer™	VizionViewer™
Development SDK	VizionSDK	VizionSDK	VizionSDK	VizionSDK	VizionSDK	VizionSDK	VizionSDK





# Lens Information

		Focal Length	Aperture	D-FOV	H-FOV	V-FOV	TTL	MOD	Distortion	Lens Structure
AR0144	S33	8 mm	F1.6	33.1° ± 5%	28.0° ± 5%	17.4° ± 5%	26.2 mm	0.3 m	<-5.03%	6G + IR
	S83	2.85 mm	F2.8	82.6° ± 5%	73.5° ± 5%	50.3° ± 5%	20 mm	0.3 m	<-0.35%	2G + 3P + IR
AR0145	S31	8 mm	F1.6	31.2° ± 5%	26.3° ± 5%	16.3° ± 5%	26.2 mm	0.3 m	<-5.03%	6G + IR
	S78	2.85 mm	F2.8	78.2° ± 5%	69.5° ± 5%	47.1° ± 5%	20 mm	0.3 m	<-0.35%	2G + 3P + IR
AR0234	S32	12 mm	F2.0	31.8° ± 5%	26.9° ± 5%	16.8° ± 5%	23.2 mm	0.3 m	<-2.50%	5G + IR
	S83	3.9 mm	F2.8	82.8° ± 5%	73.4° ± 5%	50.1° ± 5%	22 mm	0.3 m	<1.26%	2G + 2P + IR
	S128	2.87 mm	F2.8	127.7° ± 5%	110.5° ± 5%	68.6° ± 5%	21 mm	0.3 m	<-20%	4G + 1P + IR
	S191*1	2.18 mm	F2.4	191.28° ± 5%	154° ± 5%	93.73° ± 5%	14.5 mm	0.2 m	<-75.6%	2G + 3P + IR
AR0235	S30	12 mm	F2.0	29.6° ± 5%	25.3° ± 5%	15.9° ± 5%	23.2 mm	0.3 m	<-2.50%	5G + IR
	S79	3.9 mm	F2.8	78.9° ± 5%	69.6° ± 5%	46.6° ± 5%	22 mm	0.3 m	<1.26%	2G + 2P + IR
	S120	2.87 mm	F2.8	120.3° ± 5%	104.6° ± 5%	62.1° ± 5%	21 mm	0.3 m	<-20%	4G + 1P + IR
AR0246	S33	8 mm	F1.6	33.0° ± 5%	28.6° ± 5%	15.9° ± 5%	26.2 mm	0.3 m	<-5.03%	6G + IR
	S83	2.85 mm	F2.8	82.3° ± 5%	74.5° ± 5%	46.2° ± 5%	20 mm	0.3 m	<-0.35%	2G + 3P + IR
AR0521	S34	12 mm	F2.0	33.6° ± 5%	26.8° ± 5%	20.1° ± 5%	23.2 mm	0.3 m	<-2.50%	5G + IR
	S85	3.9 mm	F2.8	85.2° ± 5%	73.0° ± 5%	58.1° ± 5%	22 mm	0.3 m	<1.26%	2G + 2P + IR
	S140	2.87 mm	F2.8	140.0° ± 5%	110.5° ± 5%	81.4° ± 5%	21 mm	0.3 m	<-20%	4G + 1P + IR
AR0522	S34	12 mm	F2.0	33.6° ± 5%	26.8° ± 5%	20.1° ± 5%	23.2 mm	0.3 m	<-2.50%	5G + IR
	S85	3.9 mm	F2.8	85.2° ± 5%	73.0° ± 5%	58.1° ± 5%	22 mm	0.3 m	<1.26%	2G + 2P + IR
	S140	2.87 mm	F2.8	140.0° ± 5%	110.5° ± 5%	81.4° ± 5%	21 mm	0.3 m	<-20%	4G + 1P + IR
AR0544	S22	12 mm	F2.0	21.3° ± 5%	17.1° ± 5%	12.8° ± 5%	23.2 mm	0.3 m	<-2.50%	5G + IR
	S62	3.9 mm	F2.8	61.4° ± 5%	51.0° ± 5%	39.5° ± 5%	22 mm	0.3 m	<1.26%	2G + 2P + IR
AR0821	S44	12 mm	F2.0	44.0° ± 5%	38.3° ± 5%	21.6° ± 5%	23.09 mm	0.15 m	<2%	5G + IR
	S74	6 mm	F2.8	74.4° ± 5%	67.1° ± 5%	40.8° ± 5%	28.6 mm	0.1 m	<0.5%	7G + IR
	S119	3 mm	F2.0	118.8° ± 5%	110.7° ± 5%	75.4° ± 5%	29.56 mm	0.3 m	<-5%	2G + 3P + IR
	S156	3.2 mm	F2.0	156.0° ± 5%	137.2° ± 5%	79.4° ± 5%	44.98 mm	0.3 m	<-32%	8G + IR
AR0822	S42	12 mm	F2.0	41.7° ± 5%	36.3° ± 5%	20.5° ± 5%	23.09 mm	0.15 m	<2%	5G + IR
	S72	6 mm	F2.8	72.0° ± 5%	64.7° ± 5%	39.0° ± 5%	28.6 mm	0.1 m	<0.5%	7G + IR
	S108	3 mm	F2.0	108.6° ± 5%	104.0° ± 5%	72.2° ± 5%	29.56 mm	0.3 m	<-5%	2G + 3P + IR
	S150	3.2 mm	F2.0	150.0° ± 5%	132.6° ± 5%	77.6° ± 5%	44.98 mm	0.3 m	<-32%	8G + IR
AR1335	S85	3.2 mm	F2.4	84.6° ± 5%	70.3° ± 5%	55.2° ± 5%	22 mm	0.3 m	<1.6%	4G + 2P + IR

\* Note 1 : Only compatible with board-level camera modules.

Don't see what you are looking for ? Talk to us.

# Customization

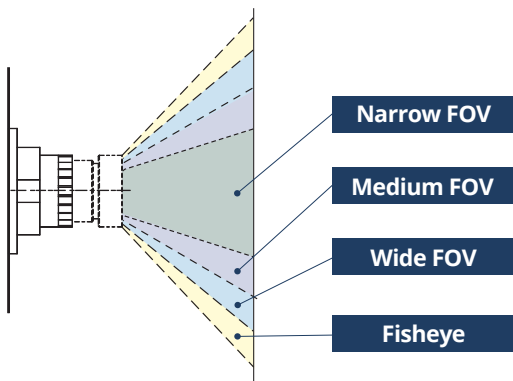
Embedded system design often requires customization to fit the specific target application. Contact your TechNexion sales representative for a consultation if you have questions on one of the following subjects:

## Firmware Support

TechNexion GMSL2 Cameras 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 VizionSDK and VizionViewer 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.

