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To: **Worldwide Partners**  
cc: Teledyne Imaging - Digital Imaging offices  
From: Manny Romero  
Date:  
RE: Lt Series Camera – New Sony Starvis 8.3M models in Production

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## Lt Series Camera – M3840 / C3840

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### Versatile High Resolution USB3 Cameras targeted at Machine Vision systems

#### Description

The Teledyne Lumenera Lt Camera Series, our latest USB3 series of affordable easy-to-use digital cameras specifically engineered for industrial imaging applications requiring tight system integration.

Lt Series cameras use the industry's latest leading sensors such as the Sony® Starvis™ rolling shutter and Pregius™ Gen2 series of global shutter active pixel-type CMOS image sensors. Additional leading sensors are targeted like Teledyne E2V Emerald series and Sony Pregius Gen3 series.



Lt Series cameras combine standard USB3.1 technology (supporting USB3 Vision 1.0) with the Teledyne Lumenera USB expertise to dependably capture and transfer images from the camera to the host PC. Lt Series cameras are available in several models implementing different sensors, image resolutions, and feature sets, either in monochrome or color versions.

[www.teledynelumenera.com](http://www.teledynelumenera.com)

#### Americas

Ottawa, Canada  
+1 613-736-4077  
lumenera.sales@teledyne.com

#### Europe

Krailling, Germany  
+49 89-89-54-57-3-80  
lumenera.sales@teledyne.com

#### Asia Pacific

Tokyo, Japan  
+81 3-5960-6353  
lumenera.sales@teledyne.com

Shanghai, China  
+86 21-6427-9081  
lumenera.sales@teledyne.com

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## Features and Details

### Models Specific Details

Supported Features	Camera Models
	M3840 / C3840
Resolution	3840 x 2160
Sensor	Sony IMX334 (8.3M)
Optical Format	1/1.8"
Shutter	Rolling shutter function (with Global row reset in External trigger mode)
Pixel Size	2.0µm x 2.0µm
Maximum Frame Rate (in full resolution)	44 fps
Pixel Data Formats	Monochrome 8-bit / 12-bit (for Mono model) Bayer 8-bit / 12-bit (for Color model)
Exposure Control	Internal - Programmable via the camera API External – based on trigger width
Exposure Minimal	104 µs (single frame) / 18 µs (free running)
Synchronization	Via External Trigger Signal
Auto-Exposure	Yes, with programable target
Black Offset Control	Yes
Flip function	Reverse X and reverse Y
Full Well charge	10.4 ke- (typical)
Output Dynamic Range	69.5 dB
Responsivity	see graphic below

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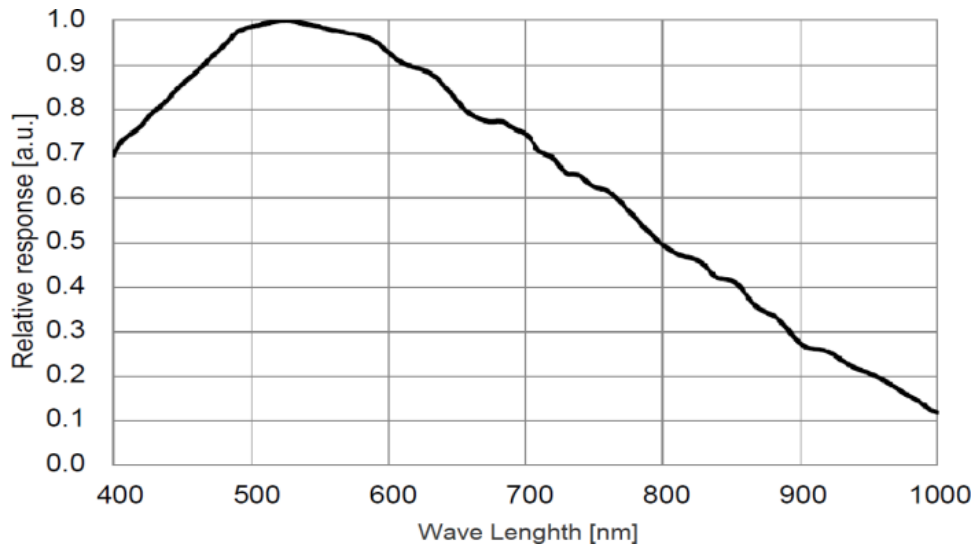
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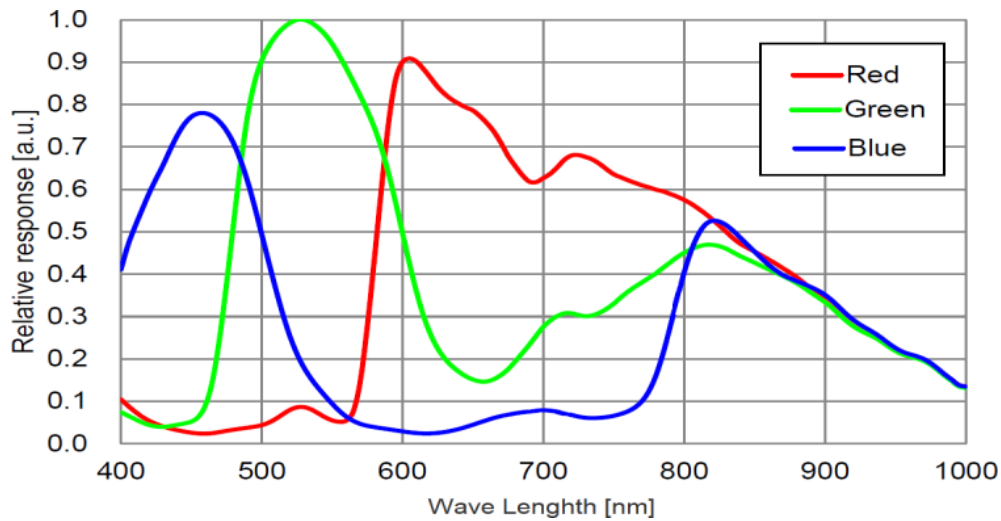
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**Spectral Response**

**Monochrome Model M3840 (Starvis IMX334)**



**Color Model C3840 (Starvis IMX334)**



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**Common Details**

Camera Controls	
Exposure Modes	Programmable in increments of 1µs minimum (in µs) is 18 µs maximum is 76 Minutes Pulse controlled via Trigger pulse width.
Trigger Inputs	Opto-isolated, 33V to 24V typical, 20mA. Trigger delay supported
Strobe Outputs	Output opto-isolated
Features	
Image Buffer	128 MB of on-board memory
Color Enhancement support	Brightness, Contrast and Gamma features on Color models
Defective pixel replacement	Yes
I/O signals	1 Input Opto-isolated, 1 Output Opto-isolated and 2 TTL bidirectional I/O
Software Interface	
Software Compatibility	Lt-Uxxx-xxxxx P/N for the UBS3 Vision v1.0 compliant Lt-Lxxx-xxxxx P/N for the Lumenera SDK compliant
Mechanical Interface	
Camera (L x H x W)	31 mm x 45 mm x 45 mm (with CS-mount lens adapter) 36 mm x 45 mm x 45 mm (with C-mount lens adapter)
Mass	88 g (with no lens)
Input Power	via 9-pin connector, or Data connector through USB
Data connector	USB3 Micro-B
I/O connector	JST# SM09B-NSHSS-TB (mating part: JST # NSHR-09V-S )
Electrical Interface	
Input Voltage	+5 to +12 Volts DC (+/-10%) on Auxiliary connector Supports the Power Over USB standard.
Power Dissipation	~3.6W
USB Speed	USB 3.1 Gen1 (5Gbps)
Data and Control	USB 3.1
Environmental Conditions	
Operating Temperature	0°C to 50°C (Housing Temperature)
Operating Relative Humidity	10% to 70% non-condensing
Storage Temperature	-40°C to +80°C
Storage Relative Humidity	20% to 80% non-condensing

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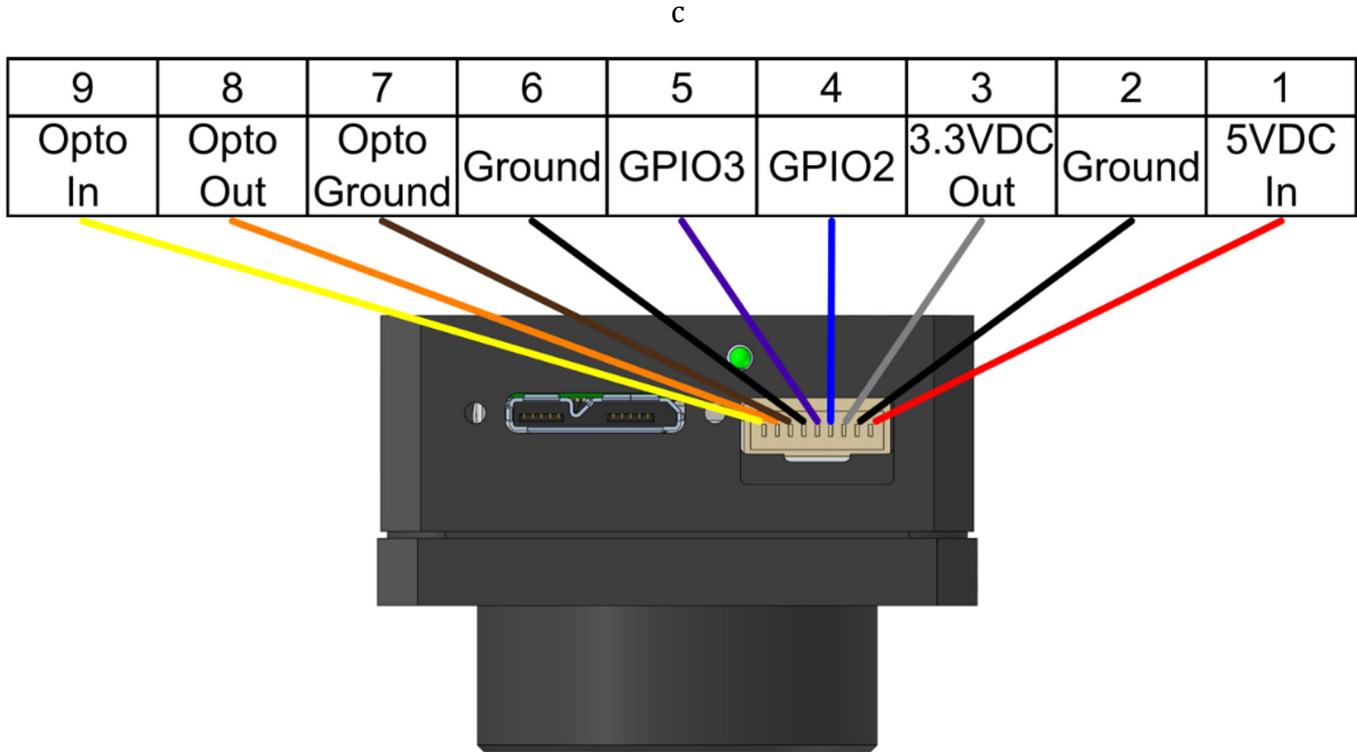
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### 9-pin I/O Connector Details

- A single 9-pin connector (JST# SM09B-NSHSS-TB) for all Lt Series camera I/O and an auxiliary DC power source. The following figure shows the pin number assignment.



### I/O Mating Connector Sources

Teledyne Lumenera offer a cable assembly for the Lt Series camera. Refer to the cable pn: La4000PAFL in the accessory list

For users wishing to build their own custom I/O cabling, the following product information is provided to expedite your cable solutions.

MFG	Part #	Description	Data Sheet
JST	NSHR-09V-S	Discrete connector	<a href="http://www.jst-mfg.com/product/pdf/eng/eNSH.pdf">http://www.jst-mfg.com/product/pdf/eng/eNSH.pdf</a>
JST	SSHL-003T-P0.2	contact	<a href="https://www.digikey.com/product-detail/en/jst-sales-america-inc/SSHL-003T-P0.2/455-2792-1-ND/3313668">https://www.digikey.com/product-detail/en/jst-sales-america-inc/SSHL-003T-P0.2/455-2792-1-ND/3313668</a>

### JST # NSHR-09V-S Connector availability online

For North America (specific countries can be selected)

<https://www.digikey.com/product-detail/en/jst-sales-america-inc/NSHR-09V-S/455-2785-ND/3313624>

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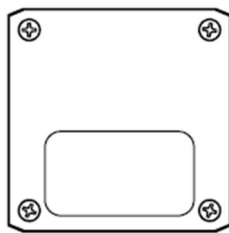
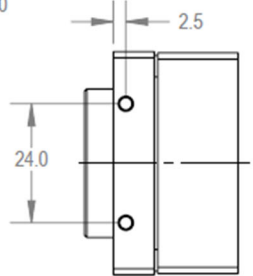
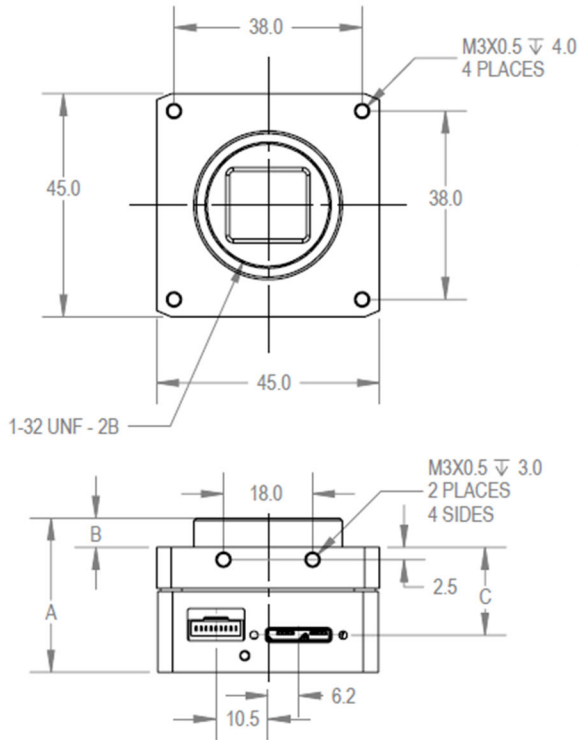
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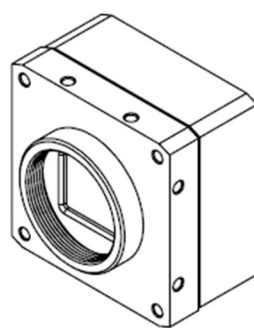
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**Mechanical Information**



MODELS	MOUNT	DIMENSION		
		A	B	C
LT-1950 LT-2020 LT-2420 LT-4020 LT-4030	C-	36.1	10.8	17.7
LT-1951 LT-2021 LT-2421 LT-4021 LT-4031	CS-	31.1	5.8	17.7
LT-1900 LT-3840	C-	32.8	10.8	14.5
LT-1901 LT-3841	CS-	27.8	5.8	14.5



DIMENSIONS IN MILLIMETERS

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## Software support

The Teledyne Lumenera Lt Series cameras are compatible with the following software packages

All the part numbers starting with LT-Lxxx-xxxxxx are compatible with the Teledyne Lumenera SDK below:

Operating System	Teledyne LUMENERA SDK
  <b>Linux</b>	 <a href="#">Lumenera Camera Software Development Kit (LINUX) v2.4.1</a>
 <b>Windows</b>	 <a href="#">LuCam Software and Software Development Kit v6.8.3</a>

A download link can be found below:

<https://www.lumenera.com/support/industrial-usb-ethernet/drivers-downloads.html>

The Teledyne Lumenera Lt Series cameras with part numbers starting with LT-Uxxx-xxxxxx are compatible with a USB3 Vision compliant SDK:



Teledyne Imaging have a beta driver USB3 Vision support within its popular Sopera Lt SDK (within v 8.60)

Contact your sell representative to have access to the Beta driver today.

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## Availability



Production units available NOW

For model based on the Sony 2M Starvis, another SIU will soon be release with availability and pricing.

## Pricing and Ordering Options

The list prices for the camera models based on the 8M Starvis are provided in the table below. Current lead time for cameras is 2 to 3 weeks.

Contact your sales representative for volumes greater than 5 units.

Lt Series - Small casing (45mm x 45mm)					
Model	Resolution	Input Voltage	Part Number	Lens Mount Option	List Price
Lt-M3840 	3840 x 2160 @ 44fps Sony IMX334 Mono (8.3M) Rolling	5 Volt DC and Power over USB	LT-xM10-M3840	C-mount STD	\$380
			LT-xM10-M3841	CS-mount STD	\$380
Lt-C3840 	3840 x 2160 @ 44fps Sony IMX334 Color (8.3M) Rolling	5 Volt DC and Power over USB	LT-xC10-C3840IF	C-mount STD With IR cut-off filter	\$395
			LT-xC10-C3841IF	CS-mount STD With IR cut-off filter	\$395

All above Part number supported for **USB3 Vision compliant device** are identify as LT-**U**xxx-xxxxx

All above Part number supported in **LuCam Software SDK** are identify as LT-**L**xxx-xxxxx

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## Accessories

Part Number	Description	List Price
La303ML	USB 3.1 Cable A-Male to Micro-B male Locking (3m / 9.75ft) 	\$20
La4000PAFL	GPIO Sync cable, 9-Pin with IO lead (power & lead cable) (applicable to PN: LT-xx1x-xxxxxx)	\$30

Best Regards,

# Manny Romero

Senior Product Manager

Email: [manuel.romero@teledyne.com](mailto:manuel.romero@teledyne.com)

Tel: +1-514-333-3297 x4268

[www.teledynelumenera.com](http://www.teledynelumenera.com)

#### Americas

Ottawa, Canada  
 +1 613-736-4077  
[lumenera.sales@teledyne.com](mailto:lumenera.sales@teledyne.com)

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