

# Icon™ User Programmable Camera Series



## Features and Benefits

### Image Acquisition

- Available in multiple resolutions and sensor technologies
- Integrated support for camera configuration and setup

### Embedded Processing Platform

- Fully Supported by Embedded Sapera Vision SDK
- Unified API across camera models
- Familiar off-the-shelf development tools
- In-camera application debugging via integrated Ethernet port
- Multi-tasking operating system for efficient in camera program execution

### Open Platform

- Ability to add custom code and algorithms using C/C++
- Field proven Sapera Processing libraries

### Autonomous Operations

- Self contained unit, operates without a PC
- Local I/O enables external event synchronization
- Built-in illumination control

### Compliance

Compact, ergonomic design offers:

- Small size: 44 x 44 x 44mm
- FCC, CE and RoHS compliant

## User Programmable Camera for Embedded Imaging Applications

The Icon camera series combines Teledyne DALSA's expertise in image sensors, cameras and image processing with off-the-shelf development tools and libraries to deliver a cost effective, yet powerful application development environment.

### Embedded Image Capture

Icon cameras feature high quality, high sensitivity, low noise image output and support resolutions from VGA to 1600 in color and monochrome formats. Image capture can be synchronized with external events and controls for a deterministic response.

**CamExpert™** - Camera Configuration Utility - Teledyne DALSA's powerful CamExpert is a graphical user interface that provides an interactive environment to create or modify camera configurations files. Icon camera parameters can be fine tuned while grabbing live images on the host computer. In addition, CamExpert's intuitive interface allows users to explore and reconfigure camera control signals.

### Powerful Embedded Processing Platform

To process and analyze images, Icon cameras feature 1GHz ARM Cortex-A8 and C64x+ DSP processors and Microsoft® Windows CE™ real-time operating system. This powerful processing capability combined with extremely low power consumption and a ruggedized small form factor body is ideal for embedded processing applications.

### Development Environment and Processing Libraries

#### Embedded Sapera™ Vision SDK

At the heart of Icon's sophisticated development environment is Embedded Sapera Vision SDK – a comprehensive suite of image acquisition, processing, analysis and control libraries, including Sapera Processing, Teledyne DALSA's highly optimized image processing primitives, and advanced image analysis tools such as 1D and 2D barcode, OCR, blob analysis, area and geometric search and calibration.

While Icon comes pre-licensed and ready to deploy using Sapera Processing tools it is engineered as an open platform to allow OEMs to develop applications using third party image processing tools.

#### Microsoft® Visual Studio

Supported by the Embedded Sapera Vision SDK, users can develop vision applications using the familiar off-the-shelf development tools like Microsoft® Visual Studio. Applications can then be debugged and traced using remote Ethernet tools of Microsoft® Visual Studio, substantially reducing development and deployment time.

### Autonomous Operations

Icon cameras are designed for standalone operations and to carry out necessary actions with the help of on-board general purpose I/Os and communications using Ethernet or RS232 serial ports. Icon cameras incorporate non-volatile memory to store user applications and can be configured to run on power up without any assistance from a PC. In addition, Icon cameras feature optically isolated inputs and outputs for reliable external event synchronization.

<sup>1</sup>Contact Teledyne DALSA Sales for other supported operating systems

## Specifications\*

Icon Series	Description			
Sensor	640x480 1/3"	1024x768 1/3"	1280x960 1/3"	1600x1200 1/3"
Monochrome	ICX424AL	ICX445AL	ICX445AL	ICX274AL
Color	ICX424AQ	ICX445AQ	ICX445AQ	
Pixel Size	7.7x7.7µm	3.75x3.75µm	3.75x3.75µm	4.4x4.4µm
Sensor Size(diagonal)	6mm	6mm	6mm	8.9mm
Dynamic Range	57dB	55dB	55dB	56dB
Pixel Bit Depth	M: 8-bit/pixel or C: 24bit RGB	M: 8-bit/pixel or C: 24bit RGB	M: 8-bit/pixel or C: 24bit RGB	M: 8-bit/pixel or C: 24bit RGB
Gain	-6dB to +12dB	-6dB to +12dB	-6dB to +12dB	-6dB to +12dB
Frame Rate	60fps	22fps	22fps	15fps
Lens Mount	CS,C-mount	CS,C-mount	CS,C-mount	CS,C-mount
Icon Developer's Kit P/N <sup>1</sup> - Monochrome	K1-EM0B-SKT10	K1-EM0B-SKT20	K1-EM0B-SKT30	
Color	K1-EC0B-SKT10	K1-EC0B-SKT20	See note 2	See note 2
Exposure Control	22µs to 1s	22µs to 1s	22µs to 1s	35µs to 1s

## Processor & Memory

Model	Texas Instruments® Davinci™ 37xx
Program Memory	256MB
Storage Memory	256MB

## Software

Operating System	Microsoft® Windows® CE 6
Development IDE	Camera: Microsoft Visual Studio 2005 and 2008 Host: Microsoft Visual Studio 2005, 2008 and 2010
Development SDK	Embedded Samera Vision SDK - Image Acquisition and control library - Image Processing and Analysis <ul style="list-style-type: none"> <li>• Image processing primitives</li> <li>• Blob Analysis</li> <li>• Pattern matching and Pattern finding using area and edge based search</li> <li>• Barcode 1D and 2D symbology</li> <li>• OCR</li> <li>• Calibration</li> </ul>

## IO & Control

Communication	Ethernet 100-BaseT, RS232
Input	2 optically isolated- 1 trigger, 1 general purpose; 12-30V tolerant, 7.5mA typical at 24V input Switching ON: time1µs; OFF: 10µs
Output	2 optically isolated- 24V max, 100mA, 200µs ON/OFF delay
Illumination Control	12V output, 1A max

## Mechanical

Enclosure	Machined Aluminum 44x44x44mm
Mounting	2xM4/side
Connectors	M12 Style: 2 x 8-pin, 1 x 5-pin

## Power

Power	12 to 30 V DC, 150mA@24VDC
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## Temperature

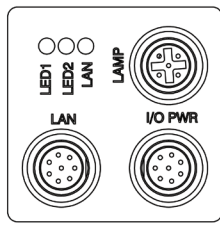
Temperature	0 to 45°C
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## Compliance

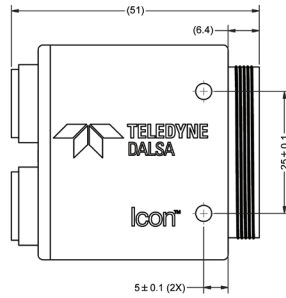
Compliance	FCC, EU CE, RoHS
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<sup>1</sup> Includes camera, CS\C-mount adapter, SDK, cables and accessories

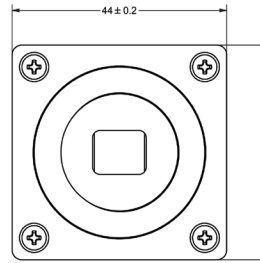
<sup>2</sup> Contact Teledyne DALSA Sales for availability



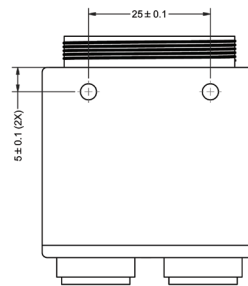
Back View



Side View



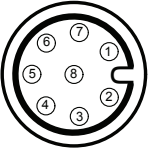
Front View



Bottom View


### LAN Connector Signal Details

LAN 8-pin female M12 connector

LAN Connector	Pin	Direction	ICON Signal
	1	-	PWR+
	2	-	NC
	3	-	GND+
	4	Out	TXD-
	5	In	RXD+
	6	Out	TXD+
	7	-	NC
	8	In	RXD-


### I/O Power Connector Signal Details

Power 8-pin female M12 connector

I/O PWR Connector	Pin	Direction	ICON Signal
	1		TRIG
	2	-	PWR
	3	In	INO
	4	Out	OUT1
	5	In	IN CMN
	6	Out	OUT0
	7	-	GND
	8	Out	OUT CMN

### LAMP Connector Signal Details

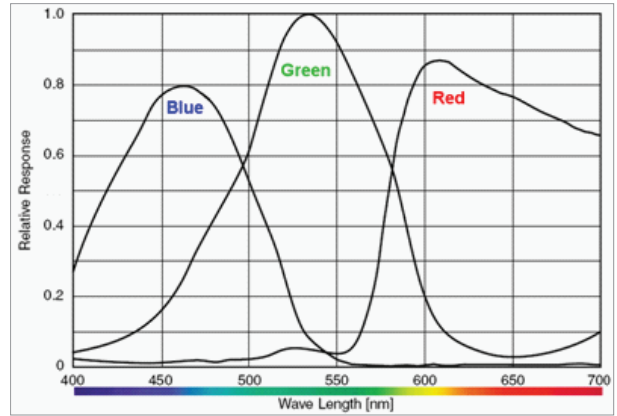
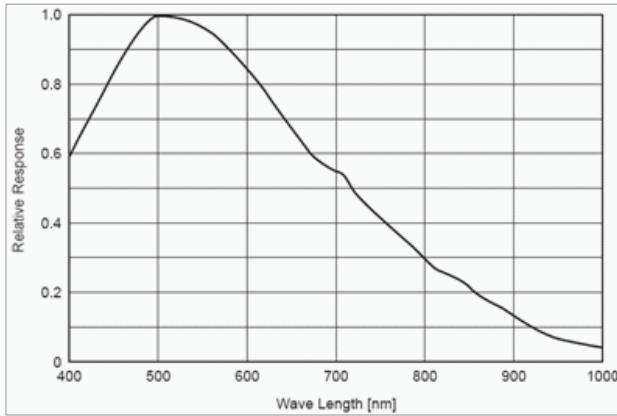
LAMP 5-pin female M12 connector

LAMP Connector	Pin	Direction	ICON Signal
	1		PWR
	2	In	RS232 RX
	3	-	GND
	4	Out	STR
	5	Out	RS232 TX

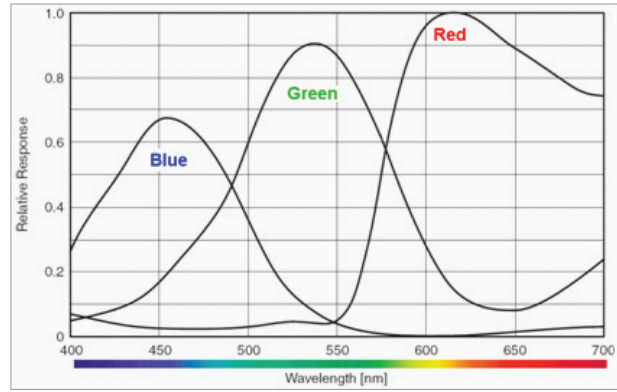
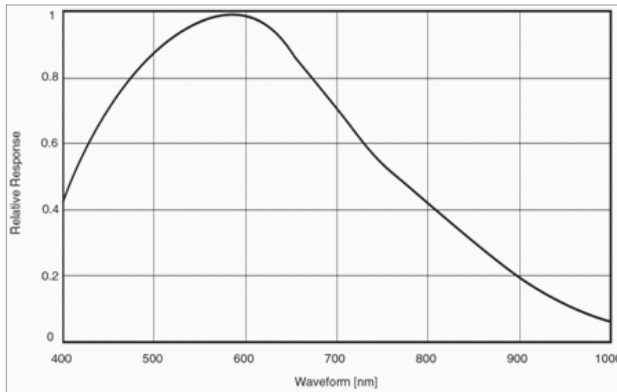
# Icon™ User Programmable Camera Series

## Responsivity

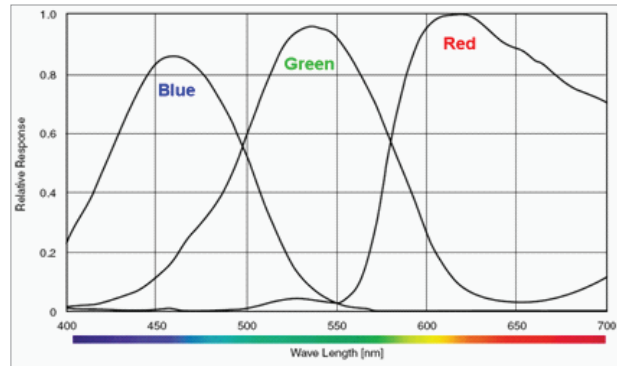
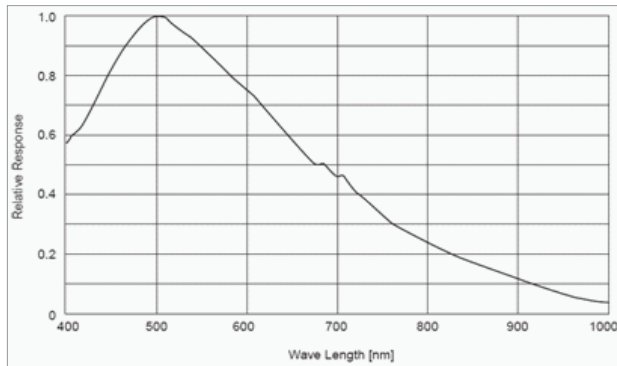
Icon 640x480



Icon 1200x960



Icon 1600x1200



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