PixeLINK®
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PL-D729

CMOS | ON SEMI MANO 9600 | ROLLING SHUTTER

The PL-D family of cameras links together the benefits of high frame rate CMOS technology with the high speed data throughput of USB 3.0 technology. The PL-D729 camera provides low noise images for outstanding value in a broad range of industrial applications.

KEY FEATURES

- 9.5MP CMOS
- 22 FRAMES Per Sec
- 2.4 µm
- 10.98 mm
- 10 BIT
- MONO
- USB 3

TYPICAL APPLICATIONS

- Parts Inspection
- Strength Testing
- Metrology
- Biometrics
- Medical Imaging
- PCB & Flat Panel Display Inspection

DESCRIPTION

The PL-D family of USB 3.0 cameras links together the benefits of high frame rate CMOS technology with the high speed data throughput of USB 3.0 technology. The PL-D729 camera provides low noise images for outstanding value in a broad range of industrial applications. The camera features a 9.5 megapixel (3840 x 2484) resolution imager.

The PL-D729 cameras are based on an On Semiconductor MANO 9600 CMOS rolling shutter sensor with a 2/3" optical format. The extensive built-in image processing possibilities (image pre-processing) result in outstanding image quality, less load on the system and higher performance. These cameras provide the user choice of 8-bit or 10-bit digitization and have a dynamic range of up to 60db. The external hardware trigger and 2 general-purpose outputs ensure users have the flexibility to synchronize the camera with their processes and illumination.

PixeLINK's industry leading SDK uses a common API for all cameras regardless of the chosen interface. Software code developed for one camera is easily transferred to other PixeLINK models without the need to recompile. Overall system costs are reduced and camera integration is simplified.

The flexible Region of Interest (ROI) control allows users to operate at higher frame rates by placing a lower resolution "window" on the imager at any location.

GENERAL FEATURES

- Great image quality
- Compact size
- One common API for all cameras
- Board level and enclosed models
- Tethered sensor head option 6"/12" (*Board Level version only)
- Auto & manual exposure
- Programmable LUT
- Auto & Manual White Balance
- Saturation
- Binning and Decimation
- Image Flip & Rotate
- Callbacks (Image Filters)

SENSOR FEATURES

- 9.5 MP (3840 x 2484) Resolution
- CMOS Rolling Shutter
- Flexible Region of Interest (64 pixel H x 64 pixel W granularity)
- 8-bit or 10-bit digitization

SOFTWARE FEATURES

- PixeLINK Capture Software - a test and configuration software, with real-time, interactive multi-camera application.
- PixeLINK SDK - providing full access to the PixeLINK API, as well as sample applications with full source code.

AVAILABLE CONFIGURATIONS

PL-D729MU	PL-D729MU-BL-AF25	PL-D729MU-S-BL-AF9.6	PL-D729MU-BL-AFE25
PL-D729MU-BL	PL-D729MU-S-BL-AF2.6	PL-D729MU-BL-AFE12	PL-D729MU-BL-AFE35
PL-D729MU-BL-AF16	PL-D729MU-S-BL-AF7.5	PL-D729MU-BL-AFE25	

Color Space	Interface	Housing	Autofocus
C – Color	F – Firewire	S- BL – S Mount Board Level	AF - Autofocus Lens (in mm)
M – Mono	G – GigE	BL – Board Level	AFE - Edmund Optics Autofocus Lens (in mm)
NIR – Near Infrared	U – USB	T – Trigger	
		CYL - Cylindrical case	

TECHNICAL SPECIFICATIONS

SENSOR	
Sensor	ON Semiconductor MANO 9600
Type	CMOS Rolling Shutter
Resolution	9.5 MP (3840 x 2484)
Pixel Pitch	2.4 µm x 2.4 µm
Active Area	10.98 mm diagonal
Peak QE	40% at 550 nm
Max Datarate	248 MHz

PERFORMANCE SPECIFICATIONS	
FPN	<1 % of signal
PRNU	<2% of signal
Dynamic Range	54 dB
Bit Depth	8 or 10-bit
Responsivity at 550 nm	4 LSB10 /nJ/cm2
Mono Data Formats	Mono 8 and Mono 16

MECHANICALS	
Dimensions (mm)	32 x 48 x 11 (without lens mount)
Weight (g)	35.8 (without optics)
Mounting	C-Mount and CS-Mount

INTERFACES	
Interface | Date rate	USB 3.0 | Micro-B | 5Gbps
Board Level GPO/Strobe	2 outputs, 3.3V

FRAME RATE	
Resolution	Free Running
3840 x 2484	22 fps
1920 x 1080	88 fps
1280 x 1024	123 fps
640 x 480	385 fps
Frame rates will vary based on host system and configuration	
*Above calculations based on fixed frame rate mode	

POWER REQUIREMENTS	
Voltage Required	5V DC (from USB connector)

PIO INTERFACE PIN OUTPUT DESCRIPTION	
Pin	**Pin Name & Function**
1	3.3V power output
2	TRIGGER, 3.3V HCMOS input
3	Ground
4	GPO1, 3.3V HCMOS output
5	GPO2, 3.3V HCMOS output
6	Clock, 3.3V (12C access for OEMs)
7	Data, 3.3V (12C access for OEMs)
8	No connection
Board connector: Molex 53398-0871 (8-pin, 1.25mm pitch, vertical); Cable receptacle: Molex 51021-0800; Cable crimp terminals: Molex 50079-8100	

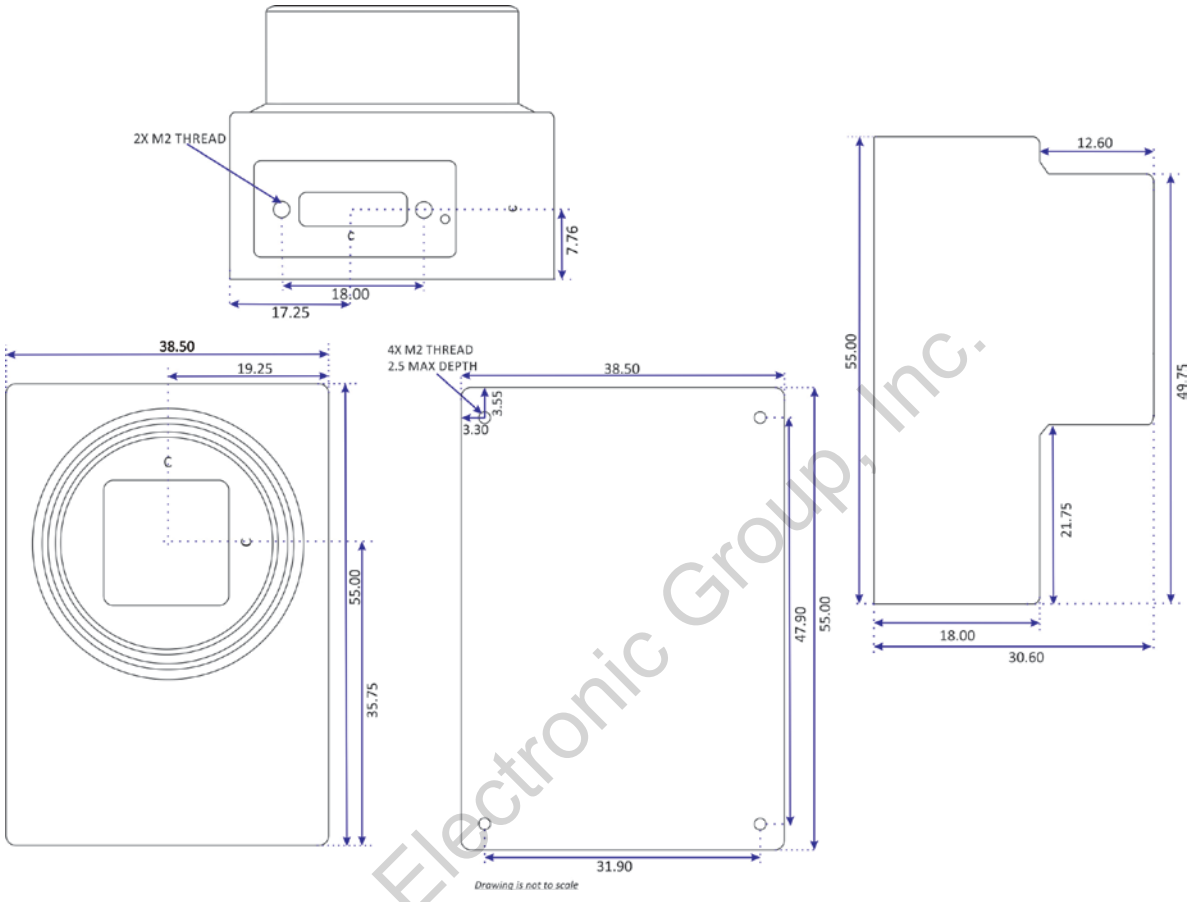
SOFTWARE	
PixeLINK Capture	Test and Configuration Software
DirectShow	Bundled with PixeLINK Capture
TWAIN	Bundled with PixeLINK Capture
SDK	API, sample code and LABVIEW wrappers

ENVIRONMENTAL & REGULATORY	
Compliance	RoHS
Shock & Vibration	300 G & 20 G (10Hz - 2KHz)
Operating Temperature	0°C to 50°C (non-condensing)
Storage Temperature	-45°C to 85°C

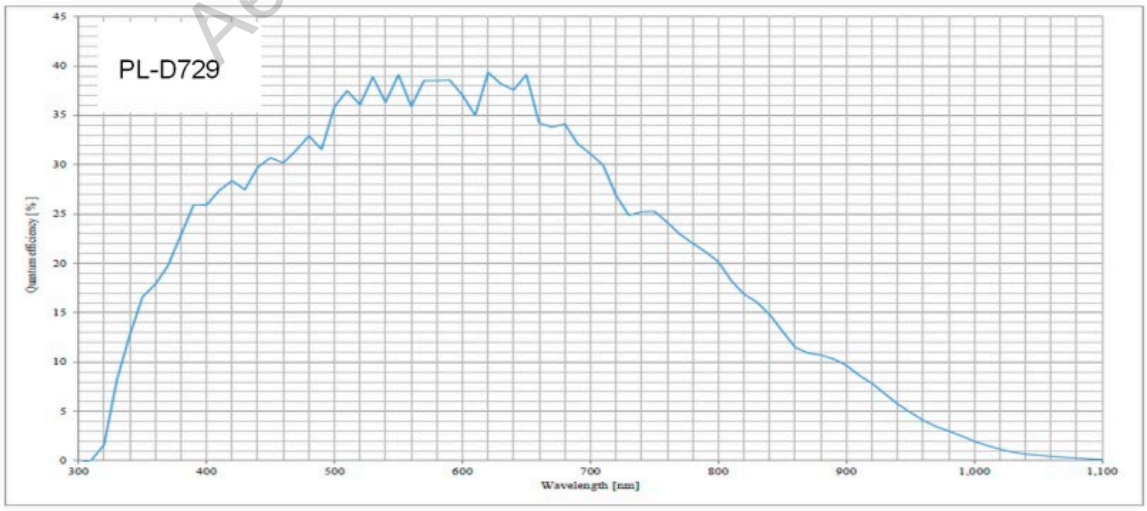
COMPUTER & OPERATING SYSTEM				
	Windows	**Linux x86**	**Linux ArmV7**	**Linux ArmV8**
Processor	Intel i5 or better	Intel i5 or better	Arm7 (32 bit)	Arm8 (64 bit)
Memory	4GB recommended	4GB recommended	2GB	2GB
Hard Drive Space	150 MB	150 MB	50 MB	50 MB
Operating System	Windows 7/8/10	Ubuntu 14.04 / 16.04 Desktop	Ubuntu 14.04 Desktop	Ubuntu 14.04/16.04 Desktop

MECHANICAL DRAWINGS & RESPONSIVITY CURVES

MECHANICAL DRAWINGS



RESPONSIVITY CURVE – MONO



PixeLINK Capture Software

PixeLINK Capture is a real-time, interactive, multi-camera application. This software is compatible with all PixeLINK's USB 3.0 line of cameras and has been developed using the most advanced software development tools in the market to provide an unmatched multi-camera user experience. Click here to download the PixeLINK Capture software.

PixeLINK Capture is an advanced application with an agile and friendly user interface. Users now have the ability to drag and drop or arrange windows as they like. As a multi-camera application with a built-in autofocus application, PixeLINK Capture offers tremendous flexibility and power allowing vision engineers the ability to configure and test multi-camera vision applications.

PixeLINK Capture's built-in autofocus application supports both single point and multiple point autofocus. When launched with an autofocus camera, the application takes advantage of the speed of liquid lens technology and displays the time in milliseconds, for each autofocus shot.

For the advanced user, PixeLINK Capture offers options of more complex image enhancements for exposure control, filtering, frame-by-frame property changes, all viewable in the preview window prior to capture.

SOFTWARE FEATURES	
Capture Tab	The "Capture" tab allows the user to capture images in different ways, i.e, one at a time, automated using a "trigger", and elapsed time. The user will also be able to capture images in various file formats like BMP and JPEG.
Effects	An "Effect" transforms the image's pixel data just prior to display or capture. Typically this function is intended to process an incoming image. The effects tab allows the user to select a pre-defined callback on real-time or captured images.
LUT	The Lookup table (LUT) control provides the user an easy way to manipulate the grey scale image data coming from the camera via a simple lookup table.
Layout	The user will be able to stream mutiple cameras with this application. To control cameras together and keep organized under the same window, the software has a user-friendly multiple window layout feature.
Preview	The preview panel displays live images from the camera which begins streaming immediately when the software is launched. If multiple cameras are connected to the system, then any random camera from the camera tray will start streaming. The preview panel in PixeLINK Capture has been designed with functionalities that allow the user the ability to control a camera directly from the preview panel.
Settings	The settings tab controls the image quality in real-time as seen on the preview window. Controls like exposure, gain, etc. are contained in this tab.
Triggers and GPO Tab	This tab allows the user to control external devices such as triggers and strobes connected to the camera.
Video	The video tab allows the user the ability to capture and display "video clips" or group of frames (partial or full), save the raw data and further save the formatted clip so that it can be previewed at a later date.

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DIGITAL IMAGING MADE SIMPLE

The use of PixeLINK machine vision cameras in industrial environments has been proven in numerous applications. Used by both end-users and OEMs, PixeLINK offers high quality, reliable off-the-shelf and custom industrial camera solutions to customers around the world.

Only PixeLINK can provide you with a custom machine vision camera solution that matches your specific business need. Our custom design services will help you select and integrate the best machine vision camera for your particular application. Contact us today!

PixeLINK, a part of the Navitar family, designs and manufactures reliable industrial cameras and microscope cameras for any machine vision project or microscopy application. Used by both OEM and end-user customers, our custom and off-the-shelf cameras are used in imaging projects around the world.

At PixeLINK, we combine reliable industrial camera hardware with industry-leading software to offer unmatched off-the-shelf, OEM and industrial imaging solutions to customers.

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