PL-B777F & PL-B778F FireWire
PL-B777G & PL-B778G Gigabit Ethernet
PL-B777U & PL-B778U USB 2.0

5 MP (2592 x 1944)
Monochrome & Color Cameras
7 fps Free Running -6.5 fps Triggered

General Description

The PL-B777 Monochrome and PL-B778 Color cameras provide high resolution, low noise images for outstanding value in a broad range of industrial, security and life sciences applications. The camera features a 5.0 megapixel (2592 x 1944) resolution imager capable of 7 frames per second at full resolution. The PL-B777/778 series of cameras are based on a Aptina (formerly Micron) CMOS progressive scan sensor with a 1/2.5" optical format. Factory calibrated Digital Pixel Correction and on-board Flat Field Correction (FFC) provides image quality similar to CCD cameras but at a much more affordable price. These cameras provide the user of choice of 8-bit or 12-bit digitization and a dynamic range of 60dB in 12-bit mode. The external hardware trigger and 2 general-purpose outputs ensure users have the flexibility to synchronize the camera with their processes and illumination.

You have the choice of a FireWire, Gigabit Ethernet or USB 2.0 interface, all of which eliminate the need for a frame grabber. 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 sensor architecture provides superior anti-blooming compared to CCD sensors making the PL-B777 & 778 an excellent choice for imaging highly reflective objects or scenes with intense illumination. 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. The camera can output 10 fps at 2048 x 1536 resolution, 14.5 fps at 1920 x 1080 resolution and 64 fps at 640 x 480 (VGA) resolution.

Why CMOS Sensor Technology?

CMOS sensor technology has made great strides in image quality over the past 5 years – to the point where performance levels are on par with many CCD sensors. The machine vision community continues to embrace CMOS technology due to its inherent strengths of low cost, low power consumption, high-speed, superior anti-blooming and the flexible ROI.

Typical Applications

The PL-B777 & 778 cameras are suitable for a broad range of applications such as biometrics, high performance security & surveillance applications, parts inspection, metrology, high resolution document archiving, PCB inspection and flat panel display inspection.

FireWire, Gigabit Ethernet & USB 2.0 Interfaces

PixeLINK recognizes that OEMs and System Integrators are constantly looking for ways to reduce system costs and complexity. PixeLINK has answered this call by offering three widely accepted interfaces all of which eliminate the need to purchase & integrate frame grabber boards and expensive custom cables.

IEEE 1394A – FireWire has proven itself as a reliable and robust interface over the past decade in machine vision applications. The deterministic communication provided by FireWire allows for precise timing in synchronized applications. PixeLINK's FireWire cameras support the IIDC 1.31 specification making them compatible with a wide range of 3rd party DCAM software applications.

Gigabit Ethernet – 1,000 Mbit data rates, 100M cable lengths and networked connectivity have made the Gigabit Ethernet interface for machine vision, appropriately named GigEVision, the fastest growing interface over the past years. Transmission is provided via standard CAT5E or CAT6 cables.

USB 2.0 – Universality of this interface on host PCs is a major benefit for applications in the consumer end-user markets. Plug-and-play operation and low cost cabling makes USB 2.0 the leading user-friendly interface.

Customization - The products listed here are standard offerings. PixeLINK also provides an extensive list of customized cameras to OEM customers around the world. If you can't find what you are looking for in the standard products, call us. We may already have what you need. If not, we can certainly design and build it for you.

FEATURES	BENEFITS
Common API for all cameras	Use existing code without recompiling. Saves development time and money.
5.0 Megapixel resolution	High definition images provide over 16X resolution compared to VGA cameras
Flexible ROI control	Users can increase frames up to 2740 fps with 8 pixel granularity
In-camera Flat Field Correction (FFC) & Defective Pixel Correction	Provides superior image quality by correcting for non-uniform illumination, lens shading, and sensor Fixed Pattern Noise (FPN)

SENSOR

Sensor	Aptina (formerly Micron) CMOS
Type	CMOS Rolling Shutter
Resolution	2592(H) x 1944(V) 5.0 MP Color & Mono
Pixel Pitch	2.2 µm x 2.2 µm
Active Area	5.70 mm x 4.28 mm - 7.13 mm diagonal
Peak QE	69 % (mono) 46 % (color)
Max Datarate	48 MHz

COMPUTER & OPERATING SYSTEM

Processor	2.0 GHz or better
Memory	512 MB min. 1 GB recommended
Operating System	Windows XP 32/64bit & Windows 7 32/64bit
Hard Drive Space	75 MB

POWER REQUIREMENTS

Voltage Req.	FireWire/GigE 8-32 V DC - USB 5 V DC
Power Req. PL-B777	FireWire 3.6 W, USB 3.2 W, GigE 4.6 W
Power Req. PL-B778	FireWire 4.6 W, USB 4.0 W, GigE 5.6 W

ENVIRONMENTAL & REGULATORY

Compliance	FCC Class B, CE & RoHS
Shock & Vibration	300 G & 20 G (10Hz - 2KHz)
Operating Temp.	0°C to 50°C (non-condensing)
Storage Temp.	-45°C to 85°C

SOFTWARE

PixeLINK Capture OEM	Free Download (www.pixelink.com)
DirectShow (exl. GigE)	Bundled with PixeLINK Capture OEM
TWAIN	Bundled with PixeLINK Capture OEM
SDK	API, sample code and LabVIEW wrappers
DCAM 1394 Compliance	IIDC version 1.31

CAMERA CONTROLS & FEATURES

Auto & Manual White Balance, Color Temperature, Gain, Brightness (Dark Offset), Gamma, Saturation, Region of Interest (ROI), Histogram, Binning, Averaging, Resampling, Image Flip & Rotate, Programmable LUT, In-Camera Defective Pixel & Color Correction, Callbacks (Image Filters), FFC (Gain & Offset).

FRAME RATES

Resolution	Free Running Mode	Triggered Mode
2592 x 1944	7	6.5
1920 x 1080	14.5	14.2
1600 x 1200	15.8	14
1280 x 1024	21	18.7
640 x 480	64	51

Frame rates will vary based on host system and configuration

Specifications are subject to change without notice

PERFORMANCE SPECIFICATIONS *

Responsivity	Mono TBD DN/(nJ/cm^2)
	Color TBD DN/(nJ/cm^2)
FPN	<1 %
PRNU	<2.5 %
Read Noise	PL-B777 4.1 DN - PL-B778 4.5 DN
Dynamic Range	PL-B777 60 dB - PL-B778 59.2 dB
Bit Depth	8 & 12-bit
Color Data Formats	Bayer 8, Bayer 16 and YUV422
Mono Data Formats	Raw, Mono 8 and Mono 16
Exposure Range	100 µs to 2 seconds free running
	136 µs to 2 seconds triggered
Gain	0 dB to 14 dB in TBD increments

*PL-B777: 40ms integration time, 0dB gain, FFC on, 12-bit mode
*PL-B778: 100ms integration time, 0dB gain, FFC on, 12-bit mode

MECHANICALS

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Dimensions	102 x 50 x 41 mm (straight)
	110 x 50 x 41 mm (right angle)
Weight	Straight: 204 g - Right Angle: 258 g
Mounting	4 M3 threaded holes in front plate &
	4 M3 threaded holes in camera case
Tripod Mount	1/4" - 20 mount (optional)
Status LED	Amber - Start-up, Green - Idle or streaming
	Red - Warning or failed status
Lens Mount	C & CS-Mount, 1/2.5" optical format

INTERFACES

Interface / Date rate / Connector	IEEE 1394A (2) / 400 Mbit / 6-pin
	GigE / 1000 Mbit / RJ-45
	USB 2.0 / 480 Mbit / Type B
Trigger Connector	9-pin Micro D
Trigger Modes	Free running, software, hardware
Trigger Input	Optically isolated 5-12V DC @ 4-11 mA
GPO/Strobe	2 Optically Isolated - Maximum 40V DC
	differential. Maximum 15 mA

For more information, visit: http://www.pixelink.com/help

## PIN OUTPUT DESCRIPTION

Pin   Pin Name & Function

1   POWER cable power, FireWire/GigE 8-32 V DC - USB 5 V DC
2   Gp2+ Positive terminal of GPO 2
3   Gp2- Negative terminal of GPO 2
4   Gp1+ Positive terminal of GPO 1
5   Gp1- Negative terminal of GPO 1
6   TRIGGER + Positive terminal of trigger input
7   TRIGGER - Negative terminal of trigger input
8   (no connection)
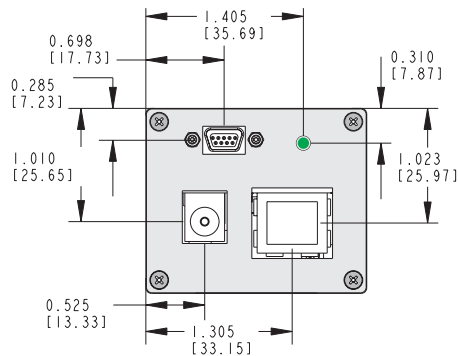9   GROUND Logic and chassis ground
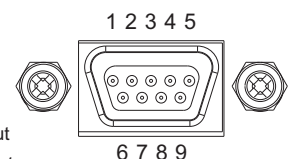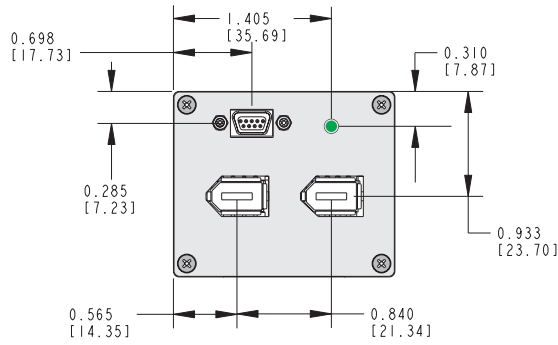
Back Panel FireWire
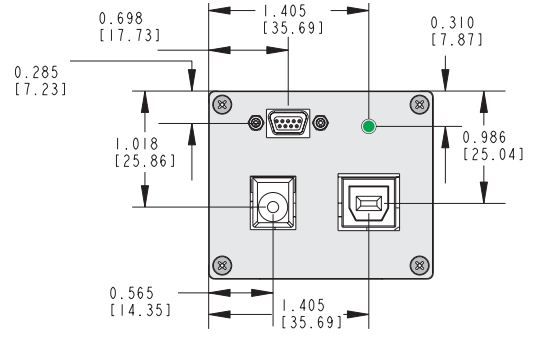
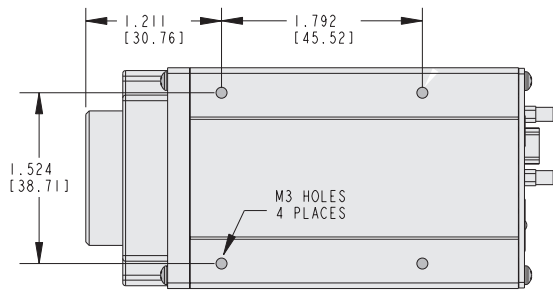**Back Panel USB 2.0**

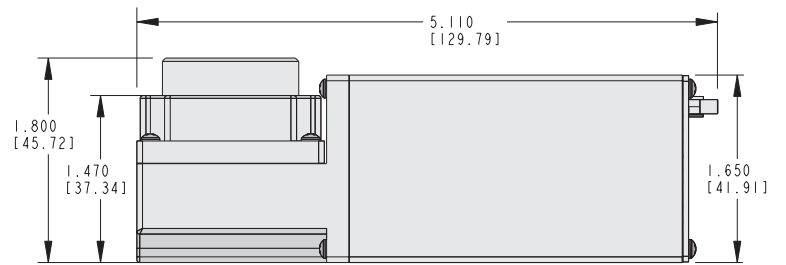**Back Panel GigE**
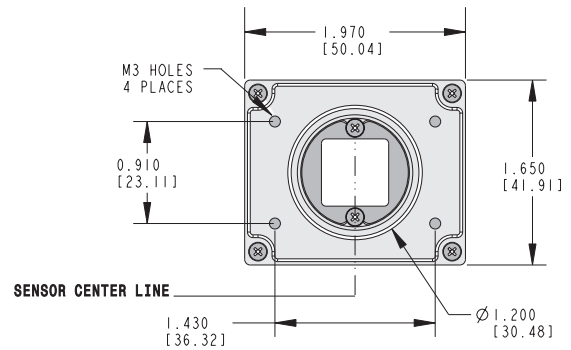
Front Panel

Straight Case Bottom

Right Angle Side
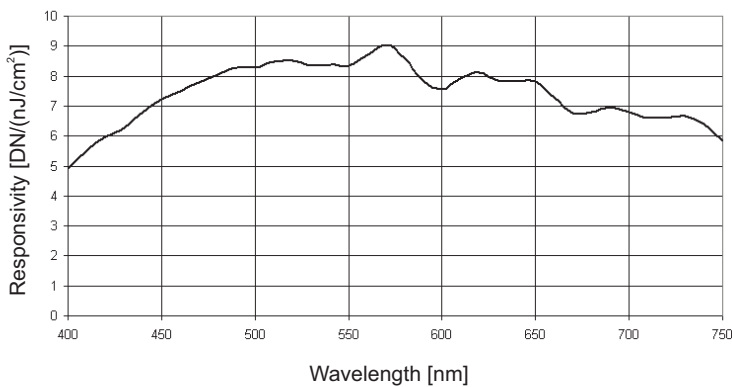
RESPONSIVITY CURVE - MONO

0dB Gain, 10bit Data

RESPONSIVITY CURVE - COLOR

0dB Gain, Channel Gains at Unity, 10bit Data