

Dual Band Camera

PLI-CLD-CL

Datasheet



2555 US Route 130 South Suite 1
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(609) 495-2600
www.princetonlightwave.com

PLI-CLD-CL Version 2.0

Features

- **Independent Visible and IR Sensing with Spatial and Temporal Correlation**
- **CCD Resolution: 2048 pixels**
- **PDA Resolution: 512 Pixels**
- **High Sensitivity and SNR Performance**
- **Dual CameraLink[®] Interface (Base Configuration)**
- **Data rate up to 60 Mpixels/Sec**
- **Flexible and Easy to Operate with Serial Commands:**
 - ⇒ **Exposure Time: 5uS to 32mS**
 - ⇒ **Analog Gain: 2 to 36dB**
 - ⇒ **Digital Gain: 0 to 6dB**
 - ⇒ **Output Format: CameraLink[®] - 8, 10, 12 bit data on 1 or 2 Outputs**
 - ⇒ **Trigger Modes: Free Run or External Trigger**
- **PRNU Field Correction**
- **Multi-Camera Synchronization**
- **Single Power Supply: 12 to 24 VDC**

Product Description

The Princeton Lightwave Dual Band Camera is a one dimensional linescan camera that utilizes two independent sensors, optically coupled to allow simultaneous imaging in both visible (400nm-900nm) and infrared (1000nm-1700nm) wavelengths.

Visible sensing is provided by a 2048 element integrated CCD-MUX employing a dual channel video data stream at up to 40 Mega Pixels/Second, (CameraLink[®] transfers up to 60 Mega Pixels/Second) at line rates of up to 9.65KHz. CCD elements are 14um wide.

IR sensing is provided by a 512 element InGaAs photodiode array and CDS-MUX employing a dual channel video data stream at up to 5 Mega Pixels/Second, (CameraLink transfers up to 60 Mega Pixels/Second) at line rates of up to 9.65KHz. PDA elements are 56um wide.

Pixels are optically aligned enabling simultaneous imaging of both spectrums with a 4:1 resolution ratio. (Pixel 1 of the PDA is coincident with pixels 1 through 4 of the CCD).

Image data is supplied to the user on two separate CameraLink interfaces, which can free run, or be triggered independently. Each CameraLink interface operates in the "base configuration" as defined by the CameraLink standard and support several programmable data rates as well as two channel (taps) or single multiplexed channel transfer. Data can be delivered as 12, 10, or 8 bit data.

The performance and reliability of this camera make it well suited for industrial imaging applications.

The camera is supplied without a lens allowing the user to adapt the camera to a particular application. Factory set-ups and calibrations are performed to flatten the sensor's dark and illuminated fields, (DSNU and PRNU).

User field calibration functions are available to compensate for the user's lens and illumination non-uniformity.



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The camera consists of two sensors, one for visible spectrum imaging and one for IR spectral imaging. The sensors maintain an optical alignment to provide simultaneous sensing across the visible and IR spectrums. Each sensor provides two analog output streams, which are processed using correlated double sampling (CDS), dark level correction and analog gain. Finally, the streams are converted to 12-bit digital data and buffered unto dual-port RAM for synchronization and further digital processed. Two independent CameraLink interfaces are provided for transferring processed video streams to the user. Each CameraLink interface operates in the “base configuration” as defined by the CameraLink standard and support several programmable data rates as well as two channel (taps) or single multiplexed channel transfer. Data can be delivered as 12, 10, or 8 bit data.

The camera supports external triggering for multi-camera synchronization and external exposure time control.

The camera can be configured using simple serial commands allowing the setting of:

- * Integration
- * Signal gain
- * Trigger mode
- * Data rate and depth
- * PRNU correction
- * Contrast expansion

Typical Performance

Parameter	CCD (Visible)	PDA (IR)	Unit
	Value	Value	
Resolution	2048	512	pixels
Pixel Size	14x14	56x200	um
Maximum Line Rate (1)	9.65	9.65	KHz
Output Format	8, 10, 12	8, 10, 12	bits
Output Pixel Rate	60	60	MP/S
Spectral Range	400-900	1100-1700	nm
Gain Range	2 to 36	0 to 36	dB
PRNU *	±1	±1	%+
Dynamic Range (2)	10.5	12	ENOB
Linearity	±5	±5	%
Sensor Alignment	x,y=±50, z=±30	x,y=±50, z=±30	um
Power Supply	12 to 24		VDC
Supply Current	<2.0		A
Power Dissipation	<15		W
Size (WxHxL)	102 x 77 x 93		mm
Operating Temperature	0 to 40		°C
Storage Temperature	-40 to 75		°C

Notes:

- 1) At maximum CameraLink[®] transfer rate of 60MP/S.
 - 2) At minimum analog gain settings.
- * With user correction



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