

## ❖ LQ-200 CL

### 4 CCD RGB/NIR Line Scan Camera



- 4 CCD line scan camera with Camera Link output
- Dichroic RGB/NIR beam splitter prism with 4 sensors
- 4 sensors with 2048 pixels, 14  $\mu\text{m}$  x 14  $\mu\text{m}$  pixel size
- 28.67 mm effective image length
- Scan rate up to 19048 lines per second at 40 MHz pixel clock
- 4 x 8 bits or 4 x 10 bits output through Camera Link interface
- Three shutter operating modes including pulse width control mode
- Very low-noise operation ( $S/N > 58$  dB) providing superior image quality
- One-push automatic white balance
- Flat-field correction and color shading compensation
- Binning functions for increased sensor sensitivity
- Gamma correction using LUT table
- Set-up and installation aid with built-in test pattern generator
- Available with M52 mount or Nikon F-mount
- Short ASCII set-up commands via RS 232C or Camera Link
- Setup by Windows XP software



# Specifications for LQ-200 CL

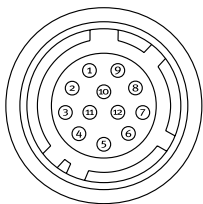
Specifications	LQ-200 CL
Scanning system	Line sensor with internal clock
Pixel clock	40.00 MHz
Scan rate	Max. 19048 lines/second (internal trigger) (2100 pixels per line)
Sensor	4 line sensors mounted on RGB/NIR beam splitter prism
Sensor scanning width	28.67 mm
Cell size	14 (h) x 14 (v) $\mu\text{m}$
Active pixels	4 x 2048 (h) 4 x 1024 (h) with 2:1 binning
Sensitivity (sensor)	27 nJ/cm <sup>2</sup>
Sensitivity (standard)	RGB: 2800 Lux (7800k white LED light) (Gain 0 dB, 600 $\mu\text{s}$ exp., 100% video on f2) NIR: 20 $\mu\text{W}/\text{cm}^2$ @ 800 nm
S/N ratio	58 dB on green with gain = -0 dB
Video output	4 x 8 bits or 4 x 10 bits in CL medium configuration
Gain Master mode:	G -3 dB to +12 dB R/B/NIR -6 dB to +6 dB
Individual mode:	R/G/B/NIR -9 dB to +18 dB
White balance	Manual, fixed or one-push Adjustable range 4000 K to 9000 K Fixed: 4000 K, 4600 K or 5600 K
Shading correction	Flat field: R/G/B/NIR individual Color: R/B/NIR match with G
Flat-field correction	Pixel uniformity (PRNU) and Dark signal (DSNU) correction on each channel
Synchronization	Internal X-tal or external trigger
Trigger modes	No-shutter, shutter-select and pulse width control
Line rate adjustment	Internal trigger 52.5 $\mu\text{s}$ (1L) to 53.683 ms (1024L)
Programmable exposure	50 nsec. to 51.23 msec. in 25 ns increments
Functions controlled by RS 232C or CL	Trigger modes, line rate, exposure time, gain/black level, shading correction, flat-field correction, white balance, diagnostics
Diagnostics	Test pattern generator. (Color bar, gray pattern and white) LED for power
Lens mount	M52-mount (Standard) F-mount (Optional)
Sensor alignment	Better than $\pm 0.1$ pixel
Operating temperature	-5°C to +45°C
Humidity	20 - 80% non-condensing
Storage temp./humidity	-25°C to +60°C, 20 - 80% non-condensing
Vibration	3G (20Hz to 200Hz, XYZ direction)
Shock	50G
Regulations	CE (EN61000-2 and EN61000-3) IEC61000-4-2 Conforming level 4 FCC Part15 Class B RoHS
Power	12V DC to 24V DC $\pm 10\%$ 12W at +12V (saturated)
Dimensions (W x H x D)	90 mm x 90 mm x 120 mm
Weight	1050 g

## JAI 4CCD/prism Technology

The LQ-200CL is a 4 CCD line scan camera capable of simultaneous imaging of the Red, Blue, Green and NIR wavelengths through a single optical axis. The incoming light is split into 4 separate sensors using JAI's 4 CCD/prism-based technology with dichroic filters.

## Connection Pin-out

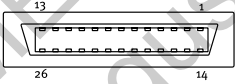
### DC In / Trigger



HIROSE HR10A-10R-12PB-01

Pin	Signal	Function
1	Ground	
2	+12V DC	
3	Ground	
4	Reserved	
5	Ground	
6	RXD RS 232C*	
7	TXD RS 232C*	
8	Ground	
9	XEEN output	
10	Trigger input (TTL)*	
11	+12V DC	
12	Ground	

### Camera Link Interface



Pin	Signal	Function	
1	14	GND	
2	15	X <sub>0</sub> -/X <sub>0</sub> +	CL Data
3	16	X <sub>1</sub> -/X <sub>1</sub> +	CL Data
4	17	X <sub>2</sub> -/X <sub>2</sub> +	CL Data
5	18	Xclk-/Xclk+	CL Clk
6	19	X <sub>3</sub> -/X <sub>3</sub> +	CL Data
7	20	SerTC+/SerTC-	Serial in *
8	21	SerTFG-/SerTFG+	Serial out *
9	22	CC1-/CC1+	Trigger *
10	23	CC2-/CC2+	Reserved
11	24	CC3-/CC3+	Not used
12	25	CC4-/CC4+	Not used
13	26	GND	

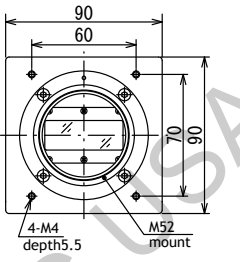
\*) In Camera Link or 12 pin Hirose  
**Note:**  
Camera Link base configuration shown.  
For medium configuration refer to Camera Link specifications or operation manual.

## Ordering Information

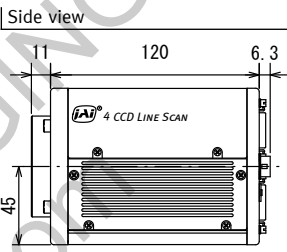
- LQ-200 CL 4 CCD RGB/NIR Line Scan Camera. M52-mount
- LQ-200 CL 4 CCD RGB/NIR Line Scan Camera. F-mount

## Dimensions

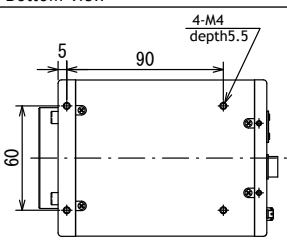
### Front view



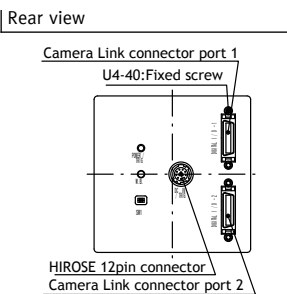
### Side view



### Bottom view



### Rear view



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