



## ❖ **TM-2016-8 CL** Monochrome Progressive Scan CCD



- **High-resolution 1" progressive scan IT CCD imager (KAI-2093)**
- **1920(H) x 1080(V) @ 8 fps (full resolution)**
- **7.4  $\mu\text{m}$  square pixels**
- **Compact 44 x 44 x 63 mm housing**
- **LVDS versions: order TM-2016-8 and TMC-2016-8**
- **Digital Camera Link output and analog output**
- **16 fps with 2x vertical binning**
- **Maximum dynamic range control with built-in look-up table (LUT)**
- **Full frame integration for long exposures**
- **Electronic full-frame shutter to 1/8,000**
- **Asynchronous reset, no-delay shutter with pulse width control**
- **Read-out-inhibit control for multiple-camera applications**
- **RS-232 external control**



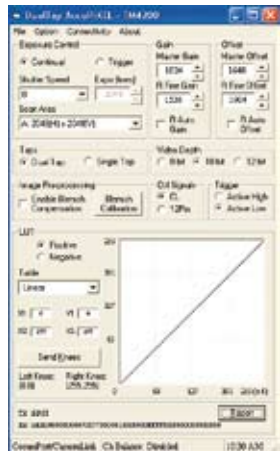
# Specifications for TM-2016-8CL

Specifications	TM-2016-8CL
Sensor	1" progressive scan interline transfer CCD
Active area	14.2mm x 8.0mm
Active pixels	1920 (H) x 1080 (V)
Cell size	7.4 μm x 7.4 μm
Readout modes	1920 (H) x 1080 (V) @ 8 Hz 1920 (H) x 540 (V) @ 16 Hz (2-row binning)
Synchronization	Internal/External auto switch HD/VD, 4.0 Vp-p impedance 4.7K Ω VD=8 Hz ± 5%, non-interlace HD=9.09 kHz ± 5%
Pixel clock	20.00 MHz
S/N Ratio	>50 dB
Sensitivity	0.12 lux f=1.4 (no shutter) @ 8 fps Pixel sensitivity: 14 μV/e-
Video output	Camera Link base
Gamma	Programmable LUT (1.0 std)
Lens mount	C-mount (use M12 format lenses)
Power	12V DC ± 10%, 430 mA (typical at 25° C)
Operating temperature	-10° C to 50° C
Vibration	7 Grms (10 Hz to 2000 Hz) Random
Shock	70 G, 11 ms, half-sine
Dimensions (H x W x L)	44 mm x 44 mm x 63 mm
Weight	140 g (without tripod)

## GUI Interface

A user-friendly GUI (graphical user interface) is provided. This interface allows users to control the following functions of the TM-2016-8CL camera:

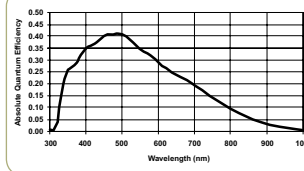
- Shutter control for manual async. and pulse-width control
- Gain control
- Offset control
- Save settings
- Load settings
- Report settings
- LUT setting and graphic display
- Scanning mode selection and option selections
- Channel auto balancing



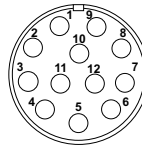
Camera parameters can be uploaded from the PC to the camera. Once these parameters are stored in EEPROMs, an instantaneous change from one setting to another can be done with a delay of few frames in between.

Software available for download at [www.jai.com](http://www.jai.com)

## Spectral Response



## Connector Pin-out



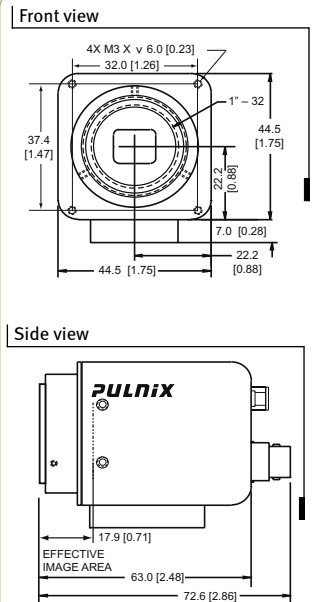
### 12-Pin Connector

1 GND	7 VD in
2 +12V DC	8 GND
3 GND	9 HD in
4 Video out	10 NC
5 GND	11 INTEG/ROI
6 NC	12 NC

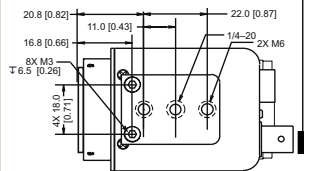
## Shutter Speed

	Manual	Async
0	no shutter	no shutter
1	1/30	1/8,000
2	1/60	1/4,000
3	1/125	1/2,000
4	1/250	1/1,000
5	1/500	1/500
6	1/1,000	1/250
7	1/2,000	1/125
8	1/4,000	1/60
9	1/8,000	Ext. pulse width control

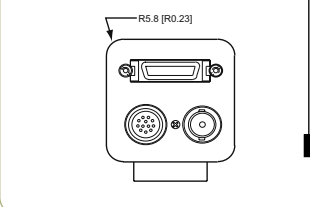
## Dimensions



## Bottom view



## Rear view



## Ordering Information

Camera	
Lead Processing	TM-2016-8CL
RoHS Compliant	RM-2016-8CL
Optional Functions	
Internal IR Filter Added	OP3-1
Optical Filter Removal	OP3-2
Glassless CCD Imager	OP21
Ultraviolet Imager	OP21-UV
Strobe Output	OP8o
10-Bit Output	OP93-1
Optional Accessories (MUST BE ORDERED SEPARATELY)	
I/O	26CL-02-26 digital output cable
Power Supply	PD-12UUP series (includes power connector)
Power Cable	12P-02S

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