

PULNiX TM-4100GE



The TM-4100GE is a miniature, very high-resolution (4.2 megapixels) monochrome progressive scan CCD camera with Gigabit Ethernet output and a frame rate of 15 fps at full 2048 x 2048 resolution. The TM-4100GE features the latest Kodak KAI-4021 interline transfer (IT) CCD imager for the best image quality and sensitivity. Applications for the TM-4100GE include machine vision, medical imaging, intelligent transportation systems, high-definition graphics, gauging, and surveillance.

- 1.2" progressive scan IT CCD imager (KAI-4021)
- 2048 x 2048 resolution @ 15 fps
- 7.4 μm square pixels
- Miniature 51 x 51 x 85 mm housing
- Color version (RGB Bayer CFA) is available as TMC-4100GE‡
- High speed point-to-point connection, up to 1Gbps
- Gigabit Ethernet output (8-bit/10-bit), 100 m with CAT 5E or CAT 6 cable
- Maximum dynamic range control with PULNiX-exclusive, patent-pending built-in look-up table
- Image center partial scan (1000, 500, 250 lines)
- Full-frame shutter to 1/16,000 sec.
- Asynchronous reset, no-delay shutter
- Extensive software developer's kit (SDK)

‡ For more information, see the TMC-4100GE data sheet

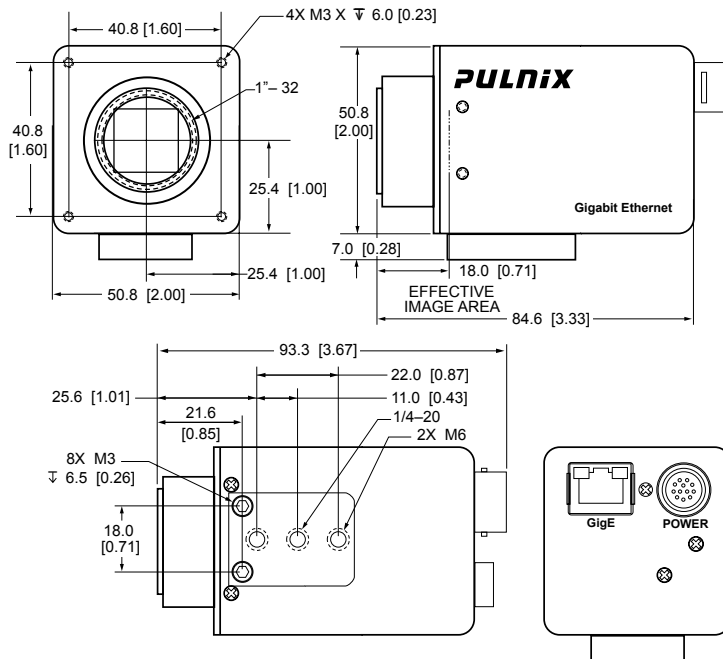
TM-4100GE Specifications

Imager	1.2" progressive scan interline transfer CCD
Active Area	15.15mm x 15.15mm
Active Pixels	2048 (H) x 2048 (V)
Cell Size	7.4 μm x 7.4 μm
Display Mode (Active Pixels)	A 2048 (H) x 2048 (V) @ 15 Hz B 2048 (H) x 1000 (V) @ 28 Hz (partial scan) C 2048 (H) x 500 (V) @ 50 Hz (partial scan) D 2048 (H) x 250 (V) @ 80 Hz (partial scan)
Sync	Internal/External auto switch HD/VD, 4.0 Vp-p impedance 4.7k Ω VD=14.79 Hz \pm 2%, non-interlace HD=30.78 kHz \pm 2%
Data Clock Output	40.00 MHz
Resolution	Digital: 2048 (H) x 2048 (V)
S/N Ratio	50 dB min.
Min. Illumination	0.12 lux Sensitivity: 31 μ V/e- f=1.4 (no shutter) @ 15 fps
Video Output	Gigabit Ethernet
Gamma	Programmable LUT (Gamma 1.0 std)
Lens Mount	C-mount (use >1" format lenses)
Power Requirement	12V DC \pm 10%, 590 mA (typical at 25 $^{\circ}$ C)
Operating Temp.	-10 $^{\circ}$ C to 50 $^{\circ}$ C
Vibration	7 Grms (10 Hz to 2000 Hz) Random
Shock	70G, 11 ms, half-sine
Size (W x H x L)	51mm x 51mm x 85mm
Weight	197 grams, 6.9 oz (without tripod mount)

MUST BE ORDERED SEPARATELY

Optional Functions	Internal IR Filter Added (OP3-1); Optical Filter Removal (OP3-2); Glassless CCD Imager (OP21); 10-bit output (OP93-1)
Optional Accessories	P/N
Power Cable	12P-02S
Power Supply	PD-12UUP series (includes power connector)

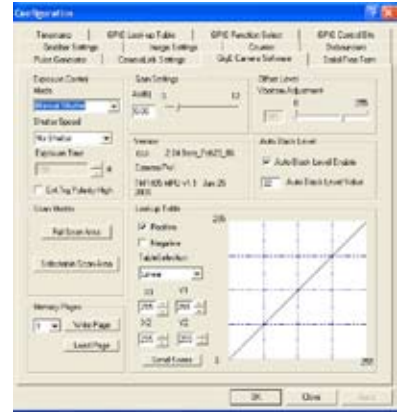
* Image quality will degrade with increasing temperature.



Graphical User Interface

A user-friendly graphical user interface (GUI), provided as part of the camera's extensive software development kit (SDK), allows users to control various camera functions, including:

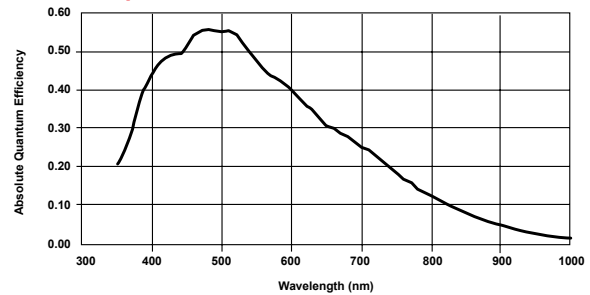
- Shutter control for manual async. and pulse width control
- Gain control
- A/D reference voltage control
- Save settings
- Load settings
- Report settings
- LUT setting and graphic display
- Scanning mode selection and Option selections



The SDK also provides functions for controlling the grabbing of images, and configuring local I/Os, by means of an integrated API and a set of powerful C++ classes. Changes in the camera's acquisition modes automatically update the API for easy image acquisition. CPU usage is only a few percent, thanks to the TCP/IP offload engine.

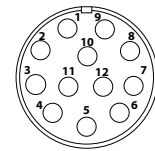
Software available for download at www.jai.com

Spectral Response



12-Pin Connector

1 GND (power)	7 VD in
2 +12V	8 Strobe out
3 GND (analog)	9 HD in
4 Video out	10 Reserved
5 GND (digital)	11 INTEG/ROI
6 VINIT in	12 Reserved



Shutter Speed

	Manual	Async
0	1/frame rate	Async no shutter
1	1/60	1/16,000
2	1/125	1/8,000
3	1/250	1/4,000
4	1/500	1/2,000
5	1/1,000	1/1,000
6	1/2,000	1/500
7	1/4,000	1/150
8	1/8,000	1/125
9	1/16,000	Ext. pulse width control



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