Board-Level TDI Camera
C10000-201

Time Delay Integration Camera

The C10000-201 TDI camera is useful for a wide range of imaging applications requiring high speed operation with high sensitivity simultaneously. TDI is a special image acquisition technology that has been used extensively in machine vision applications for industrial inspection. TDI imaging is appropriate for applications where it is desired to record a linear process over time, or where the aspect ratio of the subject being imaged is significantly asymmetric. TDI is particularly useful for low light level scanning applications for which a typical line scan camera would have inadequate sensitivity.
Also, frame readout mode is available for easy focusing.

FEATURES

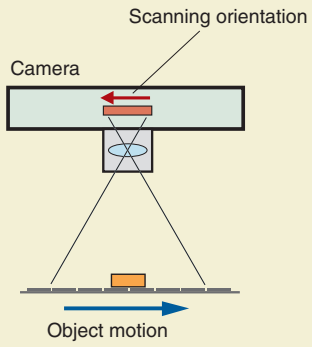
- 2048(H) spatial resolution with 128(V) TDI stages
- Line rates up to 50 kHz
- High speed imaging combined with high sensitivity & low noise
- Great spectral response for UV-NIR with back thinned CCD
- 100 % fill factor
- 100x anti-blooming with lateral overflow drain
- Dynamic range of 770:1
- 12 bit / 8 bit selectable A/D converter
- Bi-directional scanning operation
- Frame readout mode for easy focusing

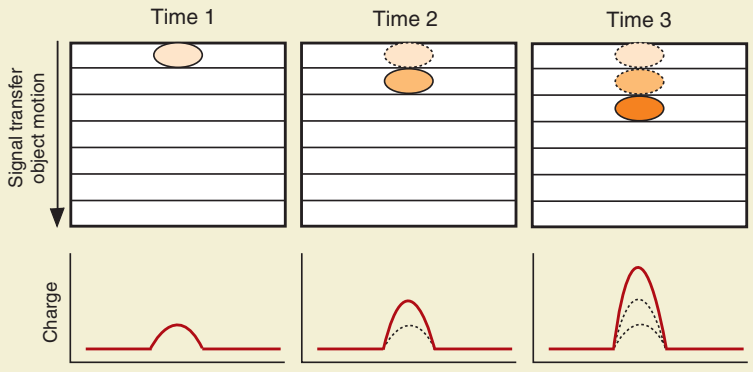
APPLICATIONS

- High speed imaging for low light applications i.e. fluorescence imaging
- Electronics manufacturing and inspection
- Semiconductor inspection
- High speed scanning for a large size sample i.g. flat panel displays
- Continuous imaging of high-speed moving object

OPERATING PRINCIPLE OF TDI

TDI (Time Delay Integration):
Time Delay Integration is a technology of scanning in which a frame transfer device produces a continuous video image of a moving object by means of a stack of linear arrays aligned with and synchronized to the motion of the object to be imaged in such a way that, as the image moves from one line to the next, the integrated charge moves along with it, providing higher resolution at lower light levels than is possible with a line-scan camera.





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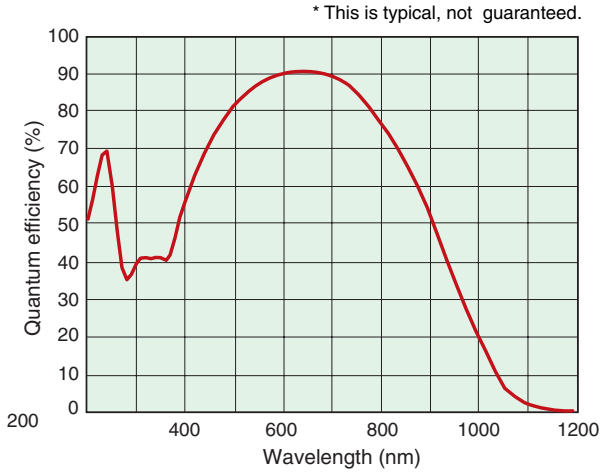
SPECIFICATIONS

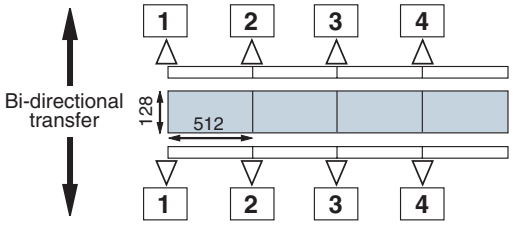
Camera type	Board type (No mechanical chassis)
Pixel number	2048 (H) × 128 (V)
Device structure	Back thinned type
Cell size	12 µm(H) × 12 µm(V)
Effective area	24.58 mm(H) × 1.536 mm(V)
Readout mode	TDI mode / Frame readout mode *1
TDI transfer direction	Bi direction
TDI output channel	4 TAP (512 × 4)
Anti-blooming	Lateral overflow drain (100×)
TDI pixel clock rate	30 MHz
TDI line rate	0.45 kHz to 50 kHz
TDI line rate control	Internal setting by serial command *2 / External trigger
Full-well capacity (typ.)	100 000 electrons *3
Readout noise (typ.)	130 electrons r.m.s.
Dynamic range (typ.)	770 : 1
Analog enhancement gain	1 time to 10 times (16 steps)
A/D converter	12 bit / 8 bit *4
Interface	Camera Link (Medium Configuration)
Camera control	Serial control in Camera Link
Camera output clock	30 MHz
Camera connector	2 × Camera Link / 9 pin D-sub for power supply / BNC for trigger in
Lens mount	F-mount
Power / Power consumption	DC +15 V, DC +5 V / 20 V·A
Ambient storage tenmperature	-10 ℃ to +50 ℃
Ambient operating temperature	0 ℃ to +40 ℃
Ambient operating / storage humidity	70 % max. (with no condensation)

*1 Frame readout mode is useful for easy focusing, but it is not suitable for measurement. Please consult with our sales office for details.
*2 Internal TDI line rate is set by 33 ns step.
*3 Guaranteed linearity is up to 80 000 electrons.
*4 Selectable by serial command.

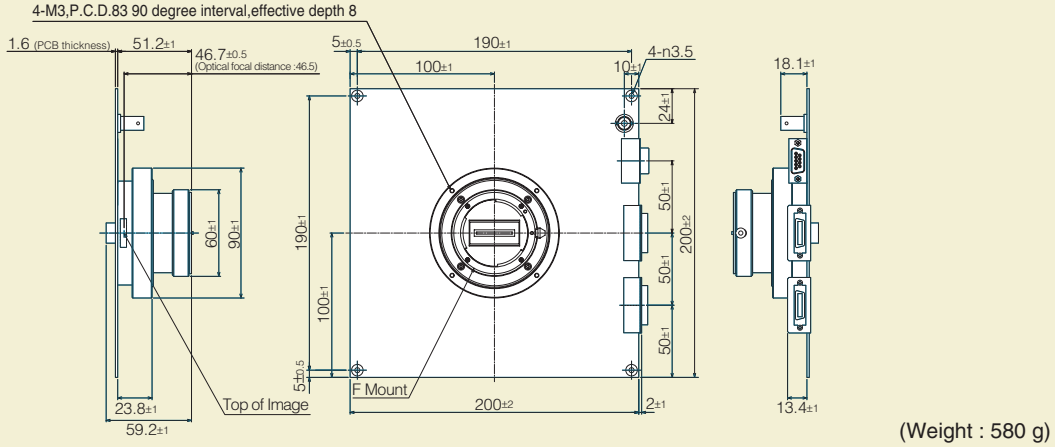
SPECTRAL RESPONSE



TDI SENSOR STRUCTURE



DIMENSIONAL OUTLINES (Unit : mm)



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HAMAMATSU PHOTONICS K.K. www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Systems Division
812 Joko-cho, Higashi-ku, Hamamatsu City, 431-3196, Japan, Telephone: (81)53-431-0124, Fax: (81)53-435-1574, E-mail: export@sys.hpk.co.jp

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P. O. Box 6910, Bridgewater. N.J. 08807-0910, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: usa@hamamatsu.com
Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-2658 E-mail: info@hamamatsu.de
France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: infos@hamamatsu.fr
United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road Welwyn Garden City Hertfordshire AL7 1BW, United Kingdom, Telephone: 44-(0)1707-294888, Fax: 44(0)1707-325777 E-mail: info@hamamatsu.co.uk
North Europe: Hamamatsu Photonics Norden AB: Thorshamnsgatan 35 SE-164 40 Kista, Sweden, Telephone: (46)8-509-031-00, Fax: (46)8-509-031-01 E-mail: info@hamamatsu.se
Italy: Hamamatsu Photonics Italia: S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39)02-935 81 733, Fax: (39)02-935 81 741 E-mail: info@hamamatsu.it
China: Hamamatsu Photonics (China) Co., Ltd.: 1201 Tower B, Jiaming Center, 27 Dongsanhuan Road North, Chaoyang District, Beijing 100020, China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn

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