



# High-Speed 2048-Pixel USB2.0 CCD Line Camera with External Trigger (12-Bit)

(Part Numbers: TCN-1209-U and TCE-1209-U)

## FEATURES

- USB2.0 (480Mb/s) compatible
- 2048 square pixel silicon linear CCD array
- High scan rate (up to 3,300 scans/second)
- 14μm x 14μm pixel size
- 12-Bit A/D converter for high intensity resolution
- Full-featured SDK
- Optical Integration Time adjustable from 300us to 3.3s
- External trigger capability
- 4 GPIOs
- Linux driver available
- USB command set protocol for non-Windows based applications
- LabVIEW support is provided
- Demo graphical user interface
- No external power supply required
- Optional F-mount lens adapter (P/N:ACC-LCE-F)
- Board-level camera, available for OEM applications
- Compatible to Windows 2000, XP or higher

## APPLICATIONS

- Machine vision

## PRODUCT DESCRIPTION

Mightex's TCN/TCE-1209-U line camera is a cost-effective high-performance monochrome line CCD camera, based on a single-line, 2048-pixel CCD chip with USB2.0 (480 Mb/s) interface. CCD line cameras have several advantages over their area-array counterparts, including high optical linear resolution that allows systems developers to use the cameras to capture two-dimensional (2-D) images by moving the object or the CCD perpendicularly to the scan line. The TCN/TCE-1209-U is a compact linear camera ideal for a variety of OEM applications in industry process control, optics, biology, spectroscopy and reflection imaging. Setting up the TCN/TCE-1209-U line camera is very easy: the user simply installs the application software (included in the shipping package) and then connects the line camera to the PC using a USB cable. There is no need to install a DAC card, and no external power supply is required.

## PERFORMANCE SPECIFICATIONS

Parameter	Specification
CCD	Toshiba TCD1209
Number of Pixels	2048
Pixel Size	14μmx14μm
Spectral range	200nm to 1000nm (see spectral response below)
Pixel Output Clock	8 MHz
Frame buffers on camera	64 frames
ADC resolution	12 bits
External Trigger	Yes
Exposure Time Range	0.3 ~ 3,277ms
GPIO	Yes (4 programmable IOs)
Frame Rate	3,300 scans/second*
Lens mount (optional)	F mount
Host Interface	USB 2.0

\* Frame Rate is dependent on exposure time. When exposure time is set to 0.3 ms, the camera can achieve 3300 scans / second in Continuous Mode.

## SDK Features

Operation Systems	Windows 2000, XP, Vista, Windows 7
Minimum Requirement	RAM > 64M; Available Hard Disk Space > 10M
USB Port	USB2.0
Multiple Cameras	Supported
Plug & Play	Not recommended
Device Driver	Yes
Demo Application	Yes
Library Files	Yes (DLL files and Static Library file)
Example Codes	Yes (VC++ and Delphi)
Frame Attributes*	Exposure Time, Time Stamp, Trigger Event Count, Over Exposure Detect.

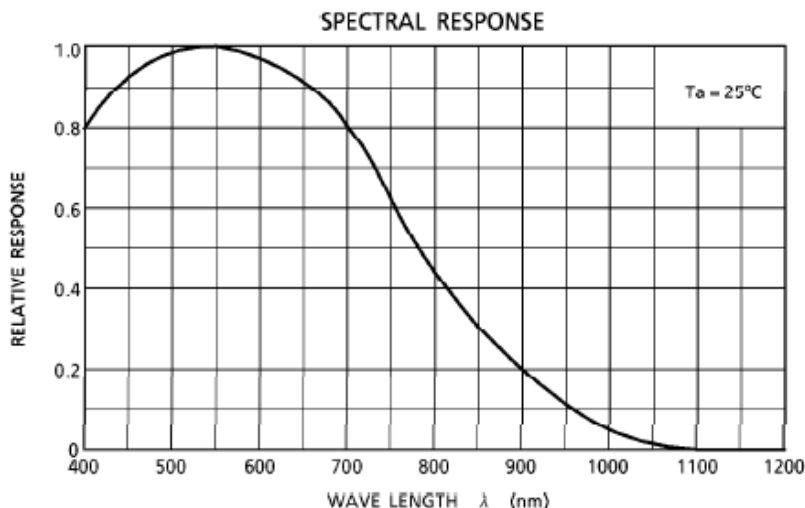
\* SDK will provide call back, which will send user Frame data and the related attributes of each frame.. The attributes include: Exposure Time, Time Stamp, Trigger Event Count and Over-Exposure Flag.



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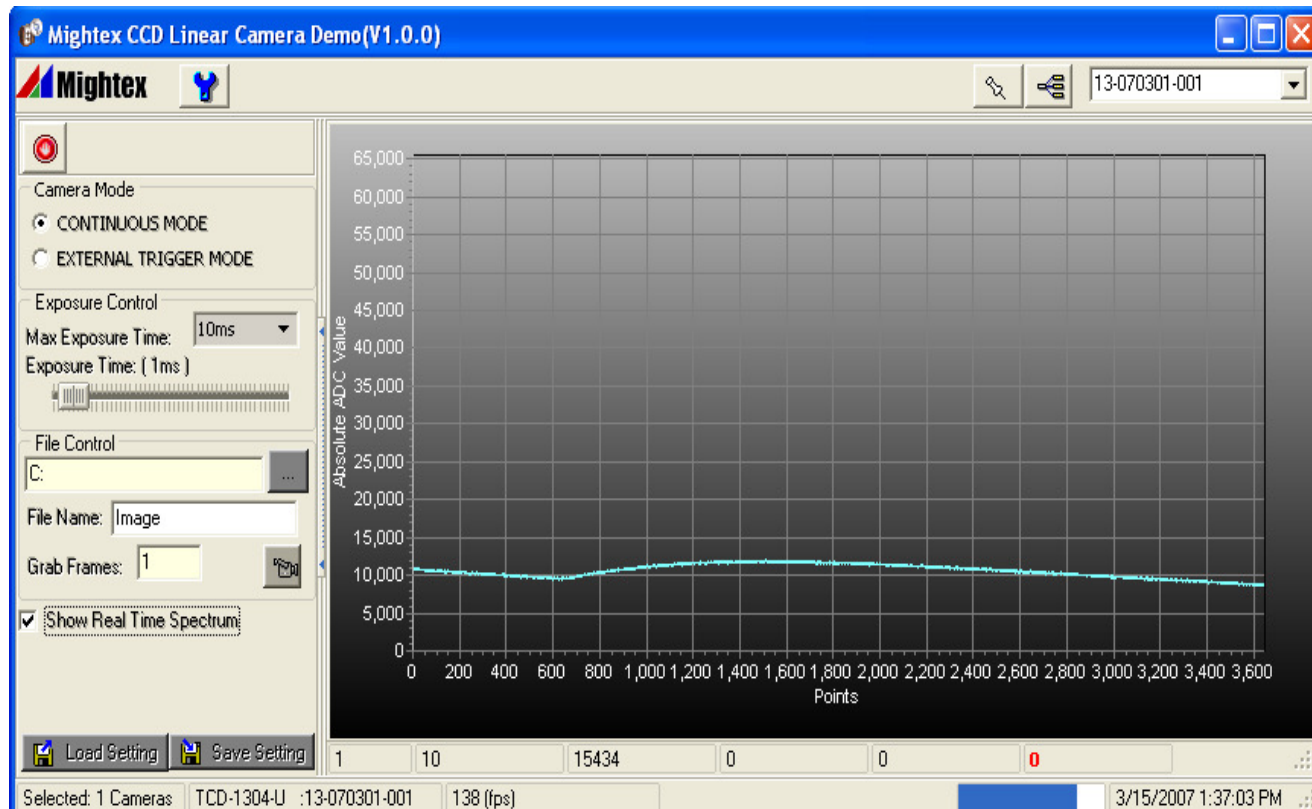
## SPECTRAL RESPONSE



## OPERATION CONDITION

Operating Temperature Range:  $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$   
Storage Temperature Range:  $-25^{\circ}\text{C} \sim 85^{\circ}\text{C}$   
Relative Humidity, Non-condensing:  $5\% \sim 95\%$

## EXAMPLE OF GRAPHICAL USER INTERFACE



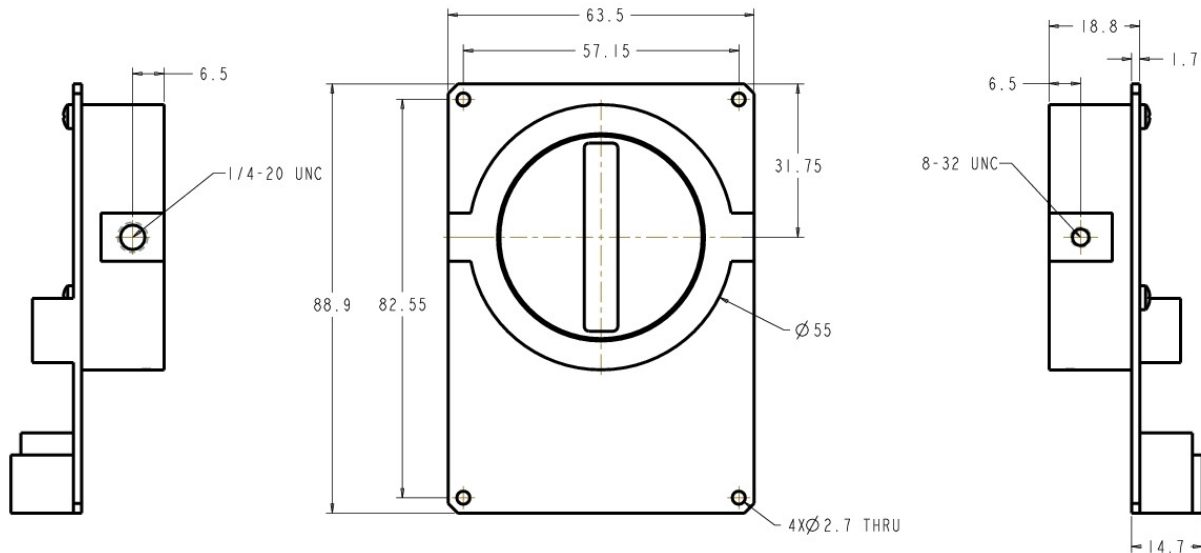


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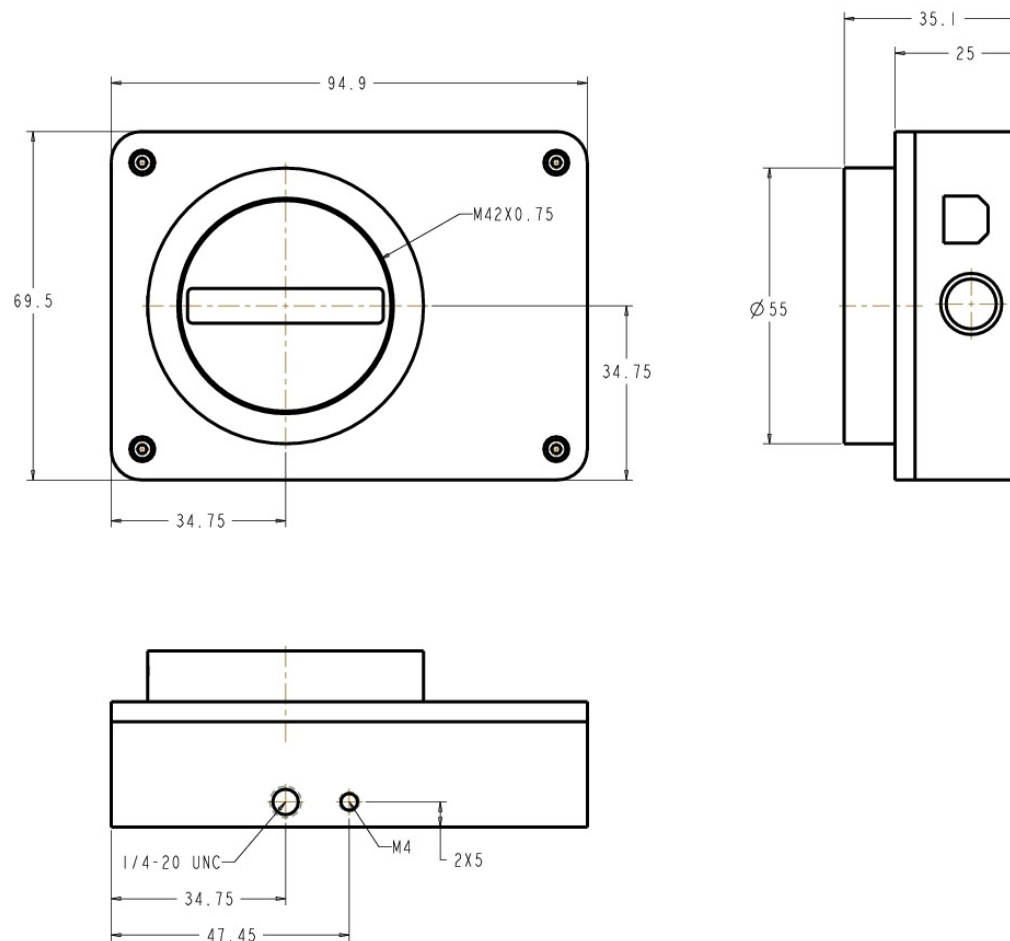
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### INSTALLATION DRAWINGS

#### 1) Board-level Camera



#### 2) Enclosed Camera



With a world-class OEM design team, Mightex offers a broad range of customized solutions in order to meet individual customer's unique requirements. Please call 1-416-840 4991 or email [sales@mightex.com](mailto:sales@mightex.com) for details.