

4,096 or 2,048 Pixels, 80kHz Scan rate, Camera Link compliant

DIGITAL LINESCAN CAMERA

TL-4096ACL
TL-2048ACL
TL-2048ACL



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(Lens optional)

Overview

- Industrial Digital Line Scanner employing CMOS image sensor with linearly arranged 4,096 (TL-4096ACL) or 2,048 photodiodes.
- High Sensitivity by Large-sized Pixel of $7\mu\text{m} \times 7\mu\text{m}$.
- High-speed CMOS Line Scan Camera featuring 80 kHz scan rate at 400 MHz (TL-4096ACL) or 200MHz (TL-2048ACL) data rate.
- About 4 times as high sensitivity rises are possible in horizontal and vertical binning mode, compared with standard scanning mode.
- Each Camera Link connection mode of Full (TL-4096ACL only), Medium and Base configuration can be chosen if needed.

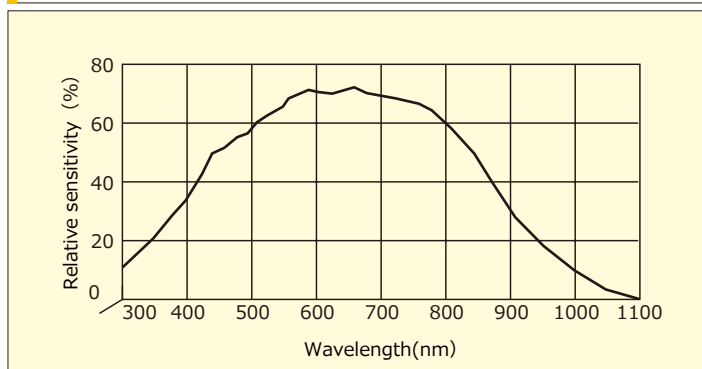
Features

- Setup parameters can be easily controlled by the serial communication command.
- Global shutter function, FFC function, and anti-blooming function are equipped.
- DC12V single power supply, low power consumption
- Built-in dark current compensation circuit provides stable output against change of ambient temperature .
- Uniquely designed circuit and mechanical components have been achieved significant downsizing and weight reduction.
- Versatile F-mount and C-mount (2048ACL only) has been adopted.

Applications

- Image processing device for Image inspection.
- Inspection equipment for liquid crystal panel.
- Measuring equipment such as appearance inspection device or dimensional measurement device.
- Surface inspection device for sheet-like object.
- High-resolution pattern inspection instrument.
- Data entry device for image processing unit employing computer.

Spectral Sensitivity



Specifications

	TL-4096ACL	TL-2048ACL/ACL
Image sensor	Global shutter CMOS	
Number of pixels	4,096	2,048
Pixel size	$7\mu\text{m} \times 7\mu\text{m}$	
Photo array length	28.672mm	14.336mm (Optical size 1")
Digital Video output	8/10bit Base, Medium 8bit Full Configuration	8bit/10bit Base, Medium Configuration
Scan rate (Data rate)	Full 80kHz (50MHz×8TAP) Medium 80 kHz (85MHz×4TAP) Medium 47.4 kHz (50MHz×4TAP) Base 40.9kHz(85MHz×2TAP) Base 24kHz(50MHz×2TAP)	Medium 80 kHz (50MHz×4TAP) Base 80kHz(85MHz×2TAP) Base 47.4kHz(50MHz×2TAP)
Line transfer pulse input	12.5μsec (Min)	
Sensitivity	gain1 = 1.2 gain2 = 4.8 (DN/nJ/cm ²)	
Saturation exposure	46 ke ⁻ (typical)	
Dynamic range	60dB (on the element)	
Output nonuniformity	10 % standard at 50 % of saturation output	
Power supply	+12V ±0.5V (0.5A以下)	
Operational ambient temperature	0~ +40°C(with no icing or condensation)	
Operational humidity range	85% Max	
Storage teperature range	-10°C~ +65°C(with no icing or condensation)	
Gain	Analog gain :x1 or x4 ADC gain: x0.2 to x5.7 Digital gain: x1 to x5 (x0.125 step)	
Lens mount	F mount	F mount C mount
Connector	DC12V operation power supply (HR10A-7R-6P/HIROSE ELECTRIC)	
External dimension	80(W)×100(H)×60.4(D)mm (Connector excluded)	
Weight	720g or less	

Back panel



Power connector

Camera Link connector
Base/Full configuration
Full configuration

Power indicator

● Power connector (HR10A-7R-6P)

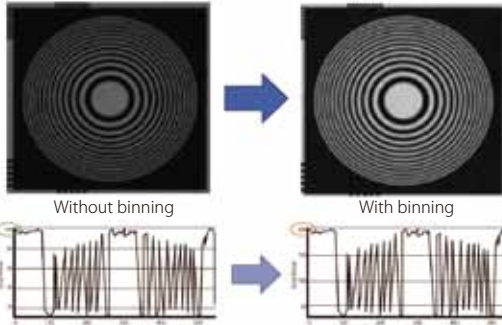
Pin No.	Signal name	Pin No.	Signal name
1	+12V	4	GND
2	+12V	5	GND
3	+12V	6	GND

● Camera Link connector (3M/MDR-26 FEMALE)
The camera is connected to Frame grabber board with two Camera Link cables. (Base connector, Full connector)

Binning

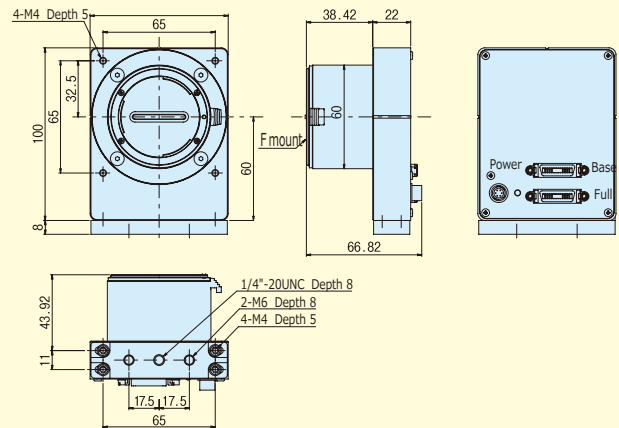
Although the resolution is sacrificed, virtually increased light-receiving area improves sensitivity by adding the signal of pixels. Since the sensitivity is proportional to the pixel area, the sensitivity becomes two times higher in the horizontal binning, and four times higher in the horizontal and vertical simultaneous binning.

An example at F4/30 μsec exposure

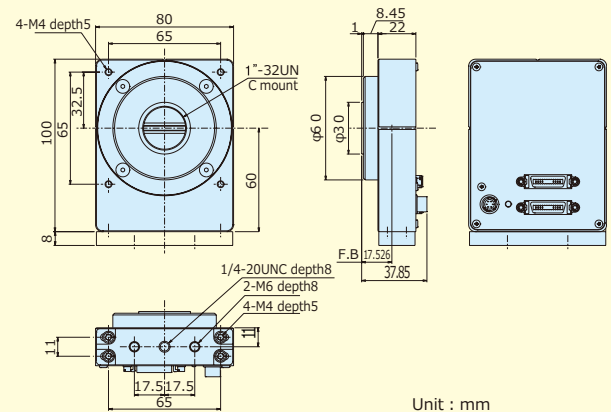


Dimensional Outline Drawing

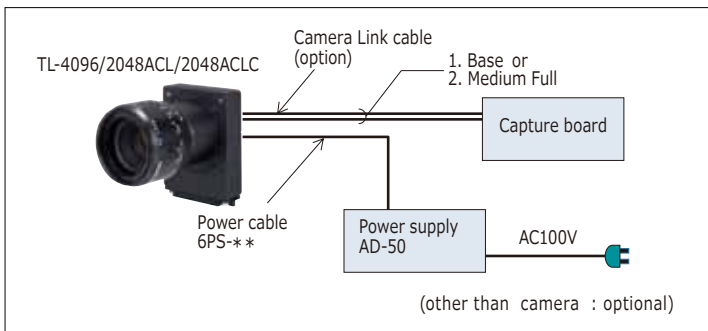
TL-4096/2048ACL



TL-2048ACLC



Configuration Diagram



- Suitable Power Supply
AD50 Power Supply is suitable for this Line Scanner.
- Suitable Cable
Power cable 6PS--**
** represents the cable length (m).
Camera Link cable (Separately sold)
14B26-SZLB-200-OLC (2M)
14B26-SZLB-300-OLC (3M)
14B26-SZLB-500-OLC (5M)

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TAKEX TAKENAKA SYSTEM CO., LTD.

Headoffice: 86-66, Nomizo-cho, Ohtsuka, Yamashina-ku,
Kyoto City 607-8135, JAPAN
TEL: +81-75-593-9300 FAX: +81-75-593-9790
E-mail: sales@takex-system.co.jp
TAKENAKA SYSTEM URL: <http://www.takex-system.co.jp>
TAKENAKA SENSOR GROUP URL: <http://www.takex.co.jp>