GEViCAM

GigE Vision Camera GD-Series

GD-155000 (2/3" 5M pixel) Dual-tap GigE camera

Features

- 1Gigabit/s high speed point-to-point transmission
- No frame grabber required for image capture
- 100m with Gigabit Ethernet cable CAT5e or CAT6
- GigE Vision standard compliance
- Field upgradeable firmware via Ethernet
- Excellent S/N (>56dB) for 12-bit, 10-bit or 8-bit output, 12 to 8-bit Gamma conversion and custom LUT
- No-delay asynchronous reset with time stamp and async shutter
- Auto-channel balance
- GPIO for local I/O, RS-485 communication for auxiliary devices, Audio I/O
- Miniature, robust package (34 x 34 x 68 mm)
- Industrial Ethernet and GPIO connectors
- Various drivers available for existing machine vision software
- Extensive software developer's kit (SDK)

General Description

GEViCAM GD-Series are dual-tap Gigabit Ethernet cameras for industrial applications. They are designed on a common platform and comply with the GigE Vision standard for plug-and-play performance as well as proprietary high performance SDK. GP-155000 uses 2/3" 5M pixel (2456 x 2058) high sensitivity CCD (ICX625) with dual 12-bit A/D converter. The normal data output is selectable for 12-bit, 10-bit (MSB), or 8-bit (MSB) at 80 MHz to maintain excellent over-all camera S/N ratio of >56 dB at factory default. The frame rate is 12 fps for full resolution and 15 fps for HDTV format partial scan (2456 x 1380).

For multiple camera applications, it accepts external trigger via GPIO (general purpose I/O) and resets the internal timing with no-delay and time stamp to provide exact image locations. This eliminates a need for external sync (HD/VD), which tends to generate some PLL jitters.

Streamlined design for the camera and GigE section reduces the component count and make these cameras very compact and low cost for the performance. This is ideal for machine vision applications to move up from conventional analog cameras (+frame grabber) to frame grabber-less systems for improved cost-performance.

GigE Vision itself has further advantages to conventional systems. It allows multiple camera operations on the net, multicasting (multiple computers per camera), long cable distance (100m without repeaters), auxiliary device control via GPIO, plug-and-play compatibility with commonly available software and camera systems, common camera control protocol or GUI, etc. The firmware or software is field upgradeable via Ethernet even if the original camera is installed in a remote area.

The GPIO uses a 14-pin MDR connector and interfaces with TTL (trigger and strobe), RS-485 or CAN, opto-isolated I/Os, and digital audio. A customer can download its control protocol for the local auxiliary devices such as PLC, surveillance controls, where the GigE camera operates as a local server. Audio CODEC is standard for remote audio input and output via Ethernet.

The platform provides full progressive scan, partial scan, various exposure control, and other special functions. GigE buffer also allows various size of images (Region of Interest) to capture and transmit.

Please refer GP/GD series data sheet for the detail.

GEViCAM : A GigE Vision Camera Company

Specifications

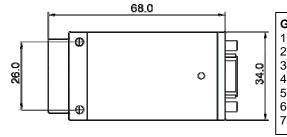|	GD-155000
CCD Imager	2/3" 5M pixel
Active Pixels (data out)	2456 x 2058
Pixel Size (μm)	3.45 x 3.45
Active Area (mm)	8.74 (H) x 7.13 (V)
Scanning Mode	Progressive scan full
Frame Rate	12 fps @ 40 x2 MHz (15 fps optional)
Data Clock	80 MHz
Data Output	Gigabit Ethernet
Resolution	2456 x 2058
S/N Ratio	>56 dB
Minimum Illumination	0.5 lux at 12 fps
Gamma	1.0 / 0.45 LUT
Power Requirement	12 V DC ±10%, 5W
Lens Mount	C-mount or CS
Operating Temperature	-10°C to +50°C
Vibration	7G
Shock	70G
Size (mm)	34 x 34 x 68
Weight	115g (4oz)

2/3" 5 M pixel CCD

GD-155000 is specifically designed to provide high sensitivity, excellent S/N ratio and optimized data rate of Gigabit Ethernet. CCD itself can run at higher clock and frame rate. However, this CCD's well capacity is small and the dark current (floor noise) is also very low. To maximize the dynamic range and performance, the clock is set at 40 MHz per channel and total data rate is 80 MHz. With 12-bit capability for excellent image quality, GD-155000 allows bandwidth room for Ethernet communication. In order to achieve higher frame rate, there are two stages of partial scans are available.

1. 16:9 aspect ratio (2456 x 1380) at 15 fps
2. 2456 x 1000 at (TBD)

Power consumption and Thermal consideration

GD-155000 has powerful functions and high speed dual-tap GigE architecture in a very small package. The power consumption is less than 5 W at 12V. However, heat generation is inevitable for such high speed device. The camera design contains heat pipe structure for two critical components, FPGA and PHY to extract the junction temperature to the base plate. CCD generates more heat than other small CCDs and thermally connected to the front end. Even though internal components are kept the junction temperature at reasonable range, package may get hot. It is recommended to mount cameras on relatively large metal mounting stages (brackets).
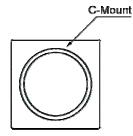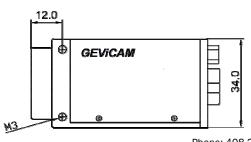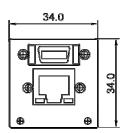
Physical Dimensions

GPIO Pin Assignment

1	12V RTN (GND)	8	Power in 12V
2	GND	9	Trigger in (TTL)
3	Strobe out	10	RS-485 -
4	RS-485 +	11	Opto D1 in -
5	Opto D1 in +	12	Opto D2 out -
6	Opto D2 out +	13	Audio out
7	GND	14	Audio in