16 Megapixel machine vision camera for extreme environments

Prosilica GT4905 is a 16 Megapixel camera with a GigE Vision compliant Gigabit Ethernet port and Hirose I/O port. Prosilica GT4905 is offered in both monochrome and color models. This camera incorporates the high quality ON Semiconductor KAI-16050 TRUESENSE Gen 2 CCD sensor providing excellent monochrome and color image quality. At full resolution, this camera runs 7.5 frames per second. With a smaller region of interest, higher frame rates are possible. It is a rugged camera designed to operate in extreme environments. This camera is a large format housing camera with a standard F-Mount lens mount. By default monochrome models ship with no optical filter and color models ship with an IRC30 IR cut filter.

Benefits and features:

- Monochrome (GT4905) and color (GT4905C) models
- GigE Vision interface with Power over Ethernet
- Screw mount RJ45 Ethernet connector for secure operation in industrial environments
- Supports cable lengths up to 100 meters (CAT-5e or CAT-6)
- Trigger over Ethernet (ToE) Action Commands allow for a single cable solution to reduce system costs
- Comprehensive I/O functionality for simplified system integration
- Planarity adjustable (PA) EF Lens Mount (option -18) for electronic control of aperture and autofocus
- Easy camera mounting via standard M3 threads at all sides and 1/4-20 tripod mounting hole
- Easy software integration with Allied Vision’s Vimba SDK and compatibility to the most popular third party image-processing libraries.
- Defect pixel masking feature with the Defect Mask Loader tool that allows you to manage a user defined defective pixel list to match your application and optimize the life cycle of the camera.
Specifications

<table>
<thead>
<tr>
<th>Prosilica GT</th>
<th>4905</th>
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</thead>
<tbody>
<tr>
<td>Interface</td>
<td>IEEE 802.3 1000BASE-T, IEEE 802.3af (PoE)</td>
</tr>
<tr>
<td>Resolution</td>
<td>4896 (H) × 3264 (V)</td>
</tr>
<tr>
<td>Sensor</td>
<td>ON Semi KAI-16050</td>
</tr>
<tr>
<td>Sensor type</td>
<td>CCD Progressive</td>
</tr>
<tr>
<td>Shutter mode</td>
<td>Global shutter</td>
</tr>
<tr>
<td>Sensor size</td>
<td>Type APS-H</td>
</tr>
<tr>
<td>Pixel size</td>
<td>5.5 µm × 5.5 µm</td>
</tr>
<tr>
<td>Lens mounts (available)</td>
<td>F-Mount, F-Mount PA, M58-Mount, M58-Mount PA, M42-Mount, M42-Mount PA</td>
</tr>
<tr>
<td>Max. frame rate at full resolution</td>
<td>7.5 fps</td>
</tr>
<tr>
<td>ADC</td>
<td>14 Bit</td>
</tr>
<tr>
<td>Image buffer (RAM)</td>
<td>128 MByte</td>
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</table>

**Imaging performance**

Imaging performance data is based on the evaluation methods in the EMVA 1288 Release 3.1 standard for characterization of image sensors and cameras. Measurements are typical values for monochrome models measured at full resolution without optical filter. Contact Sales or AE for more information.

- Quantum efficiency at 529 nm: 41 %
- Temporal dark noise: 17.8 e⁻
- Saturation capacity: 20700 e⁻
- Dynamic range: 61.1 dB
- Absolute sensitivity threshold: 18.3 e⁻

**Output**

- Bit depth: 12/14 Bit
- Monochrome pixel formats: Mono8, Mono12, Mono12Packed, Mono14
- YUV color pixel formats: YUV411Packed, YUV422Packed, YUV444Packed
- RGB color pixel formats: RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
- Raw pixel formats: BayerGR8, BayerGR12, BayerRG12Packed

**General purpose inputs/outputs (GPIOs)**

- TTL I/Os: 1 input, 2 outputs
- Opto-isolated I/Os: 1 input, 2 outputs
- RS232: 1

**Operating conditions/dimensions**

- Operating temperature: -20 °C to +50 °C ambient (without condensation)
- Power requirements (DC): 7 to 25 VDC AUX or 802.3at Type 1 PoE
Prosilica GT 4905

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>7.3 W at 12 VDC; 9.0 W PoE</td>
</tr>
<tr>
<td>Mass</td>
<td>372 g</td>
</tr>
<tr>
<td>Body dimensions (L × W × H in mm)</td>
<td>96 × 66 × 53.3 (including connectors)</td>
</tr>
<tr>
<td>Regulations</td>
<td>CE: 2014/30/EU (EMC), 2011/65/EU, including amendment 2015/863/EU (RoHS); FCC Class A; CAN ICES-003 Issue 4/5</td>
</tr>
</tbody>
</table>

Quantum efficiency

Features

Image optimization features:

- Auto gain (manual gain control: 0 to 33 dB)
- Auto exposure (manual exposure control: 15 µs to 26.8 s)
- Auto white balance (GT4905C only)
- Binning (horizontal and vertical)
- Color correction, hue, saturation (GT4905C only)
- Defect pixel masking (user defined with Defect Mask Loader tool)
- Decimation X/Y
- Gamma correction
- Three look-up tables (LUTs)
- Region of interest (ROI), separate ROI for auto features
• Reverse X/Y

Camera control features:

• EF lens control (order option -18)
• Event channel
• Image chunk data
• IEEE 1588 Precision Time Protocol (PTP)
• RS232
• Storable user sets
• StreamBytesPerSecond (bandwidth control)
• Stream hold
• Sync out modes: Trigger ready, input, exposing, readout, imaging, strobe, GPO
• Tap mode switchable in Vimba Viewer 2.0 or later (four-tap, one-tap)
• Temperature monitoring (main board and sensor board)
• Trigger over Ethernet (ToE) Action Commands
1/4-20 Tripod Mount 2 Sides

M3×4 (4x) 2 Sides

2.5 48.3 2.5
28.2 40

M2×3 (2x)

12.7 11.4 13.5 20

53.3 26

66

A STEP file is available on the Allied Vision Technical Documentation website.
Applications

Prosilica GT4905 is ideal for a wide range of applications including:

- Outdoor imaging
- Traffic imaging and Intelligent Traffic Systems (ITS)
- Public security and surveillance
- Industrial inspection
- Machine vision
- Military and space applications