

■ 1456 x 1088

■ 24 fps

Apex Series 

**GigE**  
VISION

## ▶ AP-1600T-PGE

1.6 megapixel CMOS prism area scan



- **High resolution prism-based 3CMOS camera**
- **Full spatial resolution and true RGB color values with no interpolation**
- **Individual analog gain and exposure control for R, G, and B channels**
- **Color and edge enhancement functions**
- **On-board RGB to HSI, XYZ, sRGB and Adobe RGB color space conversions**
- **Single and multi-ROI's**
- **RGB video output with 8, 10, or 12-bits per channel\***
- **Compact size and smart design**
- **Excellent shock and vibration resistance**
- **GenICam-compliant GigE Vision 1.1 interface**
- **C-mount lens mount**

\* Some video processing functions not available with 12-bit output

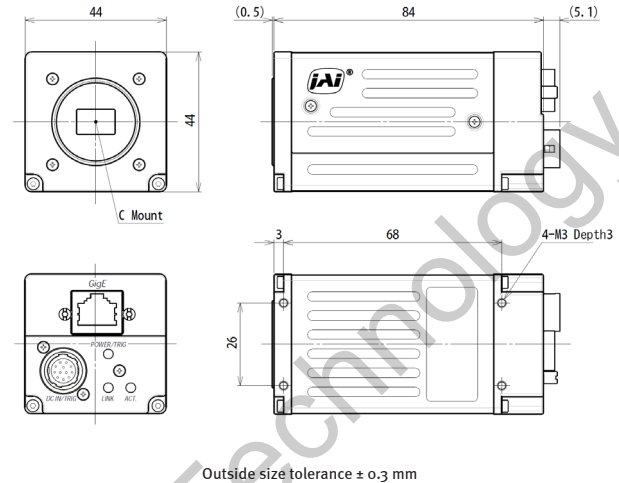


# Specifications for AP-1600T-PGE

## Apex Series

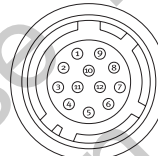
| Specifications            | AP-1600T-PGE                                                                                                                                                                                                                    |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensor                    | 1/2.9" 3-CMOS global shutter (IMX273)                                                                                                                                                                                           |
| Active pixels             | 1456 (h) x 1088 (v) x 3 (R,G,B)                                                                                                                                                                                                 |
| Frame rate, full frame    | 24.2 frames/sec. @ 8-bit                                                                                                                                                                                                        |
| Active area               | 5.02 mm (h) x 3.75 mm (v) - 6.27 mm diagonal                                                                                                                                                                                    |
| Pixel size                | 3.45 µm x 3.45 µm                                                                                                                                                                                                               |
| System clock              | 74.25 MHz (for pulse generator)                                                                                                                                                                                                 |
| Read-out modes            | Full ROI (single) 1456 (h) x 1088 (v) up to 24.2 fps<br>H: 16 to 1456 pixels in 16 pixel steps<br>V: 2 to 1088 lines in 2 line steps<br>ROI (multi) Binning Up to 5 overlapping scanning areas can be defined.<br>1x2, 2x1, 2x2 |
| EMVA 1288 Parameters      | 12-bit output format                                                                                                                                                                                                            |
| Absolute sensitivity      | 5.47 p (λ = 525 nm)                                                                                                                                                                                                             |
| Maximum SNR               | 40.60 dB                                                                                                                                                                                                                        |
| Traditional SNR*          | >60 dB (0 dB gain, 10-bit)                                                                                                                                                                                                      |
| Video signal output       | 8/10/12-bits per channel <sup>†</sup><br>(24/30/36-bit RGB)                                                                                                                                                                     |
| Video modes               | Normal, Single ROI, Multi ROI, Sequencer                                                                                                                                                                                        |
| Gain                      | Manual control - master mode or individual R/G/B channels<br>Auto gain control - off, continuous, one-push                                                                                                                      |
| White balance             | Off, 4 presets (3200K, 5000K, 6500K, 7500K), or one-push/continuous AWB using gain or exposure time (3000K to 9000K)                                                                                                            |
| Gamma/LUT                 | 0.45 to 1.0 (9 steps) or 257-point programmable LUT                                                                                                                                                                             |
| Shading correction        | Flat shading, color shading                                                                                                                                                                                                     |
| Trigger input             | Opto In (2), Pulse Generators (4), Software, NAND Out (2), User Output (4)                                                                                                                                                      |
| Exposure modes            | Timed/EPS, Trigger Width, Auto                                                                                                                                                                                                  |
| Electronic shutter        | (can be set independently for R/G/B channels)<br>15.26 µs to 8 sec. in 1 µs steps (8-bit)<br>15.26 µs to 8 sec. in 1 µs steps (10-bit)                                                                                          |
| Auto Level Control (ALC)  | Shutter range from 100 µs to 13.427 ms, gain range from 0 dB to +12 dB. Tracking speeds and max. values adjustable.                                                                                                             |
| Pre-processing functions  | Color enhancer, edge enhancer, color space conversion (RGB to HSI, XYZ, sRGB, Adobe RGB), blemish compensation (200 px/channel)                                                                                                 |
| Operating temp. (ambient) | -5°C to +45°C (20 to 80% non-condensing)                                                                                                                                                                                        |
| Storage temp. (ambient)   | -25°C to +60°C (20 to 80% non condensing)                                                                                                                                                                                       |
| Vibration                 | 3G (20 Hz to 200 Hz, XYZ directions)                                                                                                                                                                                            |
| Shock                     | 50G                                                                                                                                                                                                                             |
| Regulations               | CE (EN61000-6-2, EN61000-6-3)<br>FCC Part 15 Class B, RoHS/WEEE                                                                                                                                                                 |
| Power                     | 12-pin PoE +12V to +24V DC ± 10%. 5.4 W typical @ +12 V<br>+36V to +57 V DC. 7.5 W typical @ +48 V                                                                                                                              |
| Lens mount                | C-mount                                                                                                                                                                                                                         |
| Dimensions (H x W x L)    | 44 mm x 44 mm x 84 mm (excl. connectors)                                                                                                                                                                                        |
| Weight                    | 200 g                                                                                                                                                                                                                           |

## Dimensions



## Connector pin-out

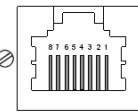
### DC In / Trigger



HIROSE HR10A-10R-12PB(71)

| Pin | Signal              |
|-----|---------------------|
| 1   | Ground              |
| 2   | DC in +12V to +24V  |
| 3   | Opto In 2-          |
| 4   | Opto In 2+          |
| 5   | Opto In 1-          |
| 6   | Opto In 1+          |
| 7   | Opto Out 1-         |
| 8   | Opto Out 1+         |
| 9   | TTL out 1           |
| 10  |                     |
| 11  | DC in +12V to +24 V |
| 12  | Ground              |

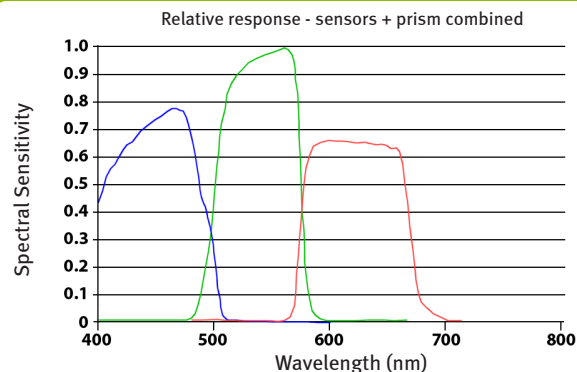
### GigE Vision Interface



RJ-45 with locking screws

| Pin | Signal   |
|-----|----------|
| 1   | TRD+ (0) |
| 2   | TRD- (0) |
| 3   | TRD+ (1) |
| 4   | TRD+ (2) |
| 5   | TRD- (2) |
| 6   | TRD- (1) |
| 7   | TRD+ (3) |
| 8   | TRD- (3) |

## Spectral response



## Ordering Information

|              |                                            |
|--------------|--------------------------------------------|
| AP-1600T-PGE | 3-CMOS prism color camera with GigE Vision |
|--------------|--------------------------------------------|

\*Traditional SNR is based on random noise in a single frame, where EMVA SNR measurements consider more comprehensive noise sources and variance over time.

<sup>†</sup>12-bit output available in video processing bypass mode. See manual for details.

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