A Fast and Responsive 4K Single Line Monochrome CMOS Imaging Sensor

The IT-K3-04120 sensor is a high performance, digital, single line scan monochrome CMOS image sensor. The sensor is optimized for a high line rate and low noise, while providing high responsivity and high quantum efficiency (QE). The sensor is designed for ease-of-integration and uses FR4 packaging.

The pixel features global shutter capability, 100% fill factor, and true correlated double sampling (CDS) for low noise.

FR4 packaging offers high signal integrity and simple interfacing for quick system integration. The interface consists of two 60-pin connectors, which contain input signals, such as EXSYNC (trigger), clocks and voltages, and output signals, such as data and strobe (s-LVDS). Access to the registers of the sensor is handled through a serial-peripheral interface (SPI), plus the temperature of the sensor can be monitored.

The two 60-pin connectors on the IT-K3 share the same electrical and mechanical interface with the entire IT-K and IT-L sensor series, whereby the two 60-pin connectors and four mounting holes are positioned identically relative to one another as well as pin compatibility.

**Specifications**

- **Line Rate**: 70 kHz, maximum
- **Output**: 12-bit digital LVDS
- **Resolution**: 4120 x 1 (4k single line)
- **Pixel Size**: 7.04 µm x 7.04 µm
- **Random Noise**: 1.9 DN
- **Dynamic Range**: 66 dB
- **Conversion Gain**: 0.20 DN/e
- **Full Well**: 19 ke
- **Shutter Type**: Global shutter
- **Responsivity**: 210 DN / nJ / cm² @ 12-bit, peak
- **Power Consumption**: 2 W
- **Operating Temperature**: 0° to +60°C
- **Package**: FR4
- **Regulatory Compliance**: RoHS

**Key Features**

- High speed: 70 kHz
- 100 % fill factor
- Low noise
- Ease of integration
- Common electrical and mechanical interface

**Typical Applications**

- Web inspection
- Recycling
- Document scanning

**Models**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Resolution</th>
<th>Maximum Line Rates</th>
<th>Pixel Size</th>
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<tr>
<td>IT-K3-04120-00-R</td>
<td>4120 x 1</td>
<td>70 kHz</td>
<td>7.04 µm x 7.04 µm</td>
</tr>
</tbody>
</table>

Camera part number for sensor evaluation: LA-CM-04K08
IT-K3-04120
4K Single Line Monochrome CMOS Imaging Sensor

Note: Savitsky-Golay filtering applied, with 40 nm window and 1st order polynomial.

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Teledyne DALSA Digital Imaging offers the widest range of machine vision components in the world. From industry-leading image sensors through powerful and sophisticated cameras, frame grabbers, vision processors and software to easy-to-use vision appliances and custom vision modules.

Teledyne DALSA is headquartered in Waterloo, Ontario, Canada. We have sales offices in the USA, Europe and Asia, plus a worldwide network of representatives and agents to serve you efficiently.

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