Highly precise detection of people and objects using sensor technologies installed in satellites

### Features

**High pixel count and high temperature-resolution enable highly precise understanding of people/object movement**

- **Mitsubishi Electric Original Pixel Structure**
  1. The supporting legs are ultrathin thanks to the introduction of an innovative microfabrication technique. This makes it possible to transfer energy more efficiently without releasing heat, thereby enabling the pixel count to be increased and achieving higher image resolution.
  2. The generation of electromagnetic noise is minimized by mounting the thermal diode and high-performance amplifier on the same chip, achieving high temperature-resolution.

**Vacuum-sealing, Chip-scale Packaging Contributes to Compact Space-saving Size**

1. Chip-scale packaging technology developed in-house eliminates the use of ceramic package and achieves vacuum state performance.
2. New packaging technology reduces product size to approximately 80% compared to conventional products, enabling greater compactness and space savings.

### Specifications

<table>
<thead>
<tr>
<th></th>
<th>MIR8060 series</th>
<th>MIR8032 series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type No.</strong></td>
<td>MIR8060B1*</td>
<td>MIR8032B1</td>
</tr>
<tr>
<td><strong>Pixels</strong></td>
<td>80 x 60 pixels</td>
<td>80 x 32 pixels</td>
</tr>
<tr>
<td><strong>FOV</strong></td>
<td>78° x 53° (Typ.)</td>
<td>78° x 29° (Typ.)</td>
</tr>
<tr>
<td><strong>Frame rate</strong></td>
<td>4 / 8 fps (selective)</td>
<td>4 fps (fixed)</td>
</tr>
<tr>
<td><strong>Temp. resolution (NETD)</strong></td>
<td>100 mK (Typ.)</td>
<td>100 mK (Typ.)</td>
</tr>
<tr>
<td><strong>Operating voltage</strong></td>
<td>3.3 V</td>
<td>3.3 V</td>
</tr>
<tr>
<td><strong>Current consumption</strong></td>
<td>50mA (Max.)</td>
<td>50 mA (Max.)</td>
</tr>
<tr>
<td><strong>Product dimensions</strong></td>
<td>19.5 x 13.5 x 9.5 mm</td>
<td>19.5 x 13.5 x 9.5 mm</td>
</tr>
<tr>
<td><strong>Detectable temp. range</strong></td>
<td>-5 ~ +60 °C</td>
<td>-5 ~ +60 °C</td>
</tr>
<tr>
<td><strong>Interface</strong></td>
<td>Serial Peripheral Interface (SPI)</td>
<td>Serial Peripheral Interface (SPI)</td>
</tr>
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</table>

**High pixel count**
- More tenfold compared to conventional products\(^{+1}\) (80 x 60 / 80 x 32 pixels)

**High temp. resolution**
- Fivefold compared to conventional products\(^{+1}\) (by units of 0.1 °C, 100mK)

**Compact & Space-saving**
- Reduces product size to 80% compared to conventional products\(^{+2}\) (19.5 x 13.5 x 9.5 mm)

\(^{+1}\): Compared to general 16x16 pixel thermopiles available in market.

\(^{+2}\): New product
Infrared Sensor

MelDIR

Please visit our website for further details.

Example Images by Application

- Crime Prevention
- Patient Monitor
- People Counting
- Smart Buildings

Temperature Sensitive Equipment

*Image was obtained after heating the surface of the face to simulate the condition of having a fever. The color tone of the image was adjusted to define the difference in body temperature (i.e., difference between high body temperature and normal body temperature is approx. 2°C). This cannot be used for medical diagnosis.

Sensor Technology Installed in Satellites

Thermal diode sensor technology adopted to install a Compact Infrared Camera (CIRC) in the ALOS-2.

Installed in Kirigamine FZ-Z Series Room Air Conditioners

The newly developed "Move Eye mirA.I+" is equipped with AI technology and high-resolution sensors. A world-first, the airflow from the air conditioner is detected with high accuracy and adjust to various residential environmental, leading to comfortability.

User-Support Tools

- User-support tools that contribute to reducing customer development time

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<tr>
<th>Product planning</th>
<th>Technology development</th>
<th>Product development</th>
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<td>Proposal</td>
<td>Evaluation kit</td>
<td>Reference code</td>
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<tr>
<td>Propose use for each application</td>
<td>Provide hardware and image display software required to evaluate MelDIR</td>
<td>Provide information on drivers, temperature measurement programs etc., required for software design</td>
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<tr>
<td>System configuration</td>
<td>MelDIR Connecting board</td>
<td>MCU board</td>
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<tr>
<td>Example installation</td>
<td>MCU board</td>
<td>PC</td>
</tr>
<tr>
<td></td>
<td>Example of temperature measurement</td>
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</table>

User-support tools that contribute to reducing customer development time

- Proposal
  - Propose use for each application
  - System configuration
  - Example installation

- Evaluation kit
  - Provide hardware and image display software required to evaluate MelDIR

- Reference code
  - Provide information on drivers, temperature measurement programs etc., required for software design

- Reference design
  - Provide information required for hardware design

- Reference design
  - Provide information required for hardware design

- User-support tools that contribute to reducing customer development time

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- User-support tools that contribute to reducing customer development time

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INFRARED SENSORS
MelDIR

Mitsubishi Electric Semiconductors & Devices Website
www.MitsubishiElectric.com/semiconductors/

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