

FLIR AX8 Thermal Camera - Optics, Field of View and Practical Resolution

Technical supporting information on thermal resolution, field of view and practical mounting distances in fixed industrial installations.

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This document summarizes the optical and practically usable resolution characteristics of the FLIR AX8 thermal camera. It is general technical supporting information for users who use this camera in their own installations, diagnostic workflows or software solutions.

The FLIR AX8 is not a JC-Technology product component. These notes concern practical use of the camera itself.

1. Camera and Lenses

The AX8 contains two different camera and lens systems:

Camera	Resolution	Field of view
Thermal IR camera	80 × 60 px	48° × 37°
Visible-light camera	640 × 480 px	maximum 66°, but aligned with the IR optics according to the data sheet

Temperature measurement uses the 80 × 60 pixel thermal image. The 640 × 480 pixel visual camera mainly supports object identification and interpretation of the thermal image.

2. Key Practical Consequence

Thermal detail is determined by the thermal IR camera, not by the visual camera.

For industrial diagnostics with the AX8, the key data is therefore:

- IR camera: 80 × 60 px;
- IR field of view: 48° × 37°.

3. Thermal Field of View at Different Distances

The following calculations are based on the 48° × 37° IR field of view:

Distance	Viewed width	Viewed height	IR resolution X	IR resolution Y
1 m	approx. 89 cm	approx. 67 cm	1.11 cm/px	1.12 cm/px
2 m	approx. 178 cm	approx. 134 cm	2.23 cm/px	2.23 cm/px
3 m	approx. 267 cm	approx. 201 cm	3.34 cm/px	3.35 cm/px
4 m	approx. 356 cm	approx. 268 cm	4.45 cm/px	4.46 cm/px
5 m	approx. 445 cm	approx. 335 cm	5.57 cm/px	5.58 cm/px

Simplified rule of thumb:

Distance	Thermal pixel size
1 m	approx. 1.1 cm per pixel
2 m	approx. 2.2 cm per pixel
3 m	approx. 3.3 cm per pixel
4 m	approx. 4.5 cm per pixel
5 m	approx. 5.6 cm per pixel

4. Theoretical Image Resolution of the Visual Camera

If the visual image is aligned with the IR field of view, 640 × 480 pixels are available for the same viewed area:

Distance	Visual resolution
1 m	approx. 0.14 cm/px
2 m	approx. 0.28 cm/px
3 m	approx. 0.42 cm/px
4 m	approx. 0.56 cm/px
5 m	approx. 0.70 cm/px

This is not thermal resolution. The visual camera can only be used for optical identification and overview.

5. Practical Working Distance

Practical estimate for AX8 use:

Distance	Usability
0.5-2 m	Very good range for smaller machine parts, connectors, relays, motor bearings and cabinet components
2-4 m	Still useful for larger objects, motors, cabinet sections and pneumatics
above 5 m	More suitable for larger hot spots, larger surfaces and rough trend monitoring
approx. 10 m	Usually too coarse for industrial diagnostics at 80 × 60 px, except for large objects

6. Minimum Distance

The AX8 has fixed focus. According to the data sheet, the lower depth-of-field limit is approximately 0.1 m.

This does not mean that measurements from 10 cm are automatically reliable. For close measurements, consider:

- target size;

- emissivity;
- viewing angle;
- parallax error;
- reflections from shiny or metallic surfaces;
- whether the measured object covers several IR pixels.

7. Practical Recommendation for Fixed Installations

In fixed installations, the AX8 is most useful at a distance of approximately 1-3 m.

This range provides a good compromise:

- sufficiently large field of view;
- still usable thermal detail;
- stable industrial mounting;
- good object identification using the visual camera.

8. Short Summary

Question	Answer
Does the AX8 have two lenses or cameras?	Yes, one thermal IR camera and one visual camera.
Do they have the same resolution?	No. IR: 80 × 60 px; visual: 640 × 480 px.
Which camera measures temperature?	The IR camera.
Which camera matters most diagnostically?	Primarily the IR camera.
Ideal distance	Approximately 1-3 m.
Usable above 5 m?	Yes, but mainly for larger hot spots and trend monitoring.
Recommended around 10 m?	Usually not, except for large objects.

9. Trademark Notice

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