

Deptrum[®] Aurora 910

Product Specification

V1.0 - 2026/09/30

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1 Revision History

Revision	Description	Date	Revised by
V1.0	Official release	2026/09/30	Hu Tao



Product Rendering (front view, without mounting wings)

2 Product Overview

Product Introduction

The Deptrum® Aurora 910 series depth camera captures the 3D structure of objects and scenes based on 3D structured light technology, and fuses the RGB image from the RGB camera with depth data to provide users with convenient and efficient 3D perception.

The Aurora 910 camera is designed on the speckle structured light principle. With internal speckle enhancement processing and a high-performance ISP, it outputs high-quality RGB, IR, and speckle images. Depth can be reconstructed on the host PC using the software-based depth reconstruction algorithm. In addition, the camera integrates a security chip that signs the images to prevent image data tampering.

System Requirements

Works with RK3288 or equivalent-or-higher computing power mainboards for facial recognition applications; Windows / Linux / Android are supported. Can also be combined with Deptrum's proprietary face anti-spoofing (liveness) algorithm.

Product Features

- Low power consumption, compact size, high cost performance
- RGB image: 1080 × 1920 @ 22 fps
- RGB / IR / Depth aligned stream: 480 × 768 @ 11 fps
- RGB image supports closed-loop Face AE, ensuring performance in low-light and backlit scenarios
- The RGB camera supports an AF motor for near and far focusing, and supports close-range code scanning
- All three images support an illumination range of 3 ~ 100,000 lux, covering both indoor and outdoor facial recognition performance
- Temperature drift compensation ensures high-precision depth quality at all temperatures
- Hardware synchronization and pixel alignment of RGB / IR / Depth images

Applications

- AI + 3D camera
- Facial recognition payment
- Volume measurement
- Door locks and access control

3 Core Specifications

Aurora 910 Specifications		
Module Parameters	Overall dimensions	61 × 18 × 13.5 mm (without mounting wings)
	Baseline	40 mm
	Interface	USB 2.0 Wafer connector
	Facial recognition working distance	0.3 ~ 1 m
	Code scanning working distance	5 ~ 30 cm
	Operating temperature	-10°C ~ +55°C
	Operating humidity	0% ~ 95% RH, non-condensing
	Operating illuminance	3 ~ 100,000 lux
	Power supply	5 V ± 10%, > 1.5 A
	Average power consumption	Standby 550 mW; Facial recognition 1.65 W; Code scanning 1 W
	ESD rating	Contact discharge ±4 kV, air discharge ±8 kV
	Safety	Class 1 laser safety
Image Performance	Depth data format	Raw 16
	Depth accuracy	±3 mm @ 0.5 m; ±4 mm @ 0.8 m; ±7 mm @ 1 m
	Depth resolution / frame rate / FOV	480 × 768 / 11 fps / 51° × 74°

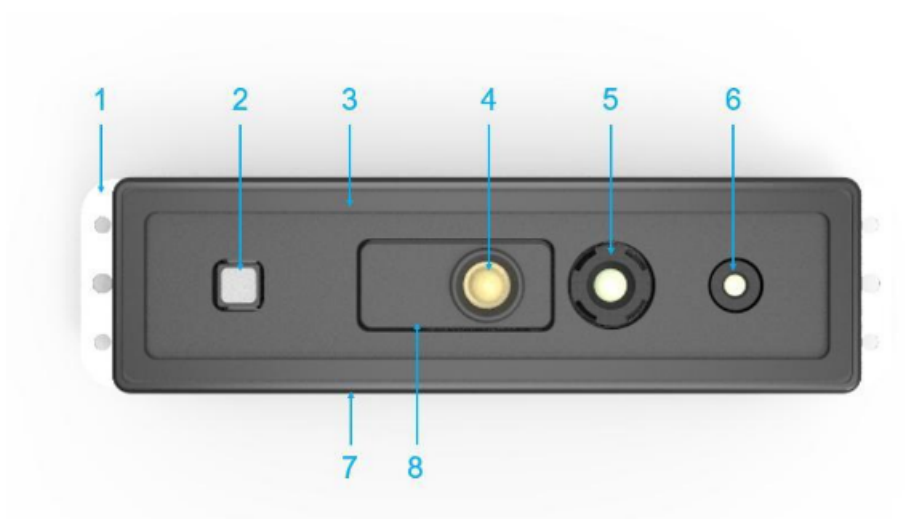
	RGB data format (facial recognition)	JPEG
	RGB resolution / frame rate / FOV (facial recognition)	480 × 768 / 22 fps / 51° × 74°
	IR data format	Raw 8
	IR resolution / frame rate / FOV	480 × 768 / 11 fps / 51° × 74°
	RGB data format (code scanning)	JPEG
	RGB resolution / frame rate (code scanning)	480 × 768、720 × 1280、1080 × 1920, 22 fps
	RGB FOV (code scanning) ¹	51° × 74° @ 480 × 768 ; 56° × 88° @ 720P、1080P
	Image temporal alignment	Max. delay among the three images: 90 ms
	Image spatial alignment	±3 pixel
Firmware Capabilities	Firmware upgrade	Supports USB online upgrade
	Warm-start latency	< 400 ms
	Mode-switch latency	< 400 ms
System Compatibility	System compatibility	Supports Android 7 / 8 / 9 / 10; supports Windows 7 / 10

4 Module Dimensions & Structure

¹The RGB FOV differs across resolutions in order to make the most of the RGB lens's field of view in code-scanning mode.

4.1 Module Description

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Module Layout Diagram (numbers correspond to the System Components table)

System Components	No.
Mounting wing - steel plate	1
Dot projector	2
Cushioning foam	3
Infrared Illuminator (IR fill-in illuminator)	4
RGB Camera (RGB Camera Module)	5
IR Camera (Infrared Camera Module)	6
USB Wafer connector	7
Silicone sleeve (detachable, replaceable as needed)	8

5 Module Electrical Requirements

5.1 PIN Definition

PIN NO.	Name	Type	Description
1	VBUS	Power	5 V power input

2	VBUS	Power	5 V power input
3	D+	I/O	USB 2.0 D+
4	D-	I/O	USB 2.0 D-
5	GND	Power	Power ground
6	GND	Power	Power ground

5.2 Interface Definition



USB 2.0 Wafer interface definition (with PIN1 position mark)

6 Environment & Reliability

Item	Parameter	Specification
Operating environment	Temperature	-10°C ~ +55°C
	Humidity	0% ~ 95% RH, non-condensing
	Illuminance	3 ~ 100,000 lux
Storage environment	Temperature	-30°C ~ +70°C
	Humidity	Relative humidity: 10% ~ 95%, non-condensing

7 Certification

Item	Specification
Laser eye safety	Class 1 , IEC 60825-1:2007 Ed 2, IEC 60825-1:2014 Ed 3
Environmental certification	RoHS

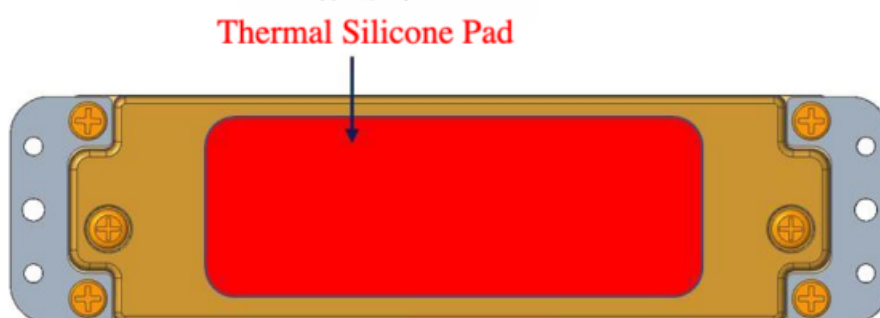
8 EMC

Item	Specification
ESD rating	Contact discharge ± 4 kV, air discharge ± 8 kV
RE rating	Complies with GB 9254 CLASS B

9 Thermal Design Recommendations

The Aurora 910 module generates heat during continuous operation. The host device structure must provide thermal management according to the following requirements to ensure depth accuracy and facial recognition performance over the full temperature range.

- Add heat conduction at the bottom of the module, e.g., with a thermal silicone pad. The pad should be compressible with low rebound force and a thermal conductivity of $\geq 3 \text{ W/(m} \cdot \text{K)}$. Refer to the red area in the figure below for the attachment position.



Module thermal design diagram (the red area indicates the thermal silicone pad attachment position)

- Heat is conducted from the back of the thermal silicone pad to a metal heatsink, which can be made of CNC-machined or die-cast aluminum alloy with a thermal conductivity of $\geq 90 \text{ W}/(\text{m} \cdot \text{K})$. If part of the heatsink can be exposed outside the host device for air convection, heat dissipation will be more effective.
- During module operation, the maximum temperature rise of the housing must not exceed 20°C . The red areas in the figure mark the positions where the 3D ASIC and the SoC are in closest contact with the rear housing; these two positions have the maximum housing temperature rise.

10 Protective Cover Requirements

The front protective cover of the host device must meet the following requirements:

- Protective cover material: glass.
- The light-transmitting areas of the protective cover corresponding to the dot projector, IR camera, RGB camera, and IR LED must be opened by silk-screen printing. The opening size can refer to the FOV of each component in the drawings provided by Deptrum, or, according to the actual product structure, be expanded outward by $\geq 0.5 \text{ mm}$ on each side beyond the component FOV.
- Optical transmittance: for the dot projector area, the global minimum transmittance $T_{\min} \geq 90\%$ in the $800\text{--}1050 \text{ nm}$ band; for the IR camera area, $T_{\min} \geq 90\%$ in the $800\text{--}1050 \text{ nm}$ band; for the RGB camera area, $T_{\min} \geq 90\%$ in the $400\text{--}780 \text{ nm}$ band; for the IR LED area, $\geq 90\%$ in the $800\text{--}1050 \text{ nm}$ band.
- It is recommended to apply an AF coating on the outer surface of the protective cover to prevent fingerprints and oil stains from affecting facial recognition performance in actual use.
- Protective cover structural dimensions: when the material is glass, the thickness must be designed within $0.3\text{--}1.0 \text{ mm}$; the air gap between the protective cover and each optical component must be $< 0.5 \text{ mm}$; the flatness of the protective cover must be $< 0.005 \text{ mm}$.

- Fingerprint and oil prevention: during module-to-host assembly, the surfaces of all optical components must be strictly protected from dust and contamination. During host device use, keep the outer surface of the protective cover clean to avoid affecting facial recognition performance.
- If a protective film is applied to the outer surface of the cover, cutouts must be made in the film at the window areas corresponding to the 4 components; otherwise, light transmittance and the facial recognition experience will be seriously affected.

11 Software Development

Customers can use the Deptrum Stream SDK for secondary development. The SDK supports Windows / Linux / Android platforms and x86_64 and ARMv7 / ARMv8 architectures, with specific performance optimizations for embedded architectures. For detailed usage, refer to the documentation included with the SDK.

12 Disclaimer

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13 Technical Support

Support is available through the following channels:

- Email support: please send your questions to support@deptrum.com
- FAE support: please contact our sales team for FAE support

14 Precautions

- Do not heat this product with any other heat source.
- Do not drop or impact this product to prevent internal component damage and accuracy degradation; improper handling may damage internal components.
- Do not attempt to modify or disassemble this product in any way to avoid module damage and accuracy degradation.
- The module heats up after a period of use, which is normal. Heat dissipation can be applied to the back of the module.
- Do not store the module in high-temperature, high-humidity environments to prevent accuracy degradation or depth reconstruction failure.