



User Manual

TM262-E1

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Safety

Safety Precautions

- To ensure safe use, please read this user manual carefully and understand how to use this product correctly before operation. Failure to use and maintain the product according to this manual may result in camera damage or other injuries. Any injuries or losses caused by improper operation are not the responsibility of Percipio, and Percipio assumes no liability.
- Following the warnings in this user manual can effectively reduce risks, but it cannot eliminate all risks.
- Each part of this user manual has been thoroughly checked during compilation. If you have any questions or find any errors, please feel free to contact Percipio at any time.
- This product should be installed, connected, used, and maintained by qualified adult technicians. Proper transportation, storage, installation, connection, use, and maintenance are essential to ensure the safe operation of the product.

Laser Safety

The Percipio Camera TM262-E1 is classified as a Class 1 laser product. When the device is powered on, it emits laser radiation. Do not stare directly into the light beam, do not view it with optical instruments, and avoid direct exposure to the beam.



User Instructions

- Do not place flammable, explosive, or other dangerous items near the camera. Keep the camera away from open flames and high temperatures. Do not incinerate or crush the product, as this may cause an explosion.
- Avoid collisions, throwing, or dropping the camera. Strong impacts or vibrations can cause damage or operational failure. Any form of modification to the camera is prohibited. Percipio is not responsible for damage or loss resulting from self-repair or disassembly.
- Prevent metal objects, dust, paper, sawdust, and other foreign materials from entering the camera. This can lead to fire, electrical shock, or functional failure.
- Do not use the camera in environments with extreme temperatures. For the operating temperature range for the camera, refer to Appendix: [Specifications](#).
- Avoid using the camera in corrosive environments.
- Use the camera indoors unless specified otherwise. Some cameras are designed for outdoor use; please refer to the user manual for specific instructions.
- Do not point the lens directly at the sun or other strong light sources for extended periods, as this can damage the image sensor.
- Operate the camera at altitudes below 2,000 meters above sea level.

- It is strictly prohibited to use a power supply with a voltage higher than the standard power supply voltage of the camera to power the camera. Any casualties or any losses suffered by third parties due to your improper operation have nothing to do with Percipio, and Percipio shall not bear any liability.
- Install the camera in a well-ventilated and open area.

Pre-use Inspection

- Before each use, carefully inspect the camera to ensure it is in normal working condition. Check for any signs of damage, water ingress, unusual odors, smoke emissions, or missing/damaged screws. If any of these issues are detected, immediately cut off the power and discontinue use.
- High temperatures can cause power cables to age. Please check the power cables regularly to ensure that they are in normal condition and free from aging.

Disposal Instructions

- When disposing of this camera, comply with local regulations to protect the environment. Do not discard used cameras improperly, as improper disposal can cause environmental pollution.

Compliance

TM262-E1 3D camera complies with the following standards and test specifications.



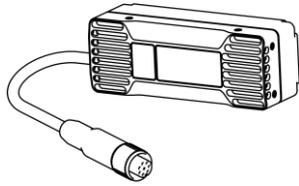
Certification status may be updated. For the latest information, please contact support@pcp3d.com.



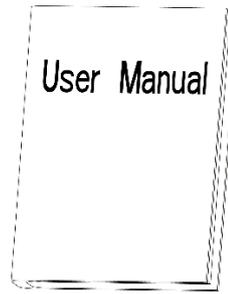
This product meets the following European Union electromagnetic compatibility standards:

- EN IEC 61000-6-2: 2019
- EN IEC 61000-6-4: 2019
- EN 61000-4-2: 2009
- EN IEC 61000-4-3: 2020
- EN 61000-4-4: 2012
- EN 61000-4-5: 2014 + A1: 2017
- EN 61000-4-6: 2014/AC: 2015
- EN 61000-4-8: 2010

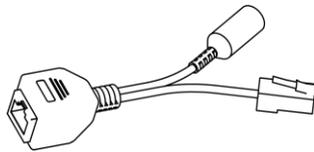
Unboxing



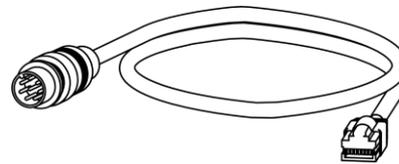
3D Camera x 1
(TM262-E1)



User Manual x 1



Cable Splitter
(Optional) x 1



Adapter Cable
(A-Code to RJ45, Optional) x 1

 **Note**

If any items are missing or damaged, please contact support@pcp3d.com promptly.

Hardware Installation

Connector

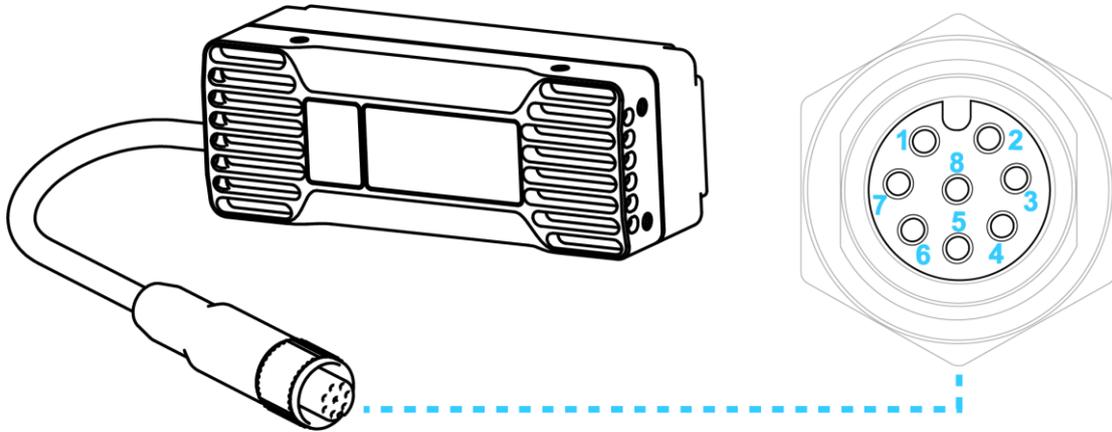


Figure 1: Power & Trigger & Data Connector

Table 1: Power & Trigger & Data Connector Descriptions

Pin Number	Name	Descriptions
1	POWER	DC / trigger circuit positive power supply (DC 24V \pm 20%)
2	TRIG_IN	Trigger input signal
3	GND	DC / trigger circuit GND
4	MD1-	—
5	MD2-	—
6	MD1+	—
7	TRIG_OUT	Trigger output signal
8	MD2-	—

Indicator Lights

The whole process from power-on to the completion of initialization of this camera takes approximately 25 seconds. When the camera is being initialized, the PWR indicator light stays on constantly. After the initialization is completed, the status of the indicator light is shown in the following table.

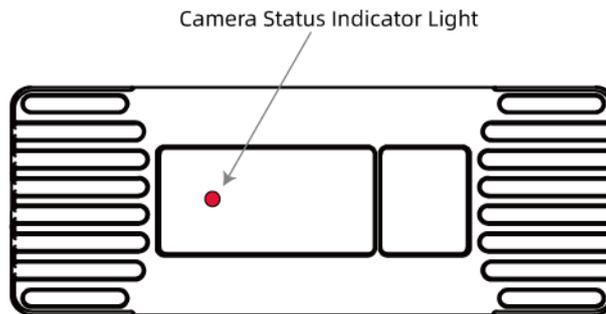


Figure 2: Indicator Lights

Table 2: Indicator Lights Descriptions

Name	Color	Descriptions
Camera Status Indicator	Red	<p>Flashing at 1Hz: The camera is working normally.</p> <p>Flashing at > 1Hz: The camera firmware has encountered an initialization error.</p> <p>Constantly on: The camera is currently in a system freeze state.</p> <p>Constantly off: The camera is either not powered on or in a system freeze state.</p>

Camera Installation

The TM262-E1 camera has a set of M3 threaded holes (thread depth 5mm) on the top surface and a set of M3 threaded holes (thread depth 4mm) on the side for installation purposes. Percipio does not include a mounting bracket for the camera. When installing the camera, please choose suitable mounting holes based on your specific requirements to secure the camera in place. For more information regarding the mounting holes, please refer to the camera's specifications for detailed dimensions or contact support@pcp3d.com for the camera's 2D/3D CAD model.

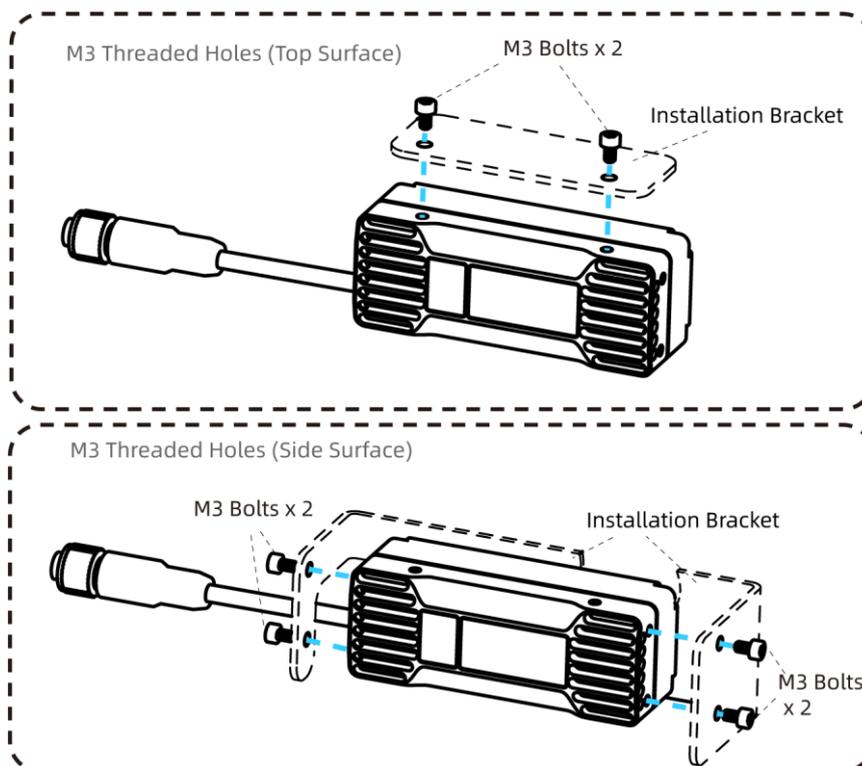


Figure 3: Camera Installation Diagram

The environmental requirements for camera installation are as follows:

1. To ensure the camera's ranging performance is not affected, it is recommended to clear occlusions within 30cm in front of the camera within its field of view (FOV). If occlusions exist within this range, they may affect the detection of distant or low-reflectance targets, potentially causing data errors or detection failure. The degree of impact caused by occlusions to the camera's ranging performance depends on the following factors:
 - Distance between the occlusion and the camera.
 - Reflectance of the occlusion.
 - Reflectance of the target being measured.
 - Distance of the target being measured.

If occlusions cannot be avoided, it is recommended to consult with support@pcp3d.com during camera installation for relevant suggestions.

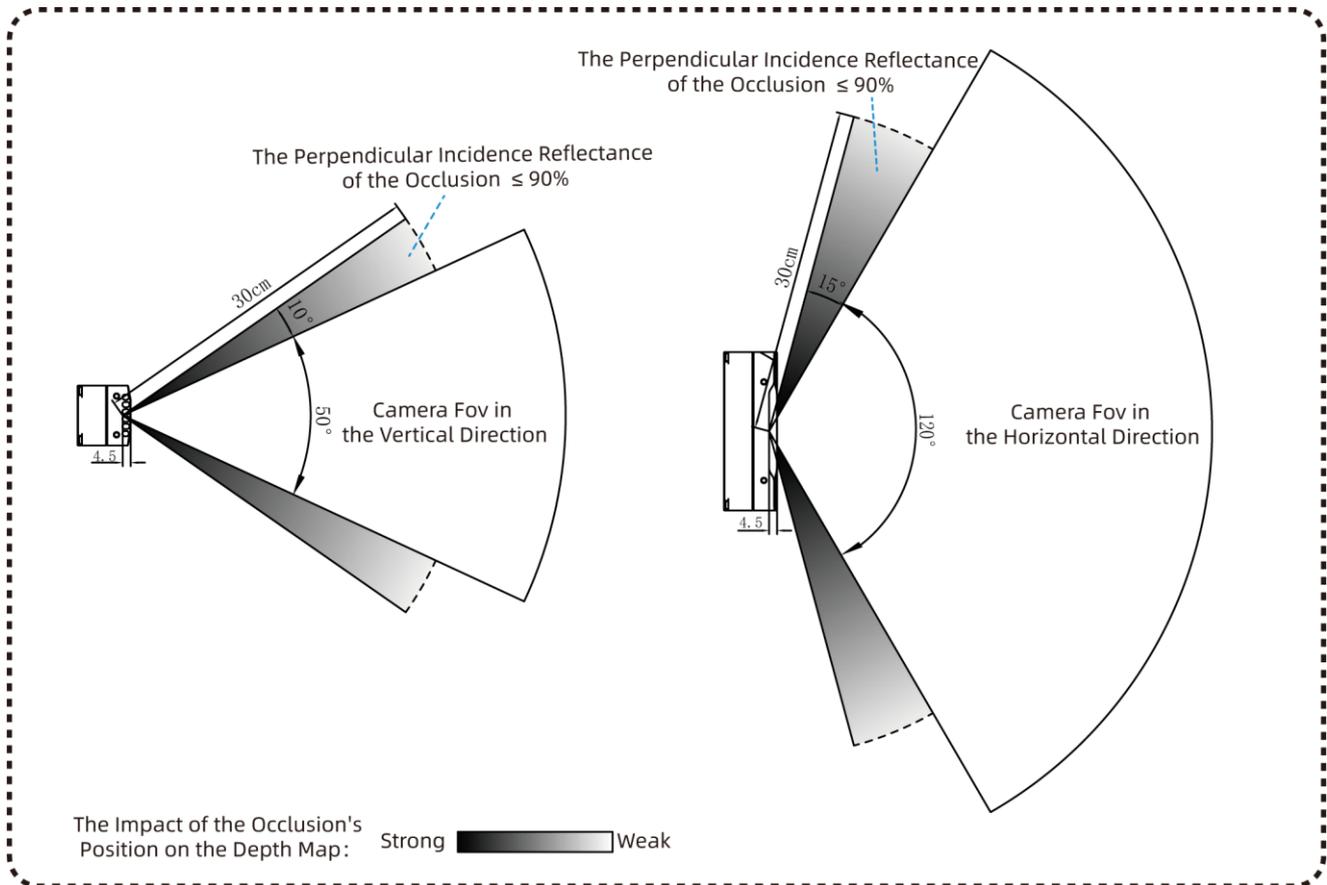


Figure 4: Schematic Representation of Occlusion Effects

2. The camera's casing is designed with built-in heat dissipation capabilities, so no additional cooling measures are necessary. It is recommended to ensure good ventilation around the camera and that the metal mounting surface of the camera is in contact with the equipment during installation to optimize heat dissipation. Do not cover the camera to avoid poor heat dissipation affecting its measurement performance.

Power Supply & Network Connection

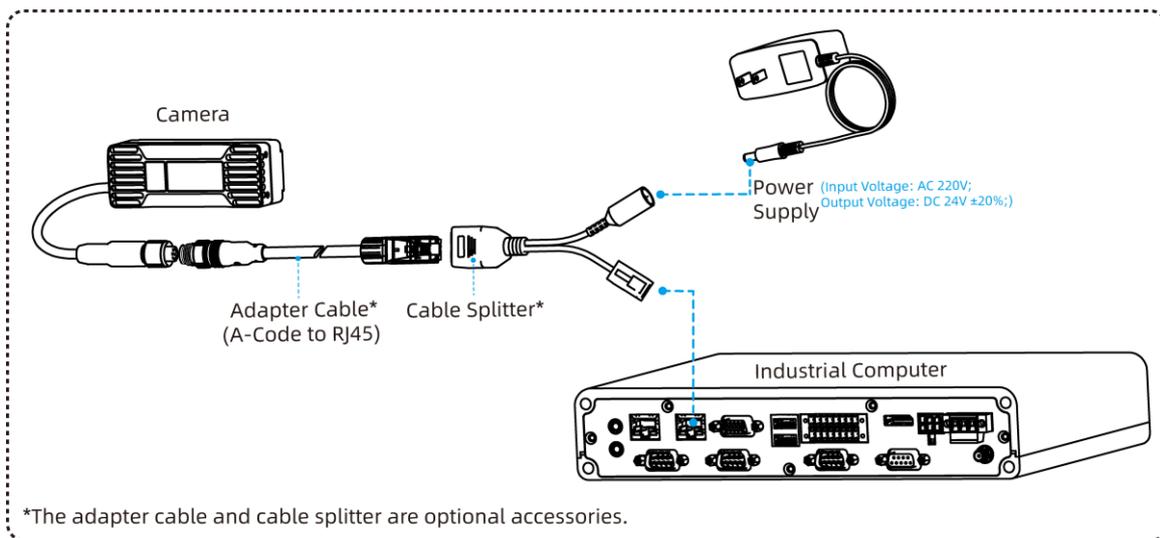


Figure 5: Connection Method

Connection Steps

1. Connect the M12 A-code end of the adapter cable to the camera connector, and connect the RJ45 end to the cable splitter.
2. Connect to Network: Insert the RJ45 end of the cable splitter into the RJ45 network port of the industrial computer (host computer).
3. Connect to Power Supply: Connect the DC socket (5.5*2.1) end of the cable splitter to the external DC power supply. The output voltage of the external DC power supply should be 24V \pm 20%.

Note

The adapter cable and cable splitter are optional accessories. You may customize the adapter cable according to the descriptions for [Connector](#), and connect the camera directly to the power supply and the industrial computer via the customized adapter cable.

Hardware Trigger Connection

Hardware triggering refers to the camera operating in a hardware trigger mode, where it captures images upon receiving an external trigger signal. TM262-E1 supports one channel of falling edge hardware trigger input/output. This section provides a reference for hardware trigger wiring.

Instructions

If hardware triggering is not required, the camera can be operated after completing the [Power Supply & Network Connection](#) and [How to Run the Camera](#).

Hardware Trigger Requirements

1) Electrical Specifications for Hardware Triggering

Table 3: Electrical Specifications for Hardware Triggering.

Index	Minimum (V)	Typical (V)	Maximum (V)
TRIG_POWER Voltage	19.2	24	28.8
TRIG_OUT High Voltage	19.2	24	28.8
TRIG_OUT Low Voltage	-0.3	0	0.4
TRIG_IN High Voltage	19.2	24	28.8
TRIG_IN Low Voltage	-0.3	0	0.4

2) External Trigger Input Signal Requirements

To avoid abnormal hardware triggering, please use external trigger input signals that meet the following requirements:

- For rising-edge trigger, a high pulse square wave signal is required, with the rising-edge being effective. The pulse width should be within the range of 10 to 30 milliseconds. To prevent false triggering, the signal rise time should not exceed 5 microseconds.
- For falling-edge trigger, a low pulse square wave signal is required, with the falling-edge being effective. The pulse width should be within the range of 10 to 30 milliseconds. To prevent false triggering, the signal fall time should not exceed 5 microseconds.
- The trigger frequency must not exceed the device's processing capability (i.e., the frame rate in continuous mode). Otherwise, the camera will discard the trigger signals without processing them.

Note

The wire sequence marked in the wiring reference diagrams represents the pin sequence of the TM262-E1 camera connector. Please customize the adapter cable the descriptions for [Connector](#).

Trigger Input Wiring Reference

Falling Edge

The following describes the falling-edge trigger input wiring method using an NPN (sinking) type connector as an example. The client output connector is connected to the TRIG_IN 2 (pin No. 2) signal line, and the TRIG_OUT (pin No. 7) signal line is used as needed.

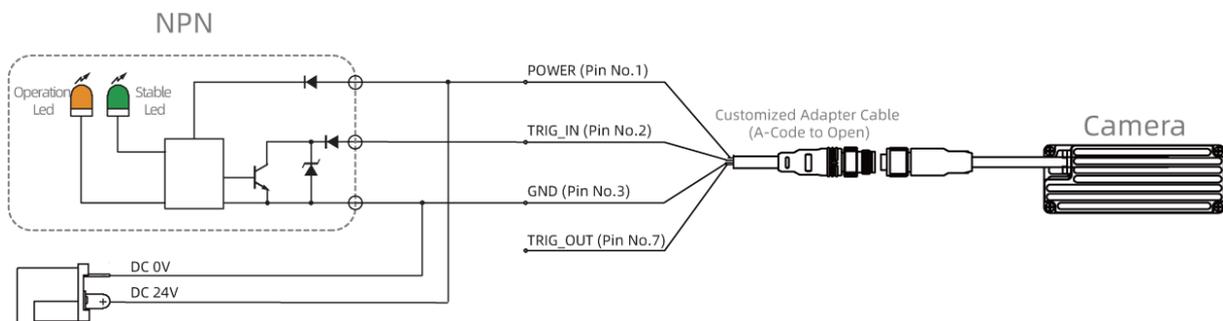


Figure 6: Falling-edge — NPN (Sinking) Type Connector Control Trigger

Trigger Output Wiring Reference

Falling edge

The camera's falling-edge trigger output signal can drive an optocoupler. A reference wiring diagram is shown below, where RL is selected based on the trigger power supply conditions.

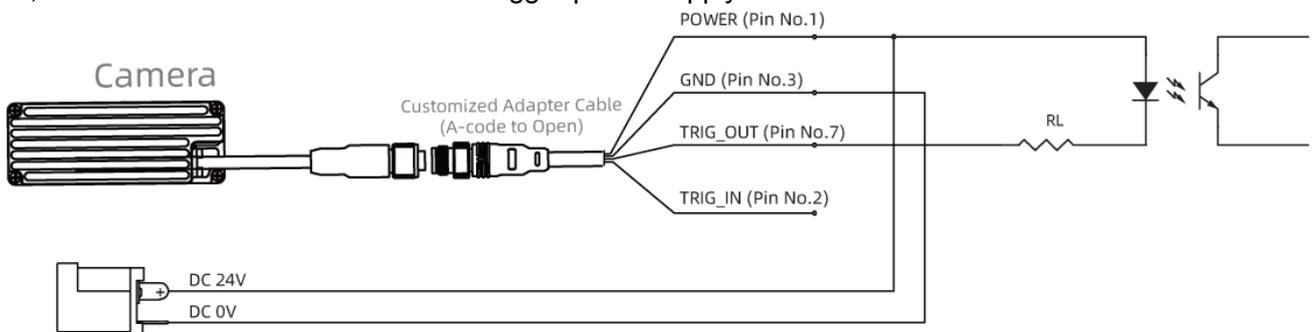


Figure 7: Falling-edge — Driving an Optocoupler

How to Run the Camera

Users can use Percipio Viewer, a proprietary image viewing software developed by Percipio, to preview the camera's output in real-time, including depth images, grayscale images, and point clouds. Additionally, users can control the camera through Percipio's SDK and a series of APIs.



Note

Percipio cameras are configured with dynamic IP addresses by default, enabling them to automatically obtain an IP. If a static IP address needs to be set for the camera, the SDK or Percipio Viewer software can be utilized. For detailed instructions, please refer to the [Application example: Set Camera IP](#) and the [Percipio Viewer User Guide: Set Camera IP](#).

Download Links:

Percipio Viewer Download Links: <https://en.percipio.xyz/downloadcenter/>

SDK Download Links: <https://en.percipio.xyz/downloadcenter/>

Tutorial Links:

Percipio Viewer User Guide: <https://doc.percipio.xyz/cam/latest/en/viewer-en.html>

SDK and API Documentation: <https://doc.percipio.xyz/cam/latest/en/index.html>



Download Center



Technical Documentations

Troubleshooting

If you encounter issues while operating the camera, you can refer to the Troubleshooting Guide to diagnose and resolve problems.

Troubleshooting Guide: <https://doc.percipio.xyz/cam/latest/en/troubleshooting/index-en.html>



Troubleshooting

Service and Maintenance

Service

TM262-E1 is a precision optical instrument with no user-serviceable parts inside. Do not disassemble the camera.

Maintenance (Cleaning)

Clean the exterior of the camera as follows:

- Use lint-free cloth and alcohol or water to wipe the camera window (glass panel) to keep it clean.



Note

Avoid using gasoline or other corrosive and volatile solvents to clean the camera, as these substances may damage the camera's exterior and internal structure.

- It is recommended to regularly clean the dust on the camera surface to ensure efficient heat dissipation.

Maintenance (Storage)

- Do not immerse the camera in water or place it in a high-humidity environment, as this may cause malfunction. Store the camera in a cool, dry, and well-ventilated indoor location.
- Do not leave the camera outdoors for an extended period to avoid damage from water ingress due to rain or snow.
- The storage temperature range for the camera is -10°C to 55°C. Exceeding this range may affect the camera, leading to performance degradation or damage.
- Disconnect the camera from the power supply before storage to prevent fire hazards.
- Do not point the camera lens directly at the sun or other strong light sources for an extended period to avoid damage to the image sensor from intense light.

Appendix: Specifications

Table 4: TM262-E1 Specifications

Index	Specifications
3D Sensing Technology	Direct Time of Flight (DToF)
Working Distance	50 mm ~ 8000 mm
Field of View (Depth)	Depth16 (undistort): 3575 mm x 1400 mm @ 1500 mm (H/V \approx 100°/50°) XYZ48: 5195 mm x 1400 mm @ 1500 mm (H/V \approx 120°/50°)
Z-axis Accuracy	\pm 10 mm + 0.5% of depth
Frame Rate @ Resolution (Depth)	Supported resolution: 240 x 96 Supported depth quality and corresponding frame rate: BASIC (25 fps), MEDIUM (15 fps)
Power Supply	External DC Power Supply: DC 24V \pm 20% (Wide Voltage Range)
Dimensions (Excluding the Cable)	90.0 mm x 34.0 mm x 30.5 mm
Weight (Excluding the Cable)	130 g
Data Transmission	100M Ethernet
Power Consumption	Idle Mode: 1.5 W Continuous Mode: 4.0 W
Ingress Protection	IP65
Temperature	Operating: 0 °C ~ 45 °C Storage: -10 °C ~ 55 °C
Eye Safety	Class 1 (IEC 60825-1:2014)

Percipio.XYZ is an industry leading provider of 3D cameras. We provide a broad range of 3D camera products to meet requirements from various applications, such as industrial, automotive, inspection, logistics, medical, education, security and commercial etc. We will continue to develop and optimize our product roadmap to support more 3D vision applications.

Percipio is an independent vendor of 3D machine vision solutions. We provide products and services to system integration customers rather than end users. This marketing strategy allows us to serve multiple sectors and segments, and also means that our success will be based on our customer's success. Together with our customer's industry specific expertise, we can support end users with implementing machine intelligence, which will improve productivity and/or reduce cost.

Affordable 3D Machine Vision

Contact Us

Purchase : info@pcp3d.com
Technical : support@pcp3d.com
Website : www.pcp3d.com
Documentation : doc.percipio.xyz/cam/latest/en/

Statement

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