



TMC160xB Manual

TMC160BB / TMC160EB



Revision

| Version | Date | Contents |
|---------|-------------|--------------------------------|
| 1.0 | JUL.16.2023 | 1 st Release |
| 1.1 | FEB.06.2026 | Detailed specifications update |
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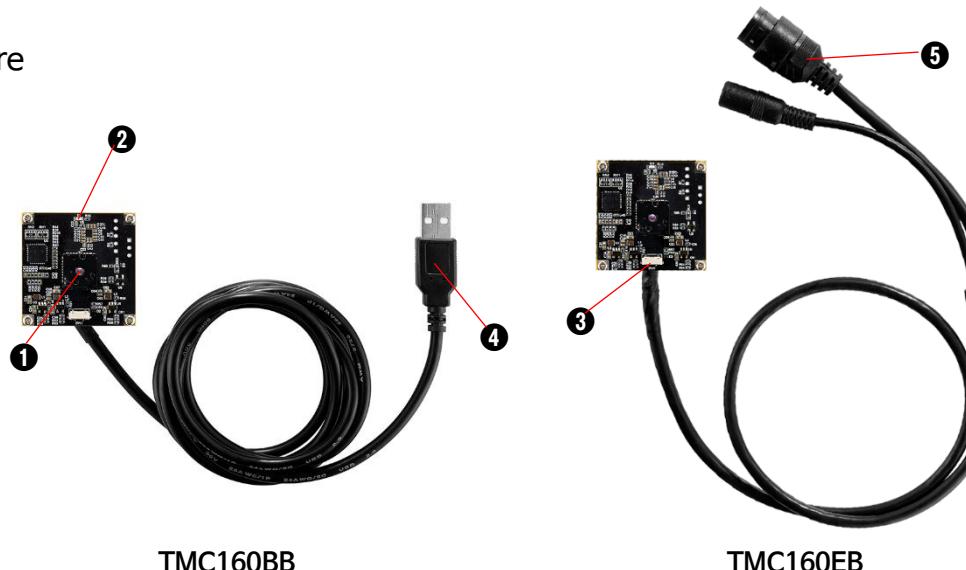
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1. Introduction

The Thermoeye TMC160BB and TMC160EB cameras are compact thermal camera and suitable for application to research and industrial products. They offer comprehensive visual temperature monitoring for process control and quality assurance applications as well as condition monitoring and fire prevention.

1.1. Figure



| Item | Description | Item | Description |
|------|--------------|------|-------------|
| ① | LWIR Sensor | ④ | USB cable |
| ② | LED | ⑤ | PoE cable |
| ③ | Reset Button | | |

1.2. Key Features

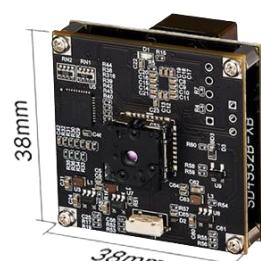
160
x
120

57°

8.7Hz

NETD
≤50mK

- ✓ Resolution : 160 x 120
- ✓ Field of View : 57°
- ✓ Frame Rate : 8.7Hz
- ✓ Noise Equivalent Temperature Difference : ≤50mK
- ✓ Compact Size : 38mm x 38mm
- ✓ Interface : USB or Ethernet (PoE)



2. Specifications

| Model | | TMC160BB | | | TMC160EB | | |
|-----------------------|--------------|--|---------|--------|--|---------|--------|
| Sensor | | Uncooled VOx Microbolometer | | | | | |
| Spectral Range | | 8μm ~ 14μm | | | | | |
| Resolution | | 160 X 120 | | | | | |
| Pixel Pitch | | 12μm | | | | | |
| NETD | | ≤50mK @25°C | | | | | |
| Frame Rate | | 8.7Hz | | | | | |
| FOV | | 57 ° | | | | | |
| Measure Range | High Gain | -10°C ~ 140°C | | | | | |
| | Low Gain | -10°C ~ 400°C | | | | | |
| Accuracy | High Gain | ± 5°C or ± 5% | | | | | |
| | Low Gain | ± 10°C or ± 10% | | | | | |
| Interface | | USB-FS (Type-A) | | | Ethernet (RJ-45) | | |
| Protocol | | UVC, CDC ACM | | | TCP, UDP, RTSP, RTP | | |
| Operating Temperature | | -10°C ~ 80°C | | | | | |
| Power | | USB DC5V USB  | | | PoE(802.3af) DC12V DC12V PoE  | | |
| Cable Length | | 144mm | | | 56mm | | |
| Size | | 38mm x 38mm x 13mm | | | 38mm x 38mm x 28mm | | |
| Power Consumption | State / Unit | Voltage | Current | Watt | Voltage | Current | Watt |
| | Idle | 5V | 83mA | 415mW | 12V | 44mA | 528mW |
| | Streaming | | 83mA | 415mW | | 44mA | 528mW |
| | FFC | | 220mA | 1100mW | | 95mA | 1140mW |

※ PoE adapter and DC12V adapter are not provided.

3. Installation

Connect the camera device to a Windows PC via Ethernet or USB cable and check the connection status with the TmSDK GUI.

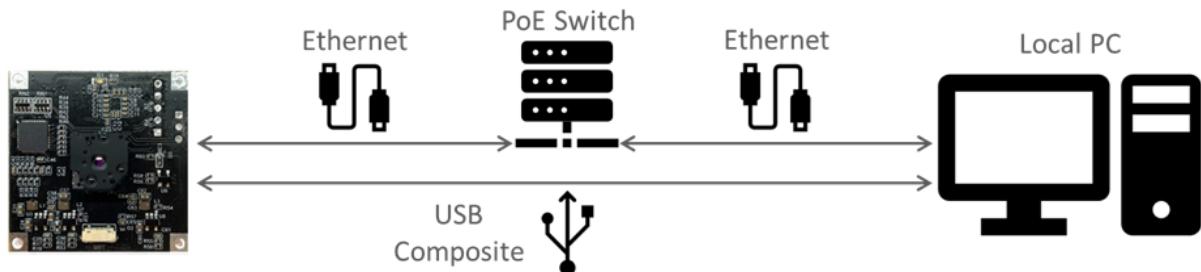


Figure 1. System Configuration Diagram

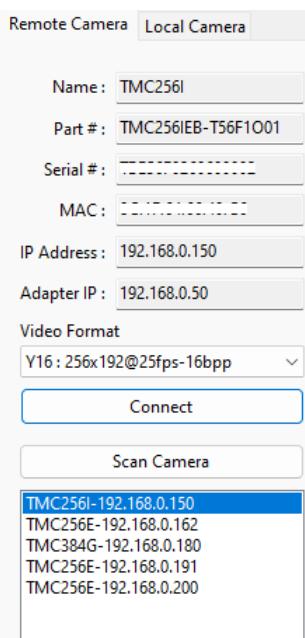
The TmSDK GUI can be downloaded from the Thermoeye Github. For detailed instructions, please refer to the separately provided TmSDK manual.

<https://github.com/thermotye/tmsdk>

2.1. Ethernet

Connect the camera device and a network switch that supports PoE with an RJ-45 Ethernet cable. And the LED will turn on when it boots up normally.

When you run the TmSDK GUI on a PC connected to the network, you can find connectable camera devices on the network and view the device list and product information on the **Remote Camera** tab, as shown below.



The default network settings for your device are:

- IP Assignment: Static
- IP Address: 192.168.0.150
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.0.1
- Main DNS Server: 164.124.101.2
- Sub DNS Server: 168.126.63.1
- Protocol and Port:
UDP (15000), RTSP/TCP (554), RTP/UDP (50000-51000)

Network settings can be changed on the **Network** tab after connecting with the camera device.

Figure 2. Ethernet Connection

2.2. USB

Connect the camera device and a PC with an USB cable. And the LED will turn on when it boots up normally.

When you run the TmSDK GUI on your PC, you can find connectable camera devices and view the device list and product information in the **Local Camera** tab, as shown below.

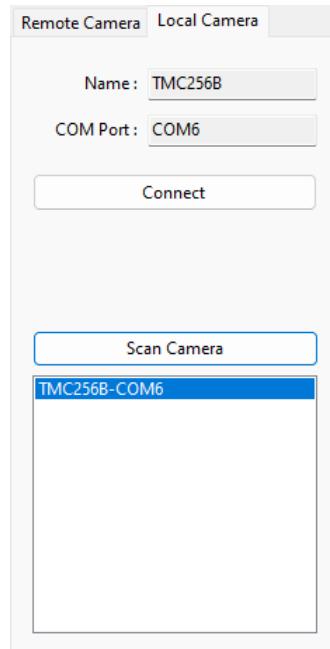


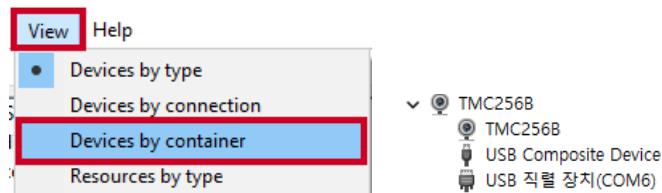
Figure 3. USB Connection

You can also view the connection information in the Windows Device Manager.

USB connection is possible using the product name and COM port number of the camera device.

The COM port number might change each time you connect the camera device with a USB cable.

If you change the display to "View ⇌ Devices by container" from the menu in Device Manager, you can see the USB camera product name and COM port number included with the camera device at a once.



2.3. Factory Reset

If the product malfunction occurs due to incorrect settings, you can perform a factory reset using the button on the side of the device.

If you press and hold the button for more than 15 seconds, the LED will blink rapidly to indicate the start of the factory reset. If you release the button at this time, the factory reset will proceed with a restart.

2.4. LED indication for each camera operation status

| Indication | Operation | Status |
|------------|---|---|
| ● | On | Idle after a normal boot |
| ○○●○●○○ | Repeat 2 short blinks during bootup | Unable to boot due to abnormal firmware |
| ○○●○●○○●○○ | Repeat 3 short blinks during bootup | A problem with the camera sensor |
| ●○○●○○●○○ | Blinking every 1 seconds during video playback | Playing a live video |
| ●○○●○○●○○● | Fast blinking when the reset button is pressed for more than 15 seconds | When you release the button you were holding, the factory reset will begin. |

Table 1. LED Indication

3. Mechanical Considerations

The TMC160BB and TMC160EB cameras are not sealed assembly. Consequently, for most applications it is recommended to locate the assembly behind a sealed protective window and housing. Common materials for LWIR windows include silicon, germanium, and zinc selenide (LWIR absorption in silicon is on the order of 15%/mm, which means NEDT is adversely affected using a silicon window. Bulk absorption in germanium and zinc selenide is negligible, and performance is essentially unchanged provided both surfaces of the window are anti-reflection (AR) coated.)

Note

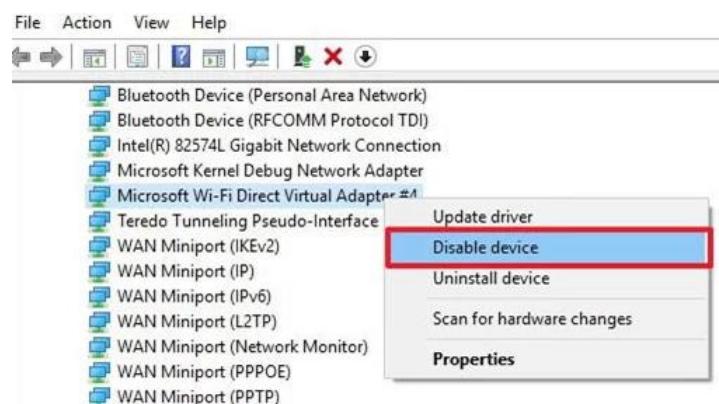
The window should be sized large enough to avoid encroaching upon the optical keep-out zone.

4. Troubleshooting

Please refer to this if you encounter any problems during product installation or SDK development.

4.1. Scan Camera is not working on Remote Camera

If you execute Scan Camera to find a Remote Camera connected to PoE on a PC equipped with Wi-Fi wireless adapter, but you cannot find any device, please set all of **Microsoft Wi-Fi Direct Virtual Adapter** devices to **Disable device** on the network adapter in the PC's Device Manager as follows.



5. Support

Thermoeye Inc. operates service channels to keep your camera running at all times. If you discover a problem with your camera, please get in touch with us for technical support.

- ✓ Website: www.thermoeye.co.kr
- ✓ E-mail: help@thermoeye.co.kr
- ✓ Tel: +82-70-4489-6196
- ✓ Head Office: 307, Research Building 3, 70, Yuseong-daero 1689 beon-gil, Yuseong-gu, Daejeon, Republic of Korea
- ✓ Seoul R&D: 4~5F, 169 Sadang-ro, Dongjak-gu, Seoul, Republic of Korea

Please visit the Thermoeye Github to download detailed product manuals and SDK for application development.

- ✓ <https://github.com/thermoeye/tmsdk>

6. Glossary

| Term | Definition |
|----------|---|
| CDC ACM | USB Communication Device Class - Abstract Control Model |
| COM port | USB serial COMmunication port |
| DHCP | Dynamic Host Configuration Protocol |
| DNS | Domain Name System |
| FOV | Field Of View |
| IP | Internet Protocol |
| LED | Light-Emitting Diode |
| MAC | Media Access Control |
| NEDT | Noise Equivalent Differential Temperature |
| NETD | Noise Equivalent Temperature Difference |
| PoE | Power over Ethernet |
| ROI | Region Of Interest |
| RTSP | Real-Time Streaming Protocol |
| RTP | Real-time Transport Protocol |
| TCP | Transmission Control Protocol |
| UDP | User Datagram Protocol |
| USB | Universal Serial Bus |
| USB-HS | USB High Speed |
| UVC | USB Video device Class |
| VOx | Vanadium Oxide |