TMC160xB Manual

TMC160BB / TMC160EB

Revision

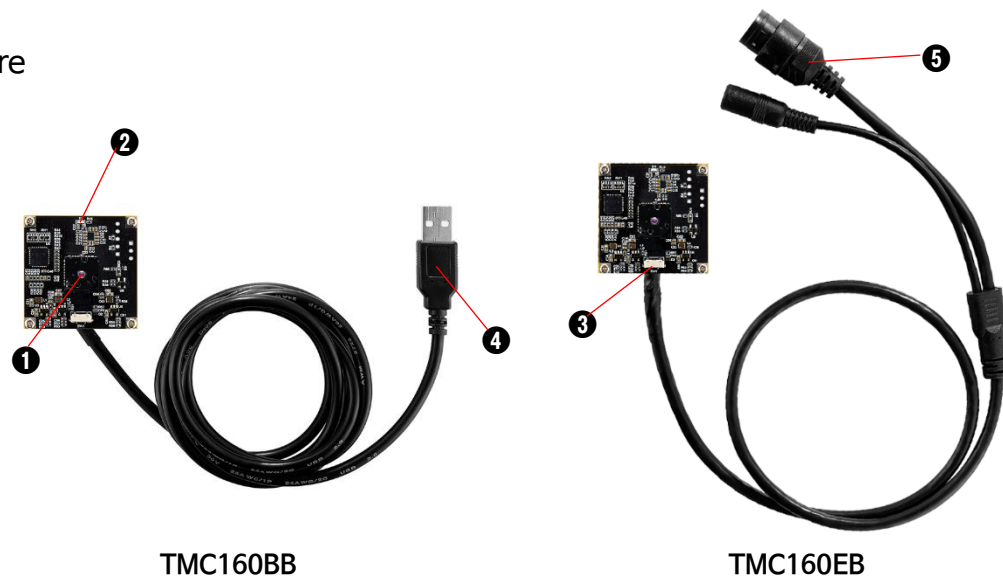| Version	Date	Contents
1.0	JUL.16.2023	1st Release
1.1	FEB.06.2026	Detailed specifications update

Chapter

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

TMC160BB   TMC160EB

Item	Description	Item	Description
❶	LWIR Sensor	❹	USB cable
❷	LED	❺	PoE cable
❸	Reset Button		

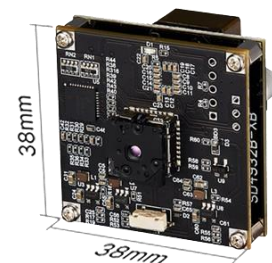## 1.2. Key Features

- ✓ 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	8㎛ ~ 14㎛					
Resolution	160 X 120					
Pixel Pitch	12㎛					
NETD	≤50mK @25℃					
Frame Rate	8.7Hz					
FOV	57 ˚					
Measure Range — High Gain	−10℃ ~ 140℃					
Measure Range — Low Gain	−10℃ ~ 400℃					
Accuracy — High Gain	±5℃ or ±5%					
Accuracy — Low Gain	±10℃ or ±10%					
Interface	USB-FS (Type-A)			Ethernet (RJ-45)		
Protocol	UVC, CDC ACM			TCP, UDP, RTSP, RTP		
Operating Temperature	−10℃ ~ 80℃					
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 (PoE switch, injector) and DC12V adapter are not provided.

※ Don't connect the DC12V and PoE adapter at the same time. This may damage the device.

※ If you use a general switch other than PoE, you can use a DC12V for separate power supply.

3. Installation

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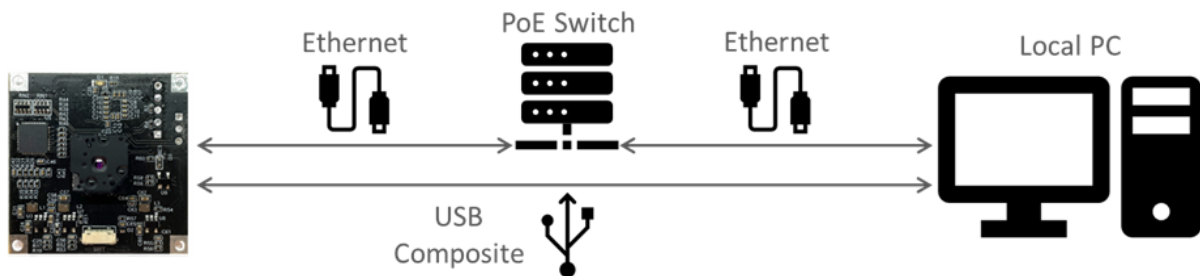

Figure 1. System Configuration Diagram

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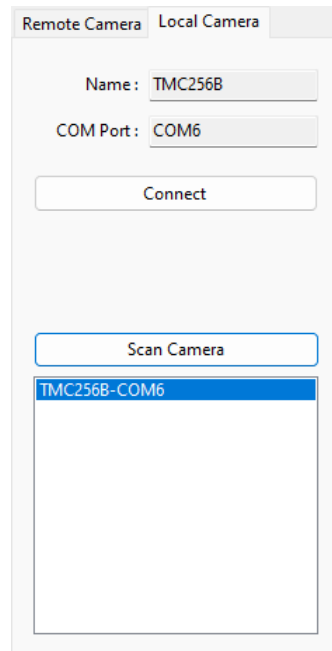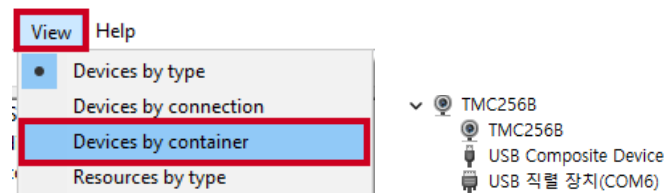
You can also view the connection information in the Windows Device Manager.

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.

Figure 3. USB Connection

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.)
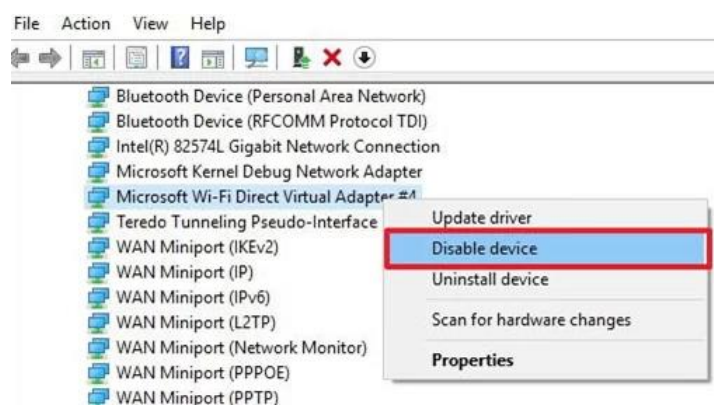

Note
The window should be sized large enough to avoid encroaching upon the optical keep-out zone.

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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