

EFM-45 User Manual

EF-45NC-based modular iris recognition system with dual iris image capture and central positioning LCD

Version 2.1.0, July 2024



APPLICATION

For customized integration into kiosks, ATM's, and similar automated, self-service applications.

About This Manual

The EFM-45 is the modular version of CMITech’s next generation EF-45NC dual iris imaging system. This manual contains the descriptions and operational instructions for EFM-45 device. It is intended and written for system administrators who are in charge of overall operation including installation and management. We recommend you familiarize yourself with this manual in order to make use of the product correctly and effectively.



- The figures and screenshots in this guide are given for illustration purposes only and may differ from the actual product.
- Due to continuous technological improvements, the guide may not contain the most updated information. For further information not covered in this guide, please contact us at service@cmi-tech.com or sales@cmi-tech.com.

Revision History

Version	Date	Description	Note
2.0.0	2024-05-10	<ul style="list-style-type: none"> • Initial release in new docs format • Updated product specification 	
2.1.0	2024-07-10	Add Expanding EFM-45 Functionality with EF-IO to Appendix	

Conventions in This Manual

The following symbols are used throughout this manual. Make sure that you fully understand the meaning of each symbol and follow the instructions accompanied.

Symbol	Name	Description
	WARNING	Indicates information that should be followed with the utmost care. Failure to comply with a warning could cause severe damage to the equipment or injury to personnel.
	CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
	IMPORTANT	Emphasizes essential information required for user success.
	NOTE	Provides important supplemental information that might enhance users' understanding or alternative steps to accomplish their goals.
	TIP	Provides optional information to help users be more successful in their tasks.

Safety Instructions

Follow the safety instructions to use the product safely and prevent any risk of personal injury or damage to the product.



WARNING

Choosing Location

- DO NOT expose the product to direct sunlight, excess heat, open flames, corrosive gasses, moisture, or dust. Doing so may cause electrical shock, electrical short, or fire.
- DO NOT install the product near heaters, air conditioners, electrical fans, refrigerators, or water. Doing so may create the risk of a short circuit or fire caused by water or condensation that may come into contact with the product.
- DO NOT install the product in an environment that is susceptible to explosion.

Operation

- DO NOT let any type of liquid, mists, or sprays get into the product. Doing so may cause electrical shock, electrical short, or product damage.
- If smoke, odors or noise rise from the device, stop using the device immediately, disconnect the power cable, and contact our customer support.

Maintenance

- DO NOT attempt to disassemble, repair, or modify the device yourself. Opening or removing covers may expose you to electrical shock or other risks and may void your warranty. If the product does not work correctly, contact your dealer or our customer support.



CAUTION

Choosing Location

- Keep the front side of the device away from strong ambient light, direct sunlight, or both. Sunlight, halogen lamps or other strong illumination may degrade the performance of the device, that is, increase in failure-to-capture rates or occasional authentication problem.
- DO NOT install the product outdoors unless environmental factors such as water, temperature, or sunlight in the location are controlled by means of proper protection.
- DO NOT expose the product to high electro-magnetic radiation. Device failure or performance degradation may occur caused by electro-magnetic interference.
- DO NOT install the product next to devices that contain magnets or generate magnetic fields such as speakers. Device malfunction or performance degradation may occur caused by magnetic interference.

Installation

- DO NOT install the product on a surface subject to vibration or physical shock. Doing so can cause damage to the product.
- DO NOT install the power supply cable in a high-traffic area where people pass by. Doing so may create a trip hazard and cause the cable to become worn or frayed.
- Use only a power cord set complying with the national regulation of the countries intended for sale.
- DO NOT connect multiple devices to one power adapter. Overload on power adapter may cause over-heat or fire hazard.
- DO NOT use any type of extension cord to connect the product to a power supply.

Operation

- DO NOT use any sharp tools when pressing the buttons to prevent damage to the touch screen from scratches or cuts.

Maintenance

- When cleaning the product, wipe the product with a soft and dry cloth. Do not apply water, benzene, alcohol, or spray cleaner. These may cause product failure or fire.

Contents

About This Manual	ii
Revision History	ii
Conventions in This Manual	iii
Safety Instructions	iv
1. Introduction to EFM-45	1
1.1. Key Features	2
1.2. Components	3
1.3. Parts and Controls	4
2. Installing EFM-45	6
2.1. Installation Requirements	6
2.1.1. Environmental Requirements	6
2.1.2. Electrical Requirements	6
2.1.3. Tool Requirements	7
2.2. Mounting Types	8
2.2.1. Type A: Top/Bottom side mount using a clamp bracket	8
2.2.2. Type B: Side mount using a clamp bracket	8
2.2.3. Type C: Top/Bottom side mount using a bracket	8
2.2.4. Type D: Desktop Installation	9
2.3. Connecting Cables	9
2.3.1. Power Connection	9
2.3.2. Network Connection	9
2.3.3. Speaker Connection	9
3. Using EFM-45	10
3.1. Enrollment	10
3.2. Authentication	10
3.3. Configuration	12
4. Product Specifications	14
4.1. Mechanical Specifications	14
4.1.1. Dimensions (unit: mm)	14
4.2. Technical Specifications	14
4.3. Cables and Connectors	16
Appendix A: Expanding EFM-45 Functionality with EF-IO	17
A.1. Prerequisites	17
A.2. Installation Overview	17
A.3. Configure EFM-45	18
A.3.1. Verify device IP address	18

A.3.2. Configure serial communication and LED light control	19
A.4. Connect EFM-45, EF-IO, and LED signal light	22
Appendix B: Legal Information	24
B.1. Disclaimer	24
B.2. Copyright Notice	25
Appendix C: Regulatory Information	26
C.1. FCC compliance statement	26
C.2. EU Declaration of Conformity (CE)	27
Appendix D: Contact Information	28

1. Introduction to EFM-45

The EFM-45 is the modular version of CMITech's next generation EF-45NC dual iris imaging system. It is intended for specialized solution integrators to incorporate high accuracy iris recognition biometrics into a kiosk or similar self-service terminal. This system's operation is identical to CMITech's EF-45NC iris recognition terminal product, which provides unprecedented subject ease of use through a highly innovative and intuitive user positioning approach.

New to the EFM-45 is a central 1.45" touch LCD , which assists the user in intuitive positioning, making capture of the iris and face images faster and easier.

This independent user interface allows the integrator to position the units without regard to the kiosk's own display panel. It provides the same positioning feedback cues and instructions as in the EF-45 system including sound.

Subjects will view their own face in the LCD to position themselves correctly. Each subject will intuitively and naturally move to the correct position by simply centering and sizing their face image to the positioning box within the display. In addition, this box turn green to indicate that the subject is within the proper distance range of 33 to 47cm, after which the iris biometrics images are automatically captured.

The EFM-45 can be used with a desktop cradle to allow it to be utilized as an enrollment device for an EF-45NC installation.

The EFM-45 is an embedded system that includes its own ARM main board to manage all iris and face imaging processes. The communication options to the host system are TCP/IP via an Ethernet connection or a USB connection.

1.1. Key Features

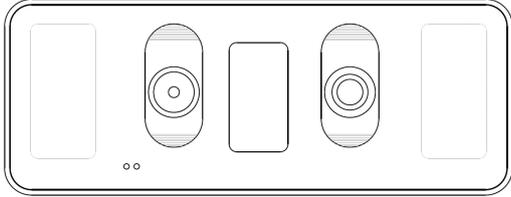
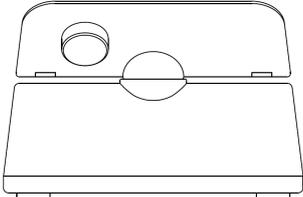
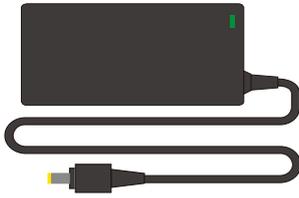
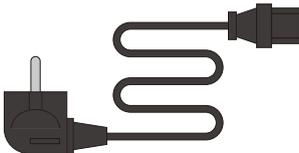
The key features of EFM-45 are shown in the following table:

Feature	Description
Advanced real time subject tracking with simple user instructions	EFM-45 accurately locates the subject face in real time and tracks the face tilting automatically to provides easy positioning.
Automatically tilting at user height	+25 to -20degree
Utilization of ultra-high performance face matching engines	Advanced, dedicated co-processor allows utilization of latest and most powerful face algorithms.
Supports multiple languages in GUI	English, Korean
Large on-board (embedded) iris and face template database	Store up to 100,000 active iris templates on-board in 1:N recognition (verification) identification mode. For the face store up to 3,000 Active face templates on-board in 1:N recognition (verification) identification mode.
High speed face matching	Can provide up to 3,000 matches per second on-board.
Use in widest range of lighting conditions	Embedded illuminators in both white and NIR ranges expand use in adverse ambient light environments. Indoor use only.
Standard I/O Interface	USB Host and Slave, Ethernet, RS-232C
User Interface	LCD with touch screen and speaker embedded
Fully compatibility with CMITech CMID Manager and SDK software	Supports full integration with CMID and Software Development Kit (SDK)

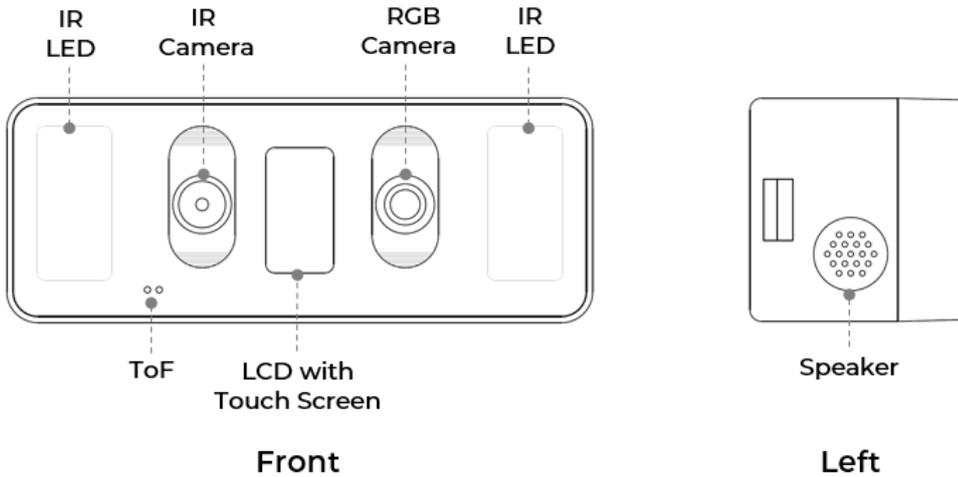
1.2. Components

Before you begin, make sure that all the following items are included with your device. If you find anything is missing, contact your dealer.

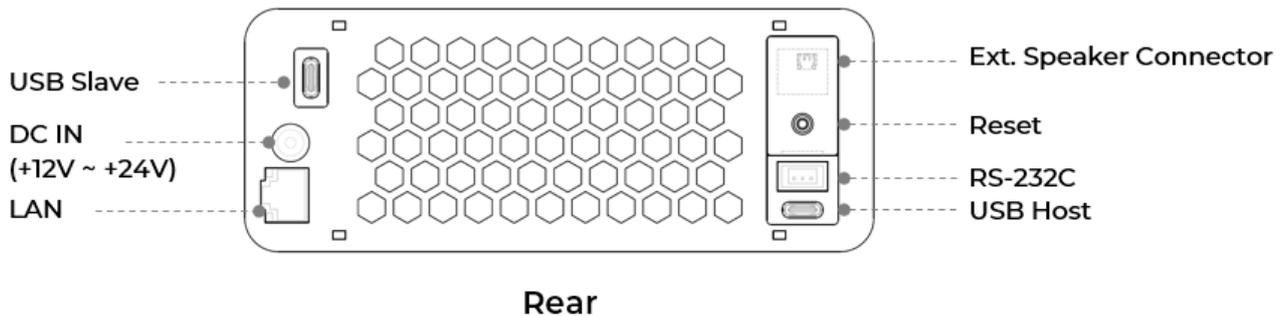
EFM-45 component table

Name	Quantity	Image	Note
EFM-45	1		
Desktop cradle	1		Optional
Power cable	1		Optional
Cables Speaker cable	1		Optional
RS-232 cable	1		Optional
AC adapter	1		Optional
Power cord	1		Optional

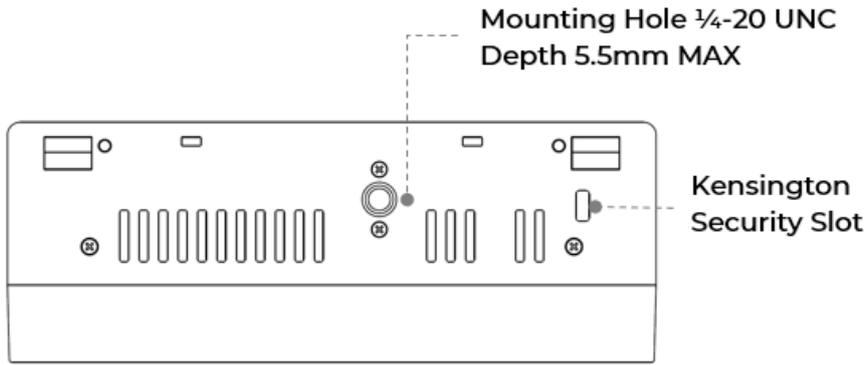
1.3. Parts and Controls



Name	Description	Note
Camera	IR and RGB to captures the iris and face images	
IR LED	Illuminates the NIR lighting for capturing the iris	
LCD with Touch screen	Shows preview images to capture the iris and face and its results	
ToF sensor	Detects the subject's motion	
Speaker	Delivers indication sound by embedded speaker	



Name	Description	Note
USB Host and Slave	USB-2.0 Type-C Host and Slave port	
LAN	Connects the ethernet cable	
RS-232	Connects the RS-232 cable	
DC IN	Connects the power cable	
External Speaker Connector	Connects with external audio output	
Reset button	Resets to the factory default settings	



Bottom

Name	Description	Note
Kensington lock	Secures the unit to object with cable and lock	
Tripod socket	Attaches the unit with a tripod that has the standard 1/4-20 UNC and depth 5.5mm screw hole	

2. Installing EFM-45

This chapter gives the information about the requirements and the prerequisites for installing EFM-45 and the installation procedures.

2.1. Installation Requirements

Before installation, make sure that the following requirements are met.

2.1.1. Environmental Requirements



The EFM-45 is designed and intended for indoor use only. The device is not weatherproof and must not be exposed to water, ice, extreme temperatures or other adverse weather conditions. If it is required to use the device in outdoor or extreme environments, contact local sales or service@cmi-tech.com for more information.

- Avoid the location that is exposed to backlight, direct sunlight, and other strong illumination.
- Choose the location with moderate ambient light.
- Determine the height at which you install the device.



The recommended mounting height is 135 cm (53 inches) from the floor to the bottom of the device. It covers a person's height from 140 cm (55 inches) up to 210 cm (83 inches).

2.1.2. Electrical Requirements

- Use a stable power supply adapter of DC 12/24V ($\pm 5\%$) with a minimum 2A.
- Make sure that the power cable is as short as possible and have correct wire gauge (22 AWG or smaller in number)
- Use CAT5 or later for ethernet cable.

Power requirements depending on cable length and wire gauge

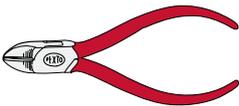
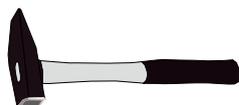
Input voltage (V)	Wire gauge (AWG)	Power cable length (m)		Note
		Recommended	Maximum	
12	16	30.3	44.6	
	18	19.0	28.0	
	20	12.0	17.7	

15	20	37.5	50.1	<i>Standard Configuration</i>
	22	23.6	31.4	
24	20	105.1	140.1	
	22	66.0	88.1	

2.1.3. Tool Requirements

The following tools can be necessary for installation and are not supplied by default.

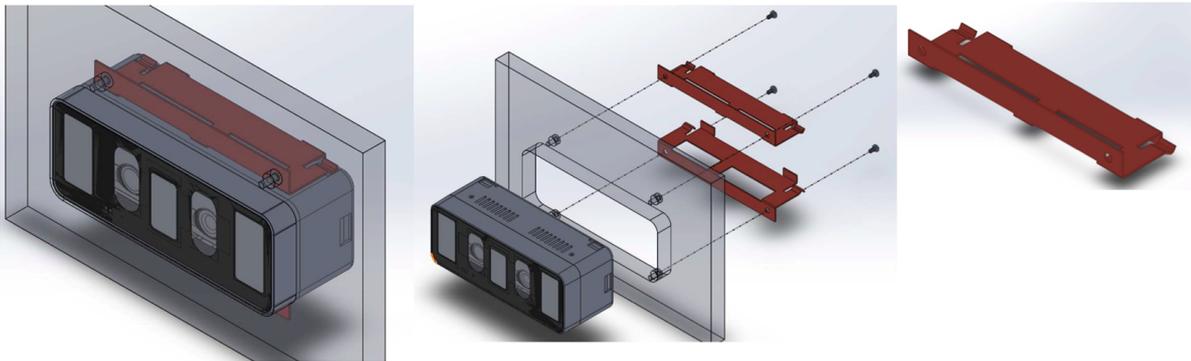
Required tools

Purpose	Name	Figure	Note
General	Screw driver		Cross head
	Tape ruler		For measuring the installation height
	Cutting plier		
Concrete wall mount	Electric drill		With a drill bit and anchor bolts
	Marker		
	Hammer		

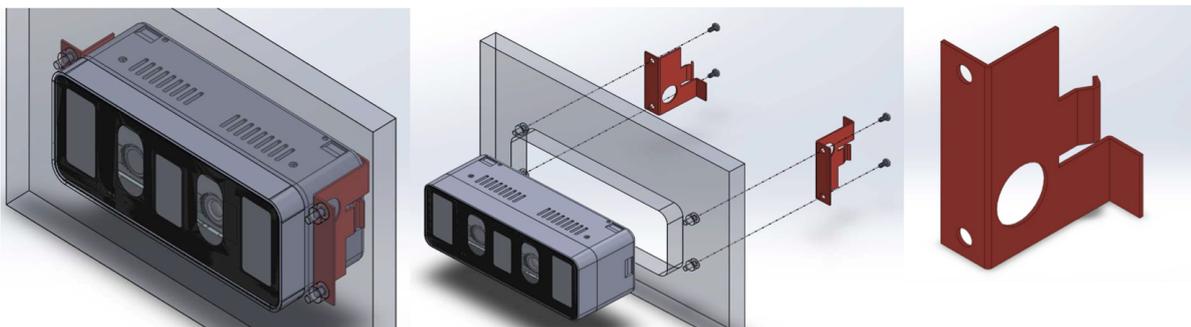
2.2. Mounting Types

The EFM-45 is primarily intended for flush installation in kiosk front panel. Depending on the installation environment, user should utilize a customized bracket or clamp as shown below. Please contact CMITech for more information.

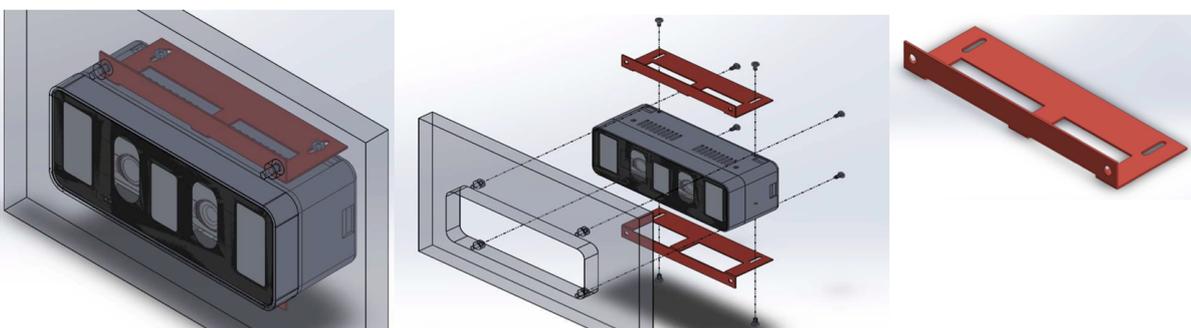
2.2.1. Type A: Top/Bottom side mount using a clamp bracket



2.2.2. Type B: Side mount using a clamp bracket

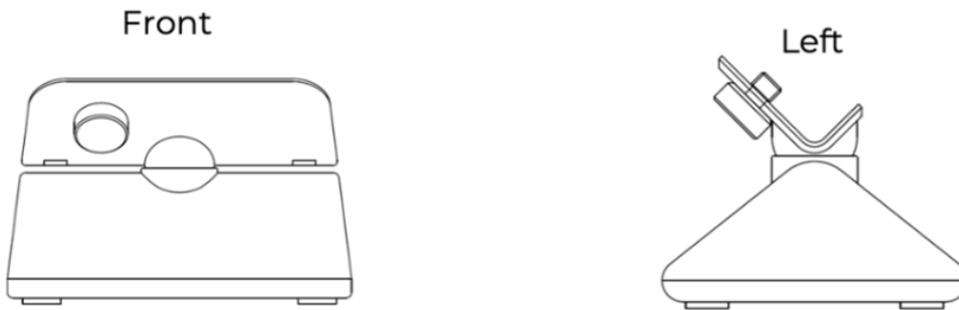


2.2.3. Type C: Top/Bottom side mount using a bracket



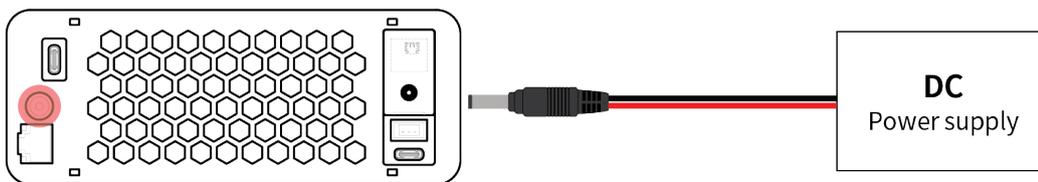
2.2.4. Type D: Desktop Installation

For desktop use, optional cradle is available.



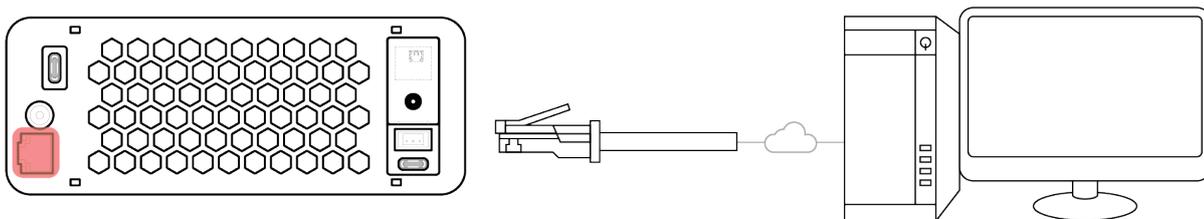
2.3. Connecting Cables

2.3.1. Power Connection

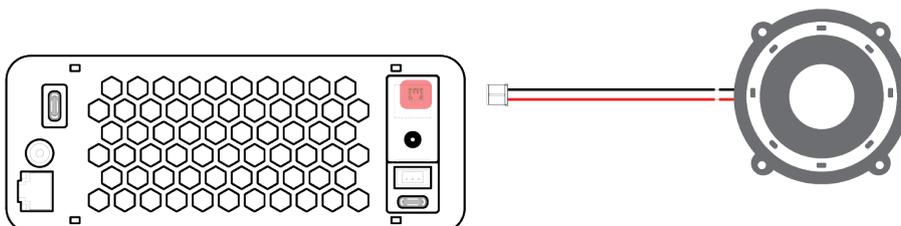


2.3.2. Network Connection

RJ-45 connector for 10/100 Base-T Ethernet communication, minimum CAT5 cable.



2.3.3. Speaker Connection



3. Using EFM-45

3.1. Enrollment

You can enroll or manage users by using the CMID Manager or the Software Development Kit (SDK) provided by CMITech. See the CMID Manager V2 User Guide for more information on how to enroll users.

3.2. Authentication

EFM-45 detects a subject and captures the images of subject's irises and face automatically once it's at an appropriate distance and position.

1. Position yourself facing straight at the LCD display. When the device detects your movement within 1.0 meter range, it initiates the image capture sequence. A rectangular-shaped user guide box will appear on the screen.
 - If it is **BLUE**, it means you are too far from the device. Move forward.



- If the user guide box flashes **GREEN**, it means you are at an appropriate position. Stop and hold your position until the device captures image of your face and/or iris.



- If you are standing too close to the device, your face will not fit in the LCD display. When the user guide box flashes **RED**, it means the device cannot capture your image because you are too close. Move back until the box turns green.



2. Authentication result is displayed on the screen depending on whether your face is recognized successfully.
 - **Success:** Authentication success or capture of iris and face is completed.



- **Failed** or **Denied**: Authentication failed or denied. Or capture of iris and face is failed.



3.3. Configuration

This section provides information on how to configure the device settings.



You can also set up the device through the CMID Manager V2 software.

1. To enter the setup menu, press the center of LCD screen.



You can access the setup menu only when the device does not detect any object within 1.0 meter range.

- The available menu items are shown in the following table:

No.	Name	Description	Options
1	UI	Select the GUI guide type	BOX1, BOX2
2	Volume	Adjust the speaker volume	Min. 0 to Max. 10
3	Detection	Select the user detection mode	ToF, Motion Detection
4	Language	Select the display language	English, Korean
5	IP	Shows the IP address of the device	
6	MAC	Shows the MAC address of the device	
7	Camera	Select the power line frequency	50Hz, 60Hz
8	Version	Shows the firmware version of the device	

2. To navigate through the menu items, press the center of the LCD screen. To select the desired option, use the arrow keys on the screen.



3. To apply the change and exit the setup menu, leave the device idle for 10 seconds. The device will automatically return to the main screen.

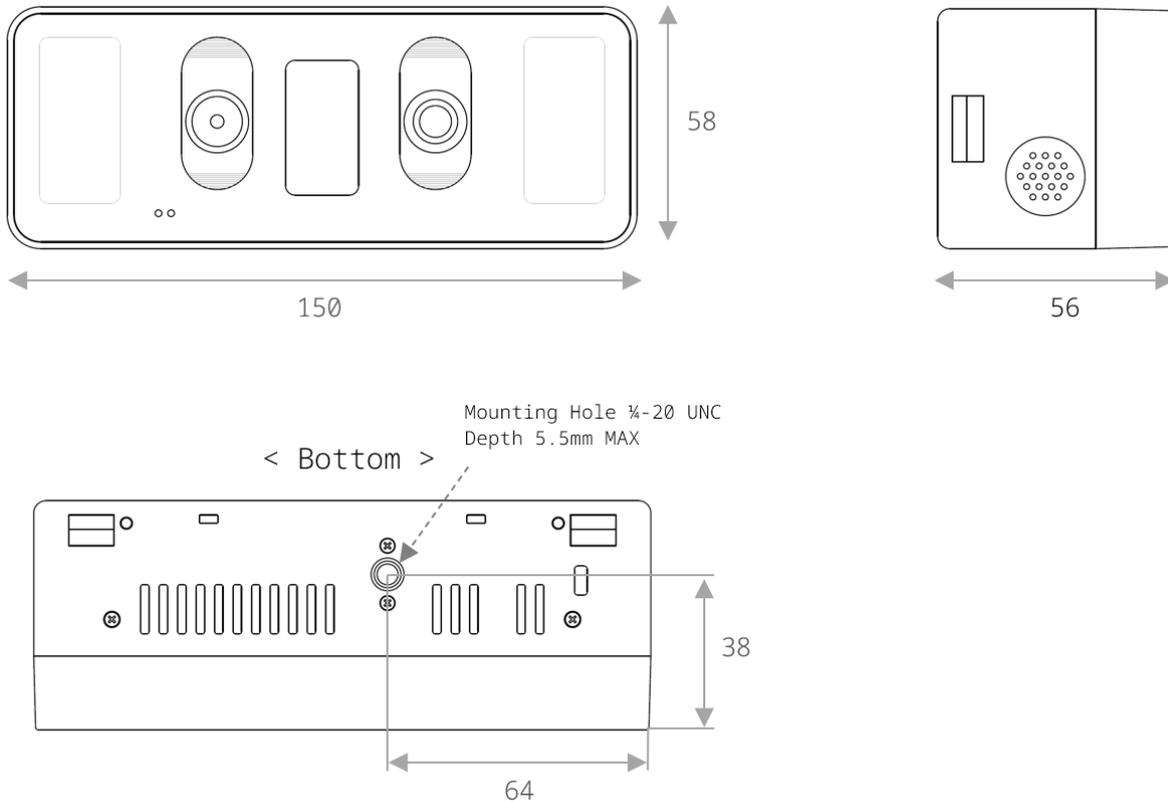


To apply the display language change, touch the center of screen to reboot the system.

4. Product Specifications

4.1. Mechanical Specifications

4.1.1. Dimensions (unit: mm)



4.2. Technical Specifications

Specification	Description
CPU	ARM Cortex A55 quad-core
Camera	IR 5M, RGB 1.2M (HD)
Iris on-board algorithm	Standard in all configurations
Face on-board algorithm	Please contact CMITech for details
SDK configurations	High level SDK is RESTful type that includes host side application for LAN or USB connection to EFM-45 resident services layer. Requires Windows API development to EFM-45 host side application. Reference code included.
Host side compatibility	Windows C# (.NET), Windows C, Linux C on x86 platform. Please contact CMITech for Java or Android support.
Dimensions	150 x 58 x 56 mm

Specification	Description
Weight	320 g
On-board data storage	Up to 100,000 iris template pairs (useful for 1:N authentication mode) with match speed of under 0.5 seconds.
Iris image output	Meets ISO 19794-6 2011, ISO/IEC 29794-6 standards
Iris image pixel resolution	640 x 480 pixels, 8 bit depth. Output format .bmp standard
Standard operation iris imaging distance	36 to 44 cm range in enrollment mode
Simplest of user instructions	<p>Very simple and repeatable subject instructions:</p> <ul style="list-style-type: none"> • Position face within guide box in display. • Move toward the system to size head to box. • Once within range, the box bar will turn green to indicate proper positioning. <p>Capture is automatic once subject is in proper position and real time image quality metrics parameters are met.</p>
Speed of iris image capture	Typically about 0.5 second from time subject's eyes are placed within proper capture volume.
IR illumination for iris imaging	Dual wavelength near infrared (NIR) LEDs to conform to ISO best practices for iris imaging.
Face image capture	Standard 24-bit color (for reference image)
Auto tilt	Internal: +25 to -20 degree up/down tilt
LCD	1.45" (172 x 320 pixels) with touch screen
Sound	Internal speaker embedded with external speaker connector
Ethernet	10/100 Mbps (RJ45 connector)
I/O	USB 2.0 host (Type-C), USB-2.0 Slave (Type-C), RS-232C, Factory Reset
Voltage	12 to 24V DC, Max 30W
Power Adaptor	Optional
Kensington Lock	Yes
Tripod mount thread	¼ / 20 UNC (standard consumer tripod)
Desktop cradle	Optional
Operating temperature range	-20 to 50 °C
Humidity	10 to 90% RH, non-condensing

Specification	Description
Illuminator eye safety standard and certification	IEC 62471
Other certifications	CE, FCC, UKCA, KC, RoHS

4.3. Cables and Connectors

RS-232C



Pin	Name	Color	Wire Gauge
1	TXD	Red	26 AWG
2	RXD	Green	
3	GND	Black	

Speaker



Pin	Name	Color	Wire Gauge
1	SPK_OUT_P	Red	28 AWG
2	SPK_OUT_N	Black	

Power



Appendix A: Expanding EFM-45 Functionality with EF-IO

While the EFM-45 lacks built-in interfaces for access control, it can be paired with the EF-IO expander via RS-232 to gain additional functionalities. This section details how to connect and configure EFM-45 with EF-IO to control a signal light, but the principles apply to other EF-IO functionalities as well.

A.1. Prerequisites

Before proceeding, ensure the following is available:

- The EF-IO product (sold separately)
- A RS-232 cable that is an optional EFM-45 component (sold separately)
- A LED signal light and all the necessary accessories including a power supply and wires



For how to purchase the EF-IO and RS-232 cable, please contact your CMITech representative.

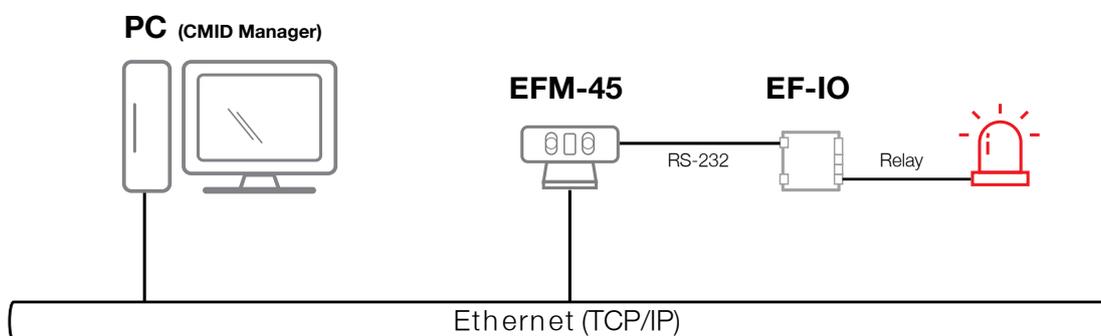
There also needs to prepare a PC with the following software installed or downloaded:

- [CMIUtilityTool](#) (for changing the EFM-45 IP address)
- [CMID Manager](#) (for the EFM-45 serial communication settings)

A.2. Installation Overview

The following diagram illustrates the connection between the EFM-45, EF-IO, and signal light:

Deployment Diagram



A.3. Configure EFM-45

The EFM-45 configuration can be done by using the CMID Manager software because the device does not have on-screen menus for the advanced settings like serial communication and LED signal control.

A.3.1. Verify device IP address

First, the device must be discoverable on the network by the CMID Manager. To achieve this, you need to know the device's IP address. If the device and the PC where the CMID Manager is installed are on the same subnet, the device should be automatically discovered. If not, you need to change the device's IP address to match the PC's subnet by using the CMIUtilityTool.

1. Run the CMIUtilityTool.exe.
2. Click **Search/Stop** to list all the connected devices on the network.
3. Identify the target EFM-45 device and its IP address by the serial number.



The device's serial number is printed on the label on the back of the device.

4. If you find that the device and the PC are on different subnets, do the steps that follows:

CMI Utility Tool v1.11.0.0

The screenshot shows the CMI Utility Tool interface. The 'Search' button is highlighted in red. Below it is a table of discovered devices. The device with IP 192.168.77.156 and Serial No PZ1407A000116 is selected and highlighted in red. To the right, the 'Device Control' tab is active, showing configuration options for the selected device. The 'IP Change' section is also highlighted in red, showing static IP settings.

IP Address	Mac Address	Serial No
<input type="checkbox"/>	192.168.77.7	50:3F:98:00:67:D1 OA1310A030278
<input type="checkbox"/>	192.168.77.152	50:3F:98:00:63:9F OA1309A029208
<input type="checkbox"/>	192.168.77.101	50:3F:98:00:6E:86 KH1404A006375
<input type="checkbox"/>	192.168.77.103	50:3F:98:00:6E:33 KH1404A006292
<input type="checkbox"/>	192.168.77.154	50:3F:98:00:59:CA OA1306A027091
<input type="checkbox"/>	192.168.77.17	50:3F:98:00:62:EA OA1309A029027
<input type="checkbox"/>	192.168.77.104	50:3F:98:00:6E:39 KH1404A006298
<input type="checkbox"/>	192.168.77.177	50:3F:98:FF:FE:01 QA1407A000159
<input checked="" type="checkbox"/>	192.168.77.156	50:3F:98:00:74:F7 PZ1407A000116

Control

IP Address: 192.168.77.156

SSL

SCP UDP

Memory: [Dropdown]

Log

Save device log file

Device Time

Apply to all selected devices

[Text Field]

IP Change

Static DHCP

IP: 192.168.77.159

Gateway: 192.168.77.1

Subnet: 255.255.255.0

MAC: 50:3F:98:00:74:F7

Firmware

TCP REST

Force Upgrade

Apply to all selected devices

Firmware: [Text Field]

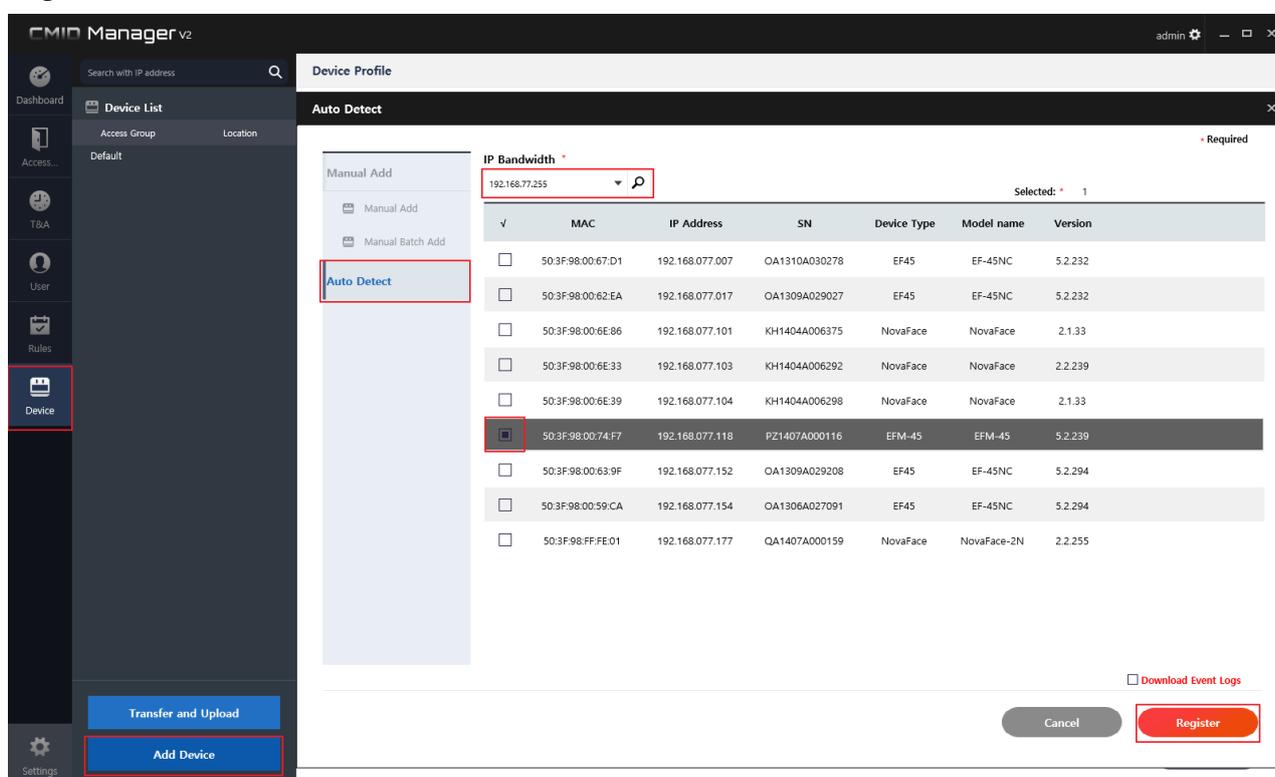
Upload: [Text Field]

- a. Click the **Device Control** tab.
- b. Select **Static** and enter the device's new IP address, gateway, and subnet mask that match the PC's subnet.
- c. Click **Apply** and check the result message that shows the success of the IP address change.
- d. Click **Search/Stop** to verify the device's new IP address.

A.3.2. Configure serial communication and LED light control

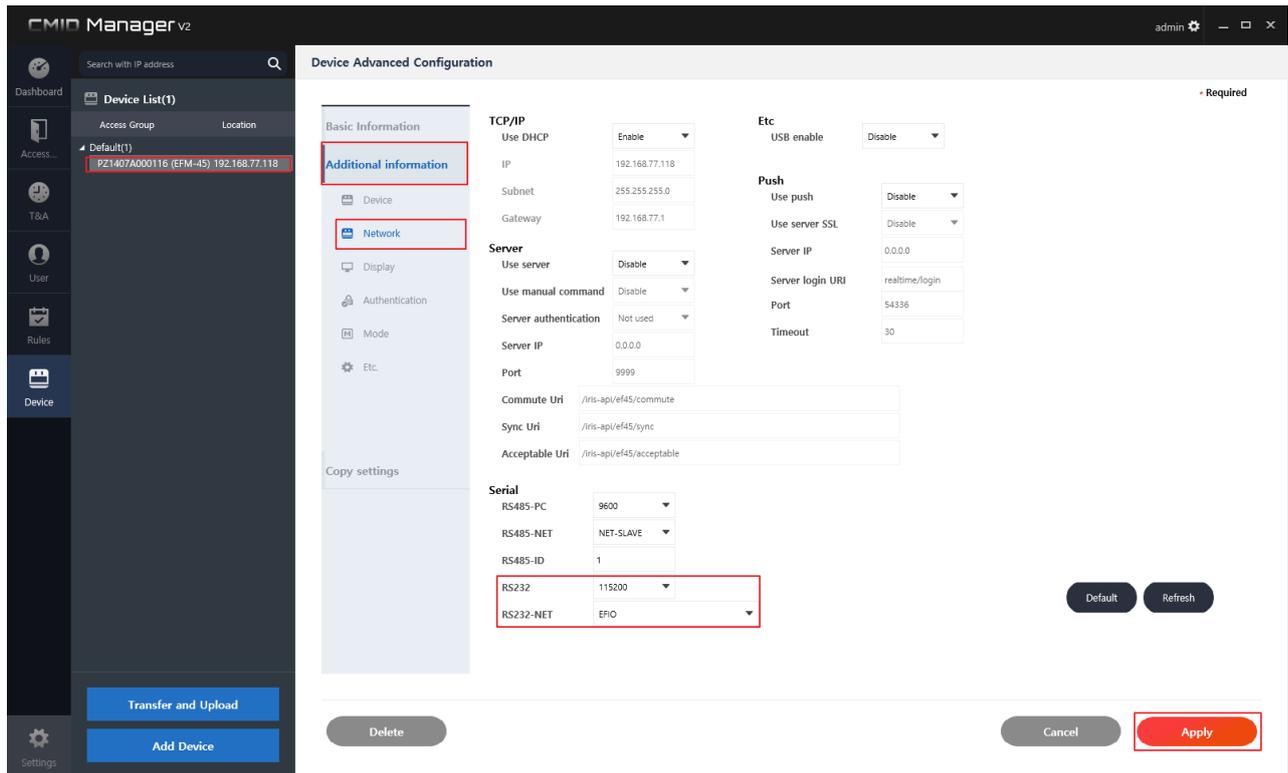
After the device's IP address is set correctly, you need to configure the serial communication and LED signal settings of the EFM-45 to make it work with the EF-IO. This can be done by using the CMID Manager software.

To register device



1. Run the CMID Manager software and log in.
2. Click **Device > Add Device**.
3. Click **Auto Detect**, select a **IP Bandwidth**, and click the **Search** icon.
4. Select the target device from the list and click **Register > Yes > OK**.

To set up RS-232 communication



1. Select the registered device on the right **Device List** pane.
2. Click **Additional information > Network**.
3. Under the **Serial** section, select **115200** as the baud rate in **RS232** while selecting **EPIO** for **RS232-NET**.
4. Click **Apply**.

To set up LED signal light

Device Advanced Configuration

• Required

Basic Information

Additional information

Device

Network

Display

Authentication

Mode

Etc.

Copy settings

Device...	User positioning interface	Box	Door	Relay	Not used	LED feedback sensor	Not used
	Enroll notices timeout	3 sec		Relay ID	Relay ID	LED feedback sensor type	N/O
	Motion detection wait time	0 sec		Driven by	All Events	Interphone	
	Motion detection	Not used		Duration	5 sec	Interphone	Disable
	Debug	Disable		RTE(Exit button)	Not used	IP Address	0.0.0.0
	Speaker volume	5		RTE type	N/O	LED Signal	
	MIC volume	5		Door sensor	Not used	Recog success(Green LED) Relay	EFIO Relay 1
	Power line frequency	60Hz		Door sensor type	N/O	Recog success(Green LED) Duration	3
	Bio			Held open period(sec)	30	Recog fail(Red LED) Relay	EFIO Relay 2
	Security level	Iris only		Alarm sensor	Not used	Recog fail(Red LED) Duration	3
	Cover glass IR transmission(%)	100		Alarm sensor type	N/O		
	Biometrics (iris)			Tamper	Not used		
	Enroll iris usable area(%)	60		Interlock sensor	Not used		
	Recog false accept rate	10E-8		Interlock sensor type	N/O		
	Fast recog mode	Enable		Prohibition sensor	Not used		
	Recognition: allow either eye	Enable		Prohibition sensor type	N/O		
	Enroll: allow either eye	Disable		Recognition start sensor	Not used		
	Min distance(cm)	35		Recognition start sensor type	N/O		
	Bio - Face						
	Fake face	Disable					

Default
Refresh

Delete

Cancel

Apply

1. Click **Additional information > Device**.
2. Under the **LED Signal** section, select **EFIO Relay 1** for **Recog success(Green LED) Relay** and **EFIO Relay 2** for **Recog fail(Red LED) Relay**.
3. Enter the duration time in seconds for the LED light to be on in both **Recog success(Green LED) Duration** and **Recog fail(Red LED) Duration**.
4. Click **Apply**.

A.4. Connect EFM-45, EF-IO, and LED signal light

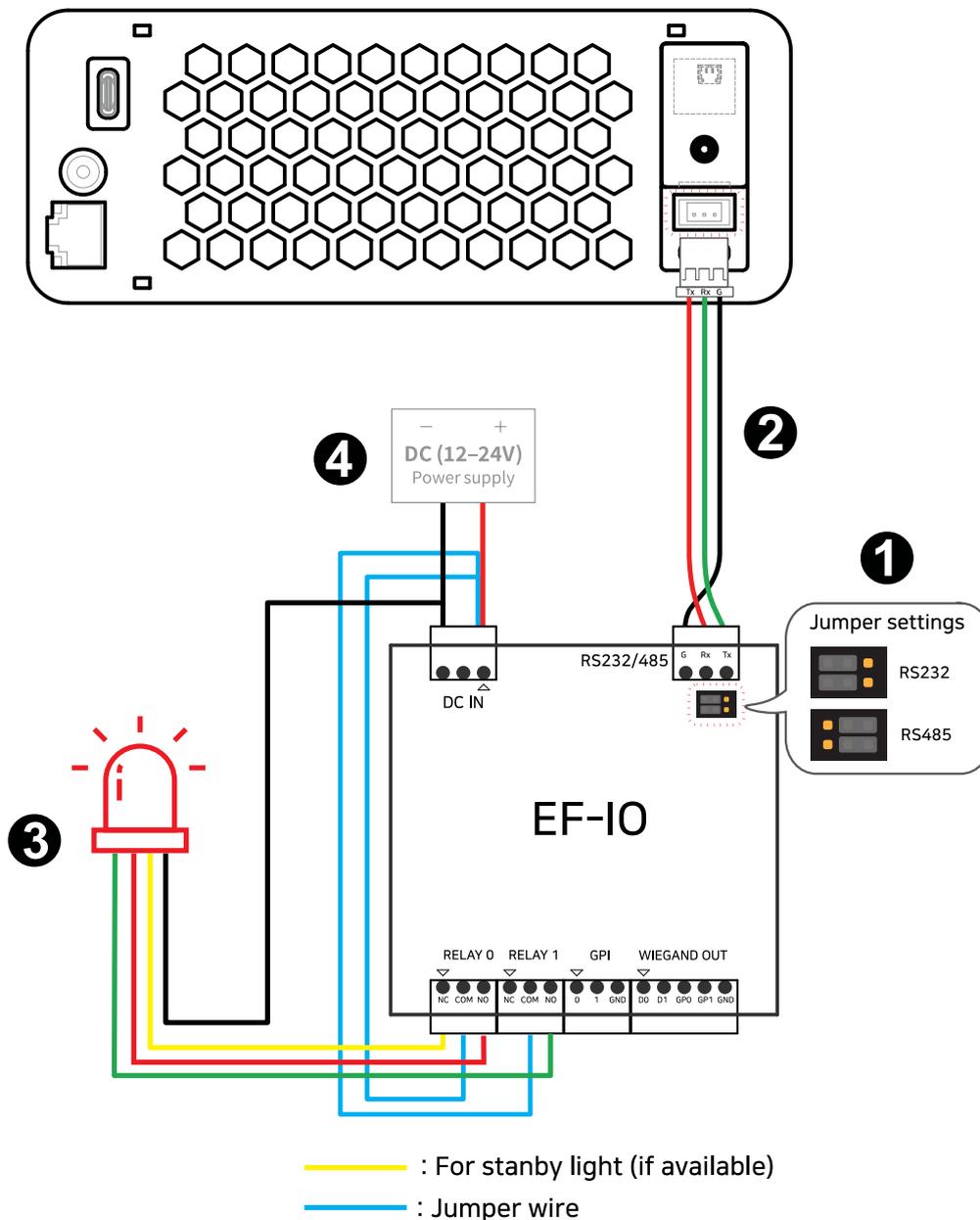
After configuring the EFM-45, connect the EF-IO to the EFM-45 via RS-232 and connect the LED signal light to the EF-IO. The following figure illustrates the wiring connections:



Be sure to power off all devices before connecting them. Otherwise, it may cause damage to the devices.

Connection Diagram

EFM-45 (Rear)



1. Move the jumper block to the **RS232** position on the EF-IO.

2. Connect the RS-232 cable to the EFM-45 and EF-IO.



Be sure to connect the **TX** pin of the EFM-45 to the **RX** pin of the EF-IO and vice versa.

3. Connect the LED signal light to the EF-IO.

4. Power on the devices and test the LED signal light by performing a face recognition on the EFM-45.

Appendix B: Legal Information

B.1. Disclaimer

The words of which the initial letter is capitalized have meanings defined under the following conditions. The following definitions shall have the same meaning regardless of whether they appear in singular or in plural.

For the purposes of this Disclaimer:

- **Company** (referred to as either "the Company", "We", "Us" or "Our" in this Disclaimer) refers to CMITech Co. Ltd.
- **You** means the individual accessing the Product, or the company, or other legal entity on behalf of which such individual is accessing or using the Product, as applicable.
- **Product** means the electronic device provided by the Company named EFM-45 and its manual.

The information contained on the Product is for general information purposes only. The Company assumes no responsibility for errors or omissions in the contents of the Product. In no event shall the Company be liable for any special, direct, indirect, consequential, or incidental damages or any damages whatsoever, whether in an action of contract, negligence or other tort, arising out of or in connection with the use of the Product or the contents of the Product. The Company reserves the right to make additions, deletions, or modifications to the contents on the Product at any time without prior notice.

The Product may contain links to external websites that are not provided or maintained by or in any way affiliated with the Company. Please note that the Company does not guarantee the accuracy, relevance, timeliness, or completeness of any information on these external websites.

The information given by the Product is for general guidance on matters of interest only. Even if the Company takes every precaution to insure that the content of the Product is both current and accurate, errors can occur. Plus, given the changing nature of laws, rules and regulations, there may be delays, omissions or inaccuracies in the information contained on the Product. The Company is not responsible for any errors or omissions, or for the results obtained from the use of this information.

All information in the Product is provided "as is", with no guarantee of completeness, accuracy, timeliness or of the results obtained from the use of this information, and without warranty of any kind, express or implied, including, but not limited to warranties of performance, merchantability and fitness for a particular purpose. The Company will not be liable to You or anyone else for any decision made or action taken in reliance on the information given by the Product or for any consequential, special or similar damages, even if advised of the possibility of such damages.

B.2. Copyright Notice

All rights reserved. This documentation is copyrighted by CMITech Co., Ltd. No part of this guide may be reproduced, transmitted, or transcribed without the expressed written permission from CMITech Co., Ltd. All other product names, trademarks, or registered trademarks are property of their respective owners.

We reserve the right to make any alterations which may be required due to technical improvement. For the most current information, contact your CMITech representative.

Appendix C: Regulatory Information

C.1. FCC compliance statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications to this product not authorized by CMITech could void the electromagnetic compatibility (EMC) and wireless compliance and negate your authority to operate the product.

This product has demonstrated EMC compliance under conditions that included the use of compliant peripheral devices and shielded cables between system components. It is important that you use compliant peripheral devices and shielded cables between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices.

C.2. EU Declaration of Conformity (CE)

This product is CE marked according to the provisions of the RED (Radio Equipment Directive) Directive (2014/53/EU). CMITech Co., Ltd. hereby declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. This device is a class 1 radio device according to the directive. For more information, contact us using the following contact information.

CMITech Company, Ltd.

- Website: <https://www.cmi-tech.com/>
- Address: 4th Floor, #417 - 419, 136, LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do, 14118, Republic of Korea
- Tel: +82-70-8633-8278 / Fax: +82-31-624-4490

Appendix D: Contact Information

CMITech Company, Ltd.

4th Floor, #417 - 419, 136, LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do, 14118, Republic of Korea

Tel: +82-70-8633-8277

CMITech America, Inc.

2033 Gateway Place, Suite 500
San Jose, CA 95110 USA

Tel: (1) 408 573-6930

sales@cmi-tech.com or service@cmi-tech.com