

NovaFace User Guide

Version 0.1, May 2020

About This Manual

NovaFace (Model:) is an advanced face recognition terminal that provides highly accurate face recognition in an embedded system. This manual contains the descriptions and operational instructions for NovaFace 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.

Revision History

Version	Date	Description	Note
0.1	2020-04-29	1st draft	

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.

Symbol	Name	Description
	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.
- When you install the product on a wall, make sure that you secure the product with the provided fasteners. Dropping from the wall may cause damage to device casing, internal parts, or both.
- 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 the power adapter which is either provided or approved by CMITECH for the product to operate properly and safely.
- 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.

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1. Introduction to NovaFace

NovaFace is a face recognition terminal that provides face recognition in an embedded system with real-time subject finding and local authentication for high throughput access control and time & attendance applications

1.1. Features

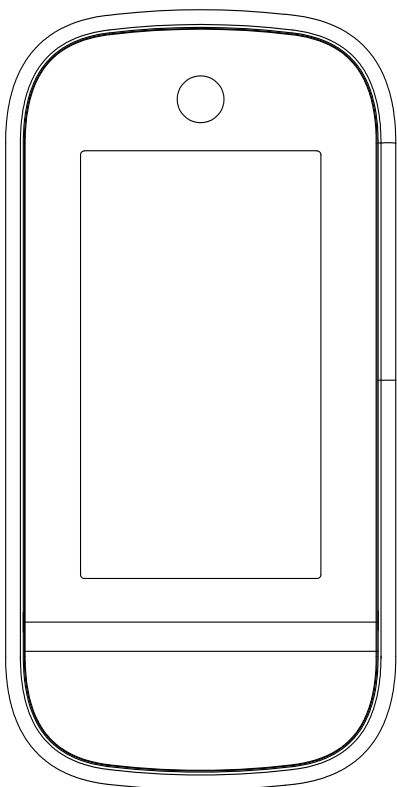
The key features of NovaFace are shown in the following table:

Feature	Description
Advanced real time subject tracking with simple user instructions	NovaFace accurately locates the subject face in real time and tracks in 4 sides of angle to provides wider and deeper positioning.
Wide angle face imaging for outstanding capture volume	Allows height range of 135 to 210 cm
Utilization of ultra-high performance face matching engines	Advanced, embedded 8 core ARM CPU allows utilization of latest and most powerful face algorithms.
Supplemental display of authorization results	Can display authorization decision when coupled to access control provisioning logic so that "subject recognized, but not granted permission" information can be displayed.
Supports multiple languages in GUI	English, Korean, Simplified Chinese, Traditional Chinese, Japanese, Arabic, Spanish, Italian, Turkish, French
Large on-board (embedded) face template database	Store up to 10,000 active face templates on-board in 1:1 recognition (verification) identification mode. Store up to 3,000 active face templates on-board in 1:N identification mode.
High speed face matching	Can provide up to 10,000 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.
Standard multi-band RFID reader	MiFare, DesFire, FeliCa card support with standard embedded ISO/IEC 14443 reader.
Full range of deployment options	Standard connections in include dual Wiegand out, GPI, RS 485, and contact relay.

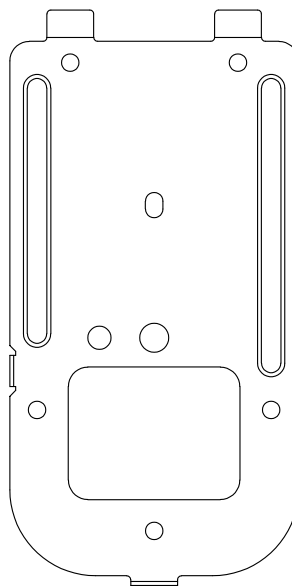
Feature	Description
Fully compatibility with CMITech CMID Manager v2 access control and T&A solution software	Supports full integration with CMID Manager for distributed access control and T&A solutions on single network.

1.2. Components

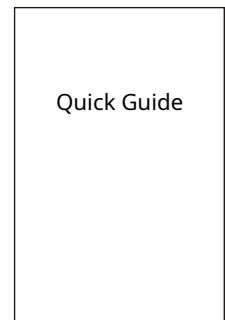
Before you begin, make sure that all the following items are included with your device. If you find anything is missing, contact your dealer.



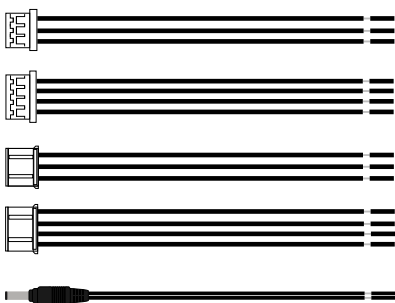
NovaFace



Mounting Plate



Quick Guide

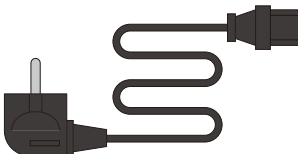


Cables

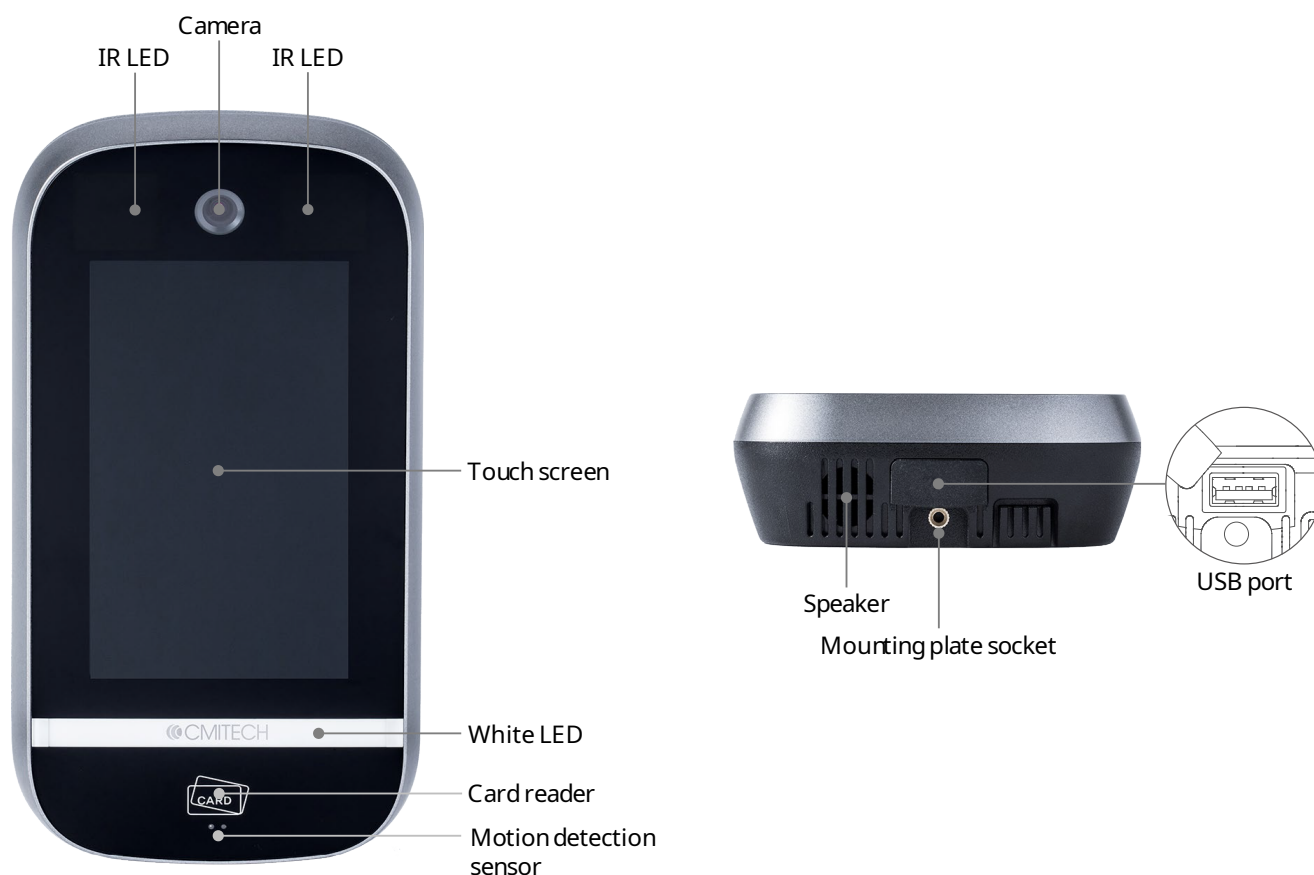


Diode

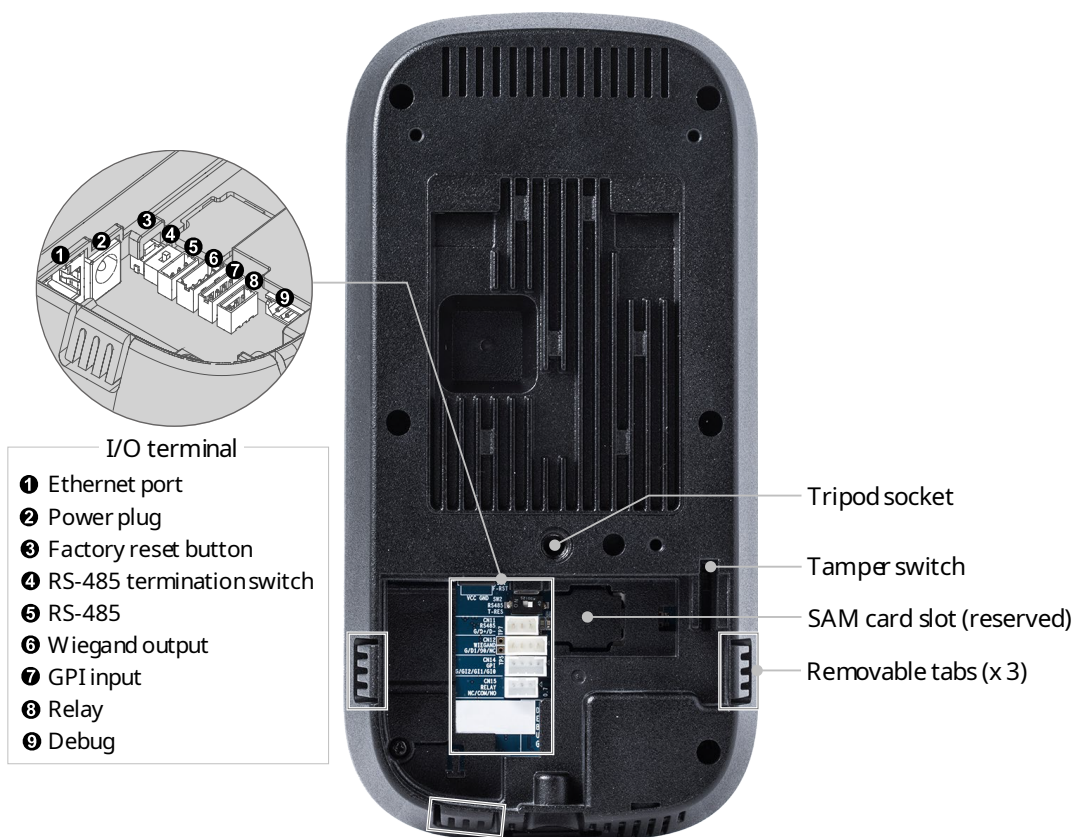
Table 1. NovaFace component table

Name	Quantity	Description	Note
NovaFace	1		
Mounting Plate	1		
Quick Guide	1		
Diode	1		
Power cable	1		
Relay cable	1		
GPI cable	1		
Cables	Wiegand cable		
	RS-485 cable		
AC adapter (optional)	1		Output: 15VDC, 3.0A
Power code (optional)	1		

1.3. Parts and Controls

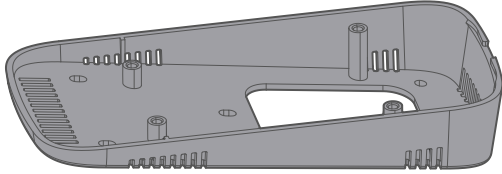


Name	Description	Note
Camera	Camera	
IR LED	IR LED	
Touch screen	Preview and control	
White LED	White LED	
Card reader	Card reader	
Motion detection sensor	Motion detection sensor	
Speaker	Speaker	
Bracket socket	Bracket socket	
USB port	USB port	



Name	Description	Note
Tripod socket		
Tamper switch		
SAM card slot		Reserved
Removable tabs		
I/O terminal	Ethernet port	
	Power plug	
	Factory reset button	
	RS-485 termination switch	
	RS-485	
	Wiegand output	
	GPI input	
	Relay	
	Debug	

1.4. Accessories

Name	Quantity	Description	Note
Mounting bracket	1		
Secure I/O	1		
RF card writer	1	Duali RF card reader	TOC (template on card)
RF card (A type)	1	MiFare, Desfire only (4k memory)	TOC use
RF card (B type)	1	MiFare, Desfire, Felica	General use

2. Installing NovaFace

This chapter gives the information about the requirements and the prerequisites for installing NovaFace and the installation procedures.

2.1. Installation Requirements

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

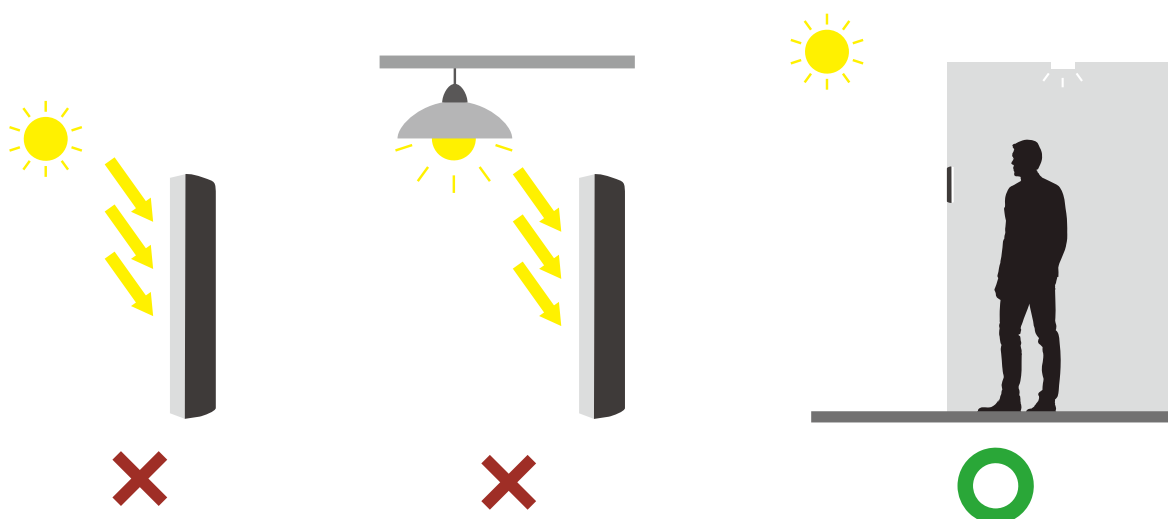
2.1.1. Environmental Requirements



The NovaFace 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.

Environmental requirements

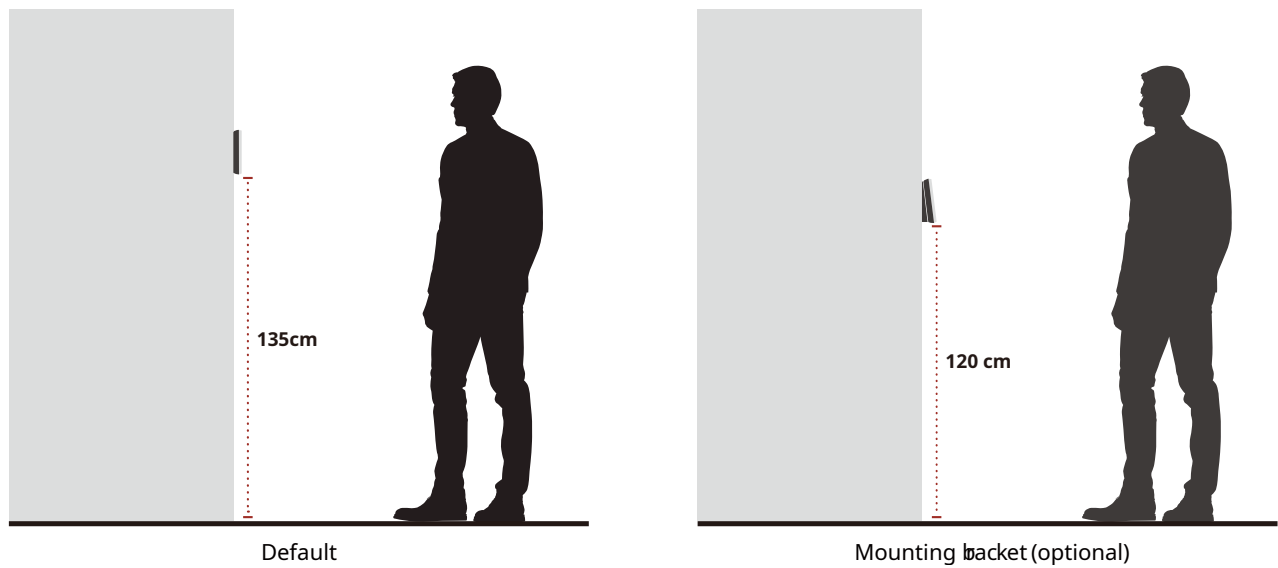


- ☑ Determine the height at which you install the device.



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 190 cm (75 inches) at the distance of 55 cm (22 inches) from the device.

Recommended mounting height



2.1.2. Electrical Requirements

- ☒ Use a stable power supply adapter of DC 15V ($\pm 5\%$) with a minimum 3.5A.
- ☒ Make sure that the power cable is as short as possible and have correct wire gauge (min. 22 AWG)
- ☒ Use CAT5 or later for ethernet cable.

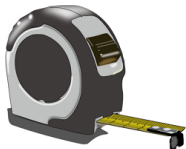
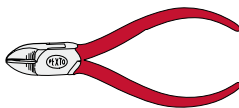
Table 2. Power requirements depending on cable length and wire gauge

Input voltage (V)	Wire gauge (AWG)	Power cable length (m)	
		Recommended	Maximum
15	20	30.0	37.5
	22	18.9	23.6
18	20	48.0	60.1
	22	30.2	37.7

2.1.3. Tool Requirements

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

Table 3. Required tools

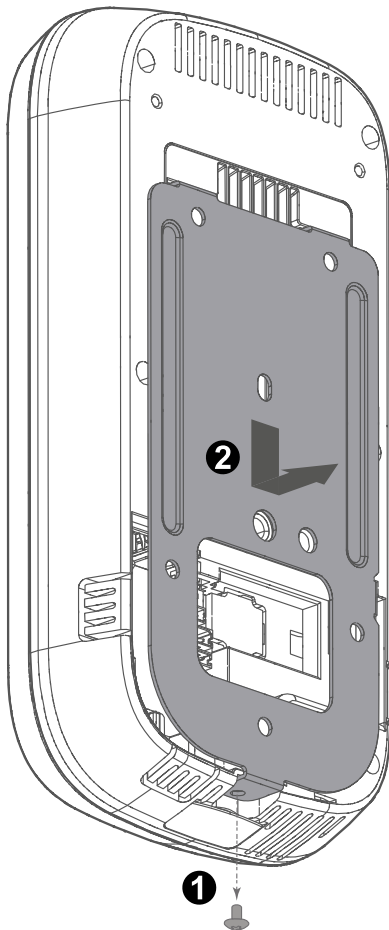
Purpose	Name	Figure	Note
General	Screw driver		Cross head
	Tape ruler		For measuring the installation height
	Cutting plier		
Concrete wall mount	Electric drill		With a drill bit and anchor bolts
	Marker		
	Hammer		

2.2. Installation Procedure

2.2.1. Mounting Device (Wall Mount)

You can install the device onto a wall directly by using the mounting plate.

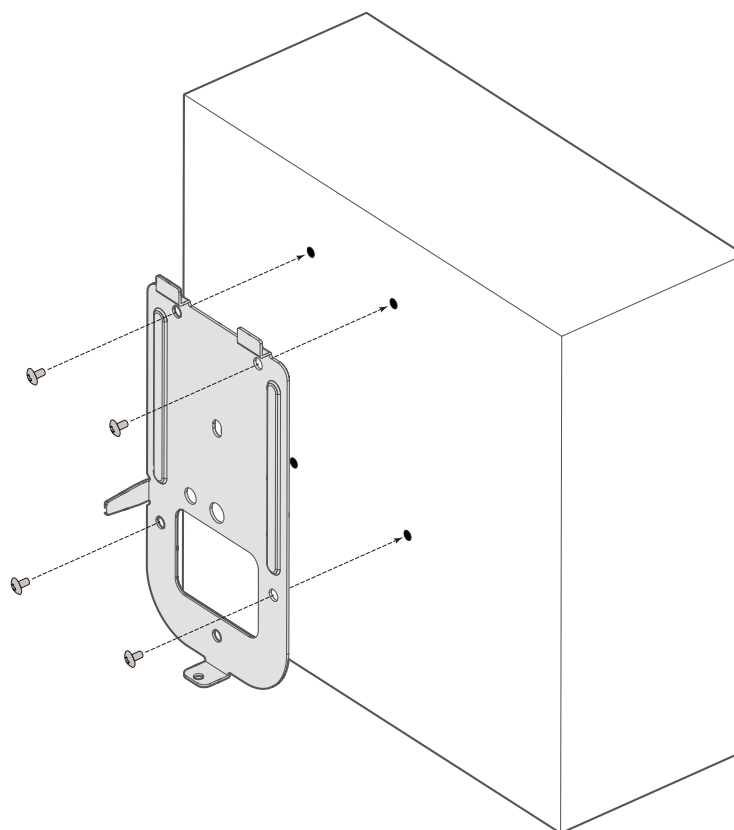
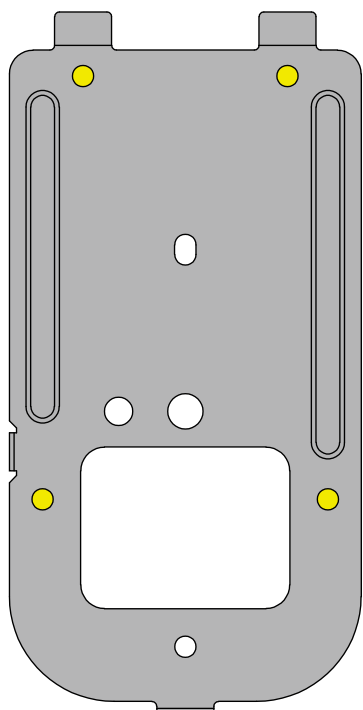
1. Remove the screw that attaches NovaFace to the mounting plate and disassemble the plate.



Keep the screw because it will be used to attach them again.

2. Put the mounting plate at the predetermined position and attach the plate onto the wall with the screws (M4 x 8).

Wall mounting points



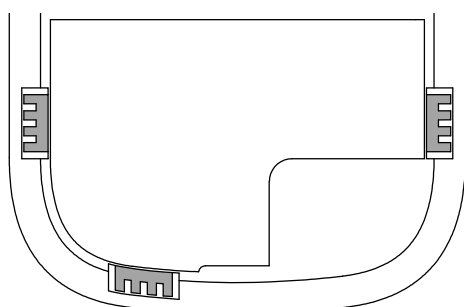
For concrete wall mount, do the steps that follow:



1. Put marks on the wall through the holes of plate by using a marker.
2. Drill the marked points by using a electric drill.
3. Attach the anchor bolts to the holes by using a hammer.
4. Attach the plate to the wall with the screws.

3. Connect the power cable and peripherals cables, if necessary, to the connectors in the rear panel. (See **Connecting Cables** for more information)
4. Remove one or more plastic tabs to allow the wire routing and let the cables go through the opening.

Removable tabs



5. Put the device onto the installed plate, slide it downward, and attach them with the screw (M3 x 6)

2.2.2. Mounting Device (Gang Box Mount)

You can also install the device on a gang box (outlet box) by using the mounting plate.

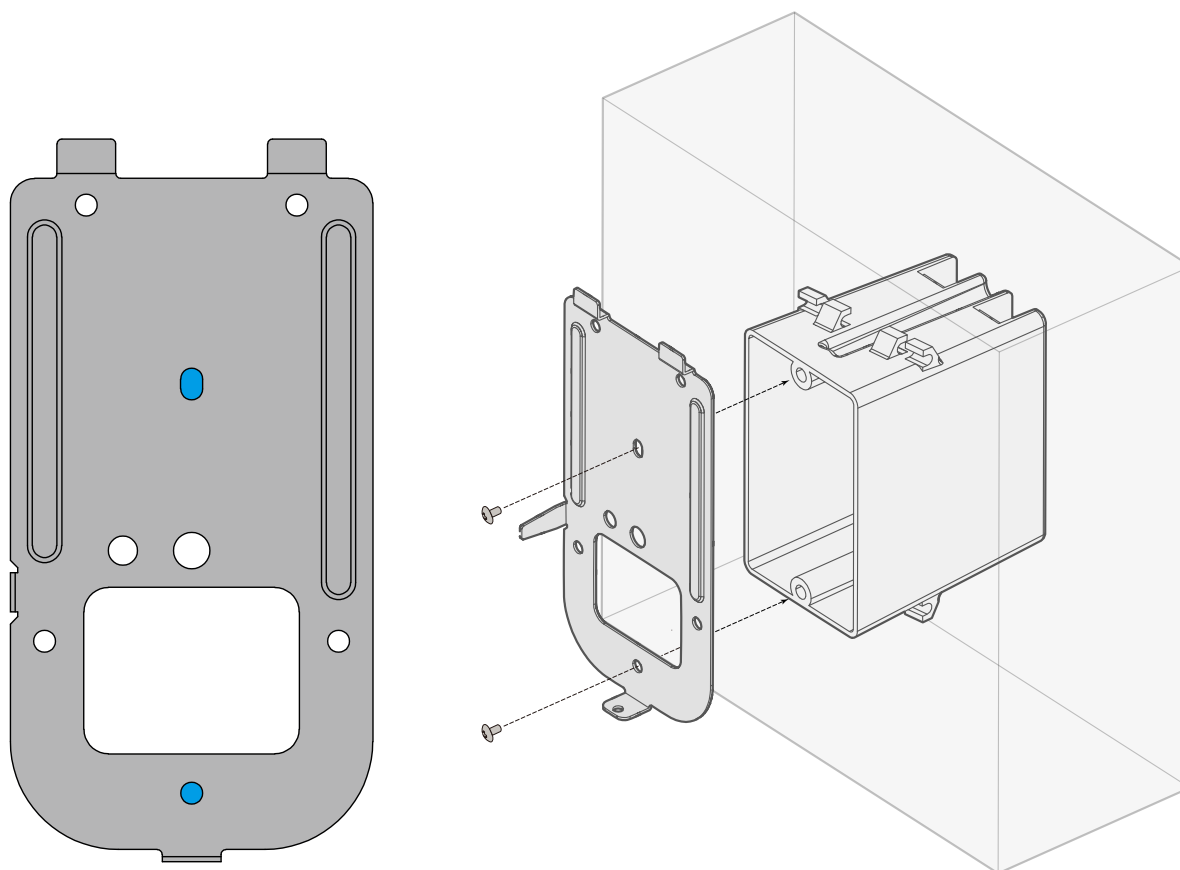
1. Remove the screw that attaches NovaFace to the mounting plate and disassemble them.



Keep the screw because it will be used to attach them again.

2. Put the mounting plate onto the gang box and attach it to the box with the screws (M4 x 8).

Gang box mounting points



Make sure that the outgoing cables from the gang box go through the rectangular opening in the plate.

3. Connect the power cable and peripherals cables, if necessary, to the connectors in the rear panel. (See OOO for more information)
4. Put the device onto the installed plate, slide it downward, and assemble them with the screw (M3 x 6)

3. Using NovaFace

3.1. Enrollment

This section gives the procedural information to enroll users to the device.

1. Press the User button on the main screen.
2. Press **Enroll** in the bottom.
3. Type **ID** and **Name**.
4. Press one or more credential type buttons (Face, Card, PIN) to add to the user.
 - For **Face**, let the user stand in front of device and complete the face capture.
 - For **Card**, put the card on the device's card reader. When the CSN (card serial number) appears on the screen, press **OK**.
 - For **PIN**, press the PIN numbers and press **OK**.
5. Press **OK** to complete the enrollment.

3.2. Authentication

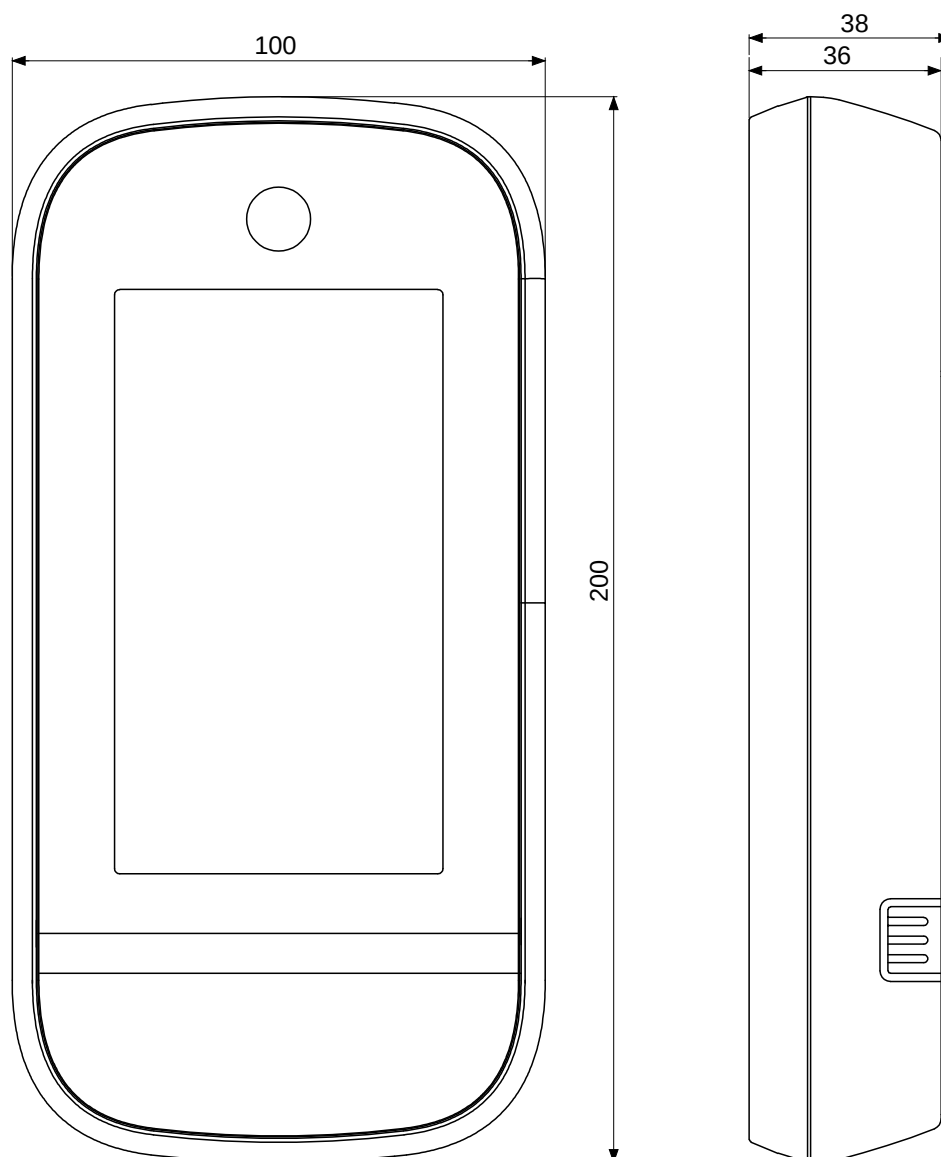
NovaFace detects and displays the subject's face over 1.6 meters from the system on the high-resolution color display. The subject will simply and naturally walk toward the face capture range of .5 to 1.0 meter. Once the system recognizes the subject, the result will be displayed immediately with indication line over the subject's face image.

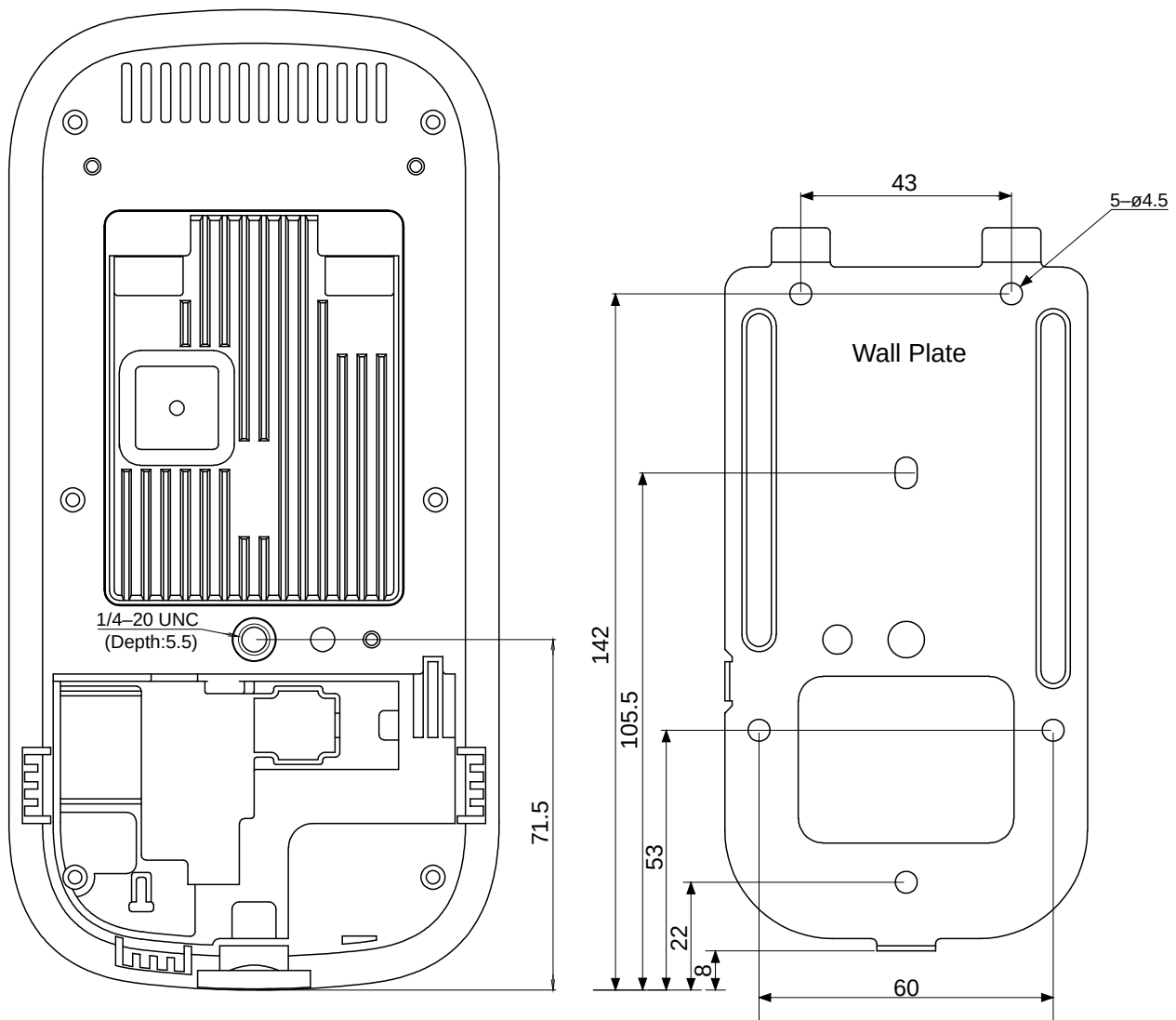
1. Go near and look at the device. The image will be changed from monochrome to color when your face is detected.
2. Authentication result is displayed on the top of the screen depending on whether your face is recognized successfully.

4. Product Specifications

4.1. Mechanical Specifications

4.1.1. Dimensions (unit: mm)





4.2. Technical Specifications

Item	Description
CPU	ARM Cortex A53 OctaCore (8 core) operating at 1.4GHz
Memory	1GB RAM, 8GB Flash
Number of cameras	One
IR LED	YES, for low ambient light levels and supplementary face detection support
White LED	YES, for adjunct lighting of face
Ethernet	Standard 10/100 BaseT and GigE
Dimensions	100 x 200 x 36 mm
Weight	400 g (0.9 pounds)

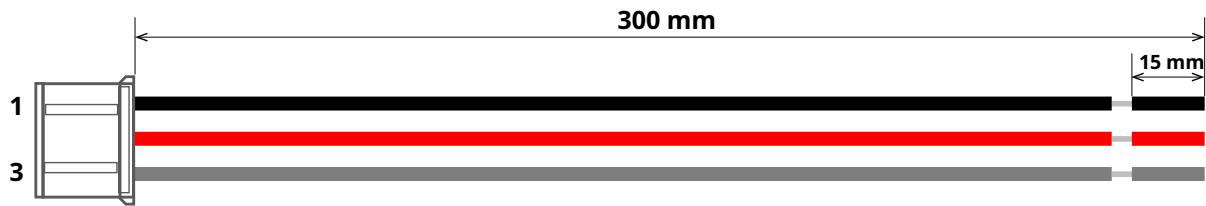
Item	Description
Capture range	50 cm to 160 cm
User's height range	120cm - 210cm (wth system installed at 145 cm)
Enrollment speed	About 1.0 second
Recognition speed	About 500 ms with single record in local data base Under 1.0 second total in 1:N mode with 3,000 subjects in local database
Display	5" LCD with touch
Enrollment	10,000 users total DB size(Max 3,000 users in 1:N mode)
Fake face detection	YES
Temperature range	-20°C to 50°C, operating
Audio	YES (Speaker only)
Power	DC 15V to 24V
RF Card reader	ISO/IEC 14443 reader for MiFare, DesFire and FeliCa cards. standard
IP	IP54 (front only)
Connections	RJ45 for LAN, Wiegand out, GPIO (3), RS485, dry contact relay
USB	Only for host / service modes

4.3. Electrical Specifications

Item	Description
Power	Voltage: 15 VDC, Current: Max. mA
Switch input VIH	Min.: V, Max.: V
Switch input VIL	Max.: V
Switch Pull-up resistance	kΩ (The input pots are pulled up with kΩ.)
Wiegand output VOH	More than V
Wiegand output VOL	Less than V
Wiegand output Pull-up resistance	Internally pulled up with kΩ
Relay	Voltage: Max. VDC, Current: Max. A

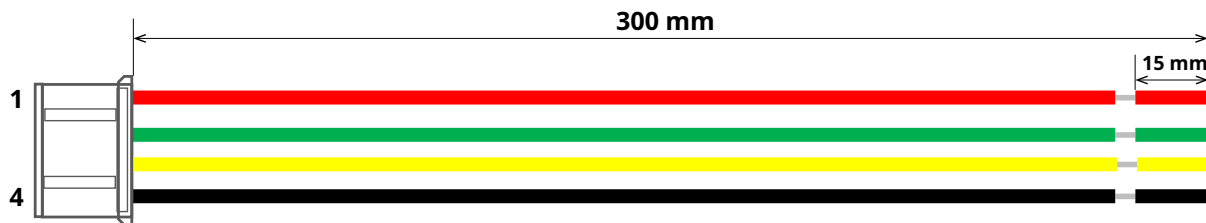
4.3.1. Cables and Connectors

Relay



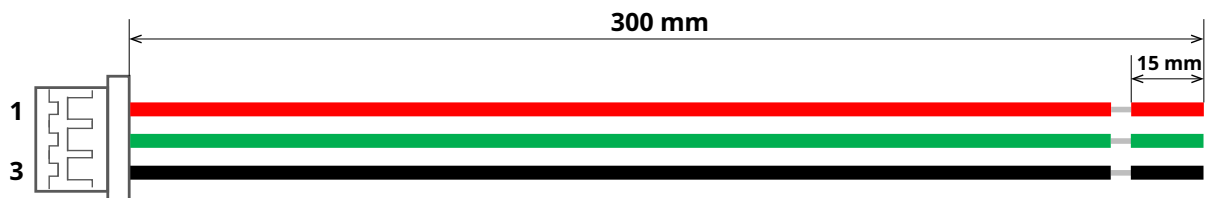
Pin	Name	Color	Wire Gauge
1	Normal Open (NO)	Black	24 AWG
2	Common (COM)	Red	
3	Normal Close (NC)	Gray	

GPI



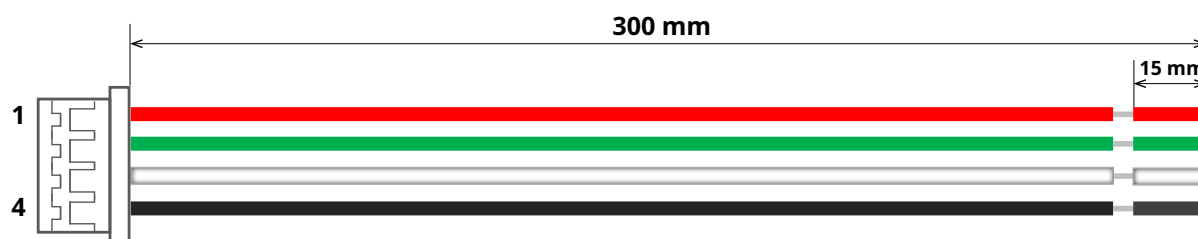
Pin	Name	Color	Wire Gauge
1	GPI 0	Red	24 AWG
2	GPI 1	Green	
3	GPI 2	Yellow	
4	Ground (GND)	Black	

RS-485



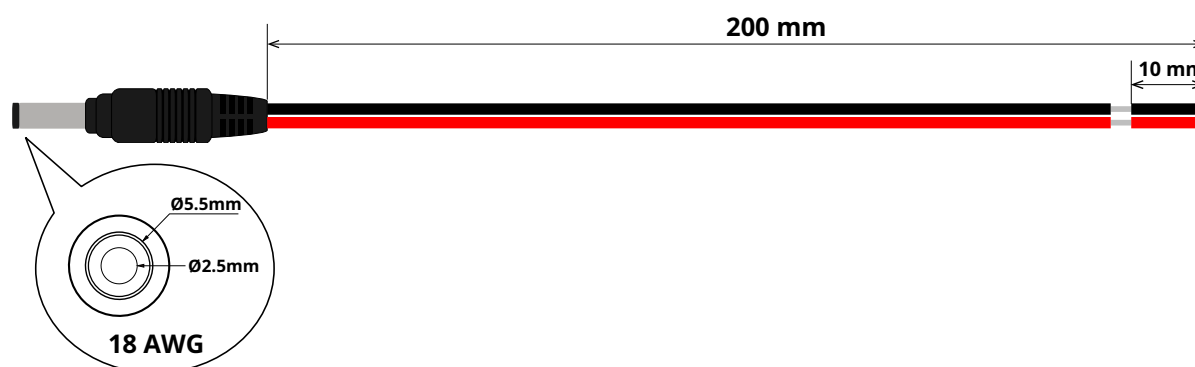
Pin	Name	Color	Wire Gauge
1	DATA -	Red	24 AWG
2	DATA	Green	
3	Ground (GND)	Black	

Wiegand IN/OUT



Pin	Name	Color	Wire Gauge
1	No connection	Red	24 AWG
2	DATA 0	Green	
3	DATA 1	White	
4	Ground (GND)	Black	

Power



4.4. Environmental Specifications

Item	Description	Note
Temperature	Operating	5°C to 35°C (40°F to 95°F)
	Non-operating	-40°C to 60°C (-40°F to 140°F)
Humidity	Operating	8% to 85% relative humidity, non-condensing
	Non-operating	8% to 90% relative humidity, non-condensing

Appendix A: OSD Menu List

This appendix gives the details about advanced setting menus of NovaFace device that appears when you press the **Gear** button on the main screen.

A.1. User

Name	Description
Enroll	
Delete	
Modify	
Search	Searches ID

A.2. Device

Name	Description
Reader	ID
	Port
Network	DHCP Use
	IP
	Subnet mask
	Gateway
	DNS 1
	DNS 2
GPI	GPI 1
	GPI 2
	GPI 3

A.3. ACU

Name	Description
ACU	
AIPC	
SW ACU	

Name	Description
DMS	

A.4. Advanced

Name	Description
Auth. mode	Device auth. Fake face
Run settings	ID Length OP mode T&A use T&A mode
Door	Relay use DS use Open duration T&A door use

A.5. Environmental

Name	Description
Speaker volume	
Language	
Data/Time	

A.6. Database Management

Name	Description
Device management	FW upgrade Factory reset Device reboot
DB management	User import User export
Device info.	FW version MAC

Name		Description
Network info.	IP	
	Subnet mask	
	Gateway	

A.7. Test

Name		Description
GPI	GPI 1	
	GPI 2	
	GPI 3	
Debug	Capture image use	
Card test	Auto recog.	

A.8. Log

Name		Description
Log info	Total used	
	Total count	
Log delete	Delete log	

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 NovaFace 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.

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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.

Appendix D: Contact Information

CMITech Company, Ltd.

5F, 38, Burim-ro 170beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14055, Republic of Korea

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Fax: +82-31-624-4490

Contact: sales@cmi-tech.com

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