ARMATURA AMT-FAR-10 Reader Enclosure Embeds the Module User Manual

Contents

ARMATURA AMT-FAR-10 Reader Enclosure Embeds the Module

Product Information

The AMT-21 is a product manufactured by ARMATURA LLC. It is a registered trademark of ARMATURA LLC and is designed for specific operations and maintenance purposes. The product is accompanied by a user manual that contains important instructions and guidelines for its proper functioning. It is essential to read the manual thoroughly before operating the product.

Product Usage Instructions

1. **Familiarize Yourself with the Manual:** Read the entire user manual carefully to understand the operation and maintenance procedures for the AMT-21.
2. **Training Requirements:** Ensure that all operating and maintenance personnel have received thorough training on using and maintaining the AMT-21. It is crucial for safe and satisfactory operation.
3. **Safety Precautions:** Before using the product, it is essential to read, understand, and follow the safety instructions provided in the manual. This ensures the safety of personnel and prevents accidents.
4. **Contract Specifications:** In case of any conflict between the terms and conditions mentioned in the manual and the contract specifications, drawings, or any other contract-related documents, the contract conditions/documents shall prevail.
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Thank you for choosing our product. Please read the instructions carefully before the operation. Follow these instructions to ensure that the product is functioning properly. The images shown in this manual are for illustrative purposes only.

- For further details, please visit our Company's website **www.armatura.us**.

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If there is any issue related to the product, please contact us.

ARMATURA Headquarters

- **Address** 190 Bluegrass Valley Pkwy, Alpharetta, GA 30005.
- For business-related queries, please write to us at **info@armatura.us**.
- To learn more about our global branches, visit **www.armatura.us**.

About the Company

ARMATURA is a global leading developer and supplier of biometric solutions that incorporate the latest technologies in biometric hardware design, algorithm research, and software development. ARMATURA holds numerous patents in the field of biometric recognition technologies. Its products are primarily used in business applications that require high-secured, high-accurate, and fast matching and identification processes. ARMATURA biometric hardware and software are built into the product of the world's top workforce management (WFM) solution providers, Point-of-Sale (PoS) terminals vendors, intercoms, electronic safes, metal key lockers, dangerous machinery, and many other product vendors that heavily rely on accurate, secured and fast user identification features.

About the Manual

- This manual introduces the operations of AMT-FAR-10, a dual-lens near-infrared light and visible light face reader.
- All figures displayed in this manual are for illustration purposes only which may not be exactly consistent with the actual product.

Document Conventions

Conventions used in this manual are listed below:

GUI Conventions

For Software	
Convention	Description
Bold font	Used to identify software interface names e.g. **OK**, **Confirm**, **Cancel.**
>	Multi-level menus are separated by these brackets. For example, File > Create > Folder.
For Device	
Convention	Description
< >	Button or key names for devices. For example, press <OK>.
[ ]	Window names, menu items, data tables, and field names are inside square brackets. For example, pop up the [New User] window.
/	Multi-level menus are separated by forwarding slashes. For example, [File/Create/Folder].

Symbols

Convention	Description
	This represents a note that needs to pay more attention to.
	The general information helps in performing the operations faster.
	The information that is significant.
	Care is taken to avoid danger or mistakes.
	The statement or event that warns of something or that serves as a cautionary exam ple.

Product Introduction

Overview

AMT-FAR-10 is a high-performance dual-lens face image-capturing reader that supports both Visible Light and Near-Infrared Light images. This reader is equipped with an optical camera with a wide dynamic imaging sensor, a megapixel lens, and infrared-light LEDs.

The model is also equipped with a high-performance processor with a frequency of 400MHz, capable of capturing high-quality visible and near-infrared face images. It supports USB interface communication and external power supply in one single cable. This fully enclosed face reader can be easily plugged into a USB-supported host device to work without extra hardware integration. AMT-FAR-10 utilizes the Infrared light imaging sensor to capture grayscale face images for the face recognition process by integrating with AMT FaceLite SDK, and the visible light camera captures the true color face image for display and another relevant process. Combined with AMT FaceLite SDK, the captured face grayscale image and true color image are utilized for liveness detection and anti-spoofing protection process. AMT FaceLite SDK well fits to integrate facial recognition features into business applications.

For price-sensitive customers, the module and AMT FaceLite SDK together provide a cost-effective biometric authentication solution. The solution can be applied to a wide range of applications such as time attendance, access control, entrance management, payment kiosks, intercoms, and turnstiles which are running on Windows PCs, Android tablets, Linux-based devices, and other hardware platforms.

Features

- Supports Visible Light and Near-Infrared face image acquisition.
- Built-in wide dynamic image sensor suitable for various lighting conditions.
- Works with AMT FaceLite SDK to perform liveness detection and anti-spoofing process with grayscale face images and true color face images.
- Supports integration with third-party applications on Windows, Android, or Linux operating systems via AMT FaceLite SDK.
- Compatible with USB 2.0 specifications.
- Low power consumption with operating power less than 2W.
- Supports wide field of view which is adaptable to varieties of individual heights.
- Compact, lightweight size with USB 2.0 interface which simplifies integration with various hardware devices.

- Provide hygienic and non-invasive touchless identification solution which makes it stress-free for public use.

Product Specifications

Technical Specifications

Features	Technical Specifications
Processor	Low-power-consumption processor, 400MHz
Image Sensor	1/2.7”, HDR CMOS, (Support visible and Near-infrared light)
Communication Interface	USB 2.0 (High speed)
Power Requirements	USB 5V
Power Consumption	1.0W (Standby) / 1.75W (Operating)
Dimensions	95.50 * 26.40 * 29.00mm (±1 mm)
Certifications	CE, FCC, RoHS

Electrical Features

Specifications	Test Conditions	Min	Standard	Max	Unit
Operating Voltage	–	4.75	5.0	5.25	V
Operating Current	T = 25°C, VCC = 5.0 V	–	350	400	mA
Operating Power Consumption	T = 25°C, VCC = 5.0 V	–	1.75	2.0	W
Standby Current	T = 25°C, VCC = 5.0 V	–	200	220	mA
Standby Power Consumption	T = 25°C, VCC = 5.0 V	–	1.0	1.1	W
Operating Temperature	–	–10	–	55	°C
Storage Temperature	–	–20	–	80	°C

Optical and Image Specifications

Features	Technical Specifications	
Sensor Model	HDR CMOS Sensor	
Sensor Size	1/2.7 inch	
Sensor Type	Optical	
Image Size (pixel)	720W x 1280H	
Dynamic Range	83 dB	
Max. Frame Rate	12 fps	
Lens Type	RGB	IR
Optical Wavelength	440 to 650 nm	840 to 860 nm
Field of View (FOV)	Diagonal = 74°, Horizontal = 40°, Vertical = 65°	
Optical Distortion Rate	≤1%	

Lens Composition	Composed of a 4-Plastic Lens and an IR-Filter (4P+1IR)
Default Output Format	MJPEG
Recognition Distance	40 cm to 80 cm

Model Specifications

Features	Technical Specifications
SDK	AMT FaceLite SDK 12
Recognition Angle	Yaw≤25°, Pitch≤ 25°, Roll≤25°
Recognition Method	1:1 and 1:N
Capacity	6,000 templates
Accuracy	TAR=98.6% when FAR=0.001%
Recognition Time	<300ms (Quad-core Cortex-A9 up to 1.6GHz)
Windows	Windows XP / Windows 7 / Windows10 (32/64bits)
Android	Android 4.1 or higher version

Algorithm Specifications

AMT FaceLite 12.0 is an excellent near-infrared face recognition algorithm based on the indoor face recognition algorithm which is adaptable to various lighting conditions and meets the requirement of large user volume recognition cases. To ensure a very low False Rejection Rate (FRR), the algorithm focuses on improving the adaptability to the deployed environment and user experience, thereby achieving the robustness and high-pass rate of face recognition. The SDK libraries assist in enhancing the security requirements through facial recognition which protects against spoofing attacks and is widely used in various business applications, including attendance, security, video surveillance, and more. Face recognition specifications are presented in the following table.

Algorithm Version	AMT FaceLite 12.0
Face Detection Speed	< 50 ms
Biometric Template Extraction Speed	< 200 ms
Biometric Comparison Speed	< 100 ms
Face Capacity	6,000
Posture Adaptability	Yaw ≤ 25°, Pitch ≤ 25°, Roll ≤ 25°
Precision	TAR=98.6% when FAR=0.001%

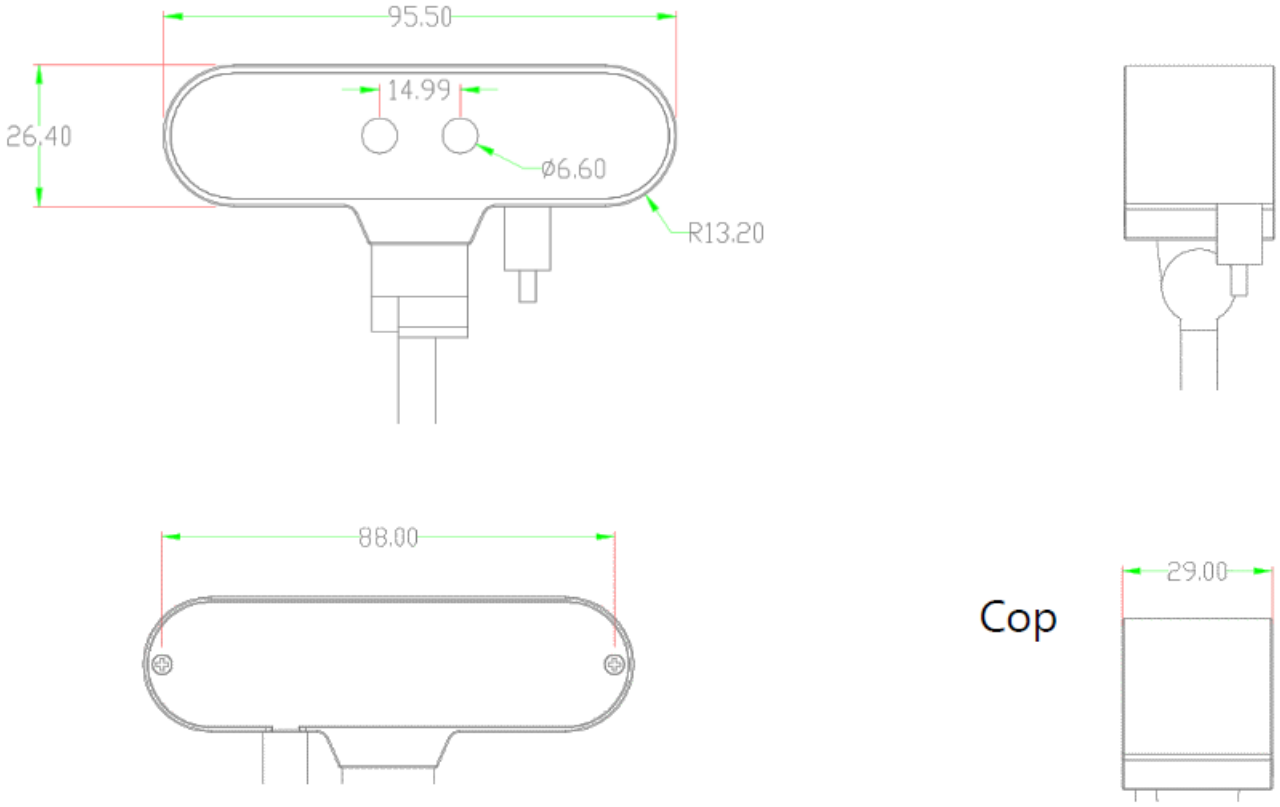
Note:
The algorithm performance is tested based on a proprietary image data set with an image size of 480W x 640H pixels and on a quad-core Cortex-A9 @1.5 GHz processor platform.

Application Scenarios

The AMT-FAM-10 module is optimized on its physical structure for the purpose of built-in design and integration, facilitating easy and fast integration into third-party hardware devices. Kept the integration thought into design, the module can be built into a host device using a single USB cable which provides both the power supply and data communication, this approach simplifies the integration development work considerably.

With AMT FaceLite SDK, you only need to write a few lines of code to call the SDK interfaces to achieve face recognition in your application. It speeds the development work and improves productivity. The integration solution can be applied to various business applications such as time attendance, access control, entrance management, payment kiosks, intercom units, turnstiles, PCs, tablets, and more.

Structural Dimensions



Installation Guide

Vertical Mount Approach

When the plane where the lens is located (or the lens plane) is perpendicular to the horizontal direction, the recommended installation height is 1.55 meters or 61 inches, and the recognition distance is within 0.4 meters-0.8 meters or 16 inches – 32 inches. This installation is suitable for the individual's height within 1.47 meters – 1.82 meters or 57 inches – 72 inches, as shown below.

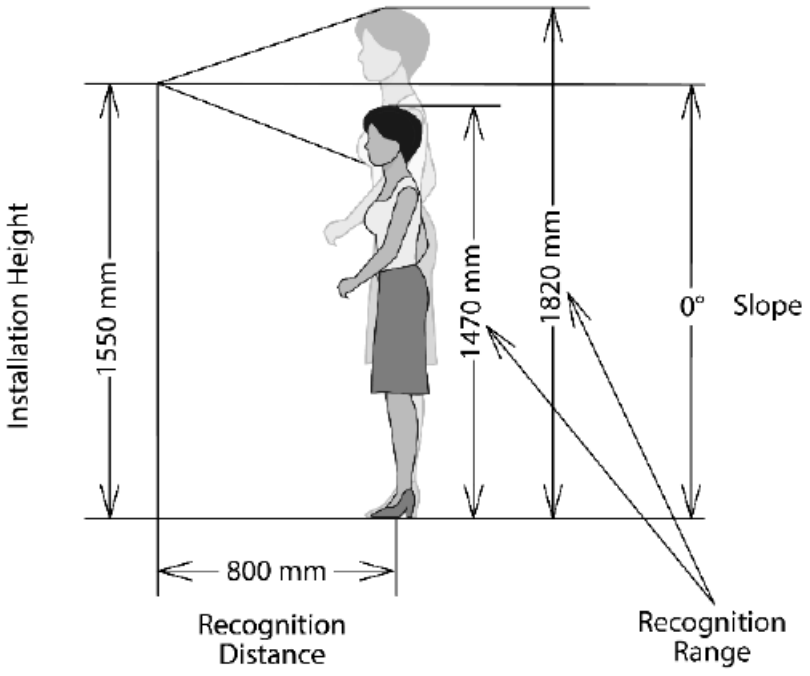


Figure 6.1 Schematic diagram of the installation height of 1.55 meters

Tilting Mount Approach

The recommended installation height is 1.2 meters, the tilt angle is 37 degrees (which is the same angle between

the lens plane and the vertical direction), and the recognition distance is within 0.4 meter to 0.8 meter or 16 inches – 32 inches. This can adapt to the height range of 1.5 meters – 2.2 meters or 59 inches – 87 inches, as shown below.

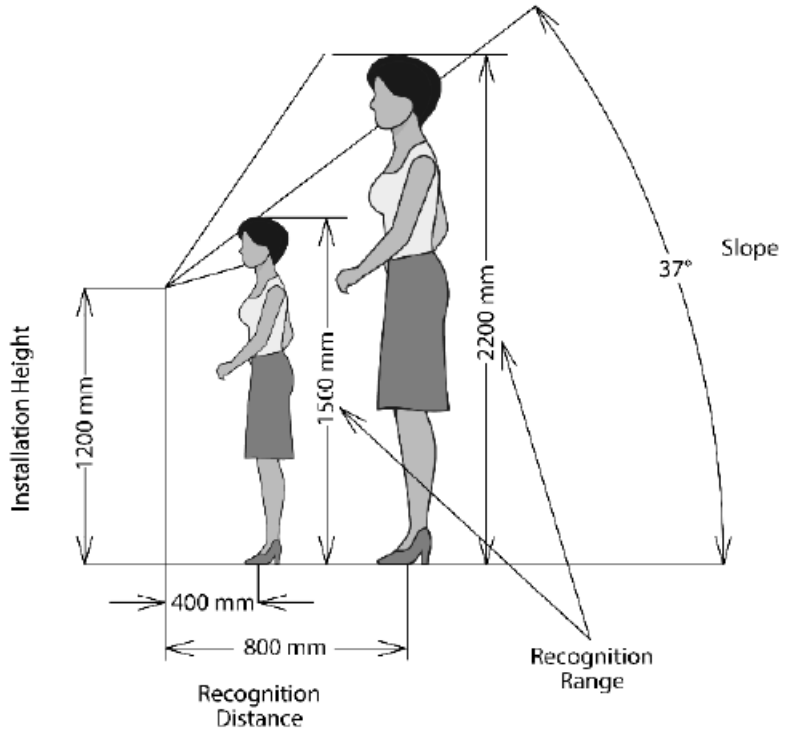


Figure 6.2 Schematic diagram of the installation height of 1.2 meters

Recommended Installation Height and Mounting Angle

- As shown in the table below, the listed mounting angle is the angle between the center axis of the lens and the horizontal ground (that is, the angle between the plane above the module lens and the vertical direction).
- The installation height is the distance from the module to the ground.

Height	0.8m	0.9m	1.0m	1.1m	1.2m	1.3m	1.4m	1.5m	1.55m
Angle	54°	50°	46°	43°	37°	24°	18°	8°	0°

Facial Expressions and Standing Posture

During the enrollment and matching process, please keep natural facial expressions and proper standing postures. Incorrect facial expressions and standing postures may cause recognition failure. The guide of natural facial expressions and proper standing postures are illustrated in Figures 7.1 and 7.2, respectively.

Figure 7.1 The facial expressions illustration

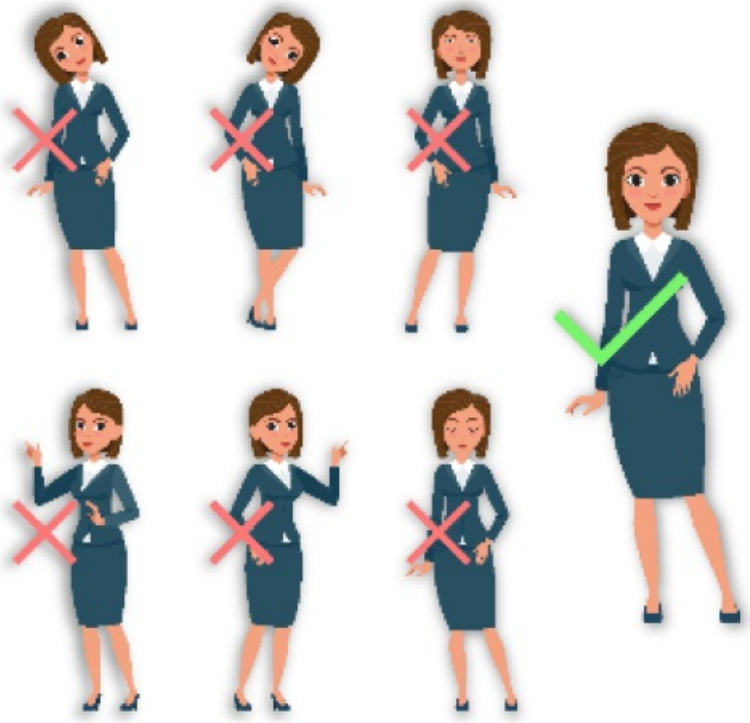


Figure 7.2 The standing postures illustration

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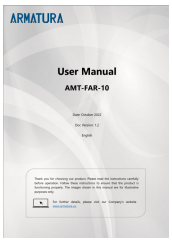
Documents / Resources

	ARMATURA AMT-FAR-10 Reader Enclosure Embeds the Module [pdf] User Manual AMT-21, AMT-FAR-10, AMT-FAR-10 Reader Enclosure Embeds the Module, Reader Enclosure Embeds the Module, Enclosure Embeds the Module, Embeds the Module, Module

References

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