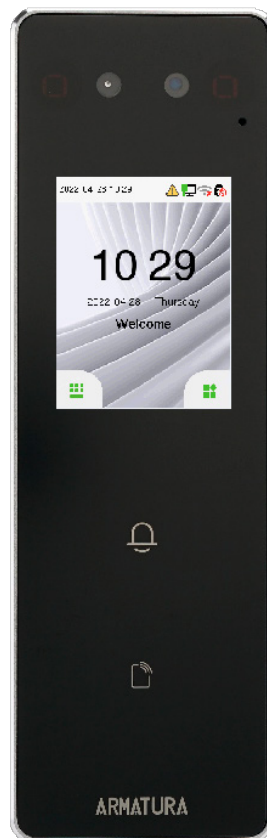# ARMATURA

MADE IN
THAILAND

Architecture and Engineering Specifications

OmniAC20
Contactless Biometric Standalone Terminal

SUPERIOR QUALITY
DESIGNED
& ENGINEERED
IN THE USA
ARMATURA
GEORGIA • USA

IP66

QR CODE

Date: 14 August 2023
Version Number: Version 1.0

Table of Content

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Section 1

1. Purpose

The purpose of this architecture and engineering specifications (A&E) document is to provide guidance for the design, implementation, and installation of the OmniAC Series, OmniAC20, an all-weather outdoor multi-tech smart standalone terminal for access control applications and security management.

2. Goals and Objectives

The OmniAC20 an all-weather outdoor multi-tech smart standalone terminal architecture and engineering system specification aims to achieve the following goals and objectives:

- Provide a highly secure and reliable multi-tech smart standalone terminal with multi-biometric technology combining palm and facial recognition.
- Ensure scalability and flexibility to accommodate varying user and system requirements.
- Meet or exceed relevant industry standards and regulations.
- Provide a clear and detailed specification for the design, supply, installation, and commissioning of the OmniAC20 an all-weather outdoor multi-tech smart standalone terminal.

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3. Key Features and Requirements

The OmniAC20 an all-weather outdoor multi-tech smart standalone terminal shall have the following key features and requirements:

- A modern aesthetic design with a high-quality metal enclosure and a tempered glass panel.

- Slim design with its backplate suits most architectural and interior designs. Supports various mount types including mullion-mount door installations or any flat surface mounting. Supports rots-02 bracket.

- Offers high-resolution touchscreen and intuitive UI design with advanced algorithms, supporting facial recognition distance include dual camera liveness detection on 15.7" - 55.1" (40cm - 140cm). Single camera liveness detection on 15.7" - 78.7" (40cm - 200cm). Palm recognition distance and angle tolerance is about 7" - 15.7" (18cm - 40cm), Pitch +/- 35, Yaw +/- 60, Roll +/-35, Blend +/-30.

- Unrivalled palm and facial recognition with unique deep learning algorithm. A combination of visible and NIR infrared recognition offers exceptional authentication accuracy.

- Palm, face, card and QR code recognition supports contactless authentication which suits the new standards of the post-pandemic world.

- Supports palm and face tracking for more intelligent capture the users' biometrics and avoid the users' biometrics from continuing to be compared after verifying.

- Advanced Security with ODSP(v2.1.7) over RS-485 communication between the OmniAC20 and access control panels.

- Using AES-128 encryption standards ensures the highest levels of data protection and security.

- Supports 125 kHz and 13.56 MHz frequency credentials. Supports various card types including EM, IC Card, HID Prox, HID iCLASS, DESFire and FeliCa.

- Compatible with variable input voltage, from 9V to 24V.

- Attain IP66 protection rating, providing waterproof and dustproof, fully operate in extreme weather conditions, including cold winters, heavy rains and dry/hot summers.

- Operating temperature from -20°C to 60°C/ -4°F - 140°F, which ensures OMNIAC20, the all-weather outdoor multi-tech smart standalone terminal performs well under the most severe weather conditions.

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4. Design And Implementation Constraints

- The design and implementation of the OmniAC20 all-weather outdoor multi-tech smart standalone terminal shall adhere to the following constraints:

- The design shall be scalable and flexible to accommodate varying user and system requirements.

- The implementation shall be done by trained installers who have been certified by the manufacturer.

- The implementation shall comply with relevant standards and regulations.

- The implementation shall ensure high-level cybersecurity to protect against unauthorized access or data breaches.

5. Existing Standards and Regulations

The OmniAC20 all-weather outdoor multi-tech smart standalone terminal shall comply with the following standards and regulations:

- OSDP V2.1.7 Standards

- FCC Standards

- CE Standards

- RoHS Standards

- AES-128 end-to-end secured communication channel.

6. Submittals

The following submittals shall be provided by the manufacturer.

- Product data sheets

- Installation and operation manuals

- Technical support contact information

- Warranty information

7. Qualifications

The manufacturer shall have the following qualifications:

- ISO 9001 certification, ISO27701, ISO27001, ISO9001, ISO14001.

- Minimum of 5 years' experience in producing access control equipment.

8. Warranty

The manufacturer shall provide a limited 36-month warranty for the OmniAC20, an all-weather outdoor multi-tech smart standalone terminal to be free of defects in material and workmanship.

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Section 2

Key Features and Requirements
Key Features

1. Support Multi-Factor Authentication Capability

    - Provides users with multiple ways to access it, such as palm and face recognition, cards, QR codes, and PIN codes. It supports various types of IC cards and offers advanced biometric recognition methods like palm and facial recognition. Additionally, visitors and employees can use QR code scanning to access the system.

    - User capacity supports 50,000; Face capacity supports 10,000 (1:N) or 50,000 (1:1). Palm capacity supports 5,000 (1:N) or 20,000 (1:1).

    - Facial Recognition distance include dual camera liveness detection on 15.7" - 55.1" (40cm - 140cm). Single camera liveness detection on 15.7" - 78.7" (40cm - 200cm).

    - Palm recognition distance and angle tolerance is about 7" - 15.7" (18cm - 40cm) / Pitch +/- 35, Yaw +/- 60, Roll +/-35, Blend +/-30.

    - Facial recognition speed is 100ms (field test result).Palm recognition speed is 140ms (field test result).

    - Supports anti-spoofing live face detection.

    - Transaction buffer supports 1,000,000 records.

2. Support Multi-card Types

    - Supports 125kHz and 13.56 MHz frequency credentials. Supports various card types including EM, IC Card, HID Prox, HID iCLASS, DESFire and FeliCa.

    - RFID capacity supports 50,000 (1:N) or 50,000 (1:1).

    - RFID reading distance (13.56MHz & 125kHz): up to 1.96"/ 50 mm (depending on environment and transponder).

    - Maximum RFID card number length is Wiegand In & Out (up to 64 bits).

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3. Multi-Biometric technology offers an efficient authentication experience by combining palm and facial recognition with a deep learning algorithm. The technology utilizes a combination of visible and NIR infrared recognition technology, providing exceptional authentication accuracy and industry-leading anti-spoofing protection.

4. Features the remote user enrollment, palm and mask detection, and facial recognition for users with or without masks. The device's Palm/Face/Card/QR code recognition technology supports contactless authentication.

5. Equipped with palm and face tracking technology that captures user biometrics more intelligently and discontinues comparison after verification. Additionally, the palm and face AE function helps the device obtain higher quality images, resulting in improved recognition accuracy.

6. Advanced security with OSDP(v2.1.7) over RS-485 communication between the OmniAC20 and access control panels.

7. Adopting the AES-128 encryption standards ensures the highest levels of data protection and security. Complies with TLS1.2 for end-to-end secure communications channel (secured communication between standalone terminal and server).

8. Offers an improved user experience with its high-resolution 2.4" touchscreen and intuitive UI design. Its advanced algorithms ensure the best verification experience for users.

9. Equipped with 1.2GHz Quard Core ARM Processor.

10. High performance: 2.4 TOPS NPU.

11. Offers a storage capacity of 8GB for flash memory and 1GB of RAM.

12. Primary host communication with Ethernet: 10/100Mbps, auto MDI/MDIX. Complies with TLS1.2 for end-to-end secure communications channels.

13. Ethernet network connection with Port 1:10/ 100Mbps and auto MDI/MDIX.

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14. Number of Ports: 1 TCP/IP; 1 RS-485; Input:4ch TTL inputs; Output: 1ch TTL output and 3 relays.

15. Inputs include Wiegand in, Button, Sensor in and Aux Input.

16. Outputs include 3 relays with dry contacts, Weigand Output, lock, alarm and bell.

17. Normally open contact rating is 5A@30Vdc resistive.

18. Normally closed contact rating is 5A@30Vdc resistive.

19. Offers a magnetic tamper detection system through the tamper switch.

20. Provides 99 access group.

21. On-Board access-point control is 1 access point on board.

22. On-Board Reader Support is 1 (OSDP over RS-485) or 1 (Wiegand Input).

23. Compatible with variable input voltage, from 9V to 24V.

24. Attain IP66 protection rating, providing waterproof and dustproof, fully operate in extreme weather conditions, including cold winters, heavy rains and dry/hot summers.

25. Operating temperature from -20°C to 60°C/ -4°F - 140°F, which ensures OMNIAC20, the all-weather outdoor multi-tech smart standalone terminal performs well under the most severe weather conditions.

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Dimensions

2.3"/ 58.47mm

7.3"/ 184.97mm

General Information

Primary Power	12 VDC (3A min @12V)
RS-485 connection	Port 1: RS-485 standard / OSDP V2.1.7
CPU	1.2 GHZ Quad Core ARM Processor
NPU	2.4 TOPs NPU
Memory	8 GB Flash + 1 GB RAM
Camera	Face Automatic Exposure Palm Automatic Exposure Face Tracking Palm Tracking WDR HDR 50Hz to 60Hz Automatic Adaption Dual Camera CMOS 2MP (Output image 720P*960P)
Primary Host Communication	Ethernet 10/ 100 Mbps, auto MDI/ MDIX Complies with TLS 1.2 for end-to-end secure communication channel
Ethernet network connection	Port 1:10/ 100 Mbps, auto MDI/ MDIX
Data Protection	Complies with TLS 1.2 for end-to-end secure communication channel (Secured Communication between Standalone Terminal & Server) AES128 (Secured Communication between Standalone Terminal & OSDP Reader & Access Control Panel)
Number of Ports	1*TCP/IP 1*RS-485 Input: 4ch TTL Inputs Output: 1ch TTL Output 3 relays
Inputs	Wiegand in, Button, Sensor in, Aux Input
Outputs	Wiegand Output, 3 relays with dry contacts (Lock, Alarm, Bell)

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Normally Open Contact Rating	5A @30Vdc resistive
Normally Closed Contact Rating	5A @30Vdc resistive
Tamper Switch	Magnetic tamper detection system
On-Board Monitor	Size: 2.4", Resolution: 320*240, Touch Screen, TFT
Audio Indicator	Internal speaker with adjustable intensity (Configurable on UI)
MIC	Supported
User Capacity	50,000
RFID Card Capacity	50,000 (1:N)/ 50,000 (1:1)
Maximum RFID Card Number Length	Wiegand In & Out (up to 64 bits)
Face Capacity	10,000 (1:N)/ 50,000 (1:1)
Palm Capacity	5,000 (1:N)/ 20,000 (1:1)
RFID Reading Distance	13.56MHz & 125kHz: Up to 1.96"/ 50 mm (depending on environment and transponder)
Face Recognition Distance	Dual Camera Liveness Detection On: 15.7" - 55.1" (40cm - 140cm)
	Single Camera Liveness Detection On: 15.7" - 78.7" (40cm - 200cm)
Palm Recognition Distance and Angle Tolerance	7" - 15.7" (18cm - 40cm) / Pitch +/- 35, Yaw +/- 60, Roll +/-35, Blend +/-30
Face Recognition Speed	100ms (Field Test Result)
Live Face Detection (Anti-Spoofing)	Supported
Recommend Installation Height:	Recommended Installation Height:
	55" (140cm) (Using the plate with tilt angle)
	59" (150cm) (Plate with horizontal angle)
Palm Recognition Speed	140ms (Field Test Result)
Transaction Buffer	Records: 1,000,000
Access group	99
On-Board Access Point Control	1 access point on board
On-Board Reader Support	1 (OSDP over RS-485) or 1 (Wiegand Input)
Protection / Resistance	Weather & Dust Proof Protection Rating compliant with IP66

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RFID / Biometrics Reader Interface

Input Voltage	12 VDC (3A min @12V)(Equal to primary power input)
Maximum Input Current	12 VDC (3A min @12V)(Equal to primary power input)
RS-485 Protocol	OSDP 2.1.7 Secure Channel, AES-128
OSDP Mode	9600-115200 bps, OSDP V2.1.7, asynchronous, half-duplex, 1 start bit, 8 data bits, and 1 stop bit.
Wiegand	Wiegand In & Out (Up to 64 bits)
Data Inputs	TCP/IP, RS-485, OSDP and Wiegand standards supported. Maximum RS-485/ OSDP cable length: 500ft (152m) Maximum Wiegand cable length: 328ft (100m)

Cable Requirement

Power & Relays	Twisted pair, 18 to 16 AWG
Ethernet	CAT-5, minimum 330 ft. (100m)
RS-485 Reader Port	9600-115200 bps, asynchronous, half-duplex, 1 start bit, 8 data bits, and 1 stop bit. One twisted pair with drain wire and shield, 120 ohm resistance, 22-18 AWG, Maximum cable length: 3937ft (1200m)
Wiegand Port	20 AWG shielded ,328ft. (100m)

Mechanical

Dimensions	2.3" W x 0.77" D x 7.3" H (58.47 x 19.5x 184.97mm)
Weight	11.53oz (327g)
Mounting	Suited for mullion-mount door installations or any flat surface mounting Supports rots-02 bracket
Housing Material	Aluminum alloy + Tempered glass

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Environmental	
Operating & Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)
Operating Humidity	10 - 95% RH (Non-condensing)
Certification(s)	CE, FCC, RoHS, UL (coming soon)

Software Interface	
TCP/IP Mode	Ethernet: 10 - 100Base-TX
TCP/IP Protocol	VLAN, SSH, HTTP, IPv4, DNS
TCP/IP Encryption	Complied up to TLS1.2 end to end secure communication channel
TCP/IP Communication	Push Protocol over HTTP, HTTPS and Spada Protocol over WebSocket
Supported Software	Armatura One Security System, Cielo365

Maintenance and Support

The OmniAC20 all-weather outdoor multi-tech smart standalone terminal shall be supported by a comprehensive support program, which shall include the following:

- Regular software updates and security patches.

- Technical support via phone and email.

- Onsite repair services as needed.

- Spare parts availability.

- Training for system administrators and end-users.

Documentation

The supplier shall provide the following documentation for the OmniAC20 all-weather outdoor multi-tech smart standalone terminal:

- User manual

- Installation guide

- Technical specifications

- Software release notes

- Warranty terms and conditions

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Warranty and Support

The OmniAC20 all-weather outdoor multi-tech smart standalone terminal shall be covered by a minimum of 36 month manufacturer's warranty that covers defects in materials and workmanship. The manufacturer shall provide remote technical support and assistance to the installer and end-user during the installation and operation of the controller.

Training and Documentation

The manufacturer shall provide the following training and documentation for the OmniAC20 all-weather outdoor multi-tech smart standalone terminal:

- User manuals and technical documentation for installation, configuration, and operation of the controller.

- Online training courses and videos for system administrators and operators.

- On-site or remote training sessions for system integrators and installers.

- Technical support and assistance for system integrators, installers, and end-users.

*Note Certifications may vary by region and country. Please consult the manufacturer for specific certifications applicable to your location.

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