AHSC-1000

IP-Based Core Controller

- Ultimate Authentication Performance
- Scalable
- Advanced Global Functionality based on peer-to-peer communication
- High Level Cyber Security

Key Features

Ultimate authentication performance

Supports up to 800,000 (1:1) & 400,000 (1:N) RFID card, 400,000 (1:N) BLE / NFC / Dynamic QR Code mobile credential, 100,000 (1:1) & 50,000 (1:N) fingerprint, 100,000 (1:1) & 50,000 (1:N) facial, 5,000 (1:1) & 3,000 (1:N) palm authentication in one single controller. Supports up to million-grade (1:1) authentication capacity with online backend authentication server.

Scalable

Supports up to 129 access points, with 32 AHDU-1460 door units and 258 readers with various authentication options including biometrics, RFID card and mobile credential authentication (Bluetooth / NFC / Dynamic QR Code). With advanced communication protocols, the AHDU-1000 supports up to 792 AHEB series IO expansion boards and 33 AHDU door units, ultimately supporting up to 12,801 inputs or outputs.

Innovative MQTT based communication protocol

MQTT is a lightweight communication protocol generally used by IoT devices. Its features make it an optimal solution for intelligent security systems, which enable the controller to communicate with more edge devices (Door Unit, reader, sensor, etc.) under the same network environment.

Threat Levels

Unlimited threat levels are used to adjust user access during lockdowns and lockouts instantaneously.

Advanced Communication

The serverless design enables the controller to operate independently. Peer-to-peer cross-controller linkage communication among controllers can be active while the Armatura-One server is unavailable. All preset linkages and global linkages can operate as usual.

Dual System Rom Protection Design

To offer the best operation stability, durability, and safety and tackle different kinds of situations, such as an improper upgrade, cyber attack, and malware infections that completely render the ROM to inoperable status. Armatura's controllers are built with a dual ROM design, one of the ROMs acts as a primary ROM for the system startup, and the second layer ROM acts as a "Recover" ROM. When the primary ROM happens to fail or malfunction, the second layer ROM will automatically take over on your next controller board startup.

Supervised Inputs

The AHSC-1000 controller is equipped with four state-monitoring inputs, which gradually avoids short circuit attacks. The AHSC-1000 controller can detect abnormal changes below 5% Ohms in the circuit and filter out all possible attacks.
REX inputs and dedicated fire alarm inputs on the board are independently managed by isolated microchips to ensure these inputs can operate normally under various extreme and catastrophic situations, even if the motherboard does not function properly.

PoE

Power-over-Ethernet (PoE) 802.3at/ 9-24VDC from power sourcing equipment (PSE) according to IEEE PoE 802.3at standards.

3rd Party Integration

Supports BMS common communication protocols such as BACnet, Modbus, and OPC to integrate building management systems. Supports a range of reader protocols, including Armatura Explorer series reader, 3rd party biometric reader, 3rd party Wiegand / OSDP readers, and Assa Abloy Aperio™ Wireless Lock. Supports Kone, Schindler, Mitsubishi & Hitachi elevator DCS & DOP integration through Armatura -One Security Platform & provides RESTful based API for 3rd Party integration.

Cyber Security

OSDP V2.2 communication over RS-485 with Advanced Encryption Standard (AES) 128-bit encryption between readers and I/O expansion boards to AHSC-1000 Security Core.
AES256 / TLS 1.2 communication between Armatura-One server and edge devices through TCP/IP.
Communication between the Armatura-One server and web-client is protected by HTTPS / TLS1.2 (AES256) or above.
An additional crypto chip (Certified EAL6+ standard) provides an enhanced cybersecurity level, providing dedicated storage and cryptographic functionality for the AHSC-1000 controller.
Supports IP/Mac address filtering functions and VLAN isolation to enhance cybersecurity standards.

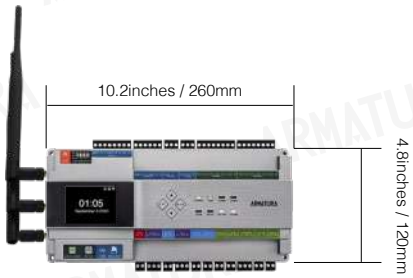
Port Failover (TCP/IP coming soon) & Redundancy

The AHSC-1000 controller has dual Ethernet ports. If the primary communication circuit fails, the controller can automatically fail over to the secondary port (the controller has separate network address configurations set for both ports). 100 Base-TX Ethernet data transfer is included on the AHSC-1000 controller, allowing users to take full advantage of this high-speed network technology. Two out of three onboard RS-485 ports are dedicated and configurable for redundancy failover. The door units / IO expansion boards / readers connected with RS-485 can failover to the secondary port if the current port is disconnected.

Intelligent Power Monitoring

The AHSC-1000 supports flexible voltage inputs (9V-24V with automatic voltage detection) with multiple power supply options including PSU, board-only and Power Over Ethernet (PoE IEEE 802.3at).
The AHSC-1000 onboard intelligent power monitoring system can precisely monitor onboard battery power supply, onboard battery health, PoE power supply status & PSU power supply status. It also displays real-time power status on the webserver dashboard, ensuring administrators have clear indicators for troubleshooting.

Dimensions of Core Controller



AHSC-1000

General Information

Primary Power	PoE 802.3at / 9 - 24 VDC ± 20%, 550 mA maximum (reader current not included)
Primary Host Communication	Ethernet: 100Base-TX 256bit AES* symmetric encryption for Controller to Server and Inter-Controller communications
Secondary Host Communication	Bluetooth 5.2
Third Host Communication	Wi-Fi IEEE 802.11ac 5GHz, or 2.4GHz/5GHz IEEE 802.11n 256bit AES* symmetric encryption for Controller to Server and Inter-Controller communications
Ethernet network connection	Port 1: Ethernet: 100Base-TX Port 2: Ethernet: 100Base-TX (Configurable for Port Failover)
RS-485 connection	Port 1: Armatura RS-485 / OSDP V2.2 Port 2: Armatura RS-485 / OSDP V2.2 Port 3: Armatura RS-485 / OSDP V2.2 (Configurable for Port Redundancy dedicated on port 2 & 3)
Number of Ports	2*TCP/IP (IPv4 & IPv6) 3*RS-485 2*Wiegand 1*RS-232
Inputs	4 states supervision, resistor values (5% tolerance), Normally open contact: use 1.2k, 2.2k. 4.7k or 10k Normally closed contact: use 1.2k, 2.2k. 4.7k or 10k Dedicated Panel Tamper IO Input* Dedicated Microchip Control Fire Alarm IO Input & REX Input for catastrophic situation
Outputs	1 relay, 1* Form-C with dry contacts
Normally Open Contact Rating	5A @ 30Vdc resistive
Normally Closed Contact Rating	5A @ 30Vdc resistive
On-Board Monitor	Size: 2.4", Resolution: 320*240, TFT Monitor Quickly view status of board, connected doors and for configuration information display
On-Board Webserver	Webserver for System Configuration and Management Dashboard for Controller Status Monitoring, Device Connection Status Monitoring & Configuration, Performance Status, Server Primary Controller Setting, Network Status Monitoring & Setting, IP Access Filter, SSL / TLS Certificates Setting, Access Log Export, Controller Reset, Debug Status Monitoring, Operation Log Monitoring, User Management, Date & Time Setting, Daylight Saving Time Setting, NTP Server Setting, General Status, Controller Information

RFID Card Capacity	As a Main-Controller: 800,000 (Storage) As a Door Unit: 400,000 (1:N) / 800,000 (1:1)
Maximum RFID Card Number Length	Supported up to 256-bits card number length
Mobile Credential Capacity	400,000 (1:N) (Bluetooth) 400,000 (1:N) (NFC) 400,000 (1:N) (Dynamic QR Code)
Fingerprint Capacity	As a Primary Controller: 100,000 (Storage) As a Door Unit: 50,000 (1:N) / 100,000 (1:1)
Face Capacity	As a Primary Controller: 100,000 (Storage) As a Door Unit: 5,000 (1:N) / 100,000 (1:1)
Palm Capacity	As a Primary Controller: 5,000 (Storage) As a Door Unit: 3,000 (1:N) / 5,000 (1:1)
Transaction Buffer	5,000,000 Events
Access Level	100,000 Levels
On-Board Access Point Control	1 access point on board
On-Board Reader Support	2 (OSDP over RS-485) or 2 (Wiegand) with on-board IO
Maximum Access Points	129 (with 32pcs AHDU-1460 modules through TCP/IP connection) 97 (with 24pcs AHDU-1460 modules through Armatura RS-485 over RS-485 connection)
Maximum Readers	258 (with 32pcs AHDU-1460 modules through TCP/IP connection) 194 (with 24pcs AHDU-1460 modules through Armatura RS-485 over RS-485 connection)
Maximum Inputs	12,801 (with 33pcs AHDU-1460 modules through TCP/IP connection + 792pcs AHEB-1602 IO Expansion Board through OSDP over RS-485 connection)
Maximum Outputs	12,801 (with 33pcs AHDU-1460 modules through TCP/IP connection + 792pcs AHHEB-0216 IO Expansion Board through OSDP over RS-485 connection)
Maximum IO Board	24pcs (2*High Speed RS-485 communication)
Maximum DU Modules	32pcs (1*TCP/IP communication with AES-256 & TLS1.2 end to end secure channel) 24pcs (OSDP over RS-485 communication with AES-128 end to end secure channel)

Door Unit Controller Interface	
Input Voltage	12 -24 Vdc +/- 10% regulated, 500 mA maximum each reader
Maximum Input Current	12 -24 Vdc +/- 10% regulated, 500 mA maximum each reader
TCP/IP Mode	Ethernet: 100Base-TX
TCP/IP Protocol	802.1X, VLAN, SSH, IPv4, IPv6, WebSocket
TCP/IP Encryption	Complied up to TLS1.2, AES-256 end to end secured communication channel
TCP/IP Communication	Spada Protocol over WebSocket
RS-485 Protocol	AES-256, Armatura RS-485 Secure Channel
Armatura RS-485 Mode	9600-115200 bps, asynchronous, half-duplex, 1 start bit, 8 data bits, and1 stop bit.
Data Inputs	TCP/IP standard supported. Maximum TCP/IP cable length: 330ft. (100m) RS-485 standard supported. Maximum RS-485 cable length: 3937ft. (1200m)

RFID / Biometrics Reader Interface	
Input Voltage	12 -24 Vdc +/- 10% regulated, 500 mA maximum each reader
Maximum Input Current	12 -24 Vdc +/- 10% regulated, 500 mA maximum each reader
RS-485 Protocol	AES-128, OSDP Secure Channel
OSDP Mode	9600-115200 bps, OSDP V2.2, asynchronous, half-duplex, 1 start bit, 8 data bits, and1 stop bit. 3rd Party reader: support OSDP V2.2 or above
Wiegand	Read: support up to 128 bits / Write: Support 26 / 34 / 37 bit, and other customised card formats
Tamper Input (Wiegand)	TTL levels, high > 3 V, low < 0.5 V, 5 mA source/sink maximum
Buzzer Output (Wiegand)	TTL levels, high > 3 V, low < 0.5 V, 5 mA source/sink maximum
LED Output (Wiegand)	TTL levels, high > 3 V, low < 0.5 V, 5 mA source/sink maximum
Data Inputs	RS-485, OSDP and Wiegand standards supported. Maximum RS-485 /OSDP cable length: 3937ft. (1200m) Maximum Wiegand cable length: 328ft (100m)

IO Expansion Board Interface	
RS-485 Protocol	TLS 1.2, AES-128, OSDP V2.2 Secure Channel
OSDP Mode	9600-115200 bps, OSDP V2.2, asynchronous, half-duplex, 1 start bit, 8 data bits, and1 stop bit. Maximum cable length: 2,000 ft. (609.6m)
Data Inputs	OSDP and Wiegand standards supported. Maximum cable length: 500 ft. (152m)

Software Interface	
TCP/IP Mode	Ethernet: 100Base-TX
TCP/IP Protocol	NTP, SNMP V2 /V3, 802.1X, vLan, SSH, MQTT, IPv4, IPv6, DNS, DDNS
TCP/IP Encryption	Complied up to TLS1.2, AES-256 end to end secured communication channel
TCP/IP Communication	Spada Protocol over MQTT

Cable Requirement	
Power & Relays	One twisted pair, 18-16 AWG
Ethernet	CAT-5, minimum 330 ft. (100m)
Ethernet Failover Port	CAT-5, minimum 330 ft. (100m)
RS-485 Reader Port	9600-115200 bps, asynchronous, half-duplex, 1 start bit, 8 data bits, and1 stop bit. One twisted pair with drain wire and shield, 120 ohm resistance, 22-18 AWG, Maximum cable length: 3937ft (1200m)
RS-485 I/O Device Port	9600-115200 bps, asynchronous, half-duplex, 1 start bit, 8 data bits, and1 stop bit. One twisted pair with drain wire and shield, 120 ohm resistance, 22-18 AWG, Maximum cable length: 3937ft (1200m)
RS-485 Failover Port	9600-115200 bps, asynchronous, half-duplex, 1 start bit, 8 data bits, and1 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 Wiegand wire ,328ft. (100m)

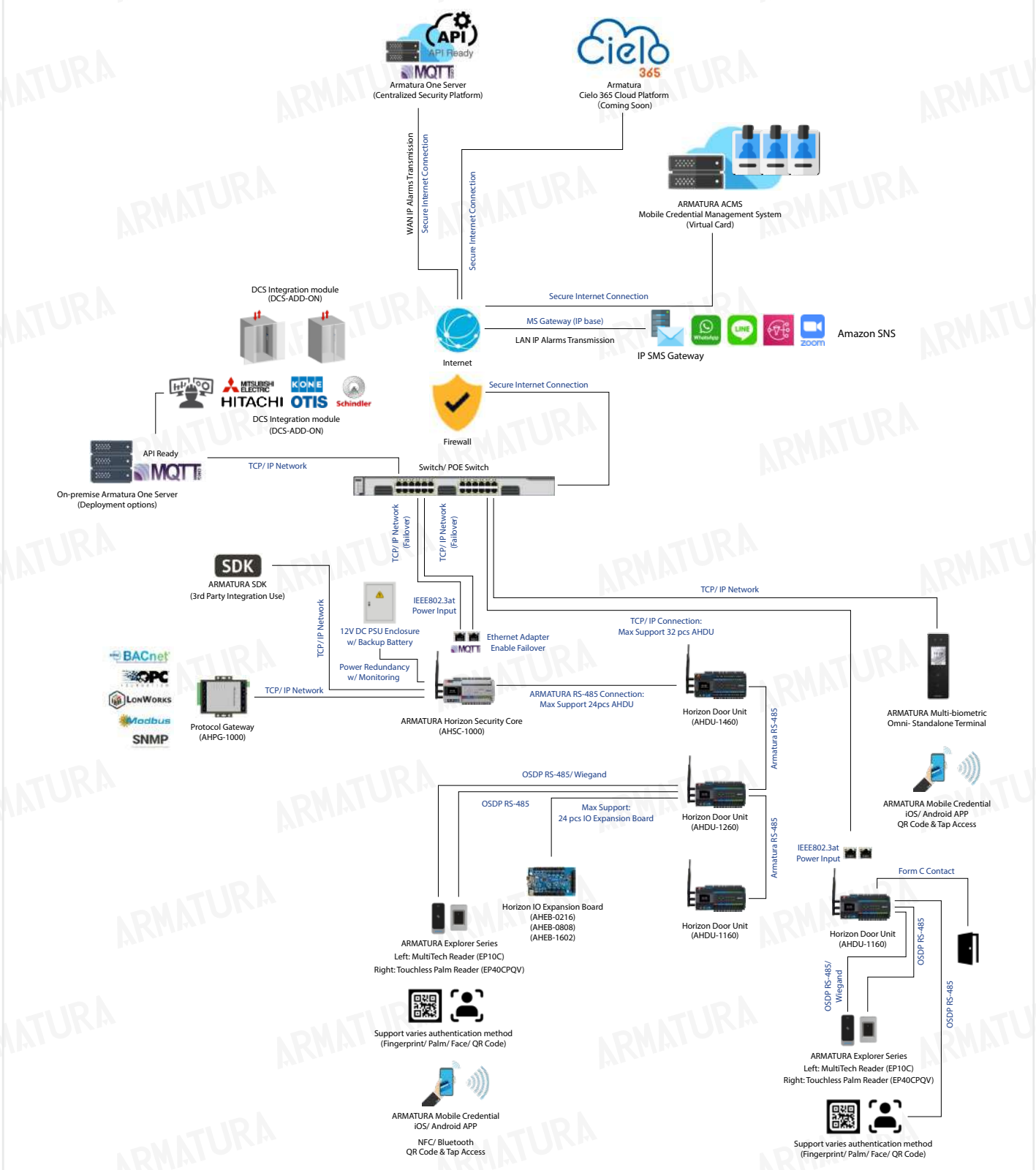
Mechanical	
Dimensions	4.8” W x 10.2” L x 2.5” H in. (122 x 260 x 62.5mm)
Weight	approx. 30oz (830g)
Mounting	Supported DIN35 Rail Compatible with UTA89 Din Rail Adapter for screwing on switchgear (Sold Separately) Wall mount
Housing Material	ABS-PC UL-94 V2

Environmental	
Temperature	-22°F ~ 158°F (-30°C~70°C), Operating & Storage
Humidity	0-95%RHNC
Certifications*	Certification: CE, FCC, RoHS, UL294
Security Rating	Secure Data Storage in EAL 6+ Certified Crypto Chip

Software	
Supported Software	Armatura--One Security System

ARMATURA

Armatura System Diagram



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