ARMATURA

ARCHITECTURAL AND ENGINEERING SPECIFICATIONS

DESIGNED & ENGINEERED **IN THE USA**
ARMATURA

EP20 Series
All Weather Outdoor
Multi-tech Smart Reader
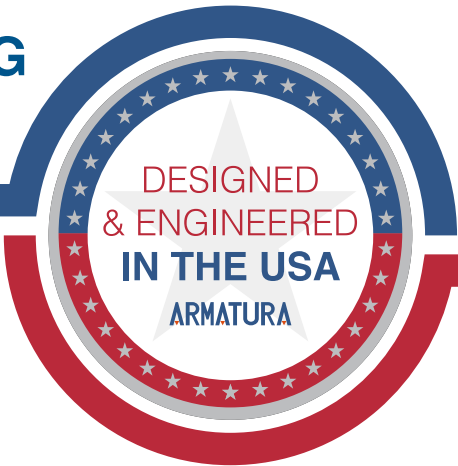
Bluetooth™   NFC   OSDP   IP68   IK07/10

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Address: 190 Bluegrass Valley Parkway Alpharetta, GA 30005

Email: sales@armatura.us

Date: 9 Apr 2025

Version Number: 1.2

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SECTION 1 GENERAL SPECIFICATIONS

1. PURPOSE

This architecture and engineering specifications document (A&E) outlines the minimum requirements for the design, supply, installation, and commissioning of the EP20C/ CK/ CQ/ CKQ all-weather outdoor multi-tech smart reader.

2. GOALS AND OBJECTIVES

This A&E specification aims to achieve the following goals and objectives:

· Provide a highly secure and reliable all-weather outdoor multi-tech smart reader with advanced authentication and access control capabilities.

· Ensure scalability and flexibility to accommodate varying user and system requirements.

· Meet or exceed relevant industry standards and regulations.

· Provide a clear and detailed specifications for the design, supply, installation, and commissioning of the EP20C/ CK/ CQ/ CKQ all-weather outdoor multi-tech smart reader.

3. KEY FEATURES AND REQUIREMENTS

The EP20C/ CK/ CQ/ CKQ multi-tech smart reader shall have the following key features and requirements:

· Mobile credential capability for access control on both iOS and Android operating system. With the Armatura ID mobile app that supports NFC (Android OS) and Bluetooth, allowing users to easily open doors by presenting your smartphone to the reader, extending mobile access functions to almost all smartphone users.

· Supports Open Supervised Device Protocol (OSDP;v2.2) for secure communication between the control panel and reader.

· Utilizes certified crypto chips with EAL6+ for advanced data protection.

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- AES-128 end-to-end encryption for secure communication between the control panel and reader.
- Supports multi-tech reading including 125kHz,13.56MHz and 2.4GHz Bluetooth frequency credentials.
- Supports over 100 card types and over 100 RFID card types in standard package with varies optional RFID modules.
- EP20CKQ provides compatibility with all HID Mobile Access® solutions, including the employee badge feature in Apple Wallet.
- Compact mullion mount design with optional gang box (Single gang, European gang and Asian gang box).
- Compliant with FCC, CE, RoHS3.0, WEEE and UL294 standards.
- Housing material made of Polycarbonate, and it is strictly UL94-V0 compliant.
- IK10 Vandal-proof and IP68 waterproof & dustproof protection levels enable operation under any installation environment.
- The system shall comply with GDPR privacy standards.
- This product complies with IEC EN/BS EN 60839 Grade 4 standards, meeting the highest requirements for security and performance in intrusion and access control systems.

4. DESIGN AND IMPLEMENTATION CONSTRAINTS

The design and implementation of the EP20C/ CK/ CQ/ CKQ multi-tech smart reader shall adhere to the following constraints:

- 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.

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5. EXISTING STANDARDS AND REGULATIONS

The EP20 series shall comply with the following standards and regulations:

· FCC Standards

· CE Standards

· UL294 Standards

· IEC EN/BS EN 60839 Grade 4

· RoHS 3.0 Standards

· WEEE Standards

6. SUBMITTALS

The following submittals shall be provided by the manufacturer.

· Product data sheets

· Installation manuals

· Operation manuals

· Test reports

7. QUALIFICATIONS

The manufacturer shall have the following qualifications:

· ISO 9001, ISO27001, ISO27701, ISO27017, CMMI5 certification.

· Minimum of 5 years' experience in producing access control equipment

8. WARRANTY

The manufacturer shall provide a limited 36-month warranty for the product to be free of defects in material and workmanship.

SECTION 2 TECHNICAL SPECIFICATIONS

1. KEY FEATURES AND REQUIREMENTS

Key Features

i. Multi-tech RFID & Mobile Credential

ii. Supports over 100 RFID card types and both mobile NFC (Android operating system only) and Bluetooth (Low Energy).

iii. Support Multi-card Types

iv. The standard package supports over 100 RFID card types, with optional modules available to cover an additional over 100 secured RFID protocols. This provides high flexibility for multi-card types and mobile credential situations, satisfying most end-user requests.

v. EP20C & EP20CK provide RFID and Bluetooth functions.

vi. EP20CQ & EP20CKQ provide RFID, Bluetooth and QR code functions.

vii. Only EP20CK & EP20CKQ equipped with the 12-digits touch keypad.

viii. EP20CKQ & EP20CKQ support dynamic QR Code reading for enhanced security and verification. When used with the Armatura mobile credential application, Armatura ID, the QR code mode can generate a dynamic QR code on the app that automatically regenerates every 3 seconds to prevent security leaks. The dynamic QR code is secured with AES-256 encryption,ensuring a seamless and safe verification process.

ix. EP20CQ and EP20CKQ support QR code scanners with 648*488 pixel array scanning pattern. Also, it has a QR Code scanning angle of 66° (Horizontal) and 50° (Vertical).

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x.   The QR Code scanning print contrast includes 25% minimum reflectance difference rotation, pitch, skew: 360°, +/-40° and+/-60°.

xi.   This product complies with IEC EN/BS EN 60839 Grade 4 standards, meeting the highest requirements for security and performance in intrusion and access control systems.

xii.   With high barcode capability. Supports one-dimensional (1D) barcodes such as UPC-A, UPC-E, EAN-8, EAN-13, EAN-14, EAN-128, UCC128, ISBN/ISSN, CODE11, CODE32, CODE39, CODE39 Full ASCII, CODE93, CODE128, Interleaved 2 of 5, Industrial 2 of 5, Matrix 2 of 5, Toshiba Code, UK/Plessey, and GS1. Additionally, supports two-dimensional (2D) codes, including QR codes, for enhanced functionality. With high QR codes capability. Support two-dimensional code including QR code, PDF147, Data matrix, MicroPDF417 and Aztec.

xiii.   For EP20CQ & EP20CKQ scanning performance, the Barcode (Code 128) scanning range in narrow width encompasses 6mil/ 9mil/ 15mil/ 20mil. While the Barcode (Code 128) scanning range in the depth of field comprises 2.0" to 3.1" (5cm to 8cm)/ 2.0"to 4.7"(5cm to 12cm)/ 2.3" to 7.7"(6cm to19.5cm)/ 2.3" to 9.8"(6cm to 25cm). Please note that the QR code scanning was rigorously tested in a lab with 250 Lux luminance.

xiv.   The QR code scanning range in narrow width consists of 6mil/ 9mil /15mil /20 mil. While the QR code scanning range in the depth of field encompasses 2.0" to 9.8" (6cm to 25cm) / 2.0" to 3.5" (5cm to 9cm) / 2.0" to 6.3" (5cm to 16cm)/ 2.3" to 7.9" (6cm to 20cm). Please note that the QR code scanning was rigorously tested in a lab with 250 Lux luminance.

xv.   Operating Frequency: 125kHz, 13.56MHz: ISO14443 types A & B, ISO15693, 2. 4GHz Bluetooth® and QR code.

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xvi.   The reading distance of 125kHz and 13.56MHz operating frequency is maximum at 2.3"(60mm), depend on environment and transponder.

xvii.   The reading distance with a Bluetooth smartphone is up to 393.7" (10m) and it is configurable on each reader.

xviii.   Provides three mobile identification modes when using the Armatura ID mobile App across the iOS and Android operating systems on smartphones. The card mode presents your smartphone to the reader like an access card. The remote mode conducts the verification on the reader by clicking a button in the Armatura ID App. Present your QR Code and get access and activated and paired up with reader for fully automated door access in the express mode.

xix.   To secure communication between the reader and the control panel, it adopts AES-128 encryption.

xx.   Utilizes EAL6+ certified crypto chip for enhanced data protection. Anti-SPA/ DPA/ EMA/ DEMA Attack.

xxi.   Support Wiegand for communications and panel connection.

xxii.   Adopts OSDP (version 2.2) via RS-485 up to 128bits SCP secure communication.

xxiii.   IP68 waterproof & dustproof protection level.

xxiv.   Provides red, green and blue (RGB) LED visual indicators and it is configurable by Armatura Connect mobile App.

xxv.   Equipped with an internal buzzer with adjustable intensity and it is configurable by Armatura Connect mobile App.

xxvi.   The EP20C series is compatible with Asian, European and single gang-box installations or any flat surface mounting.

xxvii.   The EP20C series can fully operate at -30°C to 70°C (-22°F - 158°F), which ensures operation under extreme weather conditions.

xxviii.   EP20C/ / EP20CK/ EP20CQ/ EP20CKQ reached IP68 protection rating for waterproof and dust proof.

xxix.   Only EP20C reached IK10 vandal-proof rating enables protection from multiple attacks up to 20 joules.

xxx.   EP20CK/ EP20CQ/ EP20CKQ attained IK07 for vandal-proof rating.

xxxi.   A tamper switch with magnetic tamper detection system.

xxxii.   The casing material is compliant with the UL94-V0 standards for flammability, ensuring burning combustion is not sustained for more than 10 seconds after applying a controlled flame.

xxxiii.   For UV stability, it is compliant with the & UL746C (F1) standards, there is nil structural degradation for the life of the reader in 3 years.

xxxiv.   Power supply ranges from 9 VDC to 24 VDC.

xxxv.   The dimension is 3.54" in width, 4.24" in height and 0.93" in depth, which is equi valent to 89.8mm in width, 107.8mm in height and 23.6mm in depth.

2. MAINTENANCE AND SUPPORT

The EP20 series 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.
· Spare parts availability.
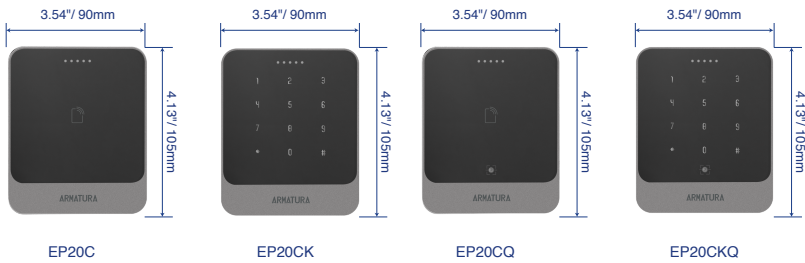· Training for system administrators and end-users.

3. DOCUMENTATION

The supplier shall provide the following documentation for the EP20 series:

- Product Datasheet
- User manual
- Installation guide
- Technical specifications
- Software release notes

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4. TECHNICAL SPECIFICATIONS

Dimensions

EP20C	EP20CK	EP20CQ	EP20CKQ
3.54"/ 90mm 4.13"/105mm	3.54"/ 90mm 4.13"/105mm	3.54"/ 90mm 4.13"/105mm	3.54"/ 90mm 4.13"/105mm

Specifications				
Internal Number	EP20C	EP20CK	EP20CQ	EP20CKQ
Operating Frequency / Standards	125 kHz 13.56 MHz: ISO14443 types A & B, ISO15693 2.4 GHz Bluetooth®			
Functions	RFID, Bluetooth®		RFID, Bluetooth® and QR code	
Keypad	N/A	Touch Keypad	N/A	Touch Keypad
QR Code Scanner	N/A		Supported	
QR Code Scanning Pattern	N/A		Area image (648*488 pixel array)	
QR Code Scan Angle	N/A		Horizontal: 66°/ Vertical: 50°	
QR Code Scanning Print Contrast	N/A		Print Contrast: 25% minimum reflectance difference Rotation, Pitch, Skew: 360°, +/-40°, +/-60°	
QR Code Capability	One-Dimensional Code: UPC-A , UPC-E, UPC-E1, EAN-8, EAN-13, EAN-14, EAN-128, UCC128, ISBN/ISSN, CODE11, CODE32, CODE39, CODE39 Full ASCII, CODE93, CODE128, Interleaved 2 of 5 code, Industrial 2 of 5 code, Matrix 2 of 5 code, Toshiba code, UK/Plessey, GS1 Two-Dimensional Code: QR code, PDF417, Data matrix, MicroPDF417, Aztec			
QR Code Scanning Performance*	N/A		Narrow Width 6.0 mil (Code128) 9.0 mil (Code128) 15.0 mil (Code128) 20.0 mil (Code128) 6.0 mil (QR) 9.0 mil (QR) 15.0 mil (QR) 20.0 mil (QR)	Depth of Field 2.0"-3.1" (5cm-8cm) 2.0"-4.7" (5cm-12cm) 2.3"-7.7" (6cm-19.5cm) 2.3"-9.8" (6cm-25cm) 2.0"-2.3" (5cm-6cm) 2.0"-3.5" (5cm-9cm) 2.0"-6.3" (5cm-16cm) 2.3"-7.9" (6cm-20cm)

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Internal Number	EP20C	EP20CK	EP20CQ	EP20CKQ
Communications & Panel Connection	Wiegand OSDP (v2.2) via RS-485 (Up to 128bits SCP Secure Communication)			
Reading Distance	13.56MHz & 125kHz: Up to 2.3"/60 mm (depending on environment and transponder) Up to 393.7"/ 10m with a Bluetooth Smartphone (configurable distances on each reader)			
Data Protection	AES128 (Secured Communication between Reader & Controller) Secure Data Storage in EAL6+ Certified Crypto Chip			
Visual Indicator	RGB LEDs (Configurable By 'Armatura Connect' Mobile APP)			
Audio Indicator	Internal buzzer with adjustable intensity (Configurable By 'Armatura Connect' Mobile APP)			
Power Requirement / Power Supply	9 VDC to 24 VDC			
Operating Temperature	-22°F - 158°F /-30°C to 70°C			
Dimensions	3.54" W x 4.24" H x 0.93" D (89.8 x 107.8 x 23.6mm)			
Tamper Switch	Magnetic tamper detection system			
Certifications	CE, FCC, RoHs3.0, WEEE, UL294, IEC EN/ BS EN 60839 Grade 4			
Mounting	Suited for Asian / European / single-gang installations or any flat surface mounting			
Protection / Resistance	Weather & Dust Proof Protection Rating compliant with IP68 Reinforced Vandal-proof Structure IK10 certified	Weather & Dust Proof Protection Rating compliant with IP68 Reinforced Vandal-proof Structure IK07 certified	Weather & Dust Proof Protection Rating compliant with IP68 Reinforced Vandal-proof Structure IK07 certified	Weather & Dust Proof Protection Rating compliant with IP68 Reinforced Vandal-proof Structure IK07 certified
UV Stability	Nil structural degradation for the life of the reader in 3 years			
Housing Material	Polycarbonate UL94-V0 & UL746C (F1)			

Remarks:
**Standard version provides "Read only" function. Customization is required for "Read & Write" function.
*This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/)
QR scanning performance was resulted in a laboratory testing environment, the luminance was recorded as 250 Lux

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5. ARMATURA CARD MODULES SUPPORTING LIST

ARMATURA RFID Card Module Supporting List

Frequency	Classification	Card Module Abbreviation / Compatible Readers	[DF] EP10C/ EP20C/ EP20CK/ EP20CQ/ EP20CKQ/ EP20ENC/ EP30 Series	[SFMH] EP10C/ EP20C/ EP20CK/ EP20CQ/ EP20CKQ/ EP20ENC/ EP30 Series/ VG10CKQ*	[NO] EP10C/ EP20ENC	[NP] EP10C/ EP20ENC	[NI] EP10C/EP20CQ/ EP20CKQ/ EP20ENC EP30 Series	[NPL] EP10C	[NIH] EP10C	[RNP] OmniAC20/ OmniAC30/ EP20CQ*/ EP20CKQ*/ EP30 Series/ VG10CKQ*	[RNI] OmniAC20/ OmniAC30/ EP20CQ*/ EP20CKQ*/ EP30 Series/ VG10CKQ*	[RNIB] OmniAC20/ OmniAC30	[RNPB] OmniAC20/ OmniAC30
13.56MHz	ISO14443A	LEGIC Advant		√	√1)	√1)	√1)		√1)				
		MIFARE Classic, Mini S50,S70	√4)	√	√	√	√		√	√4)	√4)	√4)	√4)
		MIFARE Classic EV1	√4)	√2)	√2)	√2)	√2)		√2)	√4)	√4)	√4)	√4)
		MIFARE DESFire Light		√8)	√8)	√8)	√8)		√8)	√4)	√4)	√4)	√4)
		MIFARE DESFire EV1	√4)	√	√	√	√		√	√4)	√4)	√4)	√4)
		MIFARE DESFire EV2/ EV3	√4)	√13)	√13)	√13)	√13)		√13)	√4)	√4)	√4)	√4)
		MIFARE Plus S, X		√	√	√	√		√	√4)	√4)	√4)	√4)
		MIFARE Smart MX		√3)	√3)	√3)	√3)		√3)	√4)	√4)	√4)	√4)
		MIFARE Ultralight		√	√	√	√		√	√4)	√4)	√4)	√4)
		MIFARE Ultralight C		√	√	√	√		√	√4)	√4)	√4)	√4)
		MIFARE Ultralight EV1		√2)	√2)	√2)	√2)		√2)	√4)	√4)	√4)	√4)
		NFC (NTAG2xx)	√		√	√	√		√				
		SLE44R35		√3)	√3)	√3)	√3)		√3)				
		SLE66Rxx (my-d move)		√3)	√3)	√3)	√3)		√3)				
		Topaz			√	√	√						
		HID iCLASS SEOS					√20)		√20)		√20)	√20)	
		NFC(HCE & NTAG2xx)		√	√	√	√		√	√	√	√	√
	ISO14443B	Calypso		√3)	√3)	√3)	√3)		√3)				
		Calypso Innovatron protocol		√3)	√3)	√3)	√3)		√3)				
		CEPAS		√3)	√3)	√3)	√3)		√3)				
		CTS			√	√	√		√10)				
		Pico Pass		√1)	√4)	√4)	√4)		√4)				
		SRI4K, SRIX4K		√	√	√	√		√				
		SRI512, SRT512			√	√	√		√				
	ISO18092/ ECMA-340	Sony FeliCa		√5)	√5)	√5)	√5)		√5)	√1)	√1)	√1)	√1)
	ISO15693	EM4x33		√3)	√3)	√3)	√3)		√3)				
		EM4x35		√3)	√3)	√3)	√3)		√3)				
		HID iCLASS		√1)	√1)	√1)	√10)		√10)	√1)	√10)	√10)	√1)
		HID iCLASS SE/ SR/ Elite		√1)	√1)	√1)	√10)		√10)	√1)	√10)	√10)	√1)
		iCODE SLI		√	√	√	√		√				
		LEGIC Advant		√1)	√1)	√1)	√1)		√1)				
		M24LR16/64		√	√	√	√		√				
		MB89R118/119			√	√	√		√				
		SRF55Vxx (my-d vicinity)		√3)	√3)	√3)	√3)		√3)				
		Tag-it		√	√	√	√		√				
		Pico Pass		√1)	√4)	√4)	√4)		√4)				
		LEGIC Prime		√									
		CPU Card											

*To be released

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ARMATURA RFID Card Module Supporting List — ArmaSec-07022025

Frequency	Classification	Compatible Readers	[DF]	[SFMH]	[NO]	[NP]	[NI]	[NPL]	[NIH]	[RNP]	[RNI]	[RNIB]	[RNPB]
		Card Module Abbreviation	EP10C/ EP20C/ EP20CK/ EP20CQ/ EP20CKQ/ EP20ENC/ EP30 Series	EP10C/ EP20C/ EP20CK/ EP20CQ/ EP20CKQ/ EP20ENC/ EP30 Series/ VG10CKQ*	EP10C/ EP20ENC	EP10C/ EP20ENC	EP10C/EP20CQ/ EP20CKQ/ EP20ENC EP30 Series	EP10C	EP10C	OmniAC20/ OmniAC30/ EP20CQ*/ EP20CKQ*/ EP30 Series/ VG10CKQ*	OmniAC20/ OmniAC30/ EP20CQ*/ EP20CKQ*/ EP30 Series/ VG10CKQ*	OmniAC20/ OmniAC30	OmniAC20/ OmniAC30
125KHz		AWID			√	√	√	√					
		Cardax			√	√	√	√					
		CASI-RUSCO			√6)	√6)	√6)	√6)		√	√	√	√
		Deister			√6)	√6)	√6)	√6)					
		EM4100, 4102, 4200	√		√7)	√7)	√7)	√7)		√	√	√	√
		EM4050, 4150, 4450, 4550			√	√	√	√					
		EM4305			√	√	√	√					
		Ultra Prox			√	√	√	√					
		G-Prox				√6)	√6)	√6)					
		HID DuoProx II (1336)				√	√	√		√1)	√1)	√1)	√1)
		HID ISO Prox II (1386)				√	√	√		√1)	√1)	√1)	√1)
		HID Micro Prox II (1391)				√	√	√		√1)	√1)	√1)	√1)
		HID Prox III (1346)				√	√	√		√1)	√1)	√1)	√1)
		HID Prox				√	√	√		√1)	√1)	√1)	√1)
		HID Prox II (1326)				√	√	√		√1)	√1)	√1)	√1)
		HITAG 1, 2, S			√9)	√9)	√9)	√9)					
		ICT			√8)	√8)	√8)	√8)					
		IDTECK			√	√	√	√					
		Indala				√	√	√					
		ioProx				√	√						
		ISONAS			√	√	√	√					
		Keri			√	√	√	√					
		Miro			√	√	√	√					
		Nedap			√6)	√6)	√6)	√6)					
		Nexwatch				√	√	√					
		Pyramid			√	√	√	√					
		Q5			√	√	√	√					
		T5557, T5567, T5577			√	√	√	√					
		TITAN (EM4050)			√	√	√	√					
		UNIQUE			√	√	√	√					
		ZODIAC			√	√	√	√					
2.4GHz		BLE										Y*	Y*
	Availability	Globally Available		Y				Y	Y	Y	Y		
		Globally Available Except for U.S., E.U., Japan, Australia, Canada, U.K., Albania, Iceland, Liechtenstein, Monaco, North Macedonia, Norway, San Marino, Serbia, Switzerland, Turkey, and the United Kingdom	Y			Y	Y	Y					

√) UID only, customization upon request for reading encryption content
1) UID only
2) Read/ write (customisation) enhanced security features on request
3) Read/ write (customisation) in direct chip command mode
4) UID only, read/ write (customisation) on request
5) UID + read/ write (customisation) public area

6) Hash value only
7) Only emulation of 4100, 4102
8) On request
9) Without encryption
10) UID + PAC (CSN & Facility Code), read/ write(customisation) on request
11) In preparation

13) EV2/ EV3 supported as part of the EV1 downward compatibility
14) From FW V4.05
15) 134.2 kHz only
20) PAC (CSN & Facility Code), read/ write (customisation) on request

*The RNIB/ RNPB version is for devices that don't have built-in Bluetooth support. If the device already has Bluetooth Low Energy (BLE) built-in, then you don't need to use the RNIB/RNPB version.

The final interpretation of this data sheet belongs to Armatura LLC.

All information regarding the card formats supported by the RFID card modules are claimed by the provider(s) of the card modules. Armatura LLC accepts no liability.

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5. INSTALLATION AND CONFIGURATION

The EP20 series shall be installed and configured in accordance with the following requirements.

- The installation shall be carried out by qualified and experienced personnel in accordance with applicable codes, standards, and regulations.
- The controller shall be configured using the on-board webserver or through software provided by the manufacturer.
- The configuration shall include setting up access levels, user accounts, time schedules, and other relevant parameters.
- The controller shall be tested and commissioned to ensure proper operation and compliance with the specified requirements.

6. WARRANTY AND SUPPORT

The EP20 series 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.

7. TRAINING AND DOCUMENTATION

The manufacturer shall provide the following training and documentation for the EP20 series.

·	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.