SECTION 28 13 00 – BIOMETRIC READER DEVICE

BioConnect® Arc Rex™ AI-Powered Facial Authentication Reader

Reference Engineering Specification

Based on BioConnect Arc Rex product documentation and published specifications.

This specification is intended for use by Architects and Engineers (A&E) as a basis-of-design biometric reader specification and may be adapted to suit project-specific requirements.

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for a compact, wall-mounted biometric facial recognition reader designed for use within a physical access control system (PACS).

B. Reader shall support AI-powered facial authentication and additional credential types while interfacing with an upstream Physical Access Control System (PACS).

C. Reader shall be suitable for indoor and outdoor installations, including harsh environmental, perimeter, and high-traffic locations.

1.2 SYSTEM DESCRIPTION

A. The biometric reader shall be a self-contained, network-capable facial authentication device performing on-device face template matching using embedded artificial intelligence.

B. The reader shall operate as a peripheral authentication device, presenting credential data to an access control panel or biometric middleware using standard physical-access signaling interfaces.

C. The reader shall support centralized enrollment, configuration, monitoring, and firmware management through manufacturer-supported software platforms.

1.3 PERFORMANCE REQUIREMENTS

A. Reader shall deliver fast and accurate facial authentication suitable for enterprise, data-center, and critical-infrastructure environments.

B. Reader shall support near-range facial authentication with recognition distances appropriate for controlled access points.

C. Reader shall incorporate live-face detection to mitigate spoofing using photographs, video replay, or other presentation attacks.

D. Reader shall maintain consistent authentication performance under varying lighting conditions and environmental factors.

1.4 SUBMITTALS

A. Manufacturer product data and technical specifications for the biometric reader.

B. Installation instructions, wiring diagrams, and mounting details.

C. Environmental ratings, impact resistance, and regulatory compliance certifications.

D. Supported credential technologies and interface formats.

1.5 QUALITY ASSURANCE

A. Manufacturer shall specialize in enterprise-grade biometric authentication devices utilizing AI-based recognition technologies.

B. Reader shall be listed and tested for use in commercial and critical-infrastructure access control installations.

C. Reader firmware, biometric algorithms, and AI models shall be supplied and maintained by the original equipment manufacturer.

1.6 WARRANTY AND SUPPORT

A. Biometric reader shall be covered by the manufacturer’s standard hardware warranty.

B. Manufacturer shall provide ongoing technical support, software updates, and firmware upgrades.

PART 2 – PRODUCTS

2.1 BIOMETRIC FACIAL AUTHENTICATION READER

A. Basis of Design: **BioConnect Arc Rex**™ AI-powered facial authentication reader.

B. Manufacturer: BioConnect (or approved equal).

2.2 AUTHENTICATION AND CREDENTIAL FEATURES

A. Reader shall support the following authentication methods:

1. Facial recognition with on-device AI processing.
2. Contactless smart card credentials.

B. Reader shall support multi-factor authentication, including face-only or face-plus-card operation.

C. Reader shall provide user feedback through multi-color LED indicators and audible annunciation.

2.3 FACIAL RECOGNITION TECHNOLOGY

A. Reader shall utilize an integrated camera and AI processing engine for facial template acquisition and matching.

B. Facial template matching shall be performed locally at the device without reliance on real-time cloud processing.

C. Reader shall support industry-recognized facial biometric standards and secure template storage.

D. Reader shall include live-face detection to prevent spoofing using printed images, digital displays, or recorded media.

2.4 PROCESSING AND MEMORY

A. Reader shall include an embedded multi-core processor with an integrated AI acceleration engine suitable for high-speed facial recognition.

B. Reader shall include onboard memory sufficient to support enterprise-scale facial templates, credential data, and event logs.

2.5 INTERFACES AND COMMUNICATIONS

A. Reader shall support the following interfaces:

1. Ethernet (10/100 Mbps) for TCP/IP communication.
2. Wiegand input and output.
3. RS-485 communications supporting host or slave configurations, including OSDP.
4. Relay output for door hardware control.

B. Reader shall support deployment in:

1. Network-connected biometric architectures, and
2. Panel-connected reader architectures using standard access control signaling formats.

2.6 ELECTRICAL REQUIREMENTS

A. Reader shall operate on low-voltage DC power supplied by a listed and regulated power source.

B. Reader shall support Power over Ethernet (PoE) where specified by the manufacturer.

C. Relay outputs shall be suitable for interfacing with electric strikes, magnetic locks, and access-controlled hardware via external power supplies.

2.7 ENVIRONMENTAL AND DURABILITY REQUIREMENTS

A. Reader enclosure shall be rated **IP67** for protection against dust and water ingress.

B. Reader shall provide vandal-resistant protection with an impact rating of **IK09** or better.

C. Reader shall be designed for reliable operation across exterior temperature and humidity ranges.

2.8 PHYSICAL CHARACTERISTICS

A. Reader shall be a compact, mullion-mount or surface-mount device with a modern, low-profile form factor.

B. Reader enclosure shall be constructed of durable, impact-resistant materials suitable for exterior installations.

C. Reader shall incorporate an internal tamper switch to detect unauthorized removal or opening.

2.9 SYSTEM COMPATIBILITY

A. Reader shall be compatible with enterprise PACS platforms through direct panel interface or biometric middleware, including but not limited to:

1. Genetec Security Center.
2. Software House C•CURE 9000.
3. LenelS2 OnGuard / NetBox.
4. AMAG Symmetry.
5. Acre Security (Open Options and RS2).
6. Brivo.
7. Other systems supporting standard reader interfaces.

B. Reader shall not require proprietary access-control panels when standard signaling interfaces are used.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install reader in accordance with manufacturer installation instructions, mounting templates, and applicable codes.

B. Position reader to ensure proper facial capture distance and unobstructed user approach.

C. Provide weather-sealed mounting and conduit terminations for exterior installations.

3.2 CONFIGURATION

A. Configure reader communication protocol to match system design (network, Wiegand, RS-485, or OSDP).

B. Configure authentication modes, LED indicators, timeouts, and relay operation per project requirements.

C. Integrate reader into centralized facial enrollment and management systems where applicable.

3.3 TESTING AND COMMISSIONING

A. Verify facial recognition accuracy, speed, and liveness detection.

B. Verify credential presentation and signaling to the PACS.

C. Verify tamper detection, environmental sealing, and door hardware operation.

3.4 TRAINING AND HANDOVER

A. Provide administrator and technician training on facial enrollment workflows and reader operation.

B. Deliver as-built documentation, configuration records, and manufacturer manuals to the Owner.

END OF SECTION 28 13 00 – BIOMETRIC READER (BIOCONNECT ARC REX)