**Access Controller Specification**

**Manufacturer - Matrix Research Limited**

**Product Brand - ACX**

1. Integrated Access Control System Software
2. Architecture
3. Windows-based application which can run on WIN 10/ Windows Server 2020 or higher version.
4. Server Program is a service in the PC/Server, once the PC/Server is restarted, the server program will run automatically.
5. Software has multi-language features. English, Traditional Chinese, and Simplify Chinese are a MUST.
6. Users can online change the software text content.
7. The maximum number of concurrent user logins will be under control.
8. Same database for storing Facial templates, Palm Vein templates, Fingerprint templates, mobile virtual cards, and physical card numbers.
9. Same software interface for managing Facial, Palm Vein, Virtual Card registration, fingerprint, mobile virtual card, and access control distribution.
10. The access control system shall be integrated with the Virtual Card Platform.
11. Communication
12. Server program uses a multi-threading programming technique, which direct communication to access the control panel on an Ethernet cable, real-time response.
13. TCP/IP communication.
14. Data Security
15. User-defined 128 bits master key in Server and Panel for data encryption.
16. A unique 192 bits random key is generated per data transmission.
17. In the Data encryption method, the master key encrypts the random key, random key encrypts the exchanged data during communication.
18. AES128 and 3DES Algorithm mixed.
19. Database requirement
20. MS SQL 2019 or above
21. Application user authority
22. Password protection
23. Application’s access can be filtered by View / Add / Edit / Delete
24. User data access can be filtered
25. Access panel access can be filtered
26. Event status can be filtered
27. Event acknowledge can be filtered
28. Reporting
29. All kinds of reports can be viewed on-screen and sent to the printer
30. Report can export to TEXT, EXCEL & PDF files.
31. Email Service
32. User can receive alarm records by email
33. User can receive their daily access record by email
34. Supervisor can view group users’ access reports and different kinds of time attendance reports by email
35. Access control system
36. Real-time upload parameters to panels
37. Client software can read controller and reader parameters instantly.
38. Controller and reader parameters can be defined by global or by individual
39. Door Group
	* + Allow 10,000 door groups set up
		+ Card access per door of its time zone can be classified by different door group
		+ Door group can be assigned to the department
40. Fire Alarm Group
	* + Allow 255 fire alarm groups for any combination of the door lock released when the fire alarm is triggered
41. Cardholder management
42. Provide Import and Export data tools for 3rd party data integration
43. Cardholder access rights can be selected by department or door group
44. Software can define 1,000+ suspected cardholder groups for instant enable or disable their access rights
45. Cardholder access rights can be defined by door group or by department
46. Staff management
47. Provide Import and Export data tools for 3rd party data integration
48. Online capture of a personal photo, palm vein, fingerprint biometric templates
49. Print staff badge
50. Time zone control
51. Each time zone has 4 intervals per day, Mon to Sun & Holiday
52. 100 Holiday dates per door access control panel
53. 10,000+ door access time zone in the database, 80 door time zones per door access control panel
54. Password time zone
55. Electric Lock release time zone
56. Twin card operation time zone
57. Release button time zone
58. Door opens too long time zone
59. Alarm time zone
60. Twin card operation
61. Twin card operation with time zone control for high-security access control application.
62. Door access activated by the specified cardholder
63. The door is allowed for use before the specified card authorization
64. Power Monitoring
65. A.C. power failure monitoring
66. Backup failure monitoring (20% of full load)
67. Transaction and Events viewer
68. Global viewer for card access records and events
69. Individual / Multi viewer for card access records to the display card holder details information, e.g., Photo, etc.
70. Alarm viewer displays the live camera
71. Card access records filter by user, control panel, date and time, and access status.
72. Different sorting order, ascending or descending, all access record, only IN or OUT or First IN last OUT record.
73. Event records can be filtered by the control panel, date and time, and status.
74. Event records can be previewed and sent the file to the printer.
75. Export the file to EXCEL, text, and PDF
76. Event monitoring system
77. Each event can be defined by different icons
78. Software can define the device input normal status in NC or NO
79. Action taken can be assigned to each device input when the alarm triggered
80. Action items as like as Acknowledgment requested, door open by the fire alarm, enabling surveillance integration, signal integration with third-party BMS, and playing music etc.
81. PoE+ Networked Single Door Access Panel
82. Architecture
83. PoE+ TCP/IP-based single door panel
84. The overall power consumption is 30W, max. 17W power reserves for E-Lock.
85. Wiring method: Cat 5 cable for the panel to PoE+ switch
86. Communication
87. PC to Panel, TCP/IP communication
88. Scramble data encryption during PC/Server to panel data exchanges through the network cable
89. Panel to the reader, Wiegand or scramble RS485 data encryption
90. Active upload for swipe card records and events
91. Data Security
92. Apply scramble data encryption methodology during data exchange
93. 128 bits user master key on PC, Panel, and Reader
94. 192 bits random key auto-generated per communication
95. Master key encrypts random key, random key encrypts data exchanges between PC and Panel, Panel and Reader
96. AES 128 & 3 DES mixed Algorithm
97. Reader supports
98. 1 x IN and 1 x OUT for single door panel
99. Supports scramble RS485 reader
100. Support multi-technology reader Card reader (e.g., Facial + Palm Vein + QR + Bluetooth + 13.56MHz contactless smartcard, Facial + QR + Bluetooth + 13.56MHz contactless smartcard, Palm Vein+ QR + Bluetooth + 13.56MHz contactless smartcard, Keypad + QR + Bluetooth + 13.56MHz contactless smartcard and QR + Bluetooth + 13.56MHz contactless smartcard)
101. Card number format
102. Default 26 / 32/ 34 / 35 / 37 / 56 / 64 and three custom formats
103. Each card format can have three facility code
104. Support four card formats at the same time
105. Card number length, maximum 64 bits
106. Memory storage
107. Memory for cardholder
	* + Single-door controller
			- Allow storage of at least 40,000 sets of card numbers
108. Memory for transactions
	* + Single door controller: allow storage of at least 42,000 nos. of transactions
109. Events: allow storage of at least 800 nos. of events
110. Time zone control
111. Each time zone has 4 intervals per day, Mon to Sun & Holiday
112. 100 Holiday dates per door access control panel
113. 10,000+ Door access time zone in the database, 80 time zones per door access control panel
114. Password time zone
115. Electric Lock release time zone
116. Twin card operation time zone
117. Release button time zone
118. Door opens too long time zone
119. Alarm time zone
120. LCD reader message time zone
121. Fire Alarm
122. Panel AUX #1 for fire alarm input
123. 255 fire alarm groups per panel
124. Firm alarm signal broadcasts through the network card, no need through the PC server
125. Twin card operation
126. Twin card operation with time zone control for high-security access control application. E.g., Car park system, treasury application.
127. Anti-pass back
128. Single door panel (single anti-passback)
129. Device Inputs
130. Auto detect end-of-line resistors installed or not, if yes, enable supervised monitoring
131. Supervised monitoring needs end-of-line resistors, 1K ohm + 1K ohm
132. Door release button (Normal Open)
133. Door Sensor (Normal close)
134. Panel temper box sensor (Normal Close)
135. 2 x AUX inputs
	* + Normal mode can be defined by N.O. or N.C.
		+ Fire alarm signal, broadcast release E-Lock command instantly through the network cable
		+ Non-fire signal depends on COM server command configuration
136. Device Outputs
137. Access granted output for E-Lock operation. 12VDC, 10A Relay (N.O. / N.C.)
138. Alarm output. 12VDC, 5A Reply (N.O. / N.C.)
139. Door Ajar. 5VDC, 10mA output
140. High-Security Key Switch
141. Tamper proof for the E-Lock override
142. Tamper proof for short circuit or open circuit of the exposed key switch’s wires
143. Expand RS485 port
144. 2 x RS485 port
145. High-level data exchange with a third-party system
146. 2 x Auxiliary input
147. Auxiliary input # 1 – Fire alarm trigger then auto release E-Lock
148. Auxiliary input # 2 – Trigger alarm relay
149. Networked Door Access Panel
	* 1. Architecture
150. TCP/IP-based network control panel
151. Built-in two LAN ports
152. Wiring method: Cat 5 cable for the panel to a network switch or panel-to-panel (daisy chain)
153. Communication
154. PC to Panel, TCP/IP communication
155. Scramble data encryption during PC-to-panel data exchanges through a network cable
156. Panel to the reader, Wiegand or scramble RS485 data encryption
157. Active upload for swipe card records and events
158. Data Security
159. Apply scramble data encryption methodology during data exchange
160. 128 bits user master key on PC, Panel, and Reader
161. 192 bits random key auto-generated per communication
162. Master key encrypts random key, random key encrypts data exchanges between PC and Panel, Panel and Reader
163. AES 128 & 3 DES mixed Algorithm
164. Reader supports
165. 1 x IN and 1 x OUT for single door panel
166. 2 x IN and 2 x OUT for two-door panel
167. Supports scramble RS485 reader
168. Support multi-technology reader Card reader (e.g., Facial + Palm Vein + QR + Bluetooth + 13.56MHz contactless smartcard, Facial + QR + Bluetooth + 13.56MHz contactless smartcard, Palm Vein+ QR + Bluetooth + 13.56MHz contactless smartcard, Keypad + QR + Bluetooth + 13.56MHz contactless smartcard and QR + Bluetooth + 13.56MHz contactless smartcard)
169. Card number format
170. Default 26 / 32/ 34 / 35 / 37 / 56 / 64 and three custom formats
171. Each card format can have three facility code
172. Support four card formats at the same time
173. Card number length, maximum 64 bits
174. Memory storage
175. Memory for the cardholder
	* + Single-door controller
			- Allow storage of at least 40,000 sets of card numbers only
		+ Two-door controller
			- Allow storage of at least 20,000 sets of card numbers only
176. Memory for transactions
	* + Single door controller: allow storage of at least 42,000 nos. of transactions
		+ Two-door controller: allow storage of at least 21,000 nos. of transactions
177. Events: allow storage of at least 800 nos. of events
178. Time zone control
179. Each time zone has 4 intervals per day, Mon to Sun & Holiday
180. 100 Holiday dates per door access control panel
181. 10,000+ Door access time zone in the database, 80 time zones per door access control panel
182. Password time zone
183. Electric Lock release time zone
184. Twin card operation time zone
185. Release button time zone
186. Door opens too long time zone
187. Alarm time zone
188. LCD reader message time zone
189. Fire Alarm
190. Panel AUX #1 for fire alarm input
191. 255 fire alarm groups per panel
192. Firm alarm signal broadcasts through the network card, no need through the PC server
193. Twin card operation
194. Twin card operation with time zone control for high-security access control application. E.g., Car park system, treasury application.
195. Anti-pass back
196. Single door panel (single anti-passback)
197. Two-door panel (single or global anti-passback)
198. Global anti-passback, through the server.
199. Device Inputs
200. Auto detect end-of-line resistors were installed or not, if yes, enable supervised monitoring
201. Supervised monitoring needs end-of-line resistors, 1K ohm + 1K ohm
202. Door release button (Normal Open)
203. Door Sensor (Normal close)
204. Panel temper box sensor (Normal Close)
205. 2 x AUX inputs
	* + Normal mode can be defined by N.O. or N.C.
		+ Fire alarm signal, broadcast release E-Lock command instantly through the network cable
		+ Non-fire signal depends on COM server command configuration
206. Device Outputs
207. Access granted output for E-Lock operation. 12VDC, 10A Relay (N.O. / N.C.)
208. Alarm output. 12VDC, 5A Reply (N.O. / N.C.)
209. Door Ajar. 5VDC, 10mA output
210. High-Security Key Switch
211. Tamper proof for the E-Lock override
212. Tamper proof for short circuit or open circuit of the exposed key switch’s wires
213. Expand RS485 port
214. 2 x RS485 port
215. High-level data exchange with third-party system
216. 2 x Auxiliary input
217. Auxiliary input # 1 – Fire alarm trigger then auto release E-Lock
218. Auxiliary input # 2 – Trigger alarm relay

1. Networked Lift Control Master Panel
2. A multi-purpose device that provides an interface between field-level input, output devices, and a Lift application server
3. True IP device, support DHCP
4. Supports 2 sets of ACX readers.
5. Timezone controller for the lift floor access
6. 2 x LAN Port, allow daisy chain connection.
7. Dry contact supervised monitoring
8. User-defined NC / NO at normal mode
9. 2 x INPUTs for Manual key overwrite and Fire Alarm input
10. 28 x RELAY outputs for 28 Floors access, RELAY in 3A DC output
11. Panel installation depends on the IP address available
12. RS485 port for 8907 Lift control expansion panel
13. 12VDC input, 1A
14. Networked Lift Control Expansion Panel
15. Works with Networked Lift Control Master Panel
16. RS485 connection
17. User-defined NC / NO at normal mode
18. 38 x RELAY outputs for extra 38 Floors access, RELAY in 3A DC output
19. 12VDC input, 1A
20. Network Alarm Input Panel
21. 2 x LAN Port, allow daisy chain connection
22. Suitable for huge sensors monitoring
23. Dry contact supervised monitoring
24. User-defined NC / NO at normal mode
25. 28 Input Points, 2 RELAY 10A output per panel
26. Panel installation depends on the IP address available
27. Relay status triggered by 28 Inputs AND / OR program logic
28. RS485 port for proprietary device communication
29. 12VDC, 500mA
30. Controller Power Supply
31. The power supply box shall have a metal casing.
32. The power supply box shall have earth wiring.
33. The size of the power supply box shall be not more than 340mm(H) x 290mm(W) x 80mm(D).
34. The power supply box shall have 12VDC, 3A power supply output for ONE set of electric lock installed; and 5A power supply output for TWO sets of electric locks installed.
35. The power supply shall have a battery charging function, and the battery charging voltage is 13.8VDC
36. The power supply can output 0VDC or 5VDC voltage level to the controller to indicate the occurrence of the following events: -
37. AC. power failure
38. DC battery installed
39. backup battery power was lowered by 20%
40. A 7AH DC battery shall be included for a single E-Lock installed. In case of the AC power supply failure, assume the E-Lock power consumption is 12V 0.5ADC, the door access system can be operated for 4 hours.
41. A 9AH DC battery shall be included for a double E-Lock installed. In case of the AC power supply failure, assume the E-Lock power consumption is 12V 0.5ADC, the door access system can be operated for 3 hours.
42. Door emergency exit device (Resettable Call Point)
43. The resettable call point comes with a hinged front cover to prevent the unit from activating randomly.
44. Once the “PRESS HERE” button was pressed, the fail-safe type E-Lock power is cut off, and the door is released.
45. The call point can be reset by inserting a plastic key horizontally into the front panel of the resettable call point.
46. The call point unit shall have an LED light to identify the operation mode. RED, GREEN, BLUE, and mixed colors shall be assigned for normal mode and emergency exit mode.
47. The LED light of the call point is provided by the E-Lock power input, if the LED light is ON, the E-Lock power supply is normal and vice versa.
48. For emergency exit mode, the call point shall have a beep sound notification.
49. The LED and buzzer settings shall be operated by a DIP switch.
50. The call point shall have two set dry contact switches, one set for E-Lock power, and another set for signal output. The current rate of the switch is 5ADC under a 12VDC power supply.
51. The resettable call point shall have a voltage regulator to support E-Lock power in AC/DC, 12V/24V.

1. High-Security Override key switch and key switch controller
2. The High-security override key switch works with a key controller, no matter if the key switch has been tampered, the electric lock keeps the original lock status
3. One LED indicator on the key switch front plate: LED indicator in RED in normal operation, after key override, the LED indicator changes to GREEN. Once the key switch has been tampered with, the LED indicator goes off.
4. If the key switch has been tampered with, no matter short-circuits or cuts the wires between the key switch and key switch controller, the electric lock status remains unchanged.
5. Reset the button in the key switch controller which to activate the key switch function
6. The key cylinder shall have a master operation key that can open all high-security override key switches, the master key built in a small movable pellet that cannot be physically duplicated excludes the original cylinder supplier.
7. Minimum 3 sets of master keys shall be provided to the end customer.
8. The Key cylinder is by ABLOY PROTEC2, 1.7 billion key combinations