SOYAL

# 701Server MODBUS IO Mapping

Version 1.02

Date January 7, 2022

**Home Series (AR721H & 727HV3)**

Controller IO& Modbus IO Corresponding Mapping Table: DO

| DO-0 | | | |
|---|---|---|---|
| Pp | Controller Functions | Status | Value |
| 00 | Door Relay | On/Off | 1/0 |
| 01 | Alarm Relay | On/Off | 1/0 |
| 02 | | | 1/0 |
| 03 | | | 1/0 |
| 04 | | | 1/0 |
| 05 | | | 1/0 |
| 06 | | | 1/0 |
| 07 | | | |
| 08 | | | |
| 09 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

**Home Series (AR721H & 727HV3)**

Controller IO& Modbus IO Corresponding Mapping Table: DI

| DI-0 | | | |
|---|---|---|---|
| Pp | Controller Functions | Status | Value |
| 00 | Door Sensor | Open/Close | 1/0 |
| 01 | Arm Status | ARMING/Disarm | 1/0 |
| 02 | Egress | Close/Open | 1/0 |
| 03 | Alarm Status (Force or Open too long) | On/Off | |
| 04 | Door Open too Long | On/Off | |
| 05 | Force Open Alarm (Illegally Open Door) | On/Off | |
| 06 | Duress Alarm | On/Off | |
| 07 | | | |
| 08 | | | |
| 09 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | Online | Under Multi Door Control Panel | |

| | | | |
|---|---|---|---|
| | | AR-716E16 RS485 Connection Status | |

| | | | |
|---|---|---|---|
| 511 | Fire State | | 1/0 |

**Enterprise Series & AR-716-E16(AR-721Ev2)**

Controller IO Modbus IO Corresponding Mapping Table: DO

| Main | WG | | | | | | | Function | Status | Value |
|---|---|---|---|---|---|---|---|---|---|---|
| 256 | 272 | | | | | | | Door Relay | On/Off | 1/0 |
| 257 | 273 | | | | | | | Alarm Relay | On/Off | 1/0 |
| 258 | 274 | | | | | | | | | 1/0 |
| 259 | 275 | | | | | | | | | 1/0 |
| 260 | 276 | | | | | | | | | 1/0 |
| 261 | 277 | | | | | | | | | 1/0 |
| 262 | 278 | | | | | | | | | 1/0 |
| 263 | 279 | | | | | | | | On/Off | 1/0 |
| 264 | 280 | | | | | | | | | |
| 265 | 281 | | | | | | | | | |
| 266 | 282 | | | | | | | | | |
| 267 | 283 | | | | | | | | | |
| 268 | 284 | | | | | | | | | |
| 269 | 285 | | | | | | | | | |
| 270 | 286 | | | | | | | | | |
| 271 | 287 | | | | | | | | | |

**Enterprise Series & AR-716-E16(AR-721Ev2)**

Controller IO Modbus IO Corresponding Mapping Table: DI

| Main | WG | | | | | | | Function | Status | Value |
|---|---|---|---|---|---|---|---|---|---|---|
| 256 | 272 | | | | | | | Door Sensor | On/Off | 1/0 |
| 257 | 273 | | | | | | | Arm Status | On/Off | 1/0 |
| 258 | 274 | | | | | | | Egress | | 1/0 |
| 259 | 275 | | | | | | | Alarm Status (Force /Open too long) | | 1/0 |
| 260 | 276 | | | | | | | Door Open too Long | | 1/0 |
| 261 | 277 | | | | | | | Force Open Alarm | | 1/0 |
| 262 | 278 | | | | | | | Duress Alarm | | 1/0 |
| 263 | 279 | | | | | | | | On/Off | 1/0 |
| 264 | 280 | | | | | | | | | |
| 265 | 281 | | | | | | | | | |
| 266 | 282 | | | | | | | | | |
| 267 | 283 | | | | | | | | | |
| 268 | 284 | | | | | | | | | |
| 269 | 285 | | | | | | | | | |
| 270 | 286 | | | | | | | | | |
| 271 | 287 | | | | | | | On Line / Off Line | On/Off | 1/0 |

| | | | | |
|---|---|---|---|---|
| 511 | | Fire Alarm State | | 1/0 |

**Controller Wired under AR-716-E16(AR-721Ev2)**

Controller IO & Modbus IO Corresponding Mapping Table: DO

| Controller Node ID | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***01*** | ***02*** | ***03*** | ***04*** | ***05*** | ***06*** | ***07*** | ***08*** | Function | Status | Value |
| 0 | 16 | 32 | 48 | 64 | 80 | 96 | 112 | Door Relay | On/Off | 1/0 |
| 1 | 17 | 33 | 49 | 65 | 81 | 97 | 113 | Alarm Relay | On/Off | 1/0 |
| 2 | 18 | 34 | 50 | 66 | 80 | 98 | 114 | | | 1/0 |
| 3 | 19 | 35 | 51 | 67 | 83 | 99 | 115 | | | 1/0 |
| 4 | 20 | 36 | 52 | 68 | 84 | 100 | 116 | | | 1/0 |
| 5 | 21 | 37 | 53 | 69 | 85 | 101 | 117 | | | 1/0 |
| 6 | 22 | 38 | 54 | 70 | 86 | 102 | 118 | | | 1/0 |
| 7 | 23 | 39 | 55 | 71 | 87 | 103 | 119 | | | 1/0 |
| 8 | 24 | 40 | 56 | 72 | 88 | 104 | 120 | | | |
| 9 | 25 | 41 | 57 | 73 | 89 | 105 | 121 | | | |
| 10 | 26 | 42 | 58 | 74 | 90 | 106 | 122 | | | |
| 11 | 27 | 43 | 59 | 75 | 91 | 107 | 123 | | | |
| 12 | 28 | 44 | 60 | 76 | 92 | 108 | 124 | | | |
| 13 | 29 | 45 | 61 | 77 | 93 | 109 | 125 | | | |
| 14 | 30 | 46 | 62 | 78 | 94 | 110 | 126 | | | |
| 15 | 31 | 47 | 63 | 79 | 95 | 111 | 127 | | | |

**Controller Wired under AR-716-E16(AR-721Ev2)**

Controller IO & Modbus IO Corresponding Mapping Table: DO

| Controller Node ID | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***09*** | ***10*** | ***11*** | ***12*** | ***13*** | ***14*** | ***15*** | ***16*** | Function | Status | Value |
| 128 | 144 | 160 | 176 | 192 | 208 | 224 | 240 | Door Relay | On/Off | 1/0 |
| 129 | 145 | 161 | 177 | 193 | 209 | 225 | 241 | Alarm Relay | On/Off | 1/0 |
| 130 | 146 | 162 | 178 | 194 | 210 | 226 | 242 | | | 1/0 |
| 131 | 147 | 163 | 179 | 195 | 211 | 227 | 243 | | | 1/0 |
| 132 | 148 | 164 | 180 | 196 | 212 | 228 | 244 | | | 1/0 |
| 133 | 149 | 165 | 181 | 197 | 213 | 229 | 245 | | | 1/0 |
| 134 | 150 | 166 | 182 | 198 | 214 | 230 | 246 | | | 1/0 |
| 135 | 151 | 167 | 183 | 199 | 215 | 231 | 247 | | | 1/0 |
| 136 | 152 | 168 | 184 | 200 | 216 | 232 | 248 | | | |
| 137 | 153 | 169 | 185 | 201 | 217 | 233 | 249 | | | |
| 138 | 154 | 170 | 186 | 202 | 218 | 234 | 250 | | | |
| 139 | 155 | 171 | 187 | 203 | 219 | 235 | 251 | | | |
| 140 | 156 | 172 | 188 | 204 | 22 | 236 | 252 | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 141 | 157 | 173 | 189 | 205 | 221 | 237 | 253 | | | |
| 142 | 158 | 174 | 190 | 206 | 222 | 238 | 254 | | | |
| 143 | 159 | 175 | 191 | 207 | 223 | 239 | 255 | | | |

**Controller Wired under AR-716-E16(AR-721Ev2)**

Controller IO & Modbus IO Corresponding Mapping Table: DI

| Controller Node ID | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***01*** | ***02*** | ***03*** | ***04*** | ***05*** | ***06*** | ***07*** | ***08*** | Function | Status | Value |
| 0 | 16 | 32 | 48 | 64 | 80 | 96 | 112 | Door Sensor | Open/Close | 1/0 |
| 1 | 17 | 33 | 49 | 65 | 81 | 97 | 113 | Arm Status | Arm/Disarm | 1/0 |
| 2 | 18 | 34 | 50 | 66 | 80 | 98 | 114 | Egress | Close/Open | 1/0 |
| 3 | 19 | 35 | 51 | 67 | 83 | 99 | 115 | Alarm On (Force or Open too long) | On/Off | 1/0 |
| 4 | 20 | 36 | 52 | 68 | 84 | 100 | 116 | Door Open too Long | On/Off | 1/0 |
| 5 | 21 | 37 | 53 | 69 | 85 | 101 | 117 | Force Open Alarm | On/Off | 1/0 |
| 6 | 22 | 38 | 54 | 70 | 86 | 102 | 118 | Duress Alarm | On/Off | 1/0 |
| 7 | 23 | 39 | 55 | 71 | 87 | 103 | 119 | | | 1/0 |
| 8 | 24 | 40 | 56 | 72 | 88 | 104 | 120 | | | |
| 9 | 25 | 41 | 57 | 73 | 89 | 105 | 121 | | | |
| 10 | 26 | 42 | 58 | 74 | 90 | 106 | 122 | | | |
| 11 | 27 | 43 | 59 | 75 | 91 | 107 | 123 | | | |
| 12 | 28 | 44 | 60 | 76 | 92 | 108 | 124 | | | |
| 13 | 29 | 45 | 61 | 77 | 93 | 109 | 125 | | | |
| 14 | 30 | 46 | 62 | 78 | 94 | 110 | 126 | | | |
| 15 | 31 | 47 | 63 | 79 | 95 | 111 | 127 | RS485 Reader On Line / Off Line | On/Off | 1/0 |

**Controller Wired under AR-716-E16(AR-721Ev2)**

Controller IO & Modbus IO Corresponding Mapping Table: DI

| Controller Node ID | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***09*** | ***10*** | ***11*** | ***12*** | ***13*** | ***14*** | ***15*** | ***16*** | Function | Status | Value |
| 128 | 144 | 160 | 176 | 192 | 208 | 224 | 240 | Door Sensor | Open/Close | 1/0 |
| 129 | 145 | 161 | 177 | 193 | 209 | 225 | 241 | Arm Status | Arm/Disarm | 1/0 |
| 130 | 146 | 162 | 178 | 194 | 210 | 226 | 242 | Egress | Close/Open | 1/0 |
| 131 | 147 | 163 | 179 | 195 | 211 | 227 | 243 | Alarm On (Force or Open too long) | On/Off | 1/0 |
| 132 | 148 | 164 | 180 | 196 | 212 | 228 | 244 | Door Open too Long | On/Off | 1/0 |
| 133 | 149 | 165 | 181 | 197 | 213 | 229 | 245 | Force Open Alarm | On/Off | 1/0 |
| 134 | 150 | 166 | 182 | 198 | 214 | 230 | 246 | Duress Alarm | On/Off | 1/0 |
| 135 | 151 | 167 | 183 | 199 | 215 | 231 | 247 | | | 1/0 |
| 136 | 152 | 168 | 184 | 200 | 216 | 232 | 248 | | | |
| 137 | 153 | 169 | 185 | 201 | 217 | 233 | 249 | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 138 | 154 | 170 | 186 | 202 | 218 | 234 | 250 | | | |
| 139 | 155 | 171 | 187 | 203 | 219 | 235 | 251 | | | |
| 140 | 156 | 172 | 188 | 204 | 22 | 236 | 252 | | | |
| 141 | 157 | 173 | 189 | 205 | 221 | 237 | 253 | | | |
| 142 | 158 | 174 | 190 | 206 | 222 | 238 | 254 | | | |
| 143 | 159 | 175 | 191 | 207 | 223 | 239 | 255 | RS485 Reader On Line / Off Line | On/Off | 1/0 |

| | | | | |
|---|---|---|---|---|
| 511 | | Fire State | On/Off | 1/0 |

**AR-727CM-IO (TCP Port 1601)** IO & Modbus IO Mapping Table

| DO-0 | | | |
|---|---|---|---|
| Pp | Controller IO | Status | Value |
| 00 | DO-0 | On/Off | 1/0 |
| 01 | DO-1 | On/Off | 1/0 |
| 02 | DO-2 | On/Off | 1/0 |
| 03 | DO-3 | On/Off | 1/0 |
| 04 | DO-4 | On/Off | 1/0 |
| 05 | DO-5 | On/Off | 1/0 |
| 06 | DO-6 | On/Off | 1/0 |
| 07 | DO-7 | On/Off | 1/0 |
| 08 | | | |
| 09 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

| DI-0 | | | |
|---|---|---|---|
| Pp | Controller IO | Status | Value |
| 00 | DI-0 | Open/Close | 1/0 |
| 01 | DI-1 | Open/Close | 1/0 |
| 02 | DI-2 | Open/Close | 1/0 |
| 03 | DI-3 | Open/Close | 1/0 |
| 04 | DI-4 | Open/Close | 1/0 |
| 05 | DI-5 | Open/Close | 1/0 |
| 06 | DI-6 | Open/Close | 1/0 |
| 07 | DI-7 | Open/Close | 1/0 |
| 08 | | | |
| 09 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | Online | RS485 Reader On Line / Off Line | |

| | | | |
|---|---|---|---|
| 511 | Fire State | | 1/0 |

**AR403MO (RS-485)** IO & Modbus IO Mapping Table

| DO-0 | | | |
|---|---|---|---|
| Pp | Controller IO | Status | Value |
| 00 | DO-0 | On/Off | 1/0 |
| 01 | DO-1 | On/Off | 1/0 |
| 02 | DO-2 | On/Off | 1/0 |
| 03 | DO-3 | On/Off | 1/0 |
| 04 | | | |
| 05 | | | |
| 06 | | | |
| 07 | | | |
| 08 | | | |
| 09 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

| DI-0 | | | |
|---|---|---|---|
| Pp | Controller IO | Status | Value |
| 00 | DI-0 | Open/Close | 1/0 |
| 01 | DI-1 | Open/Close | 1/0 |
| 02 | DI-2 | Open/Close | 1/0 |
| 03 | DI-3 | Open/Close | 1/0 |
| 04 | | | |
| 05 | | | |
| 06 | | | |
| 07 | | | |
| 08 | | | |
| 09 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | Online | RS485 Connection Status | |

701ServerSQL Modbus Bridge Area Address Assignment (IO Address assignment)

701ServerSQL is built-in Modbus TCP to Modbus RTU bridge function. It can support 16 areas, 254 controllers per area and 4906 points per controller. Due to the Modbus IO Address does not have a partition field of Area, 701ServerSQL area code must be brought into the Modbus IO Address to fully utilize the area IO points with more than 10 million points.

The Formula is：Area Modbus IO Address = (Area Code) * 4096 + (Controller IO Address).

For example: The IO is in (Area):3，Controller Node ID :2，IO Number:251 add Area number will become IO Address:12539。

| Modus IO | Number Range | |
|---|---|---|
| Area | 0 ~ 15 | |
| Node ID | 1 ~ 254 | |
| IO Address | 0 ~ 4096 | 16 Bits |

IO Address Bit Mapping

| IO Address | 16 Bits Modbus Address | |
|---|---|---|
| Modbus Format | Bit 15~12 | Bits 11 ~00 |
| 701ServerSQL Format | Area Code | Modbus IO Address |