

SmartStix™

User Manual for the CsCAN Versions (HE550 or HE559) of:

- DQM601 DQM606
- DQM701 DQM706
- DIM610 DIM710
- DIQ811 DIQ816
- DQM602

Remote I/O for the OCS/RCS Family

For Electronic Information, see www.HornerOCS.com.

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1 Technical Support

For user manual updates and technical assistance, contact Technical Support:
 North America: (317) 916-4274 Europe: (+) 353-21-4321-266
 or visit our website at www.heapg.com or visit our website at www.horner-apg.com.

2 Installation / Safety

- a. All applicable codes and standards need to be followed in the installation of this product.
- b. For I/O wiring (discrete), use the following wire type or equivalent: Belden 9918, 18 AWG or larger.
- c. For detailed installation and programming information, refer to the Control Station Hardware Manual.



Warning: Consult user documentation.



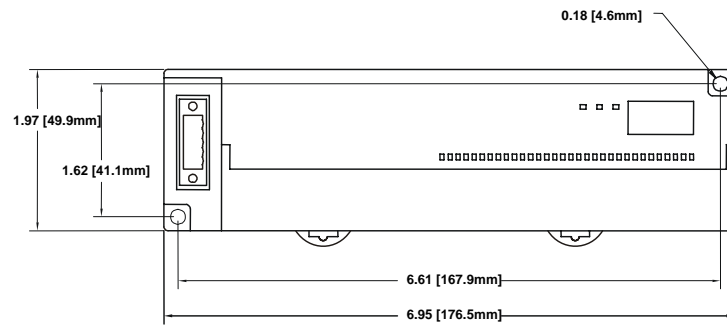
Warning: Electrical Shock Hazard.

3 Model Numbers

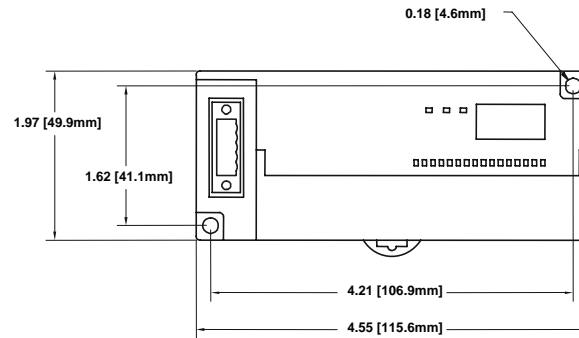
| Model Prefix | Description |
|-------------------------|--|
| HE550 | CsCAN model with non-removable terminal strip |
| HE559 | CsCAN model with removable terminal strip |
| Long or Short Dimension | Description |
| DIM610 (Short) | 16 DC Inputs (24VDC, positive/negative logic) |
| DIM710 (Long) | 32 DC Inputs (24VDC, positive/negative logic) |
| DQM601 / 606* (Short) | 16 DC Outputs (24VDC, negative logic, 0.5A) (Note: If using DQM601 with a non-removable terminal strip, the output rating is 0.1A.) (* DQM606 uses positive logic.) |
| DQM701 / 706** (Long) | 32 DC Outputs (24VDC, negative logic, 0.5A) (Note: If using DQM701 with a non-removable terminal strip, the output rating is 0.1A.) (** DQM706 uses positive logic.) |
| DQM602 (Long) | 16 Relay Outputs (250VAC, 30VDC, 2.0A) |
| DIQ811 / 816*** (Long) | 16 DC Inputs (24VDC, positive/negative logic) 16 DC Outputs (24VDC, negative logic, 0.5A) (Note: If using DIQ811 with a non-removable terminal strip, the output rating is 0.1A.) (*** DIQ816 uses positive logic.) |

4 Dimensions

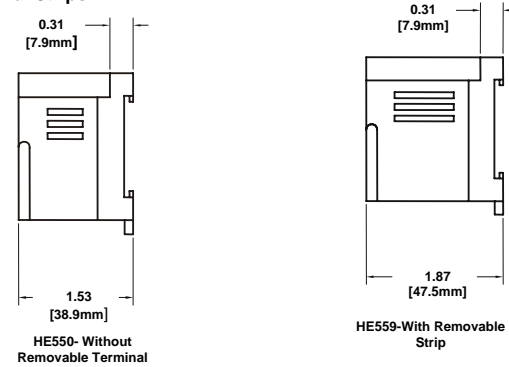
a. Long Dimensions
 SmartStix modules come in two sizes depending upon the model number. See Section 3 to determine if a module has long or short dimensions.



b. Short Dimensions



c. Terminal Strips



5 General Specifications

| General Specifications | | | |
|------------------------|--|--------------------------------|--------------------------------------|
| Storage Temperature | -25° to 70° C | Operating and Storage Humidity | 5 to 95% Non-condensing |
| Operating Temperature | 0° to 55° C | Pollution degree | 2 or lower |
| Atmosphere | Free from corrosive gases and excessive dust | Cooling method | Self-cooling |
| Vibration | | | |
| Occasional Vibration | | | |
| Frequency | Acceleration | Amplitude | Sweep Count |
| 10 ≤ f < 57 Hz | - | 0.075 mm | 10 times in each direction for X,Y,Z |
| 57 ≤ f ≤ 150 Hz | 9.8 m/s ² (1G) | - | |
| Continuous Vibration | | | |
| Frequency | Acceleration | Amplitude | Sweep Count |
| 10 ≤ f < 57 Hz | - | 0.035 mm | 10 times in each direction for X,Y,Z |
| 57 ≤ f ≤ 150 Hz | 4.9 m/s ² (0.5G) | - | |

| Shocks | | | | |
|--------------------------------|--|-------------------------|---|--|
| Maximum shock acceleration | 147 m/s ² (15G) | | | |
| Duration Time | 11 ms. | | | |
| Pulse Wave | Half sine wave pulse (3 times in each of X, Y, Z directions) | | | |
| Noise Immunity | | | | |
| Square wave impulse noise | AC: ± 1,500VDC DC: ± 900VDC | | | |
| Electrostatic Discharge | Voltage: 4kV (contact discharge) | | | |
| Radiated electromagnetic field | 27 – 500MHz, 10V/m | | | |
| Fast Transient Burst Noise | | | | |
| Severity level | All power modules | Digital I/Os (Ue < 24V) | Digital I/Os (Ue < 24 V) Analog I/Os Communication I/Os | |
| Voltage | 2 kV | 1 kV | 0.25 kV | |

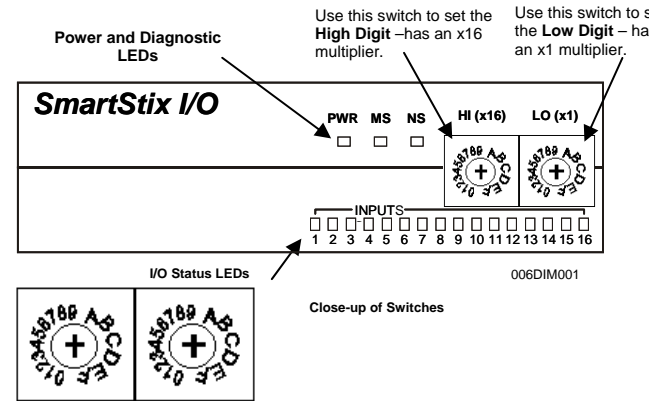
6 Network Cable

For detailed wiring information, refer to the Control Station Hardware Manual. A handy checklist is provided that covers panel box layout requirements and minimum clearances. See Section 1 for our web address.

| Color | Pin | Description | Recommended Cable | |
|-------|-----|---------------|------------------------------|--------------|
| RED | 1 | V+ | Thick: (Max Distance = 500m) | Belden 3082A |
| WHT | 2 | CAN_H | Thin: (Max Distance = 100m) | Belden 3084A |
| NC | 3 | No Connection | | |
| BLU | 4 | CAN_L | | |
| BLK | 5 | V- | | |

7 ID Switches (Setting CsCAN Network Ids)

CsCAN Network IDs are set using the hexadecimal number system from 01 to FD. The decimal equivalent is 1-253. Refer to Section 10, which shows the decimal equivalent of hexadecimal numbers. Set a unique Network ID by inserting a small Phillips screwdriver into the two identical switches. **Note:** The CsCAN Baud Rate for SmartStix I/O is fixed at 125KBaud



8 LEDs

a. Diagnostic LED Indicators

| Diagnostic LED | State | Meaning |
|---|----------------|--|
| MS: (indicates fault status of Module) | Solid Red | RAM or ROM test failed |
| | Blinking Red | I/O test failed |
| | Blinking Green | Module is in power-up state |
| NS: (indicates fault status of Network) | Solid Green | Module is running normally |
| | Solid Red | Network Ack or Dup ID test failed |
| | Blinking Red | Network ID test failed |
| | Blinking Green | Module is in Life Expectancy default state |
| | Solid Green | Network is running normally |

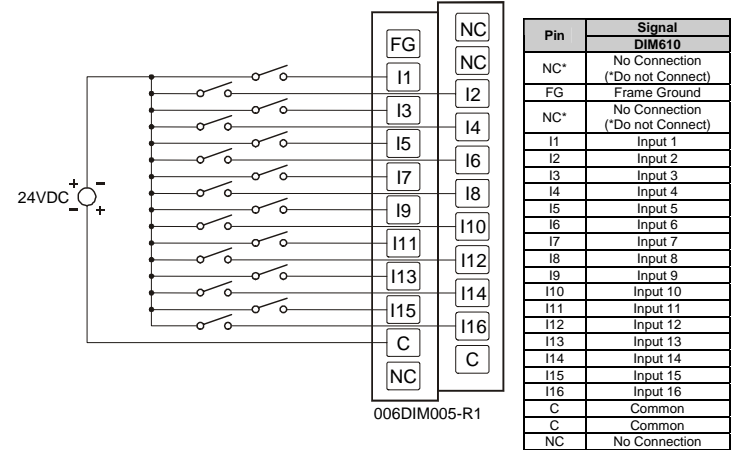
b. Status LED Indicators

The Power Status LED illuminates Red when power is applied to the module. There are I/O Status LED indicators for each of the Digital I/O points, which illuminate Red when an I/O point is ON.

9 SmartStix Modules

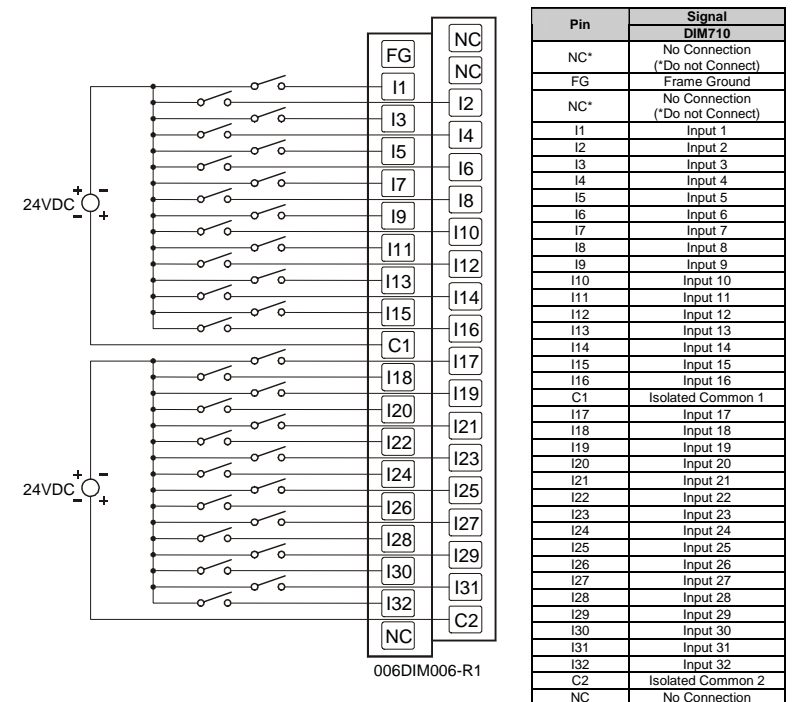
a. DIM610: 16 DC IN, Positive / Negative Logic

| DIM610 Specifications | | | |
|---------------------------------|---------------|----------------------|--|
| Number of input points | 16 | OFF to ON Response | 0 - 3ms. or less |
| Rated Input Current | 7mA | ON to OFF Response | 0 - 3ms. or less |
| ON Voltage Level | 19VDC or less | Common Terminal | 16 points / COM |
| OFF Voltage Level | 6VDC or less | Operating Indicator | LED turns on during ON state of input |
| Input Characteristics | Bidirectional | External Connections | Terminal block connector (M3 x 6 screws) |
| Isolation Method | Photo Coupler | Rated Voltage | 11 – 25 VDC |
| Rated Voltage | 11 – 25 VDC | Altitude for use | Up to 2,000m |
| Internal power Consumption (mA) | 200mA | Weight | 5.6 oz. (159 g) |



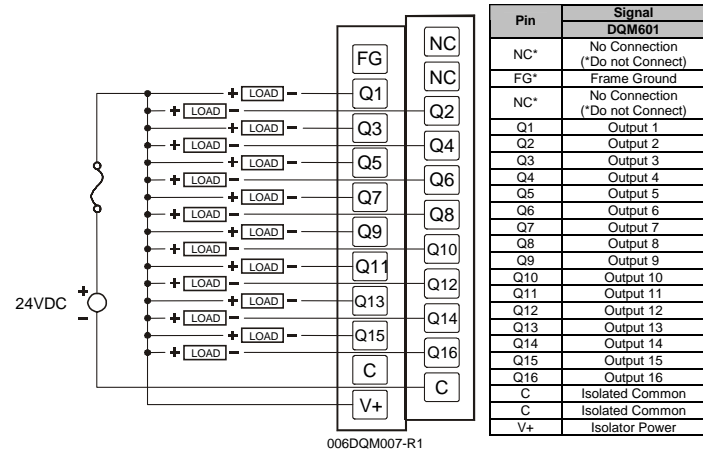
b. DIM710: 32VDC IN, Positive / Negative Logic

| DIM710 INPUTS | | | |
|---------------------------------|---------------|---------------------------------|--|
| Number of input points | 32 | OFF to ON Response | 0 - 3ms. or less |
| Rated Input Current | 7mA | ON to OFF Response | 0 - 3ms. or less |
| ON Voltage Level | 19VDC or less | Common Terminal | 16 points / COM |
| OFF Voltage Level | 6VDC or less | Operating Indicator | LED turns on during ON state of input |
| Isolation Method | Photo Coupler | External Connections | Terminal block connector (M3 x 6 screws) |
| Input Characteristics | Bidirectional | Rated Voltage | 11 – 25 VDC |
| Rated Voltage | 11 – 25 VDC | Internal power Consumption (mA) | 300 |
| Internal power Consumption (mA) | 300 | Weight | 8.36oz. (237 g) |

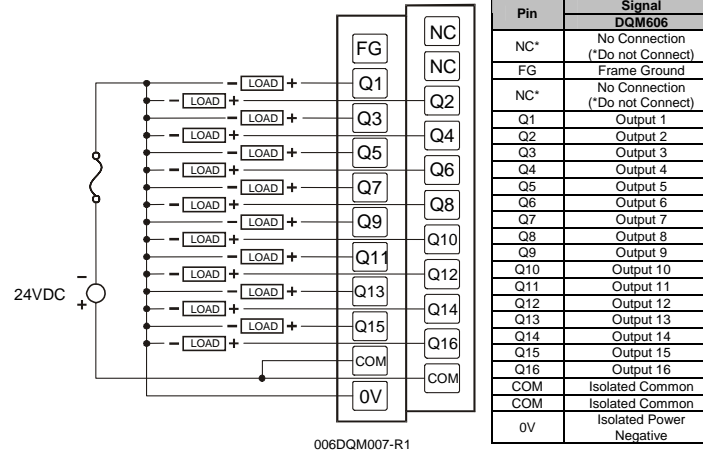


**c. DQM601: 16 DC OUT, Negative Logic
DQM606: 16 DC OUT, Positive Logic**

| DQM601 / DQM606 Outputs | | External Power Supply | Voltage | 24VDC ± 10% (ripple voltage: 4Vp-p or less) |
|--|---------------|-----------------------|--|---|
| Number of output points | 16 | | | |
| Commons per Module | 1 | | | |
| Operating Voltage | 24VDC | OFF to ON Response | 2ms. | |
| Rated Load Voltage | 24VDC | ON to OFF Response | 2ms. | |
| Max. Load Current per channel | DQM 601A | Output Type | Sinking | |
| | •DQM 601B | | | |
| | •DQM 606 | | | |
| OFF Leakage Current | 0.1mA or less | Common Method | 16 points / COM | |
| Max. Inrush Current per channel | DQM 601 | Operating Indicator | LED turns on during ON state of output | |
| | DQM 606 | | | |
| Maximum Voltage Drop during ON circuit | DQM 601 | External connections | Terminal block connector (M3 x 6 screws) | |
| | DQM 606 | | | |
| Rated Voltage | 11 – 25 VDC | Isolation methods | Photo Coupler | |
| Internal power Consumption (mA) | DQM 601 | Weight | DQM 601 | |
| | DQM 606 | | | |
| | 280 | | 5.7 oz. (161g) | |
| | | | DQM 606 | |
| | | | 6.7 oz. (191g) | |



006DQM007-R1



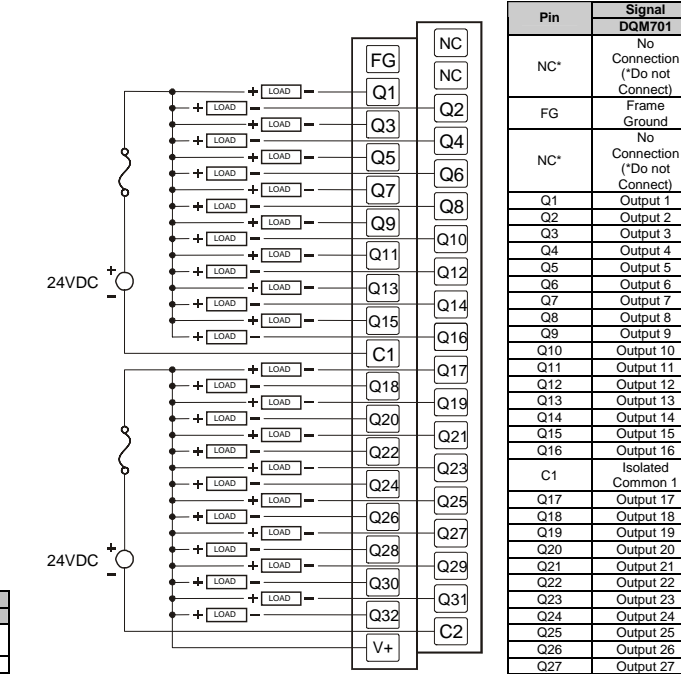
006DQM007-R1

| Pin | Signal |
|-----|---------------------------------|
| NC* | No Connection (*Do not Connect) |
| FG* | Frame Ground |
| NC* | No Connection (*Do not Connect) |
| Q1 | Output 1 |
| Q2 | Output 2 |
| Q3 | Output 3 |
| Q4 | Output 4 |
| Q5 | Output 5 |
| Q6 | Output 6 |
| Q7 | Output 7 |
| Q8 | Output 8 |
| Q9 | Output 9 |
| Q10 | Output 10 |
| Q11 | Output 11 |
| Q12 | Output 12 |
| Q13 | Output 13 |
| Q14 | Output 14 |
| Q15 | Output 15 |
| Q16 | Output 16 |
| C | Isolated Common |
| C | Isolated Common |
| V+ | Isolator Power |

| Pin | Signal |
|-----|---------------------------------|
| NC* | No Connection (*Do not Connect) |
| FG | Frame Ground |
| NC* | No Connection (*Do not Connect) |
| Q1 | Output 1 |
| Q2 | Output 2 |
| Q3 | Output 3 |
| Q4 | Output 4 |
| Q5 | Output 5 |
| Q6 | Output 6 |
| Q7 | Output 7 |
| Q8 | Output 8 |
| Q9 | Output 9 |
| Q10 | Output 10 |
| Q11 | Output 11 |
| Q12 | Output 12 |
| Q13 | Output 13 |
| Q14 | Output 14 |
| Q15 | Output 15 |
| Q16 | Output 16 |
| COM | Isolated Common |
| COM | Isolated Common |
| 0V | Isolated Power Negative |

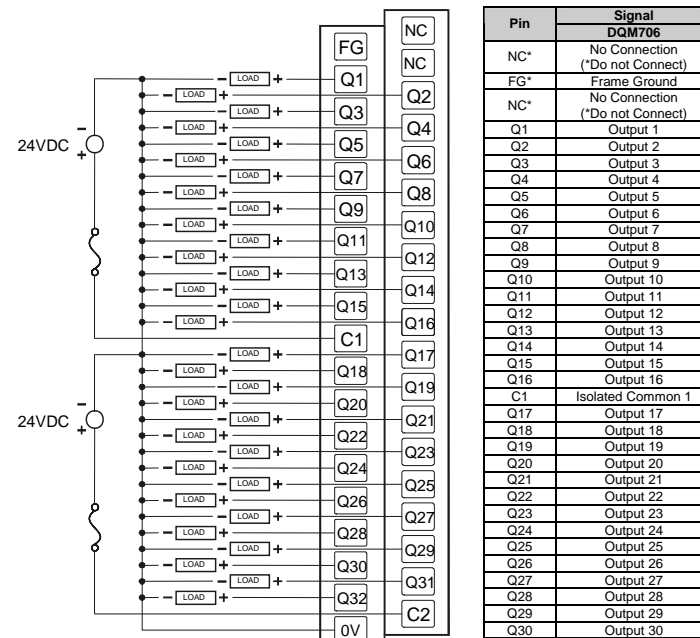
**d. DQM701: 32 DC OUT, Negative Logic
DQM706: 32 DC OUT, Positive Logic**

| DQM701 / 706 Outputs | | External Power Supply | Voltage | 24VDC ± 10% (ripple voltage: 4Vp-p or less) |
|--|---------------|-----------------------|--|---|
| Number of output points | 32 | | | |
| Commons per Module | 2 | | | |
| Operating Voltage | 24VDC | OFF to ON Response | 2ms. | |
| Rated Load Voltage | 24VDC | ON to OFF Response | 2ms. | |
| Max. Load Current per channel | DQM 701 | Output Type | Sinking | |
| | DQM 706 | | | |
| | | | | |
| OFF Leakage Current | 0.1mA or less | Common Method | 16 points / COM | |
| Max. Inrush Current per channel | DQM 701 | Operating Indicator | LED turns on during ON state of output | |
| | DQM 706 | | | |
| Maximum Voltage Drop during ON circuit | DQM 701 | External connections | Terminal block connector (M3 x 6 screws) | |
| | DQM 706 | | | |
| Rated Voltage | 11 – 25 VDC | Isolation methods | Photo Coupler | |
| Internal power Consumption (mA) | DQM701 | Weight | DQM701 | |
| | DQM706 | | | |
| | 340 | | 8.47 (240g) | |
| | 380 | | DQM706 | |
| | | | 10.22 (290g) | |



Note: For proper operation, C1 and C2 must be tied together.

| Pin | Signal |
|-----|---------------------------------|
| NC* | No Connection (*Do not Connect) |
| FG | Frame Ground |
| NC* | No Connection (*Do not Connect) |
| Q1 | Output 1 |
| Q2 | Output 2 |
| Q3 | Output 3 |
| Q4 | Output 4 |
| Q5 | Output 5 |
| Q6 | Output 6 |
| Q7 | Output 7 |
| Q8 | Output 8 |
| Q9 | Output 9 |
| Q10 | Output 10 |
| Q11 | Output 11 |
| Q12 | Output 12 |
| Q13 | Output 13 |
| Q14 | Output 14 |
| Q15 | Output 15 |
| Q16 | Output 16 |
| C1 | Isolated Common 1 |
| Q17 | Output 17 |
| Q18 | Output 18 |
| Q19 | Output 19 |
| Q20 | Output 20 |
| Q21 | Output 21 |
| Q22 | Output 22 |
| Q23 | Output 23 |
| Q24 | Output 24 |
| Q25 | Output 25 |
| Q26 | Output 26 |
| Q27 | Output 27 |
| Q28 | Output 28 |
| Q29 | Output 29 |
| Q30 | Output 30 |
| Q31 | Output 31 |
| Q32 | Output 32 |
| C2 | Isolated Common 2 |
| V+ | Isolator Power |

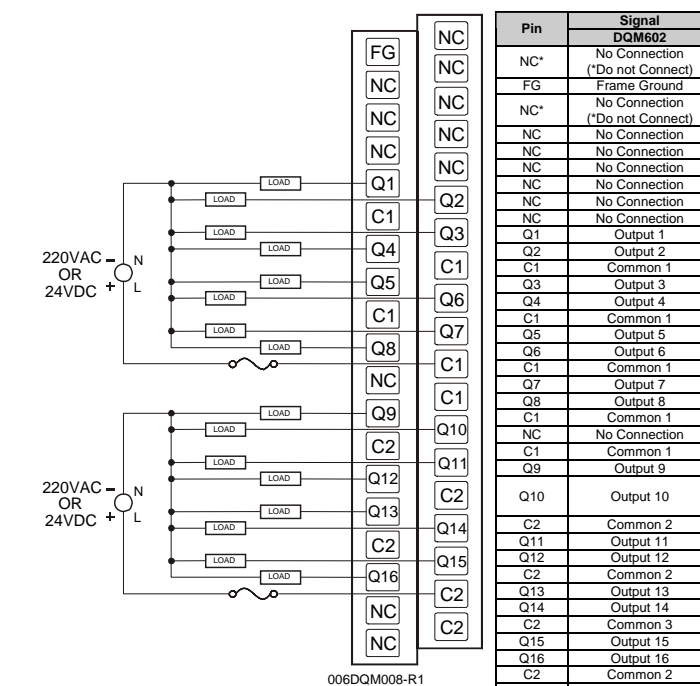


Note: If desired, C1 and C2 can use a single supply.

| Pin | Signal |
|-----|---------------------------------|
| NC* | No Connection (*Do not Connect) |
| FG* | Frame Ground |
| NC* | No Connection (*Do not Connect) |
| Q1 | Output 1 |
| Q2 | Output 2 |
| Q3 | Output 3 |
| Q4 | Output 4 |
| Q5 | Output 5 |
| Q6 | Output 6 |
| Q7 | Output 7 |
| Q8 | Output 8 |
| Q9 | Output 9 |
| Q10 | Output 10 |
| Q11 | Output 11 |
| Q12 | Output 12 |
| Q13 | Output 13 |
| Q14 | Output 14 |
| Q15 | Output 15 |
| Q16 | Output 16 |
| C1 | Isolated Common 1 |
| Q17 | Output 17 |
| Q18 | Output 18 |
| Q19 | Output 19 |
| Q20 | Output 20 |
| Q21 | Output 21 |
| Q22 | Output 22 |
| Q23 | Output 23 |
| Q24 | Output 24 |
| Q25 | Output 25 |
| Q26 | Output 26 |
| Q27 | Output 27 |
| Q28 | Output 28 |
| Q29 | Output 29 |
| Q30 | Output 30 |
| Q31 | Output 31 |
| Q32 | Output 32 |
| C2 | Isolated Common 2 |
| 0V | Isolated Power Negative |

e. DQM602: 16 RELAY OUTPUTS

| DQM602 Relay Outputs | | Minimum load voltage / current | 5VDC / 1mA |
|---------------------------------|---------------|--------------------------------|-----------------|
| Number of output points | 16 | | |
| Commons per Module | 2 | OFF to ON Response | 10ms. Max. |
| Rated Load Voltage | 24VDC, 220VAC | ON to OFF Response | 12ms. Max. |
| Rated Voltage | 11 – 25 VDC | Output Type | N.O. |
| Internal power Consumption (mA) | 550mA | Weight | 9.91oz. (281 g) |



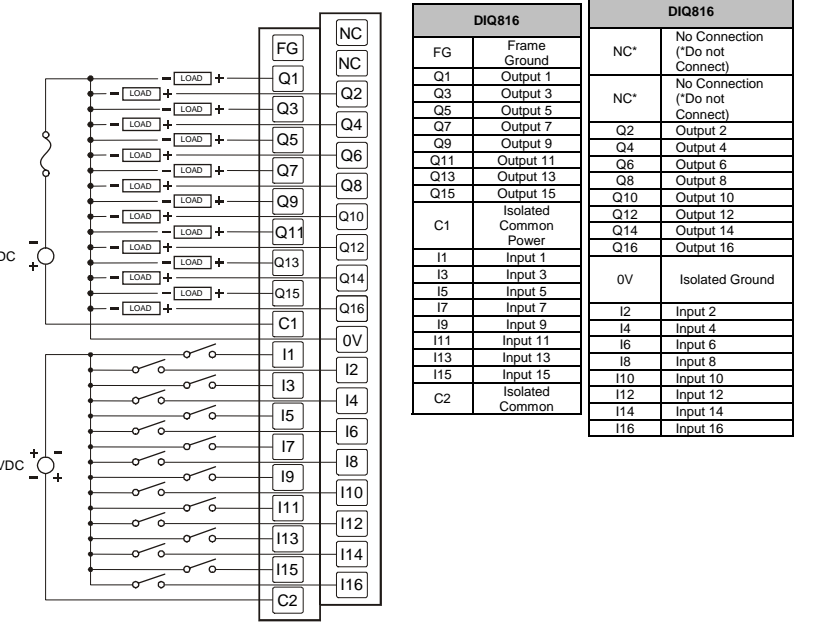
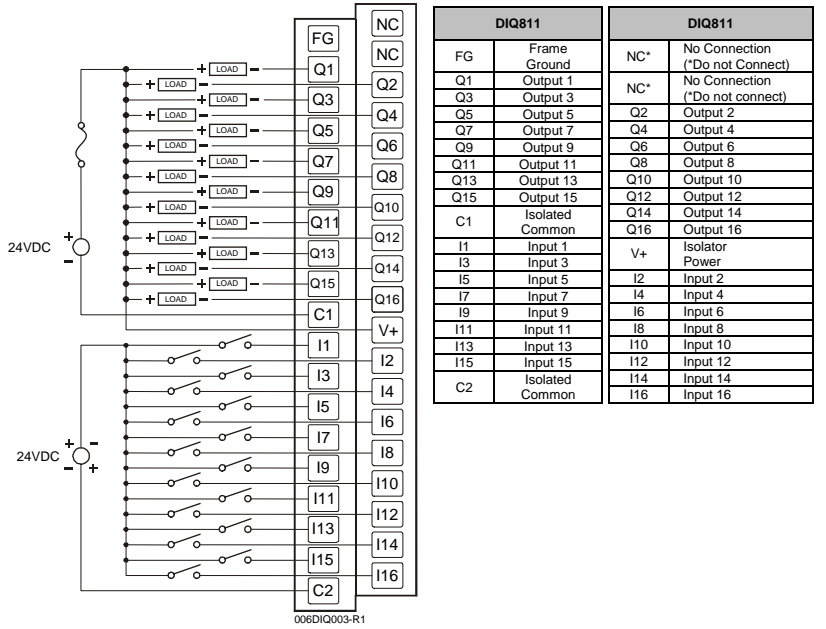
Warning: To protect the module and associated wiring from load faults, use external fuse (5 A) as shown.

Warning: Connecting high voltage to any I/O pin may cause high voltage to appear at other I/O pins.

Warning: Wiring the line side of the AC source to loads connected to outputs 0 through 15 and the neutral side of the AC source to the output common(s) would create a Negative Logic condition, which may be considered an unsafe practice.

**f. DIQ811: 16 DC IN, Positive/Negative / 16 DC OUT, Negative Logic
DIQ816: 16 DC IN, Positive / 16 DC OUT, Positive Logic**

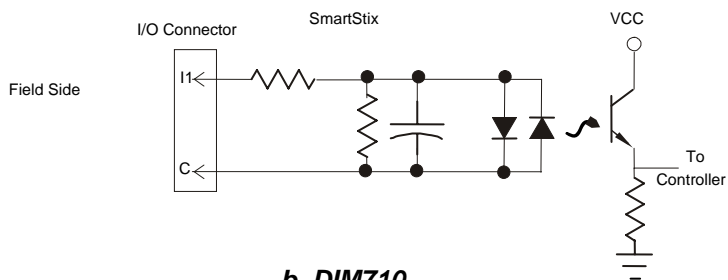
| DIQ811 / 816 IN | | External Power Supply | Voltage | 24VDC ± 10% (ripple voltage: 4Vp-p or less) |
|---------------------------------|---------------|-----------------------|--|---|
| Number of input points | 16 | | | |
| Commons per Module | 1 | | | |
| Operating Voltage | 24VDC | OFF to ON Response | 2ms. | |
| Rated Load Voltage | 24VDC | ON to OFF Response | 2ms. | |
| OFF Leakage Current | 0.1mA or less | Common Method | 16 points / COM | |
| Max. Inrush Current per channel | DIQ811 | Operating Indicator | LED turns on during ON state of input | |
| | DIQ816 | | | |
| Internal power Consumption (mA) | DIQ811 | External Connections | Terminal block connector (M3 x 6 screws) | |
| | DIQ816 | | | |
| Rated Voltage | 11 – 25 VDC | Isolation methods | Photo Coupler | |
| Common Method | DIQ811 | Weight | DIQ811 | |
| | DIQ816 | | | |
| | 300 | | 8.40 oz. (238 g) | |
| | 350 | | DIQ816 | |
| | | | 10.16 oz. (288 g) | |



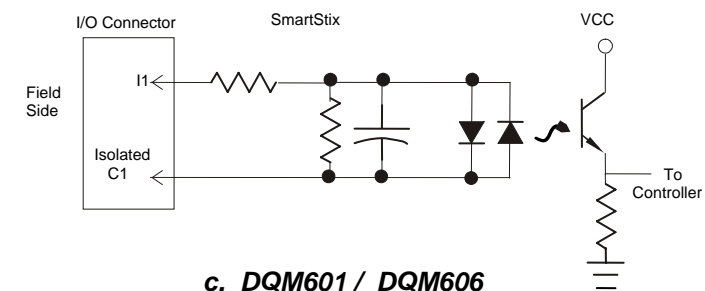
| Pin | Signal |
|-----|---------------------------------|
| NC* | No Connection (*Do not Connect) |
| FG | Frame Ground |
| NC* | No Connection (*Do not Connect) |
| Q1 | Output 1 |
| Q2 | Output 2 |
| Q3 | Output 3 |
| Q4 | Output 4 |
| Q5 | Output 5 |
| Q6 | Output 6 |
| Q7 | Output 7 |
| Q8 | Output 8 |
| Q9 | Output 9 |
| Q10 | Output 10 |
| Q11 | Output 11 |
| Q12 | Output 12 |
| Q13 | Output 13 |
| Q14 | Output 14 |
| Q15 | Output 15 |
| Q16 | Output 16 |
| C1 | Isolated Common Power |
| I1 | Input 1 |
| I2 | Input 2 |
| I3 | Input 3 |
| I4 | Input 4 |
| I5 | Input 5 |
| I6 | Input 6 |
| I7 | Input 7 |
| I8 | Input 8 |
| I9 | Input 9 |
| I10 | Input 10 |
| I11 | Input 11 |
| I12 | Input 12 |
| I13 | Input 13 |
| I14 | Input 14 |
| I15 | Input 15 |
| I16 | Input 16 |
| C2 | Isolated Common |

10 Internal Wiring

a. DIM610

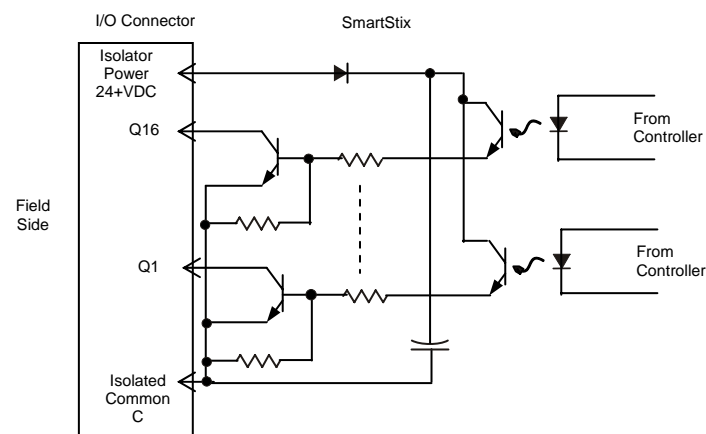


b. DIM710

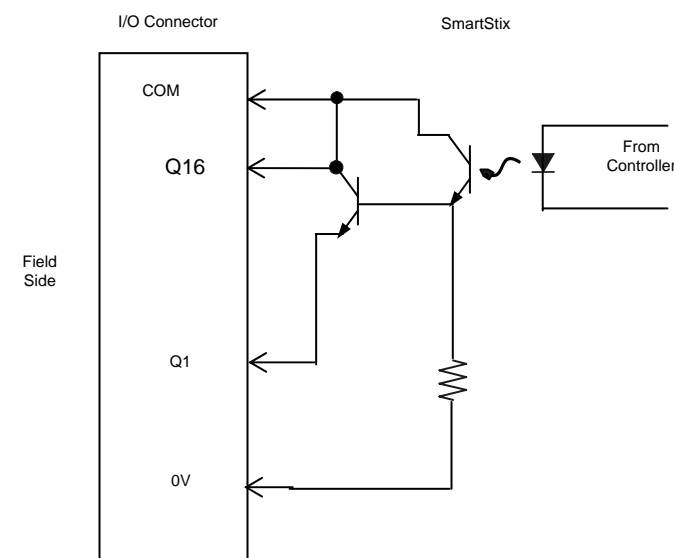


c. DQM601 / DQM606

DQM601

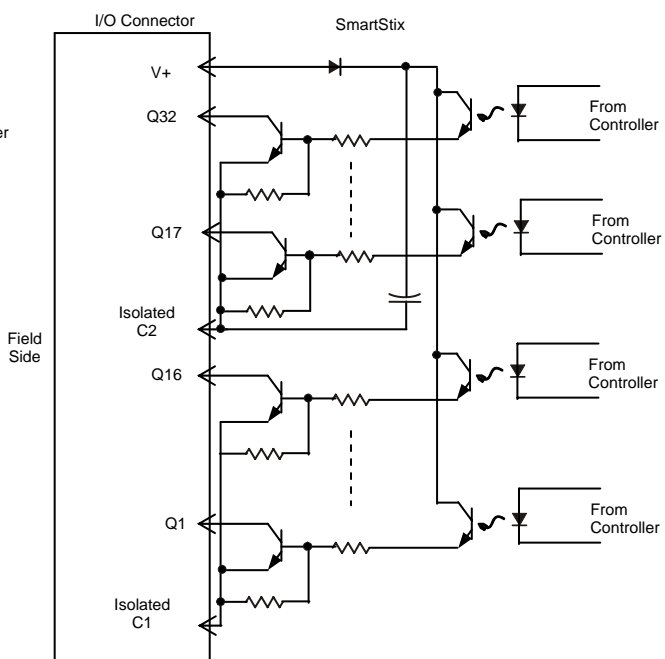


DQM606

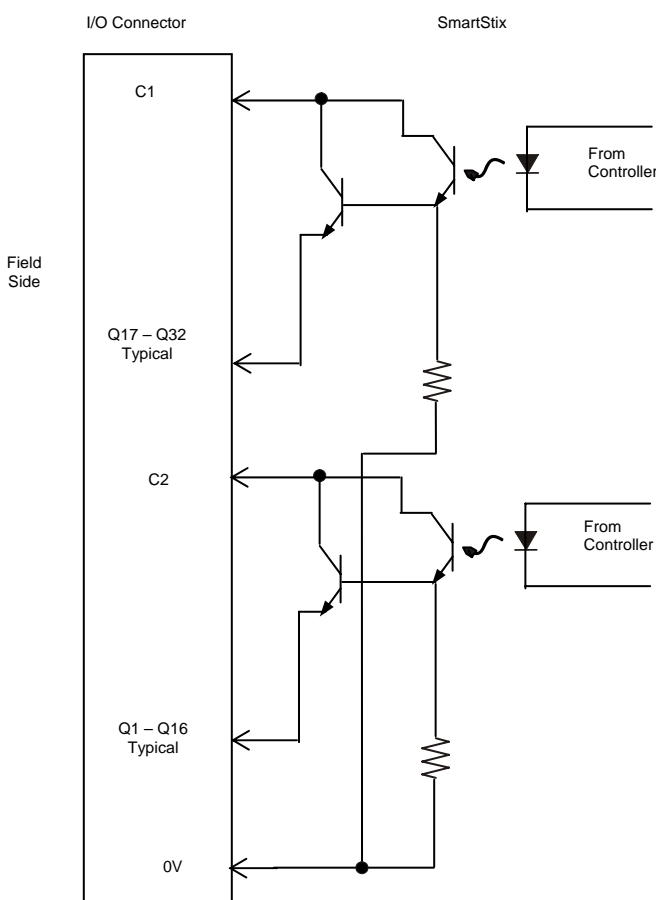


d. DQM701 / DQM706

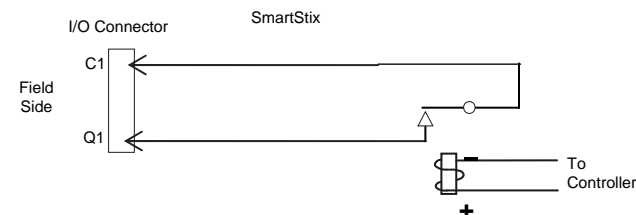
DQM701



DQM706



e. DQM602

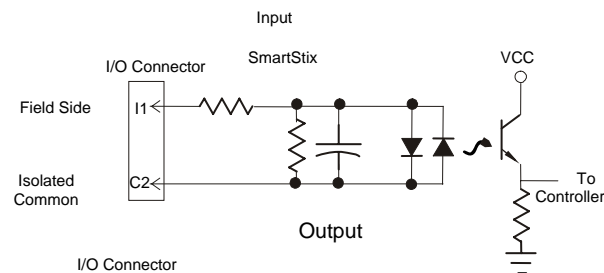


Specification for transient voltage suppressors (transorbs) used on output circuitry is 400VDC, bi-directional 400 watts.

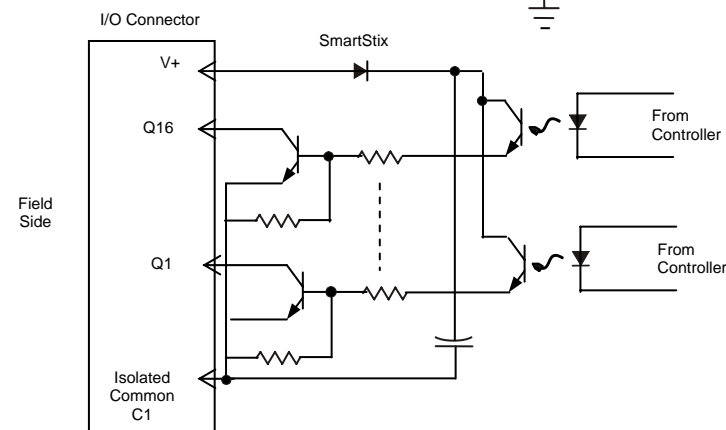
Electro-mechanical relays comply with IEC1131-2.

f. DIQ811 / DIQ816

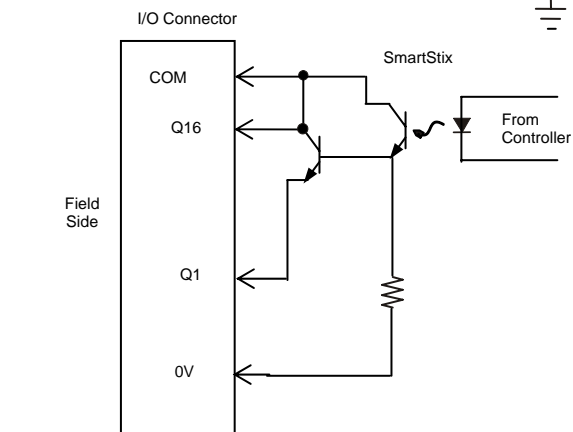
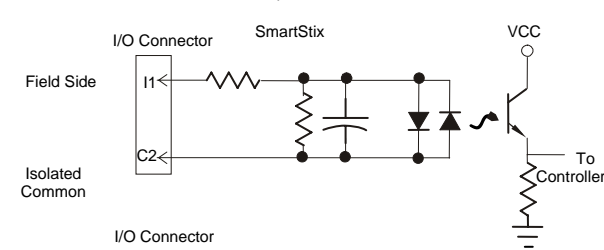
DIQ811



Output



DIQ816



11 Decimal (Dec) to Hexadecimal (Hex) Conversion Table

| Dec | Hex | | Dec | Hex | | Dec | Hex | |
|-----|-----|----|-----|-----|----|-----|-----|----|
| | HI | LO | | HI | LO | | HI | LO |
| 0 | 0 | 0 | 86 | 5 | 6 | 172 | A | C |
| 1 | 0 | 1 | 87 | 5 | 7 | 173 | A | D |
| 2 | 0 | 2 | 88 | 5 | 8 | 174 | A | E |
| 3 | 0 | 3 | 89 | 5 | 9 | 175 | A | F |
| 4 | 0 | 4 | 90 | 5 | A | 176 | B | 0 |
| 5 | 0 | 5 | 91 | 5 | B | 177 | B | 1 |
| 6 | 0 | 6 | 92 | 5 | C | 178 | B | 2 |
| 7 | 0 | 7 | 93 | 5 | D | 179 | B | 3 |
| 8 | 0 | 8 | 94 | 5 | E | 180 | B | 4 |
| 9 | 0 | 9 | 95 | 5 | F | 181 | B | 5 |
| 10 | 0 | A | 96 | 6 | 0 | 182 | B | 6 |
| 11 | 0 | B | 97 | 6 | 1 | 183 | B | 7 |
| 12 | 0 | C | 98 | 6 | 2 | 184 | B | 8 |
| 13 | 0 | D | 99 | 6 | 3 | 185 | B | 9 |
| 14 | 0 | E | 100 | 6 | 4 | 186 | B | A |
| 15 | 0 | F | 101 | 6 | 5 | 187 | B | B |
| 16 | 1 | 0 | 102 | 6 | 6 | 188 | B | C |
| 17 | 1 | 1 | 103 | 6 | 7 | 189 | B | D |
| 18 | 1 | 2 | 104 | 6 | 8 | 190 | B | E |
| 19 | 1 | 3 | 105 | 6 | 9 | 191 | B | F |
| 20 | 1 | 4 | 106 | 6 | A | 192 | C | 0 |
| 21 | 1 | 5 | 107 | 6 | B | 193 | C | 1 |
| 22 | 1 | 6 | 108 | 6 | C | 194 | C | 2 |
| 23 | 1 | 7 | 109 | 6 | D | 195 | C | 3 |
| 24 | 1 | 8 | 110 | 6 | E | 196 | C | 4 |
| 25 | 1 | 9 | 111 | 6 | F | 197 | C | 5 |
| 26 | 1 | A | 112 | 7 | 0 | 198 | C | 6 |
| 27 | 1 | B | 113 | 7 | 1 | 199 | C | 7 |
| 28 | 1 | C | 114 | 7 | 2 | 200 | C | 8 |
| 29 | 1 | D | 115 | 7 | 3 | 201 | C | 9 |
| 30 | 1 | E | 116 | 7 | 4 | 202 | C | A |
| 31 | 1 | F | 117 | 7 | 5 | 203 | C | B |
| 32 | 2 | 0 | 118 | 7 | 6 | 204 | C | C |
| 33 | 2 | 1 | 119 | 7 | 7 | 205 | C | D |
| 34 | 2 | 2 | 120 | 7 | 8 | 206 | C | E |
| 35 | 2 | 3 | 121 | 7 | 9 | 207 | C | F |
| 36 | 2 | 4 | 122 | 7 | A | 208 | D | 0 |
| 37 | 2 | 5 | 123 | 7 | B | 209 | D | 1 |
| 38 | 2 | 6 | 124 | 7 | C | 210 | D | 2 |
| 39 | 2 | 7 | 125 | 7 | D | 211 | D | 3 |
| 40 | 2 | 8 | 126 | 7 | E | 212 | D | 4 |
| 41 | 2 | 9 | 127 | 7 | F | 213 | D | 5 |
| 42 | 2 | A | 128 | 8 | 0 | 214 | D | 6 |
| 43 | 2 | B | 129 | 8 | 1 | 215 | D | 7 |
| 44 | 2 | C | 130 | 8 | 2 | 216 | D | 8 |
| 45 | 2 | D | 131 | 8 | 3 | 217 | D | 9 |
| 46 | 2 | E | 132 | 8 | 4 | 218 | D | A |
| 47 | 2 | F | 133 | 8 | 5 | 219 | D | B |
| 48 | 3 | 0 | 134 | 8 | 6 | 220 | D | C |
| 49 | 3 | 1 | 135 | 8 | 7 | 221 | D | D |
| 50 | 3 | 2 | 136 | 8 | 8 | 222 | D | E |
| 51 | 3 | 3 | 137 | 8 | 9 | 223 | D | F |
| 52 | 3 | 4 | 138 | 8 | A | 224 | E | 0 |
| 53 | 3 | 5 | 139 | 8 | B | 225 | E | 1 |
| 54 | 3 | 6 | 140 | 8 | C | 226 | E | 2 |
| 55 | 3 | 7 | 141 | 8 | D | 227 | E | 3 |
| 56 | 3 | 8 | 142 | 8 | E | 228 | E | 4 |
| 57 | 3 | 9 | 143 | 8 | F | 229 | E | 5 |
| 58 | 3 | A | 144 | 9 | 0 | 230 | E | 6 |
| 59 | 3 | B | 145 | 9 | 1 | 231 | E | 7 |
| 60 | 3 | C | 146 | 9 | 2 | 232 | E | 8 |
| 61 | 3 | D | 147 | 9 | 3 | 233 | E | 9 |
| 62 | 3 | E | 148 | 9 | 4 | 234 | E | A |
| 63 | 3 | F | 149 | 9 | 5 | 235 | E | B |
| 64 | 4 | 0 | 150 | 9 | 6 | 236 | E | C |
| 65 | 4 | 1 | 151 | 9 | 7 | 237 | E | D |
| 66 | 4 | 2 | 152 | 9 | 8 | 238 | E | E |
| 67 | 4 | 3 | 153 | 9 | 9 | 239 | E | F |
| 68 | 4 | 4 | 154 | 9 | A | 240 | F | 0 |
| 69 | 4 | 5 | 155 | 9 | B | 241 | F | 1 |
| 70 | 4 | 6 | 156 | 9 | C | 242 | F | 2 |
| 71 | 4 | 7 | 157 | 9 | D | 243 | F | 3 |
| 72 | 4 | 8 | 158 | 9 | E | 244 | F | 4 |
| 73 | 4 | 9 | 159 | 9 | F | 245 | F | 5 |
| 74 | 4 | A | 160 | A | 0 | 246 | F | 6 |
| 75 | 4 | B | 161 | A | 1 | 247 | F | 7 |
| 76 | 4 | C | 162 | A | 2 | 248 | F | 8 |
| 77 | 4 | D | 163 | A | 3 | 249 | F | 9 |
| 78 | 4 | E | 164 | A | 4 | 250 | F | A |
| 79 | 4 | F | 165 | A | 5 | 251 | F | B |
| 80 | 5 | 0 | 166 | A | 6 | 252 | F | C |
| 81 | 5 | 1 | 167 | A | 7 | 253 | F | D |
| 82 | 5 | 2 | 168 | A | 8 | 254 | F | E |
| 83 | 5 | 3 | 169 | A | 9 | 255 | F | F |
| 84 | 5 | 4 | 170 | A | A | | | |
| 85 | 5 | 5 | 171 | A | B | | | |