



Mixed DC I/O Module
HE550DIQ811
(16 Input Channels)
12/24 Vdc In, Positive/Negative Logic
(16 Output Channels)
24Vdc Out, Negative Logic

SmartStix

For electronic information, see www.HornerOCS.com.

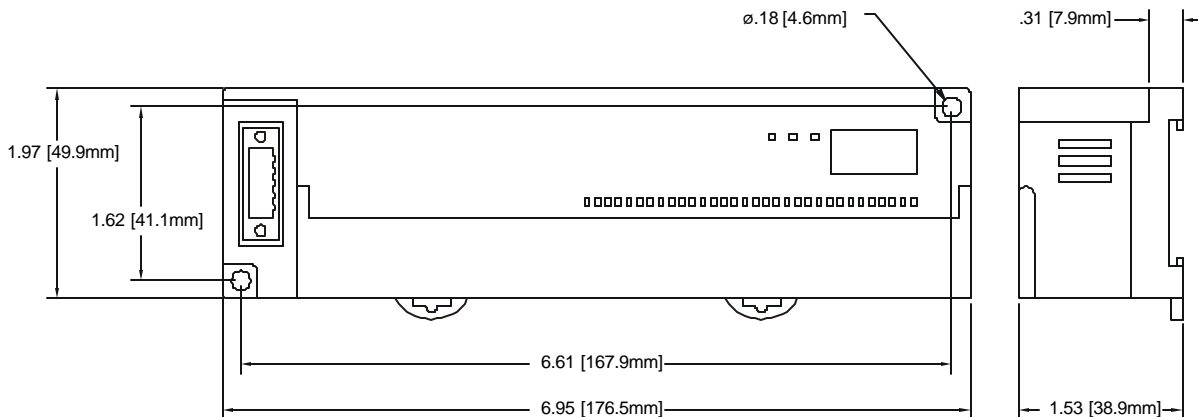
Programming information is contained in the Control Station Hardware Manual (MAN0227).

1 SPECIFICATIONS

| IN | | | |
|--|--|---------------------------------|--|
| 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 more | 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 | | |
| OUT | | | |
| Number of output points | 16 | External Power Supply | Voltage |
| Commons per Module | 1 | | Current |
| Operating Voltage | 24VDC | OFF to ON Response | 24VDC \pm 10%(ripple voltage: 4Vp-p or less) |
| Rated Load Voltage | 24VDC | ON to OFF Response | 30mA (TYP, All points ON) |
| Maximum Load Current per channel | 0.1A Max. per output 2A per common | Output Type | Sinking |
| OFF Leakage Current | 0.1mA or less | Common Method | 16 points / COM |
| Maximum Inrush Current per channel | 0.4A, 10ms. | Operating Indicator | LED turns on during ON state of output |
| | | External connections | Terminal block connector (M3 x 6 screws) |
| Maximum Voltage Drop during ON circuit | 1.5VDC(0.5A) | Isolation methods | Photo Coupler |
| GENERAL | | | |
| Storage Temperature | -25° to 70° C | Altitude for use | Up to 2,000m |
| Operating Temperature | 0° to 55° C | Pollution degree | 2 or lower |
| Atmosphere | Free from corrosive gases and excessive dust | Internal power Consumption (mA) | 350 |
| Cooling method | Self-cooling | Weight | 8.40 oz. (238 g) |
| Operating and Storage Humidity | 5 to 95% Non-condensing | | |

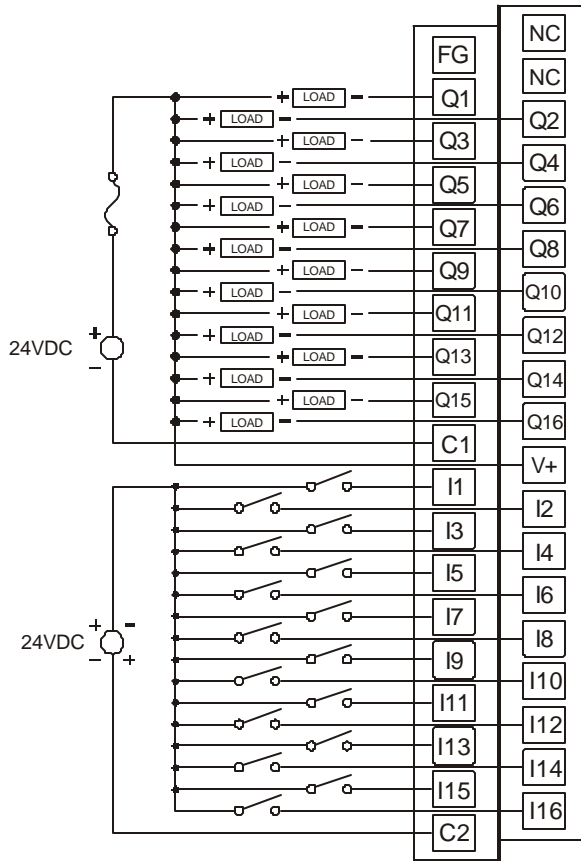
| Vibration | | | | |
|--------------------------------|-----------------------------|--|--------------------------------------|---|
| Occasional Vibration | | | | |
| Frequency | Acceleration | Amplitude | Sweep Count | |
| 10 ≤ f < 57 Hz | - | 0.075 mm | 10 times in each direction for X,Y,Z | |
| 57 ≤ 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 |

2 DIMENSIONS



006ACC002

3 WIRING

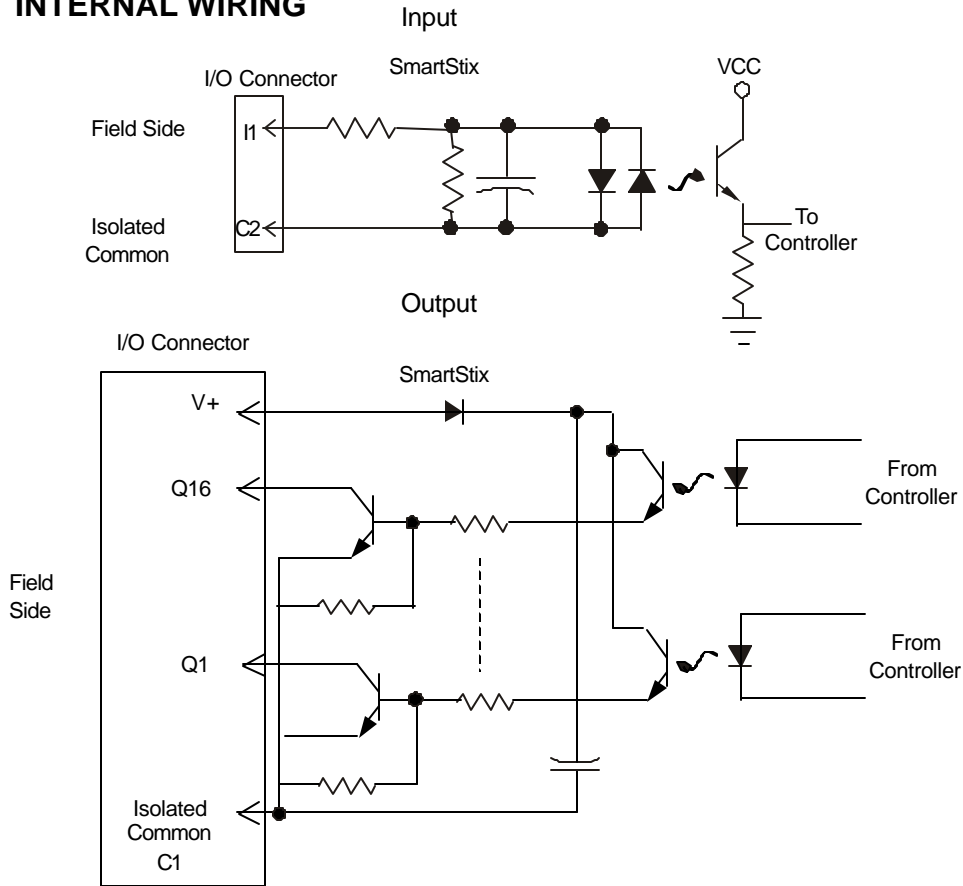


006DIQ003

| Output Pin | Signal DIQ811 |
|------------|---------------------------------|
| 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 |
| V+ | Isolator Power |

| Input Pin | Signal DIQ811 |
|-----------|-----------------|
| 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 |

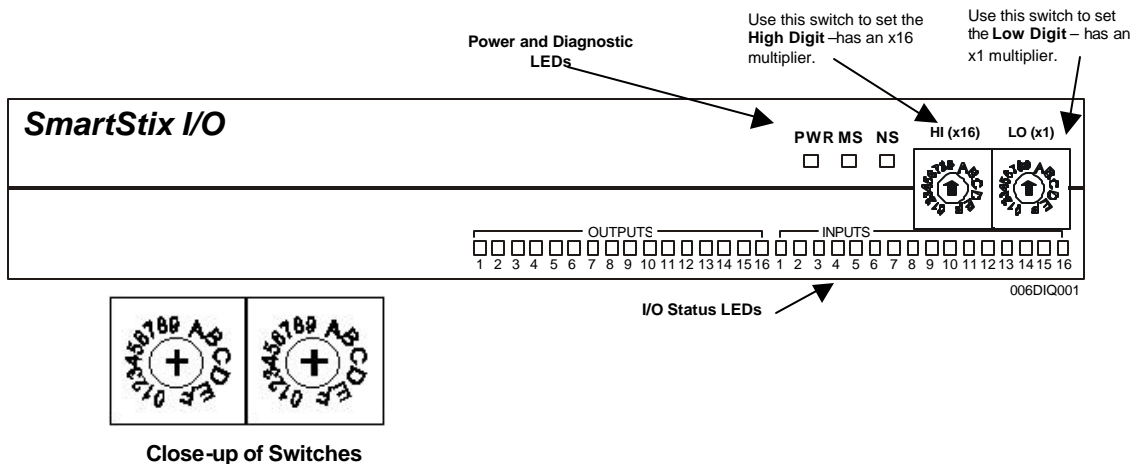
4 INTERNAL WIRING



5 SETTING ID SWITCHES

CsCAN Network IDs are set using the hexadecimal number system from 01 to FD. The decimal equivalent is 1-253. Refer to following Conversion Table, 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



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

6 LEDS

SmartStix I/O Modules provide diagnostic and status LED indicators.

a. Diagnostic LED Indicators

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

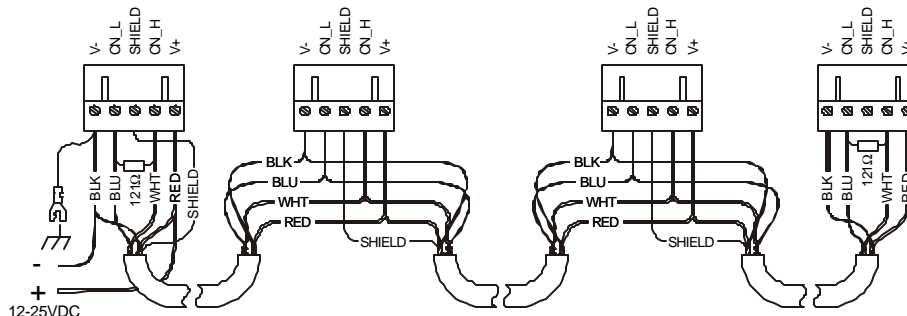
The Power Status LED illuminates Red when power is applied to the module. There are I/O Status LED indicators for each of the Digital I/O points, which illuminate Red when an I/O point is ON.

7 NETWORK CABLE

For detailed wiring information, refer to Chapter Two in the **Control Station Hardware Manual** (MAN0227). A handy checklist is provided that covers panel box layout requirements and minimum clearances.

| Pin | Description |
|-----|-------------|
| 1 | V+ |
| 2 | CAN_H |
| 3 | Shield |
| 4 | CAN_L |
| 5 | V- |

| Recommended Cable | |
|------------------------------|--------------|
| Thick: (Max Distance = 500m) | Belden 3082A |
| Thin: (Max Distance = 100m) | Belden 3084A |



Note: 12 - 24VDC must be supplied to the network.

8 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 information, refer to Chapter Two in the Control Station Hardware Manual (MAN0227). A handy checklist is provided that covers panel box layout requirements and minimum clearances.



Warning: Consult user documentation.



Warning: Electrical Shock Hazard.

9 TECHNICAL ASSISTANCE

For assistance, contact Technical Support at the following locations:

North America:

(317) 916-4274
www.heapg.com.

Europe:

(+) 353-21-4321-266
www.horner-apg.com.

NOTES