5003 Quanta-Max System

USER MANUAL

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DESCRIPTION

Quanta-Max
This is a microcomputer-controlled communication system. It has provisions for up to 8 or 16 flame sensor inputs*, which it monitors and converts to a contact closure, single or multiple zone sensor outputs. The Quanta-Max also has RS485 communication to a receiver module, PLC or Computer.

*in some applications

Quanta-Max Features
- RS 485 Communication Interface
- Optional signal display for each sensor flame level (using the DISPLAY) - Recommended
- Isolated 5 Amp relay alarm contact
- Easy mounting in control panels
- Optional History Logging of previous shutdowns
- Built-in 120 VAC 50/60 Hz supply

Quanta-Max
Function Description

LED indicators
The Quanta-Max has two Red LED indicators located on either side of the DIP Switches
**TX LED**
Illuminates and flashes when RS 485 communication is taking place.

**FL LED**
**Sequence when Dip Switch 8 is in the down position—Detecting failed scanners**
If a flame is detected by any one of the connected scanners when power is applied to the Quanta-Max transmitter unit, the FL LED will illuminate and flash at the rate of four times per second until the signal is removed. This rapid flashing also indicates that no output would be permitted from the unit. If a signal is not detected at power up then the FL LED will remain off until a signal is detected. When some signals are detected the FL LED will flash at the rate of once per second. When all signals are detected an internal 20-second timer will start and the FL LED will illuminate and remain on without flashing. If a flame signal is lost before the 20-second time is complete, the FL LED with flash at the rate of once per second. If the flame signal is re-established within the twenty-second period, the FL LED will be on steady again and the timer will reset. If a flame signal is lost any time after the twenty second timer has timed out then the FL LED with flash at the rate of once per second for up to five seconds if the signal does not return. After this five-second period the FL LED will flash four times per second and the output signal will not be allowed to reestablish until all of the flame signals are off for one second.

**Sequence when DIP Switch is in the up position—Flame indication only**
FL LED will Illuminate and flash when some sensors detect flames. Illuminates and is on steady (without flashing) when all sensors detect flame

**Note:** The Output signal from the Transmitter will always shutoff within 2 seconds if any of the flame signals are lost.
Timing and Operational Chart (Dip Switch 8 in down position)

---

**NF:** No Flame Signals Detected at any Input  
**SF:** Some Flame Signals Detected at the Inputs  
**AF:** All Flame Signals Detected at the Input

**FL:** The FL LED on the Quanta-Max Transmitter  
**FL on:** LED is on solid without flashing  
**FL off:** LED is off  
**1/sec Flash:** LED flashes at the rate of one flash per second  
**4/sec Flash:** LED flashes at the rate of four flashes per second  
**Signal output:** Flame signal output from Quanta-Max (P5)
Configuration:
Setup Dipswitch: There is one set of 8 Dip switches on the Quanta-Max module.
Note: Any switch changes must be done with power removed from the module

DIP switches 1 through 4 correspond to the number of attached flame sensors
DIP switch 5 not used
DIP switches 6 & 7 set the flame signal trip level
DIP switch 8 must be in the Down position (off) if the Quanta-Max is used in a Flame Safeguard System. It must be in the Up (on) position if the Quanta-Max is used a flame monitor only.
Note: For system setup switch 8 should be in the up position.

<table>
<thead>
<tr>
<th>Flame Signal Trip Level</th>
<th>DIP Switch Number 6</th>
<th>DIP Switch Number 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Volts</td>
<td>Down (off)</td>
<td>Down (off)</td>
</tr>
<tr>
<td>3 Volts</td>
<td>Down (off)</td>
<td>Up (on)</td>
</tr>
<tr>
<td>4 Volts</td>
<td>Up (on)</td>
<td>Down (off)</td>
</tr>
<tr>
<td>5 Volts</td>
<td>Up (on)</td>
<td>Up (on)</td>
</tr>
</tbody>
</table>
Flame Sensor Setup Table**

<table>
<thead>
<tr>
<th>Number of flame sensors connected*</th>
<th>Dip Switch Number 1</th>
<th>Dip Switch Number 2</th>
<th>Dip Switch Number 3</th>
<th>Dip Switch Number 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>3</td>
<td>off</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>4</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>5</td>
<td>off</td>
<td>off</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td>6</td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td>7</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td>8</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td>9</td>
<td>off</td>
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<td>on</td>
</tr>
<tr>
<td>10</td>
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<td>on</td>
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<tr>
<td>11</td>
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<td>on</td>
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<tr>
<td>12</td>
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<td>on</td>
</tr>
<tr>
<td>13</td>
<td>off</td>
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<td>on</td>
<td>on</td>
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<tr>
<td>14</td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>on</td>
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<tr>
<td>15</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>16</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
</tbody>
</table>

*Set for two or more

**Maximum connected sensor number setting depends on model ordered (see page 11)
Display Messages Examples

The display will display the signal level of each sensor and the status of all the sensors as a group.

<table>
<thead>
<tr>
<th>Sensor- IN#01=0V</th>
<th>Sensor- IN#16=10V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Sensors = OFF</strong></td>
<td><strong>Some Sensors = ON</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensor- IN#07=06V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Sensors = ON</strong></td>
</tr>
</tbody>
</table>

First Out annunciation will indicate which sensor was the first to lose the flame signal.

<table>
<thead>
<tr>
<th>Sensor- IN#01=0V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sensor#16 F-Down</strong></td>
</tr>
</tbody>
</table>
Alarm History Option

History Recall: This feature will recall the previous 16 Alarm Occurrences

Press "SET" to enter History Records

HISTORY RECORDS
UP=NXT; DWN =LST

Press the UP or DOWN keys to display the records

RECORD # 1

If no records are available

NO RECORDS AVAILABLE

Press "SET" again and then the UP key to Erase Records

ERASE RECORDS?
UP = YES; DWN = NO
Display Specifications

MECHANICAL:
Enclosure: 1⅜” H by 3½” L by 3” D (1/8” DIN)

ELECTRICAL:
Supply: 120VAC 50/60 Hz
220VAC 50/60 Hz (Model Available)
Power consumption: 2VA
Output: Configurable Relay contact (5 Amps), RS485

Environmental:
Class: NEMA type 4 Membrane Front
Temperature rating: -20°C to +60°C (0°F to 140°F).

Quanta-Max Specifications

MECHANICAL:
Enclosure: 5 7/8” H by 4 3/8” W by 1 5/8” D

ELECTRICAL:
Transmitter Unit
Voltage: 120 VAC 50/60Hz (Standard), Power consumption: 2VA
220VAC 50/60 Hz (Model Available)
Inputs (Depending on Model Selected)
  UV Sensor Input (2-wires)- PCI, Eclipse, Honeywell, Fireye
  Flame Rod (1 wire each)- common ground
  Relay- Dry contact

Receiver Unit
Voltage: 120 VAC 50/60Hz
220VAC 50/60 Hz (Model Available)

Outputs (Depending on Model Selected)
Flame Rod output /UV output.
Supervised dry contact (5 amp)
Quanta-Max Model Numbers and ordering information

5003-QD485- Quanta-Max RS 485 Operator Interface Display (1/8 DIN panel mount)

5003-01T-N-X Receives signals from UV sensors* and converts to one UV/FR sensor signal. Note: The X denotes the brand and model number of UV scanner (H for Honeywell, P for PCI, E for Eclipse, G for GN Electronics). The number of sensors (N) connected must also be specified when ordering. Units can be used for less than number of sensors specified but not more. Not all scanner models of all manufacturers may work. Call for confirmation before ordering.

5003-03T-N-FR- Receives signals from flame rod sensors* and converts to one UV/FR sensor signal. The number of sensors (N) connected must also be specified when ordering. Units can be used for less than number of sensors specified but not more.

5003-01R- Receives RS 485 from sender and converts to up to 16* UV/FR sensor signals for interface to controls and one combined UV/FR signal for one control.

5003-01RT-(X)- Receives RS 485 from sender and converts to triac outputs for interface to PLC Systems. The X denotes the number of outputs needed (1 to 16).

*Up to 16 sensors in some applications
Installation Notes (Read before beginning installation)

- All installation, wiring, or service activities must only be performed by knowledgeable and qualified technicians.

- All system wiring should be run in accordance with the National Electrical Code and all local code requirements.

- Neutral must be grounded

- The Quanta-Max is designed to work in a variety of applications and conditions, however some applications may not be applicable due to the presence of high electrical noise, lack of adequate ground connections, floating neutrals or other known or unknown conditions. It is therefore important to ensure proper system environment before installing these devices.

- Scanner sensitivity varies with the number of scanners connected to the Quanta-Max module. The more sensors connected the less sensitive each sensor will be to incoming flame signals. In some cases a Quanta-max module may need to be used with less sensors in order to achieve adequate flame signals from a flame. In these cases 2 Quanta-max controls can be “daisy chained” together into one control. (See page 27 for example wiring)

- The signal levels and functionality of a particular brand of sensor will not be identical to the signal levels and functionality of a sensor when used with other burner control brands. Due to variable manufacturing tolerances it is possible but unlikely for an individual sensor to not function in a Quanta-max system but still operate with it own branded control or vise versa. In these cases the scanner may need to be replaced with a new scanner.

- Route Sensor wiring a sufficient distance away from any type of ignition or other wiring to avoid electrical noise interference. Each sensor wiring must be run separate from all other wires including other sensors. In some cases shielded cable or coax may be required for long distances or high electrical interference environments. Each pair of sensor leads should be in their own shielded or coaxial pair and terminated at the Quanta-Max module.

- Always remove all power to the system before wiring.
WIRING and CONNECTIONS

Display

Contact Output  RS485 output  VAC connection

J1

Relay Out

NO  C

COMMS

RS485 TX+
RS485 TX-
Logic GND

J2

Supply Voltage

N  L
Wiring Diagram (Display)

Terminal J1

<table>
<thead>
<tr>
<th>Description</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm Contact Output</td>
<td>1-OUT-NO</td>
</tr>
<tr>
<td>Alarm Contact Output</td>
<td>2-OUT-C</td>
</tr>
<tr>
<td>RS 485 +</td>
<td>3-RS485-TX+</td>
</tr>
<tr>
<td>RS 485 -</td>
<td>4-RS485-TX-</td>
</tr>
<tr>
<td>Logic Ground</td>
<td>5-GND</td>
</tr>
</tbody>
</table>

Terminal J2

<table>
<thead>
<tr>
<th>Description</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>120VAC</td>
<td>01-120VAC-IN-L</td>
</tr>
<tr>
<td>Neutral</td>
<td>02-120VAC-IN-N</td>
</tr>
<tr>
<td>Ground</td>
<td>03-Ground</td>
</tr>
</tbody>
</table>

Note: The polarity of the plug connecting Power to the display is the reverse of the Polarity for the transmitter and receiver modules. Check designations on the module connectors before wiring.
Wiring Diagram (Quanta-Max Transmitter)

Sensor Connections

Note: Scanner signal lead connects to the “COM” terminals and the scanner return lead connects to the numbered inputs (01 to 04)

For PCI scanners, the purple wire connects to 06-COM and the yellow wire connects to one of the input terminals (01-S#1 thru 04-S#4)

For Eclipse scanners, the blue wire (S1) connects to 06-COM and the yellow wire (S2) connects to one of the input terminals (01-S#1 thru 04-S#4)

Note: the polarity of the power connections are opposite from the Display connections. Connection the power leads incorrectly will cause damage to the unit. Please check connection designations on the units before applying power.
GN Electronics 5002-01  Self Check Scanner Connections

- Route Sensor wiring a sufficient distance away from any type of ignition or other wiring to avoid electrical noise interference. Each sensor wiring must be run separate from all other wires including other sensors. In some cases shielded cable or coax may be required for long distances or high electrical interference environments. Each pair of sensor leads should be in their own shielded or coaxial pair and terminated at the Quanta-Max module.

GN Electronics Scanners (5002-01) connect with the Black lead connects to the input pins one to four and the Red lead connects to the COM terminal on each of the four terminal blocks (P1 to P4).

For applications using less that 16 scanners the scanner connections must start on terminals 1, 2, 3, 4 on P1 terminal block. Additional scanners are connected on terminal blocks P2 through P4 in a sequential order.

Example: When using only two scanners, the Black lead of scanner number 1 is connected to 01-S#1 on P1. The Red of scanner number 1 connects to 06-com on P1. The Black lead of scanner number 2 is connected to 02-S#2 on P1. The White lead of scanner number 2 connects to 06-com on P1.
GN Electronics 5004-01 Scanner Connections

- Route Sensor wiring a sufficient distance away from any type of ignition or other wiring to avoid electrical noise interference. Each sensor wiring must be run separate from all other wires including other sensors. In some cases shielded cable or coax may be required for long distances or high electrical interference environments. Each pair of sensor leads should be in their own shielded or coaxial pair and terminated at the Quanta-Max module.

GN Electronics Scanners (5004-01) connect with the Black lead connects to the input pins one to four and the White lead connects to the COM terminal on each of the four terminal blocks (P1 to P4).

For applications using less than 16 scanners the scanner connections must start on terminals 1, 2, 3, 4 on P1 terminal block. Additional scanners are connected on terminal blocks P2 through P4 in a sequential order.

Example: When using only two scanners, the Black lead of scanner number 1 is connected to 01-S#1 on P1. The White of scanner number 1 connects to 06-com on P1. The Black lead of scanner number 2 is connected to 02-S#2 on P1. The White lead of scanner number 2 connects to 06-com on P1.
Protection Controls (PCI) Scanner Connections

- Route Sensor wiring a sufficient distance away from any type of ignition or other wiring to avoid electrical noise interference. Each sensor wiring must be run separate from all other wires including other sensors. In some cases shielded cable or coax may be required for long distances or high electrical interference environments. Each pair of sensor leads should be in their own shielded or coaxial pair and terminated at the Quanta-Max module.

Protection Controls Scanners (PCII) connect with the Yellow lead connects to the input pins one to four and the Purple lead connects to the COM terminal on each of the four terminal blocks (P1 to P4).

For applications using less that 16 scanners the scanner connections must start on terminals 1, 2, 3, 4 on P1 terminal block. Additional scanners are connected on terminal blocks P2 through P4 in a sequential order.

Example: When using only two scanners, the Yellow lead of scanner number 1 is connected to 01-S#1 on P1. The Purple of scanner number 1 connects to 06-com on P1. The Yellow lead of scanner number 2 is connected to 02-S#2 on P1. The Purple lead of scanner number 2 connects to 06-com on P1.
Honeywell Scanner Connections

- Route Sensor wiring a sufficient distance away from any type of ignition or other wiring to avoid electrical noise interference. Each sensor wiring must be run separate from all other wires including other sensors. In some cases shielded cable or coax may be required for long distances or high electrical interference environments. Each pair of sensor leads should be in their own shielded or coaxial pair and terminated at the Quanta-Max module.

Honeywell Scanners (C7027A) connect with the Blue lead connects to the input pins one to four and the White lead connects to the COM terminal on each of the four terminal blocks (P1 to P4).

For applications using less that 16 scanners the scanner connections must start on terminals 1, 2, 3, 4 on P1 terminal block. Additional scanners are connected on terminal blocks P2 through P4 in a sequential order.

Example: When using only two scanners, the Blue lead of scanner number 1 is connected to 01-S#1 on P1. The White of scanner number 1 connects to 06-com on P1. The Blue lead of scanner number 2 is connected to 02-S#2 on P1. The White lead of scanner number 2 connects to 06-com on P1.
Fireye Scanner Connections

- Route Sensor wiring a sufficient distance away from any type of ignition or other wiring to avoid electrical noise interference. Each sensor wiring must be run separate from all other wires including other sensors. In some cases shielded cable or coax may be required for long distances or high electrical interference environments. Each pair of sensor leads should be in their own shielded or coaxial pair and terminated at the Quanta-Max module.

Fireye Scanners (UV-1A) connect with one Black lead connecting to the input pins one to four and the other Black lead connecting to the COM terminal on each of the four terminal blocks (P1 to P4).

For applications using less than 16 scanners the scanner connections must start on terminals 1, 2, 3, 4 on P1 terminal block. Additional scanners are connected on terminal blocks P2 through P4 in a sequential order.

Example: When using only two scanners, a Black lead of scanner number 1 is connected to 01-S#1 on P1. The other Black lead of scanner number 1 connects to 06-com on P1. A Black lead of scanner number 2 is connected to 02-S#2 on P1. The other Black lead of scanner number 2 connects to 06-com on P1.
Eclipse Scanner Connections

- Route Sensor wiring a sufficient distance away from any type of ignition or other wiring to avoid electrical noise interference. Each sensor wiring must be run separate from all other wires including other sensors. In some cases shielded cable or coax may be required for long distances or high electrical interference environments. Each pair of sensor leads should be in their own shielded or coaxial pair and terminated at the Quanta-Max module.

Eclipse Scanners connect with the yellow lead (normally going to S2 on a Veriflame) connects to the input pins one to four and the blue lead normally going to S1 on a Veriflame) connects to the COM terminal on each of the four terminal blocks (P1 to P4).

For applications using less than 16 scanners the scanner connections must start on terminals 1, 2, 3, 4 on P1 terminal block. Additional scanners are connected on terminal blocks P2 through P4 in a sequential order.

Example: When using only two scanners, the yellow lead of scanner number 1 is connected to 01-S#1 on P1. The blue lead of scanner number 1 connects to 06-com on P1. The yellow lead of scanner number 2 is connected to 02-S#2 on P1. The blue lead of scanner number 1 connects to 06-com on P1.
**Wiring For Flame Rod Version**

- Route Sensor wiring a sufficient distance away from any type of ignition or other wiring to avoid electrical noise interference. Each sensor wiring must be run separate from all other wires including other sensors. In some cases shielded cable or coax may be required for long distances or high electrical interference environments. Each pair of sensor leads should be in their own shielded or coaxial pair and terminated at the Quanta-Max module.

Flame Rods connect to the input pins one to four and a wire from the burner ground connects to the COM terminal (06-com) on each of the four terminal blocks (P1 to P4).

For applications using less than 16 flame rods the flame rod connections must start on terminals 1, 2, 3, 4 on P1 terminal block. Additional flame rods are connected on terminal blocks P2 through P4 in a sequential order.

Example: Flame rod number 1 is connected to 01-S#1 on P1. The Ground connection on burner 1 connects to 06-com on P1. Flame rod number 2 is connected to 02-S#2 on P1. The Ground connection on burner 2 connects to 06-com on P1. Flame rod number 3 is connected to 03-S#3 on P1. The Ground connection on burner 3 connects to 06-com on P1.
5004-890 Control Wiring

NOTE: Alarm Connection are made through the bottom of the control board on the left terminal side.

Note: When 5004-890 is set for Flame Rod input, the SIM output is connected to “F” and the COM output is connected to “G”.

Each terminal on the control board is labeled as follows:
- **COM**: Common terminal
- **NO**: Normally Open
- **NC**: Normally Closed
- **C**: Common
- **GND**: Ground
- **TX+**: Transmit Positive
- **TX-**: Transmit Negative
- **1**: Terminal 1
- **2**: Terminal 2
- **3**: Terminal 3
- **4**: Terminal 4
- **5**: Terminal 5
- **120 VAC**: Power input

Legend:
- **120 VAC Fused Power Supply**
- **MAIN GAS VALVE**
- **IGNITION**
- **PILOT GAS VALVE**
- **Quanta-Max Output**
- **Dry contact**
- **Limits & Interlocks**
- **5003-QD485 Display**

Quanta-Max Output to the 5004-890 when set for UV Scanner input.

Example inputs:
- **J1**: NO, TX+, TX-, GND
- **J2**: L, N, G

31-35 South St., Danbury, CT 06810
Phone: (203) 743-6741 Fax: (203) 798-7313
www.gnelectronics.com
5004-795 Control Wiring

To:
Limits & Interlocks

Air Switch
Dry Contact

Quanta-Max Output
to the 5004-795
when set for
UV Scanner input

Fused Power Supply

120 VAC

MAIN GAS VALVE
IGNITION
PILOT GAS VALVE

Limits & Interlocks

Blower

Note: Alarm Connection are made through the bottom of the control board on the left terminal side

Note: When 5004-795 is set for Flame Rod input, the SIM output is connected to “F” and the COM output is connected to “G”

Earth Ground

5003-QD485
Display

5004-795

C

J1

NO
TX+
TX-
GND

J2

L
N
G

120 VAC

Quanta-Max Module

P5

01
02
03
04
05
06

COM
NO
SIM
GND
TX-
TX+

1
2
3
4
5

1
2
3
Wiring Example

120 VAC
Fused Power Supply

L1 (Hot)

L2

Limits

Run Interlocks

L1 (Hot)

L2

1
2
3
4
5

6
7
8
9

F
G

MAIN GAS VALVE
IGNITION
PILOT GAS VALVE

Honeywell 7800 Control

Note: The 5000-01UFL is required for long wire runs.

Quanta-Max Output to the 7800 UV Scanner input

Note: The 5000-01UFL is required for long wire runs.

P5

Quanta-Max Module

COM
NO
SIM
GND
TX-
TX+

120 VAC

5003-QD485 Display

Earth Ground

J1

NO

TX+
TX-
GND

J2

120 VAC

NOTE: Quanta-Max Wiring Example: Actual wiring requirements may vary depending upon actual system design and configuration

Note: For Flame Rod input, the SIM output is connected to “F” and the COM output is connected to “G”
NOTE: Quanta-Max Wiring Example: Actual wiring requirements may vary depending upon actual system design and configuration.
PCI Wiring Example

**Note:**
the SIM output is connected to “E”
and the COM output is connected to “G”

**NOTE:** Quanta-Max Wiring Example:
Actual wiring requirements may vary depending upon actual system design and configuration
Fireye Wiring Example

Note: The 5000-01UFL is required when using a UV Fireye type control. This is not needed for Fireye Flame Rod type controls.

NOTE: Quanta-Max Wiring Example: Actual wiring requirements may vary depending upon actual system design and configuration.
Multiple Quanta-Max Example

NOTE: Quanta-Max Wiring Example: Actual wiring requirements may vary depending upon actual system design and configuration

See next page
Multiple Quanta-Max Example (Cont.)

Quanta-Max Contact Output to Quanta-Max One

From P5 (03) SIM on Quanta-Max One

To S1 on Veri-Flame 5602

From previous page

NOTE: Quanta-Max Wiring Example: Actual wiring requirements may vary depending upon actual system design and configuration

5003-QD485 Display

Earth Ground

120 VAC
Wiring Diagram (Quanta-Max Receiver)

Note: the polarity of the power connections are opposite from the Display connections. Connection the power leads incorrectly will cause damage to the unit. Please check connection designations on the units before applying power.

Note: SIM output connects to the flame sensor positive input, COM output connects to the flame sensor common input.
MODEL 5003-01R Receiver Wiring

The flame signal input of the burner control connects to the output pins one to four and the flame signal common connects to the COM terminal on each of the four terminal blocks (P1 to P4).

For applications using less than 16 burner controls, connections must start on terminals 1, 2, 3, 4 on P1 terminal block. Additional control sensor inputs are connected on terminal blocks P2 through P4 in a sequential order.

Example: When using only two burner controls, the first control sensor input is connected to 01-S#1 on P1. The first burner control sensor common connects to 06-com on P1. The second control sensor input connects to 02-S#2 on P1. The second burner control sensor common connects to 06-com on P1.
MODEL 5003-01RT4 Receiver with Triac Output

Each of the outputs from the receiver is a triac with a 70ma load capacity. This model is intended to operate relay coils for contact indication or used as inputs to a PLC. The relay coil leads are wired between terminals 1, 2, 3, 4 respectively and neutral. Terminal 06 must be wired to line. This power is switched by the triacs to turn on the relays when a flame is present at the corresponding sensor.

NOTE: MODEL 5003-01RT4 has 4 triac outputs on P1 only.
Wiring Considerations

Depending on the output option used the wiring requirements will vary somewhat.

<table>
<thead>
<tr>
<th>Output type</th>
<th>Suggested wire</th>
<th>Wiring run considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact</td>
<td>14 to 16 AWG</td>
<td>THHN or equivalent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nothing special</td>
</tr>
<tr>
<td></td>
<td></td>
<td>can be run with other wires in conduit</td>
</tr>
<tr>
<td>0 to 12VDC Flame Sensors</td>
<td>14 to 16 AWG</td>
<td>THHN if wire is run in separate conduit</td>
</tr>
<tr>
<td>Other Signals</td>
<td></td>
<td>Flame Sensor</td>
</tr>
<tr>
<td>RS 485</td>
<td></td>
<td>wires must be individually run in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>their own separate conduit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shielded cable if multiple wires are in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>one conduit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coax cable if long distance runs are required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or if high level of electrical noise is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>present</td>
</tr>
</tbody>
</table>

Note

All wiring runs to the field on, or near, hot surfaces should be rated for 90°C (195°F) or at least 25°C (50°F) higher than the surface temperature.
System Setup and Testing the Installation

This section describes the test procedures that must be performed after installation to insure that the 5003 Module and the connected sensors are operating properly.

Manually shut off the fuel supply to the burner and the pilot

With the system powered down, Set the DIP Switches as follows:
DIP switches 1 through 4: Set the number of attached flame sensors (See table page 7)
DIP switch 5: Put in the down position
DIP switches 6 & 7: Put both Switches in the Down position
DIP switch 8 must be in the Up position

| If Quanta-Max is used as part of a Flame Safeguard System then Dipswitch 8 must be placed back into the down position after set is finished (See Page 34) |

Connect 5003-QD485 Display (If Available) to Quanta-Max Module as indicated on page 22

Note: A Display is strongly recommended for setup and testing. It is also recommended for indication and annunciation during normal system operation

Restore power to the Quanta-Max system.
The LED labeled “TX” should be blinking and the LED labeled “FL” should not be illuminated. If the “FL” LED is illuminated and blinking then one of the scanners is indicating a flame signal when no flame is present. To determine which one disconnect each scanner until the blinking stops. If there is a display connected it will indicate which scanner has a flame signal as it scrolls through the scanner status list.

Remove one of the scanners from its sight tube on a burner.
Place a flame in front of the scanner and the “FL” LED should begin blinking. Then remove the flame and the “FL” LED should go out. If the LED does not blink then the scanner is not sensing a flame. If the “FL” LED does not go out when flame is removed then scanner may be in a “runaway” condition. If this occurs check the wiring. If wiring appears okay then replace the scanner.
Repeat this process until all scanners have been checked.

After all individual scanners have been checked, replaced them into their respective burner sight tubes. Then start the system normally.

When all burners are lit every sensor should be indicating a flame signal on the display unit and the “FL” LED should be illuminated and on steady (not blinking).
Manually remove one of the scanners from its burner and cover it. The “FL” LED should start blinking and the display will indicate which scanner lost its signal.
Replace that scanner and repeat this process until all scanners have been tested.
Flame Safeguard Systems

Refer to the Flame Safeguard and Burner manuals for proper system setup and testing procedures

If the Quanta-Max is used as part of a flame Safeguard System
The following must occur:
Shut down the system and remove power to the Quanta-max module.
With power removed place DIP switch 8 in the Down position.
Reestablish power and start the system normally

With Dipswitch 8 in the Down position the Quanta-max flame sensing sequence must follow the timing chart on page 5.

Note: Periodically check all interlock and limit switches by manually tripping them during burner operation to make sure they cause the system to shut down.

Warning: Never operate a system that is improperly adjusted or has faulty interlocks or limit switches. Always replace faulty equipment with new equipment before resuming operation. Operating a system with defective safety equipment can cause explosions, injuries, and property damage.
Warranty

This product is warranted for one (1) year from the date of delivery against manufacturing defects only. GN Electronics standards terms and conditions apply. GN Electronics’ liability for its products, whether due to breach of warranty, negligence, strict liability, or otherwise, is limited to the furnishing of replacement parts and GN Electronics will not be liable for any other injury, loss, damage or expenses, whether direct or consequential, including but not limited to loss of use, income of, or damage to material arising in connection with the sale, installation, use of, inability to use or the repair or replacement of GN Electronics’ products.

Units should be returned to G N Electronics. Controls should be well packed in a suitable container encased in appropriate stuffing.

All products should be shipped prepaid to:

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