LOS MEDANOS COLLEGE SCIENCE BUILDING

| | | | SYN | IBOL KEY | | | NOTES | | ACKNOWL | EDG | BEMENTS |
|--------|----------------------------|----------------------------|-----------------------------|--|-------------------|---|---|-----------|----------------|-----|--------------|
| A | Actuator ACT-FA-8001 | VAV Controller | FS Triatek Flow Sensor | X1 Step-Down Isolation Transformer 120 to 24 VAC Provided | PxC_L | Triatek Control Network Provided By Others x = # of Conductors | 1. See Power Distribution Detail 2. Connect maximum of 60 controllers per Subnet | SAM | REVISIONS | | DATE: 12/6/2 |
| HMS | HMS Controller | SS Sash Position Sensor | F FMS Pressure S Monitor | X2 Isolation Transformer 24 to 24 VAC Provided | ₹ _{xC_P} | Power Wiring Provided By Others x = # of Conductors | | <u>91</u> | | | DRAWN BY: |
| H D | HMS Display | SW Sidewall Sensor | DS Triatek Door Switch | X3 Step-Down Transformer 120 to 24 VAC 100VA By Others | kc_cs | Control Wiring Provided By Others x = # of Conductors | | | ENGINEER | | GDW |
| | Hot Water Control Valve | TS Temperature Sensor | Manual Control Switch | Cable Factory Provided | Txc_IN | Input Wiring Provided by Other x = # of Conductors | | Ainsv | worth Associat | ies | NOJEOT. |



| Product code | Description | Qty |
|----------------|--|-----|
| VAV-1000L | Lon controller for supply and general exhaust air valves | 16 |
| HMS-1622L | Fume hood monitoring system | 29 |
| POS-100TX | Sash position transmitter | 29 |
| 1000TX-RA-D | Room temerature transmitter | 7 |
| VV08ANFAPC | 8" Aluminum venturi valve w/ fast-acting electric actuator | 2 |
| VV010AIFAPC | 10" Aluminum insulated venturi valve w/ fast-acting electric actuator | 1 |
| VV012ANFAPC | 12" Aluminum venturi valve w/ fast-acting electric actuator | 1 |
| VV212AIFAPC | 2-12" ganged aluminum insulated venturi valve w/ fast-acting electric actuator | 8 |
| VV212ANFAPC | 2-12" ganged aluminum venturi valve w/ fast-acting electric actuator | 3 |
| VV312AIFAPC | 3-12" ganged aluminum insulated venturi valve w/ fast-acting electric actuator | . 1 |
| VV08HNFAPC | 8" Heresite (2 baked-on coats) venturi valve w/ fast-acting electric actuator | 3 |
| VV012HNFAPC | 12" Heresite (2 baked-on coats) venturi valve w/ fast-acting electric actuator | 26 |
| VFBPOT | CFM feedback pot for venturi air valve | 58 |
| TK-LPR-10 | LON ROUTER TP/FT-10 - TP/FT-10 | 2 |
| TLON-G-02 | Triatek LON remote gateway with dial up | 1 |
| Trigate-Pro-LB | Lon - BACnet IP | 1 |

| | | | SYME | BOLKEY | | NOTES | | ACKNOWL | .EDG | EMENTS |
|---|---------------|---------------------------|-----------------|---|-----------------------------------|---|--------|----------------|-------|--------------|
| | Actuator | VAV Triatek Controller | FS Triatek Flow | X1 Step-Down Isolation Transformer | Triatek Control Network Provided | 1. See Power Distribution Detail | | REVISIONS | | DATE: 12/6/2 |
| | | Sash Position | F EMS Pressure | Isolation Transformer | Power Wiring Provided By Others | 2. Connect maximum of 60 controllers per Subnet | SYM | DATE | APP'D | SCALE: Nor |
| L | | Sensor | S Monitor | X2 24 to 24 VAC Provided XC_P | x = # of Conductors | | | | | DRAWN BY: |
| | H HMS Display | SW Sidewall Sensor | DS Triatek Door | X3 Step-Down Transformer 120 to 24 VAC 100VA By Others | Control Wiring Provided By Others | · · | | | | GDW |
| | Hot Water | TS Temperature | Manual Control | Cable Eactory Provided | Input Wiring Provided by Other | | | ENGINEER | " | RUJECT |
| | Control Valve | Sensor | Switch | | x = # of Conductors | | Ainswo | orth Associate | s | |



| | Room Name | Valve Tag | Designated Use | Triatek Part Number | M A X C F M | M II C F I |
|--|--|-----------|----------------|------------------------|----------------|---------------|
| | 130 | SUP 2.8 | SUPPLY | VV212AIFAPC | 1680 | 151 |
| | Majors Biolab Rm 🖅 🎾 | GEX 2.8 | GENERAL | VV212ANFAPC | 1570 | 90 |
| | | HEX 2.8 | HOOD | VV012HNFAPC | 800 | 30 |
| | | SUP 2.9 | SUPPLY | VV212AIFAPC | 1770 | 155 |
| | Microbiology Rm - | GEX 2.9 | GENERAL | VV212ANFAPC | 1670 | 95 |
| | 171 | HEX 2.9 | НООД | VV012HNFAPC | 800 | 30 |
| | | SUP 2.11 | SUPPLY | VV212AIFAPC | 1650 | 165 |
| | General Biology Rm | GEX 2.11 | GENERAL | VV212ANFAPC | 1535 | 103 |
| | 126 | HEX 2.11 | HOOD | VV012HNFAPC | 800 | 30 |
| | | SUP 2.12 | SUPPLY | VV010AIFAPC | 750 | 54 |
| | | GEX 2.12 | GENERAL | V V 0 8 A N F A P C | 535 | 35 |
| | Biology Prep / Stock Rm | HEX 2.12A | НООД | VV012HNFAPC | 800 | 30 |
| | 128 | HEX 2.12B | НООД | VV08HNFAPC | 80 | 80 |
| | | SUP 2.21 | SUPPLY | VV212AIFAPC | 1520 | 71 |
| | | GEX 2.21 | GENERAL | VV012ANFAPC | 740 | 90 |
| | Chemistry Prep / Stock Rm 286 | HEX 2.21A | НООР | VV012HNFAPC | 800 | 30 |
| | 237 | HEX 2.21B | НООР | VV012HNFAPC | 800 | 30 |
| | | SUP 2.22A | SUPPLY | VV212AIFAPC | 2600 | 120 |
| | | SUP 2.22B | SUPPLY | VV212AIFAPC | 2600 | 120 |
| | | SUP 2.22C | SUPPLY | VV212AIFAPC | 2600 | 120 |
| | | SUP 2.22D | SUPPLY | VV212AIFAPC | 2600 | 120 |
| | | HEX 2.22A | НООР | VV012HNFAPC | 800 | 30 |
| | | HEX 2.22B | НООР | VV012HNFAPC | 800 | 30 |
| | | HEX 2 22C | НООР | VV012HNFAPC | 800 | 30 |
| | | HEX 2 22D | НООР | VV012HNFAPC | 800 | 30 |
| | | HEX 2 22E | НООР | VV012HNFAPC | 800 | 30 |
| | · · · · · · · · · · · · · · · · · · · | HEX 2.22E | НООР | VV012HNEAPC | 800 | 30 |
| | Organic Chemistry Lab Rm 235 | HEX 2 22G | ноор | VV012HNFAPC | 800 | 30 |
| | | HEX 2.220 | ноор | VV012HNFAPC | 800 | 30 |
| | | HFX 2 221 | НООР | | 800 | 30 |
| | 1. 205 | HEX 2 224 | НООР | | 800 | 30 |
| | 144 | HEY 2 221 | НООР | | 800 | 30 |
| | and the second sec | HEX 2 22M | НООР | | 800 | 30 |
| | | HEX 2 22N | НООР | | 800 | 30 |
| | | HEY 2 220 | H00D | | 800 | 30 |
| | | HEX 2 220 | | | 800 | 30 |
| | | | | | 500 | 30 |
| | | | | | 500 | 20 |
| | | | | | 500 | 20 |
| | | SUP 2.27 | SUPPLY | VV31ZAIFAPC | 3640 | 162 |
| | | GEX 2.27 | GENERAL | V V U BANFAPC | 525 | 3 |
| | | HEX 2.27A | HOOD | VV012HNFAPC | 800 | 30 |
| | General Chemistry Lab Rm 2972 | HEX 2.27B | HOOD | VV012HNFAPC | 800 | 30 |
| | 234 | HEX 2.27C | HOOD | VV012HNFAPC | 800 | 30 |
| | -1 | HEX 2.27D | HOOD | VV012HNFAPC | 800 | 30 |
| | 1 | HEX 2.27E | НООД | VV012HNFAPC | 800 | 30 |

| SYMBOL KEY | | | | | | NOTES | | ACKNOWL | EDG | SEMENT | |
|------------|----------------------------|----------------------------|-----------------------------|--|-------------------|---|----------------------------------|---------|----------------|--------|-------------|
| | Actuator ACT-FA-8001 | VAV Triatek Controller | FS Triatek Flow Sensor | X1 Step-Down Isolation Transformer 120 to 24 VAC Provided | Pxc_L | Triatek Control Network Provided By Others x = # of Conductors | 1. See Power Distribution Detail | 0.44 | REVISIONS | A 00%0 | DATE: 12/00 |
| HMS | HMS Controller | SS Sash Position Sensor | F FMS Pressure S Monitor | X2 Isolation Transformer 24 to 24 VAC Provided | ₹ _{xC_P} | Power Wiring Provided By Others x = # of Conductors | | SYM | DATE | APPD | DRAWN BY |
| HD | HMS Display | SW Sidewall Sensor | DS Switch | X3 Step-Down Transformer 120 to 24 VAC 100VA By Others | | Control Wiring Provided By Others x = # of Conductors | | | | | GDW |
| | Hot Water Control Valve | TS Temperature Sensor | Manual Control Switch | Cable Factory Provided | | Input Wiring Provided by Other x = # of Conductors | | Ainsw | orth Associate | es P | ROJECT |





| FTT-10A LON NETWORK CABLE, GREAT LAKES WIRE AND CABLE PART# 70010 OR | numbers in reu | | | | | | |
|---|----------------|-------|---|----------------------|------------------|------------------------------|-----------------|
| CONNECT-AIR WW221P-2001 E111240-RE TYPE CMP C(UL) PCC FT6 22AWG 071890 FT | | | | | Doubly-Term | ninated Bus Topology S | pecifications |
| FOLLOW ECHELON GUIDELINES FOR FTT-10A CABLE INSTALLATION | | | | | Cable Type | Maximum bus length | n Units |
| WWW.LONMARK.ORG | | | | | Belden 85102 | 2700 | Meters |
| WWW.ECHELON.COM | | | | | Level IV, 22AWG | 1400 | Meters |
| 005-0023-01M JUNCTION BOX AND WIRING DIAGRAMS | | | | | JY(St) Y 2x2x0.8 | 900 | Meters |
| | | | | | TIA Category 5 | 900 | Ivieters |
| SYMBOL KEY | | NOTES | | ACKNOWLEDGEMEN | rs 🔺 | | |
| | | | | REVISIONS DATE: 12/ | 06/2005 | | |
| | | | | DRAWN B | Y: | | |
| | | | | | 2376 PACIFIC DR | . NORGROSS, GA 300/1 TEL. // | DIA/O NO + D 02 |
| | | | - | ENGINEER PROJECT: | | 05 | DWG NO.: R 03 |
| | | | | Ainsworth Associates | | 00 | Page: 4 of 17 |

Cable Specifications

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Power Distribution for Triatek FMS1630L, HMS1600L, VAV-1000L and Actuators

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| | POWER GND (COMMON) "GND" POWER + (PWR) "+V" LEFT "GND" WIPER "AI4" RIGHT "+10" OVERRIDE "DI3" OVERRIDE "GND" TOUT "AI3" | IF INSTALLED | Removable Terminal Blocks On CPU Board | VAV1000L AI_4 ① O GND 0 O GND 0 O O GND 0 O GND 0 O GND 0 O GND 0 O GND 0 O GND 0 O GND 0 O O GND 0 O GND 0 O GND 0 O GND 0 O O GND 0 O GND 0 O GND 0 O GND 0 O O O O O O O O O O O O O | | LON NETW | FTT-10A ORK CONN T SHEILD |
|----------|--|--|--|---|-------|------------------------------------|---------------------------------|
| <u>-</u> | | | | | | | |
| | Actuator ACT-FA-8001 VAV Triatek LON Controller X1 HMS Controller LON SS Triatek Sash Sensor X2 | ABOL KEY Step-Down Isolation Transformer 120 to 24 VAC Provided Isolation Transformer 24 to 24 VAC Provided XC_P Power Wiring F xC_P x ef of Conduct | FTT-10 Provided By f Conductors Provided By Others actors | NOTES | SYM | ACKNOWLEL REVISIONS DATE APP | GEMENTS |
| | HMS Display SW Triatek Sidewall Sensor X3 Hot Water Control TS Triatek Temp. Sensor with Override | Step-Down Transformer 120 to 24 VAC 100VA Provided Cable Factory Provided xC_IN xC_IN xC_IN x=# of Condu | Provided By Others ictors rovided by Other ictors | | Ainsv | ENGINEER worth Associates | GDW PROJECT: VAV100 |

NECTION

Free Topology Cable Specifications

| Cable Type | Maximum Node-to- Node Distance (FT) | Maximum Total Wire Length (FT) |
|------------------|--|-----------------------------------|
| Belden 85102 | 1640 ft | 1640 ft |
| Belden 8471 | 1312 ft | 1640 ft |
| Level IV, 22AWG | 1312 ft | 1640 ft |
| JY (St) Y x2x0.8 | 1049 ft | 1640 ft |
| TIA Category 5 | 820 ft | 1476 ft |

Refer to www.lonmark.org for more details.





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|---------|--|--------------------|------------|
| 14/04 | | | ® |
| lone | | | 10 M |
| (: / | 2976 PACIFIC DR. NORCROSS, GA 30071 TEL. 7 | 70-242-1922 FAX 77 | 0-242-1944 |
| | | DWG NO.: | D7 |
| | | Page: | 16 of 17 |

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Sequence of Operation

HMS - Fume Hood Monitoring System

The Fume Hood Controller will modulate the Fume Hood's exhaust air valve to maintain

the desired face velocity set point. The System's speed of response to sash movement will provide adequate containment of hazardous fumes. Alarms will be enabled whenever the face velocity set point can not be achieved by the exhaust system, or whenever face velocity rises above the high alarm limit. Audible and visual alarms will be provided locally.

The controller can be connected to the Building Automation System via Bacnet communication network interface to provide remote monitoring / setpoint adjust.

Emergency purge operation is via the 'MAX FLOW' touch-pad button. The Fume Hood's Exhaust valve maximum position will be equal to the Fume Hood's high CFM limit.

VAV Supply, General Exhaust, and Fume Hood Exhaust

The Lab Flow Controller will modulate the general exhaust air valve and/or the supply air valve, and the reheat coil valve to maintain the room's desired CFM offset setpoint, satisfy room

cooling/heating load, and maintain minimum supply air without exhausting excess air.

The System's speed of response to Fume Hood exhaust requirements will provide adequate containment of Room air. The controller can be connected to the Building Automation System via Bacnet communication network interface to provide remote monitoring / setpoint adjustment.

FAIL-SAFE MODE

All exhaust valves will fail to the full open position upon loss of power to either the controller or actuator, or loss of analog control signal from the controller to the actuator. All supply valves will fail to its minimum position upon loss of power to the controller or actuator, or loss of analog control signal from the controller to the actuator.

| | SYMBOL KEY | NOTES | ACKNOWLEDGEM | | | | |
|----|------------|-------|--------------|------------------|-------|-------------|--|
| 1 | | | | REVISIONS | | DATE: 10/13 | |
| 10 | | | SYM | DATE A | νPΡ'D | SCALE: No | |
| | | | | | | DRAWN BY: | |
| | | | | - | | GDW | |
| | | | | ENGINEER | P | ROJECT: | |
| | | | Ainsv | worth Associates | s | | |

