ADDENDUM
#1

CLIENT: Guilford County Schools

PROJECT: GCS SMITH HIGH SCHOOL HVAC IMPROVEMENTS (Project #)

TO: All Prospective Bidders

FROM: Derrick Giles, Project Manager, ENPULSE Energy Conservation, Inc.

DATE: April 24, 2017

The attached information is intended to clarify questions regarding the construction documents.

Please contact Derrick Giles with ENPULSE Energy Conservation, Inc. at 336.988.1769 or gilesde@enpulse.com with any questions regarding this addenda, the drawings or specifications.

Where any article, division or subparagraph of the original contract documents or other addenda is supplemented herein, the provisions of the original documents shall remain in effect. All the supplemental provisions shall be considered as added thereto. Where any such article, division or subparagraphs are amended, voided or superseded thereby, the provisions of such article, division or subparagraph not so specifically amended, voided or superseded shall remain in effect.

The attention of the Contractor is called to the following clarifications, additions to and changes in the plans and specifications dated March 21, 2017, on the above job. It will be the responsibility of each Contractor to call such clarifications, additions and changes in plans and specifications to the attention of subcontractors concerned. The Engineer, his/ her Architect, or Consulting Engineers in no way assume any responsibility for notifying any subcontractor, material dealers or others not having received the original contract documents.

P.O. Box 41195
Greensboro, NC 27404
Phone: (336) 370-1088
Fax: (336) 230-0554

1. GENERAL

1	Last day for questions shall be 4/26/17 at 12 PM. Last addenda shall be 4/27/17 (if required).
2	Agenda (liqudated damages corrected) - attached
3	Sign in sheet - attached
4	The Trane Equipment submittal is incorporated into the contract documents. Contractor shall provide all items not furnished in submittal. See FTP site.
5	Disregard keynote tags for all keynotes "NOT USED"

2. SPECIFICATIONS

6	Contractor shall provide duct detectors for HVAC units. Contractor shall provide horn / strobes to be located in the main corridor adjacent to the locker room and in the corridor adjacent to the Auxiliary Gym (2 total), per specification section. Add spec section 283111 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM Add: 2 Fire Alarm details are incorporated into the contract documents. See attachments.
7	Section 233116, 2.2 B.2: Green color for duct sock shall match Sherwin Williams 6454 Shamrock. School mascot shall be screen printed on duct sock.
7.1	Reissue Section 006357 - Change Order Request Form - see attached

3. DRAWINGS

8	Structural drawing "S1" is incorporated into the contract documents. See FTP site.
8.1	M1.1, Air Terminal Schedule: Delete count column.
9	M1.1 & MC1.3, Schedule & Exhaust Fans: New EFs (3 total) shall be Greenheck Model G-090-VG or equivalent. Provide with damper, 2 speed controller and 7 day occupancy timer (Intermatic Model ST01). Locate fan controls adjacent to t-stats. See attached cut sheets and schedule.

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10	MC1.2 Clarification: Interior duct work demolition shown on MC1.2 is not in scope. All other demolition remains in scope.
11	MC1.2: Revise keynote 2 by adding: "Demolish ceiling mounted AHU -1 in Room 619. Demolish concrete equipment slab (approx 5' x 8') and patch flat with floor."
12	MC1.3: Provide remote temperature and humidity sensors for each RTU (including RTU-4, RTU-5 and RTU-6) in the space served. All T-stats and controls shall be wall mounted in office 610. All sensors and controls shall have lockable protective covers.
12.1	MC1.3: Add 20" x 20" transfer grills in main corridor above entrance doors to Boy's Locker Room and Team Room, similar to existing transfer grills on Girl's Locker Rooms (2 total grills).
13	E-0.0 / EC1.3, Luminaire type, count and locations: Luminaires shall be LED, Vertex 7 or equivalent. 34" long, 40 watt. Some luminaires are not tagged on EC1.3. Several luminaires shall be added in locations similar to shown locations. Luminaire counts shall be: Girl's Locker Room - 5 total luminaires (2 added) Boy's Locker Room - 5 total luminaires (1 added) Team Room - 4 total luminaires (0 added) One luminaire in each locker room shall have a battery back up. See attached cut sheet.
14	EC1.1, key note 6: Add: "Approximately 5 pendant luminaires shall be removed in each area shown."
15	EC1.3: Contractor shall provide new power circuits from new Panel F4 for 3 replaced exhaust fans.

4. CLARIFICATIONS AND RESPOSNSES TO QUESTIONS

None

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5. ATTACHMENTS

Pre – Bid Meeting Agenda
Pre – Bid Sign-In Sheet
Section 283111 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM and details
Section 006357 - Change Order Request Form
Drawing # S1 See FTP site.
Exhaust fan and controls cut sheets and schedule
Luminaire cut sheet

NOTE: Please make sure you acknowledge this addendum on the bid form.

END OF ADDENDUM # 1

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ENPULSE Energy Conservation

Energy & Water Management | Facilities Engineering & Management

Pre–Bid Conference Agenda

4/10/2017 at 3:00pm

Project: **GCS SMITH HIGH SCHOOL HVAC IMPROVEMENTS**

Sites: Smith High School

Meeting Location: 2407 S. Holden Rd, Greensboro, NC 27410

1. Introduction of key personnel

2. Confirm sign-in sheet is signed by all

3. Plans and specifications are available. See advertisement. at North Carolina A&T State University Plan Room, Greensboro, NC; Associated General Contractors, Raleigh, NC; Minority Contractors Resource Center, Charlotte, NC; Reed Construction Data, Norcross, GA; Hispanic Contractors Association of the Carolinas, Winston-Salem, NC.

4. A security deposit of $150.00 is required

5. Important Schedule Milestones
   Please point out any needed questions or clarifications in construction documents.
   a. Last Day for Questions – 4/20/2017 at 5:00PM
      i. Questions should be directed to Derrick Giles, ENPULSE, gilesde@enpulse.com, Office: 336-988-1769
   b. Last Day for Addenda – 4/26/2017 at 5:00PM
      (all addenda must be acknowledged on bid form)
   c. Bid Opening – 5/2/2017 at 3:00PM
   d. Location: 501 W. Washington Street, Greensboro, NC 27401, Room 100
   e. Construction start date
   f. Construction completion date
      i. Substantial - August 14, 2017
      ii. Final - September 13, 2017

6. Project Overview
    a. Specs
        i. Summary section
        ii. Unit Prices
    b. Drawings
    c. Site details
        i. Hours of work/access time
        ii. Sign-in/security

7. Bidding Submission Requirements
    a. Bid Form
    b. Bonding
        i. Bid Bond - 5%
        ii. Performance Bond – 100%
    c. MWBE requirements
    d. Liquidated Damages
        i. $1000.00 after Substantial Completion Date (Corrected)
        ii. $500.00 after Final Completion Date (Corrected)
    e. Scope reviews will be completed prior to contract execution

8. Questions / Comments

9. Walkthrough

10. Adjournment

ATTENDANCE SHEET

ENPULSE Energy Conservation

INSTITUTION GCS SMYRA
PROJECT I.D. SMYRA HVAC IMPROVEMENTS
MEETING PURPOSE PRE-BID
DATE/TIME 4/10/17 @ 3:00 PM

TOTAL EVENT HEADCOUNT ____
HUB COUNT ____

	NAME	ORGANIZATION	EMAIL	TEL#	CELL#	FAX#	HUB-Y/ N
1	DEREKK GRAVES	ENPULSE	gravesdg@enpulse.com	336.988.1769			
2	JUSTIN GRAVES	HM KERN	JKEPLEY@HMKERN.COM	336-207-0733			
3	MIKE SCHULTZ	BAR CONST. CO.	LSMITH@BARCONSTRUCTION.COM	336.274.2477	336.274.8694		N
4	Tieny Bya	ENPULSE	tienbya@yahoo.com	(336) 317-4977			
5	JARED SKELTON	GCS	SKELTONJ@GCSNC.COM	334-214-7305			
6	Keith Barnett	Smith High	barnettw@gcsnc.com				
7							
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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Manual fire-alarm boxes.
2. System smoke detectors.
3. Heat detectors.
4. Notification appliances.
5. Remote annunciator.
6. Addressable interface device.

1.03 DEFINITIONS

A. LED: Light-emitting diode.

B. NICET: National Institute for Certification in Engineering Technologies.

1.04 SYSTEM DESCRIPTION

A. The existing fire alarm system is a Simplex Grinnell coded, UL-certified addressable system. The scope of the fire alarm for this project is for Simplex Grinnell to provide all conduit (from cafeteria), wiring, back boxes and devices for a complete working fire alarm system in the existing building. The main FACP is existing and in operation serving the building. Simplex Grinnell shall drawing the devices from the existing stock and supplement accordingly to provide a complete system.

B. Contractor shall provide duct detectors for HVAC units. Contractor shall provide horn strobes to be located in the main corridor adjacent to the locker room and in the corridor adjacent to the Auxiliary Gym (2 total).

1.05 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Raceways shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

1.06 SUBMITTALS

A. General Submittal Requirements:

1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Designer.

2. Shop Drawings shall be prepared by persons with the following qualifications:

a. Trained and certified by manufacturer in fire-alarm system design.

b. NICET-certified fire-alarm technician, Level II minimum.

c. Licensed or certified by authorities having jurisdiction.

B. Product Data: For each type of product indicated.

C. Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.

1. Comply with recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72, 2002 edition.

2. Include voltage drop calculations for notification appliance circuits.

3. Include battery-size calculations.

4. Include performance parameters and installation details for each detector, verifying that each detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.

5. Include voice/alarm signaling-service equipment rack or console layout, grounding schematic, amplifier power calculation, and single-line connection diagram.

6. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits.

D. Delegated-Design Submittal: For smoke and heat detectors indicated to comply with performance requirements and design criteria.

1. Drawings showing the location of each smoke and heat detector, ratings of each, and installation details as needed to comply with listing conditions of the detector.

2. Design Calculations: Calculate requirements for selecting the spacing and sensitivity of detection, complying with NFPA 72, 2002 edition.

E. Qualification Data: For qualified Installer.

F. Seismic Qualification Certificates: For accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.

3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

G. Field quality-control reports.

H. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:

1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72, 2002 edition.

2. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.

3. Record copy of site-specific software.

4. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72, 2002 edition, article of the same name and include the following:

a. Frequency of testing of installed components.

b. Frequency of inspection of installed components.

c. Requirements and recommendations related to results of maintenance.

d. Manufacturer's user training manuals.

5. Manufacturer's required maintenance related to system warranty requirements.

6. Abbreviated operating instructions for mounting at fire-alarm control unit.

7. Copy of NFPA 25.

I. Software and Firmware Operational Documentation:

1. Software operating and upgrade manuals.

2. Program Software Backup: On magnetic media or compact disk, complete with data files.

3. Device address list.

4. Printout of software application and graphic screens.

1.07 QUALITY ASSURANCE

A. Oversight shall be provided by fire alarm vendor to ensure fire alarm system is installed to meet all code and NFPA requirements.

B. Source Limitations for Fire-Alarm System and Components: Obtain fire-alarm system from single source from single manufacturer. Components shall be compatible with, and operate as, an extension of the existing Simplex Grinnell system.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. NFPA Certification: Obtain certification according to NFPA 72, 2002 edition, by a UL-listed alarm company.

1.08 PROJECT CONDITIONS

A. Interruption of Existing Fire-Alarm Service: Coordinate any required shutdowns with Owner to tie in new fire alarm devices:

1. Notify Designer, Construction Manager, Owner no fewer than two days in advance of new device tie ins.

2. Do not proceed with tie in of fire-alarm devices without Designer's, Construction Manager's, Owner's written permission.

1.09 SEQUENCING AND SCHEDULING

A. Existing Fire-Alarm Equipment: Maintain existing fire alarm system and coordinate with the Owner any shutdowns required to tie in the expanded part of the system being installed under this project so that fire watches can occur.

1.10 SOFTWARE SERVICE AGREEMENT

A. Comply with UL 864.

B. Technical Support: Beginning with Substantial Completion, provide software support for two years.

C. Upgrade Service: Update software to latest version at Project completion. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system. Upgrade shall include new or revised licenses for use of software.

1. Provide 30 days' notice to Owner to allow scheduling and access to system and to allow Owner to upgrade computer equipment if necessary.

1.12 WARRANTY

A. Simplex Grinnell shall provide an 12 month warranty on all parts that are in stock at the site prior to the project commencing. Any products provided on site after the project commences shall be provided with a standard Simplex Grinnell warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product by the following:

1. SimplexGrinnell LP; a Tyco International company.

2.02 SYSTEMS OPERATIONAL DESCRIPTION

A. Fire-alarm signal initiation shall be by one or more of the following devices and systems:

4. Duct smoke detectors.

B. Fire-alarm signal shall initiate the following actions: Any operation sent out from the main FACP shall remain as is prior to this project.

7. Close smoke dampers in air ducts of designated air-conditioning duct systems.

2.03 FIRE-ALARM CONTROL UNIT

A. The FACP is an existing Simplex Grinnell 4010 system.

B. Circuits:

1. Initiating Device, Notification Appliance, and Signaling Line Circuits: NFPA 72, Class B.

a. Initiating Device Circuits: (IDC) Class B.

b. Notification Appliance Circuits: Class B.

c. Signaling Line Circuits: Style 4.

2. Serial Interfaces: Two RS-232 ports for printers.

C. Smoke-Alarm Verification:

1. Initiate audible and visible indication of an "alarm-verification" signal at fire-alarm control unit.

2. Activate an NRTL-listed and -approved "alarm-verification" sequence at fire-alarm control unit and detector.

3. Record events by the system printer.

4. Sound general alarm if the alarm is verified.

5. Cancel fire-alarm control unit indication and system reset if the alarm is not verified.

D. Notification Appliance Circuit: Distinctive Evacuation Signal in accordance with ANSI S3,41, American Standard Audible Evacuation Signal.

E. Elevator Recall:

1. Smoke detectors at the following locations shall initiate automatic elevator recall.

a. Elevator lobby detectors except the lobby detector on the designated floor.

b. Smoke detector in elevator machine room.

c. Smoke detectors in elevator hoistway.

2. Elevator lobby detectors located on the designated recall floors shall be programmed to move the cars to the alternate recall floor.

3. Water-flow alarm connected to sprinkler in an elevator shaft and elevator machine room shall shut down elevators associated with the location without time delay.

a. Water-flow switch associated with the sprinkler in the elevator pit may have a delay to allow elevators to move to the designated floor.

F. Elevator Controls: Heat detector operation shuts down elevator power by operating a shunt trip fused disconnect in the elevator machine room. Monitor shunt trip power loss.

G. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke barrier walls shall be connected to fire-alarm system.

H. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory, and print out the final adjusted values on system printer.

I. Printout of Events: Is as it performs prior to this project.

J. Primary Power: The primary power shall remain as is.

K. Secondary Power: Battery calculations shall be performed to verify if the existing batteries are adequate to meet code requirements with the expanded system.

2.04 MANUAL FIRE-ALARM BOXES

A. Simplex Grinnell model #4099-9001

2.05 SYSTEM SMOKE DETECTORS

A. Photoelectric Smoke Detectors: Simplex Grinnell model #4098-9714

B. Duct Smoke Detectors: Simplex Grinnell model #4098-9756

2.06 HEAT DETECTORS

A. Simplex Grinnell model #4098-9733

2.07 NOTIFICATION APPLIANCES

A. Visible Notification Appliances: Simplex Grinnell model #4906-9201

B. Voice/Tone Notification Appliances: Simplex Grinnell model #4906-9251

2.08 WIRE AND CABLE

A. Wire and cable for fire alarm systems shall be UL listed and labeled as complying with NFPA 70, Article 760.

B. Signaling Line Circuits: Twisted, shielded pair, size as recommended by system manufacturer.

1. Circuit Integrity Cable: Twisted shielded pair, NFPA 70 Article 760, Classification CI, for power-limited fire alarm signal service. UL listed as Type FPL, and complying with requirements in UL 1424 and in UL 2196 for a 2-hour rating.

C. Non-Power-Limited Circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.

1. Low-Voltage Circuits: No. 14 AWG, minimum.

2. Multiconductor Armored Cable: NFPA 70 Type MC, copper conductors, TFN/THHN conductor insulation, copper drain wire, copper armor with outer jacket with red identifier stripe, UL listed for fire alarm and cable tray installation, plenum rated.

PART 3 - EXECUTION

3.01 EQUIPMENT INSTALLATION

A. Comply with NFPA 72, 2002 edition, for installation of fire-alarm equipment.

B. Connecting to Existing Equipment: Verify that existing fire-alarm system is operational before making changes or connections.

1. Expand, modify, and supplement existing control, monitoring equipment as necessary to extend existing control, monitoring functions to the new points.

New components shall be capable of merging with existing configuration without degrading the performance of either system.

C. Smoke- or Heat-Detector Spacing:

1. Comply with NFPA 72, "Smoke-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for smoke-detector spacing.

2. Comply with NFPA 72, "Heat-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for heat-detector spacing.

3. Smooth ceiling spacing shall not exceed 30 feet.

4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Appendix A or Appendix B in NFPA 72.

5. HVAC: Locate detectors not closer than 3 feet from air-supply diffuser or return-air opening.

6. Lighting Fixtures: Locate detectors not closer than 12 inches from any part of a lighting fixture.

D. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct.

E. Heat Detectors in Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location.

F. Remote Status and Alarm Indicators: Install near each smoke detector and each sprinkler water-flow switch and valve-tamper switch that is not readily visible from normal viewing position.

G. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Appliances shall be in accordance with NFPA 72 – 2002, Section 7.4.6.

H. Visible Alarm-Indicating Devices: Install at least 6 inches below the ceiling. Appliances shall be in accordance with NFPA 72 – 2002, Section 7.5.4.

I. Device Location-Indicating Lights: Locate in public space near the device they monitor.

J. Manual initiation device location: they shall be in accordance with NFPA 72 – 2002, Section 5.12.

3.02 CONNECTIONS

A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Division 08 Section "Door Hardware." Connect hardware and devices to fire-alarm system.

1. Verify that hardware and devices are NRTL listed for use with fire-alarm system in this Section before making connections.

B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 3 feet from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.

1. Alarm-initiating connection to smoke-control system (smoke management) at firefighter smoke-control system panel.

2. Alarm-initiating connection to stairwell and elevator-shaft pressurization systems.

3. Smoke dampers in air ducts of designated air-conditioning duct systems.

4. Alarm-initiating connection to elevator recall system and components.

5. Alarm-initiating connection to activate emergency lighting control.

6. Alarm-initiating connection to activate emergency shutoffs for gas and fuel supplies.

7. Supervisory connections at valve supervisory switches.

8. Supervisory connections at low-air-pressure switch of each dry-pipe sprinkler system.

9. Supervisory connections at elevator shunt trip breaker.

10. Supervisory connections at fire-pump power failure including a dead-phase or phase-reversal condition.

11. Supervisory connections at fire-pump engine control panel.

3.03 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

B. Install framed instructions in a location visible from fire-alarm control unit.

3.04 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

3.05 FIELD QUALITY CONTROL

A. Field tests shall be witnessed by Designer, authorities having jurisdiction.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

C. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

D. Tests and Inspections:

1. Visual Inspection: Conduct visual inspection prior to testing.

a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.

b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

2. System Testing: Comply with "Test Methods" Table in the "Testing" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.

3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.

4. Test audible appliances for the private operating mode according to manufacturer's written instructions.

5. Test visible appliances for the public operating mode according to manufacturer's written instructions.

6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.

E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

F. Fire-alarm system will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

H. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

I. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.06 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION 28 31 11

PRODUCT INFORMATION

4098-9755 ADDRESSABLE ANALOG 2-WIRE DUCT SENSOR MAPNET II/IDNET SLC

FEATURES:

COMPACT AIR DUCT SENSOR HOUSING WITH CLEAR COVER TO MONITOR FOR THE PRESENCE OF SMOKE
INCLUDES FACTORY INSTALL TRUEALARM PHOTOELECTRIC SMOKE DETECTOR AND FEATURES:

- INDIVIDUAL SENSOR INFORMATION PROCESSED BY THE HOST CONTROL PANEL TO DETERMINE SENSOR STATUS
- DIGITAL TRANSMISSION OF ANALOG SENSOR VALUES VIA MAPNETII OR IDNET SLC, 2-WIRE COMMUNICATIONS
- PROGRAMMABLE SENSITIVITY, CONSISTENT ACCURACY, ENVIRONMENTAL COMPENSATION, STATUS TESTING, AND MONITORING OF SENSOR DIRT ACCUMULATION

MODEL:

- BASIC DUCT SENSOR HOUSING (NO RELAY OUTPUT) POWERED BY MAPNETII/IDNET SLC COMMUNICATIONS

GENERAL FEATURES:

- UL LISTED TO STANDARD 268A
- CLEAR COVER ALLOWS VISUAL INSPECTION
- TEST PORTS PROVIDE FUNCTIONAL SMOKE TESTING ACCESS WITH COVER IN PLACE
- MOUNTS TO RECTANGULAR DUCTS OR ROUND DUCTS (MINIMUM SIZE 8" SQUARE OR 18" DIAMETER)
- MAGNETIC TEST FEATURE FOR ALARM INITIATION AT HOUSING
- OPTIONAL WEATHERPROOF ENCLOSURE IS AVAILABLE SEPARATELY (REFER TO DATA SHEET S4098-0032)

DIAGNOSTIC LEDS (ON INTERFACE BOARD):

- RED ALARM/TROUBLE LED FOR SENSOR STATUS AND COMMUNICATIONS POLLING DISPLAY

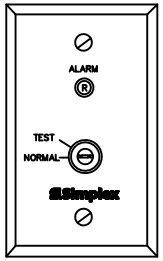
SAMPLING TUBES (ORDERED SEPARATELY):

- AVAILABLE IN MULTIPLE LENGTHS TO MATCH DUCT SIZE
- INSTALLED AND SERVICED WITH HOUSING IN PLACE

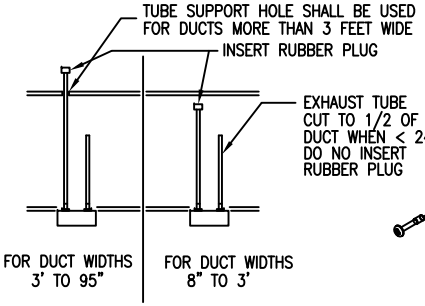
REMOTE MODULE OPTIONS (ORDERED SEPARATELY):

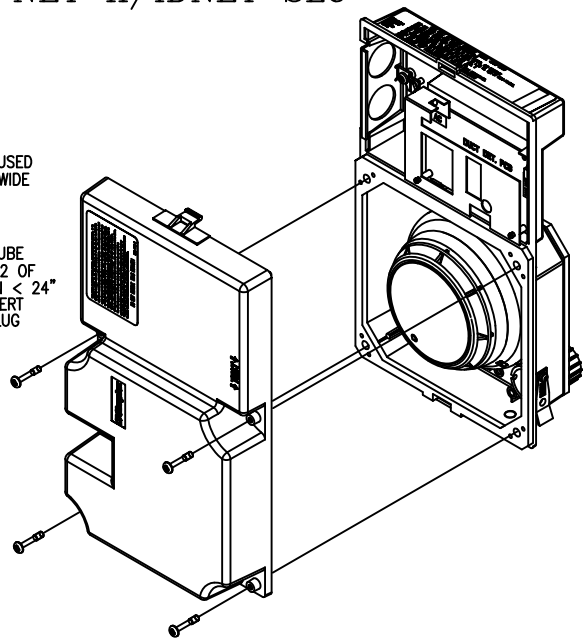
- RED STATUS/ALARM LED (2098-9808)
- TEST STATION WITH LED (2098-9806)

2098-9808
REMOTE STATUS/ALARM INDICATOR



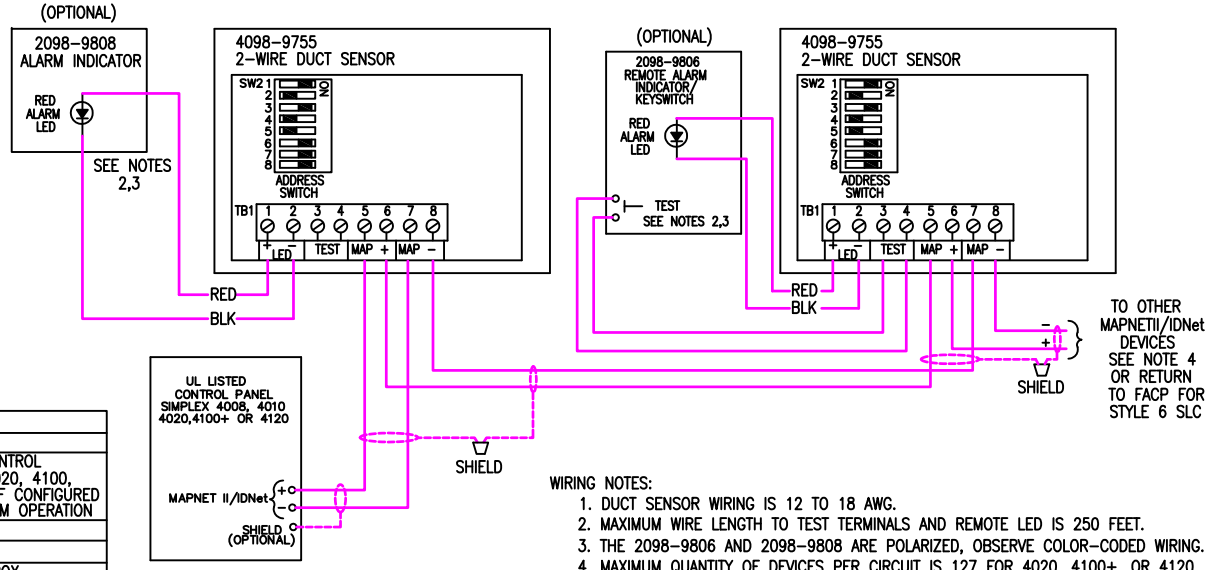
2098-9806
TEST STATION





SPECIFICATIONS:

GENERAL SPECIFICATIONS	
AIR VELOCITY RANGE (LINEAR FT/MIN)	300 TO 4000 FT/min (91 TO 1220 m/min)
SENSOR SENSITIVITY RANGE	0.2% TO 3.7% PER FOOT OF OBSCURATION, SELECTABLE AT HOST CONTROL PANEL
UL LISTED TEMPERATURE RANGE	32° F TO 100° F (0° C TO 38° C)
OPERATING TEMPERATURE RANGE	32° F TO 122° F (0° C TO 50° C)
STORAGE TEMPERATURE RANGE	0° F TO 140° F (-18° C TO 60° C)
HUMIDITY RANGE	10% TO 95% RH, NON-CONDENSING
HOUSING COLOR	BLACK BASE WITH CLEAR COVER
WIRING CONNECTIONS	TERMINAL BLOCKS, 18 TO 12 AWG
REMOTE STATUS/ALARM LED AND TEST STATION WITH REMOTE STATUS/ALARM LED	
REMOTE ALARM LED CURRENT	1.2 mA, NO IMPACT TO ALARM CURRENT (2098-9808 OR 2098-9806)
TEST STATION KEYSWITCH CURRENT	3.3 mA, NO IMPACT TO ALARM CURRENT (2098-9806)
REMOTE ALARM LED AND TEST STATION DISTANCE	250 FT. (76m) MAXIMUM
ADDRESSABLE OPERATION	
DATA COMMUNICATIONS	MAPNET II OR IDNET SLC COMMUNICATION, AUTO-SELECT 1 ADDRESS PER HOUSING, PROVIDES OPERATING POWER TO MODEL 4098-9755



DUCT DETECTOR SELECTION CHART

DUCT SMOKE SENSOR HOUSING WITH PHOTOELECTRIC SENSOR		
MODEL	DESCRIPTION	COMPATIBILITY
4098-9755	BASIC DUCT SENSOR HOUSING, OPERATING POWER IS SUPPLIED BY EITHER MAPNETII OR IDNet COMMUNICATIONS (NO RELAY OUTPUT)	SIMPLEX FIRE ALARM CONTROL MODELS 4008, 4010, 4020, 4100, 4120. ALSO 2120 CDT IF CONFIGURED FOR MAPNETII, TRUEALARM OPERATION
REMOTE LED INDICATOR AND TEST STATION, SELECT ONE IF REQUIRED		
MODEL	DESCRIPTION	MOUNTING
2098-9808	RED LED STATUS INDICATOR	USE SINGLE GANG BOX, 3" H X 2" W X 2" D (76 mm X 51 mm X 51 mm)
2098-9806	TEST STATION WITH KEYSWITCH AND RED LED STATUS (TURNING SWITCH TO TEST INITIATES ALARM FOR SYSTEM TESTING)	

WIRING NOTES:

1. DUCT SENSOR WIRING IS 12 TO 18 AWG.
2. MAXIMUM WIRE LENGTH TO TEST TERMINALS AND REMOTE LED IS 250 FEET.
3. THE 2098-9806 AND 2098-9808 ARE POLARIZED, OBSERVE COLOR-CODED WIRING.
4. MAXIMUM QUANTITY OF DEVICES PER CIRCUIT IS 127 FOR 4020, 4100+, OR 4120, 128 FOR THE 2120 CDT PANEL, AND 250 FOR THE 4010 PANEL.

4090-9002 IDNet SLC, INDIVIDUAL ADDRESSABLE OUTPUT MODULE RELAY (AOM)

PRODUCT INFORMATION

FEATURES:

- UL LISTED
- A SINGLE ADDRESSABLE POINT BOTH CONTROLS A 2A FORM "C" CONTACT AND TRACKS ITS STATUS
- COMPATIBLE WITH SIMPLEX MODEL 4010 AND 4100 ADDRESSABLE FIRE ALARM CONTROL PANEL
- LATCHING RELAY DESIGN ALLOWS DATA AND POWER TO BE BOTH SUPPLIED BY IDNet COMMUNICATIONS
- COMPACT, SEALED CONSTRUCTION:
  - SCREW TERMINALS FOR WIRING CONNECTIONS
  - REDUCES DUST INFILTRATION

SPECIFICATIONS:

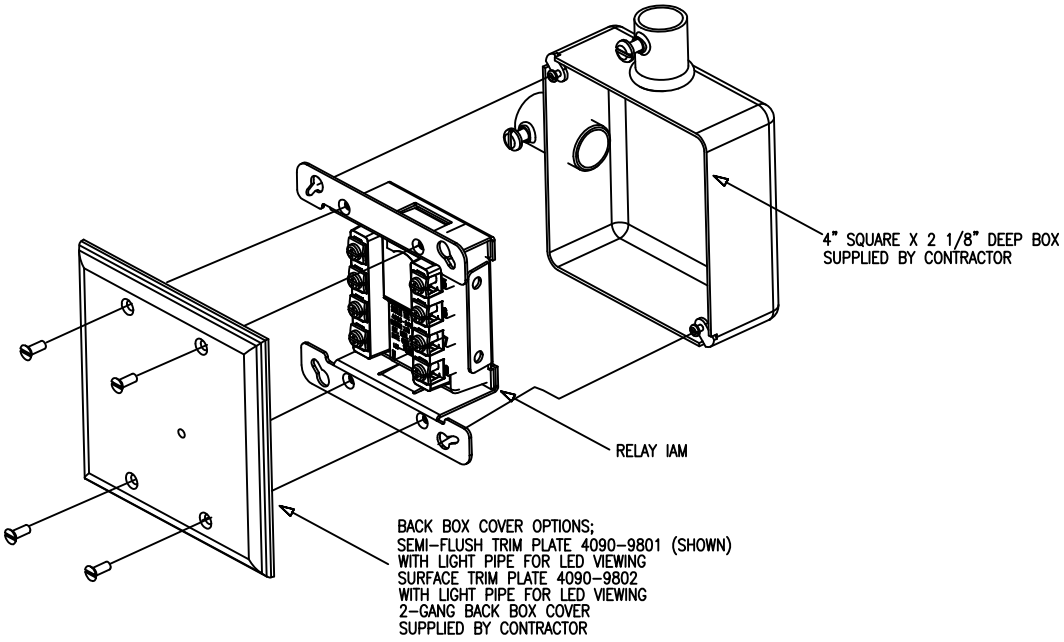
- RELAY IAM POWER: SUPPLIED BY IDNet COMMUNICATIONS
- RELAY IAM CONTACTS (FORM "C", SPDT)
- POWER LIMITED RATING: 2A @ 24VDC, TRANSIENT SUPPRESSED LOADS, 1A @ 24VDC FOR INDUCTIVE LOADS
- NON POWER LIMITED RATING: 1/2A @ 24VAC, TRANSIENT SUPPRESSED LOADS, 1A @ 24 VDC FOR INDUCTIVE LOADS
- WIRE CONNECTIONS: SCREW TERMINALS FOR IN/OUT WIRING, #18 TO #14 AWG WIRE
- COMPATIBLE WITH SIMPLEX 2081-9044 OVER VOLTAGE PROTECTORS
- DIMENSIONS: 4 1/8"H x 4 1/8"W x 1 3/8"D (105mm x 105mm x 35mm)
- HOUSING MATERIAL: BLACK THERMOPLASTIC
- MOUNTING PLATE MATERIAL: SHEET METAL, GALVANIZED
- TEMPERATURE RANGE: 32° F TO 120° F (0° C TO 49° C) INTENDED FOR INDOOR OPERATION
- HUMIDITY RANGE UP TO 93% RH AT 100° F (38° C)

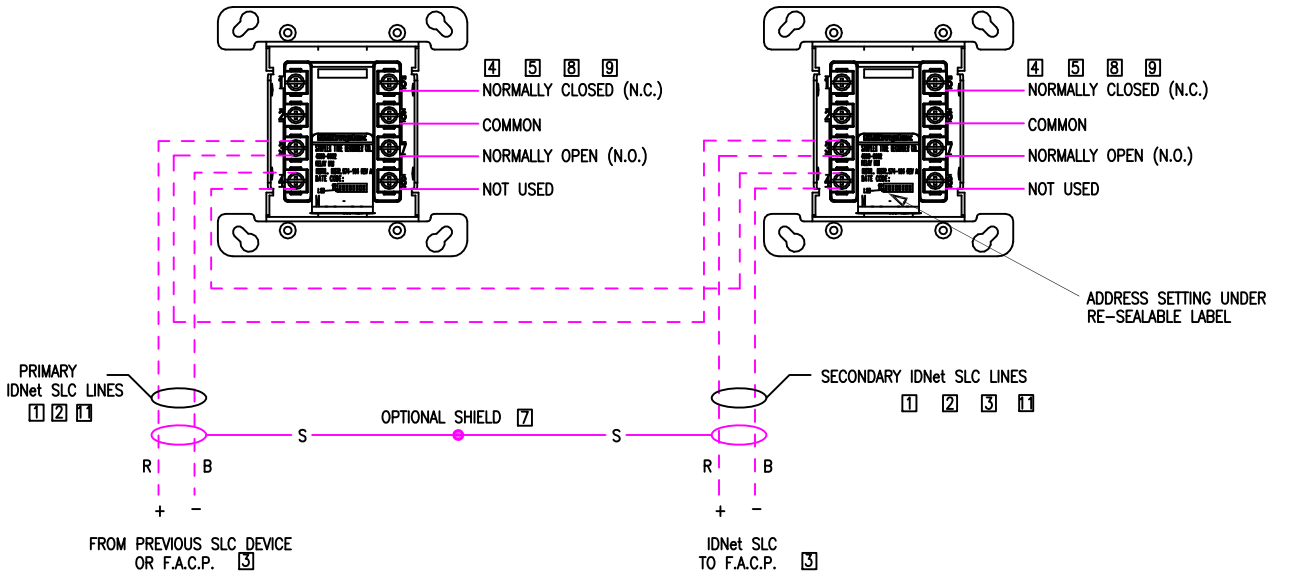
DESCRIPTION:

IDNet SLC RELAY MODULES ALLOW THE SIMPLEX FIRE ALARM CONTROL PANEL TO CONTROL A REMOTELY LOCATED FORM "C" CONTACT USING IDNet ADDRESSABLE COMMUNICATIONS FOR BOTH DATA AND POWER. TYPICAL APPLICATIONS WOULD BE FOR SWITCHING LOCAL POWER FOR CONTROL FUNCTIONS SUCH AS ELEVATOR CAPTURE, OR CONTROL OF HVAC COMPONENTS, PRESSURIZATION FANS, DAMPERS, ETC. RELAY STATUS IS ALSO COMMUNICATED REQUIRING ONLY ONE DEVICE ADDRESS.

WIRING NOTES:

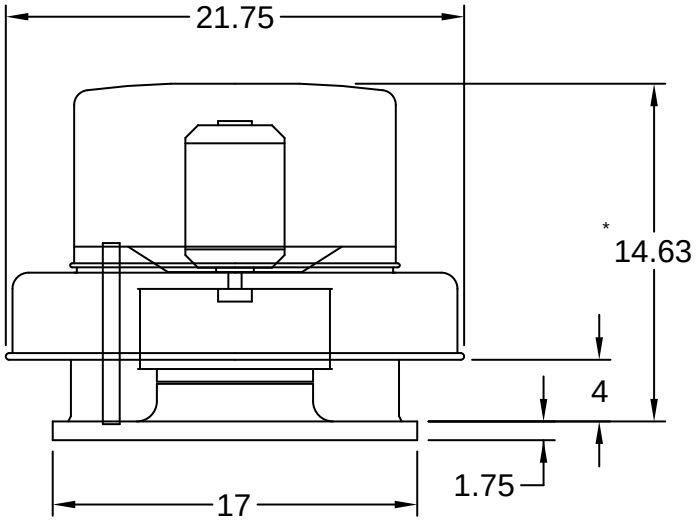
1. IDNet LINES ARE TO BE #18 AWG TWISTED PAIR (CONSULT SG SALES ENGINEERING FOR EXCEPTIONS).
2. MAXIMUM ALLOWABLE LINE RUN, FROM THE F.A.C.P. TO THE FARTHEST DEVICE, NOT TO EXCEED 2500 FEET.
3. MAXIMUM QUANTITY OF DEVICES PER CIRCUIT: CONTROL PANEL MODULE DEPENDENT
4. CONTRACTOR WIRING TO RELAY CONTACTS IS UNSUPERVISED. USE #14 AWG WIRE TO LOCAL CODE.
5. RELAY CONTACTS RATED 2A, 24VDC (1A FOR INDUCTIVE LOAD) RELAY CONTACTS RATED 0.5A 120VAC (NON POWER LIMITED) FOR POWER-LIMITED OPERATION, POWER MUST BE PROVIDED FROM FACP OR POWER-LIMITED POWER SUPPLY LISTED FOR FIRE PROTECTIVE SIGNALING USE.
6. SEE INSTALLATION INSTRUCTIONS 574-184.
7. IF SHIELD IS PRESENT, CONNECT TO THE OUTGOING IDNet SHIELD TO PROVIDE A CONTINUOUS SHIELD OVER THE LENGTH OF THE IDNet CHANNEL. METHOD OF SPLICE DETERMINED BY AHJ.
8. WHEN CONNECTED TO A NON POWER-LIMITED SOURCE, THE WIRING MUST MAINTAIN A MINIMUM 1/4 INCH SEPARATION FROM IDNet WIRING.
9. WHEN USED WITH NON POWER-LIMITED SOURCE, THE "POWER LIMITED WIRING" INDICATION ON THE DEVICE LABEL MUST BE OBLITERATED.
10. WHEN BOTH POWER-LIMITED AND NON POWER-LIMITED SOURCES ARE PRESENT, USE TYPE FPL, FPLR OR FPLP POWER LIMITED CABLE FOR POWER-LIMITED CIRCUITS.
11. MAXIMUM TOTAL WIRE (INCLUDING ALL T-TAPS) ON CIRCUIT, FROM THE F.A.C.P. NOT TO EXCEED 10,000 FEET OR .58uF. (CLASS B ONLY)
12. REFER TO FIELD WIRING DIAGRAM 842-073





Model: G-090-VG

Direct Drive Centrifugal Roof Exhaust Fan

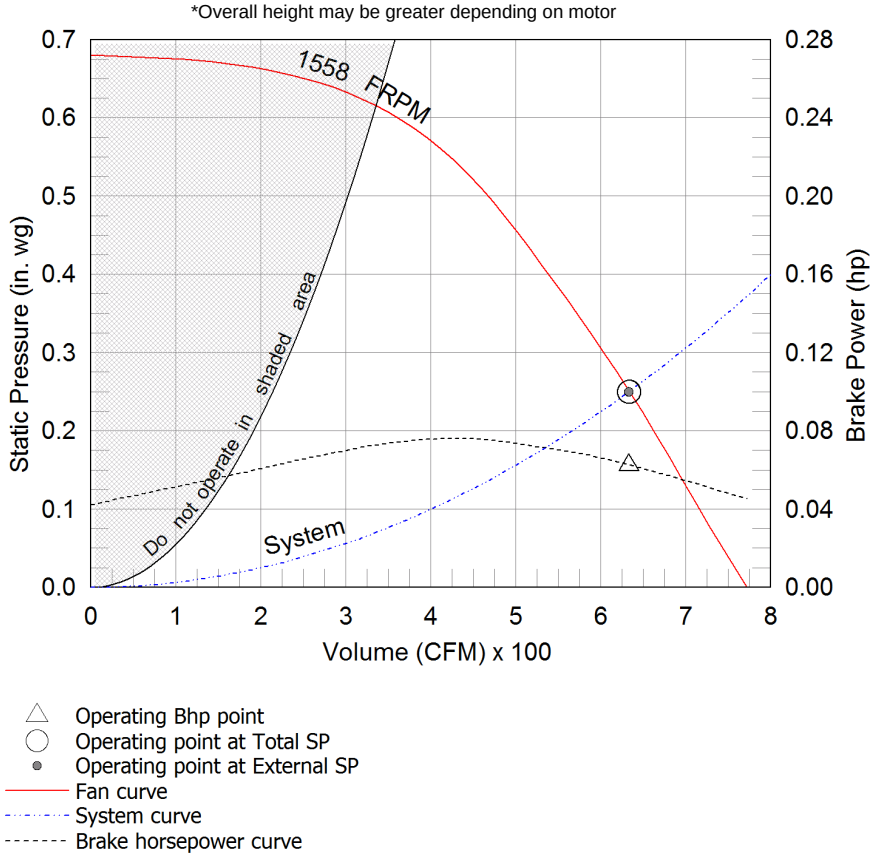


*Overall height may be greater depending on motor

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	25
Weight w/ Acc's (lb)	44
Optional Damper (in.)	10 x 10
Roof Opening (in.)	12.5 x 12.5

Performance	
Requested Volume (CFM)	633
Actual Volume (CFM)	633
External SP (in. wg)	0.25
Total SP (in. wg)	0.25
Fan RPM	1558
Operating Power (hp)	0.06
Elevation (ft)	886
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.073
Tip Speed (ft/min)	4,435
Static Eff. (%)	40

Motor	
Motor Mounted	Yes
Size (hp)	1/10
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Windings	1
FLA (Amps)	1.38



Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	70	71	70	61	58	56	54	46	66	54	7.5

Notes:

All dimensions shown are in units of in.
*NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2014. Actual motor FLA may vary, for sizing thermal overload, consult factory.
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using AMCA 301 at 5 ft

Model: G-090-VG

Direct Drive Centrifugal Roof Exhaust Fan

Standard Construction Features:

- Aluminum housing - Backward inclined wheel - Aluminum curb cap with prepunched mounting holes - Birdscreen - Ball bearing motors (sizes 100-180), sleeve bearing motors (sizes 60-95) - Motor isolated on shock mounts - Corrosion resistant fasteners

Selected Options & Accessories:

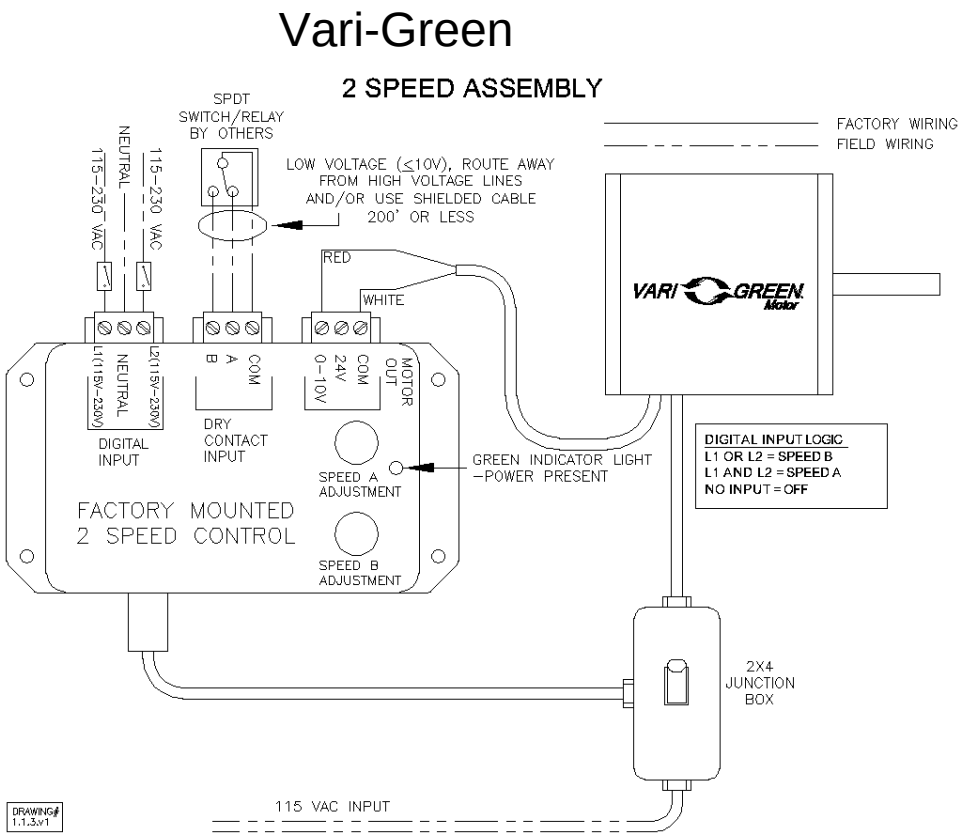
Motor - Vari-Green EC motor 0-10 VDC Input Signal
Control – Vari Green 2-speed w/Integral 85-277V to 24VDC transformer, Mtd & Wrd
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Roof Curb-Galv., GPI-17-G12, Under Sized 1.5 in. Total
Damper Shipped Loose, WD-100-PB-10X10, Gravity Operated, Not Coated
Unit Warranty: 1 Yr (Standard)

Vari-Green
Motor & Control Options

An EC motor that uses AC input power and internally converts it to DC power. Motor accepts a 0-10VDC control signal along with a 24V source to power controls in the motor. Motor is operable in the 2-10VDC range and off while in the 0-1.9VDC range. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

A control that allows motor rpm (fan speed) to be set at two independent speeds (A or B). There are two methods of toggling between speeds; Dry Contact Input (SPDT switch or relay), or AC Digital Input (feed an AC voltage directly into the 2-speed control). The 2-speed control includes a 24VDC transformer with 85-277VAC input range.

Motor Type:	0-10 VDC
Control Type:	2-Speed
Transformer:	Mounted and Wired



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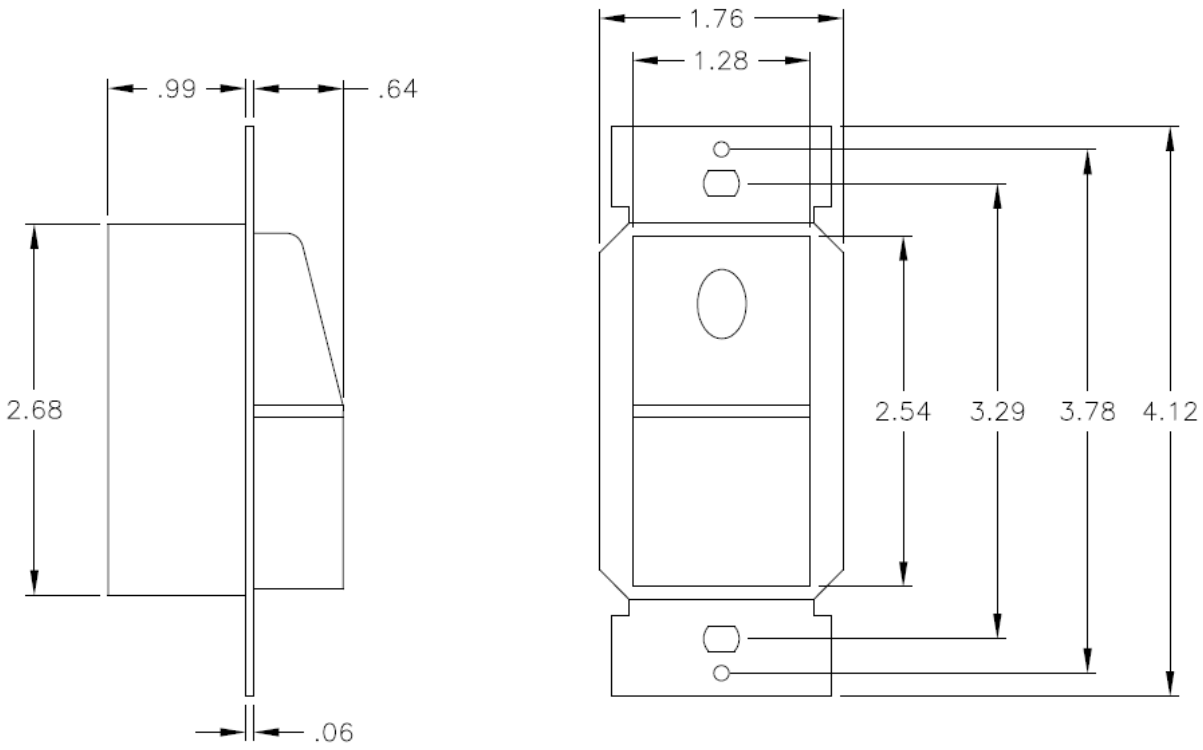
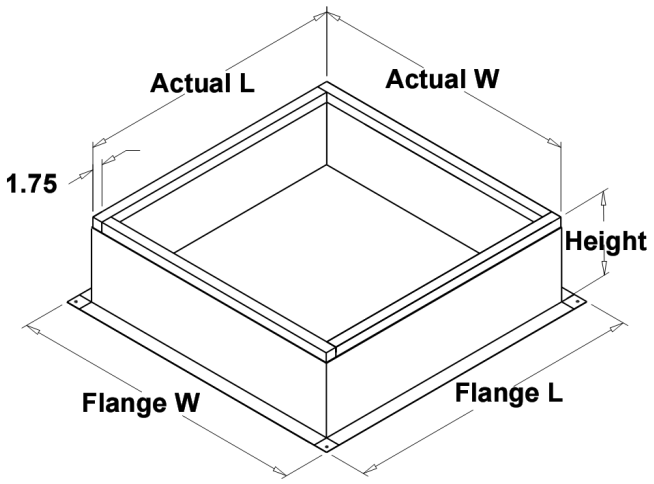
Standard Construction Features:

The model MDW is a wall mounted passive infrared motion detector switch which will automatically turn on the fan when a change in temperature is sensed within the switches 180 degree viewing area. The fan will automatically turn off after the room has been vacant past the adjustable time delay setting of 1 to 20 minutes. The detector must be installed in the line-of-sight of the subject personnel. Requires a 2 x 4 handy box by others.



Notes: All dimensions shown are in units of in.

Roof Curb
Model: GPI



Standard Construction Features:

- Roof Curb fits between the building roof and the fan mounted directly to the roof support structure - Constructed of either 18 ga galvanized steel or 0.064 in. aluminum - Straight Sided without a cant - 2 in. mounting flange - 3 lb density insulation - Height - Available from 12 in. to 42 in. as specified in 0.5 in. increments.

Notes:
- The maximum roof opening dimension should not be greater than the "Actual" top outside dimension minus 2 in..
- The minimum roof opening dimension should be at least 2.5 in. more than the damper dimension or recommended duct size.
- The Roof Opening Dimension may NOT be the Structural Opening Dimension.
- Damper Tray is optional and must be specified. Tray size is same as damper size.
- Security bars are optional and must be specified. Frames and gridwork are all 12 ga steel. Gridwork is welded to the frame and the frame is welded to the curb.

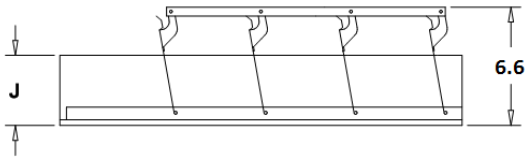
Roof Curb Configuration:

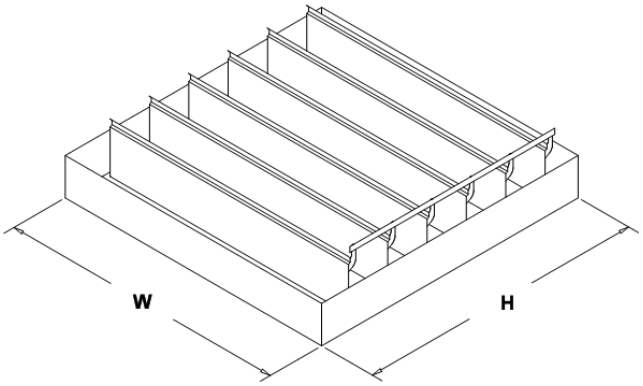
ID #:	Tag:	Qty:	Curb Cap W x L:	Actual W x L:	Flange W:	Flange L:	Height:	Step Hgt:	Damper Tray W x L:
2	EF-2	1	17 x 17	15.5 x 15.5	19.5	19.5	12	N/A	x

Notes: All dimensions shown are in units of in.

Horizontal Mount Exhaust Damper

Model: WD-100





Standard Construction Features:

- Model WD-100 is a horizontal mount exhaust damper (air flow up) and is constructed of 18 ga galvanized steel with pre-punched mounting holes - Damper blades are 0.025 in. roll formed aluminum with vinyl seals on the closing edge, and spring assisted for ease of opening - Steel axles are 0.188 in. diameter zinc plated mounted in acetal bushings - Synthetic axle bearings

Damper Configuration:

ID #:	Tag:	Quantity:	W (in.):	H (in.):	J (in.):	Act Qty:	Actuator Model:
2	EF-2	1	10	10	2.5	0	

Notes: All dimensions shown are in units of in.
Width And height furnished approximately 0.125 in. undersize

Smith HS

EQUIPMENT SCHEDULE

Fans				Actual Performance							Motor Specifications							
Mark	Qty	Model	Wheel Dia.	Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	Fan RPM	Power (hp)	dBA	Sones	Size (hp)	Volt	Hz	Ph	Enc	RPM	EC Motor	Motor Starter
EF-2	1	G-090-VG	10.875	633	0.25	0.25	1558	0.06	54	7.5	1/10	115	60	1	ODP	1725	VariGreen	

Troubleshooting Guide

Observed Problem	Possible Cause	What to Do
Switch timer does not switch ON/OFF but display looks normal.	Switch timer is not set in AUTO, RANDom, or MANual mode.	Press **MODE** to select the operational mode you want to use.
Switch timer won't enter AUTO or RANDom mode when you press **MODE**.	The time of day or timer settings have not been set.	Make sure the time of day and at least one scheduled activity have been set.
Switch timer switches at incorrect times or skips some of the programmed times.	Programmed schedule(s) are incorrect.	Press **ON/OFF** to review the settings and revise them as necessary. See instructions at the left.
	Switch timer is in RANDom mode, which varies switching times up to ±20 minutes (to give your home a "lived-in" look).	If you don't want to keep the switch timer in RANDom mode, press **MODE** to change to AUTO mode.
	The Astronomic and Specific switching times are in conflict. For example, you've set ON to DUSK and OFF at 8 pm, and due to seasonal changes, DUSK has advanced to 8:30 pm. *NOTE: Your switch timer automatically skips any conflicting ON event as summer approaches to prevent unwanted operation of lights or other controlled devices. See "What to Do" if you want to identify and remove conflicting settings.*	1. Complete the steps for setting the Time and Date, then temporarily change the date to June 21st. 2. Review the DAWN and DUSK settings by pushing the **ON/OFF** button. 3. Make sure the specific ON or OFF time settings won't interfere with these DAWN and DUSK times. Make changes as necessary. 4. When finished, change the Date setting back to today's date.
The lights or controlled devices don't match the programmed ON/OFF status immediately after setting the time or programming a schedule.	Switch timer does not "catch up" automatically to the programmed load state. The status of the switch timer will remain as is until it comes to the next programmed ON/OFF time.	After entering your schedules or the time, then returning to the AUTO mode, push the **ON/OFF** button to change the load state if necessary.
Load only operates when the remote (3-way) switch is in one position, or the switch timer ignores the remote switch.	The remote switch is wired incorrectly.	Recheck the wiring, especially for the jumper, according to "If a 3-way Switch Timer" and "If a Multiple Switch Timer Setup."
The switch timer ignores a 3-way remote switch even though it is wired correctly.	There is an excessive length of wire (more than 100 feet), or there is buried wire to the switch.	Eliminate the condition: either replace the buried cable, do without the remote switch, or contact Intermatic Customer Service for more options.
	The remote switch is not functioning properly or worn out.	Replace the remote switch.
The load turns off immediately after being turned on.	• The remote switch or switch timer is wired wrong. • There is an excessive length of wire (greater than 100 feet) • There is buried wire to the remote switch. • The switch timer is not functioning properly.	If the problem persists with the switch timer's red wire disconnected or with a remote switch temporarily connected right at the switch timer, replace the non-functioning switch timer. Otherwise, try the above suggestions.
The battery tray is difficult to replace.	• Battery is not seated in the tray. • The tray is misaligned. • The contact tabs of the tray are bent.	Seat the battery in the tray, then reinstall.
The switch timer operation is sluggish or not switching ON/OFF at all.	Though the "BATT" message is not being displayed, the battery is getting weak.	Replace the battery. To test the battery, press the **ON/OFF** button. The timer should "click."
Timer shows ON but the light or other controlled device is OFF.	The light or controlled device itself may be switched OFF.	Make sure the light or controlled device is switched ON and plugged in.

LIMITED ONE-YEAR WARRANTY

If within the warranty period specified, this product fails due to a defect in material or workmanship, Intermatic Incorporated will repair or replace it, at its sole option, free of charge. This warranty is extended to the original household purchaser only and is not transferable. This warranty does not apply to: (a) damage to units caused by accident, dropping or abuse in handling, acts of God or any negligent use; (b) units which have been subject to unauthorized repair, opened, taken apart or otherwise modified; (c) units not used in accordance with instructions; (d) damages exceeding the cost of the product; (e) sealed lamps and/or lamp bulbs, LED's and batteries; (f) the finish on any portion of the product, such as surface and/or weathering, as this is considered normal wear and tear; (g) transit damage, initial installation costs, removal costs, or reinstallation costs.

INTERMATIC INCORPORATED WILL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES. ALL IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY MODIFIED TO EXIST ONLY AS CONTAINED IN THIS LIMITED WARRANTY, AND SHALL BE OF THE SAME DURATION AS THE WARRANTY PERIOD STATED ABOVE. SOME STATES DO NOT ALLOW LIMITATIONS ON THE DURATION OF AN IMPLIED WARRANTY, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

This warranty service is available by either (a) returning the product to the dealer from whom the unit was purchased, or (b) completing a warranty claim on line at www.intermatic.com. This warranty is made by: Intermatic Incorporated Customer Service/7777 Winn Rd., Spring Grove, Illinois 60081¬9698/815-675-7000 http://www.intermatic.com

158--00883

INTERMATIC® MODEL ST01 Series Self-Adjusting Wall Switch Timer

Installation and User Instructions

Ratings

- Resistive (*heater*) 15 Amp, 120-277 VAC
- Tungsten (*incandescent*) 15 Amp @ 120 VAC, 6 Amp @ 208-277 VAC
- Ballast (*fluorescent*) 8 Amp @ 120 VAC, 4 Amp @ 208-277 VAC
- Motors 1 H.P. @ 120 VAC, 2 H.P. @ 240 VAC
- DC Loads 4 Amp @ 12 VDC, 2 Amp @ 28 VDC

⚠ *WARNING*

- **Electrical shock hazard. Risk of injury or death. Remove electrical power at service panel before installing.**
- **Risk of fire or burns from used battery. Do not recharge, disassemble, heat above 100° C, crush, or incinerate the lithium battery. Keep battery out of reach of children. Replace only with Panasonic type CR2 or equivalent CR2 battery approved by Underwriters Laboratories (UL). Use of a different battery type may present a risk of fire or explosion upon disposal of battery.**
- **Risk of fire. Do not use timer to control devices that could have dangerous consequences due to inaccurate timing, such as sun lamps, sauna, heaters, crock pots, etc.**

NOTICE

- **Follow local electrical codes during installation.**
- **Risk of timer damage due to leakage if weak battery is not replaced promptly.**
- **Dispose of used battery promptly per local regulations.**

1 – Before Installing Switch Timer, Install and Check Battery

Before installing the switch timer into the wall, make sure the supplied battery is installed and working.

1. Open the access door to reveal the battery tray, located below the ON/OFF keypad.
2. If there is a pull tab at the battery tray, remove the tab to connect the installed battery. Make sure battery tray is pushed fully into place. Proceed to Step 6.
3. If the battery was supplied loose, pry open the battery tray and remove it from the timer.
4. Place the supplied "CR2" battery into the tray, observing **+** and **–** markings on tray.
5. Replace the battery tray into the switch timer.
6. The display will initialize itself then flash "12:00 AM" in MANual mode.
7. Press the **ON/OFF** button. The switch timer should "click."

NOTE: If display doesn't flash "12:00 am", the battery may be dead. Replace the battery before installing the switch timer.

For new installations, it is recommended that you setup and program your timer before installing it in your wall. This will make it easier to follow the instructions while programming the timer. Since the timer is battery-powered and does not need AC power to program, all of your settings will be saved in the timer and ready to be used once the timer is installed.

2 – Intro to Programming: Read Before You Begin

- Your ST01 timer will display the event's information slightly differently if the event has never been programmed (Figure 14), or if it has had information entered into it before (Figure 25).
- If you are programming into an uninitialized event location (Figure 14), note that the display may flash DAWN or DUSK momentarily when the **ON/OFF** key is pressed (Section 6, Step 3).
- Your timer does not force you to program **ON** and **OFF** times in pairs; you must be sure to program a corresponding OFF time for every ON time you enter into the timer. ***Each* ON *and each* OFF *setting will use a different numbered program.*** This allows greater flexibility while programming your timer.
- As you use the menus to program, it will be helpful to have an overview of how they are organized. Press the **MODE** button to rotate through the switch timer's modes: SET UP, PROGRAM, AUTO, RANDOM, and MANUAL. All menus "loop", so they repeat when you get to the end. AUTO and RANDOM modes are skipped until there is at least one ON/OFF setting.
- Once you reach a Mode you want to work with, press the **ON/OFF** button to rotate through the loop of settings available for that Mode, returning to the beginning. For example, in SET UP mode, you will see HOUR, MINute, AM/PM, Year, MONth, etc.
- Use the **+** or **–** buttons to change a setting when it is FLASHING (e.g., the correct hour). Holding the button makes the numbers scroll faster. Pressing **ON/OFF** again advances to the next setting and automatically saves — whether you changed the setting or not. **Saving is automatic, there's no extra step.**
- If you're interrupted during programming, your work to that point is automatically saved after 5 minutes.
- Press **MODE** when you're finished to navigate to the mode you want to operate the switch timer: Auto, Manual, or Random.

3 – Clear Any Existing Programming

It's unlikely that the new switch timer has any existing programming but to make sure, use this procedure *before setting the time.*

1. Open the front cover.
2. Hold down **ON/OFF**.
3. Using a pen or paper clip, press and release **RESET**, which is the small round button to the lower right of the **+** button.
4. When the screen displays INIT, release **ON/OFF**. The screen will initialize, then flash "12:00 am" in MANual mode.

All previous settings are now deleted.

5 – Set the Date and Time

In order for the Astronomic Feature and automatic Daylight Saving Time settings to function properly, the CALENDAR settings must be entered correctly.

WHAT IT MEANS: The icon of the LIGHT BULB indicates whether the switch timer is ON or OFF. The WHITE area of the example screens is what will be flashing on your switch timer.

Fig. 4

1. Press **MODE** until the screen displays SET UP. The first time, the hours/minutes display will be flashing (Fig. 4).

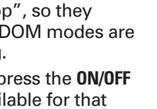


Fig. 5

2. Press **ON/OFF** to display HOUR (Fig. 5), then press **+** until the correct hour and AM/PM are shown.

   NOTE: If you go too far, press the - button to back up, or press + until you loop back.

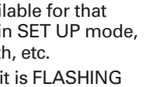


Fig. 6

3. Press **ON/OFF** to display MIN (Fig. 6), then press **+** until the correct minute is shown.
4. Repeat this routine for YEAR, MONTH, DATE.

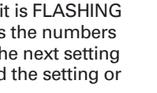


Fig. 7

5. Verify that the day of the week is correct (Fig. 7). If wrong, press **+** or **–** to loop back, then reset the calendar information.

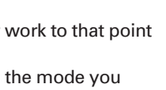


Fig. 8

6. Press **ON/OFF** to display DST (Fig. 8), and set whether you want to adjust automatically for Daylight Saving Time (DST).
   - If you use DST, press **+** for AUTO.
   - If you do not use DST, press **+** for MANual.

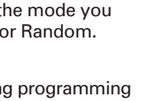


Fig. 9

7. Press **ON/OFF** to set your ZONE (Fig. 9). This feature tracks changes in sunrise and sunset times. Press **+** to select your local zone: NoRTH, CENTer, or SOUth (Fig. 10).

Fig. 10

8. You can set DAWN or DUSK to your exact time in your area according to your newspaper or online. Use the following procedures to do so, or press **ON/OFF** 3 times to skip.

Fig. 11

   a. Press **ON/OFF** to set your exact local time for DAWN (Fig 11), then press **+** to set the correct HOUR.

b. Press **ON/OFF** to display MIN (Fig. 12), then press **+** until the correct minute is shown.

Fig. 12

c. Repeat Steps **a** and **b** to set exact local time for DUSK.

9. Press **ON/OFF** again and you'll loop back to SET UP.

CHECK YOUR SETTINGS: Press **ON/OFF** repeatedly to loop back around to review your date and time settings. If anything is wrong, make corrections using the above steps.

6 – Set Initial Pair of ON and OFF Times

You have many options with up to 40 timer settings:

- *Set to a specific ON/OFF time.*
- *Set to DAWN and DUSK, which automatically adjust as the seasons change. This is the ASTRONOMIC feature.*
- *Set to activate ALL days, M-F, WeeKenD, or individual days.*

Programs are created in two procedures: setting an ON time followed by setting an OFF time. You must set each time separately. The instructions below will guide you as follows:

- *First, for setting an ON time, which can be DAWN or DUSK, or a specific time such as 6:00 pm,*
- *Then for setting an OFF time which can also be DAWN or Dusk, or a specific time.*

1. Press **MODE** until the screen displays ProGraM below the time of day (Fig. 13).

Fig. 13

2. Press **ON/OFF** to display the program number, then press **+** until you see the program number you want to set (Fig. 14).

Fig. 14

3. Press **ON/OFF**, then press **+** if necessary, to display **ON** for setting the ON time (Fig. 15). *Continue to press + for OFF (if setting an OFF time) or SKIP (if deleting a setting).*

Fig. 15

4. Press **ON/OFF**, then press **+** to display whether you want ON to be set for DUSK, DAWN, or a specific time which would be shown as "12:00" (until you change it).

<u>If ON is to be at Dawn or Dusk:</u>

NOTE: Some people like to set DUSK as an ON time and match it with a <u>specific time such as 11:00 pm</u> for OFF.

a. Press **+** to display DUSK (Fig. 16). *Continue to press + for DAWN (if setting DAWN as the on time).*

Fig. 16

b. Press **ON/OFF** to display the days you want the setting to be active, then press **+** to select either ALL days, M-F, WeeKenD, or an individual day. Fig. 17 shows ALL as an example.

Fig. 17

c. Press **ON/OFF** again. The display will briefly show SAVE.

You have successfully set the ON time as DUSK, and must now repeat this procedure to set the OFF time to go with it.

The display will loop back to Step 2 above, ready for you to set another program. Press **+** to display a flashing "02" (Fig. 18).

Fig. 18

- To set PROGRAM 2, follow this procedure again, beginning at Step 2 above.
- When you're finished, press **MODE** to exit from programming and automatically save your new settings.

<u>If ON is to be at a Specific Time such as 8:15 pm:</u>

a. Press **+** to display "12:00" (Fig. 19).

Fig. 19

b. Press **ON/OFF** to display the hour (Fig. 20), then press **+** until the correct hour is shown.

NOTE: If you go too far, press the – to back up, or press + until you loop back around.

Fig. 20

c. Press **ON/OFF** to display the minutes (Fig. 21), then press **+** until the correct minute is shown.

Fig. 21

d. Press **ON/OFF** to display the days you want the setting to be active, then press **+** to select either a specific day of the week, ALL days, M-F (work week only), or WKD (weekend only). Fig. 22 shows ALL as an example.

Fig. 22

e. Press **ON/OFF** again The display will briefly show SAVE.

Fig. 23

You have successfully set the ON time to 8:15 pm, and must now repeat this procedure to set the OFF time to go with it.

The display will loop back to Step 2 above, ready for you to set another program. Press **+** to display a flashing "02" (Fig. 23).

- To set PROGRAM 2, follow the procedure beginning at Step 2 on the other side of this sheet. ***Repeat these steps to create up to 40 unique ON/OFF settings.***
- When you're finished, press **MODE** to exit from programming and automatically save your new settings.

7 – Selecting AUTO, RANDom, or MANual Operation

Once set up, you have three choices for using the switch timer. To make a selection, open the front cover and press the **MODE** button until you see your choice of the following options:

- **AUTO** — uses the timer settings you have programmed.
- **RANDom** — gives your home a "lived-in" look by varying your settings by a random amount of ± 20 minutes or so.
- **MANual** — makes the switch into a standard ON/OFF switch without timer settings. Press on the door of the switch timer for ON, press again for OFF.

About the Battery

- The single lithium CR2 battery operates the ON/OFF function ("click-click") and maintains time of day and date. The screen flashes "BATT" when the battery is getting low.
- It is recommended to remove AC power when changing the battery.
- You have about one minute to swap batteries before the switch timer "forgets" the date and time settings. Afterwards, if the display is wrong or flashes "12:00 AM", reset the time and date. **All other settings (your ON/OFF programming) remain in memory indefinitely without battery or AC power.**
- To test the battery, press the **ON/OFF** button. The timer should "click."
- Replace the battery per Section 1 Instructions as soon as possible after the low "BATT" message appears.
- Do not leave exhausted battery in Switch Timer. (Risk of leakage.)
- Replace only with Panasonic Type CR2 lithium battery or equivalent CR2 battery approved by Underwriters Laboratories (UL).
- Dispose of the used battery promptly according to local regulations. Keep battery away from children. Do not disassemble and do not dispose of battery in fire.

Changing Program Times

Deleting an ON or OFF Setting

Use these steps to delete an existing ON or OFF setting that you no longer want (for example, special settings from a vacation.)

1. Press **MODE** until the screen displays ProGraM below the time of day (Fig. 24).

Fig. 24

2. Press **ON/OFF** to display the program number, then press the **+** button until you see the program number you want to delete (Fig. 25).

Fig. 25

3. Press **ON/OFF**, then the **+** button until SKIP is displayed (Fig. 26). The switch timer will now suppress this setting.

Fig. 26

4. Press **ON/OFF** again to cycle through the program until the display briefly shows SAVE.

5. Press **MODE** to exit from programming and automatically save your new settings.

NOTE: Repeat this step and select ON or OFF to reactivate the setting.

Revising an ON or OFF Setting

Use these steps to revise an existing ON or OFF setting.

1. Press **MODE** until the screen displays ProGraM below the time of day (Fig. 27).

Fig. 27

2. Press **ON/OFF** to display the program number, then press the **+** button until you see the program number you want to revise (Fig. 28).

Fig. 28

3. Press the **ON/OFF** button as many times as necessary to display the setting you want to revise, for example, the MINUTE (Fig. 29).

Fig. 29

4. Now press the **+** button again to display the new minute you want to set (Fig. 30).

5. Press **MODE** to exit from programming and automatically save your new settings.

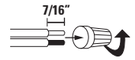
Fig. 30

Installing the Switch Timer

1. Turn off power at the service panel by REMOVING FUSE or TURNING THE CIRCUIT BREAKER OFF.

2. Remove the existing wall switch.

3. Trim building wires to 7/16" as shown.

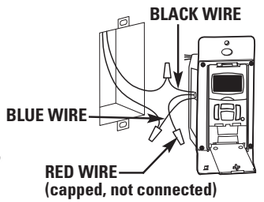


<u>If a Single Switch Setup:</u>

a. Connect one of the two wires from the wall to the black wire from the switch timer, using the twist connectors provided.

b. Connect the other wire from the wall to the blue wire from the switch timer, using the twist connectors provided.

NOTE: The RED wire is not used in single-switch installations. Cap with a twist connector.



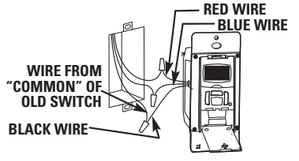
c. Connect the GREEN wire to the grounding screw in the box. If a plastic box, connect to ground as supplied.

d. Make sure all twist connectors are tight.

<u>If a 3-Way Switch Setup:</u>

NOTE: The distance between switch timer and remote switch must not exceed 100 feet.

a. Locate the COMMON wire connected to first old switch. It might be attached to a different colored screw, or find markings on old switch.



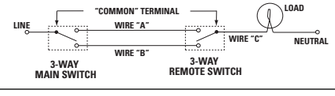
b. Connect BLACK wire from switch timer to COMMON wire, using a twist connector.

c. Connect the other two wires from the old switch to the Blue and RED wires from the switch timer.

d. Connect the GREEN wire to the grounding screw in the box. If a plastic box, connect to ground as supplied.

e. Using diagram #1 below. Identify and remove wire "C" from the "Common" terminal of your existing remote switch.

DIAGRAM 1:
TYPICAL EXISTING 2-SWITCH SETUP



f. Using diagram # 2 below, remove and reconnect wires "B" and "C" to the "Common" terminal of your remote switch, using the supplied piece of jumper wire, if necessary. Follow diagram # 3 below, if using a new single-pole remote switch.

NOTE: For new construction or to replace a dimmer switch, a lighted switch, or a 3-way switch without screw terminals, a single-pole switch can be used at the remote location, as shown.

DIAGRAM 2:
2-SWITCH SETUP, TIMER INSTALL RE-USING EXISTING REMOTE 3-WAY SWITCH

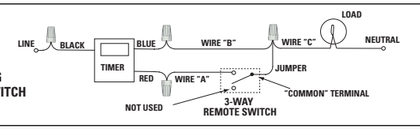
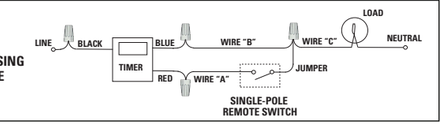


DIAGRAM 3:
2-SWITCH SETUP, TIMER INSTALL USING NEW SINGLE-POLE REMOTE SWITCH



*NOTE: If the building's wiring colors don't allow you to tell wire "A" from "B," just pick one of the two wires and connect as if it is wire "B." After the installation is complete, if the controlled light or device will not turn on properly, simply reverse wires "A" and "B." See Steps **J** and **K** for how to check.*

g. Tuck wires into the timer wall box leaving room for the timer.

h. Using screws provided, mount the switch timer into the wall box, then install the wall plate.

i. Install the remote 3-way switch in its box and install wall plate. Turn the power back on at the service panel.

j. Make sure the switch timer displays "MAN" mode. Do the following test with the remote switch in each of its 2 positions: Press the **ON/OFF** button on the switch timer several times. Each time that you push the **ON/OFF** button, the switch timer should "click" and the controlled light or device (the "load") should turn on or off. If so, proceed to Step **K**.

- If the timer clicks but the load does not operate, re-check your wiring and make sure the load is functional.
- If the timer clicks but the load only operates when the remote switch is in one of its 2 positions, you need to turn off the power at the service panel, then reverse wires "A" and "B." You can reverse wires "A" and "B" at the remote switch wall box, or you can reverse wires "A" and "B" where they connect to the red and blue wires of the switch timer. Then turn power back on at the service panel and repeat Step **J**.

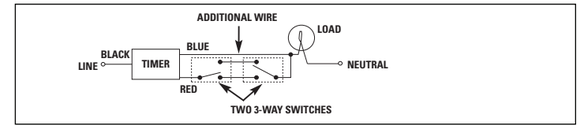
k. Verify that the controlled load turns on or off each time that the remote switch is operated.

<u>If a Multiple Switch Timer Setup:</u>

Multi-switch applications using the ST01 Series switch timer are wired differently than when using conventional toggle switches. Read the following installation instructions carefully.

- Multiple switch timers may be mounted in an unlimited number of adjacent junction box slots.
- No derating is required for multiple switch timers.

For a three-switch setup:



For four or more switch setups:

Use the preceding 3-switch installation diagram and wire 4-way switches between the two 3-way switches.

NOTE: The remote switch(es) may not function reliably when the accumulated wire length to the remote switch(es) exceeds 100 feet or if the wiring to the remote switch(es) is buried underground. Contact Intermatic Customer Service for details.

NOTE: Used remote switches from a previous conventional installation may not function reliably with an electronic timer. Try a brand new remote switch if function is intermittent.

Vertex 7

Vandal Resistant

CLF 7 Series LED

WALL /CEILING MOUNT
LED

Fixture Type | Date

Job Name | Approved By

Catalog Number - - - - - -

SPECIFICATIONS

ADA Compliant

Description The Vertex 7 series combines sophisticated optical performance with an economical, durable, steel construction that is typically used in applications where durability and price are both equally considered. Successful applications have included public schools, airports, industrial facilities and public rest areas. The Vertex 7 series is also available with energy saving occupancy sensors and can be continuous row mounted as needed.

Housing Die formed 18 gauge cold rolled zinc coated steel.
Finished with electrostatically applied polyester powder coat.

Lens Extruded UV stabilized polycarbonate with integral prisms. Maximum wall thickness 0.160". Secured to housing with injection molded end caps and 2 captive stainless steel TORX® head screws.

End Caps Injection molded UV stabilized polycarbonate with minimum wall thickness 0.140". Secured to housing with 2 captive stainless steel TORX® head screws per side. Provisions for surface conduit entry.

Driver Constant current driver at 700mA, 120-277V. 347V optional.

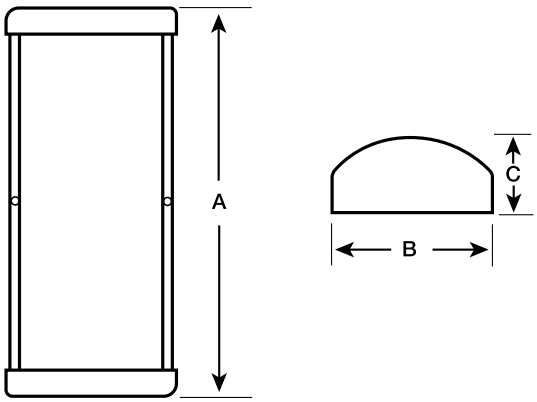
LED Samsung LM561B+ series @ 3000K, 3500K, 4000K or 5000K and 80 CRI wired in parallel-series. L_{70} projected life of over 130,000 hours at 50°C. Tested in accordance with LM-80. Ten year warranty on LED boards against operational defects.

Listings U.L., C.UL., Damp optional. Product listed on the DesignLights Consortium Qualified Products List. Please check the DLC Qualified Products List at www.designlights.org/QPL for listed configuration details.

Lifetime Warranty Luminaire LED Incorporated will repair or replace any fixture damaged due to vandalism for the lifetime of the installation.

DIMENSIONAL DATA

	A	B	C
CLF71	16.49	7.35	3.16
CLF72	25.76	7.35	3.16
CLF73	35.73	7.35	3.16
CLF74	47.96	7.35	3.16



Luminaire Led
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Luminaire LED Incorporated products are manufactured in the USA with components purchased from USA suppliers, and meet the Buy American requirements under the ARRA. Content of specification sheets is subject to change; please consult our website for current product information.

Rev: 03/17

Vertex 7

Vandal Resistant

CLF 7 Series LED

Fixture Type

ORDERING INFORMATION

SERIES	LED	CCT	VOLTS	LENS	COLOR	OPTIONS		TX/SD
								TX/SD
CLF71 - 18"	18" - 5W	3000K	120-277	CP	BLK	☐ DIM	☐ COR	
CLF72 - 24"	18" - 15W	3500K	347	OP	WHT	☐ PC	☐ EMB310	
CLF73 - 34"	24" - 15W	4000K			BRZ	☐ GLR	☐ EMB722	
CLF74 - 46"	24" - 25W	5000K			GRY	☐ 2B	☐ EMB20R	
	34" - 20W				CUST	☐ JB	☐ EMB125R	
	34" - 40W					☐ DAMP	☐ EMB250R	
	46" - 25W					☐ OCC	☐ EMB375R	
	46" - 50W					☐ OCC50	☐ ST/SC	

OPTIONS

LENS	CP = Clear Prismatic Standard OP = Opal Optional
COLORS	BLK = Black WHT = White BRZ = Bronze GRY = Gray CUST = Custom Color (Consult Factory)
DIM	0-10V dimming driver, 10% at lowest level.
PC	Photoelectric switch.
GLR	Fuse and fuse holder.
2B	(2) LED drivers for independent LED board operation. N/A with CLF 71.
JB	Injection molded joiner band for continuous row mount.
DAMP	Closed cell neoprene gasketing as required for UL damp location listing.
OCC	Microwave occupancy sensor mounted behind the lens. On/Off operation only. Consult factory for availability in select models.
OCC50	Microwave occupancy sensor mounted behind the lens. 50% of LED's constantly on and 50% sensored. 2 ft. and 4 ft. fixtures only.
COR	Corner mounted back box. Constructed from 16 gauge cold rolled zinc coated steel. Finished with white powder coat.
EMB310	1200 lumen self contained, 90 minute emergency battery pack. 0°C (32°F) to 55°C (131°F). Not available in 347V.
EMB722	2600 lumen self contained 90 minute emergency battery pack for 25W minimum operation. 0°C (32°F) to 60°C (140°F). Not available in 347V.
EMB20R	Remote mounted micro inverter that will operate a 20W maximum load for 90 minutes. 0°C (32°F) to 50°C (122°F). Not available in 347V.
EMB125R	Stand-alone inverter that will operate a 125W maximum load for 90 minutes. 20°C (68°F) to 30°C (86°F).
EMB250R	Stand-alone inverter that will operate a 250W maximum load for 90 minutes. 20°C (68°F) to 30°C (86°F).
EMB 375R	Stand-alone inverter that will operate a 375W maximum load for 90 minutes. 20°C (68°F) to 30°C (86°F).
ST/SC	Slotted screws instead of TORX® head.
TX/SD	TORX® head bit.

Luminaire Led
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Rev: 03/17

Vertex 7

Fixture Type

Vandal Resistant

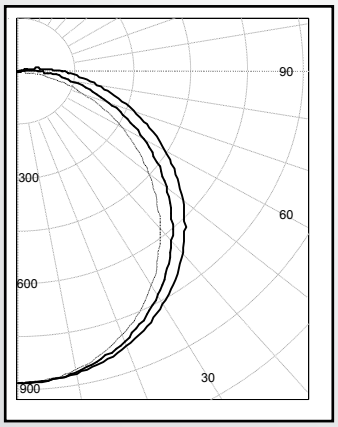
CLF 7 Series LED

PHOTOMETRIC DATA

Model	Watts	Input Watts	Delivered Lumens Clear	Opal	Delivered Lumens Clear	Opal	Delivered Lumens Clear	Opal	Delivered Lumens Clear	Opal
			3000K		3500K		4000K		5000K	
CLF71	5W	6.75	607	562	619	573	712	660	733	679
CLF71	15W	13.50	1215	1126	1239	1148	1424	1320	1466	1359
CLF72	15W	13.50	1215	1126	1239	1148	1424	1320	1466	1359
CLF72	25W	26.60	2694	2497	2750	2550	2836	2629	2921	2707
CLF73	20W	20.00	1800	1668	1836	1701	2110	1955	2173	2013
CLF73	40W	42.96	3868	3585	4408	4086	4545	4213	4681	4339
CLF74	25W	26.90	2694	2497	2750	2550	2836	2629	2921	2707
CLF74	50W	54.00	5167	4790	5273	4888	5437	5040	5600	5191

MODEL CLF72-25W-4000K-OP

Delivered Lumens: 2,629 Lumens



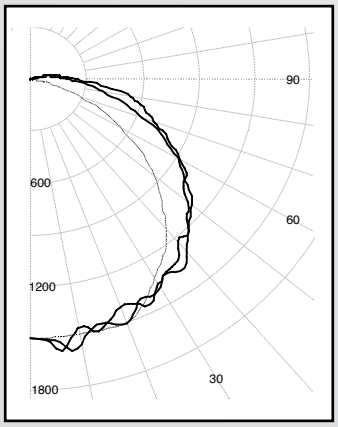
IES FILE: CLF72-25W-4000K-OP

Total Power: 29.8W

Zone	Lumens	% Lamps
0 - 30	677	25.7
0 - 40	1102	41.9
0 - 60	1934	73.6
60 - 90	621	23.6
0 - 90	2555	97.2
90 -180	75	2.8
0 - 180	2629	100.0

MODEL CLF74-50W-4000K-CP

Delivered Lumens: 5,437 Lumens

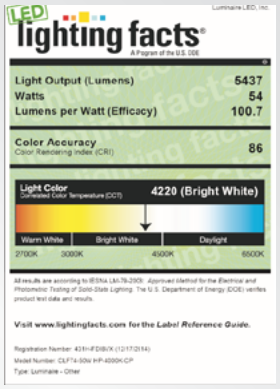


IES FILE: CLF74-50W-4000K-CP

Total Power: 55.3W

Zone	Lumens	% Lamps
0 - 30	1229	22.6
0 - 40	2056	37.8
0 - 60	3785	69.6
60 - 90	5217	26.3
0 - 90	3161	96.0
90 -180	220	4.0
0 - 180	5437	100.0

Testing was performed in accordance with IES LM-79-08



Luminaire Led

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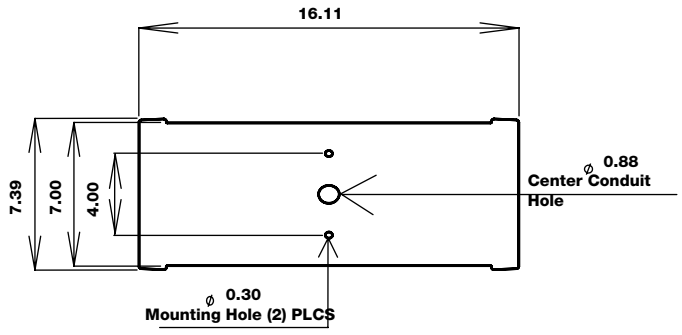
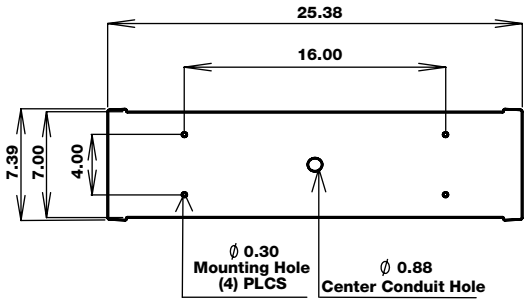
Rev: 03/17

MOUNTING PLATE DETAILS

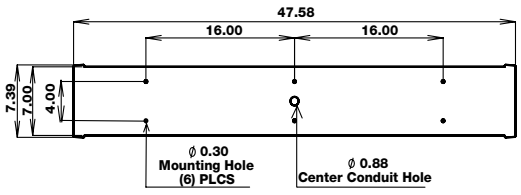
CLF71



CLF72



CLF74



Change Order Request Form

Section 00 63 57

PM Initials_____
PA2 Initials_____

Smith High School HVAC Improvements

DATE: _____PROPOSAL #:_____ CONTRACT:_____

CONTRACTOR:_____CONTRACTOR #:_____

DESCRIPTION OF CHANGE:_____

_____

Materials(Attach list with qty, item, unit $, unit mh, total mh, OT mh, Total $)

1. Total direct cost of materials $_____
2. Overhead and profit on Item 1 $_____(__% max. Inc. smalltools &consumables)
3. Sales tax $_____
4. Shipping and transportation $_____

Materials Subtotal $

Labor(include time sheets if requested)

5. Total man-hours: _____ @ _____ /hr. $_____
6. Overhead and profit on Item 5. $_____(__% max. onstraight labor cost,not premium portion). (O& Pincludes supervisor's time).
7. Payroll taxes and insurance @ _____ % $_____

Labor Subtotal $

Equipment Rental(includes quotes and pick-up/delivery tickets)

8. Equipment rental $_____
9. Overhead and profit on Item 8 (__% maximum) $_____

Equipment Rental Subtotal $

Subcontractors(includes quotes with material and equipment back up)

10. Subcontractors $_____
11. Overhead and profit on item 10 (__% maximum) $_____

Subcontractor Subtotal $

Subtotal of Proposal $

12. Bonds (___% of subtotal of proposal) $_____ $_____

TOTAL OF CHANGE PROPOSAL $

Time Extension Request _____ days _____Schedule Activity # Affected

Contractor's signature:_____ Date: _____

Architect's signature:_____ Date: _____

Owner's signature:_____ Date: _____