

VFR-400 Installation, Operation, and Instruction Manual

Releasing Panel for Sprinkler Systems

All specifications subject to revision.



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Contents

Operating Instructions Form 4

Design Guidelines 5

General Description 5

System Features 5

Visual Indicators 6

Circuit Parameters..... 7

Basic Operation..... 9

To Silence Signaling Appliance 11

Remote Annunciator Operation 12

Programming Mode Instructions 14

Panel Visual Display 14

VFR-400 Standard Program Information 17

Wiring Diagram Programs 20

VFR-400 Custom Program Information 45

Installation Instructions..... 49

Wire Checkout 50

Battery Size Calculations 51

Battery Size Requirements/Maintenance 51

2-Wire Smoke Detector Compatibility Data..... 55

Releasing Device Compatibilty 56

Wire Routing for VFR-400 56

Connection Procedure for Battery And Voltage..... 58

Connection Drawing for Central And Remote Station 58

Notes:



This is the safety alert system. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

WARNING

- The detection and suppression system employing this release panel must be designed by people trained and competent in the design and layout of fire alarm and/or suppression systems for special hazard locations. The system shall be designed and installed in accordance with all local and national codes and ordinances as well as the approval of the Authority Having Jurisdiction. Only trained, qualified and competent individuals should install, program and/or service the VFR-400. Competent people would be aware of these warnings, limitations, and requirements.
- High voltage electrocution hazard. Do not handle live AC wiring or work on the device while ac power is active. This manual is designed to help with the specification, installation, and programming of the VFR-400 release panel. It is imperative that this manual be completely read and understood before the installation or programming of the panel. Save this manual for future reference.
- Zones programmed as MANUAL RELEASE will override any cross zoning features. If it is desired to not have a Manual Release override the cross zoning, program the zone as DETECTION and map accordingly.

CAUTION

- *Locate the panel and all system components in the following nominal environment:
- *Indoor heated installation only, preferably an interior wall.
- *Verify that the wire sizes are adequate for all initiating, notification, and release circuits.
- *Make certain the panel is properly grounded.
- *Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible make all cable entries from the sides, bottom, or rear of the cabinet. Verify that they will not interfere with the batteries or other components.
- *The panel and system must be tested and maintained in accordance with all local and national codes and ordinances.

Operating Instructions Form

- 1) Fill in the name, address and telephone number of the servicing agency on the instruction sheet provided and frame and place adjacent to control panel at eye level.
- 2) The following documentation shall be delivered to the owner or their representative upon final acceptance of the system:
 - An owners manual and installation instructions covering all system equipment.
 - Wiring diagrams
 - A detailed description of the programming and operating sequence of the system.

WARNING

Fire Alarm System Limitations

Smoke detectors may not detect smoke when the smoke does not reach the detector. Such as smoke within walls, on the other side of walls, on other floors, behind closed doors, explosions, etc. Smoke detectors will not operate if they are not properly connected to the fire/release panel. The detectors and bases must be UL/ULC listed as being compatible with the panel. The detectors have a visible flashing light that indicates power is supplied to the detectors.

Notification appliances may not alert people if the people are not able to hear or see the appliances such as if they are in separate areas of the building or room.

A fire alarm/release panel will not operate without electrical power. The panel must have sufficient backup battery capability to power the panel for a specified amount of time in the event of an AC power failure. The batteries and release panel shall be tested and maintained in accordance with the testing and maintenance requirements of NFPA72.

In order for emergency forces, (Fire departments, etc.), to respond to events associated with this panel, the panel must transmit trouble, supervisory, and alarm signals to a monitoring facility either directly or through a main building fire panel.

A problem in an audible or visual device may not be apparent when the panel is in a normal condition.

Design Guidelines

People trained in the design of special hazard systems shall determine the selection and placement of the initiating devices and notification appliances connected to the VFR-400. This responsible party shall also be familiar with the premises being protected. The equipment shall be installed in accordance with the manufacturers instructions, the applicable version of NFPA 72 and all local codes and ordinances. For systems employing cross zoning of smoke detectors for the activation of the release circuit, this can include but is not limited to the installation of photoelectric and ionization types of detectors on separate zones. One of each type of detector on separate zones shall be installed in the coverage area selected for a single detector. The detectors would be installed in close proximity to each other.

The responsible party shall also determine the theory of operation regarding the programming sequence.

General Description

The model VFR-400 is a listed and approved, microprocessor based fire control/releasing panel. It is primarily designed for use as a releasing panel for pre-action, Surefire®, Firecycle® III, and deluge, water based extinguishing systems. They may also be used as stand alone fire control panels. These units comply with NFPA-13, NFPA-15, NFPA-72, and NFPA-750.

The VFR-400 complies with UL Standard 864, ULC S527-77, Canadian Electrical Code Part 1 C22.1, ULC S524, FM, CSFM and NYMEA.

System Features

- Four Class B (Style B) Initiating zones. Each initiating zone can be set up for any of the following:

- **Alarm Zones**
- Detection alarm zone
- Waterflow
- Linear Heat Detection up to 700 ohms per zone.
- Manual Release
- Viking Firecycle Detectors (Zone 1 only)
- **Supervisory Zones**
- Supervisory
- Tamper
- Low Air Supervisory
- High Air
- Low Air Alarm

Note: Only zones programmed as Detection, Waterflow, Linear Heat, Manual Release, Firecycle and Low Air Alarm can be mapped to outputs programed as release.

- Remote Annunciator Output for connection to RA-4410RC:
 - RS-485 communication, (2-wire shielded cable required)
 - Regulated 24VDC annunciator power
- Two Supervisory Zones, Class B (VDC Style B). These zones can be set up for any of the following:
 - Supervisory
 - Tamper
 - Low Air Supervisory
 - High Air
- Four Class B (Style Y) Output circuits. Each output can be set up for any of the following:
 - Notification Appliance circuit
 - Releasing circuit
 - Supervisory Bell circuit
 - Trouble Bell circuit

- Twelve Standard Programs for water based systems or custom program capability
- Releasing Zones can be set up for either normal or cross zoning operation
- All circuits inherently power limited per NEC 760 and UL 864 Section 14.4
- Initiating Circuit Disable feature
- Output Disable feature
- One-Man Walktest feature with automatic 30 minute restoration and releasing circuit disable
- Diagnostic Indicators
- Signal Silence button
- Manual Event scroll buttons
- Automatic resound of silenced trouble signals after 24 hours
- Built-in Trouble buzzer
- Common Relay Contacts for Alarm/Trouble/Supervisory/Waterflow
- 32 Character Liquid Crystal Display (LCD)
- 34 LED Display
- AC, Alarm, Supervisory, Trouble, Alarm silenced LED's (Pre-discharge/discharge LED)
- User Generated Banner Message
- User Generated Zone Labeling
- 24 or 90 hour Battery Standby available (Where required by FM and Others)
- 24 Hour Clock
- Password Protection
- Remote annunciator output
- Resettable 4-wire smoke detector power

Options

- 1) CAM - Module to convert one Class B Indicating Appliance Circuit to one Class A circuit.
- 2) CA2Z - Module to convert two Class B Initiating Device Circuits to two Class A circuits.
- 3) ARM-2 - Module to provide two Form C contacts activated by Indicating or Releasing, polarity reversing circuits
- 4) RA-4410-RC – Remote annunciator provides 34 LED's for each zone in alarm supervisory or trouble, each output activated or in trouble, AC power, Power trouble, System trouble, Ground fault, Supervisory, Supervisory trouble, Alarm, Alarm silence and Pre-discharge/Discharge.

WARNING

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Specifications

VFR-400 HOUSING

Type - 18 gauge sheet steel with hinged, removable, locked door

Size - 18 1/2" x 14 5/8" x 4 3/4"

Finish - red cabinet with logo.

Knockouts - 4 - 1/2" and 2 - 3/4" on top; 1 - 1/2" and 1 - 3/4" each side; 2 - 1/2" and 1 - 3/4" back

VFR-400 Visual Indicators (Visible with door closed):

AC LED - Green

Alarm Silenced - Amber

System Alarm LED - Red

System Supervisory LED- Amber

System Trouble LED - Amber

Pre-discharge/Discharge LED - Amber

32 Character Alpha-Numeric Liquid Crystal Display (LCD)

Red alarm per zone

Amber trouble LED per zone

Common required systems status LED's

LCD

A 2 line 32 character alpha-numeric liquid crystal display shows the condition, status and circuit for all Alarm, Supervisory and Trouble conditions:

CONDITION	STATUS	CIRCUIT
Alarm		<user Defined Message> (Up To 10 Characters)
Trouble	Disabled	Output #1
Supervisory	Acknowledged	Output #2
Tamper	Silenced	Output #3
Low Air		Output #4
High Air		Battery
Aborted		A.C.
Pre-discharging		Supervisory
Releasing		Zone #1
Released		Zone #2
		Zone #3
		Zone #4
		Ground

VFR-400 Visual Indicators

In accordance with ULC S527-99 option B:

LED Annunciator Module

Red LED's: Initiating Device Circuits Active (4),
Notification/Release Circuits Active (4)
Common Alarm (1)

Green LED: AC Power

Yellow LED's: Initiating Device Circuits Troubles (4),
Output Circuits Troubles (4)
Supervisory Initiating Zone (4)
Supervisory Bell Output Active (4)

(1) each: Supervisory Zone, Supervisory 1, Supervisory 2, Power Trouble, Supervisory Trouble, System Trouble, Ground Fault, Discharging/Discharged, Alarm Silenced

CONDITION	STATUS	LED State
Trouble	Non-Silenced	Flashing
Trouble	Silenced	Steady ON
Alarm	Non-Silenced	Flashing
Alarm	Silenced	Steady ON
Supervisory	Non-Silenced	Flashing
Supervisory	Silenced	Steady ON
Pre-discharge		Flashing
Discharged		Steady ON

Control Buttons

- Signal Silence - Momentary, silences signaling circuits, (except those activated by zones programmed as WATERFLOW)
- System Reset - Momentary, resets all alarm circuits if condition has been corrected, removes power from initiating device circuits.
- Scroll Up - Scrolls LCD display to most recent events
- Scroll Down - Scrolls LCD display to previous events

NOTE: Buzzer silence is accomplished by scrolling through all events.

Circuit Parameters

All voltages regulated DC

Initiating Device Zones

For connection of dry contact initiating devices and compatible 2 wire smoke detectors. (All values nominal)

- 4 Class B, Style B (Class A Style D module available)*
- Power limited, current limited to protect 2 wire smoke detectors
- Maximum 2 wire 24VDC smoke detector load per zone - 2.5 ma (Use only detectors that are listed in compatibility list.)
- Maximum Line resistance - 100 ohms (Except linear heat detection cable, 700 ohms per zone)
- End-of-Line Resistance - 5.1K

- Normal standby current - approximately 4.0 mA
 - Standby voltage - 25VDC maximum, 13.4 minimum
 - Maximum short circuit current - approximately 36mA
 - Maximum Impedance for Alarm - 1400 ohms
 - Normal supervisory current - approximately 4mA
 - Low current trouble activation - approximately 3.3mA
 - Alarm activation current - approximately 10mA
 - Ripple voltage - .4 VDC
 - Maximum operating voltage range: 22.5 - 25.9V DC
 - Frequency - continuous
- * In programs 6-9, Zone 1 is a normally closed zone for Firecycle® Detectors

Dedicated Supervisory Zones

- For dry contact supervisory devices such as tamper, low air, or high air switches
 - 2 Class B Style B circuit, latching
 - Power limited, current limited
 - End-of-Line resistance - 5.1K ohms
 - Ripple Voltage - .1 VDC
 - Frequency - continuous
 - Maximum voltage - 25VDC
 - Maximum short circuit current - approximately 36mA
 - Maximum line resistance - 100 ohms
 - Normal supervisory current - approximately 4mA
 - Low current trouble activation - approximately 3.3mA
 - Supervisory current condition - approximately 10mA
- (Does not include power for any auxiliary devices)

Notification/Release Circuits

The output circuits of the VFR-400 are Non-coded. This allows the use of visual and audible appliances on the same circuit. If temporal notification appliances are required for evacuation, selectable tone appliances such as the AMSECO H24W horn or SH24W Series strobe/horns or a temporal module such as AMSECO TMP1-3A or equivalents should be used.

The notification outputs do not provide synchronization. If synchronization is required, use AMSECO SMD10-3A synchronization module or equivalent, as identified on page 55. The notification appliances shall be compatible with the sync module selected. The current requirements of the appliances, wire gauge, and length of wire run determine the maximum number of appliances that can be connected to one NAC and/or sync module. The maximum cannot exceed 1 amp or whatever the sync module selected can support, whichever is lower. The sync module shall be installed as per manufacturers instructions. Equivalent sync modules are shown on page 55.

- 4 Class B Style Y (Class A Style Z module available for notification)
- Reverse polarity upon activation
- Power limited, Current limited
- 24 VDC Regulated, rated 1 amp each, 2.5 amps total for all 4 circuits
- End-of-Line-Resistor - 5.1k ohms
- Frequency - continuous
- Maximum voltage - 27 VDC
- Ripple voltage - .3 VDC
- Maximum resistance for outputs programmed as RELEASING:
1 divided by the current draw of the solenoid when activated
- Normal standby supervisory current - approximately .38mA
- Low current trouble activation - .11mA
- Maximum impedance - 5 Ohms
- High current trouble activation - .63ma

Low/Missing Battery

Causes battery and system trouble if battery falls below 22 volts. Battery circuit is fused and reverse polarity protection is provided.

Input Power

- Universal Input 120VAC, (60 Hz, 165VA) or 220VAC, (50 Hz, 185VA) 15 Amp Branch Line overcurrent protection required.
- System trouble is also generated if voltage drops below 102V.

Backup Power Requirements

- VFR-400 - Standby 121 mA, alarm 274 mA at 24VDC

Service Use

NFPA 13 - Automatic Sprinkler
 NFPA 15 - Water Spray Fixed System
 NFPA 16 - Foam Water Sprinkler and Foam Water Spray
 NFPA 72 - National Fire Alarm Code

- Local
- Remote Station (protected premise unit)
- Central Station (protected premise unit)

NFPA 750 - Water Mist

Listings And Approvals

VFR-400 - UL Standard 864, ULC Standard S527, FM, CSFM and NYMEA

Terminals

- All terminals capable of handling #14 AWG wire
- All terminations have transient protection
- All four initiating device circuit terminals capable of handling linear heat detection.

Relay Outputs

- Common system alarm contacts SPDT rated 3 Amps, 30VDC resistive
- Common supervisory contacts SPST, N.O. rated 3 Amps, 30VDC resistive
- Common system trouble contacts SPDT rated 3 Amps, 30VDC resistive
- Common system waterflow contacts SPST, N.O. rated 3 Amps, 30VDC resistive

Auxiliary Power

- Auxiliary Power - 24VDC regulated. Rated 200 mA max. Current limited
- Resettable for 4-wire smoke detectors

Annunciator Connection

- Auxiliary Power - 24VDC regulated. Rated 200 mA max. Current limited for RA-4410-RC Annunciator, non-resettable power
- RS-485 For connection to RA-4410-RC remote annunciator
- Maximum 2000' with 22 AWG, 4000' with 20 AWG shielded cable

Optional Accessories

CA2Z module (Class A initiating device circuit)
 Converts two Class B initiating device circuits to two Class A circuits.

CAM Module (Class A Indicating Appliance Circuit)

Converts indicating appliance circuit from Class B to Class A. One model CAM (Class A Module) is required for each circuit. (Do not use this on an output programmed as "TROUBLE BELL".)

ARM-1/ARM-2 Module (Auxiliary Relay Module)

Activated by 24VDC Indicating and/or Releasing, polarity reversing circuits. The module provides a non-supervised DPDT Relay that can be used for fan shutdown, door release, elevator recall, etc.

RA-4410RC (Remote Annunciator)

Connects to RS-485 & 24VDC terminals. Provides 34 LED's for each zone in alarm supervisory, or trouble, each output activated or in trouble, AC power, Power trouble, System trouble, Ground fault, Supervisory, Supervisory trouble, Alarm, Alarm silence and Pre-discharge/Discharge.

Basic Operation

In addition to the following events, the panel also provides an output via the RS-485 terminals to the RA-4410-RC remote annunciator to light the appropriate indicators. See remote annunciator operations, page 12. In addition, the remote annunciator has a silenceable buzzer that sounds on supervisory or trouble conditions.

Initiating Device Circuits Alarm Condition

An increase of current on any alarm initiating device circuit to approximately 10 mA or greater will result in the following:

Alarm (Except zones programmed as LOW AIR ALARM):

- 1) Activation of the common alarm relay contacts.
- 2) Activation of the output circuit(s) which are mapped to the initiating device circuit(s). Providing all zone(s) necessary for the activation of those circuits is in alarm
- 3) "ALARM" and zone # displayed on LCD.
- 4) Activation of the red ALARM LED in a flashing mode as well as corresponding zone. NOTE: The ALARM LED will continue to flash until the Signal Silence button is pushed. The silence button will remove power from all outputs set up as Indicating except those activated by zones programmed as Waterflow.
- 5) Activation of zones programmed as waterflow will operate the common waterflow relay contacts in addition to the above.

Note: If Zone 1 is programmed as Firecycle, an open circuit will result in the above.

⚠ WARNING

Do not silence signals until all occupants are evacuated to a safe area.

Low Air Alarm

- 1) Operation of supervisory relay contacts and local buzzer.
- 2) Activation of the notification appliance circuit(s) or releasing circuit(s) which are mapped to the initiating device circuit(s).
Providing all zone(s) necessary for the activation of those circuits is in alarm
- 3) LOW AIR ALARM and <CIRCUIT #> displayed on LCD.
- 4) Activation of the amber supervisory LED in a flashing mode. NOTE: The supervisory LED will continue to flash until all events in the SUPERVISORY queue are viewed. This is accomplished by scrolling through all of the events by use of the scroll up and scroll down buttons. The LED will go steady after all alarm events have been viewed.

Supervisory

An increase of current to approximately 8 mA or greater on the supervisory initiating device circuit(s) or disabling an output programmed as releasing will result in the following:

- 1) Operation of supervisory relay contacts and local buzzer.
- 2) Operation of any output circuits that have been described as SUPERVISORY BELL.
- 3) “SUPERVISORY”, “TAMPER”, “LOW AIR”, or “HIGH AIR” and <CIRCUIT> displayed on LCD.
- 4) Activation of the amber SUPERVISORY LED in a flashing modes well as the corresponding zone LED. NOTE: The SUPERVISORY LED will continue to flash until all events in the SUPERVISORY queue are viewed. This is accomplished by scrolling through all of the events by use of the scroll up and scroll down buttons. The LED will go steady after all supervisory events have been viewed.

Trouble Conditions**Initiating Device Circuits**

A decrease of current to approximately 3.3 mA or programming the zone as disabled on any initiating device circuit will result in the following:

- 1) Activation of trouble relay contacts and local buzzer.
- 2) Operation of any output circuits which have been described as TROUBLE BELL.
- 3) “TROUBLE” and <CIRCUIT> displayed on LCD.
- 4) Activation of the amber TROUBLE LED in a flashing mode as well as corresponding zone. NOTE: The TROUBLE LED will continue to flash until all events in the TROUBLE queue are viewed. This is accomplished by scrolling through all of the events by use of the scroll up and scroll down buttons. The LED will go steady after all trouble events have been viewed.

Note: When the circuits are operated in the Class A mode any trouble condition will require manual operation of the reset switch to restore the panel to normal after the fault has been removed.

A complete loss of power will result in the transfer of the common system trouble relay contacts.

If Zone 1 is programmed as Firecycle, an increase in current to 10 mA or greater will result in the above.

Notification Appliance/Releasing Circuits

An increase of current to approximately 0.63 mA or a decrease in current to approximately 0.11 mA on any output circuit or connecting an indicating appliance backwards, or disabling an output will result in the following:

- 1) Activation of trouble relay contacts and local buzzer.
- 2) Operation of any output circuits which have been programmed as TROUBLE BELL. If this output is in trouble, a TROUBLE BELL on this output may not function correctly, depending on the type of trouble.
- 3) “TROUBLE” and “OUTPUT #” <CIRCUIT NO.> displayed on LCD.

Note: A current in excess of 2.5 Amps, when the panel is in the alarm condition, will result in an output trouble as described above.

⚠ CAUTION

A problem in an audible or visual device may not be apparent when the panel is in a normal condition. If the circuit indicates a trouble condition when the panel is in an alarm condition the problem must be located and corrected.

Ground Fault

A short between any circuit and earth ground will result in the following:

- 1) Activation of trouble relay contacts, trouble LED in a flashing mode, and local buzzer.
- 2) Operation of any output circuits which have been described as TROUBLE BELL.
- 3) “TROUBLE” and “GROUND” displayed on LCD.

Loss Or Reduction Of AC Power

A reduction in the AC input voltage will result in the following:

- 1) Activation of amber trouble LED in a flashing mode and local buzzer.
- 2) Operation of any output circuits which have been described as TROUBLE BELL.
- 3) “TROUBLE” and “A.C.” displayed on LCD.
- 4) LCD Backlight will be extinguished.
- 5) Loss of green AC LED.
- 6) The trouble relay contacts will transfer after 90 minutes.

Low Battery Voltage

Loss of or reduction of battery voltage to 22 volts will result in the following:

- 1) Activation of common trouble relay contacts, amber trouble LED in a flashing mode and local buzzer.
- 2) Operation of any output circuits that have been described as TROUBLE BELL.
- 3) “TROUBLE” and “BATTERY” displayed on LCD.

Loss Of Auxiliary Power Output

Loss of output of the auxiliary power will result in the following:

- 1) Activation of trouble relay contacts, trouble LED in a flashing mode and local buzzer.
- 2) Operation of any output circuits that have been described as TROUBLE BELL.
- 3) “TROUBLE” and “AUX LOW” displayed on LCD.
- 4) Activation of amber POWER TROUBLE LED.
- 5) Activation of amber SYSTEM TROUBLE LED.

To Silence The Buzzer Or Outputs That Have Been Described As Trouble Or Supervisory Bell

Press the scroll up or scroll down buttons. Once all events in the trouble or supervisory queue have been viewed, the buzzer and appropriate output will silence. The applicable system TROUBLE or SUPERVISORY LED will change from flashing to steady.

Note: Any continuous trouble conditions that have been silenced automatically resound 24 hours after the first trouble condition was silenced.

To Silence A Signaling Appliance

Press the SIGNAL SILENCE button. All silencable outputs will de-activate. A trouble condition will be created and the amber Alarm Silenced LED will light.

! WARNING

Where audible and/or visual indicators are being used as an evacuation signal, do not silence an alarm condition without investigating and determining that an emergency condition does not exist.

- Notes:**
- 1) Alarms initiated from zones that are in the waterflow mode cannot be silenced. The panel must be reset to silence audible alarm devices.
 - 2) If silenceable waterflow indication is desired it must be programmed as conventional alarm and annunciated on the zone identification portion of the LCD.

To Reset an Alarm or Supervisory Condition

- 1) Determine the cause of the alarm condition and if necessary remove the cause.
- 2) Press the reset button.

To Reset A Trouble Condition

- 1) Determine the cause of the trouble condition and remove the cause.
- 2) This circuit is self-restoring. When all trouble conditions are removed all indications will return to normal.

Note: When an initiating device zone is operated in a Class A (Style D) mode any trouble condition will require manual operation of the reset switch to restore the panel to normal after the fault has been corrected.

Lamp Test

When the panel is in a Normal Condition, pushing the top two buttons will illuminate all of the LED's and display for approximately one second.

Remote Annunciator Model RA-4410RC Operation

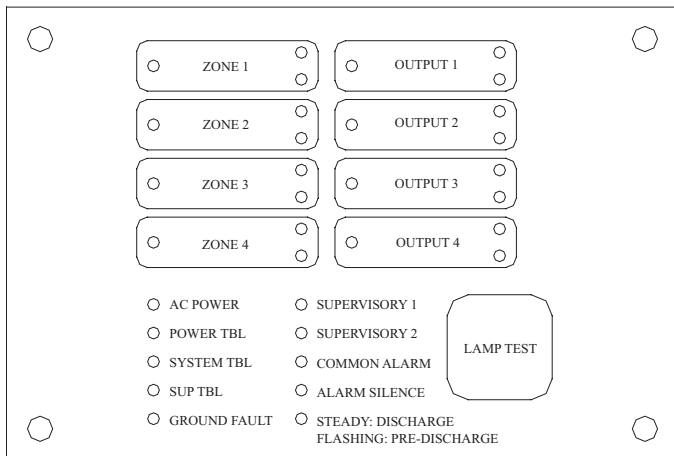
Red LED's: Initiating Device Circuits Active (4)
 Notification/Release Circuits Active (4)
 Common Alarm (1)

Green LED's: AC Power

Yellow LED's: Initiating Device Circuits troubles (4)
 Output Circuit Troubles (4)
 supervisory Bell Output Active (4)

(1) each: Supervisory Zone, Power Trouble, Supervisory Trouble, System Trouble, Ground Fault, Discharging/Discharged, Alarm Silenced

RA-4410RC



DWG# 3550-17VKG

Basic Operation

The appropriate LED flashes to indicate a change of status on the panel. A trouble or supervisory condition will flash the appropriate Yellow LED indicating the location of the condition. If any outputs are programmed as TROUBLE or SUPERVISORY BELL, that Yellow output LED will flash indicating the output is activated. Pressing the BUZZER SILENCE button on the panel changes the flashing zone Amber LED to steady on and turns the flashing Yellow output LED off. An alarm or low air alarm condition will flash a Red LED indicating the zone in alarm and any outputs mapped to that zone that

have activated. Pressing the SIGNAL SILENCE button changes the flashing Red Zone LED to steady on and the flashing Red Output LED mapped to that zone off unless the output is programmed as RELEASE. In addition, the Yellow ALARM/ SILENCE LED will light.

Any zone programmed as WATERFLOW is considered non-silenceable so the signal and buzzer silence buttons will have no effect on the flashing zone and output LED's. A buzzer on the annunciator sounds for any trouble condition. When the panel has a trouble or supervisory condition, pressing the SILENCE/LAMP TEST button silences the condition at the panel and all annunciators. When the panel is in a normal state, pressing the SILENCE/LAMP TEST button can be used to test the LED's. The release panel supervises and communicates with the annunciator via separate connections for the RS-485 communication and 24VDC power requirements of the RA-4410-RC. Separate cables should be used for power and communication. Shielded cable shall be used for the communication line. Up to three annunciators can be connected to one panel. A rotary switch is provided on the panel to indicate how many annunciators are connected. Another rotary switch is on the annunciator to set the address. The annunciators must be addressed consecutively. See page 54 for wiring information. Refer to bulletin #8840024 for installation instructions and maximum wire run.

Test Procedure

The system should be inspected, tested, and maintained in accordance with NFPA-72 National Fire Alarm Code, Chapter 10 and any other requirements of the local authority having jurisdiction.

Test Procedure (Canada)

The system should be inspected, tested, and maintained in accordance with ULC Standard CAN/ULC-S536 and any other requirements of the local authority having jurisdiction.

CAUTION

Testing should be done as a minimum as described below:

- 1) Notify the fire department or other receiving station if alarm, supervisory and/or trouble signals are transmitted.
- 2) Notify the proper building personnel so that audible and/or visual signals can be ignored.
- 3) If the release panel is monitored by a building fire alarm panel, take appropriate action to eliminate any unwanted events.
- 4) Momentarily open each of the following circuits.
 - a) Each initiating device zone
 - b) Supervisory circuit
 - c) Indicating Appliance/Releasing circuit - observe that this results in a trouble condition and all indicators operate as described in the appropriate preceding section for the particular circuit that is faulted.
- 5) Move the PROGRAM switch down. The LCD should respond: "LOOK AT HISTORY?". Press the FUNCTION button until the display reads PASSWORD=000. Enter password if changed from factory or press the SET button three times. Press the FUNCTION (bottom) button until the LCD reads "SYSTEM MODE: NORMAL". Press the SELECT button. The LCD will read "SYSTEM MODE: ONE MAN WALKTEST". Press the SET button then move the PROGRAM switch up. The panel will respond with "ONE MAN WALKTEST" and the time. The trouble LED will light. Any output described as "RELEASING" will automatically be disabled.

WARNING

Failure to enter the walktest mode and subsequent operation of initiating zones may result in a release.

After 30 minutes of no activity in the walk test mode the panel automatically reverts to normal operation.

- 6) Operate each initiating device on all zones. All audible and visual alarm devices should operate for about 3 seconds. Then the system will automatically reset allowing the user to go to the next initiating device.
- 7) Operate each initiating device on the supervisory circuit. Observe that all the indications described in the section on supervisory conditions occur.
- 8) Move the PROGRAM switch down again. The LCD should respond: "LOOK AT HISTORY?"
Press the FUNCTION button until the display reads PASSWORD=000. Enter password if changed from factory or press the SET button three times.
Press the FUNCTION (bottom) button until the LCD reads: "SYSTEM MODE: ONE MAN WALKTEST"
Press the SELECT (middle) button. The LCD will read: "SYSTEM MODE: NORMAL"
Press the SET (top) button then restore the PROGRAM switch to the up position. The LCD will show the normal banner message.
- 9) All audible and visual indicators should be off.
- 10) Notify all building, fire department, and/or other receiving station personnel that the test has concluded.

Maintenance: Test batteries per local and national standards. At a minimum replace batteries every four (4) years or sooner depending on test results. The date of purchase shall be marked on all batteries.

Programming Mode Instructions

To use the Programming Mode push the program switch down (see drawing below).

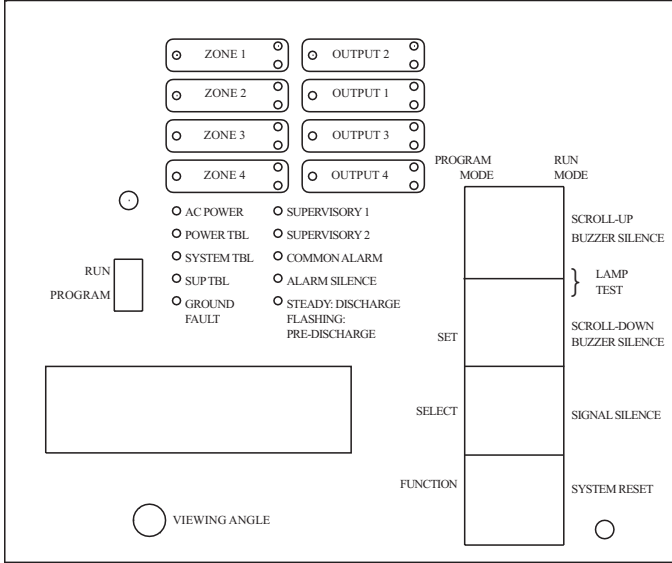
Panel Visual Display

As a general rule, the following applies on the Programming Mode buttons:

The top button (SET) sets the message on the display into the memory.

The middle button (SELECT) scrolls through the selections available for the function displayed.

The bottom button (FUNCTION) allows the user to skip the function without changing the program.



DWG# 3550-18VKG

To program, push the Program Switch down.

There is no capability to back up screens in the program mode. If a mistake was made during programming, move the program switch back up, then move it down and start from the beginning.

To exit the program mode at any time, move the Program Switch up.

When the programming switch is down (see Panel Visual Display) the following will appear in the display window:

L	O	O	K		A	T													
H	I	S	T	O	R	Y	?												

History

To examine the HISTORY press the top button, the display window will show the time and date of the last event or action. To skip to the next function or to exit history, press the FUNCTION (bottom) button.

SET Press the SET button to discover the time and date of the last event or action and to scroll forward.

SELECT To scroll back, press the SELECT button.

FUNCTION To exit or skip HISTORY, press the bottom button.

S	E	T		T	I	M	E	?							

Date/Time

SELECT To change the time, press the SELECT button.

FUNCTION To exit to the next function, press the bottom button.

If the middle button is pushed, the date and time will appear in the display window:

						0	1	/	0	5	/	2	0	0	7

The date is shown at the top and the time at the bottom of the display window. "MINUTES" indicates that the user can now change the minutes.

SET Pressing the SET button will decrease the minutes

SELECT Pressing the SELECT button will increase the minutes.

FUNCTION When finished setting the minutes, Press the bottom button. The minutes will change to hours.

Continue this process and change the DAY, MONTH and YEAR. When you have finished changing the year, press the FUNCTION (bottom) button. A display similar to the following will appear:

P	A	S	S	W	O	R	D	=	0	0	0				
									^						

Password

This display prevents unauthorized programming of the panel by requiring the user to enter the proper password. To select the appropriate number for the space indicated by the ^ symbol, press the SELECT button. When the proper number is displayed press the SET button to set the number and move to the next space. If the wrong password is entered, the panel will display "Push Programming Switch Up". All panels are shipped from the factory with a password of 000. If the password is lost contact Potter.

SET After selecting the desired number, press the SET button to set and move to the next number.

SELECT Press the SELECT button to scroll through the numbers.

FUNCTION Pressing the bottom button will have no effect.

After entering the correct password, a display similar to the following will appear:

I	N	I	T		Z	O	N	E		#	1				
E	N	A	B	L	E	D									

Zone Disabled/Enabled

This display allows the user to ENABLE or DISABLE Initiating zones. This display window shows that initiating ZONE #1 is enabled. To toggle from ENABLED to DISABLED or visa versa, press the SELECT button.

SET After selecting ENABLED or DISABLED, press the SET button to set and move to the next zone.

SELECT Press the SELECT button to toggle between ENABLED or DISABLED.

FUNCTION To skip to the next function, press the bottom button.

After selecting all four zones or pressing the FUNCTION (bottom) button, the following will appear in the display window:

O	U	T	P	U	T		#	1							
E	N	A	B	L	E	D									

Output Enable/Disable

This display allows the user to ENABLE or DISABLE any of the output circuits.

SET After selecting ENABLED or DISABLED, press the SET button to set and move to the next output.

SELECT Press the SELECT button to toggle between ENABLED or DISABLED.

FUNCTION To skip to the next function, press the bottom button.

After selecting all four outputs or pressing the FUNCTION (bottom) button, the following will appear in the display window:


NOTICE

Disabling any input or outputs will create a trouble condition on the panel.
 Disabling a releasing circuit will create a supervisory condition.

S	Y	S	T	E	M		M	O	D	E	:				
N	O	R	M	A	L										

One Man Walktest

This display allows the user to select system mode NORMAL or ONE MAN WALKTEST by pressing the SELECT button to toggle back and forth from NORMAL to ONE MAN WALKTEST. When the desired mode is displayed, press the SET button. If ONE MAN WALKTEST is selected for test purposes, the display must be restored to the NORMAL setting after the test is completed by toggling to it using the SELECT button.

 WARNING
After 30 minutes of no activity the panel automatically reverts to normal.

SET After selecting NORMAL or ONE MAN WALKTEST, press the SET button to set that mode.

SELECT Press the SELECT button to toggle between NORMAL and CROSS ZONED.

FUNCTION Press the bottom button to skip to the next function.

After selecting the operating mode or pressing the FUNCTION button a display similar to the following will appear in the display window:

P	R	O	G	R	A	M		#	1						

VFR-400 Standard Program Information

The VFR-400 has 12 standard programs which are detailed in the following pages. Selecting one of these programs will automatically program every function of the panel except the custom banner and zone message functions.

Notes:

The release discharge time is continuous for all programs not employing the Firecycle feature. The default soak timer for the Firecycle feature is continuous.

The following is an explanation of how the various programs operate and information about the types of devices that are to be connected to the input and output zones. If none of the standard programs are acceptable for the installation required, select the custom program #0 then press the SET button. This will allow the user to custom program the panel. Turn to page 45 for custom program information.

	Type	Description
Alarm Zones	Detection	Smoke Detectors, Spot Type Heat Detectors
	Waterflow	PS10 Pressure Switch
	Linear Heat	Cable Type Heat Detectors
	Manual Release	Pull Stations
	Firecycle	Viking normally closed heat detectors
Supervisory Zones	Supervisory	Valve Tamper, Low Air, High Air, Room Temperature
	Low Air supervisory	Low Air Switch
	High Air	High Air Switch
	Tamper	Valve Tamper Switch
	Low Air Alarm *	PS10, PS40

*** Not available on Supervisory Zones Sup 1 or Sup 2**

Outputs	Alarm	24VDC Bells, Horns, Strobes, to indicate an alarm condition.
	Release	Solenoid Valve, Squib, Releasing Mechanism
	Supervisory	24VDC Bells, Horns, Strobes, to indicate a supervisory condition.
	Trouble	24VDC Bells, Horns, Strobes, to indicate a trouble condition.

To program the VFR-400 to operate with one of the following 12 standard programs:

- 1) Press SELECT button to scroll to the program number (#1 thru #12) you desire.
- 2) Press SET button.
- 3) Turn to page 48 to program the banner message and to finish programming the panel.

SET After selecting the proper program number, press the SET button to set the program and move to the next function.

SELECT Press the SELECT button to scroll through the programs.

FUNCTION Press the bottom button to skip to the next function.

NOTICE

After selecting the desired program number with the middle button, SET **must** be pressed to set the program. When the Firecycle programs (6-9) are selected, only outputs #3 and #4 can be selected as releasing.

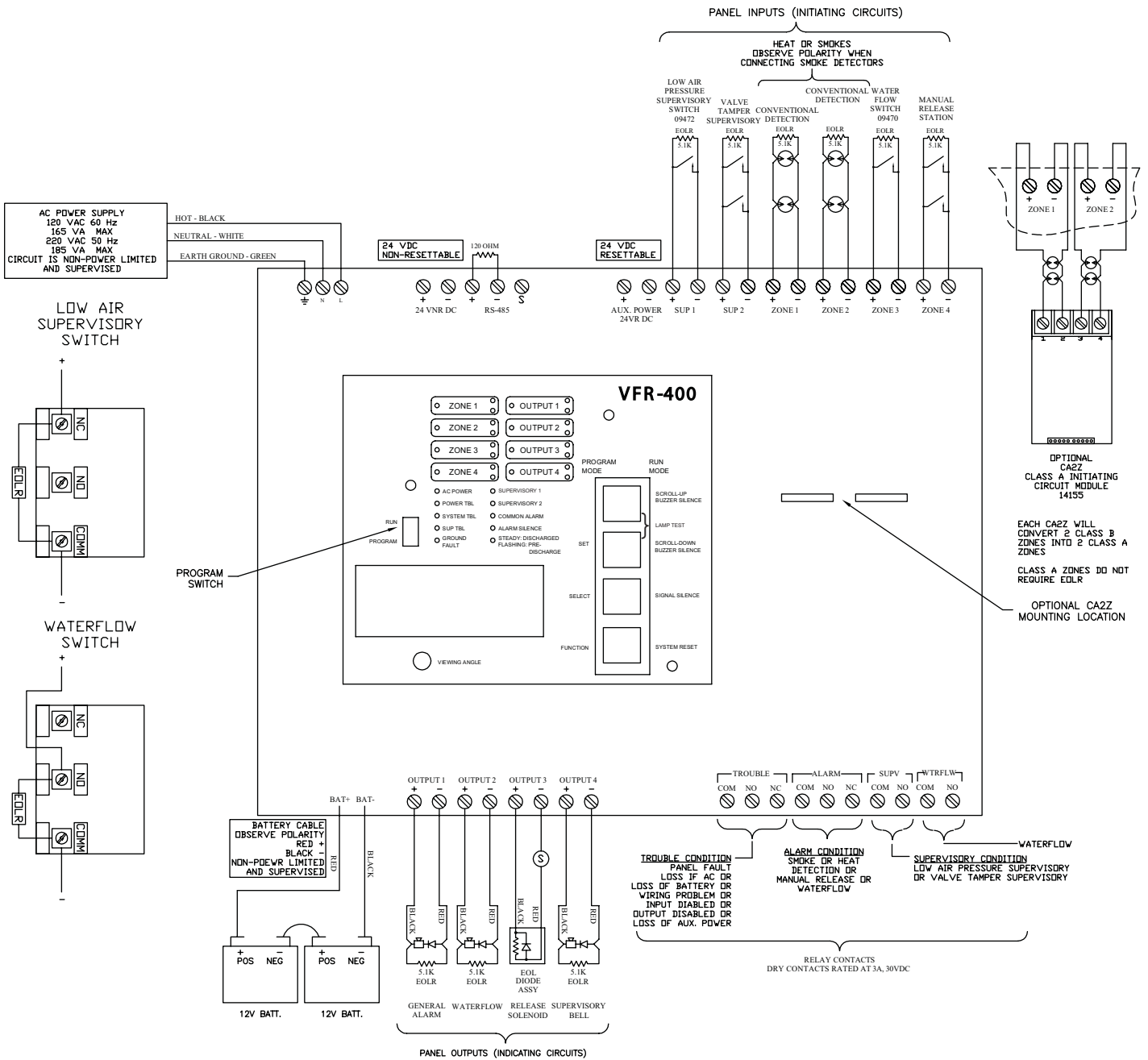
If the Firecycle feature is used, Firecycle heat detectors must be connected to Zone 1. Zone 1 follows the status of the Firecycle detector. When the detector resets, a soak timer is initiated. The default soak timer is continuous. The soak timer is user selectable to 30, 60, or 90 seconds or 2 - 20 minutes in 1 minute increments.

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PROGRAM #1						
For One Sprinkler System						
Viking Sprinkler System Types	2 Release Zones, Waterflow Zone, & Manual Release Zone	1. Single Interlocked Preaction System with Electric Release				
		2. Deluge System with Electric Release				
		3. Non-Interlocked Preaction System with Electric Release				
		4. Double Interlocked Preaction System with Electric/Pneumatic Release				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Low Air Supervisory Zone	Valve Tamper Supervisory Zone	Conventional Detection Zone	Conventional Detection Zone	Waterflow Zone	Manual Release Zone
#1 General Alarm			X	X	X	X
#2 Waterflow					X	
#3 Release Solenoid			X	X		X
#4 Supervisory Bell	X	X				
OPERATION DESCRIPTION						
Inputs:	2 Conventional Detection zones, 1 Waterflow zone, 1 Manual Release zone, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Waterflow Alarm, 1 Solenoid Release, 1 Supervisory Bell					
Operation:	Activation of Conventional Detection zone #1 or #2 or Manual Release zone #4 will activate output #3 (Release Solenoid) and output #1 (General Alarm)					
	Activation of Waterflow zone #3 will activate output #2 (Waterflow) and output #1 (General Alarm)					
	Activation of Low Air Supervisory zone #1 or Valve Tamper Supervisory zone #2 will operate output #4 (Supervisory Bell).					

NOTES:

1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #3 (Release Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when output is activated.
3. Leave EOLR (provided) on all unused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See instruction manual for list of compatible smoke detectors.
8. See specific system type data page for proper pressure switch settings.

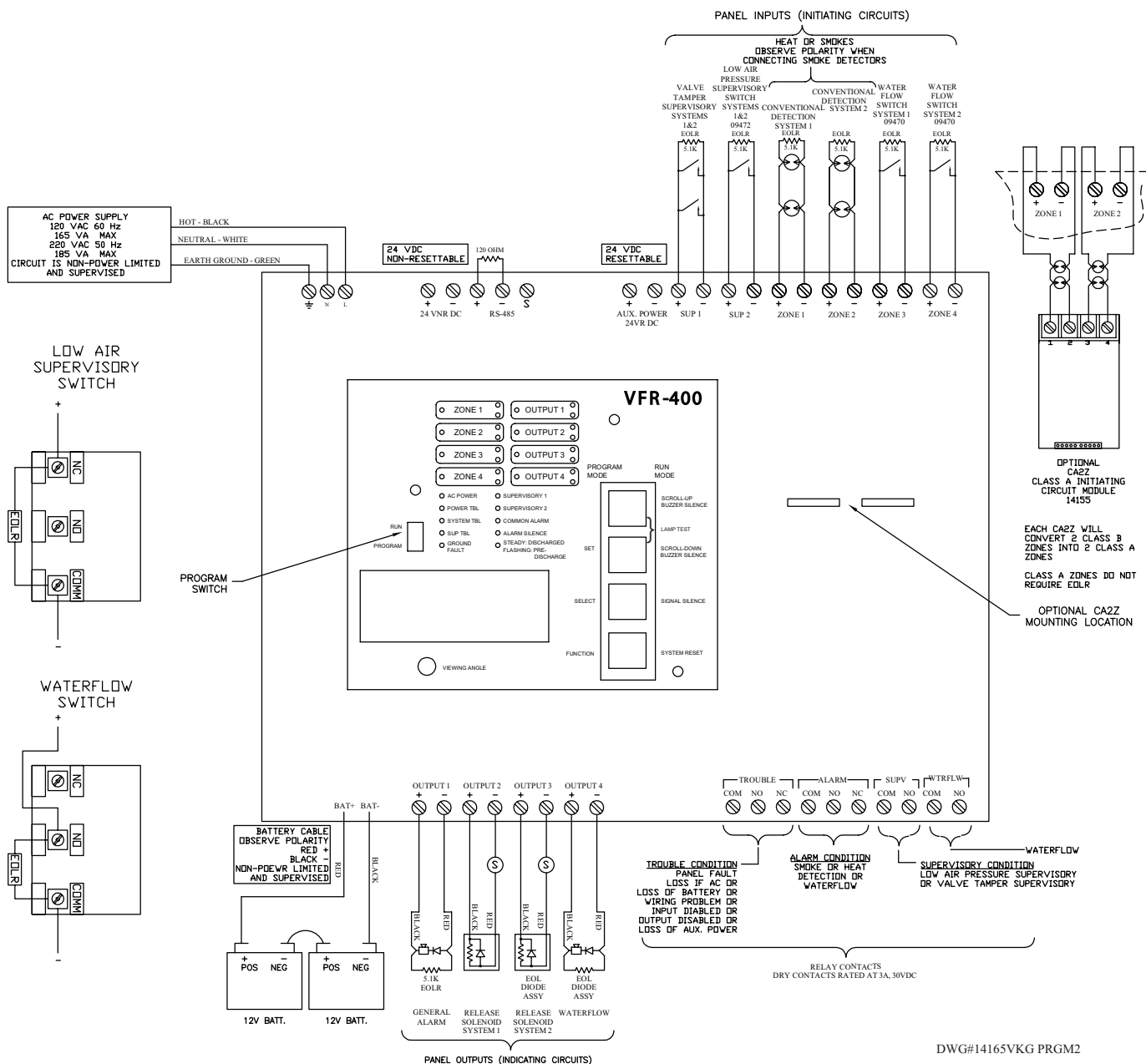


1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #1".
8. Press the SELECT button until the display reads "PROGRAM #1".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

PROGRAM #2						
For Two Sprinkler Systems Operating Independantly From Each Other						
Viking Sprinkler System Types	2 Split Release Zones and 2 Waterflow Zones	1. Single Interlocked Preaction System with Electric Release				
		2. Deluge System with Electric Release				
		3. Non-Interlocked Preaction System with Electric Release				
		4. Double Interlocked Preaction System with Electric/Pneumatic Release				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Valve Tamper Supervisory Zone for Systems 1 & 2	Low Air Supervisory Zone for Systems 1 & 2	Conventional Detection Zone for System 1	Conventional Detection Zone for System 2	Waterflow Zone for System 1	Waterflow Zone for System 2
#1 General Alarm			X	X	X	X
#2 Release Solenoid #1			X			
#3 Release Solenoid #2				X		
#4 Waterflow					X	X
OPERATION DESCRIPTION						
Inputs:	2 Conventional Detection zones, 2 Waterflow zones, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Waterflow Alarm, 2 Solenoid Release					
Operation:	Activation of Conventional Detection zone #1 will activate output #2 (Release Solenoid #1) and output #1 (General Alarm)					
	Activation of Waterflow zone #3 will activate output #2 (Waterflow) and output #1 (General Alarm)					
	Activation of Conventional Detection zone #2 will activate output #3 (Release Solenoid #2) and output #1 (General Alarm)					
	Activation of Waterflow zone #3 or #4 will activate output #1 (General Alarm) and output #4 (Waterflow)					
	Activation of Valve Tamper Supervisory zone #1 or Low Air Supervisory zone #2 will operate supervisory trouble relay.					

NOTES:

1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #2 (Release Solenoid) and output #3 (Release Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when ouputt is activated.
3. Leave EOLR (provided) on all unnnused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See instruction manual for list of compatible smoke detectors.
8. See specific system type data page for proper pressure switch settings.



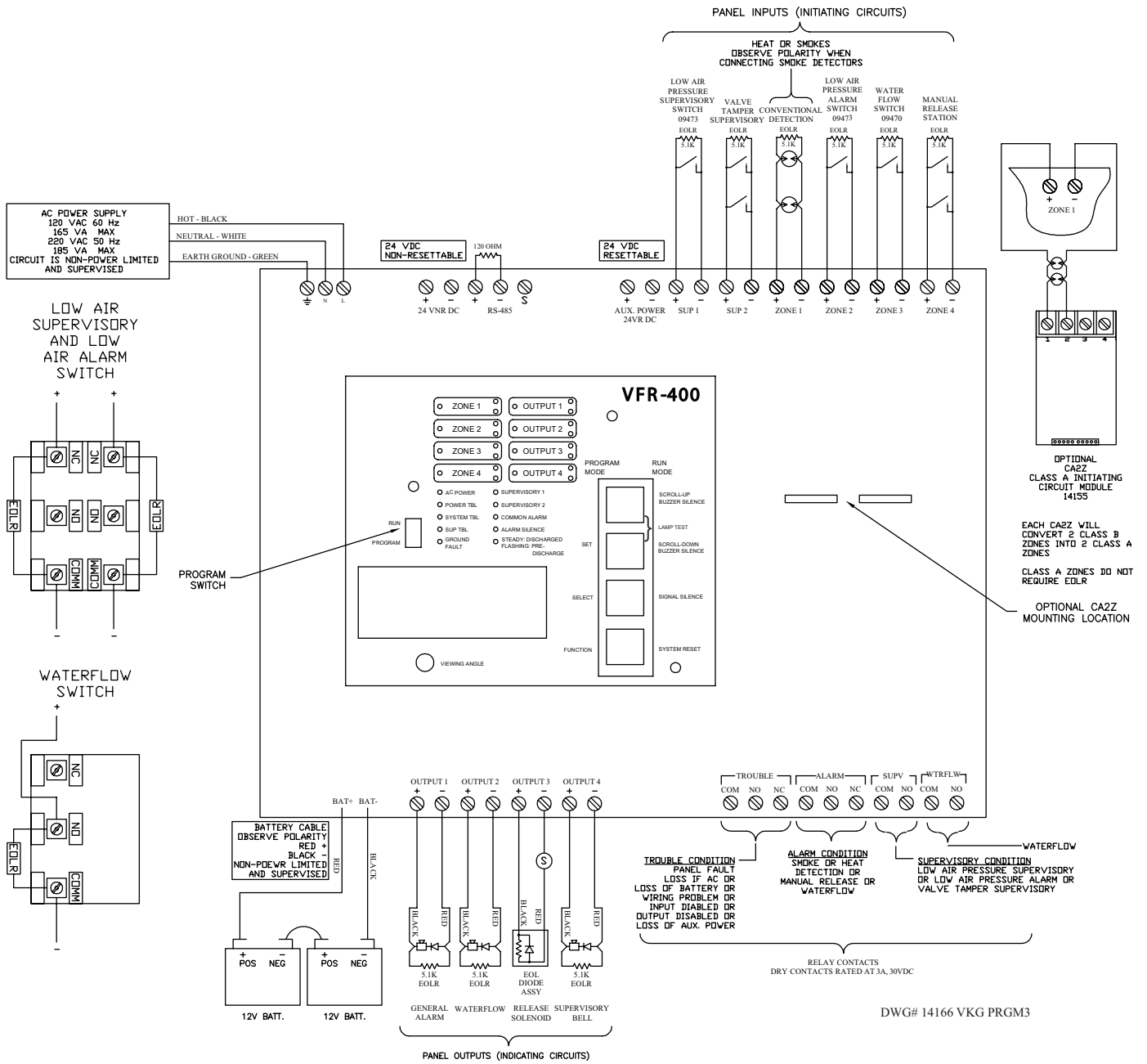
1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #2".
8. Press the SELECT button until the display reads "PROGRAM #2".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

PROGRAM #3						
For One Sprinkler System						
Viking Sprinkler System Types	2 Cross Release zones, Waterflow zone, and Manual Release zone	1. Double Interlocked Preaction System with Electric/Pneu-Lectric Release				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Low Air Supervisory Zone	Valve Tamper Supervisory Zone	Conventional Detection Zone	Low Air Alarm Zone	Waterflow Zone	Manual Release Zone
#1 General Alarm			X			X
#2 Waterflow					X	
#3 Release Solenoid			X X	X X		X
#4 Supervisory Bell	X	X		X		
OPERATION DESCRIPTION						
Inputs:	1 Conventional Detection zone cross zoned with 1 Low Air Alarm zone, 1 Waterflow zone, 1 Manual Release zone, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Waterflow, 1 Release Solenoid, 1 Supervisory Bell					
Operation:	Simultaneous activation of both the Conventional Detection zone #1 and the Low Air Alarm zone #2 will activate output #3 (Release solenoid) and output #1 (General alarm)					
	Activation of Conventional Detection zone #1 will activate output #1 (General Alarm)					
	Activation of Low Air Alarm zone #2 will activate output #4 (Supervisory Bell)					
	Activation of Waterflow zone #3 will activate output #2 (Waterflow)					
	Activation of Manual Release zone #4 will activate output #3 (Release Solenoid) and output #1 (General Alarm)					
Activation of Low Air Supervisory zone #1 or Valve Tamper Supervisory zone #2 will operate output #4 (Supervisory Bell)						

XX = Cross zoned

NOTES:

1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #3 (Release Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when ouptut is activated.
3. Leave EOLR (provided) on all unnused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See instruction manual for list of compatible smoke detectors.
8. See specific system type data page for proper pressure switch settings.

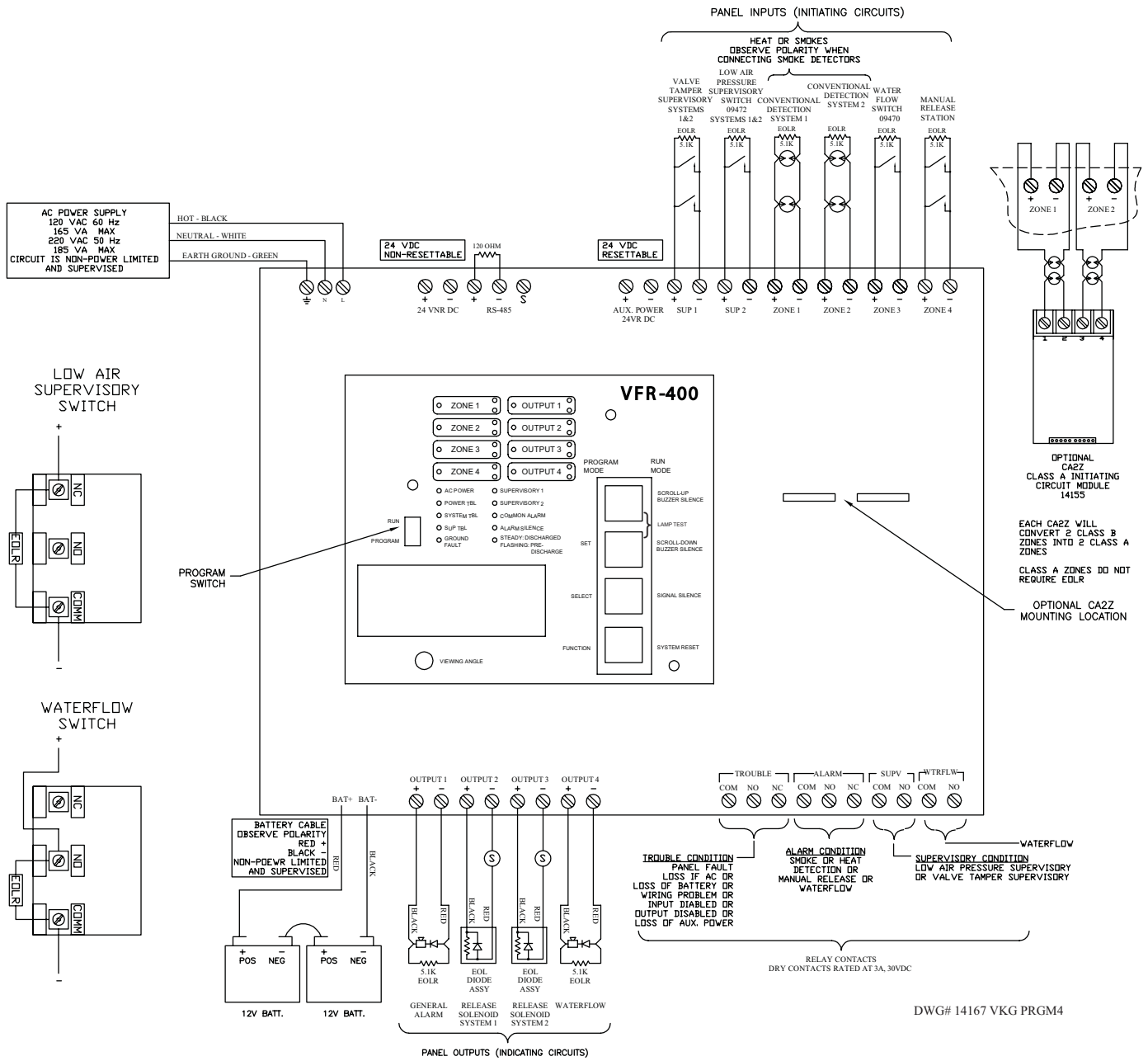


1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #3".
8. Press the SELECT button until the display reads "PROGRAM #3".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

PROGRAM #4						
For Two Sprinkler Systems - Operating Simultaneously						
Viking Sprinkler System Types	2 Dual Release Zones, Waterflow Zone, and Dual Manual Release	1. Single Interlocked Preaction System with Electric Release				
		2. Deluge System with Electric Release				
		3. Non-Interlocked Preaction System with Electric Release				
		4. Double Interlocked Preaction System with Electric/Pneumatic Release				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Valve Tamper Supervisory Zone for Systems 1 & 2	Low Air Supervisory Zone for Systems 1 & 2	Conventional Detection Zone for System 1	Conventional Detection Zone for System 2	Waterflow Zone	Manual Release Zone
#1 General Alarm			X	X	X	X
#2 Release Solenoid #1			X	X		X
#3 Release Solenoid #2			X	X		X
#4 Waterflow					X	
OPERATION DESCRIPTION						
Inputs:	2 Conventional Detection zones, 1 Waterflow zone, 1 Manual Release zone, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Waterflow, 2 Release Solenoids					
Operation:	Activation of Conventional Detection zone #1 or #2 or Manual Release zone will activate output #2 (Release Solenoid #1) and output #3 (Release Solenoid #2) and output #1 (General Alarm)					
	Activation of Waterflow zone #3 will activate output #4 (Waterflow)					
	Activation of Valve Tamper Supervisory zone #1 or Low Air Supervisory zone #2 will operate supervisory trouble relay					

NOTES:

1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #2 (Release Solenoid) and output #3 (Release Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when output is activated.
3. Leave EOLR (provided) on all unused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See instruction manual for list of compatible smoke detectors.
8. See specific system type data page for proper pressure switch settings.

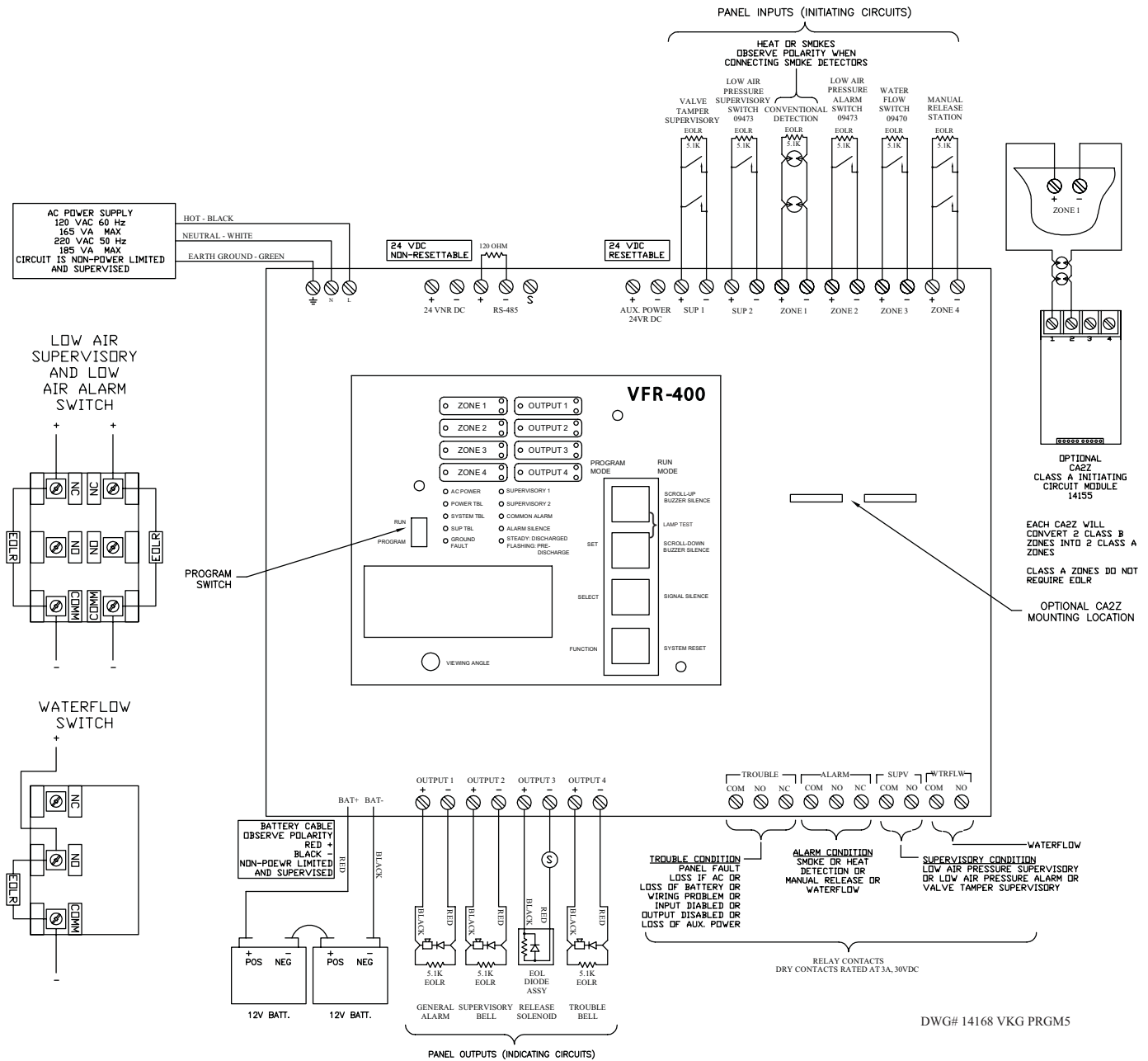


1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #4".
8. Press the SELECT button until the display reads "PROGRAM #4".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

PROGRAM #5						
For One Sprinkler System- NYC Special						
Viking Sprinkler System Types	Release Zone and Manual Release Zone	1. Single Interlocked Preaction System with Electric Release				
		2. Deluge System with Electric Release				
		3. Non-Interlocked Preaction with Electric Release				
		4. Double Interlocked Preaction System with Electric/Pneumatic Release				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Valve Tamper Supervisory Zone	Low Air Supervisory Zone	Conventional Detection Zone	Low Air Alarm Zone	Waterflow Zone	Manual Release Zone
#1 General Alarm			X		X	X
#2 Supervisory Bell	X	X		X		
#3 Release Solenoid			X			X
#4 Trouble Bell						
OPERATION DESCRIPTION						
Inputs:	1 Conventional Detection zone, 1 Waterflow zone, 1 Low Air Alarm zone, 1 Manual Release zone, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Trouble Bell, 1 Release Solenoid, 1 Supervisory Bell					
Operation:	Activation of Conventional Detection zone #1 or Manual Release zone #4 will activate output #3 (Release Solenoid) and output #1 (General Alarm)					
	Activation of Waterflow zone #3 will activate output #1 (General Alarm)					
	Activation of Low Air Alarm zone or Low Air Supervisory zone or Valve Tamper Supervisory zone will activate output #2 (Supervisory Bell)					
	A trouble condition, (low battery, wire short in outputs, loss AC, panel problem) will activate output #4 (Trouble Bell) and trouble relay					

NOTES:

1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #2 (Release Solenoid) and output #3 (Release Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when output is activated.
3. Leave EOLR (provided) on all unused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See instruction manual for list of compatible smoke detectors.
8. See specific system type data page for proper pressure switch settings.

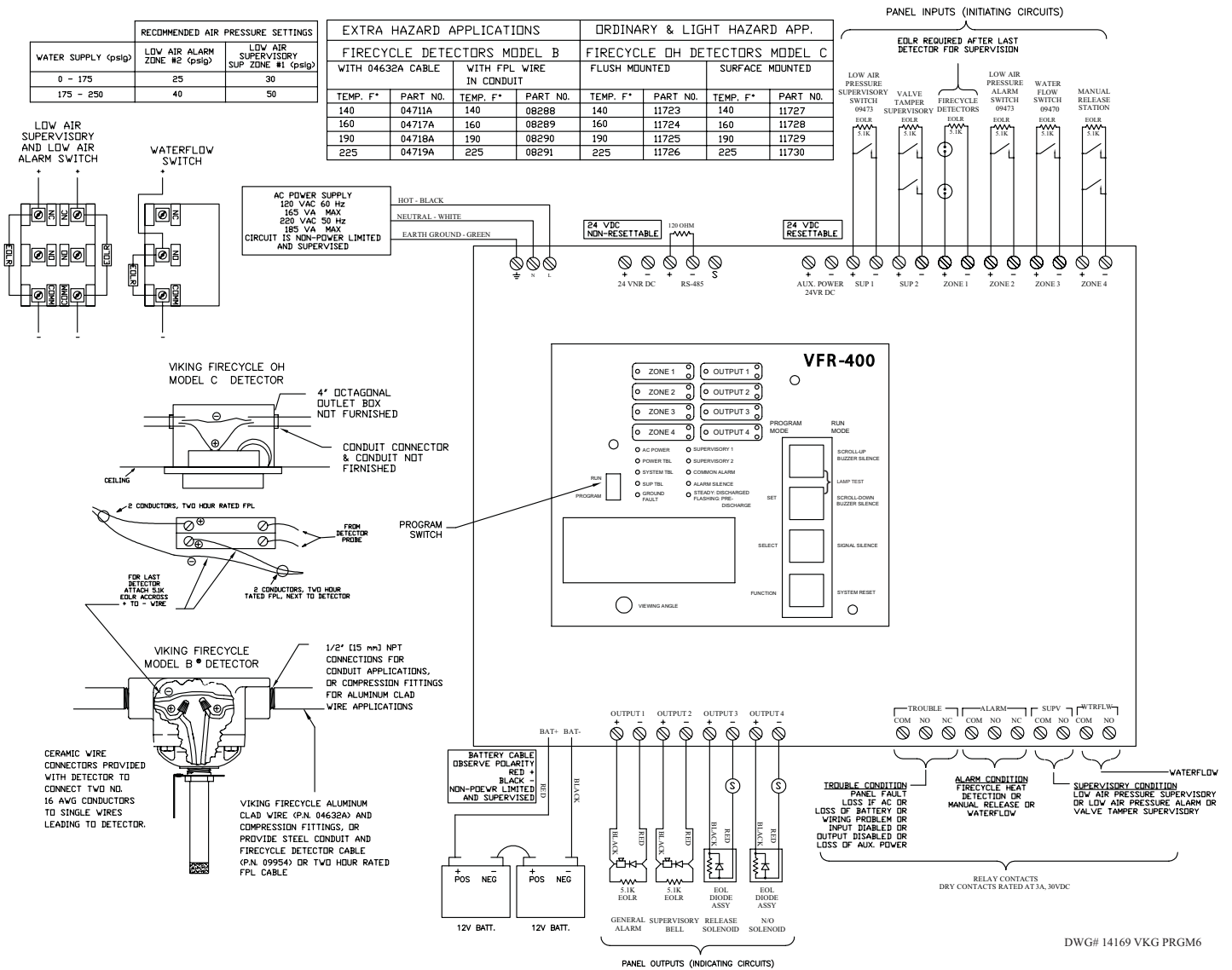


1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #5".
8. Press the SELECT button until the display reads "PROGRAM #5".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

PROGRAM #6						
For One Sprinkler System						
Viking Sprinkler System Types	Release Zone and Manual Release	1. FIRECYCLE III Single Interlocked Preaction Multicycle System				
		2. FIRECYCLE III Single Interlocked Preaction Multicycle System - NYC Special				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Low Air Supervisory Zone	Valve Tamper Supervisory Zone	FIRECYCLE Detector Zone	Low Air Alarm Zone	Waterflow Zone	Manual Release Zone
#1 General Alarm			X		X	X
#2 Supervisory Bell	X	X		X		
#3 Release Solenoid			X			X
#4 N/O Solenoid			X	X	X	
OPERATION DESCRIPTION						
Inputs:	FIRECYCLE Detector zone, Low Air Alarm zone, 1 Waterflow zone, Manual Release zone, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Supervisory Alarm, 1 Release Solenoid, and 1 N/O Solenoid					
Operation:	Activation of FIRECYCLE Detector zone #1 will activate output #1 (General Alarm), output #3 (Release Solenoid), and output #4 (N/O Solenoid)					
	Activation of Low Air Alarm zone #2 will activate output #2 (Supervisory Bell) and output #4 (N/O Solenoid)					
	Activation of Waterflow zone #3 will activate output #1 (General Alarm) and output #4 (N/O Solenoid)					
	Activation of Manual Release zone #4 will activate output #1 (General Alarm) and output #3 (Release Solenoid)					
	Deactivation of FIRECYCLE Detector zone #1 will start soak timer, when timer cycle is complete output #3 (Release Solenoid) is deactivated					
	Activation of Low Air Supervisory Zone #1 or Valve Tamper Supervisory zone #2 will activate output #2 (Supervisory Bell)					

NOTES:

1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #3 (Release Solenoid) and output #4 (N/O Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when output is activated.
3. Leave EOLR (provided) on all unused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See specific system type data page for proper pressure switch settings.
8. Connect EOL resistor after last FIRECYCLE detector on return line to common terminal in FIRECYCLE Detector zone #1.
9. Set the soak timer to desired duration period. Factory setting is continuous. Recommend 60 seconds minimum.
10. Loss of DC power below 20 volt causes output #3 (Release Solenoid) and output #4 (N/O Solenoid) to drop out.
11. Use only Viking FIRECYCLE detectors on FIRECYCLE Detector zone #1.



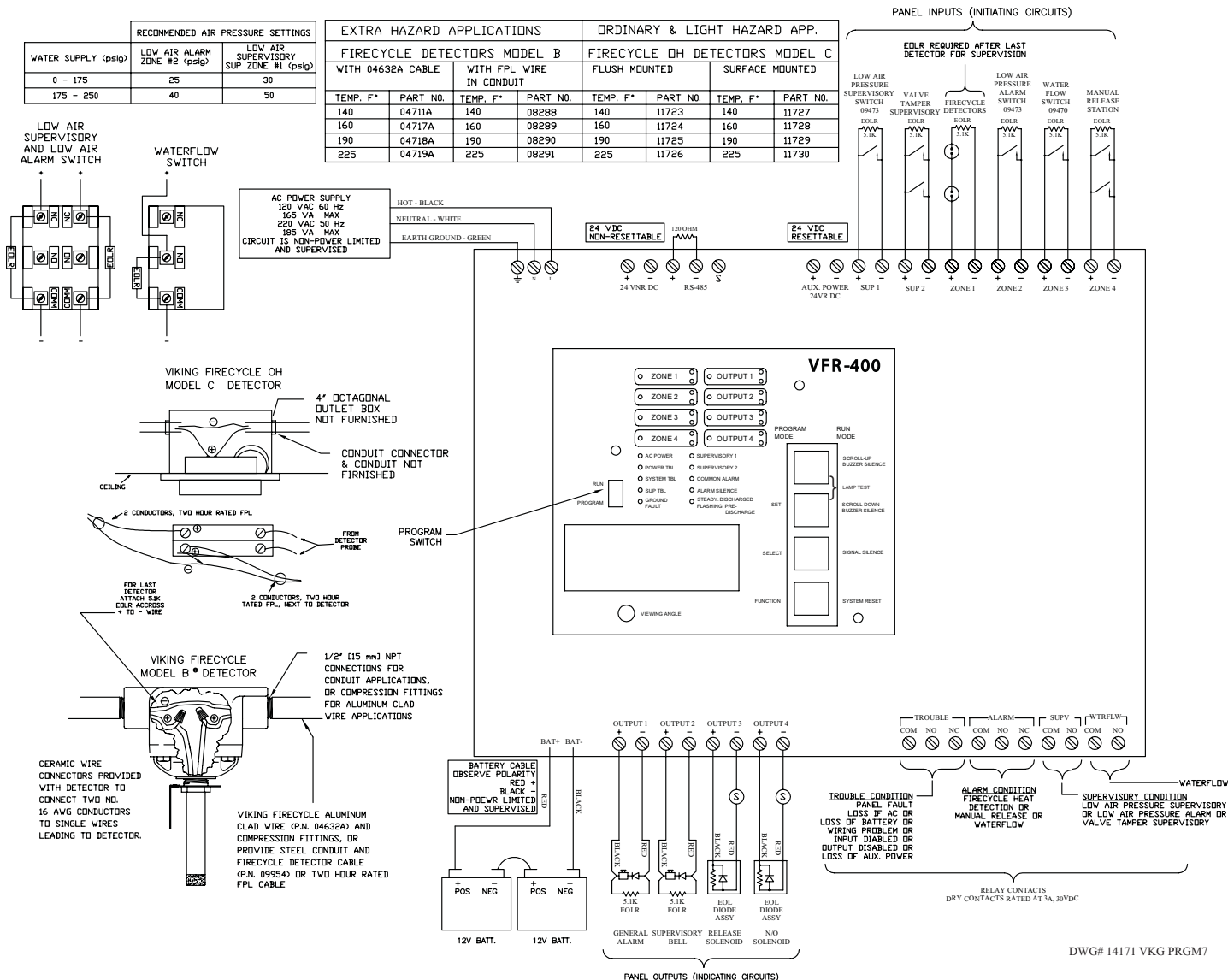
1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #6".
8. Press the SELECT button until the display reads "PROGRAM #6".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

PROGRAM #7						
For One Sprinkler System						
Viking Sprinkler System Types	2 Cross Release Zones and Manual Release Zone	1. FIRECYCLE III Double Interlocked Preaction Multicycle System				
		2. FIRECYCLE III Double Interlocked Preaction Multicycle System - NYC Special				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Low Air Supervisory Zone	Valve Tamper Supervisory Zone	FIRECYCLE Detector Zone	Low Air Alarm Zone	Waterflow Zone	Manual Release Zone
#1 General Alarm			X		X	X
#2 Supervisory Bell	X	X		X		
#3 Release Solenoid			X X	X X		X
#4 N/O Solenoid				X	X	
OPERATION DESCRIPTION						
Inputs:	1 FIRECYCLE Detector zone, 1 Low Air Alarm zone, 1 Waterflow zone, 1 Manual Release zone, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Supervisory Bell, 1 Release Solenoid, and 1 N/O Solenoid					
Operation:	Simultaneous activation of both the FIRECYCLE Detector zone #1 and the Low Air alarm zone #2 will activate output #1 (General Alarm) and output #3 (Release Solenoid)					
	Activation of FIRECYCLE Detector zone #1 will activate output #1 (General Alarm)					
	Activation of Low Air Alarm zone #2 alone will activate output #2 (Supervisory Bell) and output #4 (N/O Solenoid)					
	Activation of Waterflow zone #3 will activate output #1 (General Alarm) and output #4 (N/O solenoid)					
	Activation of Manual Release zone #4 will activate output #1 (General Alarm) and output #3 (Release Solenoid)					
	Deactivation of FIRECYCLE Detector zone #1 will start soak timer, when timer cycle is complete the output #3 (Release Solenoid) is deactivated.					
Activation of Low Air Supervisory zone #1 or Valve Tamper Supervisory zone #2 will activate output #2 (Supervisory Bell)						

XX = Cross-Zoned

NOTES:

1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #3 (Release Solenoid) and output #4 (N/O Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when output is activated.
3. Leave EOLR (provided) on all unused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See specific system type data page for proper pressure switch settings.
8. Connect EOL resistor after last FIRECYCLE detector on return line to common terminal in FIRECYCLE Detector zone #1.
9. Set the soak timer to desired duration period. Factory setting is continuous. Recommend 60 seconds minimum.
10. Loss of DC power below 20 volt causes output #3 (Release Solenoid) to drop out.
11. Use only Viking FIRECYCLE detectors on FIRECYCLE Detector zone #1.

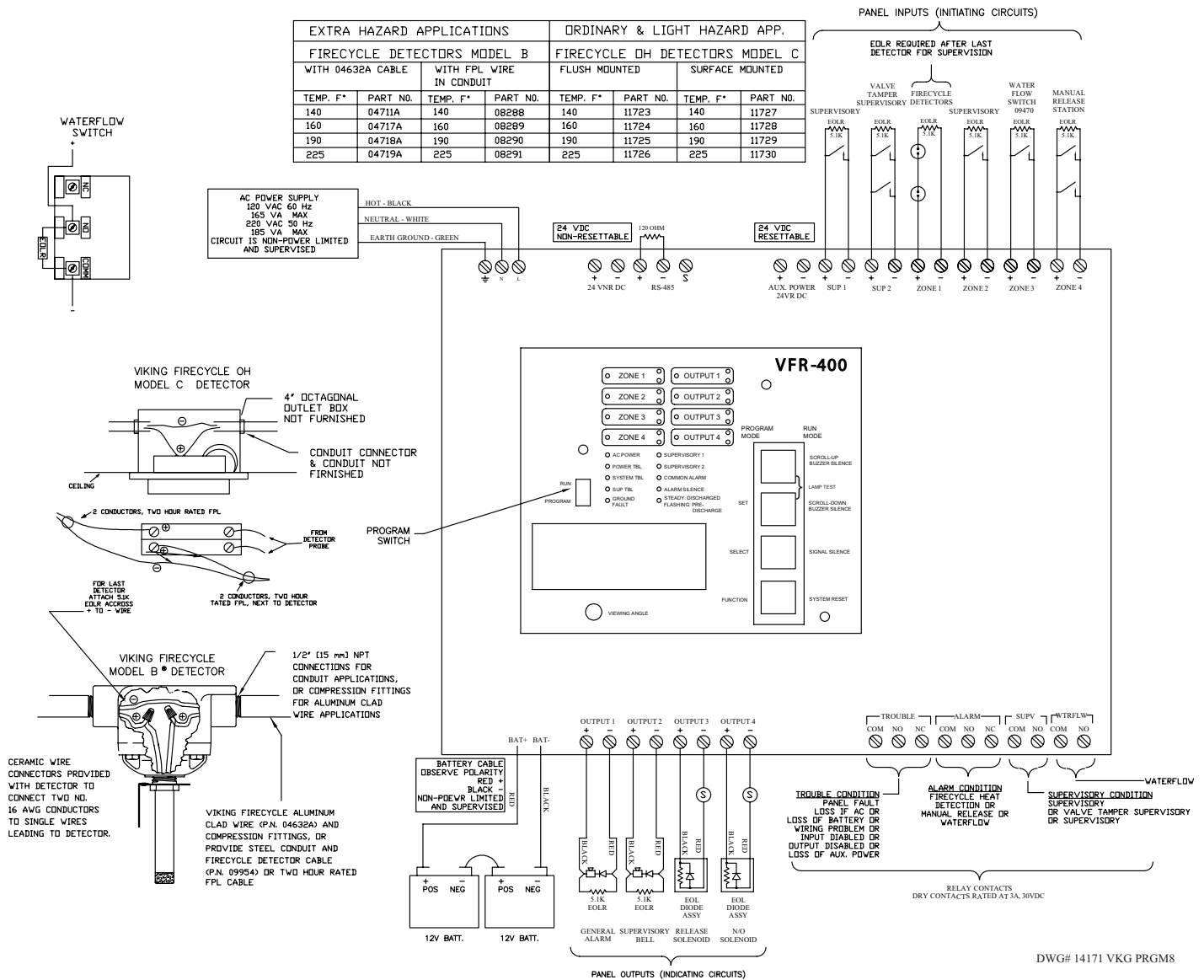


1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #7".
8. Press the SELECT button until the display reads "PROGRAM #7".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

PROGRAM #8						
For One Sprinkler System						
Viking Sprinkler System Types	1 Release Zone and Manual Release	1. FIRECYCLE III Deluge Multicycle System				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Supervisory Zone	Valve Tamper Supervisory Zone	FIRECYCLE Detector Zone	Supervisory Zone	Waterflow Zone	Manual Release Zone
#1 General Alarm			X		X	X
#2 Supervisory Bell	X	X		X		
#3 Release Solenoid			X			X
#4 N/O Solenoid			X		X	
OPERATION DESCRIPTION						
Inputs:	1 FIRECYCLE Detection zone, 1 Supervisory zone, 1 Waterflow zone, 1 Manual Release zone, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Supervisory Bell, 1 Release Solenoid, and 1 N/O Solenoid					
Operation:	Activation of FIRECYCLE Detector zone #1 will activate output #1 (General Alarm), output #3 (Release Solenoid) and output #4 (N/O Solenoid)					
	Activation of Supervisory zone #2 will activate output #2 (Supervisory Bell)					
	Activation of Waterflow Alarm zone #3 will activate output #1 (General Alarm) and output #4 (N/O Solenoid)					
	Activation of Manual Release zone #4 will activate output #1 (General Alarm) and output #3 (Release Solenoid)					
	Deactivation of FIRECYCLE Detector zone #1 will start soak timer, when timer cycle is complete the output #3 (Release Solenoid) is deactivated.					
	Activation of Supervisory zone #1 or Valve Tamper Supervisory Zone #2 will activate output #2 (Supervisory Bell)					

NOTES:

1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #3 (Release Solenoid) and output #4 (N/O Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when output is activated.
3. Leave EOLR (provided) on all unused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See specific system type data page for proper pressure switch settings.
8. Connect EOL resistor after last FIRECYCLE detector on return line to common terminal in FIRECYCLE Detector zone #1.
9. Set the soak timer to desired duration period. Factory setting is continuous. Recommend 60 seconds minimum.
10. Loss of DC power below 20 volt causes output #3 (Release Solenoid) and output #4 (N/O Solenoid) to drop out.
11. Use only Viking FIRECYCLE detectors on FIRECYCLE Detector zone #1.



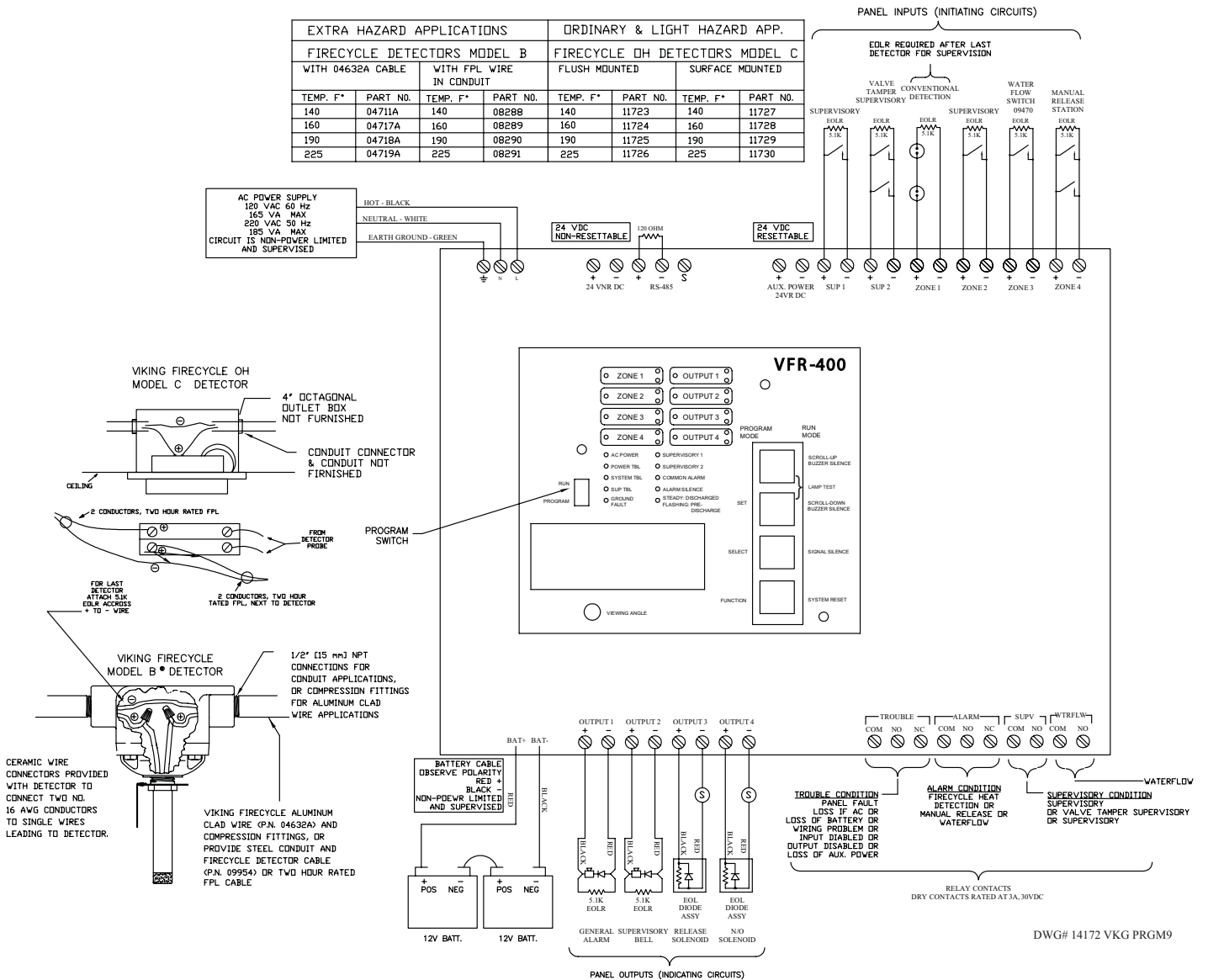
DIAG# 14171 VKG PRGMS

1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #8".
8. Press the SELECT button until the display reads "PROGRAM #8".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

PROGRAM #9						
For One Sprinkler System						
Viking Sprinkler System Types	1 Release Zone and Manual Release Zone	1. FIRECYCLE III Wet Multicycle System				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Supervisory Zone	Valve Tamper Supervisory Zone	FIRECYCLE Detector Zone	Supervisory Zone	Waterflow Zone	Manual Release Zone
#1 General Alarm			X		X	X
#2 Supervisory Bell	X	X		X		
#3 Release Solenoid			X			X
#4 N/O Solenoid			X		X	
OPERATION DESCRIPTION						
Inputs:	1 FIRECYCLE Detection zone, 1 Supervisory zone, 1 Waterflow zone, 1 Manual Release zone, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Supervisory Bell, 1 Release Solenoid, and 1 N/O Solenoid					
Operation:	Activation of FIRECYCLE Detector zone #1 will activate output #1 (General Alarm), output #3 (Release Solenoid) and output #4 (N/O Solenoid)					
	Activation of Supervisory zone #2 will activate output #2 (Supervisory Bell)					
	Activation of Waterflow Alarm zone #3 will activate output #1 (General Alarm) and output #4 (N/O Solenoid)					
	Activation of Manual Release zone #4 will activate output #1 (General Alarm) and output #3 (Release Solenoid)					
	Deactivation of FIRECYCLE Detector zone #1 will start soak timer, when timer cycle is complete the output #3 (Release Solenoid) is deactivated.					
	Activation of Supervisory zone #1 or Valve Tamper Supervisory zone #2 will activate output #2 (Supervisory Bell)					

NOTES:

1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #3 (Release Solenoid) and output #4 (N/O Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when output is activated.
3. Leave EOLR (provided) on all unused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See specific system type data page for proper pressure switch settings.
8. Connect EOL resistor after last FIRECYCLE detector on return line to common terminal in FIRECYCLE Detector zone #1.
9. Set the soak timer to desired duration period. Factory setting is continuous. Recommend 60 seconds minimum.
10. Loss of DC power below 20 volt causes output #3 (Release Solenoid) and output #4 (N/O Solenoid) to drop out.
11. Use only Viking FIRECYCLE detectors on FIRECYCLE Detector zone #1.

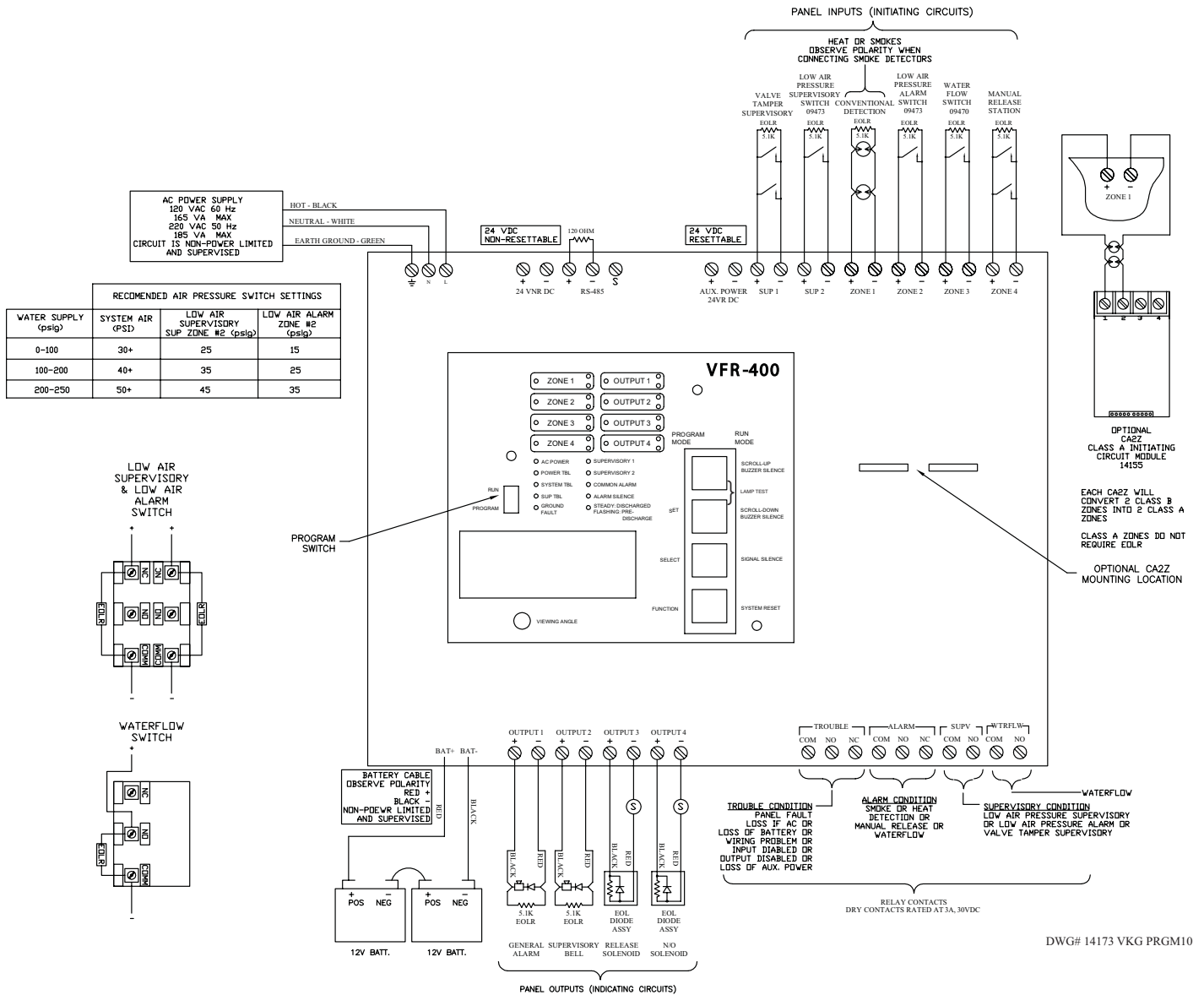


1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #9".
8. Press the SELECT button until the display reads "PROGRAM #9".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

PROGRAM #10						
For One Sprinkler System- NYC Special						
Viking Sprinkler System Types	Release Zone and Manual Release Zone	1. SUREFIRE Single Interlocked Preaction System				
		2. SUREFIRE Single Interlocked Preaction System - NYC Special				
		3. SUREFIRE Single Interlocked Preprimed Preaction System				
		4. SUREFIRE Single Interlocked Preprimed Preaction System - NYC Special				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Valve Tamper Supervisory Zone	Low Air Supervisory Zone	Conventional Detection Zone	Low Air Alarm Zone	Waterflow Zone	Manual Release Zone
#1 General Alarm			X		X	X
#2 Supervisory Bell	X	X		X		
#3 Release Solenoid			X			X
#4 Trouble Bell						
OPERATION DESCRIPTION						
Inputs:	1 Conventional Detection zone, 1 Waterflow zone, 1 Low Air Alarm zone, 1 Manual Release zone, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Trouble Bell, 1 Release Solenoid, 1 Supervisory Bell					
Operation:	Activation of Conventional Detection zone #1 will activate output #3 (Release Solenoid) and output #1 (General Alarm)					
	Activation of Low Air Alarm zone #2 will activate output #2 (Supervisory Bell) and output #4 (N/O Solenoid)					
	Activation of Waterflow zone #3 will activate output #1 (General Alarm)					
	Activation of Manual Release zone #4 will activate output #3 (Release Solenoid) and output #1 (General Alarm)					
	Activation of Valve Tamper Supervisory zone #1 or Low Air Supervisory zone #2 will activate output#2 (Supervisory Bell)					
A trouble condition will prevent output #4 (N/O Solenoid) from activating						

NOTES:

1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #3 (Release Solenoid) and output #4 (Release Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when output is activated.
3. Leave EOLR (provided) on all unused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See instruction manual for list of compatible smoke detectors.
8. See specific system type data page for proper pressure switch settings.
9. Loss of DC power below 20 volt causes output #3 (Release Solenoid) and output #4 (N/O Solenoid) to drop out.



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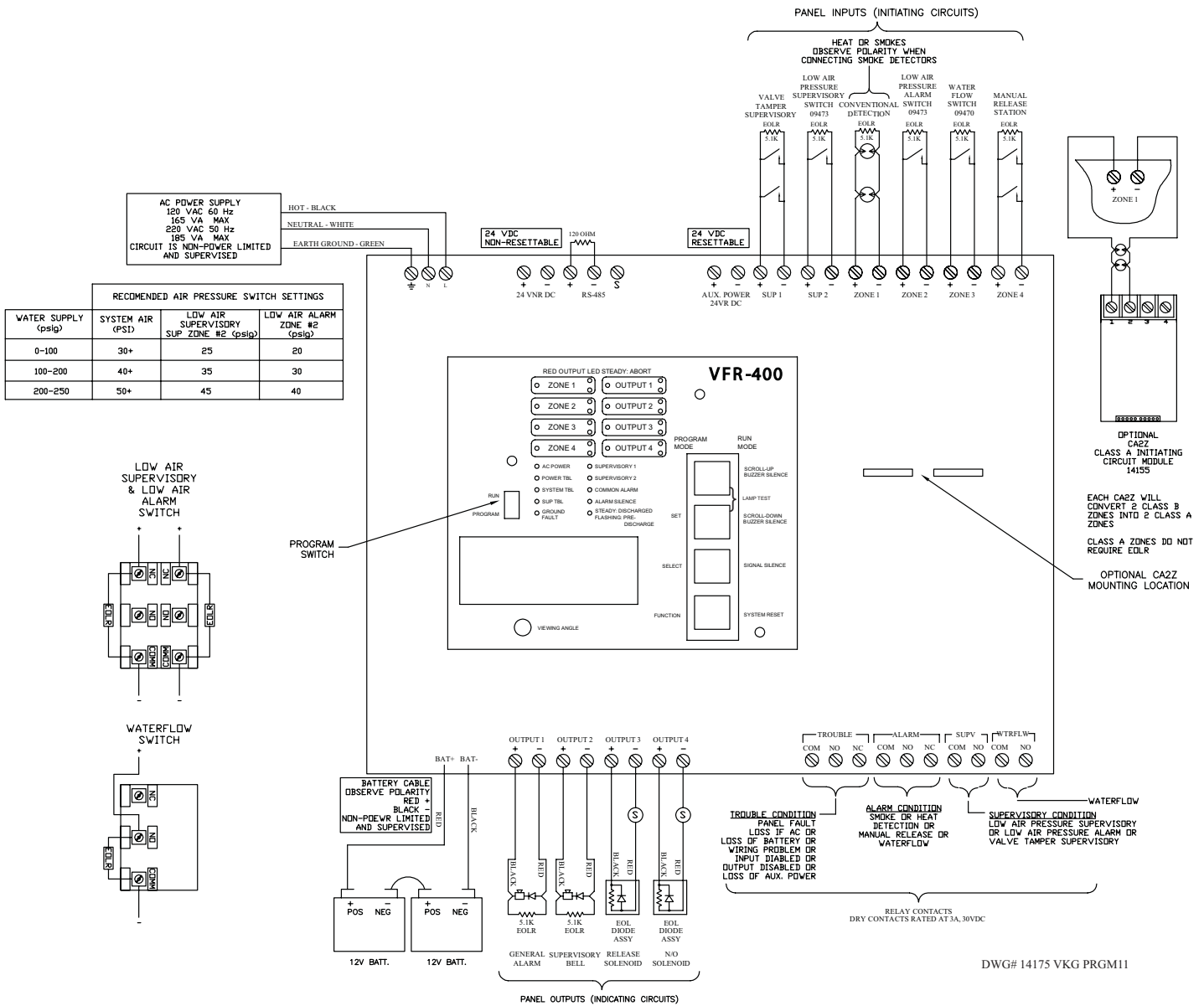
1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #10".
8. Press the SELECT button until the display reads "PROGRAM #10".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

PROGRAM #11						
For One Sprinkler System						
Viking Sprinkler System Types	2 Cross Release Zones and Manual Release Zone	1. SUREFIRE Double Interlocked Preaction System				
		2. SUREFIRE Double Interlocked Preaction System - NYC Special				
		3. SUREFIRE Double Interlocked Preprimed Preaction System				
		4. SUREFIRE Double Interlocked Preprimed Preaction System - NYC Special				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Valve Tamper Supervisory Zone	Low Air Supervisory Zone	Conventional Detection Zone	Low Air Alarm Zone	Waterflow Zone	Manual Release Zone
#1 General Alarm			X		X	X
#2 Supervisory Bell	X	X		X		
#3 Release Solenoid			X X	X X		X
#4 N/O Solenoid				X		
OPERATION DESCRIPTION						
Inputs:	1 Conventional Detection zone, 1 Low Air Alarm zone, 1 Waterflow zone, 1 Manual Release zone, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Supervisory Bell, 1 Release Solenoid, 1 N/O Solenoid					
Operation:	Simultaneous activation of both the Conventional Detection zone #1 and the Low Air Alarm zone #2 will activate output #3 (Release Solenoid) and output #1 (General Alarm)					
	Activation of Conventional Detection zone #1 will activate output #1 (General Alarm)					
	Activation of Low Air Alarm zone #2 will activate output #2 (Supervisory Bell) and output #4 (N/O Solenoid)					
	Activation of Waterflow zone #3 will activate output #1 (General Alarm)					
	Activation of Valve Tamper Supervisory zone #1 or Low Air Supervisory zone #2 will activate output #2 (Supervisory Bell)					
	Activation of Manual Release zone #4 will activate output #3 (Release Solenoid) and output #1 (General Alarm)					

XX = Cross-Zoned

NOTES:

1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #3 (Release Solenoid) and output #4 (Release Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when output is activated.
3. Leave EOLR (provided) on all unused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See instruction manual for list of compatible smoke detectors.
8. See specific system type data page for proper pressure switch settings.
9. Loss of DC power below 20 volt causes output #3 (Release Solenoid) and output #4 (N/O Solenoid) to drop out.



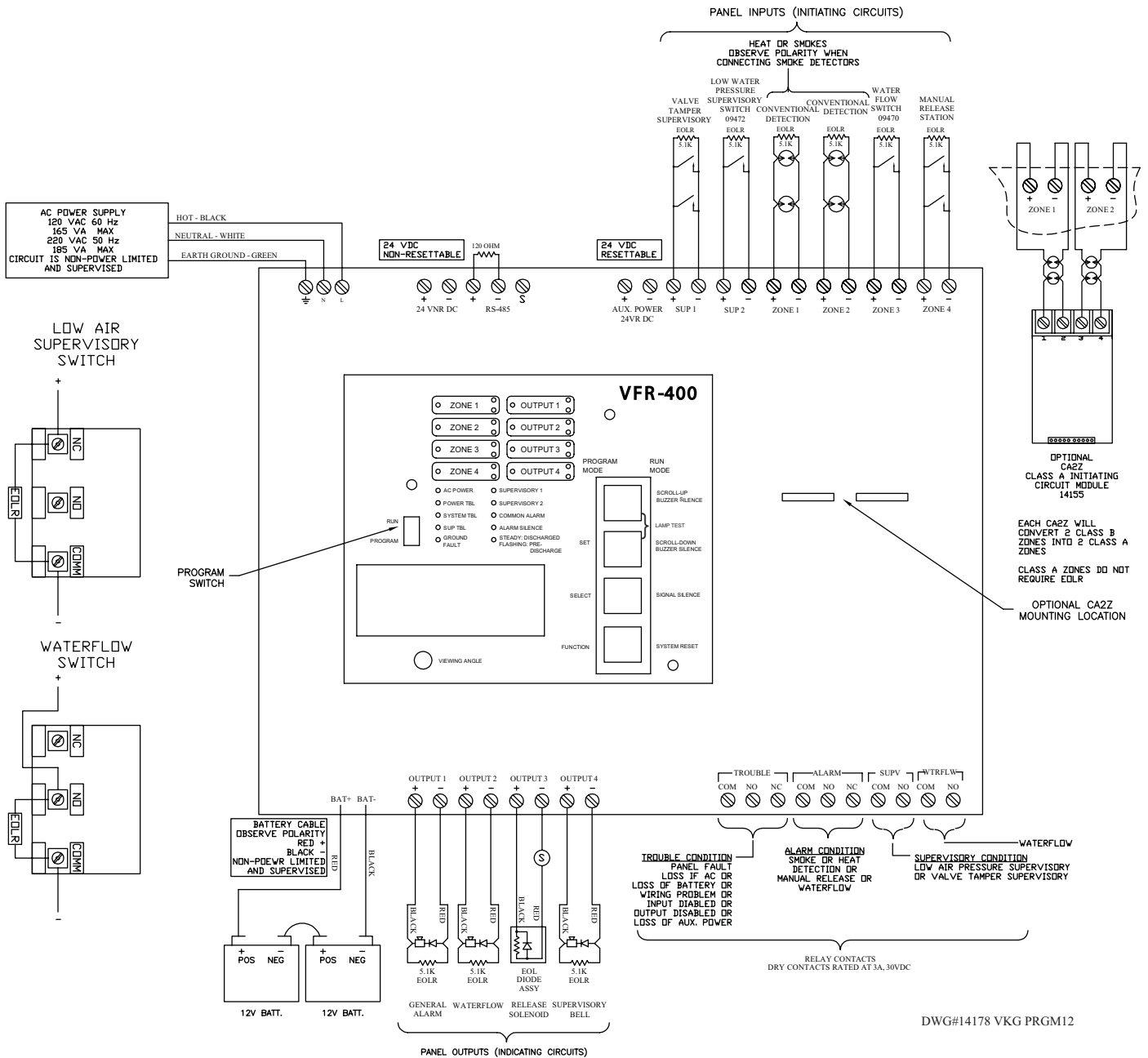
1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #11".
8. Press the SELECT button until the display reads "PROGRAM #11".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

PROGRAM #12						
For One Sprinkler System						
Viking Sprinkler System Types	2 Cross Release Zones, Waterflow Zone, and Manual Release Zone	1. Single Interlocked Preaction System with Electric Release				
		2. Deluge System with Electric Release				
		3. Non-Interlocked Preaction system with Electric Release				
		4. Double Interlocked Preaction System with Electric/Pneu-Lectric Release				
OUTPUTS (Indicating Circuits)	ZONES (Initiating Circuits)					
	SUP 1	SUP 2	#1	#2	#3	#4
	Valve Tamper Supervisory Zone	Low Air Supervisory Zone	Conventional Detection Zone	Conventional Detection Zone	Waterflow Zone	Manual Release Zone
#1 General Alarm			X	X		X
#2 Waterflow					X	
#3 Release Solenoid			X X	X X		X
#4 Supervisory Bell	X	X				
OPERATION DESCRIPTION						
Inputs:	2 Conventional Detection zones, 1 Waterflow zone, 1 Manual Release zone, 2 Supervisory zones					
Outputs:	1 General Alarm, 1 Waterflow, 1 Release Solenoid, 1 Supervisory Bell					
Operation:	Simultaneous activation of both the Conventional Detection zone #1 and the Conventional Detector zone #2 will activate output #3 (Release Solenoid) and output #1 (General Alarm)					
	Activation of Conventional Detection zone #1 will activate output #1 (General Alarm)					
	Activation of Conventional Detection zone #2 will activate output #1 (General Alarm)					
	Activation of Waterflow zone #3 will activate output #2 (Waterflow)					
	Activation of Manual Release zone #4 will activate output #3 (Release Solenoid) and output #1 (General Alarm)					
	Activation of Valve Tamper Supervisory zone #1 or Low Air Supervisory zone #2 will activate output #4 (Supervisory Bell)					

XX = Cross-Zoned

NOTES:

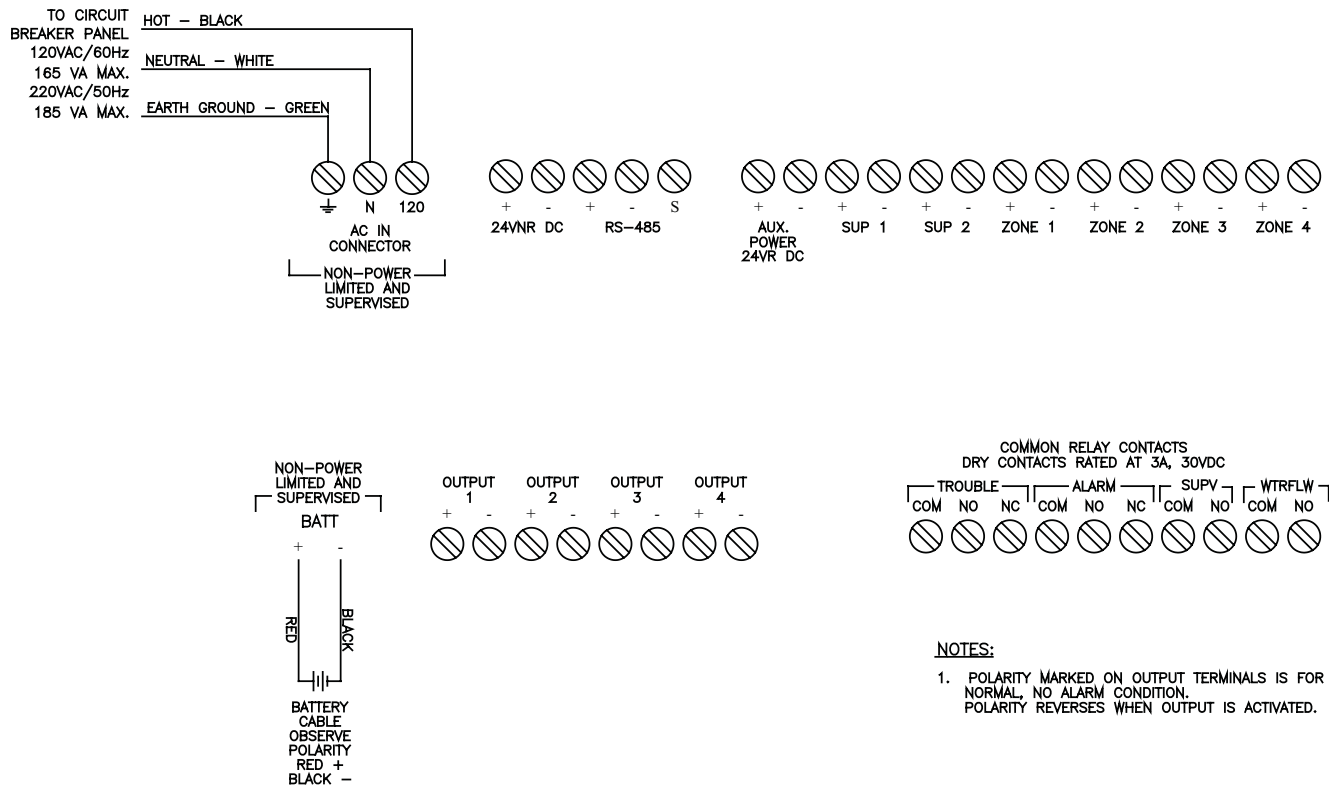
1. Connect EOL Diode assembly IN SERIES as shown with Solenoid on output #3 (Release Solenoid) and output #4 (Release Solenoid). Black wire to positive terminal on panel and Red wire through Solenoid to negative terminal on panel.
2. Polarity is shown on indicating circuits in normal (no alarm) condition. Polarity reverses when output is activated.
3. Leave EOLR (provided) on all unused circuits.
4. See the instruction manual for circuit information, panel limits, and battery sizing.
5. For wire routing instructions through the releasing panel, see Note 3 on page 56 of the instruction manual.
6. See instruction manual for proper programming.
7. See instruction manual for list of compatible smoke detectors.
8. See specific system type data page for proper pressure switch settings.



1. Run field wiring and ensure connections are proper by metering wires. Resistance reading should be 5.1K ohms with end-of-line resistor (EOLR) at last device. The end-of-line resistor is located on the mother board. Remove as needed. Leave factory installed EOLR on all unused circuits.
2. Connect one circuit at a time and apply AC power.
3. Connect batteries to the panel.
4. Once last connection is made, move Program switch down.
5. Press the FUNCTION (bottom) button until the display reads "PASSWORD = 000".
6. To enter a password, press the SELECT button until the proper number is displayed above the ^ symbol, then press the SET button to move to the next digit. After entering the third number the display will change. (All panels are shipped with a 000 password.)
7. Press the FUNCTION (bottom) button until the display reads "PROGRAM #12".
8. Press the SELECT button until the display reads "PROGRAM #12".
9. Press the SET button.
10. The panel is completely programmed except for the custom banner and zone messages. Move the program switch back up.

CUSTOM PROGRAM						
OUTPUTS	ZONES					
	SUP 1	SUP 2	#1	#2	#3	#4
#1						
#2						
#3						
#4						

WIRING DIAGRAM CUSTOM PROGRAM



DWG. #3545-99VKG

VFR-400 Custom Program Information

- SET** Press the SET button to set the description displayed into the panels program
- SELECT** Press the SELECT button to scroll between water or chemical based modes
- FUNCTION** Press the bottom button to skip to the next function

I	N	I	T		Z	O	N	E		#	1				
D	E	T	E	C	T	I	O	N							

Initiating Zone Description

This allows the user to describe the initiating zones. Ten different descriptions are available. They are:

- 1) FIRECYCLE - Used only with Normally Closed Firecycle® heat detectors. Automatic restoration of the Firecycle® heat detector will automatically start the Soak Timer.
- 2) DETECTION - These include smoke detectors, pull stations, heat detectors and other devices put on a conventional zone.
- 3) WATERFLOW - Alarms from waterflow zones are non-silenceable
- 4) LINEAR HEAT DETECTION - These use a special wire with a fuseable insulation
- 5) MANUAL RELEASE - Used to override cross zoning and cause instant release
- 6) LOW AIR ALARM – This is for a low air switch used in a double interlock system. Usually cross zoned with a smoke or heat detector. Activation of this zone creates a supervisory condition on the panel but can still operate the release circuit.
- 7) SUPERVISORY - For monitoring any supervisory function as assigned
- 8) TAMPER - For control valve monitoring
- 9) LOW AIR - Used to detect low air pressure
- 10) HIGH AIR - Used to detect high air pressure

The first five descriptions (FIRECYCLE, DETECTION, WATERFLOW, LINEAR HEAT DETECTION, and MANUAL RELEASE) are Alarm Zones. When activated, they will put the panel into alarm and operate the appropriate output as well as operating the alarm relay.

The 6th description (LOW AIR ALARM) creates a supervisory condition on the panel but can be used to activate the release circuit. This activates the Supervisory relay not the Alarm relay.

The last four descriptions (SUPERVISORY, TAMPER, LOW AIR and HIGH AIR) are Supervisory Zones. When activated, they will put the panel in a supervisory condition and activate any output described as “SUPERVISORY BELL”. They cannot activate the release circuit.

The 1st description (FIRECYCLE) is an automatically resettable alarm zone. The status of the zone follows the status of the FIRECYCLE heat detector. When the detector restores, the zone restores and initiates the soak timer.

Note: When FIRECYCLE is selected for zone 1, only outputs #3 and #4 can be mapped as releasing circuits.

If zone 1 is programmed as the FIRECYCLE, the following will appear in the display:

S	O	A	K		T	I	M	E	R						
C	O	N	T	I	N	U	O	U	S						

Soak Timer Description

This allows the user to select the amount of time the release circuit on output #3 will stay activated after the Firecycle zone restores to normal. The available times are 30, 60, 90 seconds, 2-20 minutes in 1 minute increments, or continuous.

After describing all initiating zones or skipping to the next function, the following will appear in the display window:

S	U	P	E	R	V	S	R	Y		1		Z	O	N	E
S	U	P	E	R	V	I	S	R	Y						

SET Press the SET button to set the description displayed.

SELECT Press the SELECT button to scroll through the five descriptions. (Supervisory, Valve Tamper, Low Air, High Air)

FUNCTION Press the bottom button to skip to the next function.

After Selecting SUP 1, the following will appear in the display window.

S	U	P	E	R	V	S	R	Y		2		Z	O	N	E
S	U	P	E	R	V	I	S	R	Y						

SET Press the SET button to set the description displayed.

SELECT Press the SELECT button to scroll through the four supervisory descriptions. (Supervisory, Valve Tamper, Low Air, High Air)

FUNCTION Press the bottom button to skip to the next function.

After describing what the supervisory zone is to be or skipping to the next function, the following will appear in the display window:

O	U	T	P	U	T		#	1							
I	N	D	I	C	A	T	I	N	G						

Output Description

This allows the user to describe the functions of the output circuits. Four descriptions are available:

- 1) ALARM INDICATING - Notification appliances include bells, horns, strobes and other appliances used to indicate an alarm.
- 2) RELEASING - Releasing appliances include solenoids and other electrically compatible devices.
- 3) SUPERVISORY BELL - Appliances on this circuit are used to indicate the presence of a supervisory condition. Any zone programmed as LOW AIR ALARM, SUPERVISORY, TAMPER, HI AIR or LOW AIR is automatically mapped to this output.
- 4) TROUBLE BELL - Appliances on this circuit are used to indicate the presence of a trouble condition.

The user should describe each output circuit in the same manner as the initiating circuit was described by pressing the SELECT button to select and the SET button to set the desired function.

SET Press the SET button to set the description displayed.

SELECT Press the SELECT button to scroll through the descriptions.

FUNCTION Press the bottom button to skip to the next function.

After selecting all four outputs or pressing FUNCTION, the following will be displayed if any outputs have been described as RELEASING:

O	U	T	P	U	T		#	<	A	>				
N	O	R	M	A	L									

Where “<A>” is the number of the releasing circuit output.

Normal/Cross-Zoning

Each releasing circuit can be set up for the normal or cross zoned operation. In NORMAL operation, any alarm initiating zone including LOW AIR ALARM mapped to a releasing output must be in alarm before the output is activated. In cross zoned operation ALL initiating zones mapped to the releasing circuit must be in alarm before the output is activated. An initiating zone previously described as “MANUAL RELEASE” will override the cross zoning feature.

SET Press the SET button to set the operation displayed.

SELECT Press the SELECT button to toggle between NORMAL and CROSS ZONED.

FUNCTION Press the bottom button to skip to the next function.

Z	O	N	E		I				V						
O	U	T	P	U	T	S	:		1		2		3		4

SET Press the SET button to set the time displayed.

SELECT Press the SELECT button to scroll through the available time.

FUNCTION Press the bottom button to skip to the next function

This display is where the outputs are mapped to the initiating zones. Any output that was previously described as “RELEASING” or “ALARM INDICATING” can be mapped to any initiating zones that were described as alarm zones, including zones programmed as “LOW AIR ALARM”.

Any initiating zone that was described as supervisory will automatically be mapped to outputs described as “SUPERVISORY BELL”, including zones programmed as “LOW AIR ALARM”. The “V” is pointing to the first available output for the zone indicated on the display. If the output number is displayed, it is turned on for that zone. If the number is not displayed, it is turned off. If an output is not available for that zone, i.e. “SUPERVISORY BELL”, the “V” will skip to the next available output.

SET Press the SET button to set the output to the zone displayed and move to the next available output.

SELECT Press the SELECT button to turn the output either on or off (the output number will be displayed when turned on).

FUNCTION Press the bottom button to skip to the next function.

After all available outputs for the zone displayed are mapped, the display will automatically change to the next zone. After mapping the last zone or skipping to the next function, the following will appear in the display window:

B	A	N	N	E	R		M	E	S	S	A	G	E	?	

Custom Message

To change the banner message, press the SELECT button. If you don't want to change the banner message press the bottom button.

SET

SELECT Press the SELECT button to change banner message.

FUNCTION Press the bottom button to skip to the next function.

If the SELECT button was pressed, the following will appear in the display window:

^																			

The “^” is pointing to the first character on the top line. Press the SET button to scroll one direction through the character set, or press the SELECT button to scroll the other direction. The entire alphabet, numbers and punctuation are included.

SET Press the SET button to scroll through the character set in one direction.

SELECT Press the SELECT button to scroll in the opposite direction.

FUNCTION Press the bottom button to enter the character displayed and to move to the next position.

After programming the top line (maximum 10 characters), continue this process for the bottom line and the initiating zones. To keep the initiating zones as “ZONE 1”, etc., press the bottom button when they are displayed.

When finished with the last zone, the following will appear in the display window:

N	E	W		P	A	S	S	W	O	R	D	=	0	0	0
													^		

This allows the user to change the password. All panels are shipped from the factory with a password of 000.

SET Press the SET button to set the displayed number and move to the next space.

SELECT Press the SELECT button to scroll through the numbers.

FUNCTION Press the bottom button to skip this function.

When finished with this section, the following will appear in the display window:

P	U	S	H		P	R	O	G	R	A	M	M	I	N	G
S	W	I	T	C	H		B	A	C	K		U	P		

Quit by returning the programming switch to the up position. The system is now ready for operation.

Custom Program (#0 only)

- Describe Initiating Zones 1 - 4

Alarm Zones	Supervisory Zones
Detection	Supervisory
Waterflow	Tamper
Linear Heat Detection	Low Air
Manual Release	High Air
Firecycle (Zone 1 only)	Low Air Alarm
- Describe Initiating dedicated Supervisory Zone (Sup 1 & Sup 2)
 - Supervisory
 - Tamper
 - Low Air
 - High Air
- Select Soak Timer
- Describe Output Zones
 - Alarm Indicating
 - Releasing
 - Supervisory Bell
 - Trouble Bell
 - 1) Releasing circuits: normal/cross-zoned
 - 2) Discharge time: 7, 8, 9, 10, 20 minutes or continuous
- Map Alarm Inputs to Outputs
- Put in Banner Message
- Put in Banner Message Bottom Line
- Put Zone Description for Each Initiating Zone
- Change Password
- Finished

Installation Instructions

Read the entire manual before attempting to install this panel.

NOTICE

This panel wiring should be installed and maintained in accordance with section 760 (Fire Protection Signaling Systems) and all other applicable sections of the National Electrical Code, all other applicable NFPA Code and Standards, local code and the authority having jurisdiction. Review the circuit parameters listed below before installing the panel.

NOTICE

All wiring terminals support 14 to 18 AWG wire sizes. 18 AWG stranded or solid copper wire, (or wire size rated for the current carrying capacity of the circuit application), with 300V, 85°C insulation is recommended.

Wire Checkout:

With all initiating devices and notification appliances installed and with the EOLR's in place, check the wires with an ohmmeter. Meter readings outside of the following will prevent normal operation.

From any wire to ground – less than 100K ohms.

Across the 2 wires on each Initiating zone – between 1.8K ohms and 5.4K ohms.

Across the 2 wires on each notification circuit – between 1.8K ohms and 23.9K ohms.

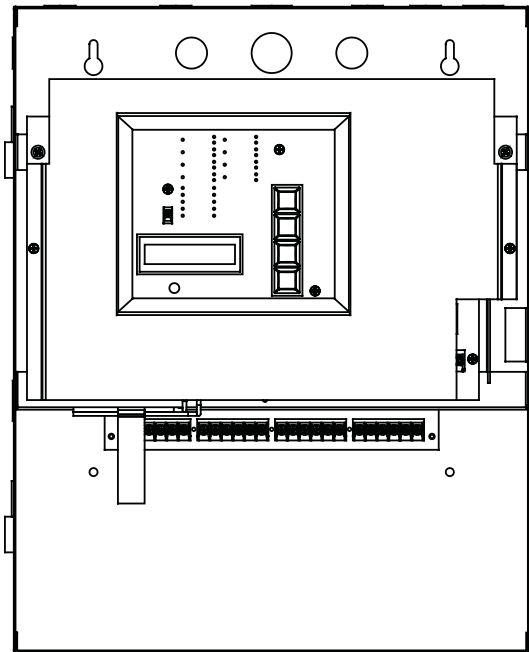
Mounting Instructions:

1) The unit should be mounted in a convenient location, approximately 5 ft. from the floor where it will be accessible for testing and servicing.

 **WARNING**

Removal of this false front exposes electrical components at potentially hazardous voltages and should be performed by qualified personnel only.

- 2) The main circuit board module should be removed before attempting to mount the cabinet. Disconnect the AC power from TB201. To remove the module, remove the two screws holding the chassis to the cabinet. Lift the module upwards, approximately 1/2", in order to clear the cross-beam of the cabinet on which the module rests. Remove the module and set aside.
- 3) Install all required conduits, external wiring and devices and make all connections that are external to the panel. Replace the module. With the AC power still turned off at the circuit breaker panel, connect the AC hot, neutral and ground wires to the terminal block TB201 as shown on the connection drawing. (See connection drawings on page 54)
- 4) Connect all the other wiring to the terminals as shown in the connection drawings. Turn the AC power on and connect the standby batteries with the cable provided, polarity must be observed.
- 5) Replace false front panel and secure with mounting screws.
- 6) The operation of the complete system should be verified as outlined in the test procedure section.

VFR-400 False Front Removal/Assembly Drawing

DWG# 3550-15

Inactive Circuits

All inactive initiating device circuits must have the end-of-line resistor on the panel terminal.

Operating Instructions Form

Fill in the name, address, and telephone number of the servicing agency on the appropriate instruction sheet. Frame and place this sheet adjacent to control panel at eye level.

Battery Size Calculations

To use Calculation Table:

- 1) List in column #1 all devices used in the system, include all modules, bells, horns, door holders, and smoke detectors (see table #1 or manufacturers specifications).
- 2) List in column #2 the quantity of each device.
- 3) List in column #3 the standby current of each device (exclude all signal indicating devices).
- 4) List in column #5 the alarm current of each device.
- 5) For each line, multiply the figure in column #2 by the figure in column #3 and enter the product in column #4. Then multiply the figure in column #2 by the figure in column #5 and enter the product in column #6.
- 6) Add the figures in columns #3 and #6, enter the sums in the appropriate Total mA box.
- 7) Convert these figures from milliamperes to amperes by multiplying by 0.001, enter the product in the appropriate Total A box.
- 8) Multiply the standby total amperes by required time in hours from table 2.
- 9) Divide the alarm total amperes by 12 (5 mins.).
- 10) Add the standby AH and the alarm AH and divide this sum by 0.85 (efficiency factor). Select a battery that has an AH rating above this figure but not less than 6.5AH.

Battery Size Requirements And Maintenance

Charging Voltage: 27VDC Nominal

Maximum Charging Current: .5A

These panels require a 24 volt sealed lead acid battery for proper operation. 24 hours of standby power is required for Local Systems and Central Station (NFPA-72).

The chart below will assist you in selecting the proper size battery: (Does not include LED Annunciator)

No. of Smoke Detectors	No. of Bells (100mA each)	Auxiliary Power Requirements	Standby Hours Required	Battery Size/Part No. (2 Req.)
0-100	0-10	0-25mA	24	8AH/BT 80
0-100	0-10	0mA	90	12AH/BT 120
0-100	0-10	0-30mA	90	18AH/BT 180

NOTICE

Maximum allowed battery size for UL applications is 12AH. FM and others may require more than 24 hours of standby time and may use larger batteries. Batteries rated above 18AH require a separate battery cabinet (Potter Model BC-2). Mark the purchase date on the batteries. Test the batteries at least semi annually according to the battery test methods in NFPA72 or the battery manufacturers instructions. Replace the batteries if they either fail the test or after four years of use. The VFR-400 is capable of charging 24 AH batteries, (FM Applications only).

TABLE 1 CURRENT REQUIREMENTS

Module/Device	Standby mA*	Alarm mA**
VFR-400	121	274
RA-4410-RC	12	12

*Add 23 mA plus current requirement of all devices connected for each output programmed as Trouble Bell
 **Includes one zone short circuit current.

TABLE 2 SECONDARY POWER SUPPLY REQUIREMENTS

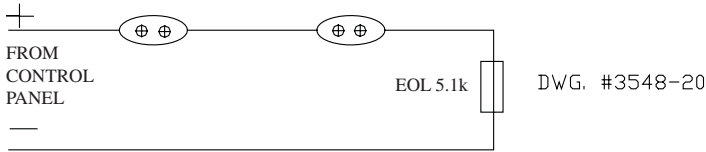
Service Use	Standby Time	Alarm Time
NFPA 72 • Central Station (PPU) • Local	24 hrs. 24 hrs.	5 mins. 5 mins.
FMRC 1011 and 1012, Deluge and Pre-action Systems Where requested by FM or others. 90 Hours is not a UL requirement.	90 hrs.	10 mins.

CALCULATION TABLE

1	2	3	4	5	6
Module/Device	Quantity	Standby mA Per Unit	Total Standby Current	Alarm mA Per Unit	Total Alarm Current
Total mA				Total mA	
Convert to A			x 0.001	Convert to A	x 0.001
Total A				Total A	
Multiply by hours from table 2			x ____	5 min/12 or 10 min/6	÷ ____
Total Standby AH				Total Alarm AH	
				+ Total Standby AH	
				Total AH	
				Efficiency Factor	÷ 0.85
				Required AH	

Use a battery with a higher AH rating than Required AH

Typical Firecycle Wiring

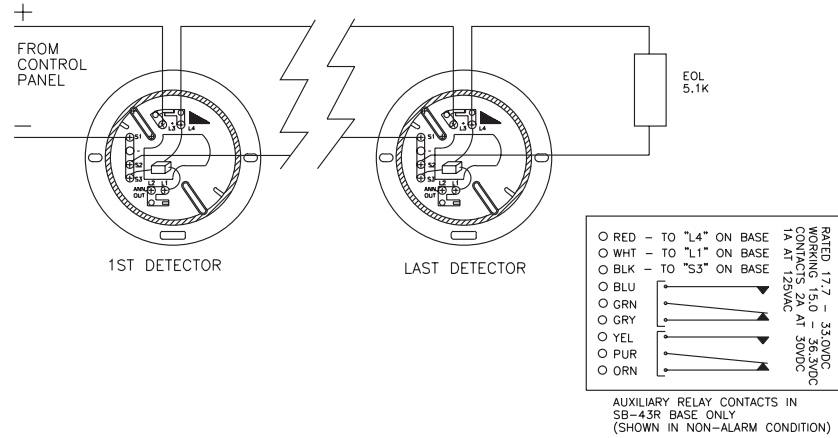


Typical 2 Wire Detector Connection Drawing

Base wiring for Potter models IS-24 Ionization Detectors and PS-24 Photoelectric Detectors.

Typical Style B (Class B) Wiring Using SB-46 Base

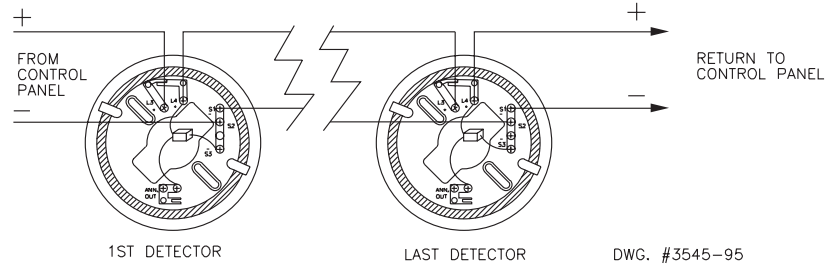
(These bases can be used in style B or Style D wiring)



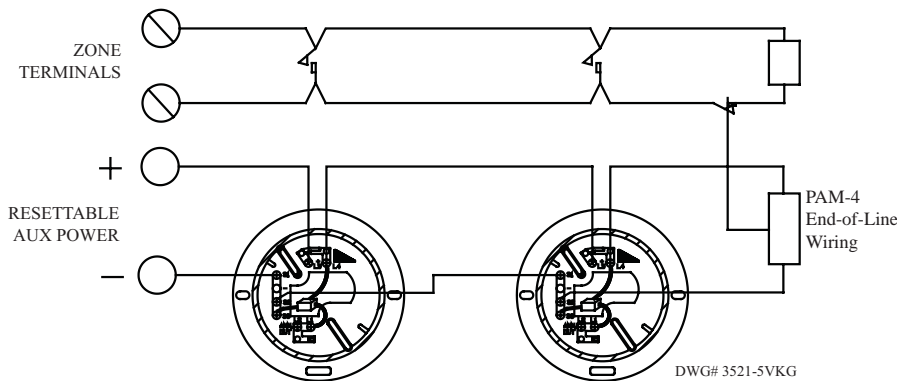
Typical Style D (Class A) Wiring

(These bases can be used in style B or style D wiring)

Note: The 6" diameter bases will mount on a 3" or 4" octagon box or a 4" square box.

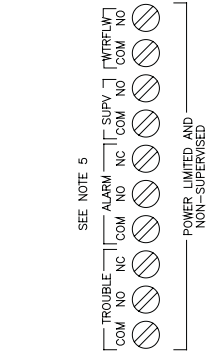
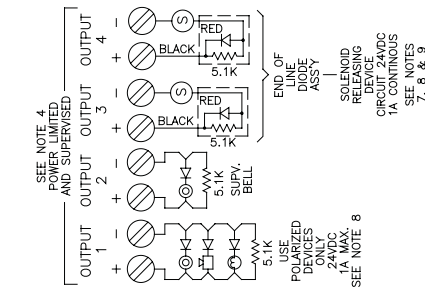
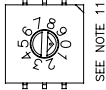
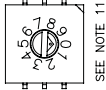
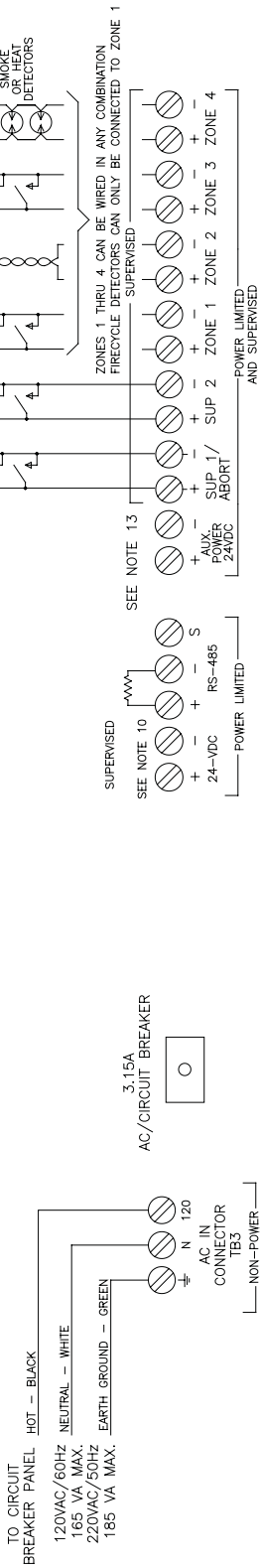


Typical 4-Wire Wiring



VFR-400 Connection Drawing

For additional connection information see text in this manual Identifier A



DWG. #3548-98VKG

NOTES:

- 1.) USE ONLY SMOKE DETECTORS THAT ARE LISTED IN COMPATIBILITY LIST, ON INSIDE OF DOOR.
- 2.) LEAVE END OF LINE RESISTORS ON INACTIVE CIRCUITS.
- 3.) ALL CIRCUITS POWERED BY THIS CONTROL PANEL ARE SUPERVISED AND POWER LIMITED.
- 4.) COMBINED LOAD OF ALL EXTERNAL DEVICES INCLUDING INDICATING AND RELEASING APPLIANCES IS NOT TO EXCEED 2.5 AMPS. REGULATED 24VDC MAXIMUM RMS VOLTAGE RANGE LIMIT, 16-33 VDC.
- 5.) COMMON RELAY CONTACTS RATED 3A 30VDC RESISTIVE. COMMON RELAY CONTACTS ARE SHOWN IN THE NORMAL CONDITION. NOT TO BE USED FOR MOTOR LOADS OR PILOT DUTY APPLICATION.
- 6.) AUXILIARY POWER FOR LIMITATIONS, SEE SECTION "BATTERY SIZE REQUIREMENTS". COMBINED LOAD ON THESE TERMINALS NOT TO EXCEED 200mA MAX. SEE SECTION ON "COMPATIBILITY DATA".
- 7.) FOR MAX. CURRENT, RESISTANCE, AND MIN. BATTERY VOLTAGE, SEE SECTION ON "RELEASING CIRCUIT". FOR LIST OF COMPATIBLE SOLENOIDS AND VALVES, SEE SECTION ON "EXTINGUISHING AGENT CONTROL VALVE COMPATIBILITY DATA".
- 8.) POLARITY SHOWN ON BELL AND RELEASING CIRCUITS IS FOR NORMAL STANDBY CONDITION. REVERSES TO ACTIVATE DEVICES. CONNECT THE NEGATIVE LEAD OF THE INDICATING APPLIANCE TO THE POSITIVE TERMINAL OF THE PANEL. CONNECT THE POSITIVE LEAD OF THE INDICATING APPLIANCE TO THE NEGATIVE TERMINAL OF THE PANEL. END OF LINE DIODE ASSEMBLY (PART #3006012) MUST BE LOCATED AT SOLENOID VALVE LOCATION.
- 9.) SOLENOID RELEASING DEVICE OPERATING CURRENTS 1A CONTINUOUS 7, 8 & 9
- 10.) POWER AND COMMUNICATION FOR RA-4410-RC ANNUNCIATOR. SHIELDED CABLE MUST BE USED FOR THE RS-485 CONNECTION. MAXIMUM 2000' WITH 22 AWG OR 4000' WITH 20 AWG WIRE. REMOVE 120 OHM RESISTOR FROM PANEL AND PLACE ON LAST ANNUNCIATOR. POWER: REGULATED 24VDC 200 ma
- 11.) ROTARY SWITCH FOR REMOTE ANNUNCIATOR. SET SWITCH TO NUMBER OF ANNUNCIATORS CONNECTED (3 MAX).
- 12.) IF ZONE 1 IS PROGRAMMED AS FIRECYCLE, THE FIRECYCLE DETECTORS ARE WIRED IN SERIES WITH THE EOLR.
- 13.) RESETTABLE POWER FOR 4-WIRE SMOKE DETECTORS. REGULATED 24VDC 200 ma
- 14.) WATERFLOW RELAY ONLY TRANSFERS UPON ACTIVATION OF ZONES PROGRAMMED AS WATERFLOW.

2-Wire Smoke Detector And Synchronization Module Compatibility Data

System Sensor (Brk) (Max. No. Of Detectors Per Zone Is 20)

Det. Model	Identifier	Base Model	Identifier
1400*	A	N/A	N/A
2400*	A	N/A	N/A
2400TH*	A	N/A	N/A
2W-B	A	N/A	N/A
2WT-B	A	N/A	N/A
2WTR-B	A	N/A	N/A

Detection Systems (Max. No. Of Detectors Per Zone Is 25)

Det. Model	Identifier	Base Model	Identifier
DS250	A	MB2W/MB2WL	A
DS250TH	A	MB2W/MB2WL	A
DS250HD	A	MB2W/MB2WL	A

ESL (Max. No. Of Detectors Per Zone Is 25)

Det. Model	Identifier	Base Model	Identifier
611U	S10	601U	S00
611UD	S10	601U	S00
611UT	S10	601U	S00
612U	S10	601U	S00
612UD	S10	601U	S00
613U5	S10	601U	S00
611UD	S10	609U10	S00
612UD	S10	609U10	S00
425C	S10	N/A	N/A
425CT	S10	N/A	N/A

Hochiki (Max. No. Of Detectors Per Zone Is 25)

Det. Model	Identifier	Base Model	Identifier
SLR-24*	HD-3	HSC-221R	HB-71
		HSB-221	HB-54
		HSB-221N	HB-54
		NS6-221	
SLR-24H*	HD-3	NS4-221	
		HSC-221R	HB-71
		HSB-221	HB-54
		HSB-221N	HB-54
SIJ-24*	HD-3	NS6-221	
		NS4-221	
		HSC-221R	HB-71
		HSB-221	HB-54
		HSB-221N	HB-54
		NS6-221	
		NS4-221	

Fenwal (Max. No. Of Detectors Per Zone Is 25)

Det. Model	Identifier	Base Model	Identifier
CPD-7051*	I51FE1	2-WIRE	FE51A
PSD-7155*	P55FE1	2WRLT	FE52A
PSD-7156*	P56FE1	2WRB	FE55A

All of the above Fenwal detectors and bases can be used in any combination

Retrofit Base Adaptor 70-501000-003, Identifier MAFE1 (for series 70-201000 Bases, Models -001, -002, -003 and -005)

Duct Housing with Detector Base DH-51, Identifier DH22FE5 (for CPD-7051 and PSD-7155 detectors only)

Potter (Max. No. Of Detectors Per Zone Is 25)

Det. Model	Identifier	Base Model	Identifier
PS-24*	HD-3(HOCHIKI)	SB-46	HB-71(HOCHIKI)
			HB-54(HOCHIKI)
PS-24H	HD-3(HOCHIKI)	SB-46	HB-71(HOCHIKI)
			HB-54(HOCHIKI)
IS-24*	HD-3(HOCHIKI)	SB-46	HB-71(HOCHIKI)
			HB-54(HOCHIKI)

NOTICE

Only one detector can be supported in alarm per zone.

*UL and ULC Listed




If using a mix of System Sensor and other smoke detectors, a maximum of 20 detectors shall be permitted.

Sync Modules: Amseco - SMD10-3A Gentex - AVSM System Sensor - MDL Wheelock - DSM 12/24

Releasing Device Compatibility

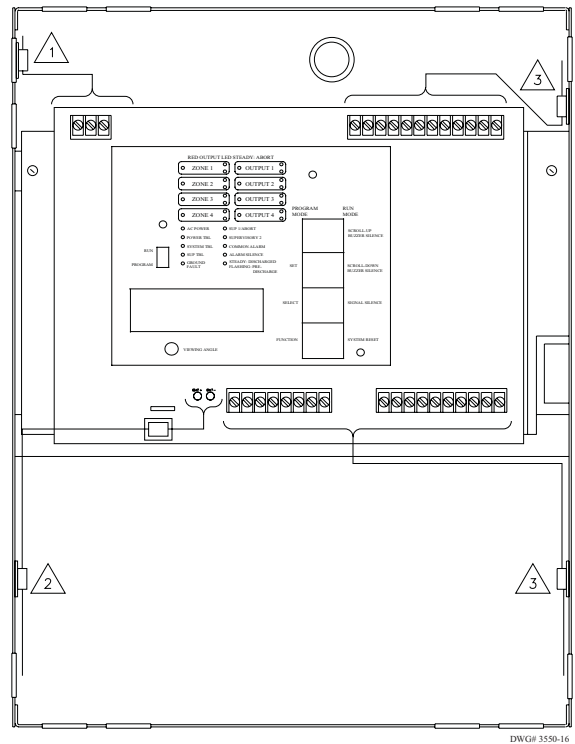
Automatic Water Control Valves Compatibility Data	
Viking:	
13215	Normally open
11591	Normally closed
11601	Normally closed
11602	Normally closed, explosion-proof
11595	Normally open
11596	Normally open, explosion-proof
11592	Normally closed, explosion-proof
13843	Normally closed
13844	Normally closed, explosion-proof

Wire Routing for VFR-400

-  1 Power Inputs
-  2 Battery Leads
-  3 Using The Cable Clamps Provided, Route All Other Wiring Away From Power Input Wiring.

NOTICE

All field installed wiring connected to this panel must maintain a spacing of 1/4" between all electric light, power, class 1 or non-power limited fire protective signaling conductors.



NOTICE**NEC Section 760-54. Installation of Conductors and Equipment.**

- (a) Separation from Electric Light, Power, Class 1, and NPLFA Circuit Conductors.
- (1) In Cables, Compartments, Enclosures, Outlet Boxes, or Raceways. Power-limited circuit conductors shall not be placed in any cable, compartment, enclosure, outlet box, raceway, or similar fitting containing conductors of electric light, power, Class 1, or nonpower-limited fire alarm circuit conductors.

Exception No. 1: Where the conductors of electric light, power, Class 1, or nonpower-limited fire alarm circuit conductors are separated by a barrier from the power-limited fire alarm circuits. In enclosures, power-limited fire alarm circuits shall be permitted to be installed in a raceway within the enclosure to separate them from Class 1, electric light, power, and nonpower-limited fire alarm circuits.

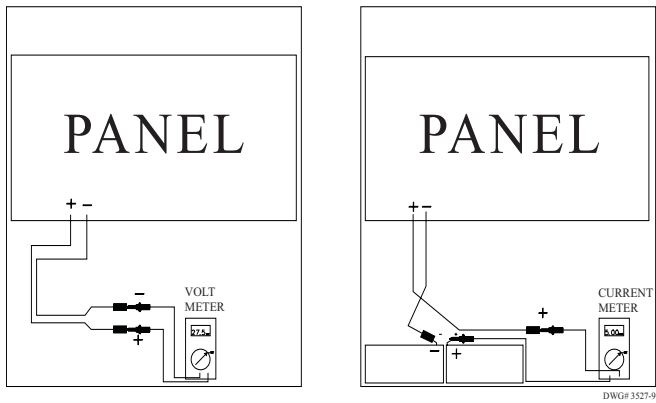
Exception No. 2: Conductors in compartments, enclosures, device boxes, outlet boxes, or similar fittings, where electric light, power, Class 1, or nonpower-limited fire alarm circuit conductors are introduced solely to connect to the equipment connected to power-limited circuits to which the other conductors are connected, and

- a. The electric light, power, Class 1, and nonpower-limited fire alarm circuit conductors are routed to maintain a minimum of 0.25 in. (6,35mm) separation from the conductors and cables of power-limited fire alarm circuits, or
- b. The circuit conductors operate at 150 volts or less to ground and also comply with one of the following:
 1. The fire alarm power-limited circuits are installed using Types FPL, FPLR, FPLP or permitted substitute cables, provided these power-limited cable conductors extending beyond the jacket are separated by a minimum of 0.25 in. (6,35mm) or by a nonconductive sleeve or nonconductive barrier from all other conductors, or
 2. The fire alarm power-limited circuit conductors are installed as nonpower-limited fire alarm circuits in accordance with Section 760-25.

Exception No. 3: Conductors entering compartments, enclosures, device boxes, outlet boxes, or similar fittings, where electric light, power, Class 1, or nonpower-limited fire alarm circuit conductors are introduced solely to connect to the equipment connected to power-limited fire alarm circuits or to other circuits controlled by the fire alarm system to which the other conductors in the enclosure are connected. If the conductors must enter an enclosure that is provided with a single opening, they shall be permitted to enter through a single fitting (such as a tee) provided the conductors are separated from the conductors of the other circuits by a continuous and firmly fixed nonconductor, such as flexible tubing.

Connection Procedure for Battery Charging Current and Voltage

- 1) To measure the battery charging voltage:
Place a voltmeter across the battery terminals as shown in FIG. 4
- 2) To measure the battery charging current:
Place a current meter in series with the battery terminals as shown in FIG. 5.

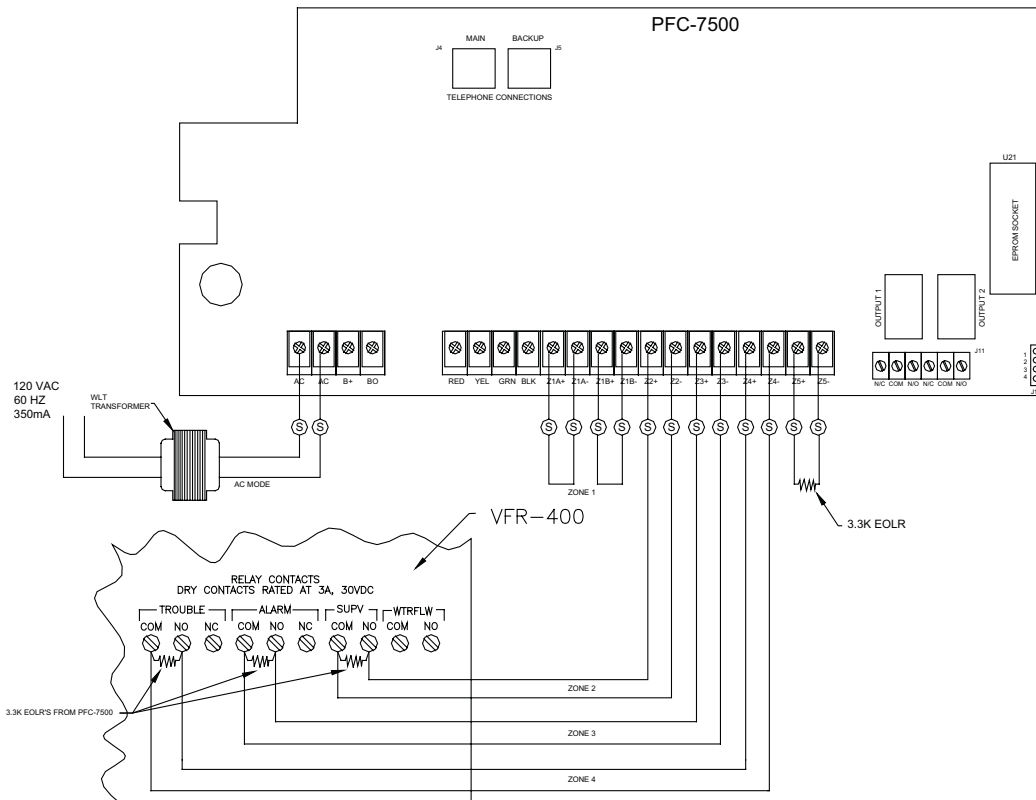


Connection Drawing for Central Station and Remote Station Operation VFR-400/PFC-7500 Interconnection Drawing

** Or other UL864 9th Edition listed stand alone DACT connected as shown and installed in the same room within 20 feet of the VFR-400 and with interconnecting wiring in conduit.

See PFC-7500 Manual 8910225 for programming information.
See PFC-7500 Manual 8910227 for installation instructions.

Note: PFC-7500 requires RA-7690 LCD Annunciator for programming.
The VFR-400 and PFC-7500 shall be installed in the same room within 20 feet of each other and the interconnecting wires shall be in conduit.



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