



## TECHNICAL DATA

### MULTI-HAZARD RELEASE CONTROL PANEL MODEL VFR400

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

### 1. DESCRIPTION

The Viking VFR400 is a microprocessor based multi-hazard releasing control panel for use on preaction, deluge, Surefire® and Firecycle® multicycle sprinkler systems, MX-1230 Fire Extinguishing System, and MX-200 Fire Extinguishing System. The Model VFR400 is Underwriters Laboratory listed, and complies with UL Standard 864, Ninth Edition, for Local Control Units for Releasing Service. It is designed to be compatible and installed in accordance with the requirements of NFPA 13, NFPA 15, NFPA 16, NFPA 72, and NFPA 2001.

The VFR400 is housed in a steel cabinet with removable door and key lock. Standard is red with black and white trim. The panel is available for use with either 120 VAC or 220 VAC for primary power. The cabinet will house up to two (2) 12AH standby batteries, which are capable of powering the unit in excess of 90 hours in the event of an AC power failure. For (2) 18AH batteries, a separate battery box (Part Number 09866) must be used. The VFR400 Release Control Panel can be used with a wide range of compatible initiating devices, such as spot heat detectors, smoke detectors, and linear heat detectors (10,000 ft. - SAFE-FIRE) or (3,500 ft. - Protectowire).



#### A. Features

- Multi-Hazard Operation
- Supervised Microprocessor
- 32 Character Alpha-Numeric LCD Display
- Custom Banner Message Text
- Custom Zone Description Text
- On Board Menu Driven Programming Controls
- Releasing Circuits Protected from False Activation
- Four Class B Initiating Circuits
- Two Class B Supervisory Circuits\*\*
- Four Class B Output Circuits
- Programmable Cross Zoning
- Continuous or Timed Discharge
- 40 Event History Buffer
- Walktest with Automatic Time-out
- Alarm, Trouble, Supervisory Waterflow Relays
- Optional Class A Output Zone Module
- 21 Standard Programs in Panel Memory
- Password Protection for all Programming
- 24 Hour Clock
- Supervised Remote Annunciator Output up to three (3)
- Auxiliary 24 VDC Power (Constant and Resettable)

#### See Installation Manual

**21 standard programs-Program option for Viking Preaction, Deluge, Surefire® Pre-action and Firecycle® Sprinkler Systems.**

**\*\*Can be used for Supervisory, Tamper, Low Air, High Air, or Abort Switch (Abort switch for MX-1230 or MX-200 Systems).**

### 2. LISTINGS AND APPROVALS



**UL Listed:** Meets UL Standard 864 - 9th Edition

**UL Listed:** Clean Agent Extinguishing System Unit



**FM Approved:** Deluge Systems, Preaction Systems, Refrigerated Area Sprinkler Systems

**FM Approved:** Control Panel Group 4

**FM Approved:** Clean Agent Extinguishing System Unit



**CE Certified**

### 3. TECHNICAL DATA

#### Specifications:

##### A. Environment

- Temperature: 32 °F to 120 °F (0 °C to 48 °C)
- Humidity: 93% non-condensing

Scan with smart phone to access technical and troubleshooting resources.



Viking Technical Data may be found on The Viking Corporation's Web site at <http://www.vikinggroupinc.com>. The Web site may include a more recent edition of this Technical Data Page.



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#### B. AC Power

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

#### C. Visual Indicators: (Visible with door OPEN):

- 33 LEDs for common signal and zone annunciation
- 32 Character Alpha-Numeric Liquid Crystal Display (LCD)

#### D. LCD:

- Displays prompts for programming system. Condition or status information is not shown.

#### E. Control Buttons:

- Scroll Up, Buzzer Silence
- Signal Silence - Momentary, silences signaling circuits
- Buzzer Silence - Momentary, silences the trouble buzzer and outputs programmed as supervisory bell or trouble bell.
- System Reset - Momentary, resets all alarm circuits if condition has been corrected, removes power from initiating device circuits.
- Program Switch

#### F. Initiating Device Circuits: 4 Class B (Class-A Module available) (all values nominal)

- Entire system is power limited, current limited to protect two wire detectors
- Capacity, two wire detectors (per zone) 25 - 0.1 mA type; or 20 - 0.12 mA type at 24 VDC
- Line resistance - 100 ohms max. (except with linear heat detection - max. 700 ohms)
- Override of signal silence for waterflow application, if desired
- End-of-Line Resistance - 5.1K ohms
- Normal standby current - approximately 4.0 mA
- Trouble-Low current - approximately 3.3 mA
- Alarm - approximately 10 mA
- Maximum Impedance for Alarm - 1400 ohms
- Ground also causes trouble and ground indicator to come on (no zone indication on ground)
- Ripple Voltage - 0.4VDC
- Max operating voltage range - 22.5 VDC to 25.9 VDC

#### G. Output/Releasing Circuits: (All values nominal)

- The indicating circuits of the VFR-400 are Non-coded. This allows the use of visual and audible appliances on the same circuit.
- Notification Appliance Circuits (Class B), reverses polarity on alarm (optional Class A Module is available)
- Current limited
- 24VDC regulated, rated 1.0 Amp continuous max. (2.5 Amps total for all outputs combined Including Auxiliary Devices and RA-4410-RC)
- End-of-Line Resistance - 5.1K ohms
- Ripple Voltage - 0.3V
- For outputs programmed as RELEASING: maximum allowable line resistance = 1 divided by current draw of solenoid (In Release Mode - Requires End-of-Line diode assembly wired series for supervised circuit)
- All outputs are 24VDC, with range of 16VDC - 33VDC (Note: Release circuits kick out at <20 VDC)

#### H. Dedicated Supervisory Initiating Circuit:

- Supervisory includes any of the following:
  - Supervisory
  - Tamper
  - Low Air
  - High Air
  - Abort (MX-1230 and MX-200)
  - One Class B/Initiating Device Circuit, latching
  - Power limited
  - End of Line resistance 5.1K ohms
  - Resistance 100 ohms max.
  - Increase in resistance causes supervisory trouble and system trouble
  - Decrease in resistance causes supervisory signal
  - Ripple Voltage - 0.1VDC

#### I. Low/Missing Battery:

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



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#### Material Standards:

##### Enclosure

Dimensions: 18.50" x 14.68" x 4.75"

Finish: Red Baked Enamel

Housing: 18 gauge steel

**Battery** - Sealed Lead Acid Type

##### Ordering Information:

VFR400 Panel Part Number 14152 for Preaction Systems

VFR400 Panel Part Number 14152-1 for Clean Agent Systems and Preaction Systems

#### A. Modules and Accessories

- **CA2Z MODULE (CLASS A INITIATING DEVICE CIRCUIT):** (Viking Part Number 14155 - See Figure 5)  
Converts two Class B initiating device circuits to two Class A circuits.
- **CAM2 MODULE (CLASS A INDICATING APPLIANCE CIRCUIT):** (Viking Part Number 14156 - See Figure 6)  
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):** (Viking Part Number 14157 - [Arm-1 is (4) Pole] and Viking Part Number 14158 [Arm-2 is (2) Pole] - See Figures 7 & 8)  
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-4410-RC (REMOTE ANNUNCIATOR):** (Viking Part Number 14154 - See Figure 4)  
Connects to RS-485 & 24VDC terminals. Provides 33 LEDs 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.  
The annunciator also has a trouble buzzer and a lamp test / trouble silence switch.

#### B. Additional Accessories and Relays

- **MR-101/T SPDT Relay Module:** (Viking Part Number 14159)
- **MR-201 DPDT Relay Module:** (Viking Part Number 14160)
- **MR801/T SPDT Relay w/Led Indicator:** (Viking Part Number 14161)
- **ELOD Resistor/Diode:** (Viking Part Number 14162)
- **ELOR Resistor:** (Viking Part Number 14163)
- Trim Bezel for Panel: (Viking Part Number 14177 - See Figure 9)
- **Batteries (2 required)**
  - 12VDC 8 AMP (Viking Part Number 07920)
  - 12VDC 12 AMP (Viking Part Number 07921)
  - 12VDC 18 AMP (Viking Part Number 09867)

## 4. INSTALLATION

Refer to VFR400 Installation and operation Manual and Panel wiring diagrams for appropriate installation and programming requirements. All appropriate installation standards and buildings codes must be followed as required by the Authority Having Jurisdiction.

## 5. OPERATION

Refer to the appropriate Viking sprinkler system data sheets for sprinkler system operational information and proper wiring diagram and required program.

## 6. INSPECTION, TEST AND MAINTENANCE



Any system maintenance that involves placing a control valve or detection system out of service will impair the fire protection capabilities of that system. Prior to proceeding, appropriate impairment procedures per NFPA 25 shall be followed with the notification of all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected areas.

**Failure to follow these instructions could cause improper system operation, resulting in serious personal injury and/or property damage.**



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### NOTICE

The building owner is responsible for maintaining the fire protection system and devices in proper operating condition. The Viking VFR400 Release Control Panel must be kept free of foreign matter and environmental conditions that could impair its operation. Refer to VFR400 Installation and Operation Manual for appropriate testing procedures. For minimum maintenance and inspection requirements, refer to NFPA 72 and NFPA 25. In addition the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

### 7. AVAILABILITY & SERVICE

The Viking VFR400 Multi-Hazard Release Control Panel is available through a network of domestic and international distributors. See the Viking web site or contact The Viking Corporation for the closest distributor.

### 8. GUARANTEES

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

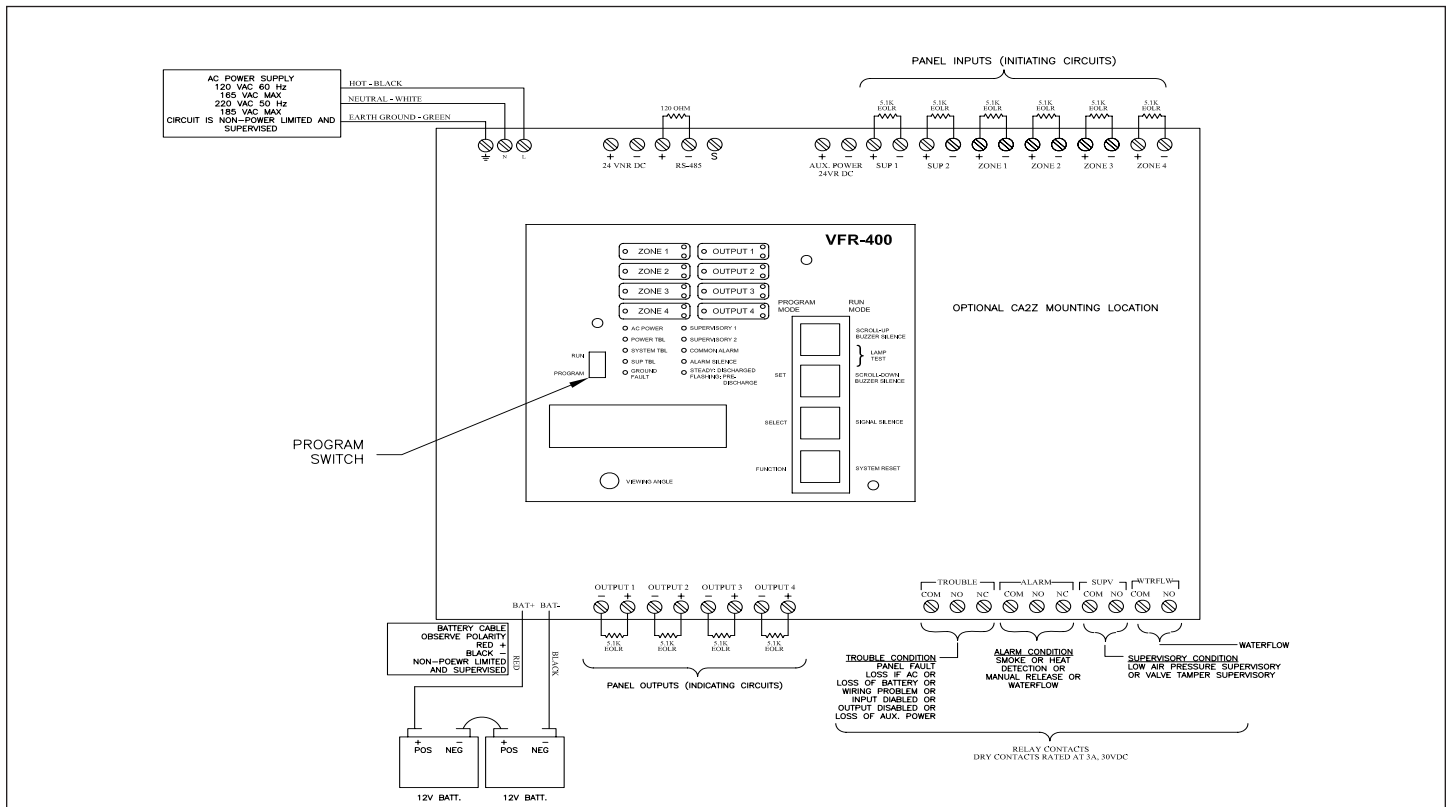


Figure 1 - Inside Panel Assembly

Table 1 - Replacement Parts

ITEM NO.	PART NUMBER	DESCRIPTION	NO. REQ'D.	NOTES
1	14153	Mother Board Assembly	1	Included
2	14163	5.1 KΩ End of Line Resistor	10	Included
Not Shown	14162	End of Line Diode Assembly	2	Included
3	07920	12 VDC 8 Amp Battery	2	Two Batteries Required
	07921	12 VDC 12 Amp Battery	2	
	09867	12 VDC 18 Amp Battery	2	



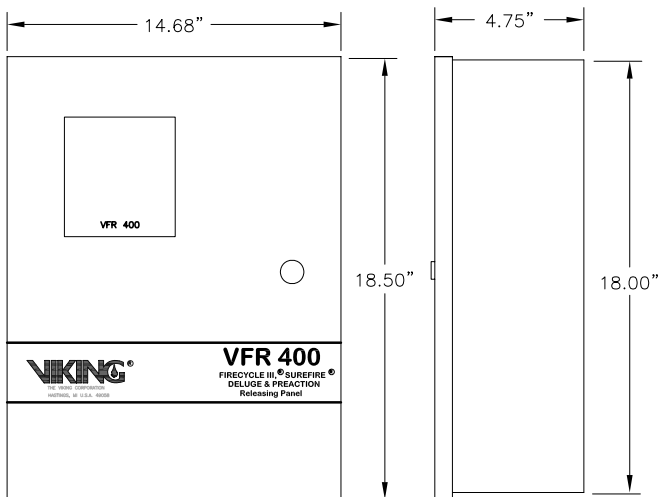
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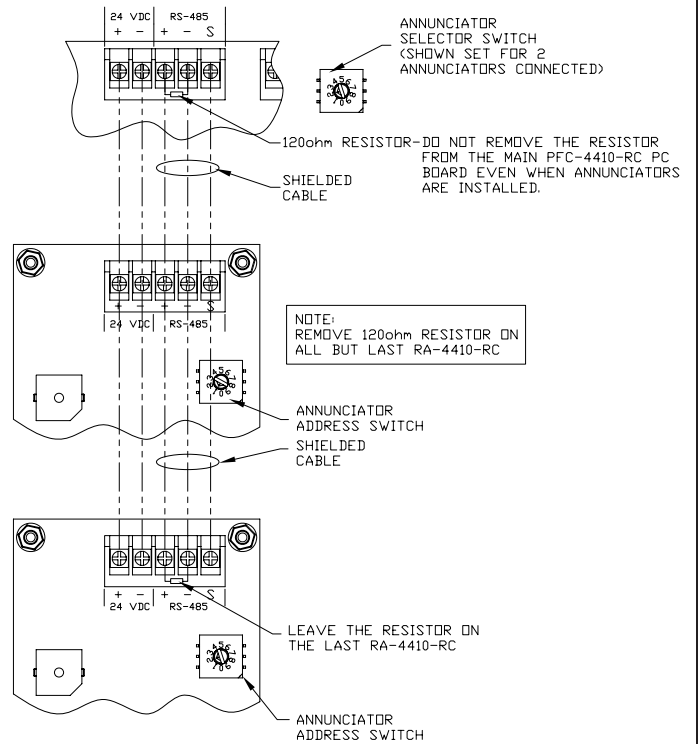
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**Inside Panel Assembly**  
**Figure 2**



**VFR400 Dimensions**  
**Figure 3**



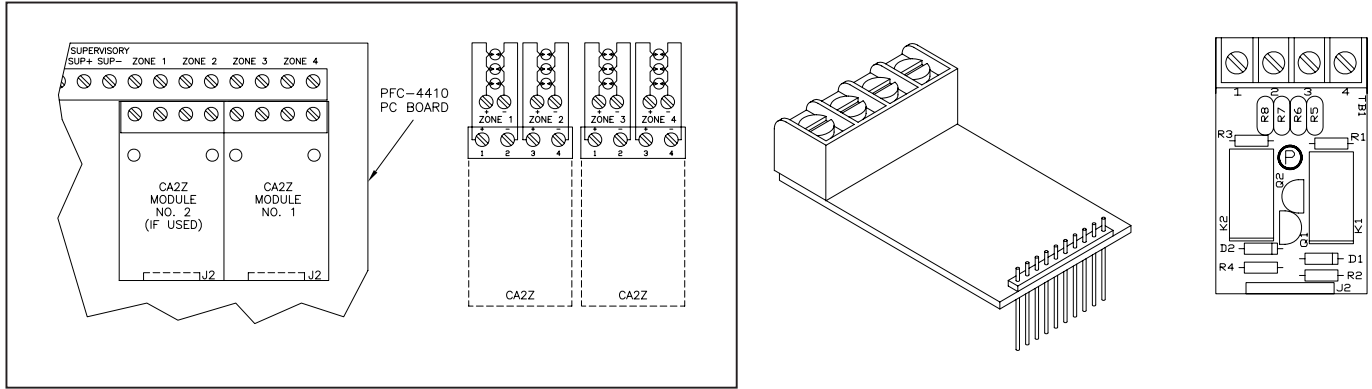
**RA-4410-RC (Remote Annunciator )**  
**Viking Part Number 14154**  
**Figure 4**



**TECHNICAL DATA**

**MULTI-HAZARD  
RELEASE CONTROL PANEL  
MODEL VFR400**

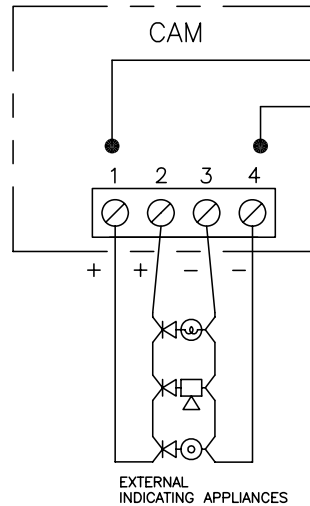
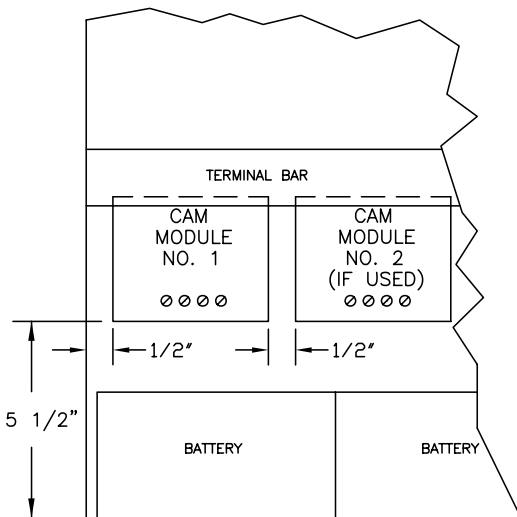
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**CA2Z Module (Class A Initiating Device Circuit)**

**Viking Part Number 14155**

**Figure 5**



TO INDICATING  
 APPLIANCE CIRCUIT  
 TERMINALS.  
 POLARITY SHOWN  
 IS FOR STANDBY  
 (NON-ALARM)  
 CONDITION.  
 REMOVE EOL  
 RESISTOR

**CAM2 Module (Class A Initiating Appliance Circuit)**

**Viking Part Number 14156**

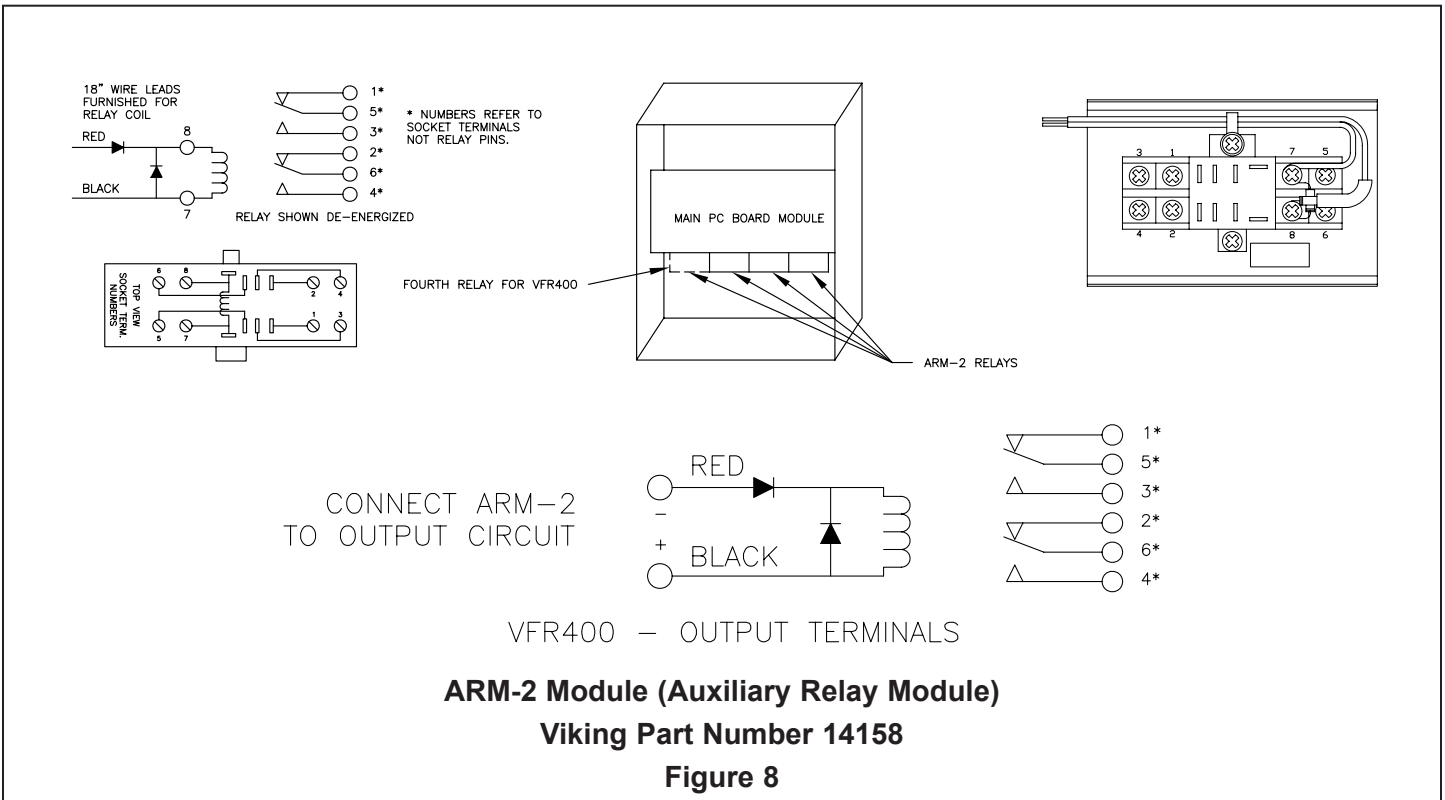
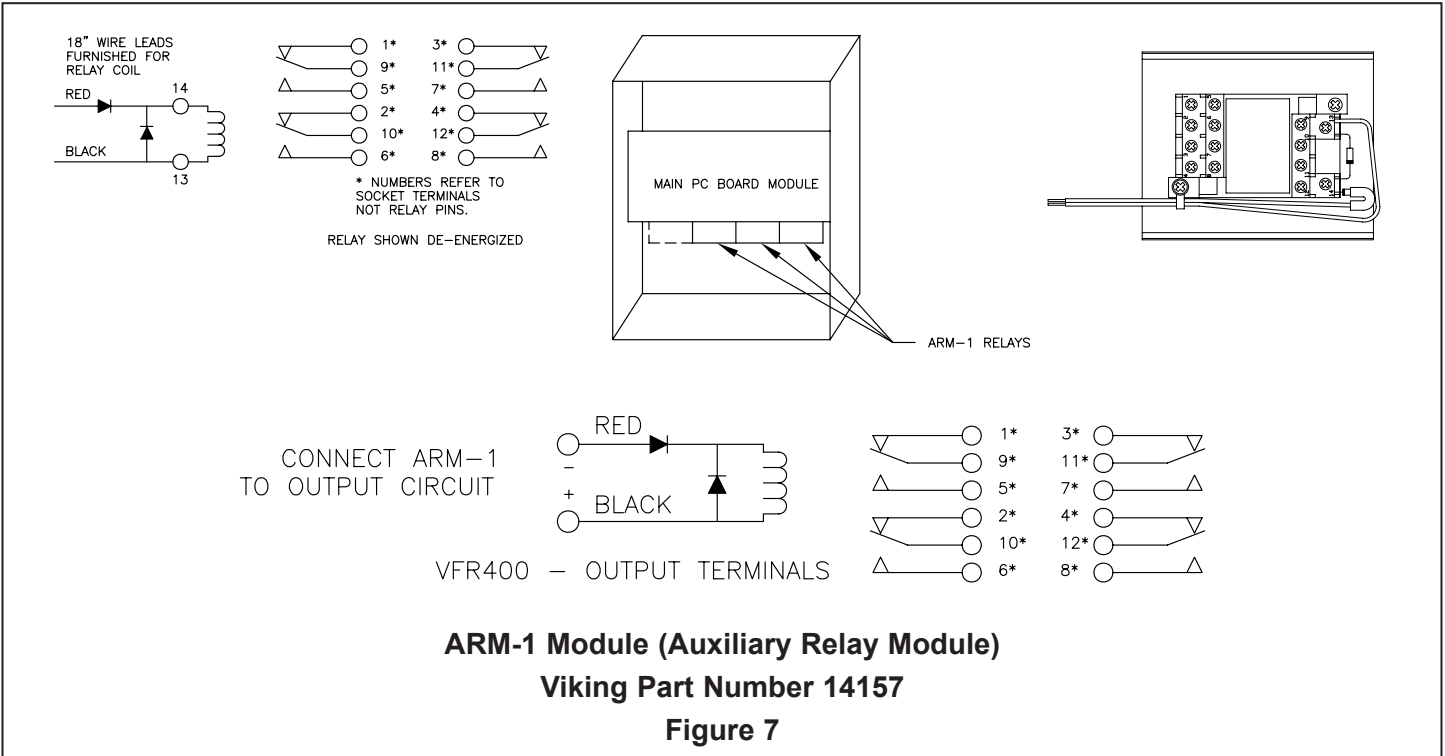
**Figure 6**



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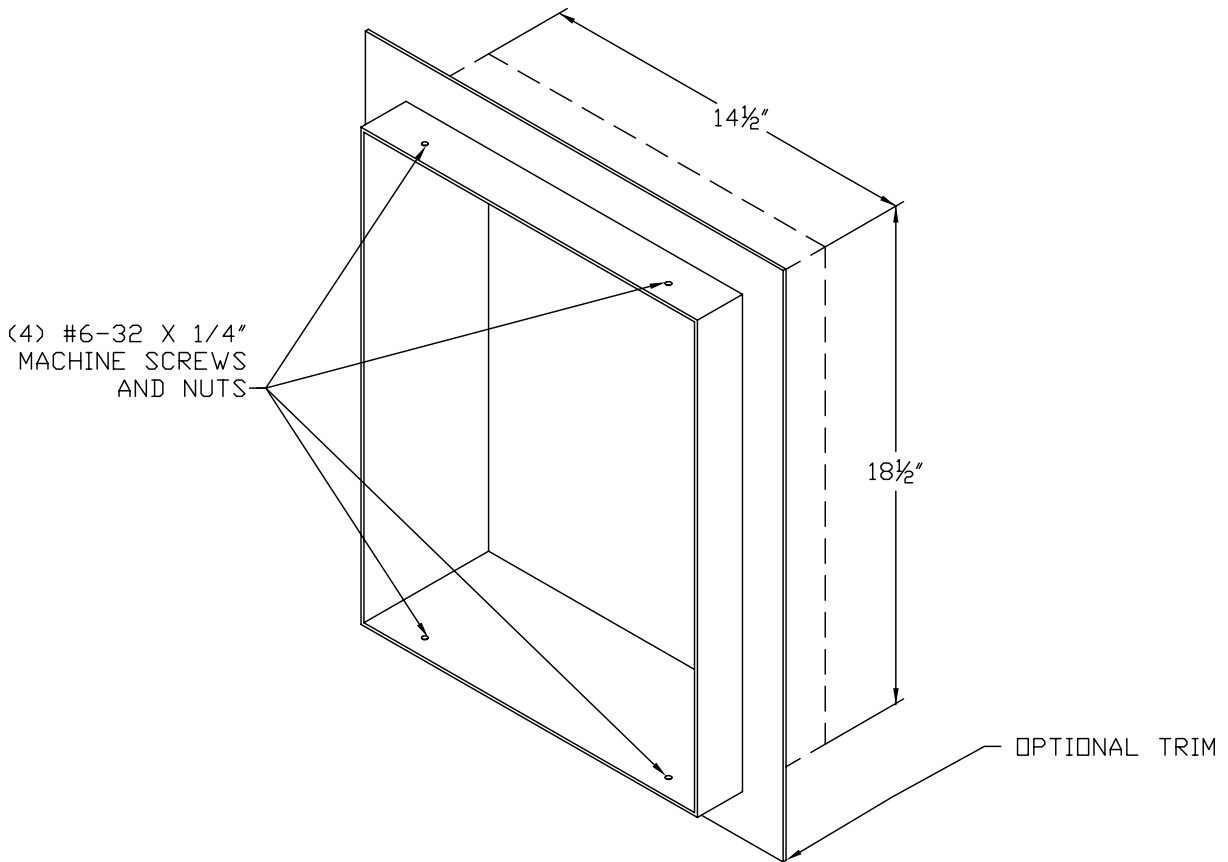




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**Trim Bezel for Panel  
Viking Part Number 14177  
Figure 9**