VIGILANT™
Fire & Life Safety

VM Series Life Safety Control System

Description

Vigilant VM Series represents the latest generation of life safety control panels for mid to large sized applications. With large multi-message displays, intuitive interfaces, and stylish contoured cabinets — these systems capture the imagination, and catch the eye. But behind the LCD display is where they really shine.

New TCP/IP-enabled microprocessors and chipsets take full advantage of the latest advances in computing technology, leading to smarter, faster, higher-capacity processing and more efficient designs. VM Series's patented Voltage Boost™ technology, for example, delivers constant voltage on NAC and AUX circuits – even at low battery power – resulting in lighter cable requirements and/or longer runs. That saves time and money.

High performance processing also leads to powerful networking features and versatile digital audio functionality. In fact, VM Series can handle jobs that range from a single stand-alone control panel, to a sophisticated network comprising as many as eight control panels processing data from up to 4,000 devices.

High quality voice evacuation also delivers system design flexibility with scalable implementation from simple Place-of-Assembly capability right up to multi-channel operation for highrise and campus applications. VM Series features three channels of integrated digital audio. Its optional paging control center includes a high quality paging microphone to which can be added a firefighters' telephone.

VM Series makes all this new technology readily accessible with easy installation and maintenance. Electronic addressing means devices virtually install themselves, while intuitive installation and detailed diagnostic tools offer a clear and rapid path to flawless system operation.

Standard Features

- One Class A or Class B intelligent device loop standard, optional second loop brings control panel capacity to 500 devices
- 24-line by 40-character backlit LCD capable of displaying eight simultaneous events
- Optional voice evacuation and firefighter's telephone
- Three Form C relays: alarm, trouble and supervisory
- Optional network interface slots are located on the back of a swingable mounting chassis
- Electronic addressing with automatic device mapping
- Optional Ethernet port for diagnostics, programming
- Supports system wide strobe synchronization
- Supports up to 30 R-Series remote annunciators with either Class A or Class B wiring
- Networkable up to eight VM control panels monitoring 4,000 intelligent points
- Patented Voltage Boost™ technology delivers constant voltage on NAC and AUX circuits — even at low battery power.
- 10 Amp UL listed power supply with universal 94 to 264 Vac input voltage
- Four on-board Notification Appliance Circuits
- Room for three optional front panel LED/Switch modules
- Optional Ethernet interface
- Hinged chassis for easy access
- Removable terminals on all low voltage wiring

Application

Application flexibility is where VM's leading edge computing power is put to best use. This generation of control panels is equally at home as the center of a simple single-building standalone system as it is when part of a sophisticated life safety network serving thousands of points across multiple buildings. Optional voice evacuation bridges the gap left by other mid-range systems, and makes these panels a cost-effective solution for most applications.

Efficient, cost-effective networking

Networking is among VM Series's strong suits. A simple VM Series network can comprise up to eight control panels – enough to serve the needs of most campuses and larger buildings. Highly efficient RS485 connectivity, plus fiber-optic communications deliver faster response times and more sophisticated diagnostic capabilities, while cost-effective remote annunciation solutions keep basic monitoring and control always within reach.

Audio that speaks for itself

VM Series features three channels of integrated digital audio with up to two minutes of on-board programmable message storage. An optional paging control center includes a high quality paging microphone to which can be added a firefighters' telephone. Auxiliary inputs are available for mass notification operations and connection to external systems.

An optional paging microphone provides local, as well as remote, audio functions.

Versatility built right in

The VM control panel has room for three fully-programmable front panel switch/LED strips. Each strip includes 12 switches with two associated LEDs (one quad-color, and one yellow), and a custom label area. LED color designations are assigned by the installer.

Perfect for retrofits

VM Series is particularly well-suited to retrofit applications. All connections are made over standard wiring – no shielded cable required. This means that in most situations existing wiring can be used to upgrade a legacy control panel to VM Series technology without the expense or disruption of rewiring the entire building.

Clear-cut remote annunciation

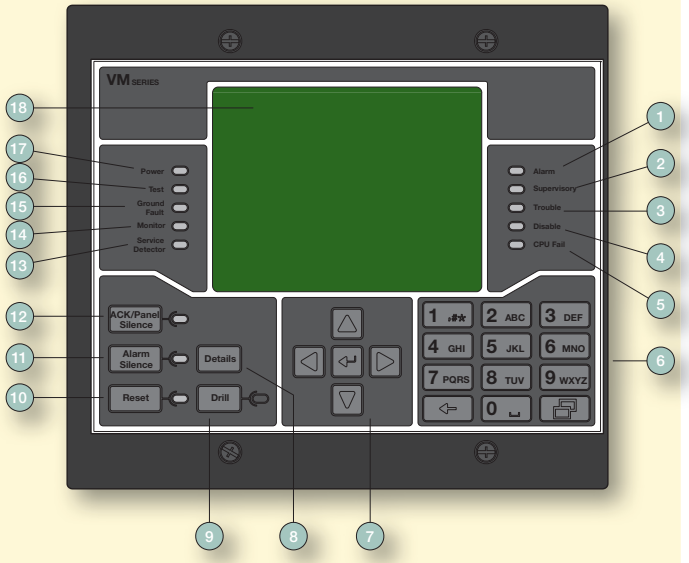
Up to 30 R-Series LCD, LED annunciators and driver interface cards may be configured for each control panel on the VM Series network. Compatible annunciators include a range of LED and LCD models that provide zone or point annunciation, as well as common control capabilities. VM Series also supports graphic annunciation with optional graphic snnunciator interface modules. Each interface provides common control, indicators, and 32 LEDS. Expansion units provide 48 led outputs.

Up to 30 R-Series annunciators may be configured for each panel on the VM Series network.

Power that goes the distance

Edwards' patented Voltage Boost™ technology delivers constant 22.5 Vdc on NAC and AUX circuits – even at low battery power. This means lighter gauge cable can be used for equivalent distances compared with conventional power supplies, or longer wire runs on the same gauge cable. Either way, this breakthrough technology saves time and equipment costs, making VM Series not only a high-performance solution — but a cost-effective one as well.

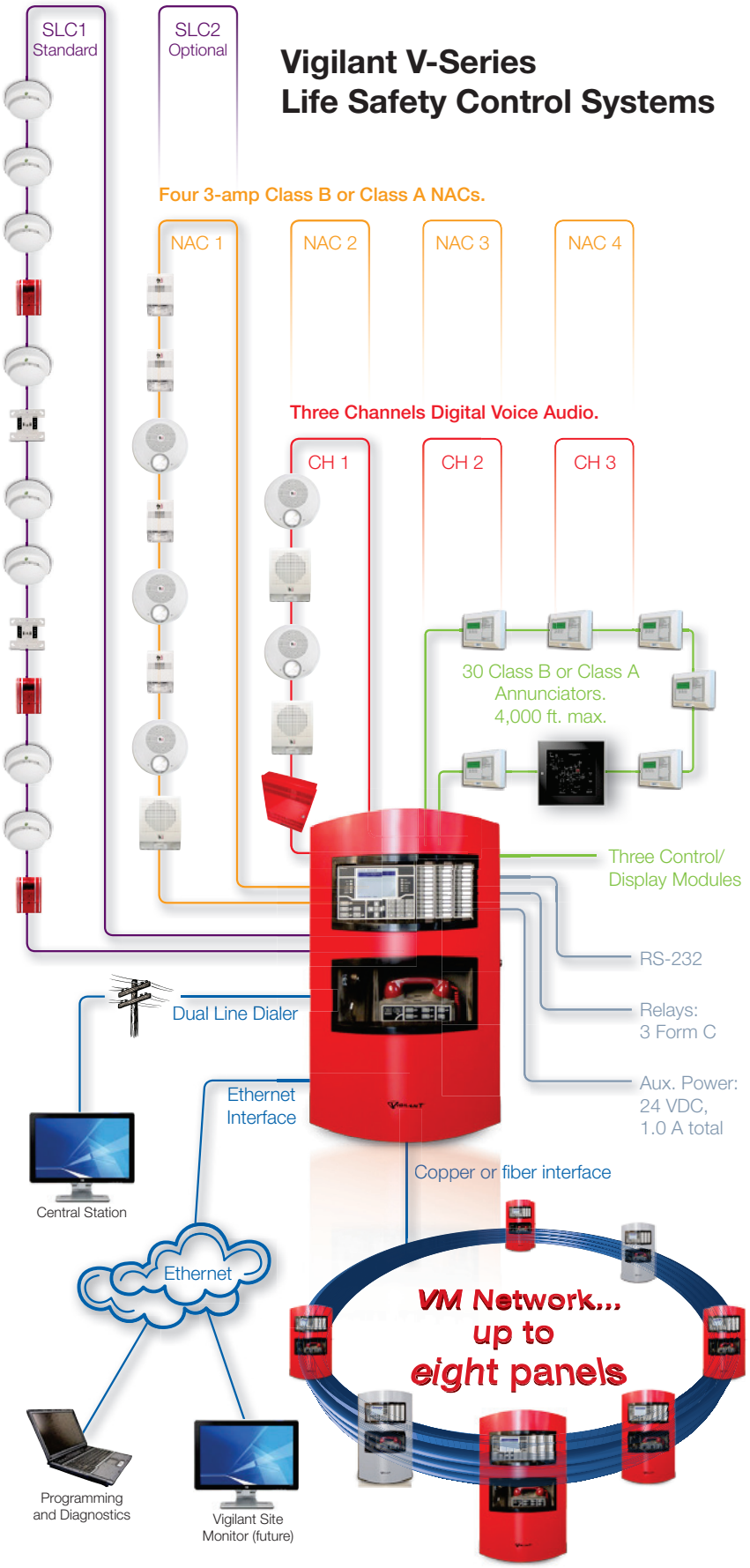
Operation



1	Alarm LED	Flashing indicates new alarm events. On indicates all alarm events have been acknowledged.
2	Supervisory LED	Flashing indicates new supervisory events On indicates all supervisory events have been acknowledged.
3	Trouble LED	Flashing indicates new trouble events. Steady indicates all trouble events have been acknowledged.
4	Disable LED	Indicates a system component has been disabled.
5	CPU Fail LED	Indicates a CPU processor failure.
6	Keypad	Includes alphanumeric keys, backspace key, and menu key.
7	Cursor controls	Includes up, down, left, and right arrow keys, and Enter key.
8	Details button	Displays additional information on the selected event.
9	Drill button	Activates audible alarm signals and, if configured, visible alarm signals. The LED indicates that Drill operation is active.
10	Reset button/LED	Resets the fire alarm system. The LED indicates the panel is resetting.
11	Alarm Silencebutton/ LED	Silences alarm signals. The LED indicates that Alarm Silence is active.
12	ACK/Panel Silence button/LED	Silences the panel buzzer and acknowledges all new events. The LED indicates that Panel Silence is active.
13	Service Detector LED	Indicates a detector needs servicing
14	Monitor LED	Flashing indicates new monitor events. On: Indicates all monitor events have been acknowledged.
15	Ground Fault LED	Indicates a system ground fault.
16	Test LED	Indicates system components are being tested.
17	Power LED	On indicates the panel is using primary power. Off iIndicates the panel (or another panel on the network) is using battery power.
18	LCD	Displays system status, event messages, reports, and operator menus.

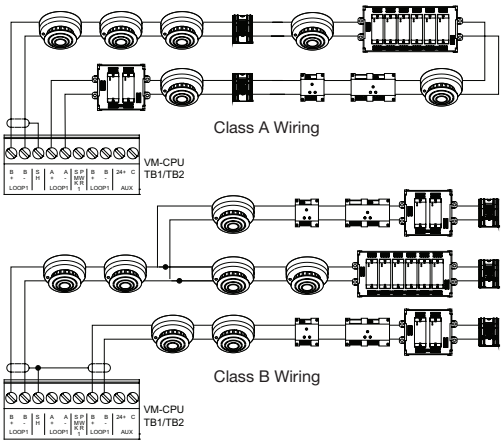
System Layout

Two Intelligent Analog Loops.

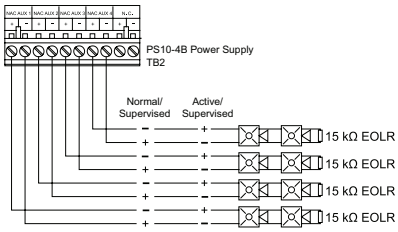


Wiring

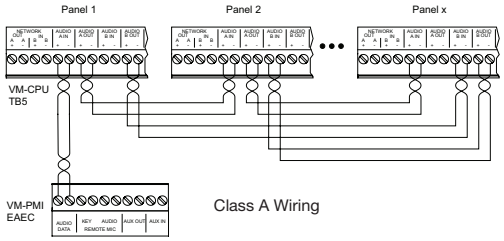
Signaling Line Circuit



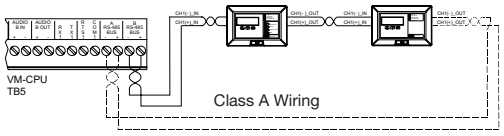
Notification Appliance Circuits



Digital Audio Riser



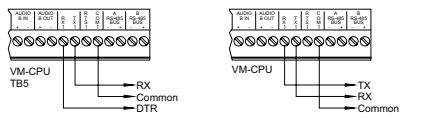
RS-485 bus wiring for remote annunciators



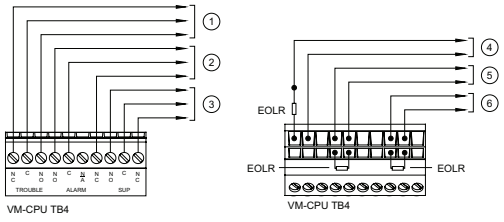
RS-232 wiring

Supervised Printer, RS-232 wiring

Unsupervised Printer, RS-232 wiring

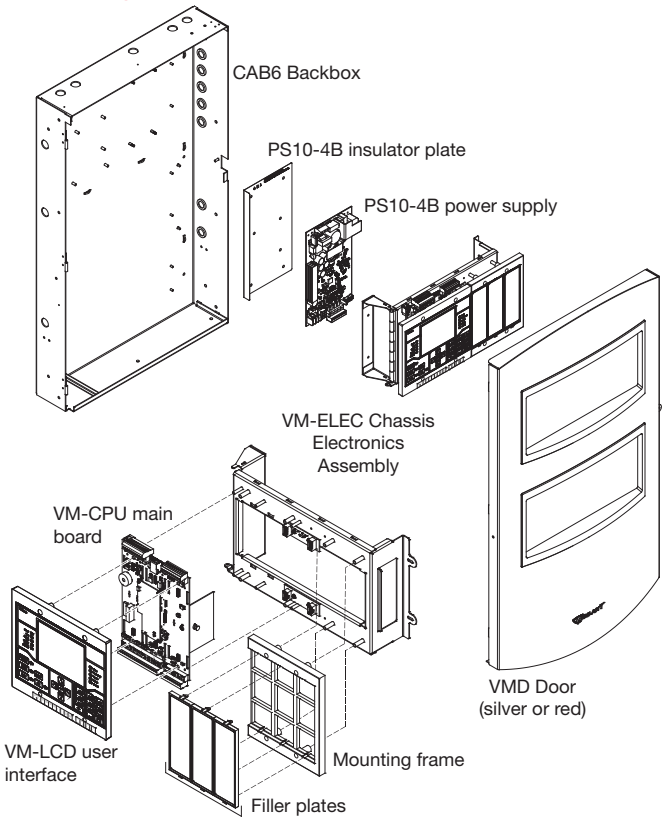


Common relays



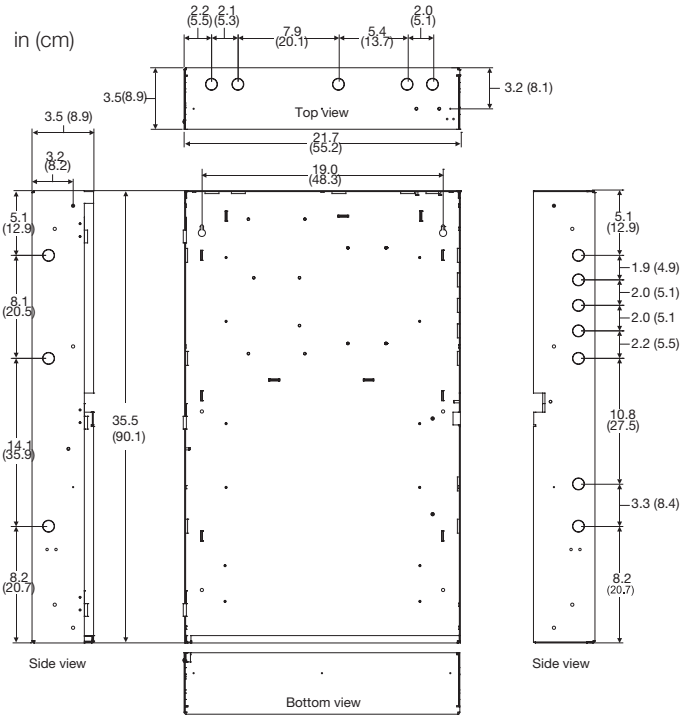
1. Trouble circuit
2. Alarm circuit
3. Supervisory circuit
4. External trouble input circuit
5. External alarm input circuit
6. External supervisory input circuit

Assembly



Dimensions

The backbox is designed for semiflush or surface mounting. Conduit and nail knockouts, keyhole style mounting holes, and wide wiring troughs facilitate efficiency during installation.



Note: Add 0.25 in (0.64 cm). to height and width dimensions to allow for knockouts when framing in the backbox for semiflush mounting.

Specifications, standard equipment

VM-CPU Main Board processes all information from modules installed in the same cabinet and from other control panels on the VM network.

Voltage	24 VDC
Current	
Standby	115 mA
Alarm	115 mA
Common relays	
Quantity	3 (Alarm, Supervisory, Trouble)
Type	Form C
Rating	30 VDC at 1 A
RS-232 circuit	
Baud rate	1200 to 38400
Length	50 ft. (6 m) max.
Resistance	13 Ω max.
Capacitance	0.7 µF max.
Remote annunciator circuit	
Length	4,000 ft. (1,219 m) max.
Resistance	90 Ω max.
Capacitance	0.3µF max.
Compatible devices	RLCD-C, RLCD, RLED-C, GCI
Wire size	18 to 12 AWG (0.75 to 2.5 mm²)
Ground fault impedance	10 kΩ

PS10-4B Power Supply Board provides the required power and related supervision functions for the control panel as well as filtered, regulated power. It also provides 24 VDC for operating ancillary equipment.

Voltage	93 to 264 VAC, 50/60 Hz
Current at 24 VDC	
Standby	50 mA
Alarm	50 mA
Current at 120 V, 50/60 Hz	3 A max.
Current at 240 V, 50/60 Hz	1.5 A max.
Power output	
UL	24 VDC at 10 A [Note 1]
ULC	24 VDC at 9.0 A [Note 1]
Brownout level	93 VAC at 50/60 Hz
Rechargeable battery circuit	
Voltage	24 VDC
Charging current	1.5 or 3 A, selectable
Charging capacity	65 Ah max.
Type	Sealed lead acid only
Battery operating voltage	20.4 V min.
Notification appliance/Auxiliary power circuits	
Quantity	4
Circuit designation	
NAC	Class B (Style Y]
AUX	Class B
Output voltage	
NAC	24 VDC
AUX	24 VDC
Output current, NAC	
Regulated	3.0 A max. per circuit 6.0 A total, shared
Special application	3.0 A max. per circuit 9.0 A total, shared
Output current, AUX	6.0 A total, shared
EOLR	15 kΩ (UL P/N EOL-15, ULC P/N EOL-P1)
Wire size	12 to 18 AWG (1.0 to 4.0 mm²) [Note 2]
Ground fault impedance	10 kΩ
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

Note 1: Internal and NAC/AUX outputs
Note 2: Mains wiring is typically 12 to 14 AWG (2.5 to 4.0 mm²)

VM-SLC Signaling Line Circuit Card provides one Class B or Class A signaling line circuit loop on a VM-CPU main board that supports up to 125 detector and 125 module addresses. The card also provides resettable 24 VDC for powering conventional two-wire smoke detector circuits on V-Series modules.

Quantity	One standard, second card optional
Current	
Standby	120 mA at 24 VDC
Alarm	132 mA at 24 VDC
Current with full loop of devices for one circuit	
Standby	144 mA at 24 VDC
Alarm	264 at 24 VDC
Current with full loop of devices for two circuits	
Standby	204 mA at 24 VDC
Alarm	336 mA at 24 VDC
Circuit	
Designation	Class B (Style 4), Class A (Style 6)
Capacity	125 detector and 125 module addresses per circuit
Resistance	100 Ω max.
Capacitance	0.5 µF max.
Smoke power output	
Voltage	24 VDC
Current	85 mA
AUX power output	24 VDC, resettable or continuous 1.0 A each circuit, 1.0 A total
Wire size	18 to 12 AWG (0.75 to 2.5 mm²)
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

Specifications, network options

Fiber Optic Transceivers are used with a fiber optic network module to provide transmission and reception capability over fiber optic cable for fire control panels. Class B and Class A configurations are supported.

Operating voltage	24 VDC
Budget	
SMXLO	15 dBm between two interfaces
SMXHI2	25 dBm max. and 8 dBm min. between two interfaces
MMXVR	10 dBm between two interfaces
Wavelength	
SMXLO, SMXHI2	1300 nm
MMXVR	820 nm
Cable type	
SMXLO, SMXHI2	8.3/125 µ
MMXVR	50/125 µ, 62.5/125 µ, or 100/140 µ
Connector type	
SMXLO, SMXHI2	Duplex SC
MMXVR	ST
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

VM-NOCF Fiber Network Option Module provides a fiber optic, or combination fiber optic and RS-485 communication path, for VM-1 control panels.

Operating voltage	24 VDC
Fiber optics network and audio	
Budget	
SMXLO	15 dBm max. between two interfaces
SMXHI2	8 to 25 dBm between two interfaces
MMXVR	10 dBm max. between two interfaces
Cable type	
SMXLO, SMXHI2	8.3/125µ
MMXVR	50/125µ, 62.5/125µ, or 100/140µ
Connector type	
SMXLO, SMXHI2	Duplex SC
MMXVR	ST
Wavelength	
SMXLO, SMXHI2	1300 nm
MMXVR	820 nm
Network data circuit	
Circuit configuration	Class B (Style 4) or Class A (Style 7)
Data rate	19.2 and 38.4 Kbps Isolated from previous panel CPU when using wire
Isolation	Total isolation when using fiber optic cable
Digital audio circuit	
Circuit configuration	Class B (Style 4) or redundant Class B (Style 7) [Note 1]
Data rate	327 Kbps Isolated from previous panel CPU when using wire
Isolation	Total isolation when using fiber optic cable
Network data circuit wire segment	
Circuit	
Length	5,000 ft. (1,524 m) max. between any three panels
Resistance	90 Ω max.
Capacitance	0.3 µF max. [Note 2]
Wire type	Twisted pair, 18 AWG (0.75 mm²) min.
Digital audio circuit wire segment	
Circuit	
Length	5,000 ft. (1,524 m) max. between any three panels
Resistance	90 Ω max.
Capacitance	0.09 µF max. [Note 2]
Wire type	Twisted pair, 18 AWG (0.75 mm²) min.
Current rating	105 mA Add 79 mA for each SMXLO and SMXHI2 Add 20 mA for each MMXVR
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

Note 1: Must be installed in separate conduit.
Note 2: Include shield capacitance.

VM-NOC RS-485 Network Option Card is used to connect up to eight VM-1 panels. The card enables two independent RS-485 circuits for network data and digital audio communications. Class B and Class A wiring is supported.

Voltage	24 VDC
Current	
Standby	98 mA at 24 VDC
Alarm	98 mA at 24 VDC
Signal level	5 Vp-p
Circuit designation	
Network data	Class B (Style 4), Class A (Style 6)
Network audio	Class B (Style 4), Class A (Style 6)
Isolation	
Network data	A port not isolated B port isolated
Network audio	A IN and B IN isolated A OUT and B OUT not isolated
Wire size	Twisted-pair, 6 twists/ft., min. 18 to 12 AWG (0.75 to 2.5 mm²)..
Circuit length	5,000 ft. (1,524 m) between any three panels
Circuit resistance	90 Ω max.
Circuit capacitance	
Network data	0.3 µF max.
Network audio	0.09 µF max.
Control panels	8 max.
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

Specifications, audio options

VM-MFK Master Firefighters' Telephone adds two-way firefighters' telephone capability to a VM-PMI Paging Microphone Interface. The VM-MFK and the VM-PMI comprise the fire command center.

Voltage	24 VDC
Current	
Standby	37 mA
Alarm	39 mA
Telephone riser	
Circuit designation	Class A or Class B
Line impedance	52 Ω, 0.2 µF max.
EOL resistor	4.7 kΩ
Active telephones	5 max.
Ground fault impedance	1 kΩ
Wire size	12 to 18 AWG (1.0 to 4.0 mm²) Shielded twisted-pair
Isolation	Isolated and supervised
Controls and indicators	
Common	
Paging Volume	Indicates the relative signal strength during an active page
Ready To Page	Flashes during preannouncement tone, steady when ready to page
Firefighter telephone	
Page By Phone	Activates and deactivates the remote firefighter telephone to paging channel
Buzzer Silence	Silences the call-in request buzzer
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

VM-PMI Paging Microphone Interface provides controls for emergency voice/alarm communication and two-way firefighters' telephone communication. The VM-PMI consists of an audio mounting bracket, EAEC Emergency Audio Evacuation Controller card, enclosure, and paging microphone.

Voltage	24 VDC
Current	
Standby	26 mA
Alarm	23 mA
Remote microphone input	Isolated and supervised
AUX input	
Impedance	1 kΩ
Level	0.2 VRMS to 1.0 VRMS
Frequency response	100 Hz to 4 kHz
Ground fault impedance	10 kΩ
Wire size	18 to 12 AWG (1.0 to 4.0 mm²)
Audio channels	4 simultaneous
Audio inputs	
Local microphone	Isolated and supervised
Remote microphone	Isolated and supervised
Firefighter telephone	Isolated and supervised
Remote audio	Isolated and supervised
Messages	
Storage	2 min
Length	39 s max.
Controls and indicators	
Common	
Paging Volume	Indicates relative signal strength during active page
Ready To Page	Flashes during preannouncement tone, steady when ready to page
Paging Microphone	
All Call	Activates/deactivates page to all areas
All Call Minus	Activates/deactivates page to areas not receiving EVAC or Alert message
Page To Evac	Activates/deactivates page to areas currently receiving EVAC message
Page To Alert	Activates/deactivates page to areas currently receiving Alert message
Firefighter Phone	
Page By Phone	Activates/deactivates remote firefighter telephone to paging channel
Buzzer Silence	Silences call-in request buzzer
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

VM Remote Microphone provides remote paging capability throughout a building or campus. Each remote microphone has two inputs for connecting other remote microphone units. The paging circuit supports up to 63 interconnected remote paging stations.

Voltage	21 to 27 VDC
Current	52 mA
Wiring Type	
Audio out	14 to 18 AWG (1.0 to 2.5 mm²) max., shielded twisted-pair, in conduit
Key out	14 to 18 AWG (1.0 to 2.5 mm²) max., twisted-pair, in conduit
Resistance	210 Ω max.
Capacitance	1 µF
Audio Output	1 VRMS at 400 to 4,000 Hz (4 kHz)
Trouble relay	
Current	1 A at 30 VDC resistive
UL rating	Common
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

EAEC Emergency Audio Evacuation Controller Card

provides the audio source interface for emergency voice/alarm communication and two-way firefighters' telephone communication. In addition, the card includes an RJ-11 connection for downloading an audio database.

Voltage	24 VDC
Current	
Standby	26 mA
Alarm	23 mA
Signal level	5 Vp-p
Remote microphone input	Isolated and supervised
AUX input	
Impedance	1 kΩ
Level	0.2 VRMS to 1.0 VRMS
Frequency response	100 Hz to 4 kHz
Wire size	12 to 18 AWG (1.0 to 4.0 mm²)
Messages	
Storage	2 min total
Length	39 s max.
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

ACHS Audio Channel Selector Card

converts digital audio from an EAEC card into an analog preamp signal. A VM-1 control panel supports up to three ACHS cards.

Voltage	24 VDC
Current	
Standby	47 mA
Alarm	64 mA
Circuit	
Designation	Class B (Style Y) or Class A (Style Z)
Output	1 VRMS analog signal
Resistance	100 Ω max.
Capacitance	0.2 µF
EOL resistor	15 kΩ
Wire size	12 to 18 AWG (1.0 to 4.0 mm²), twisted pair [1]
Amplifier capacity	Fifteen AA30/50 amplifiers per ACHS
Compatible controllers	EAEC, AMK-RN, VM-MFK
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

D12LS-VM Control-Indicating Module

provides additional operator interface capability. The module consists of 12 groups of two LED-switches arranged as a top LED that is software programmable to amber, red, blue, or green, and a bottom amber LED.

Voltage	24 VDC
Current Standby Alarm	 11 mA. 11 mA plus 2.5 mA for each active LED, 58 mA max.
Operating environment Temperature Relative humidity	 32 to 120°F (0 to 49°C) 0 to 93% noncondensing

Specifications, option cards

VM-ETH1 Ethernet Adapter Card

provides a standard 10/100 Base-T Ethernet network connection for panel programming and diagnostics.

Ethernet	10/100 Base-T
Voltage	24 VDC
Current	
Standby	42 mA (54 mA when connected to a network connection)
Alarm	42 mA at 24 VDC
Connection mode	Auto negotiation
Wire runs	
Distance	200 ft. (60 m) max. [Note 1]
Type	Standard Cat 5 or Cat 5e
Connector	RJ-45
IP address	192.168.001.003 (default)
Subnet mask	255.255.255.0 (default)
Default port ID	2501
Gateway	000.000.000.000 (default)
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

Note 1: Panel to communication equipment

VM-DACT Dual Line Dialer Card

provides dialer communications between the VM-1 control panel and remote locations over telephone lines. Alarm, supervisory, and trouble information is transmitted to the remote site using one or two telephone lines in dual or split format to any desired receiver.

Voltage	24 VDC
Input power	
Supervisory	60 mA
Active	95 mA
Output	19.2 or 38.4 Kbps
Output current	100 mA max.
Phone line	One/two loop start line on public switched telephone network, pulse, or DTMF dialing (party, ground start, and PBX lines are not acceptable.)
Modem	V.32 bis 14.4 Kbaud
Dialer protocol	Contact ID
Wall connector	Standard RJ-31X or RJ-38X phone jack
Line supervision	
Trouble	When on-hook line voltage < 10 V
Off-hook current	< 10 mA
Telco compliance	Communications Canada CS-03, FCC/CFR 47 Part 68
FCC registration number	EDWUSA-47115-AL-E
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing

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Releated Data Sheets

- M85001-0592 – Intelligent Detectors and Bases
- M85005-0128 – R-Series Remote Annunciators
- M85001-0535 – Riser Monitor Modules
- M85001-0239 – Control Relay Modules
- M85001-0241 – Input Modules
- M85001-0297 – Waterflow/Tamper Modules
- M85001-0239 – Control Relay Modules
- M85001-0271 – Isolator Module

Ordering Information

Intelligent Analog Control Panels	
VM-1R	FACP complete system with user interface, CPU, one addressable loop, four Class B NACs, Universal 110/220v 10 Amp power supply, red door, English. Order VM-SLC for second loop.
VM-1S	FACP complete system with user interface, CPU, one addressable loop, four Class B NACs, Universal 110/220v 10 Amp power supply, silver door, English. Order VM-SLC for second loop.

Option modules and accessories for VM series	
VM-SLC	Loop Expansion Module, 250 analog addressable devices total: 125 detectors, 125 modules.
VM-DACT	Dialer, dual line.
D12LS-VM	Control/Indicating Display Strip, 12 groups: two LEDs (one quad color, one yellow) with switch.
VM-ETH1	Ethernet Adapter, 10/100, provides ethernet connection from system to VM-CU for programming and diagnostics remotely. Uses standard ethernet cable (not supplied).
VM-BF	Blank Front, single slot.
CLA-PS10	Class A Adapter, PS10 NACs.

Audio components	
VM-PMI	Audio System Control and Paging Interface. Includes audio control unit, interconnect cables, mounting plate, paging interface with microphone, and user controls.
VM-MFK	Master Firefighters' Telephone Kit. Includes single riser interface (Class B or A), and master telephone. Requires VM-PMI for mounting.
ACHS	Audio Channel Selector, one channel, supervised preamp output, three max per panel.
EAEC	Emergency Audio Evacuation Controller, board only. For replacing controller in VM-PMI.
AMK-RN	Audio mounting kit. Used to mount ACHS option cards in control panels without audio system control components.
VM-ARM	Remote Microphone, includes cabinet. (Add "S" for surface.)
SIGA-AA30	30 Watt Intelligent Audio Amplifier
SIGA-AA50	50 Watt Intelligent Audio Amplifier
APS6A	6.5 Amp Booster Power Supply
APS10A	10 Amp Booster Power Supply

Network communication options	
VM-NOC	Network Option Card, RS485, Class B wiring.
VM-NOCF	Fiber Optic Communications Interface, Class A/B Network, Class A/B Audio Data. Provides single and/or multi mode network and digital audio fiber optic connections. Order required number of VM-MMXVR, VM-SMXHI2 or VM-SMXLO transceivers separately.
MMXVR	Standard Output Multi Mode Fiber Optic Transceiver. Plugs into VM-NOCF. Uses ST connectors.
SMXHI2	High Output Single Mode Fiber Optic Transceiver. Plugs into VM-NOCF. Uses duplex SC connectors.
SMXLO	Standard Output Single Mode Fiber Optic Transceiver. Plugs into VM-NOCF. Uses duplex SC connectors.

Programming Tools	
VM-CU	Programming software CD, VM series control panels. Requires USB hasp. Windows compatible.