FENWAL Protection Systems
A UTC Fire & Security Company

BULLETIN

#11-34F

Date: July 11, 2011

To: All Fenwal® Protection Systems Engineered Distributors

From: Erasmus Acquah, Product Manager (Detection & Control)

Subject: Availability of FN-2000™ CCMs and Spare Parts

Central Control Modules (CCM):
We announced the last date of assembly of FN-2000™ control units and our expectation of the availability of spare parts via bulletins #2008-61F dated October 20, 2008 and #2009-54F dated December 9, 2009 respectively. While we have stock of some FN-2000 parts, a recent high demand for CCM P/N 74-200008-701 and 74-200008-800 has significantly depleted our stocking levels for these two parts.Hence, although we can no longer ship new CCMs, Fenwal is committed to supporting your installed base and below we have outlined some alternatives to using new CCMs that you may select to move forward:

Option 1 is the FN-2000-FN8000-ML™ Retrofit kit (see attached data sheet). This UL listed and FM approved kit consists of FN-8000-ML electronics, power supply and a door for the installed FN2000 enclosure and enables replacement of the FN2000 electronics without disturbing the original backbox and conduits; thus maintaining your investment in devices, suppression and wiring. The retrofit door is sized for the FN2000 enclosure while its window is aligned with the FN8000-ML. Note that the retrofit kit - in its current configuration - is best utilized for stand-alone applications without networking and ATM Annunciator modules. If you need more information on the kit and its application, please contact Tech Support at (866) 287-2531. If you currently have an open order for CCMs and would like to select this option, please send us your change order using part numbers listed in the current Fenwal DAC price list.

Option 2 is to repair the non-working CCM. Only CCMs that are of 5-years or less vintage and with series 70 or higher firmware will qualify. Use of this option will require the following steps:

1. Please send us an order (or change order for open CCM sales orders) for refurbished P/N R74-200008-701 or P/N R74-200008-800 (note the R-prefix).

2. On receipt of this order, we will ship you a new/refurbished CCM from our stock at original list price.

3. Next, please obtain an RMA number from Customer Service and return the field CM using standard RMA procedure within 2-weeks of receipt of the refurbished unit. (Note that our stock of CCMs is relatively small; hence, it is critical that the field unit be returned to us for possible repair and refurbishment for recirculation).

4. We will verify the returned unit for vintage and firmware and apply your standard discount as credit to the order. For warranty units if it is determined that the failure was due to product/component defect the discount applied will be 100%.

Fenwal Protection Systems
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5. We will further examine the returned unit and if determined to be repairable, we will repair it, place it back into stock with the R-prefix for re-circulation and credit you an additional $200.00. As such, your overall cost for the refurbished CCM is your standard net price less an additional $200.

Please note that refurbished CCMs will carry a 90-day warranty and that this offer is valid until July 31, 2012. Unqualified CCM returns will be returned freight collect to the sender.

Other Spare Parts:
For your further reference, our current stocking level of other parts is listed below. As you are aware, these parts are not in current manufacture and will be withdrawn on stock out:

Part No	Description	QOH
74-200000-501	FENWALNET 2000 Single-Loop Control Unit in Beige Enclosure	-
74-200000-510	FENWALNET 2000 Single-Loop Control Unit in Red Enclosure	-
74-200000-600	FENWALNET 2000 Multi-loop Control Unit in Beige Enclosure	-
06-129830-001	RDCM without Enclosure	-
06-129830-002	RDM without Enclosure	-
74-100017-001	Battery Enclosure - Beige	-
74-200000-006	Expansion Backplane w/ motherboard,	2
74-200000-007	Expansion Backplane with studs for (8) Power Supplies.	-
74-200000-008	Expansion Backplane	1
74-200000-502	Main Enclosure	-
74-200000-505	Expansion Enclosure - Beige (order Back Plane separately)	-
74-200001-001	Agent Release Module	511
74-200002-001	City Tie Module	23
74-200003-001	Signal Audible Module	8
74-200004-001	Relay Module with (4) Form C Relays	52
74-200005-001	RX/TX Module	
74-200005-002	RX/TX Module for use with Multi-loop System	671
74-200007-001	I/O Motherboard for 8 optional modules.	-
74-200008-050	Replacement Display	-
74-200008-701	CCM Module (For Single-loop only, Ver 82.1 Firmware)	-
74-200008-800	CCM Module (For Multi-loop only, Ver 82.1 Firmware)	-
74-200009-002	Power Supply Module w/36” wiring harness	1
74-200009-003	Power Supply Module w/8” wiring harness	5
74-200009-010	Power Supply/Charger Assembly with Monitor Module	-
74-200017-001	FN-2000 Multi-loop I/O Motherboard	-
74-200020-001	FenwalNET 2000 Trim Ring - Beige	15
74-200036-500	Network Interface Module.	3
74-300000-502	Remote Display Control Module - Beige (RDCM - Beige)	-
74-300000-510	Trim Ring for RDCM - Beige	-

If you have any questions in this regard, please call your RSM, Marketing at (508) 881-2000 or Tech Support at (866) 287-2531.

As always, we thank you for your continued support.

Effective: July 2011

FenwalNET 8000-ML

Multi-Loop Intelligent Fire Alarm-Suppression Control Unit

F-74-800

FENWAL Protection Systems
A UTC Fire & Security Company

FEATURES

- **Multi-loop, intelligent, suppression-focused control unit**
- **Out-of-the-box features**
  - **2 SmartOne SLC with 255 unrestricted addresses each**
  - **4 x 40 Display-Keypad**
  - **2 NACs & 2 R-NACs**
  - **3 Programmable & 1 Trouble Form-C Relays**
  - **2 Auxiliary Power Outputs**
  - **USB ports for PC & printer**
  - **RS-232 ports for Graphics**
  - **4 Programmable soft-switches**
  - **120/240 V 50/60 Hz AC input**
  - **5.4 A Power Supply Unit**
  - **2-Tier or 3-Tier NEMA 1 Enclosure – fits between 16" studs**
  - **RS-485 Annunciator bus**
- **Reliable and dependable suppression control features Triple-R redundancy**
- **Suppression systems include**
  - **FM-200, FE-13, 3M Novec 1230 Fire Protection Fluid, Argonite & Halon Clean Agents**
  - **Water-Mist**
  - **Sprinkler Supervisory Service**
  - **Deluge, Pre-Action, Foam, Foam-Water Systems**
- **Modular expandable**
  - **From 2 to 8 SLCs (2,040 addresses)**
  - **Functional and Expansion Modules**
  - **Power Supply**
  - **Networkable up to 64 nodes with 130,560 addresses across network (future)**
- **Event-Output-Control programming**
- **High level serviceability and diagnostics**
  - **Ground fault detection by circuit**
  - **10,000 event log capacity**
- **Backwards compatible with installed investment**
  - **SmartOne SLC devices & protocol**
  - **Fenwal Control Heads**
  - **Fenwal Initiators**
  - **Legacy FN-2000 panels via simple retrofit kit**
- **Seamlessly integrated HSSD, ASD and LHD**
- **Internet connectivity with e-mail notification feature**
- **(future)**
- **Pleasing aesthetics**
- **Pluggable terminal blocks**
- **FM Approved to ANSI/UL864**
- **UL Listed No. S2422**
- **cUL Listed No. S2422**

DESCRIPTION - CONTROL UNIT

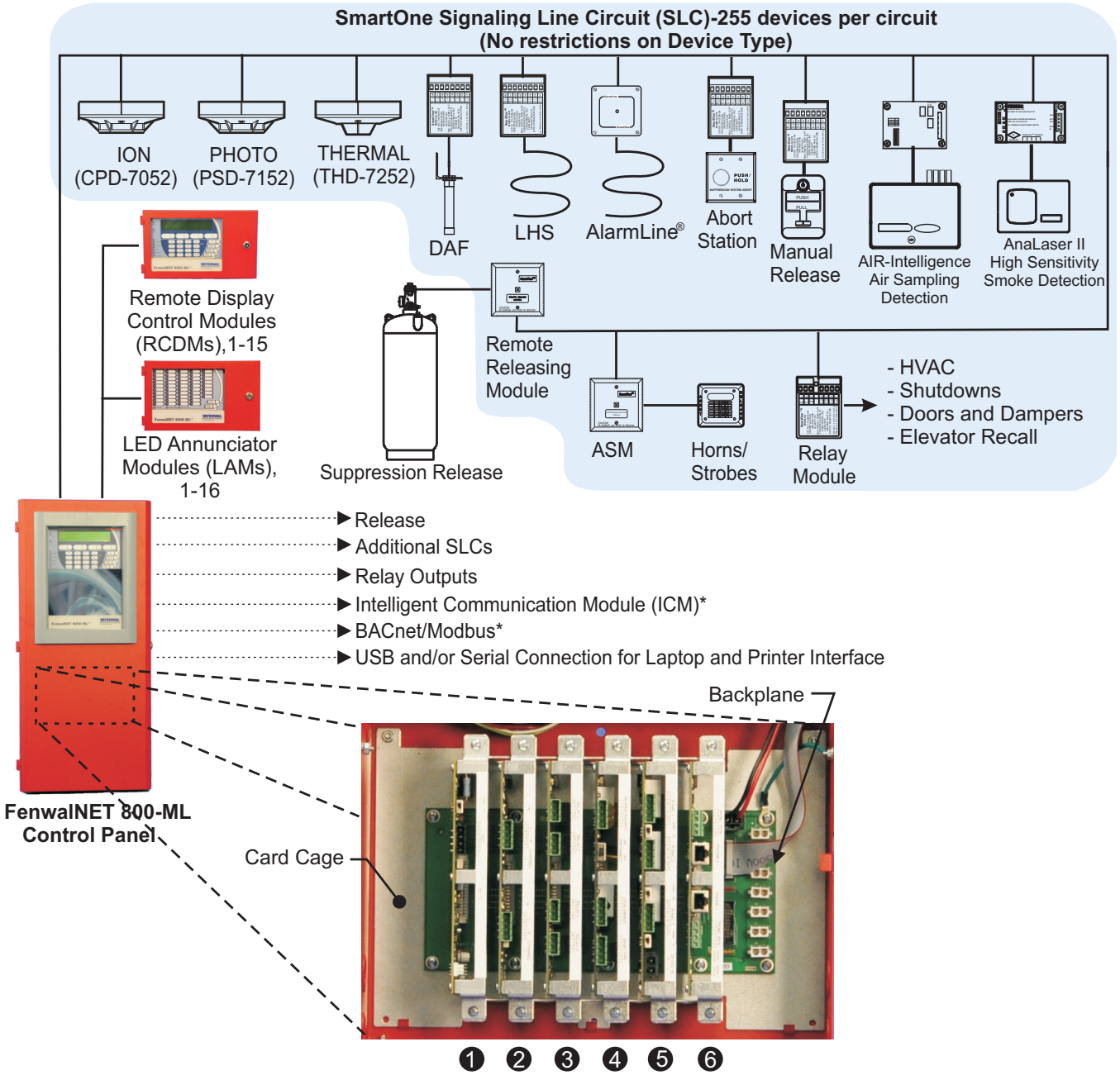
The FenwalNET 8000-ML is one of the most technologically advanced intelligent fire alarm-suppression-focused control units available to the industry today. It combines the high quality, system reliability, and flexibility required by modern commercial, high-tech and industrial applications in an aesthetically pleasing and physically robust package. Its modular architecture enables easy field expansion from the base 2-SLC unit that supports 510 addressable devices (255 per circuit) to an 8-SLC system capable of 2,040 addressable devices. Despite its compact fit-between-wall-studs dimensions, the FenwalNET 8000-ML is designed to be quick and easy to install. Cutting edge technologies incorporated in the electronics design enable diagnostics for time-efficient commissioning.

Main Controller Board - MCB

The FenwalNET 8000-ML's main printed circuit board contains the system's central processing unit (CPU) and all of the primary circuits. The MCB is the heart of the system, controlling the operation and supervision of all the system modules and software. It receives loop device data, processes the data based on pre-programmed instructions, and transmits output commands to the output modules, field devices, and display(s). The MCB is mounted to the enclosure using special design hinged stand-offs which permit the board to swing left and enable easy access to the PMU/PSU assembly behind.

User Interface

The user interface consists of a built-in keypad and a display which provide physical means by which an operator and/or installer performs system functions, enters the security password, operates soft keys, navigates the system menus, configures and tests the entire FenwalNET 8000-ML system.



1. Signal Line Circuit (SLC) Card
2. Network Interface Card (NIC), Future Offering
3. Relay Card
4. City Tie Card
5. Release/Notification Appliance (R-NAC) Circuit Card
6. Digital Alarm Communicator Transmitter (DACT), Future Offering

Figure 1. Modular Design to Meet the Most Demanding Applications

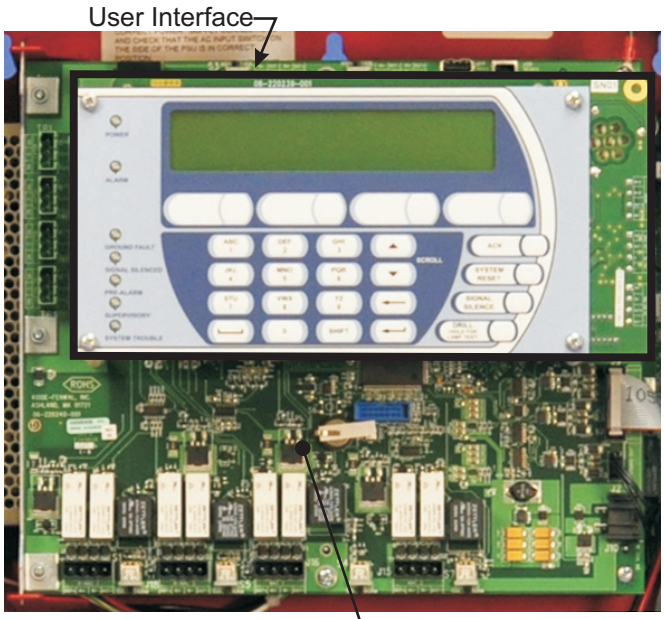


Figure 2. Main Controller Board and User Interface

MAIN CONTROL BOARD SPEC IFICATION

MCB Signaling Line Circuits	
Number of Circuits:	Two
Device Capacity:	255 devices per SLC
Device Type Restriction:	None
Wiring Classes:	Class A, B or X
T-Tapping Allowed:	Class B only
Circuit Voltage:	Nominal 24 VDC, maximum 28 VDC
Maximum Line Resistance:	40 ohms per loop
Maximum Capacitance:	0.5 mF
Maximum Current:	350 mA (short circuit)
Wiring Specifications:	Twisted #14AWG - #18AWG, unshielded, low-capacitance wire with a nominal wire-to-wire capacitance of approximately 20 pf.

MCB Notification Appliance Circuits	
Number of Circuits:	Two
Compatible devices:	24 VDC polarized horns, strobes, bells, etc.
Wiring Classes:	Class A or B
Power Limited:	Yes
Synchronized Strobes:	Yes, configurable

MAIN CONTROL BOARD SPEC IFICATION (Continued)

Maximum Output Current:	Non-Synchronized: 2.0 A Synchronized: 1.5 A
Maximum Output Circuit Terminal Voltage:	28 VDC
Minimum Output Circuit Terminal Voltage:	20 VDC
End-of-Line Resistor:	10 K, 5%, 1/2 W
Maximum Allowable Voltage Drop:	2 V at End-of-Line

MCB Release/Notification Appliance Circuits	
Number of Circuits:	Two
Individually Configurable for Notification or Release:	Yes
Notification Specifications:	Same as NAC
Release Specifications:	
Compatible devices:	
• **Fenwal Control head:**	max 1
• **Water Mist Solenoid valve:**	max 1 max 1
• **FM Group A, B, D, E, F, G, I, J or K Sprinkler Solenoid:**	max 8
• **Set of P/N 93-002009-004 Initiators:**	max 8
• **Set of P/N 31-199932-004 Initiators):**	max 12
• **Set of P/N 93-191001-001 Initiators:**	max 6
Device type configurable:	Yes, with device on-time after activation
Wiring Classes:	
• **Solenoids:**	Class A or B
• **Initiators:**	Class B
Power Limited:	Yes, requires In-Line diode device
Maximum Output Circuit Terminal Voltage:	28 VDC
End-of-Line Resistor:	10 K, 5%, 1/2 W
Allowable Voltage Drop:	2 V

MCB Relays	
Number and type:	3 Programmable and 1 Trouble Relay
Relay Form:	Form-C (1NO + 1 NC)
Rating:	3A @ 30 VDC/120 VAC

MAIN CONTROL BOARD SPEC IFICATION (Continued)

MCB Auxiliary Power Outputs	
Number of Outputs:	2
Resettable or Continuous Output:	Programmable
Rating (each):	1 A @ 24 VDC (each output)
MCB RS-232 Serial Ports	
Number of Ports:	2
Specifications:	Bi-Directional 9600 Baud, 8 Data Bits, 1 Stop Bit, No Parity
MCB RS-485 Annunciator Port	
Number of Ports:	1
Compatible Devices: • **1 to 15 RDCM** • **1 to 16 R-LAM** • **1 to 16 ATM-L (FUTURE)** • **1 to 16 ATM-R (FUTURE)**	
Compatible Device Maximum:	31 in any combination
Wiring Type:	EIA/TIA-485, twisted unshielded pair, maximum capacitance 15 pF per ft.
Wiring Minimum Size:	AWG 18
Maximum wire length:	4,000 ft. (1,219 m)
MCB USB Device Ports:	
Number of Ports:	2

Power Supply

The FenwalNET 8000-ML Control Unit requires a minimum of one Power Supply Unit and one Power Management Unit (PMU) Board for operation. Additional Power Supply Units may be added, based on calculated power requirement (refer to Battery Calculations in the FenwalNET 8000-ML Installation, Operation, and Maintenance Manual, P/N 06-237041-001).

One PMU board is needed to control up to 2 Power Supply Units. The FenwalNET 8000-ML Control Unit design offers optional Power Supply Units and Power Management Unit (PMU) Board to expand the available power to meet additional power requirements.

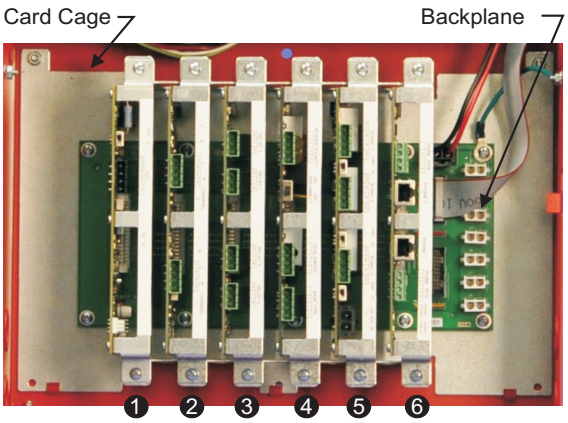
Each enclosure of the FenwalNET 8000-ML Control Unit can provide 20 Amps of power supply capacity and the system can charge up to 165 AH batteries for US applications and 132 AH batteries for Canadian applications.

POWER SUPPLY & MANAGEMENT SPECIFICATION

Number of PMUs per control unit	Minimum: 1 Maximum: 4
Number of PSUs per PMU	Minimum: 1 Maximum: 2
Primary AC Input Power:	
• **1 PSU:**	120 VAC, 50/60 Hz, 3.2 A
• **2 PSU:**	120 VAC, 50/60 Hz, 6.4 A 220 VAC, 50/60 Hz, 3.2 A
Allowable Input Voltage Variation:	115 ± 5% VAC 230 ± 4% VAC
Secondary DC Output:	
• **1 PSU:**	5.4 A @ 27.6 VDC
• **2 PSU:**	10.8 A @ 27.6 VDC
Voltage Selection:	Slide switch on PSU
Trouble Relay Contact Rating:	1.0 A @ 30 VDC (resistive)
AC to Battery Transfer Voltage:	
• **120 VAC:**	109 VAC
• **220 VAC:**	220 VAC
Battery Charging Circuit Voltage:	27.0 VDC (nominal)
Maximum Battery Charging Circuit Current:	
• **1 PSU:**	4 A
• **2 PSU:**	8A
Allowable Battery Type:	2 x 12 VDC Sealed Lead-Acid Only
Maximum Battery Capacity:	UL/FM: 165 AH ULC: 132 AH
Auxiliary Outputs:	2 per PMU, power-limited
Auxiliary Output Operating Voltage Range:	18.8 - 27.6 VDC
Auxiliary Output Maximum Current:	2 A @ 470 mF max. per output

Backplane & Card Cage

The Card Cage is a metal frame which supports and secures up to six Expansion/Functional Cards plugged into the Backplane. The frame is fixed to the Backplane and mounts to the enclosure in the second- or third-tier positions. A fully expanded FenwalNET 8000-ML system can accommodate a maximum number of four Card Cages or 24 card slots in total. Unlike installation intensive control units, the FenwalNET 8000-ML features virtually plug-and-play architecture in that the control unit is intelligent enough to detect the type of card plugged in.



1. Signal Line Circuit (SLC) Card
2. Network Interface Card (NIC), Future Offering
3. Relay Card
4. City Tie Card
5. Release/Notification Appliance (R-NAC) Circuit Card
6. Digital Alarm Communicator Transmitter (DACT), Future Offering

Figure 3. Backplane and Card Cage

CARD CAGE SPECIFICATION

Module Capacity each:	Maximum 6
Number of Card Cages:	Maximum 4 in control unit
Number of Expansion/ Functional cards:	Maximum 24 on system

Signaling Line Circuits - SLC

The Main Controller Board incorporates two SLC circuits. At the rate of one SLC per expansion card, up to six additional circuits can be included in one control unit. The Expansion Card occupies a single slot in the Card Cage Assembly and plugs directly into the backplane.

All SLC's are suitable for Class A, Class B and Class X wiring. A disconnect switch provides the means to physically isolate the circuit from its associated field wiring. Communications LEDs indicate data transmission (green) and reception (yellow) and a Status LED indicates module energized state (green) and de-energized state (yellow).

The FenwalNET 8000-ML is compatible with all SmartOne protocol based devices. The SmartOne communication protocol is called Broadcast Index Polling (BIP). The BIP enables each of the 255 initiating device on the SLC to communicate with the panel on an individual basis in an intelligent system. BIP imposes no limitations on the mix of automatic initiating devices and monitor/control modules on the signaling line circuit. Each SmartOne initiating device has a microprocessor, memory, and decision-making algorithms to interrupt normal control-unit communications and initiate an alarm signal. The BIP communication protocol divides the potential 255 addresses on the SLC loops into 8 groups of 32 addresses each and the panel constantly samples the groups for fire signatures. Once a fire signature is detected, the panel narrows down to the group with the SmartOne device(s) initiating the signature and further to the particular address initiating the fire signature.

The SmartOne smoke detectors manage their individual drift compensation routines, and have pre-alarm and alarm thresholds that are configurable in 0.1 percent-per-foot increments throughout the entire range of listed sensitivities. The FenwalNET 800-ML can dynamically adjust the smoke detector alarm thresholds as the result of one or more alarm-initiating events to confirm that a fire requiring the rapid action of an associated extinguishing system has occurred. SmartOne smoke detectors can also be configured for non-latching operation that requires them to measure smoke signatures in excess of their alarm thresholds for the entire pre-discharge time period in order to discharge the extinguishing system. This prevents a transitory event that mimics a smoke signature such as the leakage of air-conditioning fluid from accidentally discharging the extinguishing system. SmartOne heat detectors have pre-alarm and alarm thresholds that are programmable in 1°F intervals.

SLC EXPANSION CARDS SPECIFICATION

Number of Cards:	Subject to slot availabilty, max 6 in control unit
Circuit Specifications:	Same as SLC on MCB

NACs & R-NACs

The Main Controller Board incorporates two Notification Appliance Circuits and two user-configurable Releasing/Notification Appliance Circuits. The system can be expanded by adding R-NAC cards to the backplane. The Expansion Card occupies a single slot in the Expansion Card Cage Assembly and plugs directly into the backplane. Each R-NAC card provides three Releasing-Notification circuits similar to the R-NAC circuit on the MCB. Given adequate power, the number of R-NAC Expansion

Cards in a system is limited only by the availability of card slots – which itself is limited to 24.

Notification Appliance Circuits can be wired as Class A or Class B and support 24 VDC polarized appliances such as horns, strobes and bells. Strobes can be either synchronized or non-synchronized.

The Releasing Circuits can be wired as Class A or Class B and configured to activate agent control heads and solenoid valves. Fenwal initiators can only be wired Class B. The circuit-on time is configurable from 55 microseconds, 90 seconds, 10 minutes, 15 minutes, On-To-Reset, On-Off cycling dependant on the release device and suppression system. While the circuits are power limited, utilizing this option for releasing requires the use of a field In-Line Release Device – separate for solenoids and initiators. An NFPA-72 compliant disconnect switch provides the means to physically isolate the circuit from its associated field wiring.

R-NAC EXPANSION CARDS SPECIFICATION

Number of Cards:	Subject to slot availability, max 24 in control unit
Number of Circuits Per Card:	Three
Circuit Specifications:	Same as R-NAC on MCB

Triple Redundancy Protection

Unlike some generic fire alarm control units adopted for releasing service, at its core the FenwalNET 8000-ML is suppression focused. Featuring the exclusive Triple-R redundancy safeguard wherein no single component failure or combination of abnormal operating conditions including main microprocessor failure is allowed to result in accidental release activation, the FenwalNET 8000-ML provides the same high quality, dependability and maximum protection against inadvertent release that have been the hallmark of Fenwal suppression panels for decades. The Triple-R system requires that in order to activate a release, the main microprocessor issue two release commands of opposite polarity via separate signaling channels and that these commands combine with a signal from the control unit's watchdog timer to confirm the microprocessor operation. The Triple-R system ensures that electrical transients or disturbances such as power surges that could interfere with the operation of the main microprocessor will not inadvertently activate the connected suppression system. The result is a more robust and reliable suppression control unit.

Relays

The Main Controller Board incorporates 3 programmable Form-C Relays and 1 Form-C Trouble relay. The Expansion Card occupies a single slot in the Card Cage Assembly and plugs directly into the backplane. The system can be expanded by adding Relay cards to the backplane. Each Relay card provides four programmable Form-C relays similar to those on the MCB. The number of Relay Expansion Cards in a system is limited only by the availability of card slots – which itself is limited to 24.

Each relay is independently-driven and can be pre-programmed to change state for all states of Alarm, Trouble and Supervisory conditions. Relays are normally de-energized, unless configured for Trouble. A Trouble relay is energized upon startup and changes state for any Trouble event, including failure of the Main Controller Board. R-G-Y status LEDs are provided. Contact ratings are 3 A at 30 VDC or 120 VAC.

RELAY EXPANSION CARDS SPECIFICATION

Number of Cards:	Subject to slot availability, max 24 in control unit
Number of Relays Per Card:	Four
Relay Specifications:	Same as Relays on MCB

City Tie Card

The optional City Tie Card provides connection and operation for three independently operated signaling circuits used to connect to Municipal Tie inputs as either Local Energy output, Shunt-Type Master Box output or Reverse Polarity output. The City Tie Card occupies a single slot in the Card Cage Assembly and plugs directly into the backplane. The FenwalNET 8000-ML allows one City Tie Card per control unit.

CITY TIE CARD

Number of Cards:	Max 1 in control unit
Number of Circuits Per Card:	Three
Local Energy Type:	24 VDC nominal @ 550 mA maximum
Shunt-Type Master Box:	24 VDC nominal @ 5 A maximum
Reverse Polarity Type:	24 VDC nominal @ 100 mA maximum

Networking (FUTURE)

For large areas or campus style applications, FenwalNET 8000-ML control units can be networked into a powerful system capable of supporting 130,560 addressable devices. The FenwalNET 8000-ML has the capability to provide true peer-to-peer networking of up to 64 control units. Added functionality is provided when the Remote Display-Control Module (RDCM) are connected to the individual control panels and hence into the interconnection scheme. The network is capable of performing fire-

alarm and/or suppression system operations on a network-wide basis:

- Event initiation
- Protected-premises local and/or remote event annunciation
- Occupant notification via audible and visible signaling appliances
- Process/equipment control to activate safety procedures
- Fire extinguishing system release
- Off-premises transmissions to central station or fire department

The network provides several convenient interconnect programming schemes wherein control panels can be configured individually or within created groups of control panels. When utilizing the grouping configuration, the interconnection automatically provides shared alarm and trouble responses. The programmable shared responses are: acknowledge, silence, reset, event logging and logic statements. Operator events can be activated into the interconnection via the control panels or any annunciator. A location address and programmable description is used to identify the panel initiating the event.

Network Interface Card – NIC (FUTURE)

The Network Interface Card regenerates and boosts network communications between control units and electrically isolates the networked units from each other. All FenwalNET 8000-ML units must contain a NIC to be networked to one another. The NIC occupies a single slot in the Card Cage Assembly. Using the NIC, the control units transmit and receive messages via RS485 format over a twisted pair. An optional Fiber Optic Converter Card (FOCC) in addition to the NIC allows connectivity via a fiber optic medium. The networking structure supports a mixture of fiber-optic and twisted-wire interconnections among networked control units. The network structure also supports 4,000 ft long 18AWG of copper wire.

NETWORK INTERFACE CARD - NIC (FUTURE)

Number of Cards:	Max 1 in control unit
Number of nodes in network:	Maximum 64
Wiring Classes:	Class A or Class B
Data Ports:	EIA/TIA-485
Baud Rate:	38,400 baud
Recommended Wiring:	AWG 18, twisted, shielded, pair
Maximum Recommended Length:	4,000 ft. (1,219 m)

Fiber Optic Converter Card – FOCC (FUTURE)

The FOCC occupies a single slot in the Card Cage Assembly and is installed adjacent to the NIC. It converts electrical signals from the NIC into light pulses and permits distances of up to 1 mile (5,280 ft.) between networked control units. A FenwalNET 8000-ML system can include only one Fiber Optic Converter Card per control unit. The network structure supports up to 5,280 ft long of 62.5/125 µm or 100/140 µm multi-mode duplex media fiber.

FIBER OPTIC CONVERTER CARD - FOCC (FUTURE)

Number of Cards:	Max 1 in control unit (requires NIC)
Input Voltage:	24 VDC Nominal, Maximum 28 VDC
Data Ports:	EIA/TIA-485
Baud Rate:	38,400 Baud
Optical Link Distance:	5,280 ft. (1,609 m)
Max allowable cable attenuation:	Not to exceed 4 dB/km
Temperature Range:	0º to 50ºF
Humidity Range:	0 to 93% RH, non-condensing

Digital Alarm Communicator Transmitter – DACT (FUTURE)

The communication capabilities of the FenwalNET 8000-ML control unit are enhanced with an optional DACT which transmits system status over phone lines to a Central Station. The DACT card includes a built-in modem and two Loop Start Public Switched Telephone Network (PSTN) connections. Status LEDs are provided to indicate data transmission (green) and reception (yellow). A FenwalNET 8000-ML system allows one DACT Card per control unit. The DACT card operates on 24 Vdc and supports SIA DC-05-1999.09 Ademco Contact ID and SIA DC-03-1990.01 (R2003.10) protocols.

DIGITAL ALARM COMMUNICATOR TRANSMITTER (DACT)

Number of Cards:	Max 1 in control unit
Circuit Voltage:	Nominal 24 VDC, maximum 28 VDC
Electrical Interface:	PSTN line using a RJ31X phone jack
Supported Protocols:	SIA DC-05-1999.09 Ademco Contact ID SIA DC-03-1990.01 (R2003.10)

Internet Connectivity Module – ICM (FUTURE)

The Intelligent Communications Module (ICM) can be used to access the FenwalNET 8000-ML System via the Internet to view system status and current events and to download the history log. The ICM can be programmed to transmit up to five e-mails upon the occurrence of any unsolicited event in the system. The e-mail message embeds a link with the IP address of the control unit that sent the message for instant access to the remote system. The ICM can be accessed using any standard Web browsing program and requires no special proprietary software. The ICM also allows the FenwalNET 8000-ML Control Unit to report as a slave device via the Modbus TCP/IP Protocol to a master monitoring system for automated process control.

INTERNET CONNECTIVITY MODULE - ICM - (FUTURE)

Operating Current:	500 mA
Input Voltage:	24 VDC
Operating Environment:	32º to 120ºF (0º to 49ºC) 0-90% RH, non-condensing
Data Port:	RJ45
Supported Field Protocols:	Ethernet - Local Area Network or Wide Area Network (LAN or WAN)
Dimensions:	4-11/16 x 4-1/2 x 1-1/3 (in.) 116 x 117 x 34 (mm)

ModBus/BacNET Interface (FUTURE)

The Modbus/BacNet Interface module provides protocol translation between the FenwalNET 8000-ML communication protocol and the communication protocol of an external monitoring system such as building automation system. The Modbus/BacNet Interface module converts the FenwalNET 8000-ML Communications Protocol to BACNET, Modbus, TCP/IP, Modbus over IP. It operates over RS-232 or RS-485 serial communications. The communication flow is one-way from the FenwalNET 8000-ML network to the external monitoring system.

ModBUS/BacNET (FUTURE)

Operating Current:	500 mA
Input Voltage:	24 VDC
Operating Environment:	32º to 120ºF (0º to 49ºC) 0-90% RH, non-condensing

ModBUS/BacNET (FUTURE) (Continued)

Data Port:	
Serial:	Two ports configurable as RS-232 or RS-485 with DB-9
Ethernet:	One 10/100 Base-T (auto sensing) for RJ-45
Supported Field Protocols:	
Serial Connection:	RS232 or RS485 - Modbus RTU and BACnet MSTP
Ethernet Connection:	10/100 Base-T: BACnetIP, BACnet Ethernet and Modbus TCP/IP
Dimensions:	4-11/16 x 4-1/2 x 1-1/3 (in.) 116 x 117 x 34 (mm)

Enclosures

The FenwalNET 8000-ML offers two enclosure sizes, 2-Tier and 3-Tier for both main and expansion enclosures. The enclosures accommodate the MCB, PMU/PSU, Expansion Card Cages and Batteries. The enclosures are sized to fit between standard 16” center wall studs and can accommodate a pair of 12 VDC12-AH or 17-AH SLA batteries (max. 40 AH). The enclosures are painted red, rated NEMA 1 and constructed from 16 AWG cold rolled steel per ASTM A-366. All Fenwal enclosures utilize a common key. Despite its compact dimensions, the enclosure allows a minimum of 1.5 in. (38 mm) of wiring space between the wall and any wiring terminal. Multiple knockouts provide flexibility in wiring entry.

Dead Front Covers

A sheet-steel dead-front cover may optionally be mounted between the door and electronics to prevent unwanted access to the electronics. With the dead-front installed, an operator has access only to the user interface. A blanking plate (included) may be removed if an integrated LED Annunciator is present. The dead front is typical in ULC/cUL applications.

Enclosure Trim Ring

A sheet-steel red-enamel finished trim ring may be mounted around a semi-flush FenwalNET 8000-ML enclosure to enhance the Control Unit’s aesthetic appeal after installation.

MAIN & EXPANSION ENCLOSURES

Material of Construction:	18 AWG (0.053 in. or 1.35 mm) rolled sheet steel

MAIN & EXPANSION ENCLOSURES (Continued)

Enclosure Rating/Degree of Protection:	NEMA 1
Color:	Red (C21136 of Federal Standard 595)
Enclosure Dimensions (H x W x D):	
• **3-Tier:**	31-1/2 x 14-3/8 x 5-3/8 (in.)
• **2-tier:**	22-1/2 x 14-3/8 x 5-3/8 (in.) 572 x 365 x 137 (mm)
Dead Front Dimensions (H x W):	
• **3-Tier:**	(31-1/3 x 14) (in.) (796 x 356) (mm)
• **2-tier:**	22-5/8 x 14) (in.) (567 x 355) (mm)
Trim Ring Dimensions:	
• **3-Tier:**	17-1/2 x 34-5/8 (in.) 444 x 879 (mm)
• **2-tier:**	17-1/2 x 25-5/8 (in.) 444 x 651 (mm)

CONTROL UNIT FEATURES

Seamless Integration with Specialty Detectors

SmartOne loop protocol interface cards enable the FenwalNET 8000-ML to seamlessly integrate with specialty detectors. AIR-Intelligence Air Sampling Smoke Detectors (ASD) and AnaLASER-II High Sensitivity Smoke Detectors (HSSD) connect via Addressable Protocol Interface Cards (APIC) and AnaLASER Interface Modules (AIM-II) respectively and report pre-alarms and alarms in a manner analogous to SmartOne smoke detectors. AlarmLine Integrating Linear Heat Detector sensors (LHD) connect via AlarmLine Addressable Modules (AAM) and report pre-alarms and alarms similar to a Smart-One heat detector. Fixed Temperature Linear Heat Sensor cables (LHS) connect via Addressable Input Modules (AI) and report point alarms.

Field Programming Options

The FenwalNET 8000-ML Configuration Software (FCS8000) tool is used to program the control unit for each individual site-specific application. Programming is for control-by-event scenarios and consists of entering a series of conditional control statements that logically join initiating points to control-unit-based outputs and remote control modules. Each SmartOne field device can be assigned a location message of up to 40 characters via the configuration tool. A USB Device Port is available to connect a laptop computer for application upload.

An *AutoLearn* routine that creates a general alarm (one-input-activates-all outputs) application can be invoked from the User Interface to speed the configuration process. A more sophisticated *Auto-Setup* routine which automatically configures the control unit for a typical waterless fire-suppression system can also be invoked.

Automatic SLC Device Testing

The FenwalNET 8000-ML features an exclusive automatic SLC device testing protocol. With this cutting edge supervisory technology, the control unit routinely checks all SLC devices in groups of 32 for operational status. If a group fails, the control unit then interrogates at lower level in that group and pin-points and reports the malfunctioning device on the User Interface within seconds.

Duplicate Address Detection

Electronic device addressing is via the Handheld Programmer (HHP). The fully-digitized FenwalNET 8000-ML Control Unit protocol has the ability to monitor the SLC for devices with duplicate addresses. Should such duplication be detected, the control unit displays these addresses on the User Interface – thereby reducing the overall configuration time.

Battery Life Tracking

The FenwalNET 8000-ML software includes an optional Battery Monitoring Mode which can track battery lifetime from the original install date and emit an audible signal beginning one month before the replacement due date.

Annunciator Bus

The Main Controller Board includes an RS-485 bus which can communicate with up to a total of 31 Remote Annunciators. These include up to 15 RDCM Remote Display/Control Modules, up to 16 LAM LED Annunciator Modules. This capability can be expanded to include up to 16 legacy ATM-R and ATM-L Annunciator Terminal Modules (FUTURE).

CONTROL UNIT ACCESSORIES

Large Capacity Battery Cabinet

An optional NEMA-1 surface-mount Battery Cabinet is available for a pair of up to 12 VDC 40 AH sealed lead acid batteries. The cabinet is designed to be located within 100 feet of the control unit. The red painted cabinet is constructed of cold-rolled steel as other available FenwalNET enclosures. The door is hinged on the left and includes the same lock and key used with all FenwalNET enclosures. Three conduit knockouts are provided at the top to accommodate either ½ inch or ¾ inch standard electrical conduit fittings.

REMOTE BATTERY ENCLOSURE

Accommodates:	Up to 2 x 12 VDC 12-AH or 17-AH Battery (max 40 AH)

REMOTE BATTERY ENCLOSURE (Continued)

Material of Construction:	18 AWG (0.053 in. or 1.35 mm) rolled sheet steel
Enclosure Rating/Degree of Protection:	NEMA 1
Color:	Red (C21136 of Federal Standard 595)
Enclosure Dimensions (H x W x D):	12 x 20 x 8-1/4 (in.) 305 x 508 x 210 (mm)

REMOTE ANNUNCIATORS

Remote Display Control Module - RDCM

RDCMs are user interfaces that replicate the FenwalNET 8000-ML and can be located remotely from the main enclosure so as to accomplish system control from multiple locations. RDCMs display all system events and allow full system control and operator intervention via an LCD display, keypad, buzzer, five (5) system status LEDs and four (4) user-programmable soft-keys. A synchronization signal output allows expansion of up to 15 RDCM units. RDCMs are wall mountable in their own discrete enclosures and operate on 24 VDC sourced from either the FenwalNET 8000-ML Auxiliary Power Output or listed external power supply.

Figure 4. RDCM

REMOTE DISPLAY CONTROL MODULE - RDCM

Number of RDCMs:	Max 15 on Annunciator Bus
Power Input:	150 mA maximum @ 24.0 VDC
Input Capacitance:	100 mF max.
PMU Trouble Relay Input:	Short = normal; open = fault
Synch In/Out:	3.3 VDC Logic
Wiring Type:	EIA/TIA-485, twisted unshielded pair, maximum capacitance 15 pF per ft.
Wiring Minimum Size:	AWG 18
Maximum wire length:	4,000 ft. (1,219 m)

LED Annunciator Module - LAM

LAMs are annunciators that provide 48 independently programmable LEDs. Each LED is dual color (red and yellow) and has space available for an identification label. In addition, LAMs provide three system-level LED outputs for Module Power, Trouble and Signal Silenced and one each system-level input functional switches for Signal Silence and System Acknowledge/Self-Test commands. LAMs can be mounted remote from the main enclosure and utilize the same remote enclosures as do RDCMs. LAMs can also be mounted within the main FenwalNET 8000-ML enclosure for ULC/cUL applications.

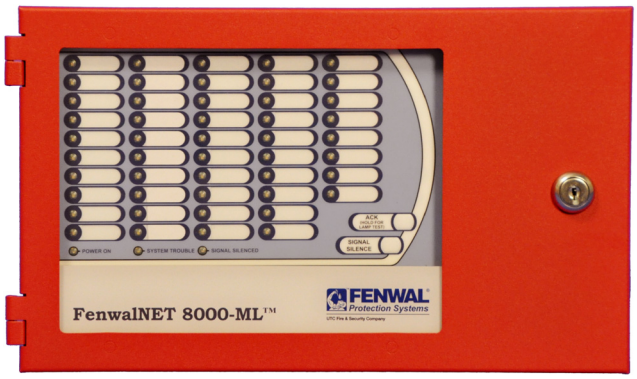


Figure 5. LAM

LED ANNUNCIATOR (LAM)

Number of LAMs:	Max 16 on Annunciator Bus; 15 if LAM integrated into Control Unit
Power Input:	150 mA maximum @ 24.0 VDC

LED ANNUNCIATOR (LAM) (Continued)

Input Capacitance:	100 mF max
PMU Trouble Relay Input:	Short = normal; open = fault
Synch In/Out:	3.3 VDC Logic

REMOTE LED ANNUNCIATOR - LAM

Number of LAMs:	Max 16 on Annunciator Bus; 15 if LAM integrated into Control Unit
Power Input:	150 mA maximum @ 24.0 VDC
Input Capacitance:	100 mF max.
PMU Trouble Relay Input:	Short = normal; open = fault
Synch In/Out:	3.3 VDC Logic
Wiring Type:	EIA/TIA-485, twisted unshielded pair, maximum capacitance 15 pF per ft.
Wiring Minimum Size:	AWG 18
Maximum Wire Length:	4,000 ft. (1,219 m)

REMOTE ANNUNCIATOR ENCLOSURE

Accommodates:	1 RDCM 1 R-LAM
Material of Construction:	18 AWG (0.053 in. or 1.35 mm) rolled sheet steel
Enclosure Rating/Degree of Protection:	NEMA 1
Color:	Red (C21136 of Federal Standard 595)
Enclosure Dimensions (H x W x D):	7-1/2 x 12-3/4 x 2-3/4 (in.) 191 x 324 x 70 (mm)

RETROFITTING LEGACY INSTALLATIONS

Legacy FenwalNET 2000 Control Unit Retrofit Kit

Installed FenwalNET 2000 control units can be upgraded to FenwalNET 8000-ML level by utilization of a retrofit kit. The retrofit kit consists of FenwalNET 8000-ML electronics, power supply and a door for the installed FenwalNET 2000 enclosure. The kit enables the FenwalNET 2000 electronics to be replaced without disturbing the original enclosure-backbox and conduits; thus maintaining the customers' investment in devices, suppression and wiring. The retrofit door is sized for the FenwalNET 2000 enclosure while its window is aligned with the FenwalNET 8000-ML.

FenwalNET 2000 RETROFIT KIT

Parts Contained:	Base Plate Base Plate Bracket Replacement Door Installation Hardware
Additional Parts Required:	
• **P/N 74-800030-002:**	PSU with wiring harness to PMU Board
• **P/N 74-800030-004:**	PMU Board
• **P/N 74-800020-001:**	MCB complete with UI & mounting hardware
• **P/N 74-800000-001:**	Universal Hardware Kit
Optional add-ons to bottom tier of legacy backbox (only one):	1 Card Cage Assembly
• **P/N 74-800010-001:**	Additional PSU/PMU
• **P/N 74-800030-003:**	Assembly with bracket and hardware, Standby Batteries

COMPATIBLE DEVICES

SmartOne Devices

Part Number	Description
71-402001-100	Photoelectric Detector
71-401001-000	Photoelectric Detector (retrofit only)
71-401004-000	Photoelectric Detector with Relay (retrofit only)
70-402001-100	Ionization Detector
70-401001-000	Ionization Detector (retrofit only)
70-401004-000	Ionization Detector with Relay (retrofit only)
70-404001-100	Heat Detector
70-400001-100	Flanged Detector Base
70-400001-101	Detector Base
70-400001-200	Detector-Base Adapter
70-400001-000	Detector Base (retrofit only)
70-403001-152	Duct Housing with Photoelectric Detector
70-403001-052	Duct Housing with Ionization Detector
70-403000-000	Duct Housing (retrofit only)
70-407008-001	Monitor Module (N/O)
70-407008-002	Monitor Module (N/C) (UL only)
70-407018-001	Monitor Module (N/O) (non-silicone)
70-407018-002	Monitor Module (N/C) (non-silicone; UL only)
70-407004-00 1	Monitor Module (N/O) (retrofit only)
70-408004-001	Control Module
70-408014-001	Control Module (non-silicone)
70-408001-000	Control Module without Mtg. Plate (retrofit only)
70-408002-000	Control Module with Mtg. Plate (retrofit only)
70-408003-000	Control Module with SS Mtg. Plate (retrofit only)
89-300010-001	AnaLASER II Interface Module
73-100003-001	Addr. Alarmline Mod.(in NEMA-4 enclosure)
70-200200-001	Addr. Signal Module
70-200200-003	Addr. Signal Module
70-200200-002	Addr. Signal Module (on 6SB Detector Base)
74-200012-002	Isolator Module (single-gang mount)
74-200012-004	Isolator Module (detector-base mount)
70-600000-00 1	Remote Releasing Module (standard mount)
70-600000-002	Remote Releasing Module (in-cabinet mount)
74-333001-001	APIC for AIR-Intelligence HSSDs

Releasing Devices

Part Number	Device “On” Time	Max. per Circuit
890181	Momentary	1
895630	Momentary	1
93-487100-001	Momentary	1
48650001	Steady	1
06-118329-001	Steady	1
06-118384-001	Steady	1
38-509834-001	Steady	1
38-509837-001	Steady	1
81-100000-001	Steady	1
897494-000	Steady	1
897494-530	Steady	1
Marioff D21070	Steady	1
FM Group A	Steady	1
FM Group B,D	Steady	1
FM Group E,G	Steady	1
FM Group F	Steady	1
FM Group I	Steady	1
FM Group J	Steady	1
FM Group K	Steady	1
93-002009-004	Momentary	8
31-199932-004	Momentary	12
93-191001-001	Momentary	6

ORDERING INFORMATION

Part Number	Description
FenwalNET 8000-ML SYSTEMS	
74-800100-001	FN8000 Control Unit-3T
74-800101-002	FN8000 Control Unit-3T-ULC
74-800200-001	FN8000 Control Unit-2T
74-800201-002	FN8000 Control Unit-ULC
74-800101-001	FN8000 Control Unit-3T-ULC
74-800201-001	FN8000 Control Unit-2T-ULC
74-800102-001	FN8000 Control Unit-3T-City of Chicago
74-800202-001	FN8000 Control Unit-2T-City of Chicago
EXPANSION ENCLOSURES	
74-800100-003	FN8000 Expansion Encl-3T
74-800200-003	FN8000 Expansion Encl-2T
ENCLOSURE TRIM RINGS	
74-800100-004	FN8000 Trim Ring-3T Enclosure
74-800200-004	FN8000 Trim Ring-2T Enclosure
74-800300-004	FN8000 Trim Ring-RDCM Enclosure
EXPANSION CARDS	
74-800011-001	FN8000 SLC Card
74-800012-001	FN8000 Relay Card
74-800013-001	FN8000 R-NAC Card
74-800016-001	FN8000 City Tie Card
EXPANSION CARD CAGE	
74-800010-001	FN8000 Card Cage Assy
74-800010-002	FN8000 Backplane Board
REMOTE ANNUNCIATORS/MODULES	
74-800300-001	FN8000 Remote Display Control Module
74-800300-002	FN8000 Remote LED Display
REPLACEMENT ENCLOSURES AND COVERS	
74-800101-005	FN8000 Dead Front-3T
74-800201-005	FN8000 Dead Front-2T
74-800100-101	FN8000 3T Main Enclosure
74-800200-101	FN8000 2T Main Enclosure
74-800101-101	FN8000 3T Main Enclosure ULC
74-800201-101	FN8000 2T Main Enclosure ULC
74-800300-101	FN8000 Remote Display Encl
MCB & KEYPAD/DISPLAY	
74-800020-003	FN8000 LAM Board
74-800020-001	FN8000 Main Control Board
74-800020-002	FN8000 Keypad-Display

ORDERING INFORMATION (Continued)

Part Number	Description
POWER SUPPLIES AND STANDBY BATTERIES	
74-800030-002	FN8000 Power Supply, 5.4A
74-800030-004	FN8000 Power Management Board
74-800030-006	FN8000 Battery Tray
74-800030-003	FN8000 Add Power Supply Management
74-800030-001	FN8000 PSU 120-240VAC 5.4A
74-800030-005	FN8000 PSU Mounting Bracket
74-800030-007	FN8000 Power Management Fuse Kit
MISCELLANOUS	
74-800000-008	FN8000 Installation Configuration Kit
74-800000-001	FN8000 Installation-Hardware Universal
74-800000-004	FN8000 Releasing Diode Kit
74-800400-001	FN8000 -FN2000 Retrofit Kit
74-800500-001	FN8000 Chicago Control Box
74-800000-002	FN8000 Main Plexiglass Window
74-800000-003	FN8000 RLAM Plexiglass Window
74-800000-005	FN8000 Bezel-Enclosure Door
74-800000-006	FN8000 Harness Enclosure-Enclosure
HANDHELD PROGRAMMER	
70-600000-100	New Hand-Held Programmer
RETROFIT KIT	
74-800400-001	FN8000 -FN2000 Retrofit Kit -Includes: • Base Plate • Base Plate Bracket • Replacement Door • Installation Hardware **NOTE:** Order MCB, Power Supplies, Card Cage, and Expansion Cards, as required.

F-74-800 Rev AB

Printed in USA

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