

# ARIES NETLink™

## Multi-Loop Intelligent Fire Alarm-Suppression Control Unit



Effective: March 2017  
K-76-800

### FEATURES

- Intelligent addressable multi-loop, suppression-focused control unit
- Triple R redundancy provides maximum protection against inadvertent release
- Out-of-the-box features:
  - 2 SLCs with 255 unrestricted addresses each (510 total)
  - 4 x 40 Display-Keypad
  - 4 Programmable soft-switches
  - 2 NACs and 2 R-NACs
  - 3 Programmable and 1 Trouble Form-C Relays
  - 2 Auxiliary Power Outputs, 2 amps each
  - USB ports for PC and printer
  - RS-232 ports for graphics
  - 120/240V, 50/60 Hz AC input
  - 5.4 A Power Supply Unit
  - Charging Capacity of 165 AH
  - RS-485 Annunciator bus
  - 2-Tier or 3-Tier NEMA 1 Enclosure – fits between 16” studs
- Suppression systems include:
  - FM-200, FE-13, 3M Novec 1230 Fire Protection Fluid, Carbon Dioxide, Argonite & Halon Clean Agents
  - Dry Chemical, Wet Chemical
  - Water-Mist
  - Sprinkler Supervisory Service
  - Deluge, Pre-Action, Foam, Foam-Water Systems
- Modular and expandable
  - From 3 to 8 SLCs (2,040 addresses)
  - Up to 96 relays
  - Up to 72 release/NAC circuits
  - Combinations of the above and/or functional modules
- Networkable up to 64 nodes (130,560 addresses)
- Flexible programming
- High level serviceability and diagnostics
  - Ground fault detection by circuit
  - 10,000 event log capacity
  - Internet connectivity with e-mail notification feature
- Modbus RTU, Modbus TCP/IP, BACnet MS/TP and BACnet IP compatibility
- Backwards compatible with installed investment
  - SmartOne SLC devices & protocol
  - Kidde Control Heads
  - Actuators
  - Legacy PEGAsys panels via simple retrofit kit
- Seamlessly integrated HSSD, ASD and LHD
- Pluggable terminal blocks
- User Interface 4 x 40 display supports 4 languages: English, French Canadian, Spanish and Portuguese
- French Canadian, Spanish and Portuguese Language kit
- Approvals/Listings\*:
  - FM Approved to ANSI/UL864
  - UL Listed No. S2422
  - cUL Listed No. S2422
  - CSFM Approved: No. 7165-1076:0195
  - California OSHPD Special Seismic Certification Pre-Approval, No. OSP-0286-10
  - NYC Fire Department Certificate of Approval: No. 6092
  - City of Chicago Acceptable for Class 1 Applications
- RoHS compliant



### DESCRIPTION - CONTROL UNIT

The ARIES NETLink™ 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 that supports 2,040 addressable devices; 130,560 addresses available for a 64-node network.

The ARIES NETLink is compact, fits between wall stud dimensions, and 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 ARIES NETLink'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 standoffs 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 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 ARIES NETLink system. The LCD display supports four languages: English, French, Spanish, and Portuguese (selected from the top-level menu).

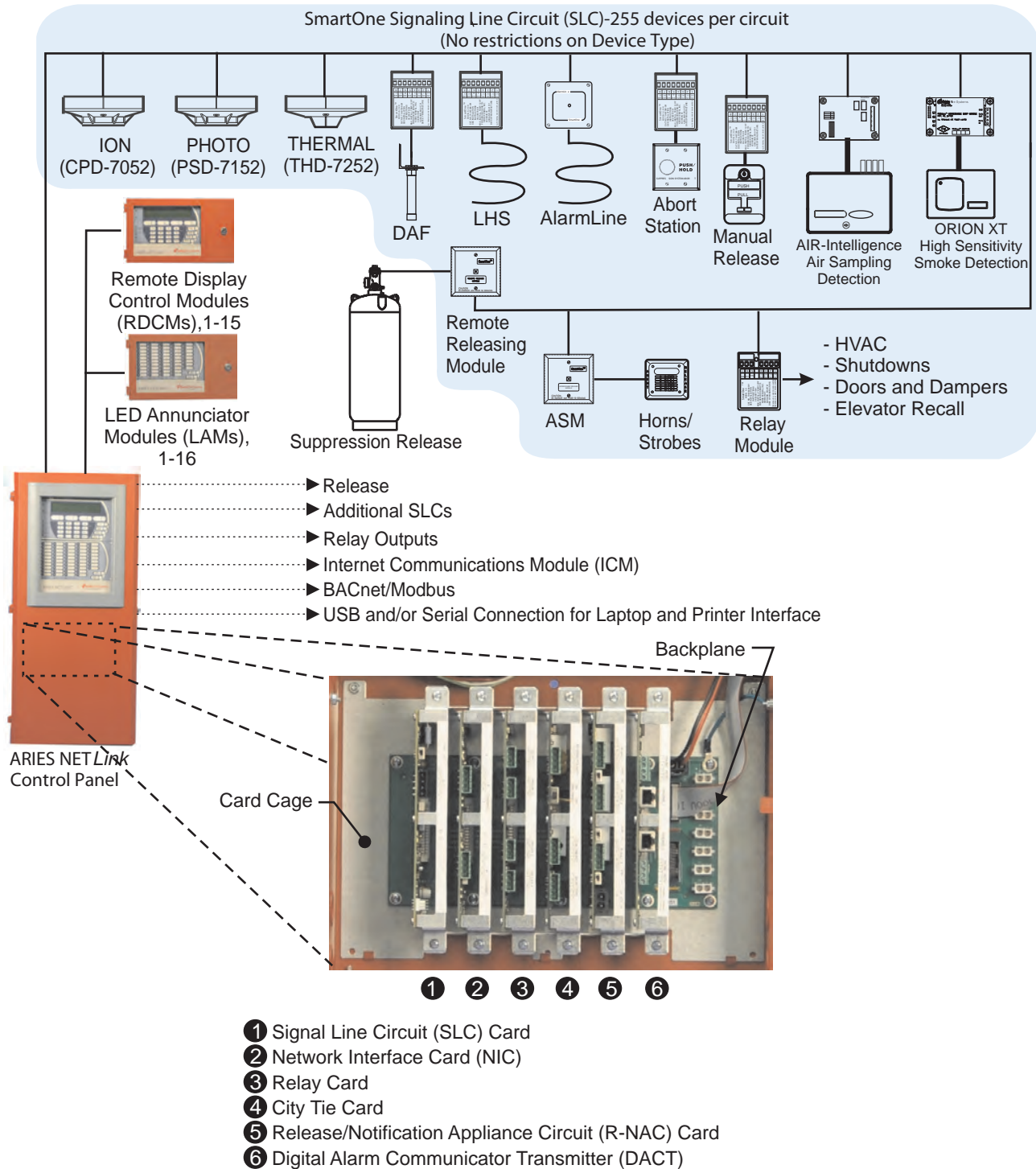


Figure 1. Modular Design to Meet the Most Demanding Applications



Figure 2. Main Controller Board and User Interface

**MAIN CONTROLLER BOARD SPECIFICATION**

**MCB Signaling Line Circuits**

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

**MCB Notification Appliance Circuits**

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

**MAIN CONTROLLER BOARD SPECIFICATION (Continued)**

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

**MCB Release/Notification Appliance Circuits**

<b>Number of Circuits:</b>	Two
<b>Individually Configurable for Notification or Release:</b>	Yes
<b>Notification Specifications:</b>	Same as NAC

**Release Specifications:**

<b>Compatible devices:</b>	
• <b>Kidde Control head:</b>	max 1
• <b>Water Mist Solenoid valve:</b>	max 1
• <b>FM Group A, B, D, E, F, G, I, J or K Solenoid:</b>	max 1
• <b>Metron actuator:</b>	
-P/N 83-132500-500	max 1
-P/N 83-131082-001	max 1

<b>Device type configurable:</b>	Yes, with device on-time after activation
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**Wiring Classes:**

• <b>Solenoids:</b>	Class A or B
• <b>Actuators:</b>	Class B

<b>Power Limited:</b>	Yes, requires In-Line diode device
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<b>Maximum Output Circuit Terminal Voltage:</b>	28 VDC
<b>End-of-Line Resistor:</b>	10 K, 5%, 1/2 W
<b>Allowable Voltage Drop:</b>	2 V

**MCB Relays**

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

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**MAIN CONTROLLER BOARD SPECIFICATION (Continued)****MCB RS-232 Serial Ports**

<b>Number of Ports:</b>	2
<b>Specifications:</b>	Bi-Directional 9600 Baud, 8 Data Bits, 1 Stop Bit, No Parity

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**MCB RS-485 Annunciator Port**

<b>Number of Ports:</b>	1
<b>Compatible Devices:</b>	
• RDCM	Max. 15 devices
• R-LAM	Max. 16 devices
• ATM-L	Max. 16 devices
• ATM-R	Max. 16 devices
<b>Compatible Device Maximum:</b>	31 in any order
<b>Wiring Type:</b>	Twisted, shielded, low-capacitance fire alarm wire
<b>Wiring Minimum Size:</b>	AWG 18
<b>Maximum wire length:</b>	4,000 ft. (1,219 m)

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**MCB USB Device Ports:**

<b>Number of Ports:</b>	2
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**Power Supply**

The ARIES NETLink 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 ARIES NETLink Installation, Operation, and Maintenance Manual, P/N 06-237058-001).

One PMU board is needed to control up to 2 Power Supply Units. The ARIES NETLink 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 ARIES NETLink Control Unit can provide 20 Amps of power supply capacity and the system can charge up to 165-AH batteries.

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**POWER SUPPLY & MANAGEMENT SPECIFICATION**

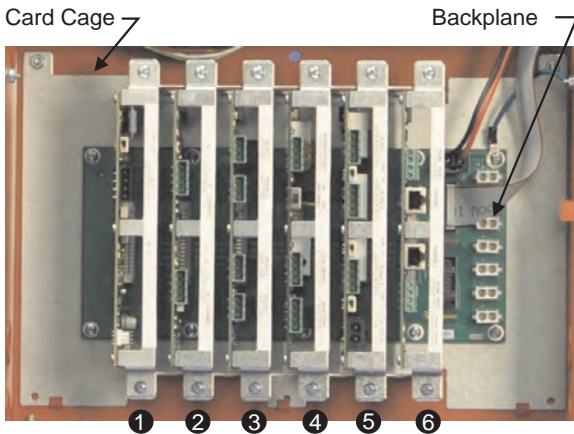
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<b>Number of PMUs per control unit</b>	Minimum: 1 Maximum: 4
<b>Number of PSUs per PMU</b>	Minimum: 1 Maximum: 2
<b>Primary AC Input Power:</b>	
• 1 PSU:	120 VAC, 50/60 Hz, 3.2 A 240 VAC, 50/60 Hz, 1.6 A
• 2 PSU:	120 VAC, 50/60 Hz, 6.4 A 240 VAC, 50/60 Hz, 3.2 A
<b>Allowable Input Voltage Variation:</b>	115 ± 5% VAC 230 ± 4% VAC
<b>Secondary DC Output:</b>	
• 1 PSU:	5.4 A @ 27.6 VDC
• 2 PSU:	10.8 A @ 27.6 VDC
<b>Voltage Selection:</b>	Slide switch on PSU
<b>Trouble Relay Contact Rating:</b>	1.0 A @ 30 VDC (resistive)
<b>AC to Battery Transfer Voltage:</b>	
• 120 VAC:	109 VAC
• 220 VAC:	200 VAC
<b>Battery Charging Circuit Voltage:</b>	27.0 VDC (nominal)
<b>Maximum Battery Charging Circuit Current:</b>	
• 1 PSU:	4 A
• 2 PSU:	8.9 A
<b>Allowable Battery Type:</b>	2 x 12 VDC Sealed Lead-Acid Only
<b>Maximum Battery Capacity:</b>	UL/FM: 165 AH ULC: 132 AH
<b>Auxiliary Outputs:</b>	2 per PMU, power-limited
<b>Auxiliary Output Operating Voltage Range:</b>	19.2 - 27.6 VDC
<b>Auxiliary Output Maximum Current:</b>	2 A @ 470 µF max. per output

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### 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 ARIES NETLink system can accommodate a maximum number of four Card Cages or 24 card slots in total. Unlike installation intensive control units, the ARIES NETLink 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)
- ③ Relay Card
- ④ City Tie Card
- ⑤ Release/Notification Appliance Circuit (R-NAC) Card
- ⑥ Digital Alarm Communicator Transmitter (DACT)

Figure 3. Backplane and Card Cage

#### CARD CAGE SPECIFICATION

<b>Module Capacity each:</b>	Maximum 6
<b>Number of Card Cages:</b>	Maximum 4 per MCB
<b>Number of Expansion/ Functional cards:</b>	Maximum 24 per MCB

#### 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 ARIES NETLink 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 ARIES NETLink 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 CARD SPECIFICATION

<b>Number of Cards:</b>	Subject to slot availability, max 6 per MCB
<b>Circuit Specifications:</b>	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. The circuit-on time is configurable from 55 microseconds, 90 seconds, 10 minutes, 15 minutes, or On-To-Reset, 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 actuators. An NFPA-72 compliant disconnect switch provides the means to physically isolate the circuit from its associated field wiring.

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**R-NAC EXPANSION CARD SPECIFICATION**

<b>Number of Cards:</b>	Subject to slot availability, max 24 per MCB
<b>Number of Circuits Per Card:</b>	Three
<b>Circuit Specifications:</b>	Same as R-NAC on MCB

Triple Redundancy Protection

Unlike some generic fire alarm control units adopted for releasing service, at its core the ARIES NETLink 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 ARIES NETLink provides the same high quality, dependability and maximum protection against inadvertent release that have been the hallmark of Kidde 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.

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**RELAY EXPANSION CARD SPECIFICATION**

<b>Number of Cards:</b>	Subject to slot availability, max 24 per MCB
<b>Number of Relays Per Card:</b>	Four
<b>Relay Specifications:</b>	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 ARIES NETLink allows one City Tie Card per control unit.

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**CITY TIE CARD SPECIFICATION**

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

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## Networking

For large areas or campus style-applications, ARIES NETLink control units can be networked into a powerful system capable of supporting 130,560 addressable devices. The ARIES NETLink 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.

The ARIES NETLink meets the Display and Control Centre requirements of ULC S527-11. When configured for "ULC Operation" and networked with other control units, any control unit can become the Display and Control Centre Node. The first node to perform a control type operation - event acknowledge, system reset, system silence or fire drill - gains exclusive control of the network. When a node is in control, all other nodes display an indication of the node in control and, as long as keypad operations continue to be performed, that node remains in control. Control can be relinquished after an inactivity period or another node requests control (by pressing an operational button and selecting "REQUEST CONTROL").

## Network Interface Card – NIC

The Network Interface Card regenerates and boosts network communications between control units and electrically isolates the networked units from each other. All ARIES NETLink 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 Module

(FOCM), 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 up to 4,000 ft. long 18 AWG of copper wire between nodes (control units).

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## NETWORK INTERFACE CARD (NIC) SPECIFICATION

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

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## Fiber Optic Converter Module – FOCM

A fiber-optic option is available for network applications (NIC card also required) with communication paths greater than 4,000 ft. or where excessive electrical noise is present. The FOCM is a bi-directional, externally-powered unit which is wall mountable in the standard ARIES NETLink remote enclosure. One FOCM is required at both interconnected ARIES NETLink control units for a single communication channel.

For short transmission distances (under 1 mile), such as within a building or on a campus, multi-mode optical fiber (MM fiber) can be used (62.5  $\mu\text{m}$  core size/125  $\mu\text{m}$  cladding diameter). For longer transmission distances (up to 12 miles), single-mode (SM fiber) can be used (8.3  $\mu\text{m}$  core size/125  $\mu\text{m}$  cladding diameter). Either type of fiber may be used and both connect to the ARIES NETLink power and RS-485 data lines in the same fashion.

The FOCM is shipped standard with one converter channel. For greater communication security and redundancy, a second converter channel may be added. This is most effective if the second channel is installed in a different pathway from the first.

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## FIBER OPTIC CONVERTER MODULE (FOCM) SPECIFICATION

<b>Operating Voltage:</b>	24 VDC
<b>Operating Current:</b>	0.0380 A (Single Mode) 0.0369 A (Multi Mode)
<b>Data Ports:</b>	EIA/TIA-485
<b>Max. Recommended Length for MM Fiber:</b>	1 mile (with no more than 6.4 dB/mile cable attenuation)
<b>Max. Recommended Length for SM Fiber:</b>	12 miles (with no more than 1.66 dB/mile cable attenuation)
<b>Baud Rate:</b>	38,400 Baud

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**FIBER OPTIC CONVERTER MODULE (FOCM)  
SPECIFICATION (Continued)**

<b>Temperature Range:</b>	0° to 50°C
<b>Humidity Range:</b>	0 to 93% RH, non-condensing
<b>Enclosure Dimensions (H x W x D):</b>	7-1/2 x 12-3/4 x 2-3/4 (in.) 191 x 324 x 70 (mm)

Digital Alarm Communicator Transmitter – DACT

The communication capabilities of the ARIES NETLink 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). An ARIES NETLink 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)  
SPECIFICATION**

<b>Number of Cards:</b>	Max 1 per control unit
<b>Operating Voltage:</b>	24 VDC
<b>Operating Current:</b>	37 mA
<b>Electrical Interface:</b>	PSTN line using a RJ45X phone jack
<b>Supported Protocols:</b>	SIA DC-05-1999.09 Ademco Contact ID SIA DC-03-1990.01 (R2003.10)
<b>Compatible Digital Alarm Communicator Receivers (DACRs):</b>	Sur-Gard System I, Sur-Gard System III and Osborne Hoffman Model 2000E

Internet Communications Module – ICM

The Internet Communications Module (ICM) can be used to access the ARIES NETLink 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 ARIES NETLink Control Unit to report as a slave device via the Modbus TCP/IP Protocol to a master monitoring system for automated process control.

**INTERNET COMMUNICATIONS MODULE (ICM)  
SPECIFICATION**

<b>Operating Voltage:</b>	24 VDC
<b>Operating Current:</b>	42 mA
<b>Operating Environment:</b>	32° to 120°F (0° to 49°C) 0-90% RH, non- condensing
<b>Data Port:</b>	RJ45
<b>Supported Field Protocols:</b>	Ethernet - Local Area Network or Wide Area Network (LAN or WAN)

Modbus/BACnet Interface

The Modbus/BACnet Interface module provides protocol translation between the ARIES NETLink communication protocol and the communication protocol of an external monitoring system such as a building automation system. The Modbus/BACnet Interface module converts the ARIES NETLink Communications Protocol to BACnet Protocol. The unit is wall mountable in the same ARIES NETLink standard remote enclosure. The communication flow is one-way from the ARIES NETLink network to the external monitoring system. The single module supports systems with up to 4 SLCs. For systems including more than 4 SLCs, a second (Add-On) module is required.

**Modbus/BACnet SPECIFICATION**

<b>Electrical Connections:</b>	<ul style="list-style-type: none"> <li>• 6-pin Phoenix connector, RS232</li> <li>• 3-pin Phoenix connector, RS485</li> <li>• Ethernet-10/100 port</li> </ul>
<b>Enclosure Dims (H x W x D):</b>	7-1/2 x 12-3/4 x 2-3/4 (in.) 191 x 324 x 70 (mm)
<b>Operating Voltage:</b>	9-30VDC or 12-24VAC
<b>Operating Current:</b>	170 - 240 mA @ 12 VDC 100 - 140 mA @ 24 VDC 80 - 100 mA @ 30 VDC
<b>Operating Temperature:</b>	-40F to 187F (-40C to 85C)
<b>Humidity:</b>	5 - 90% RH, non-condensing
<b>Data Ports:</b>	RS232, Ethernet
<b>Max. RS232 Cable Length:</b>	50 ft. (15.2 m)
<b>Supported Baud Rate for BACnet MS/TP:</b>	9.6 - 76.8K baud



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## Enclosures

The ARIES NETLink 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"-spaced 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 Kidde 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 knock-outs 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 ARIES NETLink enclosure to enhance the Control Unit's aesthetic appeal after installation.

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<b>Material of Construction:</b>	16 gauge (0.053 in. or 1.35 mm) rolled sheet steel
<b>Enclosure Rating/ Degree of Protection:</b>	NEMA 1
<b>Color:</b>	Red
<b>Enclosure Dimensions (H x W x D):</b>	
• <b>3-Tier:</b>	31-1/2 x 14-3/8 x 5-3/8 (in.) 800 x 365 x 137 (mm)
• <b>2-Tier:</b>	22-1/2 x 14-3/8 x 5-3/8 (in.) 572 x 365 x 137 (mm)
<b>Dead Front Dimensions (H x W):</b>	
• <b>3-Tier:</b>	31-1/3 x 14 (in.) 796 x 356 (mm)
• <b>2-Tier:</b>	22-5/8 x 14 (in.) 567 x 355 (mm)
<b>Trim Ring Dimensions:</b>	
• <b>3-Tier:</b>	17-1/2 x 34-5/8 (in.) 444 x 879 (mm)
• <b>2-Tier:</b>	17-1/2 x 25-5/8 (in.) 444 x 651 (mm)

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## **CONTROL UNIT FEATURES**

### Seamless Integration with Specialty Detectors

SmartOne loop protocol interface cards enable the ARIES NETLink to seamlessly integrate with specialty detectors. AIR-Intelligence Air Sampling Smoke Detectors (ASD) and ORION XT High Sensitivity Smoke Detectors (HSSD) connect via Addressable Protocol Interface Cards (APIC) and PEGAsys Addressable Loop Modules (PALM) 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 ARIES NETLink Configuration Software (ACT8000) 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.

The ARIES NETLink provides programming flexibility to prohibit the silencing of releasing service signals via the <SIGNAL SILENCE> key and to set the maximum automatic delay for the release operation in accordance with ULC S527-11 requirements. A Releasing Service Signal Silence Station is available for purchase and should be installed near the control unit in these applications.

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 ARIES NETLink 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 ARIES NETLink 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 ARIES NETLink software includes an optional Battery Monitoring Mode which can track battery lifetime from the original install date and emit an audible signal on the replacement due date.

### Annunciator Bus

The Main Controller Board includes an RS485 bus which can communicate with up to a total of 31 Remote Annunciators. These include up to 15 RDCM Remote Display/Control Modules and up to 16 LED Annunciator Modules. This capability can be expanded to include up to 16 legacy ATM-R and ATM-L Annunciator Terminal Modules.

## 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 Kidde enclosures. The door is hinged on the left and includes the same lock and key used with all Kidde enclosures. Three conduit knockouts are provided at the top to accommodate either 1/2 inch or 3/4 inch standard electrical conduit fittings.

#### REMOTE BATTERY ENCLOSURE SPECIFICATION

<b>Accommodates:</b>	Up to 2 x 12 VDC 12-AH or 17-AH Battery (max 40 AH)
<b>Material of Construction:</b>	18 AWG (0.053 in. or 1.35 mm) rolled sheet steel
<b>Enclosure Rating/Degree of Protection:</b>	NEMA 1
<b>Color:</b>	Red
<b>Enclosure Dimensions (H x W x D):</b>	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 ARIES NETLink 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 ARIES NETLink Auxiliary Power Output or listed external power supply.



Figure 4. RDCM

#### REMOTE DISPLAY CONTROL MODULE (RDCM) SPECIFICATION

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

### Remote LED Annunciator Module - R-LAM

R-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. R-LAMs include three system-level LED outputs for Module Power, System Trouble and Signal Silenced. Also included are system-level input functional switches for Signal Silence and System Acknowledge/Self-Test commands. R-LAMs are mounted remotely from the main enclosure and utilize the same remote enclosures as do RDCMs. LED Annunciator Modules can also be mounted within the main ARIES NETLink enclosure for ULC/cUL applications.



Figure 5. R-LAM

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## REMOTE LED ANNUNCIATOR (R-LAM) SPECIFICATION

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

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## REMOTE ANNUNCIATOR ENCLOSURE SPECIFICATION

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

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## RETROFITTING LEGACY INSTALLATIONS

### Legacy PEGAsys Control Unit Retrofit Kit

Installed PEGAsys control units can be upgraded to ARIES NETLink level by utilization of a retrofit kit. The retrofit kit consists of ARIES NETLink electronics, power supply and a door for the installed PEGAsys enclosure. The kit enables the PEGAsys 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 PEGAsys enclosure while its window is aligned with the ARIES NETLink.

### **ARIES NETLink RETROFIT KIT (P/N 76-800400-001)**

The retrofit kit consists of the following parts:

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• <b>Base Plate</b>	qty. 1
• <b>Base Plate Bracket</b>	qty. 1
• <b>Replacement Door</b>	qty. 1
• <b>Retrofit Installation Hardware</b>	qty. 1
• <b>PSU with wiring harness to PMU Board</b>	qty. 1
• <b>PMU Installation Hardware Kit</b>	qty. 1
• <b>MCB, complete with UI and mounting hardware</b>	qty. 1
• <b>MCB Installation Hardware Kit</b>	qty. 1
• <b>ARIES NETLink System Installation/ Configuration Kit</b>	qty. 1

### **OPTIONAL ADD-ONS TO BOTTOM TIER OF LEGACY BACKBOX:** (room for only one from list below)

• <b>Card Cage Assembly with backplane, bracket, hardware and cables, P/N 76-800010-001</b>	qty. 1
• <b>Additional PSU/PMU Assembly with bracket and hardware, P/N 76-800030-003</b>	qty. 1
• <b>Standby Batteries</b>	one pair

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**Note:** \* The ARIES NETLink system is FM Approved, UL Listed, cUL Listed and approved/listed by various other agencies. For a complete description of approvals and listings please refer to the applicable installation instructions.

**ORDERING INFORMATION**

Part Number	Description
<b>ARIES NETLink SYSTEMS</b>	
76-800100-001	ARIES NETLink Control Unit-3T
76-800101-002	ARIES NETLink Control Unit-3T-ULC
76-800200-001	ARIES NETLink Control Unit-2T
76-800201-002	ARIES NETLink Control Unit--2T-ULC
76-800101-001	ARIES NETLink Control Unit-3T-ULC
76-800201-001	ARIES NETLink Control Unit-2T-ULC
76-800102-001	ARIES NETLink Control Unit-3T-Chicago
76-800202-001	ARIES NETLink Control Unit-2T-Chicago
<b>EXPANSION ENCLOSURES</b>	
76-800100-003	ARIES NETLink Expansion Encl-3T
76-800200-003	ARIES NETLink Expansion Encl-2T
<b>ENCLOSURE TRIM RINGS</b>	
76-800100-004	ARIES NETLink Trim Ring-3T Enclosure
76-800200-004	ARIES NETLink Trim Ring-2T Enclosure
76-800300-004	ARIES NETLink Trim Ring-RDCM Enclosure
<b>EXPANSION CARDS</b>	
76-800011-001	ARIES NETLink SLC Card
76-6800012-001	ARIES NETLink Relay Card
76-800013-001	ARIES NETLink R-NAC Card
76-800016-001	ARIES NETLink City Tie Card
76-800015-001	ARIES NETLink DACT Card
76-800017-001	ARIES NETLink ICM Card
76-800014-001	ARIES NETLink NIC Card
<b>EXPANSION CARD CAGE</b>	
76-800010-001	ARIES NETLink Card Cage Assy
76-800010-002	ARIES NETLink Backplane Board
<b>REMOTE ANNUNCIATORS/MODULES</b>	
76-800300-001	ARIES NETLink Remote Display Control Module
76-800300-002	ARIES NETLink Remote LED Annunciator
76-200004-032	ARIES NETLink ATM-L LED Driver Module
76-200005-032	ARIES NETLink ATM-R Relay Driver Module
<b>STANDBY BATTERIES (order 2 for 24V)</b>	
06-115915-013	Battery, 12 Vdc, 7-AH
06-115915-047	Battery, 12 Vdc,12-AH
06-115915-046	Battery, 12 Vdc, 17/18-AH
89-100052-001	Battery, 12 Vdc, 35-AH (requires large capacity battery cabinet)
76-600000-514	Large Capacity Battery Cabinet, Red
76-800030-006	ARIES NETLink Battery Tray

**ORDERING INFORMATION (Continued)**

Part Number	Description
<b>EXTERNAL MODULES</b>	
76-800300-005	ARIES NETLink FOCM w/enclosure, for MM fiber
76-800300-006	ARIES NETLink FOCM w/enclosure, for SM fiber
76-800300-015	ARIES NETLink FOCM Add-On Converter Channel, for MM fiber
76-800300-016	ARIES NETLink FOCM Add-On Converter Channel, for SM fiber
76-800300-007	ARIES NETLink BACnet Module with enclosure
76-800300-017	ARIES NETLink BACnet Module Add-On Card
<b>REPLACEMENT ENCLOSURES AND COVERS</b>	
76-800101-005	ARIES NETLink Dead Front-3T
76-800201-005	ARIES NETLink Dead Front-2T
76-800100-101	ARIES NETLink 3T Main Enclosure
76-800200-101	ARIES NETLink 2T Main Enclosure
76-800101-101	ARIES NETLink 3T Main Enclosure ULC
76-800201-101	ARIES NETLink 2T Main Enclosure ULC
76-800300-101	ARIES NETLink Remote Display Enclosure
<b>MCB &amp; KEYPAD/DISPLAY</b>	
76-800020-003	ARIES NETLink Replacement LAM Board
76-800020-001	ARIES NETLink Main Controller Board
76-800020-002	ARIES NETLink Keypad-Display
<b>POWER SUPPLIES</b>	
76-800030-001	ARIES NETLink PSU 120-240VAC 5.4A without harness to PMU Board
76-800030-002	ARIES NETLink Power Supply, 120-240VAC 5.4A with harness
76-800030-004	ARIES NETLink PMU Board
76-800030-003	ARIES NETLink Add -on Power Supply/PMU Assembly
76-800030-005	ARIES NETLink PMU Assy Mounting Bracket
76-800030-007	ARIES NETLink PMU Fuse Kit
<b>MISCELLANEOUS</b>	
76-800000-008	ARIES NETLink Installation Configuration Kit
76-800000-001	ARIES NETLink Installation-Hardware Universal
76-800000-004	ARIES NETLink Releasing Diode Kit
76-800500-001	ARIES NETLink Chicago Control Box
76-800000-002	ARIES NETLink Main Plexiglass Window
76-800000-003	ARIES NETLink R-LAM Plexiglass Window
76-800000-005	ARIES NETLink Bezel-Enclosure Door
76-800000-006	ARIES NETLink Harness Enclosure-to-Enclosure
76-800000-007	Language kit includes operator instructions, wiring diagram and interior door label in French Canadian, Portuguese and Spanish

**ORDERING INFORMATION (Continued)**

Part Number	Description	
76-800000-009	ARIES NETLink Multi-Loop Seismic Conversion Hardware Kit for Enclosures	
76-800000-010	ARIES NETLink Multi-Loop Seismic Conversion Hardware Kit for Large Capacity Battery Cabinet	
76-800000-012	Overlay that converts text (non-LCD) on User Interface to Canadian French	
76-800000-013	Overlay that converts text (non-LCD) on User Interface to Portuguese	
76-800000-014	Overlay that converts text (non-LCD) on User Interface to Spanish	
70-600000-100	Hand-Held Programmer	
<b>RETROFIT KIT (order P/N 76-800400-001)</b>		
The Retrofit Kit consists of the following parts:		
	<u>Qty.</u>	
76-800020-001	ARIES NETLink Main Control Unit (MCB) PCB with user interface, communication and power harnesses to PMU	1
76-800030-004	Power Management Unit Board	1
76-800030-002	Power Supply Unit with wiring harness to PMU	1
	Base Plate	1
	Base Plate Bracket	1
	Replacement Door and Window Assembly	1
	Installation Hardware	
	#6 nuts	4
	#8 nuts	2
	#10 nut	1
	Self-threading screw	1

**COMPATIBLE DEVICES**

**SmartOne SLC 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)

**SmartOne SLC DEVICES**

Part Number	Description
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)
77-297103-000	PEGAsys Addressable Loop Module (Fits in ORION XT Detector)
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)
70-600000-001	Remote Releasing Module (standard mount)
70-600000-002	Remote Releasing Module (in-cabinet mount)
76-333002-001	APIC for AIR-Intelligence ASDs
84-330002-001	Addr. Dual Action Pull Station with integral Model AI Addressable Monitor Module
84-878752-010	Suppression Abort Station (requires a Model AI Addressable Monitor Module)
84-878752-110	Abort Station for ULC applications (requires Model AI Addressable Monitor Module)
76-800600-101	Canadian Releasing Service Signal Silence Station (includes Faceplate with Key Switch, Backbox, and N.O. Model AI Addressable Monitor Module)

**RELEASING DEVICES**

Part Number	Device "On" Time	Max. per Circuit
890181	Momentary	1
895630	Momentary	1
899175	Momentary	1
87-120099-001	Momentary	1
90-487100-001	Momentary	1
48650001	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
06-118329-001	Steady	1
Marioff D21070	Steady	1

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**RELEASING DEVICES**

<b>Part Number</b>	<b>Device "On" Time</b>	<b>Max. per Circuit</b>
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
83-132500-500	Momentary	1
83-131082-001	Momentary	1

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