

FenwalNET 2000 SL

Single-Loop Fire Alarm/ Suppression Control Unit



A UTC Fire & Security Company

F-74-200

FEATURES

- UL, CSFM, MEA Listed/FM Approved
- Peer-to-Peer Networking (to 32 nodes)
- Remote LCD Display and Display/Control Modules
- Password Protected Access
- Distributed Intelligence Architecture
- Full Analog Reporting from SmartOne™ Smoke/Thermal Detectors
- Total and Easy Field Programming Using Windows™-Based Configuration Software
- Interface to AnaLASER® II High Sensitivity Smoke Detection Systems using AnaLASER II Interface Module (AIM) or Intelligent Interface Module (IIM)
- Interface to AlarmLine™ Linear Heat Detection Systems Using the Addressable AlarmLine Module (AAM)
- 80-Character Alphanumeric Display
- 1024 Event History Log
- Up to 255 Loop Detection/Monitor/Control Points

DESCRIPTION

The FenwalNET 2000™ is a microprocessor based networkable fire protection control system designed for use with the exclusive FenwalNET series of Intelligent SmartOne™ detectors and devices. The FenwalNET system operates within a unique "distributed intelligence" architecture that distributes the processing power throughout all system components. This "smart" architecture includes a microprocessor, memory, and software in each system component providing a major advance in system operational speed and reliability.

The FenwalNET 2000 utilizes FenwalNET BIP (Broadcast Index Polling) protocol for signaling line circuit (SLC) device communications. BIP reduces high speed data communication traffic, reducing the risk of interference and providing these communications with high level immunity to EMI and RFI. As a result, up to 255 Intelligent FenwalNET SLC devices can be connected to the single Class B, Style 4 (2-wire) or Class A, Style 6 (4 wire) communication circuit. The field wiring can be "T" tapped or branched in Class B, Style 4 (2-wire) configuration. BIP protocol is so robust that existing detection loop wiring can be reused in retrofit installations.

All of the 255 addressable input/output devices can be in alarm and operated at the same time. With this critical feature, even a major fire event involving a large number of detectors can be reported and logged by the system.



The FenwalNET 2000 SLC provides unique FailSoft™ operation, a redundant feature which allows field devices to report an alarm even in the unlikely event of a failure in the SLC controller or the main microprocessor. Under an alarm condition, the SLC devices would sense the loss of communications with the controller and automatically revert to the FailSoft mode of operation. Redundant circuitry in the control unit, independent of microprocessor operation, would then report a zone alarm. Thus alarm reporting capability is maintained without requiring costly processor redundancy.

FenwalNET 2000 is completely field configurable. The FenwalNET Configuration Software (FCS) is a Windows™ based program which allows the installer to upload/download system configuration information, interface to system menus, and test the system from a laptop computer.

The Fenwal FCS software, coupled with the optional output modules for Signaling, Agent Release, Control Relays and Municipal Tie, allows the installer to customize the system for new or retrofit applications.

All input/output assignments are field programmed using a unique Event Output Control (EOC) Logic—a programming language that is simple to learn and use. Utilizing this language, any single or combination of input events can be related to one or several outputs.

Real Time Controls (RTC) are available for a variety of time/date sensitive operations: Control Relays, Detection Sensitivities, Time of Day, Day of Week, Weekend, Month and Holiday functions.

A 1024 event history buffer provides a record of events by time and date in nonvolatile memory. This event record is retained, even if AC and battery power are lost. Using the system menus, an operator can request a display or print-out of 1 to 1024 of the most recent events from the history file to reconstruct the events leading to a fire.

The sensitivity level of Fenwal SmartOne™ smoke and thermal detectors remains constant over time. The smoke detectors employ drift compensation using intelligent microprocessor-based technology to continuously analyze and adjust the detector sensitivity offset to compensate for contaminants that may build up in the sensing chamber over time. They have the ability to distinguish between a build up of contamination and an actual fire condition. Once contamination has reached a level for which the detector can no longer compensate, a system alert signals that detector service is required.

COMPONENT DESCRIPTION

The FenwalNET 2000 Control Unit consists of several major subassemblies: the Receiver/Transmitter Module, a Networkable Central Control Module, a Control and Display Assembly, a Power Supply and an Enclosure. Optional output modules can be added to the base system to increase system functionality. (See individual data sheets for complete descriptions.)

The Receiver/Transmitter Module (RX/TX)

The RX/TX (P/N 74-200005-001) functions as the data interface between the field devices and the Central Control Module (CCM). The RX/TX receives status changes from field devices, then reports these changes to the CCM for display. The RX/TX is capable of communication with up to 255 addressable input and/or 255 addressable output devices with Class B, Style 4 or Class A, Style 6 supervision.

Class A, Style 7.0 supervision is possible with the use of Loop Isolator devices. There are three versions of loop isolators available: single-gang mount, 6SB detector base mount and RX/TX module mount. These allow the installer needed flexibility for customized applications.

Class B, Style 4 initiation circuitry permits T-tapping or branching circuitry. The number of T-taps should be a function of sound wiring practice. The distance of the RX/TX Module SLC to field devices can extend up to 10,000 feet.

The Central Control Module (CCM)

The CCM (P/N 74-200008-X01) is the heart of the system and contains the Main Processing Unit, Programmable Memory, Real Time Clock, Watch Dog Timer, RS-232C Ports and Control and Display Assembly. In addition, the CCM provides network and remote display interfaces. The CCM receives data from the RX/TX, processes the data based on pre-programmed instructions, and transmits commands to the field devices and the display unit.

The 80-Character Alphanumeric Display

This display shows system and field device status. Control switches are provided for acknowledging or silencing alarms and resetting the system. In addition, the scroll switch allows the operator to examine multiple alarms and troubles in the system.

RS-232C Ports

Two RS-232C ports are available to remotely monitor and display information and provide the programming interface. Keyboard commands from a personal computer using FCS software may be used to access and query the system. A multilevel password protection feature in the FCS protects the system from unauthorized access.

AnaLASER® II Intelligent Interface Module (IIM)

The IIM is a communications link, networking up to 128 AnaLASER II detectors and reporting alarms and troubles. A computer equipped with a modem and running LaserNET 3.0 software can communicate with the IIM through a local PC or, using an optional dedicated telephone line, with a remote PC. This allows detectors to be completely configured and monitored from a central location. Using the same optional telephone line, the IIM can be programmed to dial out to a remote PC on the occurrence of any system alarm or trouble condition. (Refer to datasheet 89.253 for more information.)

Output Modules

Output modules are designed to control auxiliary devices from the control unit. The output modules plug into an I/O motherboard assembly. Up to sixteen I/O modules can be installed in the system but no more than 8 of any one type and only 1 City Tie Module may be used.

Signal Audible Output Module

The Signal Audible Output Module (P/N 74-200003-001) provides four (4) Class B, Style Y or two (2) Class A, Style Z reverse-polarity signal outputs. These circuits are supervised for open and short circuit conditions. Each output is electrically power-limited, negating the need for fuses.

Each signal circuit may be programmed to operate in one of the following modes:

1. Continuous
2. 60 Beats Per Minute
3. 120 Beats Per Minute
4. Temporal Pattern

Agent Release Module

The Agent Release Module (P/N 74-200001-001) is designed for actuating various types of fire suppression systems, including: FM-200, FE-13, Halon, and Carbon Dioxide. It is UL Listed/FM Approved for actuating most deluge and pre-action systems. The module provides one independently programmable

supervised releasing circuit for operating a suppression system and three Class B, Style Y signal output circuits. Each signal circuit is capable of providing 2 Amps @ 24 Vdc.

Relay Output Module

The Relay Output Module (P/N 74-200004-001) is designed to provide the system with four individually programmable SPDT Form "C" relays. Relay contact ratings are 2 Amps @ 24 Vdc or 1 Amp @ 120 Vac. The relay can be used to control building functions such as HVAC and/or power shutdown during fire conditions.

City Tie Module

The City Tie Module (P/N 74-200002-001) is designed to provide the system with a means of transmitting alarm and trouble conditions to a municipal or remote station receiver. The FenwalNET 2000 City Tie Module supports reverse polarity, shunt and local energy output styles.

Power Supply/Charger Assembly

The Power Supply/Charger Assembly (P/N 74-200009-010) is designed to provide expandable 24 Vdc power to the FenwalNET 2000 system. The system power supply/charger assembly provides 4 Amps @ 24 Vdc power and can be expanded to 8 Amps @ 24 Vdc power with the use of an auxiliary power supply unit (P/N 74-200009-002). The FenwalNET 2000 system can support up to 8 power supply/charger assemblies with auxiliary power supply units for a maximum of 64 Amps @ 24 Vdc power. The power supply communicates status to the CCM over the I/O bus.

AC input power is monitored by a threshold circuit that transfers to standby battery to maintain system operation when input power is lost. The 24, 60 or 90 hour standby power is provided by a set (or sets) of sealed lead acid batteries that can be housed in the main enclosure or an optional battery enclosure. The power supply module charger circuit maintains these batteries in the fully charged state. The module supervises system batteries for connection and, upon disconnection, the system will signal a trouble condition.

The power supply provides two auxiliary 24 Vdc power outputs with a maximum of 1.5 Amps each. These auxiliary outputs can be programmed for resettable or non-resettable operation. A power supply trouble relay contact (Form C) is provided to allow remote indication of power supply trouble conditions.

ENCLOSURE

The control unit enclosure is NEMA 1 and is designed to be surface or semi-flush mounted. The enclosure accommodates system components and (2) 24-hour standby batteries up to 33 AH in size. In larger applications where system functionality needs to be expanded, the systems

allows expansion of I/O modules and power supplies. The expansion enclosure allows both I/O motherboards and auxiliary supplies to be added, boosting the I/O module capacity to 16 modules and the 24 Vdc Power capacity to 64 Amps.

DISTRIBUTED INTELLIGENT DEVICES

FenwalNET 2000 is a distributed intelligent fire protection control unit whose computing power is spread across the system. Each field device has the ability to make decisions and store information. Status, internal supervision, alarm verification and alarm tests are made within the device. Field devices can transmit various analog data in a digital format, such as percent smoke obscuration level, voltage level of the devices, internal power supply, and voltage level of the SLC. Nine types of distributed intelligent field devices are available: photoelectric, ionization and thermal detectors, addressable contact inputs/outputs, addressable signal output, AnaLASER II interface and addressable AlarmLine modules. (See individual data sheets for complete description.)

PROGRAMMING LANGUAGE

The FenwalNET 2000 System incorporates a programming language that is unique and easy to use. The programming language, Event Output Control (EOC) and Real Time Control (RTC), is versatile and can easily accommodate any fire alarm logic application. Programs can be generated and modified using FCS software and then uploaded to the FenwalNET 2000 Control Unit. Programming is password protected. The software is accessed via an easy-to-follow software menu tree which leads the operator to the correct programming location.

The EOC Programming relates addressable input devices to addressable output devices or output modules using standard logic operators. In addition, timers are available to delay output operation up to 60 seconds. Cross-zoning and grouping of inputs can also be programmed into the system.

The RTC program language permits control of events via a real time clock. Events may be programmed to occur on an hourly, daily, weekly, or monthly time control basis. Alarm and pre-alarm threshold levels of all or specific devices may be increased or decreased in sensitivity within the UL limits under RTC control. In addition, addressable relay devices may be controlled via this program.

The optional Alarm Verification feature can be used when detectors are in environments with transient smoke conditions. A 10- to 60-second delay may be programmed into the system that permits additional verification before initiating the alarm sequence.

MENU OPERATION

The Main Menu tree of the FenwalNET 2000 consists of four categories:

1: ISOLATE 2: LIST 3: SET 4: TEST

Using the integral keypad, the operator simply selects 1, 2, 3, or 4 and presses RETURN to access the needed category. Each category is then further defined, leading the operator through the menu, from general to specific functions. The password protection feature limits access to authorized personnel only.

The ISOLATE Menu

The ISOLATE menu category permits the operator to isolate field devices and output modules. Isolating any device immediately causes the system to display a trouble condition, initiates an audible trouble signal, enters an event in the history buffer and generates a printout with the time, date and device isolated. This feature is typically used to temporarily isolate auxiliary devices during a system test.

The LIST Menu

- The LIST menu category permits the operator to list various system parameters. All lists are real time system conditions and may be printed with the time and date. Typical lists are:
- Detector Smoke Level
- Active Alarms
- Active Trouble Conditions
- Event Output Control (EOC) Program
- Line Voltage (checks field wiring integrity)
- Real Time Control (RTC) Programming

The SET Menu

The SET menu category permits the operator to program various system parameters. A few examples are:

- SET Time and Date
- ENABLE/DISABLE RTC Program
- SET Alarm Threshold Level
- SET Pre-alarm Threshold Level
- ENABLE/DISABLE RS-232 Ports
- SET Alarm Verification

The TEST Menu

The TEST menu category allows the operator to test various system components. The test options are:

- Alarm Test of Detectors
- Battery Test

- Walk Test
- Alarm Simulation Test

These unique functions allow the operator to test several aspects of system operation. When commanded, the Alarm Test feature will cause a detector to be tested. The results will be displayed at the control unit. This unique test feature actually simulates the presence of smoke in the detector sensing chamber and verifies that a response is received from the device.

The Battery Test function places the batteries of the specified power supply to be tested under an actual load and displays the voltage measurements taken to verify battery capacity.

The Walk Test function allows service personnel to select desired detection devices to be tested and then physically walk the installation, activating each of the specified detectors, receiving a pulse from corresponding signal outputs as verification of test receipt. This feature helps to reduce system service costs by allowing one service person to test the entire system.

The Alarm Simulation Test allows the operator to simulate the activation of an input and verify the programmed output has occurred. This function is specifically designed for use during system commissioning, allowing a single person to perform the test.

ORDERING INFORMATION

Part Number	Description
74-200000-X01	Control Unit Assembly
74-200001-001	Release Module
74-200002-001	City Tie Module
74-200003-001	Signal Audible Module
74-200004-001	Relay Module
74-200036-500	Network Interface Card Kit
74-200005-002	RX/TX Multi-Loop Module

TECHNICAL INFORMATION (BASE SYSTEM)

Input Voltage:	120/220; 50/60 Hz
Input Current:	2 Amps (maximum)
Output Rating:	24 Vdc @ 4 Amps; Expandable to a maximum of 64 Amps.

Maximum Output Modules:	16 (maximum of 8 of any type and only one City Tie Module per system)
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Maximum Intelligent Devices:	255
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SPECIFICATIONS

Refer to *The Engineer's Guide to Mission Critical Fire Protection* CD-ROM, P/N DSK-019, Rev. B2.

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