PEGAsys™

Multi-Loop Intelligent Suppression Control System

Kidde Fire Systems

Effective: April 2002

76-028

FEATURES

- ***UL Listed***
- ***CSFM Approved***
- ***MEA Approved***
- ***Peer-to-Peer networking (to 32 nodes)***
- ***Remote LCD display and display/control***
- ***Distributed intelligence architecture***
- ***Password Protected Panel Access***
- ***Full analog reporting from SmartOne® smoke/thermal detectors***
- ***Up to 8 loops per system***
- ***Total and easy field programming using Windows®-based configuration software***
- ***Interface to AlarmLine™ Linear Heat Detection system using the Addressable AlarmLine™ Module (AAM)***
- ***FailSoft™ default operation***
- ***80 character alphanumeric display***
- ***6100 event history log***
- ***Up to 255 loop detection/monitor/control devices per loop***

DESCRIPTION

The Kidde® PEGAsys™ Multi-Loop is a microprocessor based networkable fire protection system designed for use with the exclusive series of Intelligent SmartOne™ detectors and loop devices. The PEGAsys system operates within a unique "Distributed Intelligence" architecture which distributes the processing power throughout all system components. This "Smart" architecture which has a microprocessor, memory and software in each system component, brings major advances in system precision and reliability.

The PEGAsys features BIP (Broadcast Index Polling protocol) for loop device communications. BIP features a high immunity to EMI and RFI. As a result, up to 255 Intelligent loop devices can be connected to the Style 4 (2-wire) or Style 6 (4-wire) communication loop. Each loop controller supervises each connected smart device through direct communication. The Kidde PEGAsys Multi-Loop has the ability of supporting eight loop controllers which provides a system maximum of 2040 smart devices. The field wiring can be "T" tapped or branched in Style 4 (2-wire) configuration. The BIP protocol is so robust that in most all retrofit installations the existing code compliant detection loop wiring can be reused.

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

Each of the PEGAsys Multi-Loop Signaling Line Circuits (SLC) features a unique FailSoft™ operation. This provides a redundant feature which allows field devices to report alarm even in the unlikely event of a failure in the system's loop controller or communication microprocessors. In an actual alarm, the devices would sense the loss of communications with the loop controller and revert to the FailSoft mode of operation. Redundant circuitry in the panel, independent of microprocessor operation, would then report a zone alarm for each communication loop. Thus alarm reporting capability is maintained without costly requirement for processor redundancy.

The PEGAsys is totally field configurable. The PEGAsys Configuration Software (PCS) 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 PC or equivalent.

Kidde's PCS Software coupled with the optional output modules for Signaling, Agent Release, Control Relays and Municipal tie allow the installer to tailor the system for new or retrofit applications.

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

A 6100 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. From the

system menus, the operator can request a display or printout of the most recent events in order to reconstruct the events leading to a fire or an unwanted alarm. From 1 to 6100 of the most recent events may be requested from the history file. The operator does not have to view or print the entire file in order to examine relevant information.

The SmartOne smoke and thermal detectors employ drift compensation. Intelligent SmartOne microprocessor-based detectors continuously analyze and adjust their sensitivity to compensate for contaminants that may build in the sensing chamber over time. They have the ability to distinguish between a build up of contamination and a real fire condition. Therefore, the sensitivity level of the SmartOne Smoke Detector remains constant over time. Once the detector contamination has reached the level in which it can no longer compensate, the system alerts that detector service is required. Detectors are serviced based on actual requirements, not on a service schedule.

COMPONENT DESCRIPTION

The Kidde PEGAsys Multi-Loop is comprised of several major subassemblies: the Receiver/Transmitter Module, Central Control Module, Control and Display Assembly, Power Supply, Multi-loop I/O motherboard, and enclosure. Optional I/O modules can be added to the base system to increase system functionality. (See individual data sheets for complete descriptions.)

The Central Control Module (CCM) (P/N 76-100008-600): The heart of the system, the CCM contains the Main Central Processing Unit, Programmable Memory, Real Time Clock, Watch Dog Timer, RS-232C Ports and Control and Display Assembly. Additionally, the CCM provides network and remote display interfaces. The Central Control Module receives data from the RX/TX, processes the data based on pre-programmed instructions, and transmits out commands to the field devices and functional display panel.

The 80-Character Alphanumeric Display: Reveals system and field device status. Control switches are provided for acknowledging and silencing alarms and resetting the system. The scroll switch allows the operator to examine multiple alarms and troubles in the system and the drill switch allows the user to sound all programmed alarm outputs.

Two RS-232C Channels: Available to remotely monitor and display information and provide the programming PC interface, the keyboard commands from a personal computer with the PCS Program may be used to access and control the system. A multilevel password protection feature protects the system from unauthorized access.

The Receiver/Transmitter Module (RX/TX) (P/N 76-100005-002): Functions as the data interface between the field devices and the Central Control Module. The Multi-Loop I/O motherboard provides the ability to connect up to eight RX/TX modules. The RX/TX receives status changes from field devices and reports these changes. Each RX/TX is capable of communication with up to 255 addressable input and/or 255 addressable output devices with NFPA Style 4, Style 6 or Style 7 supervision.

Style 4 initiation circuitry permits T-tapping or branching circuitry. The amount of T tapping should be a function of sound wiring practice. Style 6 wiring provides the RX/TX with the ability to transmit data and power bi-directionally if a break occurs in the PC line. The maximum distance of the Receiver/Transmitter Modules PC line to field devices can be up to 10,000 feet.

Style 7.0 wiring is possible with the use of Loop Isolator devices. There are three versions of the loop isolators available allowing the installer flexibility in different applications. These are: single gang mount, 6SB detector base mount and RX/TX module.

Multi-Loop I/O Motherboard (P/N 76-100017-001): Designed to accept up to eight RX/TX modules or provide connections for up to seven I/O modules. The motherboard is mounted to standoffs on the back of the enclosure. It distributes the system's 24 Vdc power and CCM-RX/TX communications for the RX/TX modules and I/O bus communications to the I/O modules.

Output Modules: Designed to control auxiliary devices from the Central Control Panel. The output modules plug into the I/O motherboard assembly within the Central Control Panel enclosure. Up to seven output modules may be installed, and can be any combination of the following:

Signal Audible Output Module (P/N 76-100003-001): Provides four (4) Style "Y" or two (2) 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: Continuous, 60 Beats Per Minute, 120 Beats Per Minute or Temporal (Code 3) Pattern.

Agent Release Module (P/N 76-100001-001):Designed for actuating various types of fire suppression systems, including FM-200®, FE-13™, Halon, and Carbon Dioxide. The release module is compatible for use with all Kidde solenoid based release devices, and is UL Listed and FM Approved for activation of the most popular deluge and pre-action sprinkler systems. The module provides one independently programmable supervised releasing circuit for operating separate suppression systems and three independently programmable, Style "Y" Signal Output Circuits. Each signal circuit is capable of providing 2 Amps of 24 Vdc power.

Relay Output Module (P/N 76-100004-001):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 Notification Module (P/N 76-100002-001):

Designed to provide the system with a means of transmitting alarm and trouble conditions to a central station receiver. The Kidde PEGAsys Multi-Loop City Tie Module supports reverse polarity, shunt and local energy output styles.

Power Supply/Charger Assembly (P/N 76-100009-010)**:**

Designed to provide expandable 24 Vdc power to the PEGAsys system. The base system power supply/charger assembly provides 4 Amps of 24 Vdc power which can be expanded to 8 Amps of 24 Vdc power with the use of an auxiliary power supply unit, P/N 76-100009-002. The PEGAsys system can support up to 8 power supply/charger assemblies with auxiliary power supply units for a maximum of 64 Amps of 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 which, when necessary, transfers to standby battery to maintain system operation when input power is lost. The 24, 60 or 90 hour standby power is provided by set(s) of sealed lead acid batteries which can be housed in the main enclosure or an optional battery enclosure. The power supply module's 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.

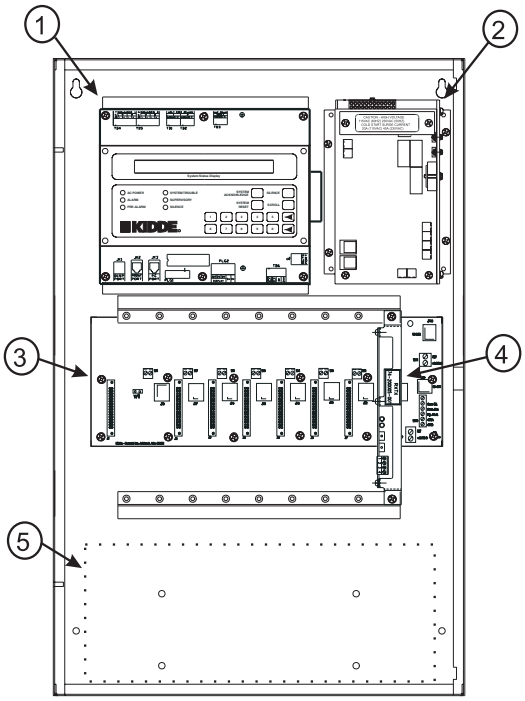
The power supply provides two auxiliary 24 Vdc power outputs with a maximum of 1.5 Amps each. These auxiliary outputs can be programmed for resetable or non-resetable operation. A power supply trouble relay contact (Form C) is provided to allow remote indication of power supply trouble conditions.

ENCLOSURES

The Central Control Panel enclosure is NEMA 1 and is designed to be surface or optionally semi-flush mounted. The enclosure accommodates all 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 both the I/O module capacity and the Power supplies. The expansion enclosure allows both an I/O motherboard and auxiliary supplies to be added boosting the I/O module capacity to 23 modules and 24 Vdc power capacity to 64 Amps. There can be up to eight (8) I/O modules of any one type. However, only one City Tie module per system may be used.

DISTRIBUTED INTELLIGENT DEVICES

PEGAsys is a distributed intelligent fire alarm system whose computing power, is spread across the system. The field devices have the ability to make decisions and store information. Status, internal supervision, alarm verification and alarm tests are processed within the device. Field devices 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 communication channel. Nine types of distributed intelligent field devices are available: Photoelectric, Ionization and Thermal Detectors, Addressable Contact Inputs/Outputs, Addressable Signal Output and Addressable AlarmLine Modules. (See individual data sheets for complete descriptions.)



1 Central Control Module (CCM)

2 Power Supply Module

3 ML Motherboard

4 Receiver/Transmitter (RX/TX) Module

5 Battery Space (Fits Two 33 AH Mzx)

Figure 1. PEGAsys System Line Drawing

PROGRAMMING LANGUAGES

The Kidde PEGAsys Fire Protection System incorporates a programming language that is unique, easy to understand and use. The programming language, Event Output Control (EOC) and Real Time Control (RTC) are very versatile and can easily accommodate any alarm logic application. Programs can be generated and modified using the PCS program and uploaded to the Kidde PEGAsys Multi-Loop Control Panel. Programming is password protected.

The software is accessed via an easy-to-follow software menu tree which leads the programmer or operator from the general to the specific item requested.

The Main Menu of the PEGAsys Menu Tree consists of four categories:

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

To access a category, the operator simply selects 1, 2, 3 or 4 and presses RETURN, using the system's integral keypad. Each category is then further defined, leading the operator through the software, from general to specific functions. The password protection feature limits access to authorized personnel only.

The ISOLATE Menu category permits the operator to isolate field devices and output modules. Isolating any device immediately places the system into a trouble condition, initiating an audible trouble alarm and 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 category permits the operator to list various system parameters. All lists are real time actual system conditions which are displayed and printed with the time and date. Typical lists are:

- Detector Smoke Level
- Active Alarms
- Active Trouble Conditions
- Event Output Control Program
- Line Voltage (checks field wiring integrity)
- RTC–Real-Time Control Programming

The SET Menu category permits the operator to program various system parameters within the system. Examples are:

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

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

- Alarm Test of Detectors
- Lamp Test
- Battery Test
- Walk Test
- Alarm Simulation Test

These unique test functions allow the operator to test aspects of system operation. The Alarm Test feature will, upon command, cause a detector to be tested, and results will be displayed at the Central Control Panel. This unique test feature actually simulates the presence of smoke in the detector's sensing chamber and verifies that a alarm 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 display's the voltage measurements taken during the loading to verify battery capacity.

The walk test function allows one service person to select desired detection devices to be tested and then walk the installation activating each of the specified detectors and 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 commissioning testing.

TECHNICAL INFORMATION (BASE SYSTEM)

Input Voltage:	120/220; 50/60 Hz
Input Current:	2 Amps (MAX.)
Output Rating:	24 Vdc; 4 Amps; Expandable to a Maximum of 64 Amps.
Max. I/O Modules:	23 (Maximum of 8 of any type) except there is only one City Tie per system
Maximum Intelligent Devices:	255; Expandable to a Maximum of 2040

ORDERING INFORMATION

Part Number	Description
76-100000-600	Multi-Loop Control Unit Assembly
76-100005-002	Multi-Loop RX/TX Module
76-100001-001	Release Module
76-100002-001	City Tie Module
76-100003-001	Signal Audible Module
76-100004-001	Relay Module
76-100007-001	I/O Motherboard
76-100036-500	Network Interface Card Kit

SPECIFICATIONS

See Kidde specification 76-013 for complete specifications on the Kidde PEGAsys fire alarm control system.

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76-028 04/02 Kidde-Fenwal Inc. Printed in USA

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