Sentinel NET Detection and Control System

FEATURES

- *FM Approved: Including Environmental and Shock & Vibration Testing*
- *Rugged, Die-Cast Aluminum IP66/NEMA4X Enclosure*
- *Two Detection Circuits: Mixed Heat, IR, and Smoke*
- *Pre-terminated Cables Using Industry Standard Deutsch Connectors*
- *High-Quality Dimmable Alphanumeric Display*
- *Triple-R Protection - False Alarm Immunity*
- *Program Features Via Laptop Computer (USB Interface)*
- *Two Alarm Relays and One Trouble Relay*
- *Flexible Release and Shutdown Delay Options*
- *Two Releasing Circuits and Separate Supervisory Circuit*
- *Direct Discharge of Up to 6 Cylinders Per Releasing Circuit —Maximum 72 Cylinders!*
- *4,000 Event Log*

DESCRIPTION

The Kidde Fire Systems Sentinel NET Detection and Control System is specifically designed to protect large haulers, graders, shovels, trucks, and other vehicles/machines critical to operations. The Sentinel NET System uses a variety of technologies to detect fires. The Sentinel NET System is designed to reduce the cost of ownership and offer fast installation while minimizing the required time to maintain the system. The Sentinel NET has met an exhaustive battery of tests, including shock and vibration, giving it full FM approval.

The Sentinel NET System package offers fire protection with manual activation and/or automatic heat and smoke detection. Cylinder actuation can be either direct electric, using a safe protractor device, and/or via pressure actuation using a protractor operated nitrogen actuator.

SENTINEL SYSTEM COMPONENTS

Sentinel NET Interface Module (NIM)

The Sentinel NIM provides the interface through which the authorized personnel and the vehicle operator operate the system. It includes 3 buttons, 8 LEDs, and alphanumeric readout, providing operators constant access to system status. The system can be programmed or interrogated via the buttons on the Sentinel NIM, or through computer interface using the Kidde Sentinel Configuration Software.

The Sentinel NIM is powered from the CANbus network loop that interconnects it with the other modules. Up to two Sentinel NIMs can be employed on a single network, along with up to six NET Control Modules (NCMs). The system has an event log that records up to 4000 separate events, providing invaluable data for troubleshooting and/or incident investigation.
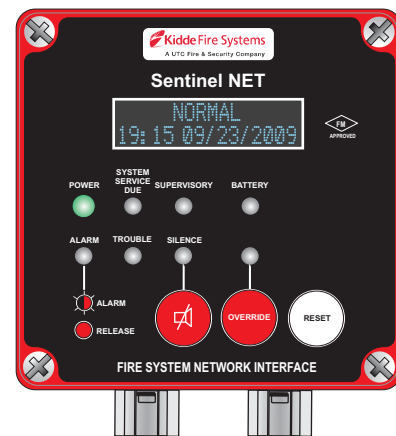

Figure 1. Kidde Sentinel NET

Sentinel NET Control Module (NCM)

While the Sentinel NIM is the interface, the Sentinel NCM is the heart of the system. Each Sentinel NCM provides 2 initiating circuits, 2 releasing circuits, a remote manual release circuit, 2 alarm relays, 1 trouble relay, 1 supervisory circuit, and a Notification Appliance Circuit (NAC).

The Sentinel NCM can be programmed for a variety of time delays, controlling engine shutdown and discharge of the suppression system. Programmability provides several features for actuation and control:

1. Single detection zone, single release
2. Single detection zone, dual release
3. Each detection zone controls applicable release
4. Cross-zoning, single release
5. Cross-zoning, dual release
6. Either detection zone, single release
7. Either detection zone, dual release

NiCad batteries are available for the NCM, and provide up to one hour of system operation after machine shutdown. This provides protection during one of the most dangerous times of the machine's life. When the battery voltage is too low, the **BATTERY** light flashes on the Sentinel NIM.

THE SENTINEL NET SYSTEM

The case is die-cast aluminum with a gasketed die-cast aluminum cover, making the whole assembly IP66/NEMA 4.

Both the Sentinel NCM and Sentinel NIM include Deutsch connectors, for all field wiring, network, inputs, and outputs.

Field cabling is pre-terminated with Deutsch connectors and the cables are available in a variety of lengths to fit any measurements and requirements. The power and relay cables are terminated only where they are plugged into a Sentinel NCM or Sentinel NIM.

The Sentinel NET system will operate up to six actuators per releasing circuit. If the actuators are applied directly to the cylinders, this allows a 12-cylinder system with a variety of time-delay options.

OTHER SENTINEL COMPONENTS

The following components are available to expand functionality of the Sentinel System:

Electric Remote Manual Release

The Electric Remote Manual Release, P/N 83-132455-000, connects directly into the Sentinel NCM via an IP-66 electrical connector. The assembly is IP66 and is terminated with input and output connectors. The release is "dual-action," requiring two actions to release the fire suppression system. It can be mounted anywhere required and there is no limit to the number of electric remote manual releases that can be put into a Sentinel NET system.

Pressure Switches

There are two types of pressure switches. Both operate from the nitrogen actuation lines when pressure actuating a system. The first can be used for engine shutdown, if applicable.

The second is the Actuation Monitor Switch, P/N 83-132510-525, used in a system that utilizes remote manual pressure release instead of, or in addition to, remote manual electric release. The Actuation Monitor Switch has an end-of-line device built in for proper supervision of the circuit. The Sentinel NET can be programmed for different responses, depending on the manual release type.

System Actuation

The system allows two types of cylinder actuation: pressure and electric.

Pressure Actuation

Remote System Actuator (RSA)

The Remote System Actuator, P/N 83-132514-000, provides the classic means of activating the Kidde Sentinel DCS or LS system. For automatic suppression, the RSA is electrically discharged, using an electric actuator. The non-explosive actuator is safe and easy to handle. In addition, the RSA includes a pull pin and push knob for manual activation of the system.

Mechanical Actuator

In addition to the RSA, a remote mechanical actuator can also be employed in the fire suppression package. These are often mounted at "ground-level," providing access to the system, without having to climb onto the machine. The mechanical actuator will operate up to 6 cylinders. Multiple mechanical actuators can be employed by using second-shot actuator assemblies.

Electric Actuation

The cylinder assemblies ship with actuators that can be activated both with pressure and electrically. When electrically activating a cylinder, the actuator is attached to the cylinder and connects to the releasing circuit.

Detection

Triple-R Protection

Both release circuits are protected by a triple failure safeguard system to protect against unwanted discharge. In order to release the suppression system(s), two release commands of opposing polarity must be combined with a third signal from the "watchdog" timer. This functionally protects against surges and transients that could cause the release of other less sophisticated control panels.

Detect-A-Fire

The Detect-A-Fire (DAF) is one of the most trusted heat detectors in the marketplace. Since the late 1940s, the DAF has proven time and again that it is the most reliable spot-type heat detector for rugged environments such as (among others) mining vehicles, machines, turbines, and conveyors.

Linear Heat Sensing Cable (LHS)

LHS Cable, P/Ns 83-100003-001, 73-200000-004, and 73-200000-005, is available in 100-meter reels. An LHS Base, P/N 83-132454-000, is used to interconnect the LHS cable with other detectors in the detection circuit. The base is IP66/NEMA 4 and has input and output Deutsch Connectors for the Initiating Circuit and sealed ports for the LHS. This allows insertion of the LHS cable anywhere in the detection circuit.

Infrared Detector (IR-1A)

The IR-1A detector, P/N 83-132450-000, is a dual-spectrum infrared sensor, providing flame detection in less than 100 milliseconds. For large, high-value machinery with high-pressure hydraulics, this fast detection provides the best of fire protection. In order to trip, the IR-1A must see both programmed spectrums of infrared light, including wavelengths specific to fire from hydrocarbon fuels and smoke. The range of the IR-1A, up to ~40 inches, makes this detector ideal for engine compartments, while maintaining reliable false-alarm immunity.

Smoke Detectors

The smoke detector base is a sealed unit (IP66/NEMA 4) that accepts both ionization and photoelectric detector heads. The base is pre-wired with Deutsch-terminated cables and can be installed anywhere in the initiating circuit. Smoke detectors are used in electrical cabinets on large shovels and other similar types of equipment.

Cabling

All cabling for the Sentinel NET system is pre-terminated using Deutsch DT series connectors, with the initiating (detection) cabling using DTM series. Detection cables are high-temperature wired, and jacketed. The power and relay cables are terminated only at one end for easy, low cost connections to appropriate contacts. All cables are IP66 or better.

For the releasing circuit, an inline assembly is used for multiple cylinder actuation where required, up to three cylinders.

Maintenance Bypass Switch

The maintenance bypass switch is wired inline with the releasing circuit. The purpose of this assembly is to enable bypassing the release of a suppression system, while maintenance and repairs are being performed on the machine. It is a key-switch device, and the key is removable in both active and bypassed positions. When a releasing circuit is bypassed, the circuit is open from the switch back to the panel, causing a "trouble" condition, while the circuit from the switch to the protractors is shunted to prevent static buildup and discharge.
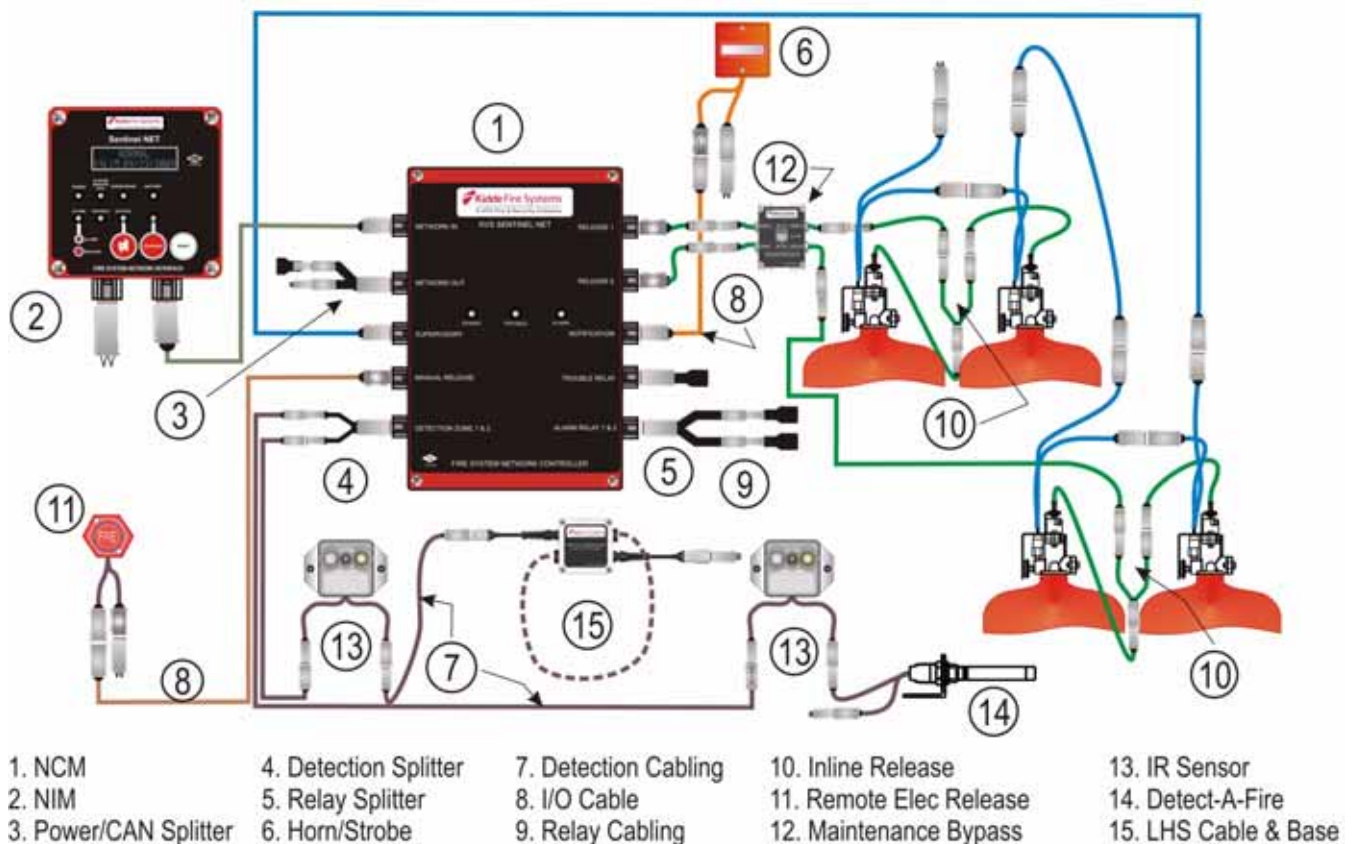

1. NCM	4. Detection Splitter	7. Detection Cabling	10. Inline Release	13. IR Sensor
2. NIM	5. Relay Splitter	8. I/O Cable	11. Remote Elec Release	14. Detect-A-Fire
3. Power/CAN Splitter	6. Horn/Strobe	9. Relay Cabling	12. Maintenance Bypass	15. LHS Cable & Base

Figure 2. Example of a Typical Sentinel NET System
(Individual systems will vary.)

ORDERING INFORMATION

Part Number	Component
83-132420-000	Network Control Module, Sentinel NET
83-132420-250	Replacement Rechargeable Battery for NCM
83-132430-000	Network Interface Module (NIM), Sentinel NET
83-132480-XXX	Cable, Power, 6, 10, 25, or 50 ft.*
83-132484-XXX	Cable, Network, 2, 3, 6, 10, 25, or 50 ft.*
83-132486-510	Splitter, Sentinel NET Detection
83-132486-520	Splitter, Sentinel NET Vehicle Power/PC Connection
83-132486-530	Splitter, Sentinel NET Relays
83-132487-600	Blanking Plug, Relay, Sentinel
83-132487-700	Blanking Plug, Relay Splitter, Sentinel NET
83-132487-400	CANBUS EOL KIT
83-132487-500	Shorting Plug, Releasing Circuit
83-132460-000	Horn/Strobe
83-132460-500	Backbox for Horn/Strobe
83-132461-001	Strobe
83-132461-500	Backbox for Strobe
83-132462-000	Horn
83-132462-500	Backbox for Horn
83-132482-XXX	Cable, Detection, 2, 3, 6, 10, 25, or 50 ft.*
83-132483-XXX	Cable, 2-pin I/O (Spv, Manual Rel., NAC, Release cct.), 2, 3, 6, 10, 25, or 50 ft.*
83-132485-XXX	Cable, Relay, 2, 3, 6, 10, 25, or 50 ft.*

ORDERING INFORMATION (CONTINUED)

Part Number	Component
83-132487-100	End of Line Device, Detection
83-132487-200	End of Line Device, MR/Sup/Not
83-132487-300	InLine Device, Release
83-132455-000	Remote Electric Manual Release
83-132483-500	Maintenance Bypass Switch
83-132450-000	Dual Spectrum Infrared Detector
83-131060-001	Mounting Bracket, Infrared Detector
83-132440-275	Detect-A-Fire, 275º F, Weathertight, indexed (with mounting bracket)
83-132440-360	Detect-A-Fire, 360º F, Weathertight, indexed (with mounting bracket)
83-132440-450	Detect-A-Fire, 450º F, Weathertight, indexed (with mounting bracket)
83-132440-600	Detect-A-Fire, 600º F, Weathertight, indexed (with mounting bracket)
83-100003-001	LHS Cable, 100 meters reel (328 feet), 350º F
83-132454-000	Base, LHS Cable
Additional Data Sheets:	Sentinel SA-1 Control Panel and accessories
	Sentinel LS Wet Chemical Suppression System
	Sentinel DCS Dry Chemical Suppression System

*E.g., 83-132480-XXX, substitute "005" for "XXX" for a 5-foot cable.

Kidde Fire Systems

A UTC Fire & Security Company