

NOT to be distributed outside of FM Approvals and its affiliates except by CUSTOMER.

APPROVAL REPORT

**CHEETAH Xi 50 POINT AND CYBER CAT 50 POINT
FIRE ALARM CONTROL SYSTEM UNITS FOR LOCAL
PROTECTIVE SIGNALING, AUXILIARY, CENTRAL
STATION AND REMOTE STATION SIGNALING,
AUTOMATIC RELEASES FOR EXTINGUISHING
SYSTEMS, AND PREACTION & DELUGE SPRINKLER
SYSTEMS**

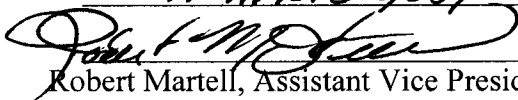
Prepared for:
Fike Corporation
704 South 10th Street
Blue Springs, MO 64015

Project ID: 3029134

Class: 3010

Date of Approval:

Authorized by:

11 APR 2007

Robert Martell, Assistant Vice President

FM Approvals
1151 Boston-Providence Turnpike
PO Box 9102
Norwood, MA 02062

**CHEETAH Xi 50 POINT AND CYBER CAT 50 POINT FIRE ALARM CONTROL SYSTEM
FOR LOCAL PROTECTIVE SIGNALING, AUXILIARY,
CENTRAL STATION AND REMOTE STATION SIGNALING,
AUTOMATIC EXTINGUISHING SYSTEMS,
AND PREACTION & DELUGE SPRINKLER SYSTEMS**

From

**Fike Corporation
704 South 10th Street
Blue Springs, MO 64015**

I INTRODUCTION

- 1.1 Fike Corporation requested an Approval examination of their modular Cheetah Xi 50 point and Cyber Cat 50 point Control units with V3.00 firmware for Local Protective Signaling, Auxiliary, Central Station Signaling, Remote Station Signaling, Automatic Extinguishing Systems, and Preaction and Deluge Sprinkler Systems.
- 1.2 The Cheetah Xi 50 and the Cyber Cat 50 units are identical except Cyber Cat 50 does not support clean agent and CO2 functionality. Both units are similar in construction and functionality to the FM Approved Cheetah Xi, Cyber Cat 254 and 1016 with the exception that the Cheetah Xi 50 and the Cyber Cat 50 each support 50 points only as defined in 1.4 and 1.5.
- 1.3 The equipment listed below includes the following Fike modules and other equipment which make up the accessories and optional modules list for the Cheetah Xi 50 and Cyber Cat 50. Included in this list are any firmware and operating software updates:

<u>Model</u>	<u>Description</u>	<u>Firmware</u>
10-2620	CyberCat 50 Controller	3.00
10-2622	CyberCat 1016 Controller	3.00
10-2542	Cheetah Xi 50 Controller	1.30
10-2482	Network Card	1.00
10-2473	SLC Supplemental Loop Module	
10-2474-p	Supplemental Power Supply;	N/A
55-052	Solenoid Release Control Module	N/A
* 10-1832	Agent Release Module (ARM III)	N/A
* 55-042	Supervised Control Module (SCM)	N/A
* 10-2204	RM4; Relay Module	N/A
* 10-2254	RPM – Reverse Polarity Module	N/A
* 10-2411	256 LED Graphic Controller	3.00
* 10-2321	Remote Display	3.00
10-2621-c	CyberCat 50 Enclosure; c: (R=Red, B=Black)	N/A

FM APPROVALS
Project ID: 3029134

- 10-2623-c Cheetah Xi 50 Enclosure; c(R=Red, G=Grey)N/A
 * 02-10881 Transformer; 120 V ac N/A
 * Note: These Fike modules were previously Approved in Reports 3020297, 3014450, 0B4A7.AY.

1.4 The following (Class B) Style 4 addressable devices are manufactured by System Sensor and have already been private labeled with Fike Corporation in FM Approval Report 3021590. These addressable devices have been examined (Reference Approval Report 3020471) and are compatible with the Cheetah Xi 50 and CyberCat 50 fire alarm control units:

<u>Description</u>	<u>System Sensor P/N</u>	<u>Fike Corp P/N</u>
Photoelectric Smoke Sensor	ED-P	63-1052
Photo/135F Heat Combination Sensor	ED-PT	63-1053
135-190F Fixed Temp and Rate of Rise Heat Detector	ED-T	63-1039
Ionization Smoke Sensor	ED-I	67-033
6" Sensor Base	EBF	63-1054
4" Sensor Base	EB	63-1055
6" Relay Base	EBR	63-1063
6" Sounder Base	EBS	63-1064
Mini Monitor Module	EM-1MM	55-045
4" Monitor Module	EM-1SM	55-041
Pull Station Monitor Module	EP-D2	20-1063
NAC Supervise Control Module	EM-1SR	55-042
Relay Module	EM-1R	55-043
Photo Duct Sensor Head	ED-DP	63-1057
Duct Detector Housing	ED-DPR	63-1056
* Solenoid Release Module	EM-1RM	55-052

* Note: The Solenoid Release Module is only compatible with the Cheetah Xi 50 control system.

1.5 The following (Class A) Style 7 addressable devices are manufactured by System Sensor and have already been private labeled with Fike Corporation as described in FM Approval Report 3021590. These addressable devices have been examined (Reference Approval Report 3020471) and are compatible with the Cheetah Xi 50, CyberCat 50 fire alarm controls:

<u>Description</u>	<u>System Sensor P/N</u>	<u>Fike Corp P/N</u>
Photoelectric Smoke Sensor	ED-PI	63-1058
Photo/135F Heat Combination Sensor	ED-PTI	63-1059
135-190F Fixed Temp and Rate of Rise Heat Detector	ED-TI	63-1040
Ionization Smoke Sensor	EDII	67-034
6" Sensor Base	EBFI	63-1060
4" Sensor Base	EBI	63-1061
Mini Monitor Module	EM-1MMI	55-050
4" Monitor Module	EM-1MI	55-046
Pull Station Monitor Module	EP-2DI	20-1064
NAC Supervise Control Module	EM-1SRI	55-047
Relay Module	EM-1RI	55-048
Photo Duct Sensor Head	ED-DPI	63-1062
*Solenoid Release Module	EM-1RMI	55-053

* Note: The Solenoid Release Module is only compatible with the Cheetah Xi 50 control system.

1.6 This report may be freely reproduced only in its entirety and without modification.

1.7 **Examination and testing of the above equipment is based on the applicable requirements of the following standard [1] and guidelines [2]:**

Number	Title	Class Number	Date
1	Deluge & Preaction Sprinkler Systems	FM Standard 1011	November, 1973
2	National Fire Alarm Code	ANSI/NFPA 72	2002

1.8 **Listing:** The Cheetah Xi 50 and Cyber Cat 50 and accessories will be shown as follows in the FM Approvals *Approval Guide*.

LOCAL PROTECTIVE SIGNALING

Cheetah Xi 50 and Cyber Cat 50 Fire Alarm units are programmable addressable systems consisting of P/N 10-2622, P/N 10-2620, respectively, Controller with V3.00 revision firmware, within P/N 10-2623(R/G) and 10-2621 (R/B) enclosures, and power supply with transformer P/N 02-10881. Signaling line circuit RS485 meets (Class B) Style 3.5 when connected to Remote Display P/N 10-2321 [firmware P/N 10-2343 Rev. 3.00]. The Cheetah Xi 50 and Cyber Cat 50 with 10-2622 and P/N 10-2620, respectively controller board provide one signaling line circuits (SLC) which meet NFPA Style 4, 6, or 7 wiring. Up to 50 addressable analog devices may be connected to the SLC. The following addressable devices are compatible with the Cheetah Xi 50 and CyberCat 50 fire alarm controls: Photoelectric Smoke Sensor p/ns 63-1052 or 63-1058; Photo/135F Heat Combination Sensor p/ns 63-1053 or 63-1059; 135-190°F Fixed Temp and Rate of Rise Heat Sensor p/ns 63-1039 or 60-1040 (detector spacing not to exceed 30 x 30 ft); Ionization Smoke Sensor p/ns 67-033 or 67-034 for use with 6" Sensor Bases p/ns 63-1054 or 63-1060, 4" Sensor Bases p/ns 63-1055 or 63-1061, 6" Sounder Base p/n 63-1064 or 6" Relay Base p/n 63-1063; Mini Monitor Modules p/ns 55-045 or 55-050; Monitor Modules p/ns 55-041 or 55-046; Pull Station p/n 20-1063 or 20-1064; NAC Supervise Control Modules p/n 55-042 or 55-047; Relay Module p/n 55-043 or 55-048; Releasing Control Module 55-043 or 55-048; Photo Duct Sensor Heads p/n 63-1057 or 63-1062; and Duct Detector Housing p/n 63-1056. 2 notification appliance circuits (Class A or B) Style Y, or Z are provided. Each NAC is rated for 1.75 Amps output. RS232 circuit located on the controller communicates with the HLI/VESDA Interface Module Assembly P/N 10-2277 connected to a VESDA Laser PLUS Detector (Software Version 2.09.00), VESDA Laser Compact Smoke Detector (Software Version 3.01.00) and/or VESDA Laser Scanner (Software Version 2.14.03). The power supply provides a 5.25 amp, 24 V dc output. 24 V dc batteries rated 18-75 AH are available to provide 24 (or 60 for auxiliary signaling) hours of emergency operation (See also CENTRAL STATION, REMOTE STATION, and AUTOMATIC RELEASES FOR PREACTION AND DELUGE SPRINKLER SYSTEMS.)

AUTOMATIC RELEASES FOR EXTINGUISHING SYSTEMS AND OTHER FIRE PROTECTION EQUIPMENT

Cheetah Xi 50 Programmable Fire Alarm Control with V1.XX firmware connected to a Release Control Module p/ns 55-043 or 55-048 to allow for release of extinguishing agents. Agent Release Module (ARM III) P/N 10-1832 is connected to the Release Control Module to release

FM APPROVALS
Project ID: 3029134

the agents . Up to 6 ARMs, or 2 12V solenoids, or 1 24V solenoid can be supported by the Release Module (See also LOCAL PROTECTIVE SIGNALING for details on the control).

CENTRAL STATION SIGNALING

Cheetah Xi 50 and Cyber Cat 50 Fire Alarm Control units are programmable addressable systems consisting of P/N 10-2622 and 10-2620, respectively Controller with V3.00, within P/N 10-2623(R/G) and 10-2621 (R/B) enclosures, and power supply with transformers P/N 02-10881. Digital alarm Communicator Transmitter DACT p/n 10-2528 (Bosch Security Systems, Inc. Model D9068) mounted within the control's enclosure at the protected premises communicating via a signaling channel, established through the public switched telephone network, with two or more Bosch Security Systems, Inc. Model D6500, D6600 or Ademco 685 Digital Alarm Communicator Receivers (DACRs). DS9068 must be set for 24 hour test signal. DACT Programmer P/N10-2477 is needed for configuring the 10-2528 DACT. DS9068 must be configured for a delayed AC power loss signal to transmit to the DACR after six hours. 24 V dc batteries rated 18-75 AH are available to provide 24 hours of emergency. (See also LOCAL PROTECTIVE SIGNALING for details on the control).

REMOTE STATION SIGNALING

Cheetah Xi 50 and CyberCat 50 Fire Alarm Control Systems units are programmable addressable systems consisting of [P/N 10-2622 and P/N 10-2620] Controllers with V3.00 firmware, within [P/N 10-2483(R/B) enclosure, and power supply with transformer P/N 02-10881. The units are equipped with integral digital alarm control transmitters (DACT) p/n 10-2476 (Bosch Security Systems, Inc. Model D9068) reporting to any two or more of the following models: Bosch Security Systems, Inc. Model D6500, D6600 or Ademco 685 Digital Alarm Communicator Receivers (DACRs) located at an a constantly attended location such as a public fire station. The connection between the controls and receivers shall be via a signaling channel established through the public switched telephone network. In addition, p/n 10-2413 city tie interface provides the ability to operate a local energy master-box. 24 V dc batteries rated 18-75 AH are available to provide 60 hours of emergency operation. It is essential that there be complete cooperation between the protected property and the remote station personnel; otherwise, substandard service may result regardless of equipment performance. (See also LOCAL PROTECTIVE SIGNALING for details on the control).

PREACTION AND DELUGE SPRINKLER SYSTEM

Cheetah Xi 50 and Cyber Cat 50 Fire Alarm Control units are programmable addressable systems consisting of [P/N 10-2622, P/N 10-2620], respectively Controller with V3.00, within P/N 10-2623(R/G) and 10-2621 (R/B) enclosure, and power supply with transformers P/N 02-10881. Controller connects with p/ns 55-042 or 55-047 Supervised Control Module (SCM) to provide peer-to-peer digital communication protocol between the conventional notification appliance circuits and the signaling line circuit. In addition, the SCM operates solenoids rated up to 2 Amps @24V dc. In addition, Release Control Module [p/ns 55-042 or 55-047] operates solenoids rated up to 2 Amps @24 V dc. For Approved combinations of solenoid and water control valves, refer to the Automatic Water Control Valve listings that follow. 24 V dc batteries rated 18-75 AH are available to provide 90 hours of emergency operation. (See also LOCAL PROTECTIVE SIGNALING for details on the control)..

WATER CONTROL VALVES

Control Panel Group [2]. These panels are compatible with Solenoid Groups [A], [B], [D], [E], and [G]:

Fike Corporation, 704 S. 10th Street, Blue Springs, MO 64015

Cheetah Xi 50 Fire Alarm Control System. P/N 10-2622 Controller with 3.00 firmware
CyberCat 50 Fire Alarm Control System. P/N 10-2620 Controller with 3.00 firmware.

Control Panel Group [4]. This panel is compatible with Solenoid Group [F].

Fike Corporation, 704 S. 10th Street, Blue Springs, MO 64015

Cheetah Xi 50 Fire Alarm Control System. P/N 10-2622 Controller with 3.00 firmware
CyberCat 50 Fire Alarm Control System. P/N 10-2620 Controller with 3.00 firmware.

II DESCRIPTION

- 2.1 The following paragraphs give a brief description of the equipment covered by this report. A more detailed description of the equipment can be found in the manufacturer's Installation, Operation and Maintenance Manual. The manufacturer has made available all necessary circuit schematics and operating specifications, which have been examined and are retained on file at FM Approvals.
- 2.2 Programmable Cheetah Xi 50 and Cyber Cat Fire Alarm Control units are addressable systems consisting of P/N 10-2622, P/N 10-2620, respectively, Controllers with 3.00 firmware. The controller boards provide 1 signaling line circuit (SLC) which meet NFPA Style 4, 6, or 7 wiring performance. Up to 50 addressable analog devices maybe connected to the SLC.
- 2.3 2 notification appliance circuits (Class A or B) Style Y, or Z are provided and are rated for 1.75 Amps output.
- 2.4 Signaling line circuit RS485 on the controller board meets (Class B) Style 3.5 when connected to Remote Display P/N 10-2321 (firmware P/N 10-2343 Rev. 3.00).
- 2.5 The main power supply is identical in design and configuration to the previously Approved Cheetah Xi and Cyber Cat power supply. The power supply circuit provides a 5.25 amp, 24 V dc output to the control.
- 2.6 24 V dc batteries rated 7-75 AH are available to provide 24 (or 60 for auxiliary signaling) hours of emergency.
- 2.7 Digital alarm Communicator Transmitter DACT p/n 10-2528 (Bosch Security Systems, Inc. Model D9068) mounts within the control's enclosure for communication via a signaling channel, established through the public switched telephone network, with two or more Bosch Security Systems, Inc. Model D6500, D6600 or Ademco 685 Digital Alarm Communicator Receivers (DACRs).

FM APPROVALS
Project ID: 3029134

- 2.8 The control units connect with previously Approved p/n 55-042 Supervised Control Module (SCM) to provide peer-to-peer digital communication protocol between the conventional notification appliance circuits and the signaling line circuit. In addition, the SCM operates solenoids rated up to 2 Amps @24V dc.
- 2.9 An RS232 circuit located on the panel controller board communicates with the HLI/VESDA Interface Module Assembly P/N 10-2277 connected to an Approved VESDA Laser PLUS Detector (Software Version 2.09.00), VESDA Laser Compact Smoke Detector (Software Version 3.01.00) and/or VESDA Laser Scanner (Software Version 2.14.03).
- 2.10 Auxiliary power outputs are directly supervised, with out end of line supervision relays, with REV level 3.00 firmware.

III EXAMINATION

- 3.1 Sample fire alarm control units are made up of the basic following modules: p/n 10-2622 Cheetah Xi 50 Controller with firmware REV level 3.00 p/n 55-042 Style 4 Supervised Control Module (SCM), p/n 10-2321 Remote Display with Backbox at REV level 3.00 within 10-2623-R enclosure. Various combinations of devices and programmable configurations were set-up for examination and testing. All of the System Sensor analog/addressable devices as described in Section 1.4 were connected to the sample units set up for testing. One sample was also connected with System Sensor P52 Series strobes [30 units] and horn/strobes [30 units]. Testing was conducted at Fike Corporation's facilities in Blue Springs, MO. The samples were considered to be representative of production and were examined, tested, and compared to the manufacturer's drawings. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

RS232 circuit located on the controller communicates with the HLI/VESDA Interface Module Assembly P/N 10-2277 connected to a VESDA Laser PLUS Detector (Software Version 2.09.00), VESDA Laser Compact Smoke Detector (Software Version 3.01.00) and/or VESDA Laser Scanner (Software Version 2.14.03).

Only the following testing was performed since the Cheetah Xi 50 and Cyber Cat 50 are similar to the FM Approved Cheetah Xi, Cyber Cat 254 and 1016, except Cheetah Xi 50 and Cyber Cat 50 are 50 point units only.

- 3.2 **Normal Operation** – Various performance and functionality tests were completed as follows:

- 3.2.1 **Trouble Signals** - Fault conditions (single open, single ground, and wire to wire shorts) were simulated on external circuits. The **TROUBLE** LED (yellow), and a pulsing local buzzer annunciated this change of condition. In addition, the LCD detailed the condition including the time and location of the trouble. The acknowledge key must be pressed to silence the local buzzer and steady the flashing LED. The LED did not reset until the fault was corrected as is required.
- 3.2.2 **Alarm Signals** - Alarm conditions were simulated on the signaling line circuits. The alarm signals were annunciated by activation of the **ALARM** LED. In addition, the LCD display detailed the condition including the time and location of the alarm. The acknowledge key must be pressed to silence the local buzzer and steady the flashing LED. The alarm LED did not reset

FM APPROVALS
Project ID: 3029134

until the alarm was cleared as is required. Additionally, the notification appliances activated under 10 seconds.

- 3.2.3 **Supervisory Signals** – Abnormal conditions such as shutdown to sprinkler control valves were simulated on external circuits designated for supervisory devices. The **SUPERVISORY** LED (yellow) and a pulsing local buzzer annunciated this change of condition. In addition, the LCD detailed the condition including the time and location of the off-normal condition. The acknowledge key must be pressed to silence the local buzzer and steady the flashing LED. The LED did not reset until the fault was corrected. This is satisfactory.
- 3.3 **Voltage Variation Tests** - The input power to the control connected to a p/n 02-10881 transformer rated 120 V ac was varied from 85% to 110% of the rated primary supply voltage 102 to 132 V ac. In addition, both controls' secondary supply voltage was varied from 85% to maximum battery float voltage 20.4 V dc to 27.3 V dc.
- 3.3.1 All the equipment operated properly and without false signal or malfunction over the entire range of voltage variation. This is satisfactory.
- 3.3.2 With the panel fully loaded and with the input power at 20.4 V dc, the release circuits operated normally when an alarm condition was simulated.
- 3.3.3 With the input power to the panel varied from 85% to 110% both ac and dc, the notification appliance circuit fully loaded, the output voltage was varied from 19.6 to 25.7 V dc. Only FM Approved notification appliances capable of operating over this entire voltage range are compatible with the Cheetah Xi 50 and CyberCat 50.
- 3.4 **Environmental Tests** – A control unit as described in 3.1 was conditioned for at least 4 hours at 120°F (49°C). There was no adverse effect on operation as a result of the exposure.
- 3.5 **Electrical Utilization Equipment Tests**
- 3.5.1 **Electrical Shock** - Examination showed that accessibility to the 120Vac energized circuits was suitably restricted by enclosure construction, component and assembly arrangement, and a locked enclosure.
- 3.5.2 **Protective Grounding** - Accessible conductive parts of the equipment that are likely to become energized in the event of a fault shall be properly grounded. Accessible metal enclosure and the hinged metal door of the control units are bonded to enable proper ground connections during installation.
- 3.5.3 **Equipment Nameplate Rating Test** – The power supply was loaded to the maximum rated current draw as specified in the manual. The input voltage was varied from 102 to 132 Vac. The maximum AC current draw of the panel was less than 110% of the name plate rating of 2.22 A.
- 3.6 **Dielectric Tests** – A sample was tested for one minute with a 60 Hz dielectric strength test as follows: input terminals to ground [1240Vac], output terminals to ground [500Vac], input terminals to output terminals [1240Vac].
- 3.7 **Radio Frequency Interference** - A sample of each of the devices covered by this report connected to a sample control unit was subjected to radio frequency transmissions with radiation power levels equivalent to 5 Watts at 24 inches (0.6 m) in the 27 MHz, 150-174 MHz, 450-467

FM APPROVALS
Project ID: 3029134

MHZ, 850-870 MHz, and 900-920 MHz bands. The system did not false alarm or give any indication of instability as a result of these exposures.

IV MARKING

4.1 The following information appears on the adhesive label on the inside cover of the Cheetah Xi 50 and CyberCat 50 Control units:

- Manufacturer's name and manufacturing location.
- Model name and P/N.
- System Operating Information.
- Installation Manual Reference.
- The FM Approval Mark.

4.2 A Serial No. is assigned for each control board. This is identified directly on the board.

4.3 The firmware Rev. 3.00 level is identified at the LCD of the control upon initial startup and reset and the revision level is also marked on the Microprocessor.

V REMARKS

5.1 Installations shall comply with the relevant requirements of the latest edition of the National Electrical Code (ANSI/NFPA 70).

5.2 Installations shall comply with the latest edition of the manufacturer's instruction manual.

5.3 Control panels for automatic release of sprinkler or extinguishing systems are not considered FM Approved if they incorporate an accessible disable or abort switch. A key operated test switch, or a disable switch behind a lockable cover, or a manually operated momentary switch is permitted, but not recommended by FM Approvals for providing an intentional interruption of operation for servicing and testing.

5.4 When disconnecting the extinguishing system discharge for testing and/or maintenance, the extinguishing system must be isolated mechanically and not solely by electrically disconnecting the equipment.

VI FACILITIES AND PROCEDURES AUDIT

The manufacturing site at Fike Corporation in Blue Springs, MO is subject to follow-up audit inspections. The facilities and quality control procedures in place continue to be satisfactory to manufacture product identical to that examined and tested as described in this report.

VII MANUFACTURERS RESPONSIBILITIES

7.1 Documentation considered critical to this Approval is on file at FM Approvals and listed in the Documentation File, Section VIII of this report. No changes of any nature shall be implemented unless notice of the proposed change has been given and written authorization obtained from FM

FM APPROVALS
Project ID: 3029134

Approvals. The Approved Product Revision Report, Form 797, shall be forwarded to FM Approvals as notice of proposed changes.

- 7.2 On 100 percent of production, the manufacturer shall subject each transformer in the power supply of the control units to a dielectric test where the connections shall withstand, for one minute and with no insulation breakdown, the application of 1000 V ac (or 1400 V dc) with respect to the protective ground. Alternatively, a test potential of 1200 Vac (or 1700 V dc) may be applied for at least one second.

WARNING: The dielectric test required may present a hazard of injury to personnel and/or property and should only be performed under controlled conditions, and by persons knowledgeable of the potential hazards of such testing to minimize the likelihood of shock and/or fire.

VIII DOCUMENTATION

The following drawings describe the Cheetah Xi 50 and Cyber Cat 50 and are filed under Project 3029134.

Drawing No.	Issue	Description
10-2620	NC	Assembly Cybercat 50
10-2620-CY	NC	PCB Assembly Cybercat 50
10-2620-P	NC	PCB Sub-Assembly Cybercat 50
02-11544	NC	PCB 50 Point Control Panel
10-2643	NC	Firmware Cybercat V3.00
10-2622	NC	Assembly Cheetah Xi 50
10-2622-Xi	NC	Sub-Assembly Cheetah Xi 50
10-2622-P	NC	PCB Sub-Assembly Cheetah Xi 50
10-2636	NC	Firmware Cheetah Xi 50
02-11773	NC	System enclosure/service Label Cheetah Xi 50
01-11772	NC	System enclosure/service Label Cybercat 50
06-369	03/07	Manual Cheetah Xi 50
06-368	03/07	Manual Cybercat 50
10-2621	NC	10-2621 Enclosure Assembly Cybecat 50
10-2623	NC	10-2623 Enclosure Assembly Cheetah Xi 50
10-2620-SCH	NC	Schematic 50 point control panel
02-1851	B	FM Label

IX CONCLUSION

The equipment described in 1.2 – 1.8 meets FM Approvals requirements. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this report.

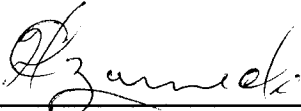
EXAMINATION AND TESTING BY: Henry Czarnecki

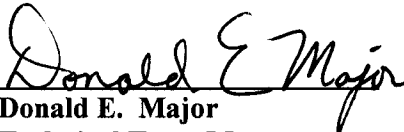
PROJECT DATA RECORD: 3029134

APPENDIX: Enclosure drawing, wiring diagrams,
system/wiring specifications, labels, and product photos.



REPORT BY:



REPORT REVIEWED BY:


Henry Czarnecki
Senior Engineer
Electrical Systems

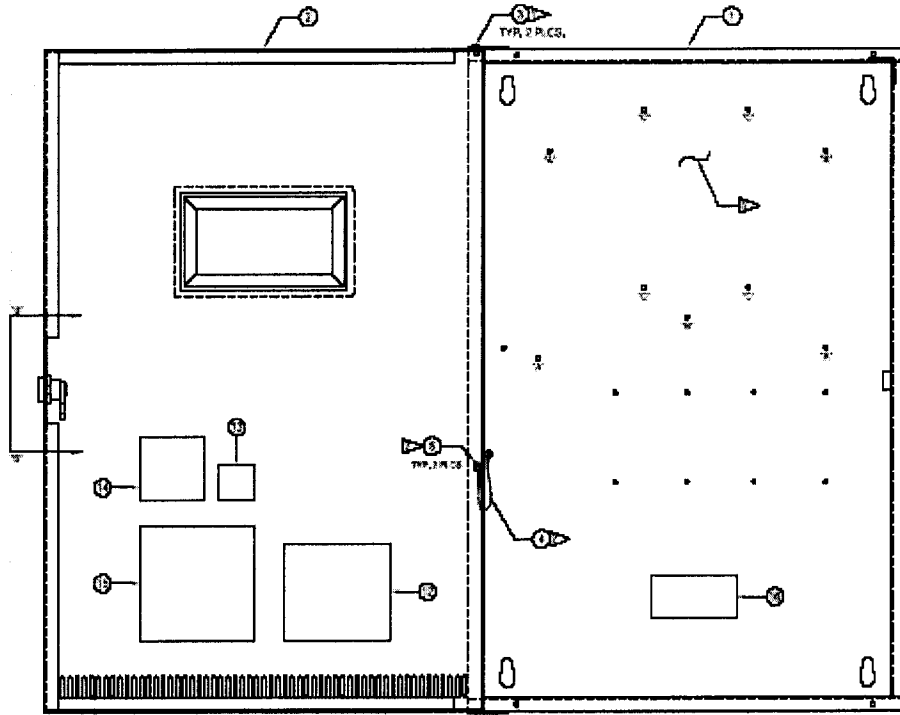

Donald E. Major
Technical Team Manager
Electrical Systems

FM APPROVALS
Project ID: 3029134

		MODEL 10-070 SERIES	
NFPA 72, COMMERCIAL PROTECTED PREMISES UNIT, NON-CODED, LOCAL, REMOTE STATION (PPU), CENTRAL STATION (PPU). FOR: MANUAL AND AUTOMATIC FIRE ALARM SERVICE RELEASING DEVICE SERVICE AUTOMATIC SPRINKLER RELEASING SERVICE SPRINKLER SUPERVISORY & WATERFLOW SERVICE DACT SERVICE AUXILIARY SERVICE			
Complies with NFPA 13, 15, 16, 70		Critical process monitoring type SM.	
Refer to Manual P/N 06-368 Dated _____ for: Installation and Operation Instructions, Configuration Options, Signaling Service Instructions, Electrical Ratings, Wiring Diagrams and Maintenance Instructions.			
If using dry contact outputs as non-power limited, mark through appropriate "power-limited" marking and wire per manual.		System Operating Power: 120VAC/60Hz/2.22A 240VAC/50Hz/1.45A	
Terminals P3, P4, P5, P6, P7, P8, P9, P10 & P11 are power limited circuits.			
Refer to 02-11761 "System Operation Posting" for basic operation.			
WARNING THIS UNIT INCLUDES AN ALARM VERIFICATION FEATURE THAT WILL RESULT IN A DELAY OF THE SYSTEM ALARM SIGNAL FROM THE INDICATED CIRCUITS. THE TOTAL DELAY (CONTROL UNIT PLUS SMOKE DETECTORS) SHALL NOT EXCEED 60 SECONDS. NO OTHER SMOKE DETECTOR SHALL BE CONNECTED TO THESE CIRCUITS UNLESS APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION.			
CIRCUIT ZONE	CONTROL UNIT DELAY (sec)	SMOKE DETECTOR MODEL	DELAY (sec)
THIS CONTROL UNIT IS INTENDED FOR INSTALLATION IN A CONTROLLED INDOOR ENVIRONMENT, IN A DRY LOCATION			
INSTALLATION LIMITS UNDER JURISDICTION OF LOCAL AUTHORITY			
IN CASE OF TROUBLE CONTACT:			
_____ -OR- _____		FIKE PROTECTION SYSTEMS BLUE SPRINGS, MO 64015 (816) 229-3405	

		MODEL 10-071 SERIES	
NFPA 72, COMMERCIAL PROTECTED PREMISES UNIT, NON-CODED, LOCAL, REMOTE STATION (PPU), CENTRAL STATION (PPU). FOR: MANUAL AND AUTOMATIC FIRE ALARM SERVICE RELEASING DEVICE SERVICE AUTOMATIC SPRINKLER RELEASING SERVICE SPRINKLER SUPERVISORY & WATERFLOW SERVICE DACT SERVICE AUXILIARY SERVICE			
Complies with NFPA 12, 12A, 13, 15, 16, 70, 2001		Critical process monitoring type SM.	
Refer to Manual P/N 06-369 Dated _____ for: Installation and Operation Instructions, Configuration Options, Signaling Service Instructions, Electrical Ratings, Wiring Diagrams and Maintenance Instructions.			
If using dry contact outputs as non-power limited, mark through appropriate "power-limited" marking and wire per manual.		System Operating Power: 120VAC/60Hz/2.22A 240VAC/50Hz/1.45A	
Terminals P3, P4, P5, P6, P7, P8, P9, P10 & P11 are power limited circuits.			
Refer to 02-11760 "System Operation Posting" for basic operation.			
WARNING THIS UNIT INCLUDES AN ALARM VERIFICATION FEATURE THAT WILL RESULT IN A DELAY OF THE SYSTEM ALARM SIGNAL FROM THE INDICATED CIRCUITS. THE TOTAL DELAY (CONTROL UNIT PLUS SMOKE DETECTORS) SHALL NOT EXCEED 60 SECONDS. NO OTHER SMOKE DETECTOR SHALL BE CONNECTED TO THESE CIRCUITS UNLESS APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION.			
CIRCUIT ZONE	CONTROL UNIT DELAY (sec)	SMOKE DETECTOR MODEL	DELAY (sec)
THIS CONTROL UNIT IS INTENDED FOR INSTALLATION IN A CONTROLLED INDOOR ENVIRONMENT, IN A DRY LOCATION			
INSTALLATION LIMITS UNDER JURISDICTION OF LOCAL AUTHORITY			
IN CASE OF TROUBLE CONTACT:			
_____ -OR- _____		FIKE PROTECTION SYSTEMS BLUE SPRINGS, MO 64015 (816) 229-3405	

FM APPROVALS
Project ID: 3029134



SHOWN WITH DOOR OPEN

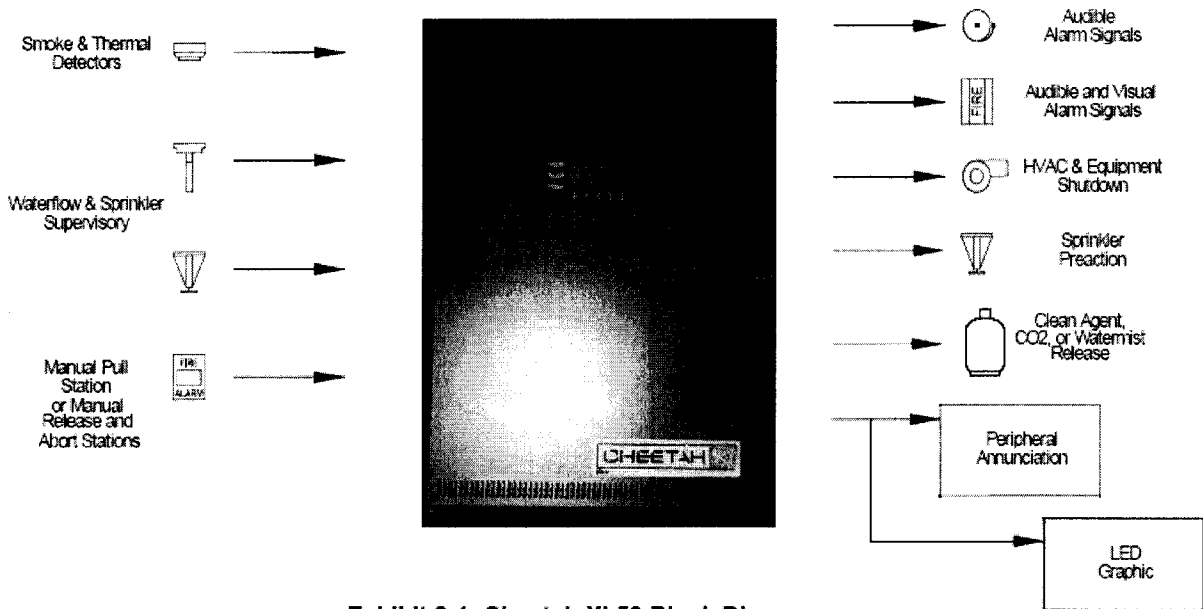
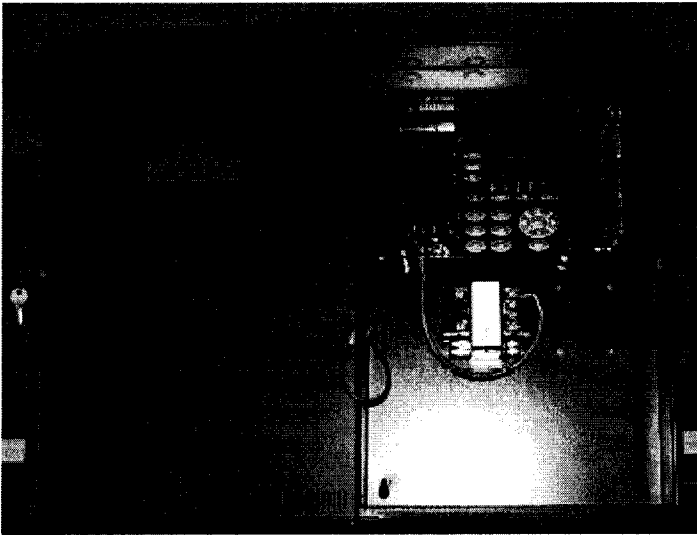
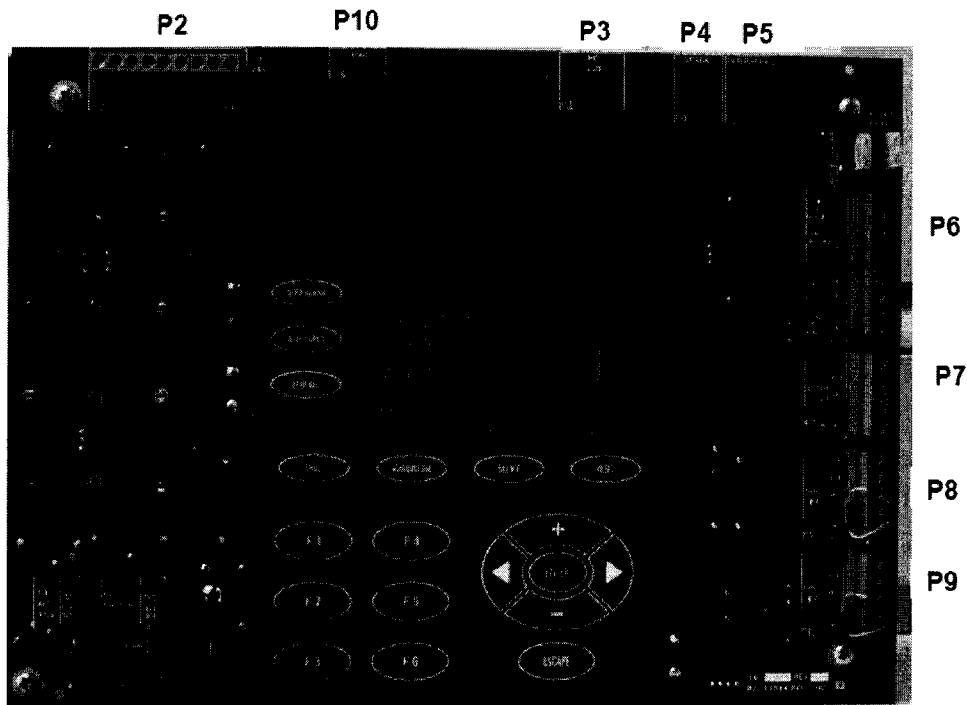


Exhibit 2-1 Cheetah XI 50 Block Diagram

**Exhibit 3-1 Cheetah Xi 50 Control
System**



The following are the specifications for the 10-2622 controller listed in order of terminal block designation (P)



P1 Exhibit 3-3 Cheetah Xi 50 Terminal Block Locations

FM APPROVALS
Project ID: 3029134

P1 - Power Supply Input



Exhibit 3-4 Terminal P1

TERMINAL	DESCRIPTION	NOMINAL RANGE	SPECIFICATION DETAILS
24 VOLT AC Secondary Term. 1 & 2 (same for both 120VAC and 240VAC xfmr)	AC Transformer secondary	Non-power-limited Supervised	Fused by F1, 15A field replaceable fuse P/N 02-4174 Wiring 16AWG minimum, THHN Terminal block accepts 12 AWG-16 AWG
BATTERY Term. 3 & 4 + -	Standby Battery	24VDC nominal Non-power-limited Supervised	Sealed lead-acid batteries only. 75 amp-hour maximum. Maximum supply current: 12 amps/ 27VDC Fused by F2, 15A field replaceable fuse, P/N 02-4174 Maximum charge current: 4 amps/ 27Vdc Batteries larger than 18 AH shall be mounted in external enclosure and the following qualifications apply: Wire Gauge shall be 14 AWG minimum. Maximum wire length shall not exceed 10 feet.

FM APPROVALS
Project ID: 3029134

P2 – Relays:



Exhibit 3-5 Terminal P2

	TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS
RELAY 1	Term. 1 C	Common	*See below	SPDT Form C relay contact DC operation: 5 amps @30VDC (pf=.35) AC operation: 0.5 amps @120VAC (pf=.35) Common (system) operation Default as Trouble but can be configurable
	Term. 2 NC	Normally Closed		
	Term. 3 NO	Normally Open		
RELAY 2	Term. 4 C	Common	*See below	SPDT Form C relay contact DC operation: 5 amps @30VDC (pf=.35) AC operation: 0.5 amps @120VAC (pf=.35) Common (system) operation Default as Supervisory but can be configurable
	Term. 5 NC	Normally Closed		
	Term. 6 NO	Normally Open		
TROUBLE	Term. 7 C	Common	*See below	SPDT Form C relay contact DC operation: 5 amps @30VDC (pf=.35) AC operation: 0.5 amps @120VAC (pf=.35) Normally Energized relay, contacts shown with power applied and no troubles Common (system) operation
	Term. 8 NC	Normally Closed		
	Term. 9 NO	Normally Open		

*May be connected to power-limited or non power-limited sources. All connections to terminal block shall be either power limited or non-power limited, not both.

P3 – P5 - RS232 Interface Circuits:

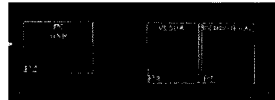


Exhibit 3-6 Terminal P3-P5

TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS
P3	Computer Interface	USB Power Limited Supervised	The PC is required to run C-Linx Software Version 3.0.0.0 (P/N 06-327). Not intended for continuous connection - Configuration and data retrieval only. DO NOT CONNECT THE PC IF A GROUND FAULT IS PRESENT. Also used for C-Linx connection for programming RS485 Peripheral Devices.
P4	VESDA HLI P/N 68-023	RS232 Cable 02-3053 Power Limited Supervised	50 Feet Maximum (the HLI includes the 14' RS232 Cable, 02-3053). HLI must be powered from Cheetah Xi 50 Aux. power output. Intelligently links Vision Systems VESDA detectors (by zone #) to the Cheetah Xi 50 (each a unique zone #, 0-255). Does NOT require loop address.
P5	Peripherals	RS232 Power Limited Supervised	Fike Guard voice evacuation interface (must be installed in the same room as Cheetah Xi 50) 50 feet maximum.

P6 – 24V AUX Out and
RS485 Peripheral Interface:

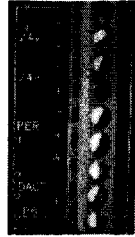


Exhibit 3-7 Terminal P6

TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS
AUXILIARY OUTPUTS + -	Continuous 24VDC Power Output	Power Limited Supervised	Two separate circuits rated 24VDC, 1.75A maximum each, Regulated. (28V max) Fused by F3-4 for short circuit, 4A field replaceable fuse P/N 02-11412 Used to power Control Modules, Remote Display, Graphics, etc.
PERIPHERAL INTERFACE + - SHLD DACT + -	RS485 Field Peripherals Drain-Chassis DACT	Power Limited Supervised Belden 9841 or equivalent. For plenum applications use Belden 82841, 82842, or 89841. No t-tapping	4000 feet, 31 devices maximum, 9600 bps 5VDC, 1mA Maximum wire impedance 110 ohms, Maximum capacitance 0.05uF 100Ω termination is required on the last device – supplied with the remote device (02-2519) Typical voltage will be varying between 0- 1VDC. It should never be a constant voltage or 0VDC. Peripheral Device must be configured as 'Supervised', if 2-way operation is required (using Reset, Silence, Acknowledge from Remote Display) <u>Field Peripherals include:</u> <ul style="list-style-type: none"> • Fike Remote Display • Zone Annunciator • LED Graphic • Multi-Interface Module • Ethernet Module



Note: The standard Cheetah Xi 50 Control Panel has a total power capability of 5.25A. Use Battery Calculation software in C-Linx Software or the form in Appendix 1 to determine proper system design.

P8-P9 – Notification Appliance Circuits (NAC):

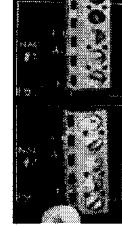


Exhibit 3-9 Terminal P8 and P9

TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS
P8 + - SHLD ++ --	Notification Appliance Circuit 1	Power Limited Supervised No t-tapping	Regulated 24VDC, 1.75.0 Amps maximum (Continuous output, 28V max.) Supports Class B, Style Y using 1.2KΩ End Of Line (EOL) resistor, P/N 10-2570; OR Class A, Style Z using redundant wiring. Always active during DRILL Can be programmed for automatic Synchronization protocols from System Sensor or Gentex. When selected, both circuits must use the same protocol. When silenced, just the horn portion of the device will silence (strokes remain flashing). Maximum # of synchronized devices is limited to the amount of current for the circuit (1.75 amps).
P9 + - SHLD ++ --	Notification Appliance Circuit 2	Power Limited Supervised No t-tapping	Same as noted in NAC1 above

The NAC circuit field wiring resistance is limited by the amount of anticipated load. Many local authorities require a voltage drop calculation be performed to demonstrate the lowest voltage present at the last device. The designer shall determine the resistance of the wire specified and distance for the installation needs. From this information, they can determine the total resistance for the circuit. The following chart provides the maximum field wiring resistance for total device current that can also be used as a tool:

Max Current (Amps)	.1	.2	.3	.4	.5	.6	.8	1.0	1.5	2.0
Audible Max Ω's	24	12	8	6	4.8	4.0	3.0	2.4	1.6	1.2

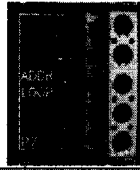
Exhibit 3-10 NAC Circuit Field Wiring Resistance

Further details on Notification Appliances may be found in the Compatible Notification Appliances and Releasing Devices Manual P/N 06-186.

FM APPROVALS
Project ID: 3029134

P7 – Signaling Line Circuit (SLC):

Exhibit 3-8 Terminal P7



TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS
P7 + - SHLD ++ - -	Addressable Loop 1	Power Limited Supervised	<p>Supports up to 50 addressable devices (only those listed in this manual)</p> <p>Supports Class B, Style 4 or Class A, Style 6 or Class A, Style 7* (using isolator devices)</p> <p>50mA maximum, 28VDC maximum</p> <p>Maximum Resistance = 70 ohms (35 ohms per leg) Maximum Capacitance = .60 uf</p> <p>12,000 ft. max distance from panel to last device. (total line length, tested using 14 AWG)</p> <p>Terminal block accepts 12 AWG – 24 AWG</p> <p>*When installing the addressable loop in a Style 7 format, the first and last addressable isolator device wiring to the control panel shall be mounted within conduit, within the same room, and no more than 20 feet from the fire alarm panel enclosure.</p>

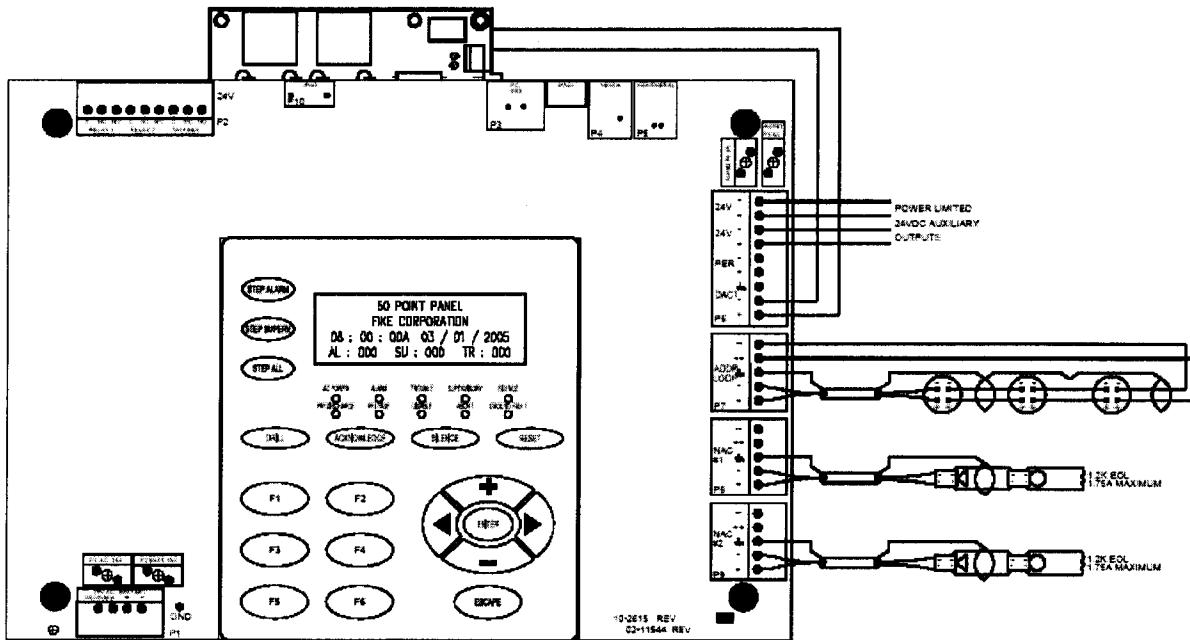


Exhibit 6-9 Cheetah Xi 50 Controller Wiring

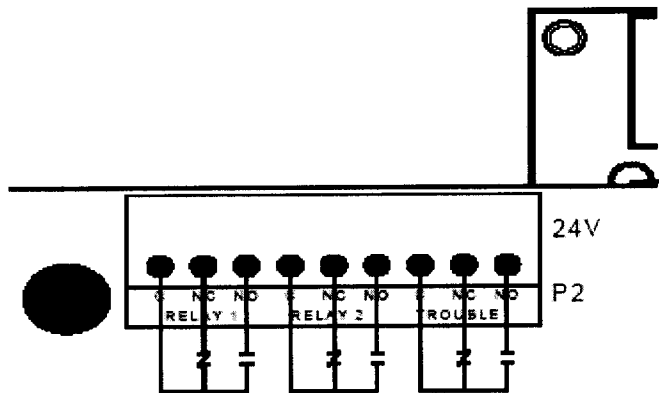


Exhibit 6-10 Wiring P2 Relays

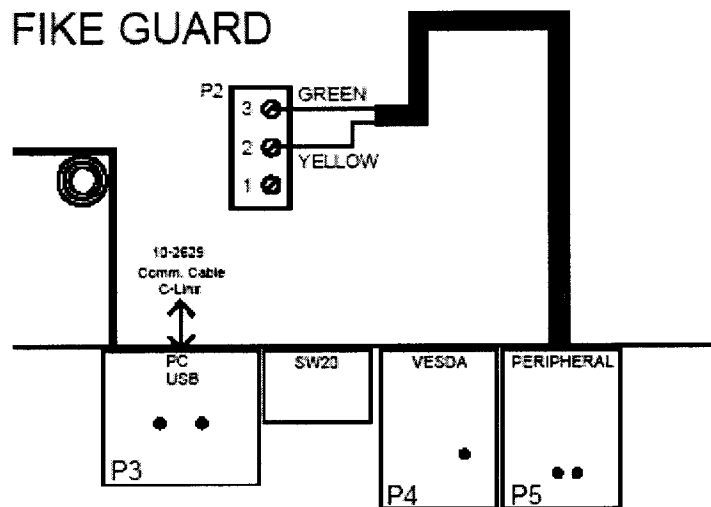


Exhibit 6-11 RS232 Wiring (P3-P5)

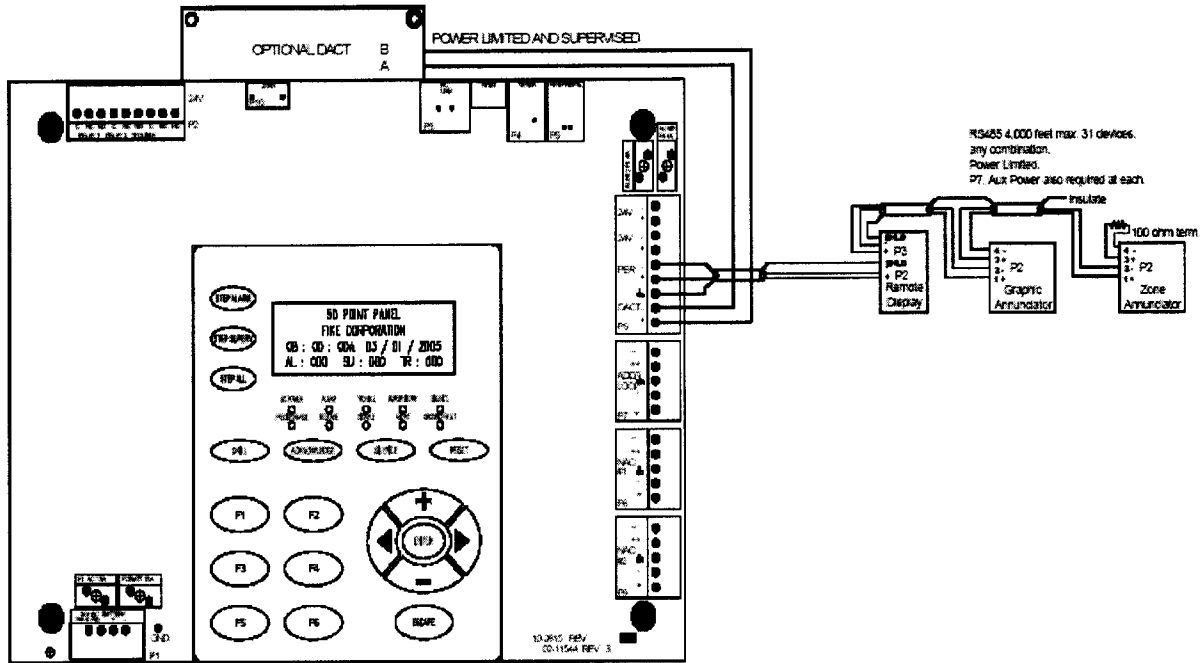


Exhibit 6-12 RS485 Peripheral Bus Wiring (P6)

FM APPROVALS
Project ID: 3029134

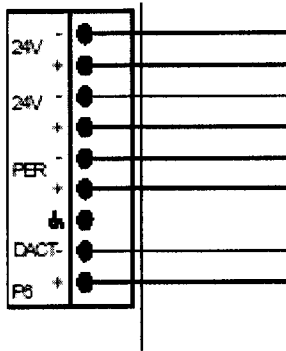




Exhibit 6-13 Auxiliary Power Wiring (P7)

COPYRIGHT © 19... BY FIKE CORPORATION. ALL RIGHTS RESERVED.					
COMPONENT SPECIFICATION					
		<p><u>NOTES:</u></p> <ol style="list-style-type: none"> 1. LETTERING TO BE BLACK ON WHITE BACKGROUND. 2. MATERIAL TO BE .003 TO .005 THK. VINYL, PRESSURE SENSITIVE. 3. RECOMMENDED SIZE 2" LONG BY 1 1/2" HIGH. 			
<p>FOR USE ON NAMEPLATES, IN LITERATURE, ADVERTISEMENTS, PACKAGING AND OTHER GRAPHICS.</p> <ol style="list-style-type: none"> 1) The FM diamond mark is acceptable to Factory Mutual Research as an Approval mark when used with the word "Approved." 2) The FMRC Approval logomark has no minimum size requirement, but should always be large enough to be readily identifiable. 3) Color should be black on a light background or a reverse may be used on a dark background. <p>NOTE: These Approval marks are to be used only in conjunction with products or services that have been Approved by Factory Mutual Research Corporation. The Factory Mutual Research Approval marks should never be used in any manner (including advertising, sales or promotional purposes) that could suggest or imply Factory Mutual Research Approval or endorsement of a specific manufacturer or distributor. Nor should it be implied that Approval extends to a product or service not covered by written agreement with Factory Mutual Research. The Approval marks signify that products or services have met certain requirements as reported by the Factory Mutual Research Corporation.</p>					
C.P.		IN10-014			
USED ON		NEXT ASSY		REMARKS	
				 Blue Springs, Missouri - U.S.A	
				PART: 02-1851	
				TITLE: LABEL, FACTORY MUTUAL SYSTEM APPROVED	
				SPECIFIED BY:	DEPARTMENT
				L. WANBAUGH	NPD
				SCALE	REV
				NONE	B
				SHEET	OF
				1	1
REV	DESCRIPTION	DATE	BY/APPR		
B	ADDED TO NOTES	5/23/90	PKK/KG/JT		
A	CHANGED LABEL, AND DRAWING SIZE	3/17/90	JH/PK/LW		
O		7/9/92	NG/		