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APPROVAL REPORT

FIBER OPTIC NETWORK CARD 10-2624 FOR USE IN FM APPROVED CHEETAH Xi, CYBERCAT 254 AND 1016 FIRE ALARM CONTROL SYSTEMS.

EPACO E10-0067 POWER SUPPLY FUSE CHANGE FROM 10A TO 15A [5700].

SHP PRO Linear Heat Detection Circuit Impedance Rating Change.

Prepared for:
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704 South 10th Street
Blue Springs, MO 64013

Project ID: 3030404
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Fiber Optic Network Card 10-2624 For Use In FM Approved Cheetah Xi, Cybercat 254 And 1016 Fire Alarm Control Systems.

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From

Fike Corporation
704 South 10th Street
Blue Springs, MO 64013

I INTRODUCTION

1.1 Fike requested an examination of the following:

1.1.1 Fiber Optic Network Card 10-2624. The network card is the same as the 10-2482 card except the 10-2624 card communication path is by Multi-Mode Fiber technology instead of 2 wire 485 communication. The fiber optic network card p/n 10-2624 allows for networking of up to 128 of any combination of Approved Cheetah Xi controllers and CyberCat 254 and CyberCat 1016 fire alarm control systems. The fiber optic network card works on the above FM Approved systems with V1.30 or higher version firmware.

1.1.2 SHP Pro detection line impedance rating change. The impedance rating change increases the impedance of the linear heat detection circuit to 500 ohms. The FM Approved system is currently manufactured and configured for 470 ohm base and 20 ohm line impedance.

1.1.3 EPACO E10-0067 power supply fuse [P3, P4] rating change from 10A to 15A. The FM Approved power supply is currently manufactured with P3 and P4 10A fuses.

1.2 The Cheetah Xi controllers and CyberCat 254 and CyberCat 1016 fire alarm control systems were previously Approved in Reports 3020297 and 3023436. The EPACO E10-0067 power supply was first Approved in FM Report 3017028. The SHP PRO fire alarm control system was first Approved in FM Report 0Z8A0.AY. The SHP PRO has been subsequently Approved under FM Reports 3005824 and 3017159.

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

1.4 **Standards**

Title	Class Number	Date
National Fire Alarm Code	ANSI/NFPA 72	2002

1.5 **Listing:** Only the listing for the Fiber Optic Network Card 10-2624 is affected by these changes. The Fiber Optic Network Card will be shown as follows in the *Approval Guide*, a publication of FM Approvals.

LOCAL PROTECTIVE SIGNALING

Cheetah Addressable Control System. Analog control panel with Software Revision Level 5.30 available in four part nos.: P/N 10-052-R-1 is a 120 V ac panel with a red 21.125 x 14.625 x 4 in. enclosure; P/N 10-052-G-1 is a 120 V ac panel with a grey 21.125 x 14.625 x 4 in. enclosure; P/N 10-052-R-2 is a 208/240 V ac panel with a red 21.125 x 14.625 x 4 in. enclosure; while P/N 10-052-G-2 is a 208/240 V ac panel with a grey 21.125 x 14.625 x 4 in. enclosure. Also available with 2-bay and 3-bay modular enclosures. Signaling line circuits can be configured to meet Styles 4 or 6. RS232 line meets (Class B) Style 3.5 when 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) via the HLI/VESDA Interface Module Assembly P/N 10-2277. Signaling line circuit RS485 meets (Class B) Style 3.5 when connected to Remote Display P/N 10-2276 (firmware P/N 10-2278 Rev. 3.10). The panel is compatible with P/Ns 63-1021 and 67-1032 analog addressable photoelectric and ionization type smoke sensors, 63-028 and 63-029 analog addressable photoelectric duct sensor, heat sensor P/N 60-1028 rated 135°F (37°C) [spacing guide: 20 by 20 ft (6.1 x 6.1 m) max] with the 6 in. P/N 63-1023 and 4 in. P/N 63-1020 sensor bases. In addition, the Cheetah control is compatible with fast response contact module P/Ns 55-019 and 55-020 with firmware 3130-00071 rev. 0.B, dual relay module P/N 55-023 with firmware 3130-00101 rev. 0.D, supervised output module P/N 55-021 with firmware 3130-00081 rev. 1.1, and solenoid releasing module P/N 55-022 with firmware 3130-00091 rev. 0.E (optional for auxiliary signaling). Up to eight Cheetah controls may be connected in a networking configuration utilizing (Class B) Style 4.0 signaling line circuit RS485 when network interface module 10-2292 is installed. Up to 32 Cheetah controls may be connected in a networking configuration utilizing Style 4, 6, or 7 signaling line circuit RS485 when network interface module 10-2374 is installed. 24 V dc batteries rated 7-65 AH are available to provide 24 hours (or 60 for auxiliary signaling) of emergency operation. (See also AUTOMATIC RELEASES FOR PREACTION AND DELUGE SPRINKLER SYSTEMS.)

CyberCat 254 & 1016 Fire Alarm Control Systems (P/N 10-064 & 10-066). Programmable addressable systems consisting of P/N 10-2525 and P/N 10-2472 CyberCat Controllers with V1.3 firmware for the 254 and 1016 models, respectively, within P/N 10-2483(R/B) enclosure, and power supply with transformers P/N 02-10881 (120 Vac) or P/N 02-10882 (240 Vac). **Up to 128 CyberCat 254 or 1016 controllers of any combination can communicate with one another when the Network Card p/n 10-2482 or Fiber Optic Network card p/n 10-2624 is installed. Either network card can be wired in a Class B, Style 4 or Class A, Style 6 or 7 configuration.** Signaling line circuit RS485 meets (Class B) Style 3.5 when connected to Remote Display P/N 10-2276 (firmware P/N 10-2278 Rev. 3.10). The CyberCat 1016 with 10-2472 controller board provides two signaling line circuit (SLC) which meet NFPA Style 4, 6, or 7 wiring performance. A Supplemental Loop Module P/N 10-2473 adds two more SLC loops. Up to 254 addressable analog devices maybe connected to each SLC for a total of 1016 devices. The CyberCat 254 with P/N 10-2525 controller board provides a single signaling line circuit (SLC) which meets NFPA Style 4, 6, or 7 wiring performance. Up to 254 addressable analog devices maybe connected to the single SLC loop. The following addressable devices are compatible with the CyberCat fire alarm control: 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; Photo Duct Sensor Heads p/n 63-1057 or 63-1062; and Duct Detector Housing p/n 63-1056. Two notification appliance circuits (Class A or B) Style Y, or Z are provided. Each NAC is rated for 2.0 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). Optional modules for use with the CyberCat include p/n 10-2204 RM4 Relay Module which provides 4 SPDT programmable relays rated 30 V dc @ 2A or 110 V ac @ 0.5A. The power supply provides a 6 amp, 24 V dc output to the control. This can be expanded to a 12 amp, 24 V dc output when p/n 10-2474-p Supplemental Power Supply is connected. 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.)

Cheetah Xi Fire Alarm Control Systems (P/N 10-068). Programmable addressable systems consisting of P/N 10-2542 Cheetah Xi Controller with V1.3, within P/N 10-2541(R/G) enclosure, and power supply with transformers P/N 02-10881 (120 Vac) or P/N 02-10882 (240 Vac). Signaling line circuit RS485 meets (Class B) Style 3.5 when connected to Remote Display P/N 10-2276 (firmware P/N 10-2278 Rev. 3.10). The Cheetah Xi with 10-2542 controller board provides two signaling line circuit (SLC) which meet NFPA Style 4, 6, or 7 wiring performance. A Supplemental Loop Module P/N 10-2473 adds two more SLC loops. Up to 254 addressable analog devices may be connected to each SLC for a total of 1016 devices. The following addressable devices are compatible with the CyberCat fire alarm control: 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. Two notification appliance circuits (Class A or B) Style Y, or Z are provided. Each NAC is rated for 2.0 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). **Up to 128 Cheetah Xi controllers of any combination can communicate with one another when the Network Card pn 10-2482 or Fiber Optic Network card 10-2624 is installed. Either network card can be wired in a Class B, Style 4 or Class A, Style 6 or 7 configuration. Other** optional modules for use with the Cheetah Xi include p/n 10-2204 RM4 Relay Module which provides 4 SPDT programmable relays rated 30 V dc @ 2A or 110 V ac @ 0.5A. The power supply provides a 6 amp, 24 V dc output to the control. This can be expanded to a 12 amp, 24 V dc output when p/n 10-2474-p Supplemental Power Supply is connected. 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.)

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 Fiber Optic Network Card p/n 10-2624 mounts on the controller of the Cheetah Xi or the CyberCat controllers [254 and 1016] to enable communication between the connected controllers. Up to 128 controllers of any combination can communicate with one another when the network card is connected. The Fiber Optic Network card can be wired in a Class B, Style 4 or Class A, Style 7 configuration. The Fiber Optic Network Card is optional for the Cheetah Xi, the CyberCat 254 and1016 controllers.

2.2.1 The EPACO E10-0067 power supply fuse [P3, P4] rating changed to 15A from 10A.

2.2.2 The SHP PRO impedance rating increase of 500 ohms to the linear heat detection circuit is intended to increase the total installation distance for linear heat detectors to 10,000ft. The FM Approved SHP PRO system is currently capable to be configured for 490 ohm total line impedance which includes the base and line impedance.

III EXAMINATION

3.1 Sample of the 10-2624 Fiber Optic Network Card was connected to an FM Approved Cheetah Xi Controller with firmware REV level 1.30. Various combinations of devices and programmable configurations were set-up for examination and testing. Some of the tests were conducted at Fike Corporation's facilities in Blue Springs, MO. The Signal Line Circuit test was performed at FM Approvals' facilities in Norwood, MA. The samples were considered to be representative of the product line 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.

3.2 **Normal Operation** – The Fiber Optic Network Card 10-2624 performance and functionality tests were completed as follows:

3.2.1 **Signaling Line Circuit** - It was verified that the Fiber Optic Network Card 10-2624 signaling line circuits between the networked Cheetah Xi and CyberCat controllers meet (Class A or B) Style 4, 6, or 7 wiring performance as described in table 6.6.1 of NFPA 72.

No other testing was deemed necessary as the Fiber Optic Network Card 10-2624 is the same as the 2 wire network card 10-2482 except for the fiber optic communication methods.

3.3 A production representative sample of the FM Approved Fike EPACO E10-0067 power supply was configured fully loaded for examination and testing. Testing was conducted at Fike Corporation's facilities in Blue Springs, MO. The sample was considered to be representative of the production line and was 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.

3.4 **Normal Operation** – The EPACO E10-0067 power supply functioned normally in both the stand by mode and in the alarm mode with the 15A P3 and P4 fuse.

3.4.1 **Electrical Measurement** - The AC current draw [input power to output circuits] under low [85%], nominal [100%] and high [110%] input voltage conditions was measured with all output circuits loaded to rated current values. The measured results are acceptable.

3.4.2 A production representative sample of the FM Approved Fike SHP PRO fire control system was configured and programmed for examination and testing. Testing was conducted at Fike Corporation's facilities in Blue Springs, MO. The sample was considered to be representative of the product line and was 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.

3.5 **Normal Operation** – The SHP PRO panel functioned normally in both the stand by mode and in the alarm mode when the increased impedance was placed on the linear heat detection circuit.

3.5.1 **Electrical Measurement** - With the linear heat detection circuit at 500ohm maximum rated impedance, the linear heat detection circuit impedance was measured at 85% [17.5Vdc] and 110% [30.8Vdc] secondary circuit voltages. Measured results are considered acceptable.

IV MARKING

4.1 The following information appears on the adhesive label on inside cover of the Cheetah Xi and CyberCat Alarm Control and meets Standard requirements:
- Fiber optic card P/N.
- Installation Manual Reference.

4.2 A revision is assigned for each board. This is identified directly on the board.

4.3 The EPACO E10-0067 power supply markings are not affected by this change.

4.4 The SHP PRO panel markings are not affected by this change

V REMARKS

5.1 Installations shall comply with the relevant requirements of the latest edition of the National Electrical Code (ANSI/NFPA 70) and National Fire Alarm Code (ANSI/NFPA 72).

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

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

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

VIII DOCUMENTATION

8.1 The following drawings describe the Fiber Optic Network Card 10-2624 and are filed under Project 3030404.

Drawing No.	Issue	Description
10-2624-P	N/C	Assembly
10-2624-P	N/C	PCB Assembly
10-2624-sch	N/C	Schematic
06-387	0, 01/06	Instructions

8.2 The following drawings describe the EPACO E10-0067 power supply P3 and P4 fuse change to 15A, and are filed under Project 3017028.

Drawing No.	Issue	Description
02-10517	E	Cover Housing, PSU

8.3 The following drawings describe the linear heat detection circuit 500ohm maximum rated impedance, and are filed under Project 3030404.

Drawing No.	Issue	Description
M07-011	April 24, 2007	Linear Heat Detection Bulletin

IX CONCLUSION

The equipment described in Section I 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: **3030404**

ATTACHMENTS: **None**

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