FIREYE E320 EXPANSION MODULE

FOR USE WITH THE FIREYE FLAME-MONITOR™ CONTROL

E320 CONTROL

RIBBON CABLE E350

DESCRIPTION

The FIREYE E320 Expansion Module provides increased interlock supervision capability of the Flame-Monitor™ System. The Expansion Module connects to the Flame-Monitor Chassis by means of a ribbon cable. It is designed for use exclusively with the 220V/240V Flame-Monitor System. These can be EB720 or the EB701 chassis.

For 110V systems, the E300 Expansion Module should be used along with the E211 Flame-Monitor System.

By wiring any of sixteen interlock switches into the Expansion Module, the Flame-Monitor display will automatically act as a “first-out” annunciator for these interlocks. In addition, a fuel selection circuit is standard.

The Expansion Module does not interfere with the normal operation of the Flame-Monitor System. It expands the message and diagnostic capability.

The E320 problem solving system provides operational information and reduces troubleshooting time and expense. It expands the standard 30 display messages of the Flame-Monitor control to include an additional 16 diagnostic messages.

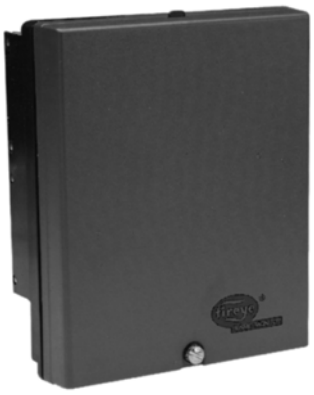
For more information on the E210 (EB720) Flame-Monitor System, see Bulletin E-2001 for a detailed description of the system.

The E320 can also be used with the E120 Flame-Monitor System as described in this bulletin.

SPECIFICATIONS

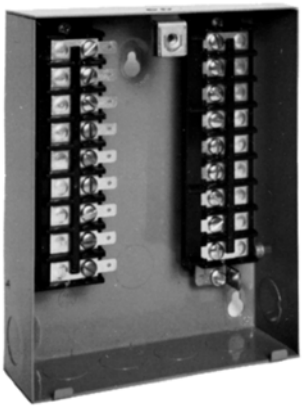
Supply Voltage	220V/240V (min. 187V, max. 264V) 50/60Hz
Ambient Temperature Levels:	- 40° F to +140° F (-40° C to +60° C)
Response Time:	100 milliseconds
Weight:	0.5 lb. (0.2 kg.)
Humidity:	85% R.H., non-condensing

ORDERING INFORMATION



E320 EXPANSION MODULE

E350 RIBBON CABLE (ORDERED SEPARATELY)

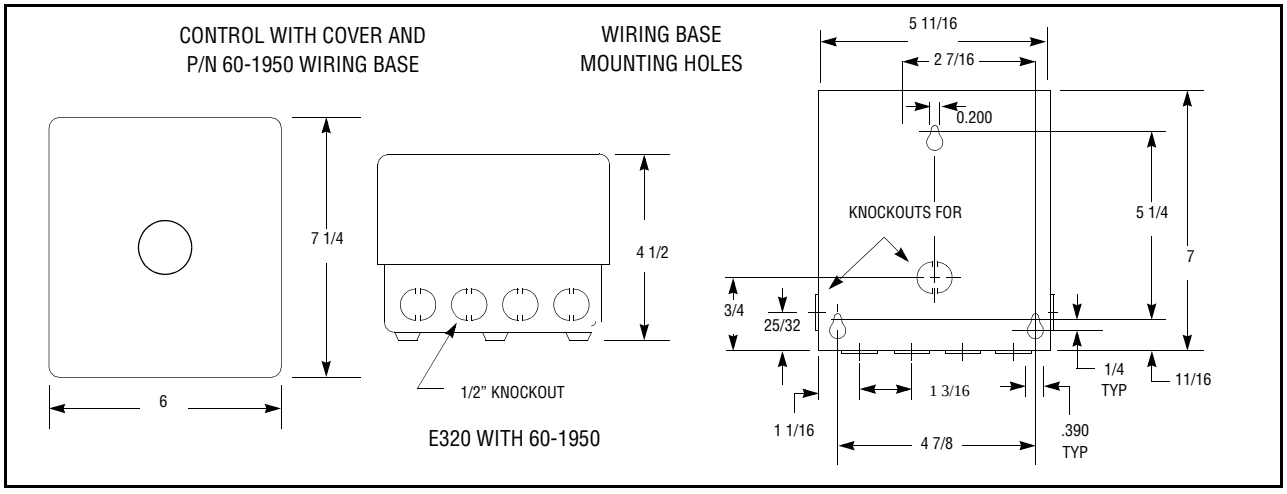


WIRING BASE (60-1950) (ORDERED SEPARATELY)

Table 1

Part Number	Description
E320	Expansion Module used with the EB720 Flame-Monitor 220V/240V (E210)
E300	Expansion Module used with the EB721 Flame-Monitor 110V (E211)
60-1950	Wiring base
E350-3	3 foot ribbon connector cable (900mm)
E350-6	6 foot ribbon connector cable (1800mm)

DIMENSIONS



OPERATION

The E320 Expansion Module expands the capability of the Flame-Monitor System by allowing the operator to individually track the operation of sixteen running interlocks. The non-recycling interlocks are in the 3-P circuit. The interlock in the 3-P circuit will automatically change the standard running interlock message on the Flame-Monitor control from "Safety Circuit Opened Purge" to be one which will individually identify the interlock by name. For example, if the low gas pressure interlock opens, the message will be "Low Gas Pressure."

The message on the ED510 will be displayed on a "first out" basis. The running interlock switch which opens first will be the one shown on the display. In cases where there are multiple interlocks open on start-up, the first open interlock will appear on the display in the following order:

Table 2: E210/E211 Interlock System

OIL MODE		GAS MODE	
Terminal	Interlock	Terminal	Interlock
20	Fuel Selector	21	Fuel Selector
22	Low Oil Temperature	23	Low Gas Pressure
24	Low Oil Pressure	25	High Gas Pressure
26	Low Atomizing Pressure	27	Auxiliary Gas
28	Auxiliary Oil	29	Air Flow
29	Air Flow	30	High Pressure
30	High Pressure	31	High Temperature
31	High Temperature	32	Low Water
32	Low Water	33	High Water
33	High Water	34	Aux NR1
34	Aux NR1	35	Aux NR2
35	Aux NR2	P	Aux NR3
P	Aux NR3		

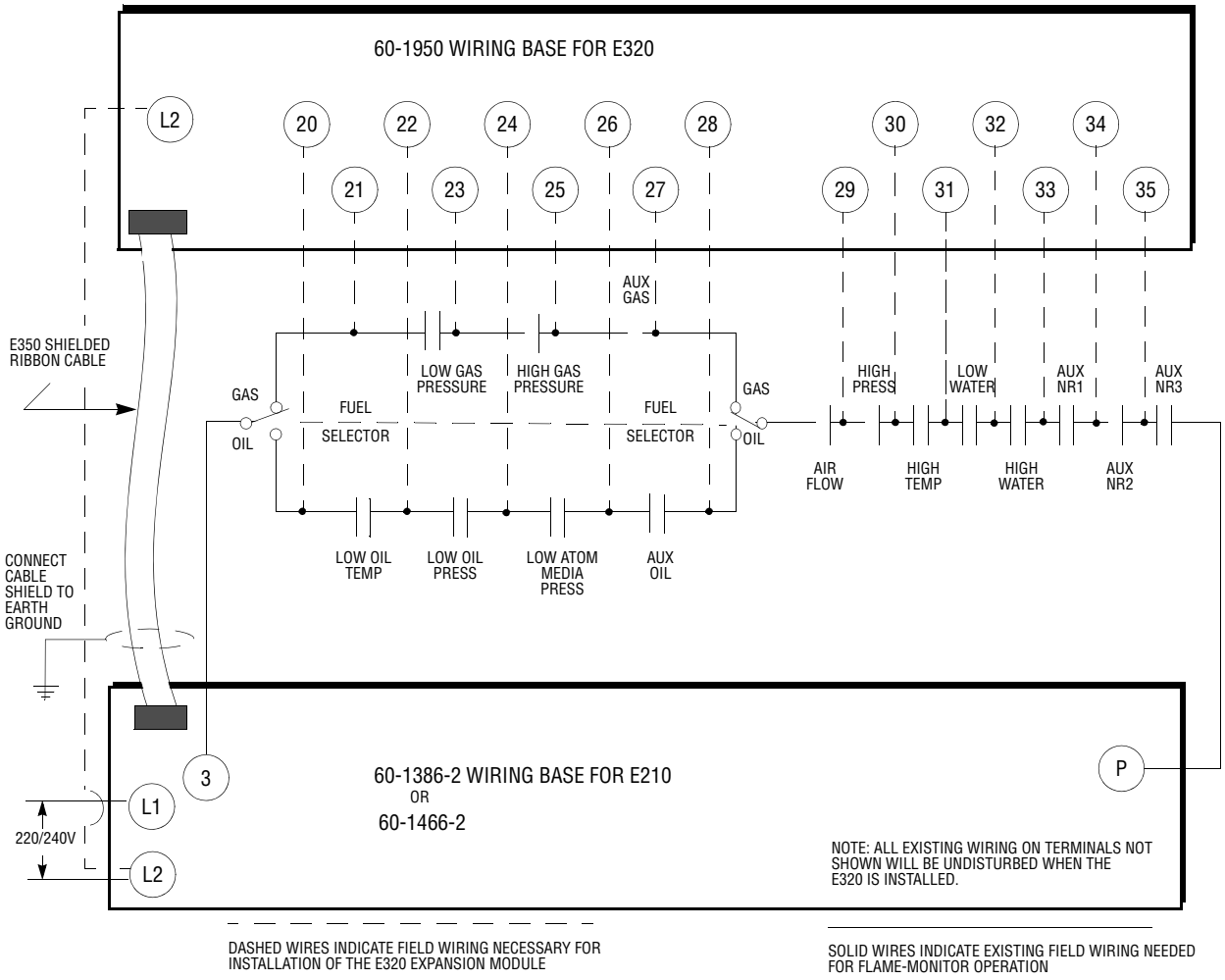
When a "Lockout" condition is manually reset, the Flame-Monitor and Expansion Module are ready to begin a new burner sequence. To reset the system, push down on the reset button found on the Display Module of the ED510, hold for one second and release. Only a small amount of pressure is necessary for this operation.

If the fuel selection switch is operated during a cycle, the control will "lockout" and display a "Safety Circuit Opened" message.

IMPORTANT: When a combination fuel burner is used with the Flame-Monitor, you must interrupt power to the control (terminal L1) momentarily when you change fuels.

When a single fuel burner is used, the fuel selector switch is not necessary. On a gas only burner, the oil interlocks (22, 24, 26, should not be jumpered. On an oil only burner, the gas interlocks (23, 25, 27, 28) should not be jumpered. interlocks (23, 25, 27, 28) should not be jumpered.

TYPICAL WIRING WHEN USED WITH E210 FLAME-MONITOR



IMPORTANT: *If a particular interlock is not used in your system, a jumper must be installed on the terminals of the Expansion Module wiring base which corresponds to that interlock message.*

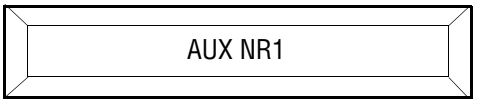
For Example: *If your system has no high temperature switch, a jumper should be placed between terminals 30 and 31.*

CAUTION: (E320 wiring should not interfere with the safety functions of the interlocks). Check each interlock for proper operation after wiring the E320.

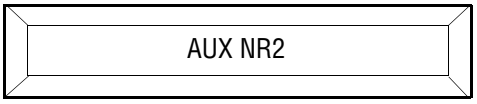
For 110V systems, substitute the E300 for the E320 and substitute the E211 for the E210.

MESSAGES[1]

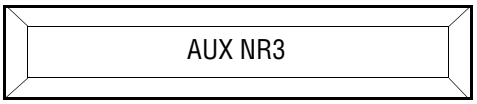
The following is a list of display lockout messages which may appear on the Flame-Monitor when the E320 is connected to the E210 Flame-Monitor System. Refer to bulletin E-3001 for applications using the E110 or E120. The display message corresponding to all wiring base (60-1950) terminals is fixed. For instance, if the interlock switch wired between terminal (31) and (32) opens, the Flame-Monitor message center will display a “LOW WATER” malfunction. If a particular interlock is not used in your system, a jumper must be installed on the terminals of the Expansion Module wiring base which corresponds to that interlock message. See typical wiring diagram on page 4.



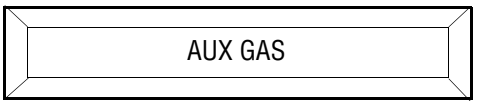
The auxiliary non-recycling limit wired between terminals 33 and 34 has opened.



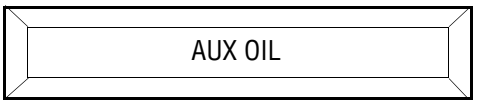
The auxiliary non-recycling limit wired between terminals 34 and 35 has opened.



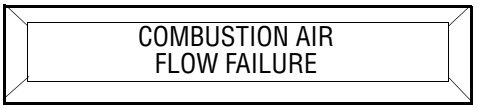
The auxiliary non-recycling limit wired between terminals 35 and P has opened.



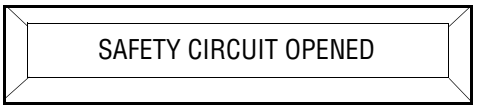
The auxiliary switch in the gas circuit wired between terminals 25 and 27 has opened.



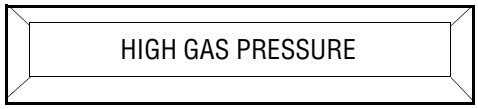
The auxiliary switch in the oil circuit wired between terminals 26 and 28 has opened.



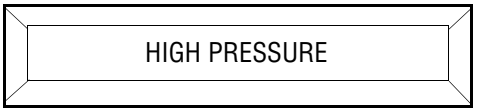
The air flow switch wired between terminals 27/28 and 29 has opened.



The fuel selector switch has been operated during a burner cycle.



The high gas pressure switch wired between terminals 23 and 25 has opened.



The high pressure switch wired between terminals 29 and 30 has opened.

1. Messages more than 8 characters in length will scroll continuously from right to left on the display.

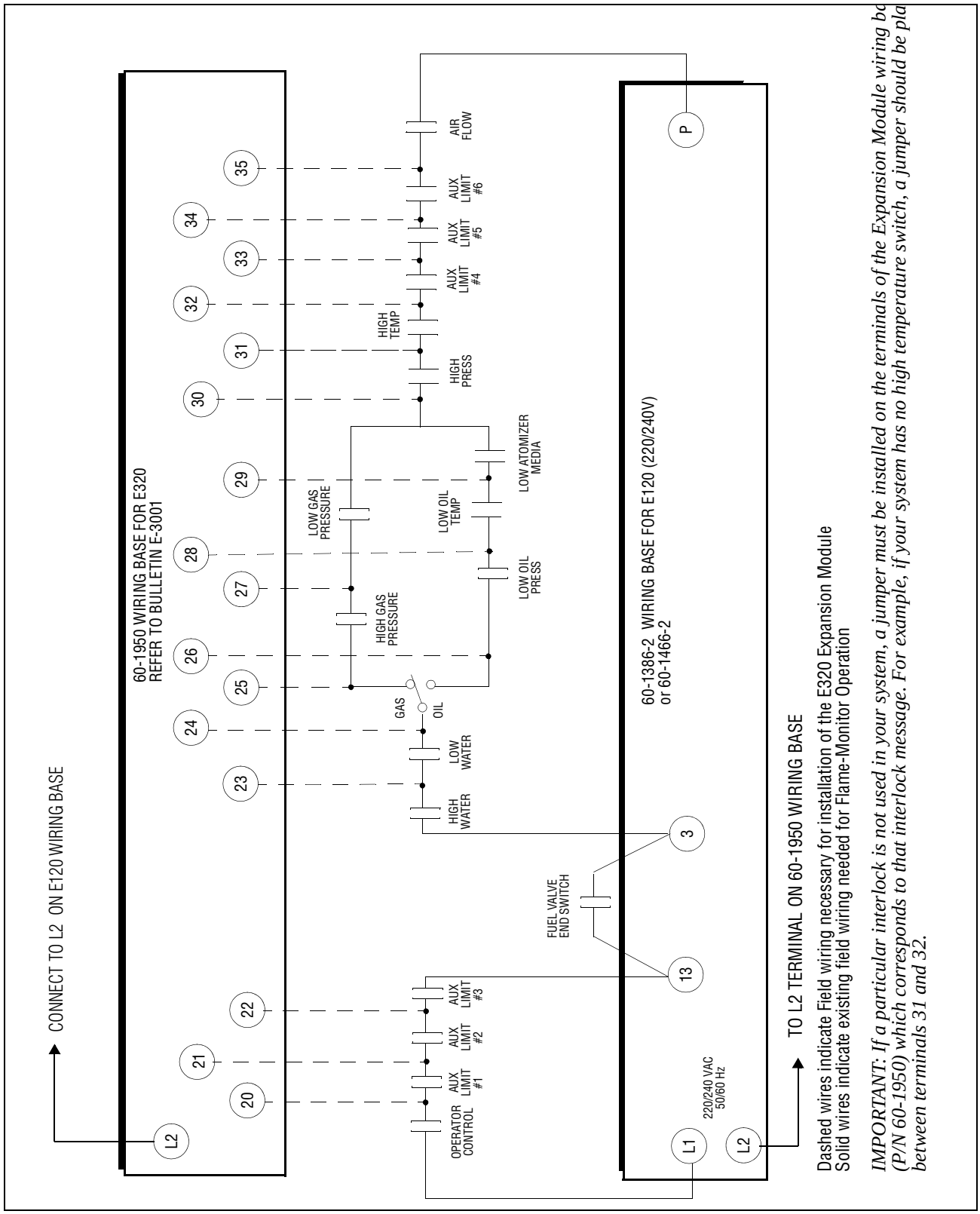
HIGH TEMPERATURE	The high temperature switch wired between terminals 30 and 31 has opened.
HIGH WATER	The high water switch wired between terminals 32 and 33 has opened.
LOW ATOMIZING MEDIA PRESSURE	The low atomizing media pressure switch wired between terminals 24 and 26 has opened.
LOW GAS PRESSURE	The low gas pressure switch wired between terminals 21 and 23 has opened.
LOW OIL PRESSURE	The low oil pressure switch wired between terminals 22 and 24 has opened.
LOW OIL TEMPERATURE	The low oil temperature switch wired between terminals 20 and 22 has opened.
LOW WATER	The low water switch wired between terminals 31 and 32 has opened.

Table 3: E120 Interlock System

OIL MODE		GAS MODE	
Terminal	Message	Terminal	Message
Recycling Limits			
20		20	
21	L1-13 Aux #1 Open	21	L1-13 Aux #1 Open
22	L1-13 Aux #2 Open	22	L1-13 Aux #2 Open
13	L1-13 Aux #3 Open	13	L1-13 Aux #3 Open
Non-Recycling Limits			
23	High Water	23	High Water
24	Low Water	24	Low Water
26	No Fuel Selected	25	No Fuel Selected
28	Low Oil Pressure	27	High Gas Pressure
29	Low Oil Temperature		
30	Low Atomizing Media	30	Low Gas Pressure
31	High Pressure	31	High Pressure
32	High Temperature	32	High Temperature
33	Auxiliary Limit #4	33	Auxiliary Limit #4
34	Auxiliary Limit #5	34	Auxiliary Limit #5
35	Auxiliary Limit #6	35	Auxiliary Limit #6
P	Air Flow	P	Air Flow

For systems that use the E120 chassis, 3 auxiliary interlocks are provided in the L1-13 circuit and 13 interlocks are provided in the 3-P non-recycling circuit. Refer to bulletin E-3001 for detailed operations.

TYPICAL WIRING WHEN USED WITH E120 FLAME-MONITOR



CAUTION: E320 wiring should not interfere with the safety functions of the interlocks. Check each interlock for proper operation after wiring the E320.

When a “Lockout” condition is manually reset, the Flame-Monitor and Expansion Module are ready to begin a new burner sequence. To reset the system, push down on the reset button found on the Display Module of the ED510, hold for one second and release. Only a small amount of pressure is necessary for this operation.

If the fuel selection switch is operated during a cycle, the control will “lockout” and display a “Safety Circuit Opened” message.

IMPORTANT: When a combination fuel burner is used with the Flame-Monitor, you must interrupt power to the control (terminal L1) momentarily when you change fuels.

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INSTALLATION AND WIRING

CAUTION: Remove all power from the Flame-Monitor and the E320 Module before proceeding.

CAUTION: Consult Fireye regarding use of the E320 with the E120 Flame-Monitor control. Special wiring is required.

1. Remove cover by loosening screw 1/4 turn. Pull bottom out and lift up from top clip.

2. Use mounting screw to attach the control to its wiring base (P/N 60-1950). Mounting screw is supplied with the E320.

3. **CAUTION: Route the ribbon cable so it is not in contact or close proximity to line voltage wiring. Secure ribbon cable to double-sided tape provided.**

4. Remove the connector board cover at the bottom of the EB720 chassis and insert the end of the E350 ribbon cable into the circuit board cable connector on the bottom left side of the EB720 as shown

5. Insert the E350 cable into the end on the printed circuit board and drape the ribbon cable down the front on the control as shown. Re-install the connector board cover.

NOTICE

When Fireye products are combined with equipment manufactured by others and/or integrated into systems designed or manufactured by others, the Fireye warranty, as stated in its General Terms and Conditions of Sale, pertains only to the Fireye products and not to any other equipment or to the combined system or its overall performance.

WARRANTIES

FIREYE guarantees for *one year from the date of installation or 18 months from date of manufacture* of its products to replace, or, at its option, to repair any product or part thereof (except lamps, electronic tubes and photocells) which is found defective in material or workmanship or which otherwise fails to conform to the description of the product on the face of its sales order. **THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES AND FIREYE MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED.** Except as specifically stated in these general terms and conditions of sale, remedies with respect to any product or part number manufactured or sold by Fireye shall be limited exclusively to the right to replacement or repair as above provided. In no event shall Fireye be liable for consequential or special damages of any nature that may arise in connection with such product or part.

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