

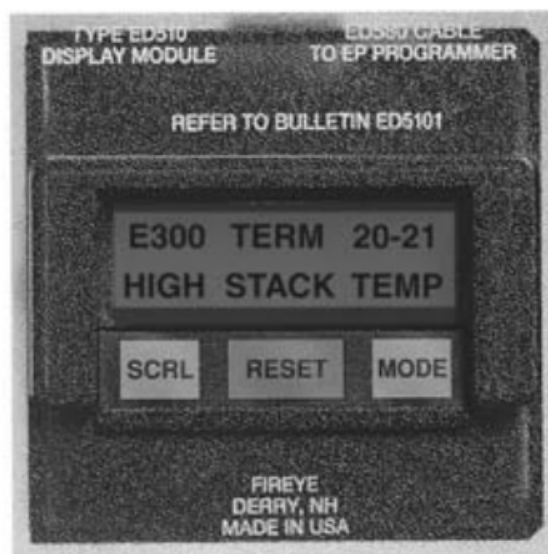


Fireye ED510 Display Module User Manual

[Home](#) » [fireye](#) » Fireye ED510 Display Module User Manual 



ED510 Display Module
User Manual





Contents

- [1 DESCRIPTION](#)
- [2 INSTALLATION](#)
- [3 ORDERING INFORMATION](#)
- [4 BACKLIT LCD DISPLAY](#)
- [5 TACTILE DOME KEYPAD](#)
- [6 GENERAL OPERATION](#)
- [7 DIAGNOSTIC MESSAGES](#)
- [8 HISTORICAL INFORMATION /SYSTEM SUB-MENUS](#)
- [9 LOCKOUT HISTORY](#)
- [10 E300 MESSAGE SELECT \(Flame-Monitor system only\)](#)
- [11 WARRANTIES](#)
- [12 Documents / Resources](#)
 - [12.1 References](#)
- [13 Related Posts](#)

DESCRIPTION

The ED510 Display Module is designed to operate with the FLAME-MONITOR Burner Management Control System using the EP and EPD style (remote mount only for EPD style) programmer modules as well as the MicroM series of controls. The ED510 display module provides the following features and capabilities:

- Two (2) line by sixteen (16) character backlit LCD display.
- Continuous display of current burner operating status, including first out annunciation in the event of a lockout condition.
- Three (3) key, tactile dome keypad to provide historical information of the burner, last six (6) lockout conditions (with burner cycle and burner hour time stamp), assign messages associated with the operation of the E300 expansion module, and diagnostic messages.
- Design mounts directly onto the front face of the EP style programmers.
- RJ style connector for connection to the EP and EPD programmer.
- Remote display capability with the EP and EPD style programmers and MicroM system using standard DIN sized opening and remote mounting kit. Refer to Bulletin E-8002.
- Weather proof housing (NEMA 4 using remote mounting kit 129-145-1, -2).

INSTALLATION

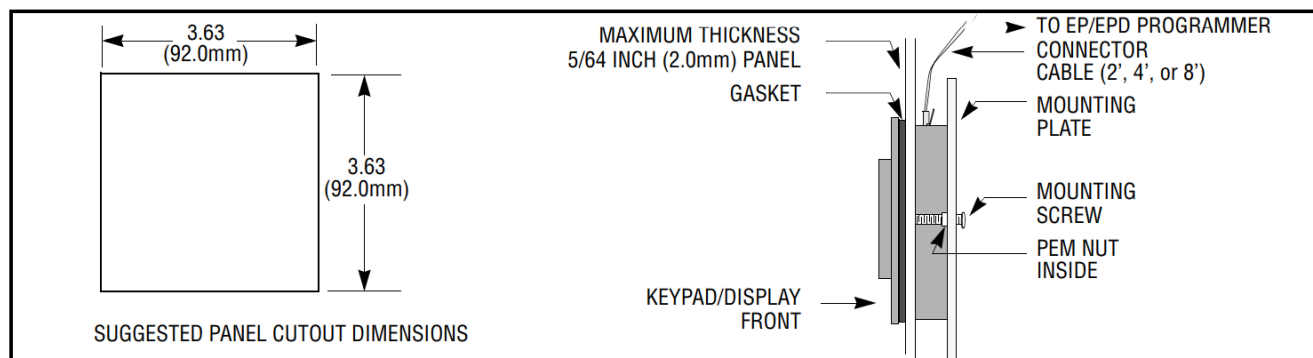
The ED510 display mounts directly onto the front of the EP style programmers. The ED510 can be mounted onto the programmer when the programmer is either installed in the EB700 chassis or not.

- Remove power from the EB700 chassis if the programmer is installed in the chassis.
- Slide the bottom of the ED510 chassis onto the two (2) mounting tabs on the face of the EP style programmer.

- Tilt the ED510 display towards the cover until the mounting tab on top of the ED510 display snaps into position into the opening on the face of the EP programmer.
 - Install the ED580 cable (provided) into the RJ style connectors on both the ED510 display and EP style programmers.
- Insert the EP style programmer and ED510 display into the second slot on the EB700 chassis (marked “Programmer Module”) and restore power.

For information on how to mount the ED510 display remotely for the EP, EPD style programmers and MicroM systems, refer to Bulletin E-8002.

FIGURE 1.



ORDERING INFORMATION

P/N	DESCRIPTION
ED510	Display module. Includes ED580-1 cable. (1.25 inches).
129-145-1	Remote mounting kit. Includes ED580-4 cable (4 foot).
129-145-2	Remote mounting kit. Includes ED580-8 cable (8 foot)
ED580-1	1.25 inch display cable.
ED580-4	4 foot remote display cable.
ED580-8	8 foot remote display cable.
ED610	Adaptor for cable lengths greater than 8 feet.

Temperature Rating

32°F — 140°F (0°C — 60°C)

BACKLIT LCD DISPLAY

The ED510 display has a two (2) line by sixteen (16) character backlit LCD display. The backlit function is continuously energized.

Contrast Control: The contrast for the LCD display is factory set. If the contrast must be adjusted for any reason (e.g.: remote mounting), a potentiometer is provided on the back of the ED510 display board.

TACTILE DOME KEYPAD

The ED510 has a three (3) key, tactile dome keypad to review both current and historical information associated

with the operation of the burner. Following is the function of each key:

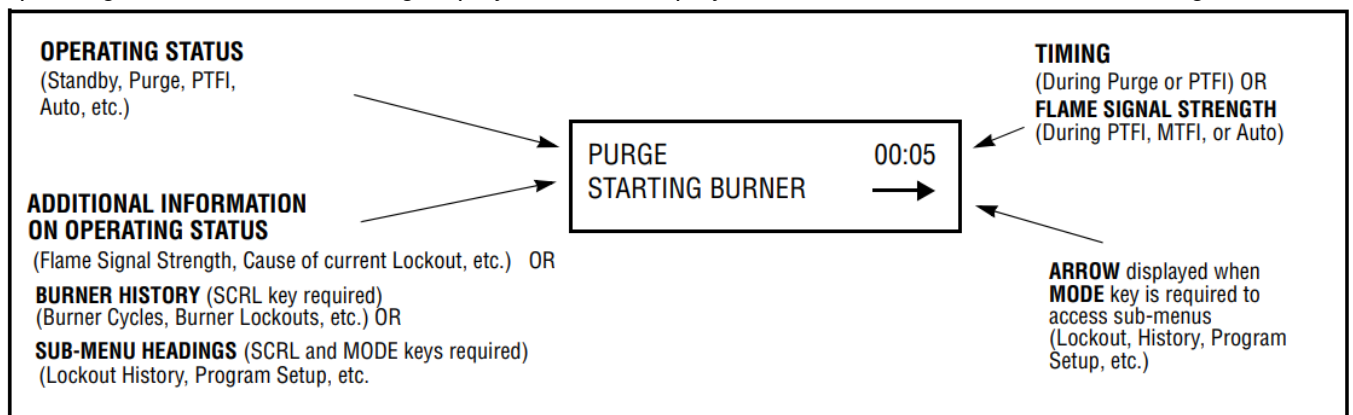
SCRL	SCRL key is used to advance through and display historical and operational information associated with the control and various submenus.
RESET	RESET key resets the control in the event of a lockout condition. The reset key is also used to modify Unit Address and messages associated with the E300 expansion module.
MODE	MODE key selects and enters a sub-menu (e.g. LOCKOUT HISTORY). The SCRL key then advances through the selections within each sub-menu. The MODE key will also exit the sub-menu. A right-hand arrow (➡) displayed on the bottom line indicates the MODE key is operational.



GENERAL OPERATION

The ED510 displays current burner status, first out annunciation in the event of a lockout condition, historical burner information, detailed lockout information of the last six (6) lockout conditions, diagnostic messages, and the ability to program messages associated with the E300 Expansion Module.

Depending on the information being displayed, data is displayed on the ED510 screen in the following locations.



The EP(D) and MicroM programmers update the messages to the ED510 display at least once every 8 seconds. If the ED510 display does not receive information from the EP(D) programmer within 10 seconds the ED510 will display:

FIREYE ED510

WAITING FOR DATA

This can be the result of a defective connection between the programmer and display, defective cable, defective drivers in the programmer or display, or an electrical noise transient causing the EP(D) or MicroM programmers to cease communication.

Removing and restoring power should be executed to recover proper operation. Refer to bulletin SN-100 for recommended techniques for display installation.

ED510 MESSAGES (as used with Flame-Monitor)

RUN MESSAGES

STANDBY L1-13 OPEN	The operating control of the FLAME-MONITOR (terminals L1-13) is open.
PURGE 00:05 HIGH FIRE PURGE	Firing rate motor sent to high fire (term. 10-X made), purge timing displayed upper right hand corner.
PURGE 00:35 LOW FIRE PURGE	Firing rate motor sent to low fire (term. 10-12 made), purge timing displayed in upper right hand corner.
PTFI 00:02 IGNITION TIMING	PTFI timing started. Pilot not proven yet. PTFI timing displayed in upper right hand corner.
PTFI 19 FLAME SIGNAL	Pilot flame proven during PTFI. Flame signal strength displayed in upper right hand corner.
MTFI 25 FLAME SIGNAL	Main flame proven during MTFI. Flame signal strength displayed in upper right hand corner.
AUTO 40 FLAME SIGNAL	Modulator motor sent to auto position (term 10-11 made). Flame signal strength displayed in upper right hand corner.
POST PURGE 00:05 CYCLE COMPLETE	Demand satisfied. L1-13 open. Blower motor de-energized 15 seconds after L1-13 opens.

HOLD MESSAGES

HOLD STANDBY 3-P INTLK CLOSED	Dipswitch #6 (3-P Proven Open to Start) is set in the Up position (Enabled). At the start of the cycle, the 3-P circuit was closed. It will hold in this position for 60 seconds and then lockout if the 3-P circuit does not open.
HOLD PURGE 00:00 D-8 LIMIT OPEN	The control has driven the firing rate motor to high purge (term. 10-X made) and is waiting for the high fire switch (term. D-8) to close. It will hold this position for ten (10) minutes and then lockout if the D-8 circuit does not close. Applies to EP160, EP161, EP165, EP170 programmers.
HOLD PURGE 01:00 M-D LIMIT OPEN	The control has finished purge and the firing rate motor is driving to the low fire position (term. 10-12 made) waiting for the low fire switch (term. M-D) to close. It will hold this position for ten (10) minutes and then lockout if the M-D circuit does not close.
HOLD PURGE 00:10 3-P INTLK OPEN	The running interlock circuit (3/P) has not closed within the first ten (10) seconds of purge. The control will hold for ten (10) minutes and then lockout. Applies to recycle programmers only.
HOLD STANDBY 25 FALSE FLAME	Flame has been sensed during the burner off time (term. L1-13 open) or during the purge period. This message will hold for sixty (60) seconds and then lockout if flame is still present. Flame signal strength is displayed in the upper right hand corner.

LOCKOUT MESSAGES

LOCKOUT STANDBY 3-P INTLK CLOSED	Dipswitch #6 (3-P Proven Open to Start) is set in the Up position (Enabled). At the start of the cycle, the 3-P circuit was closed, and the control has waited 60 seconds for the 3-P circuit to open.
LOCKOUT PURGE D-8 LIMIT OPEN	The control has held for more than 10 minutes waiting for the high fire switch (D-8) to close. Applies to EP160, EP161, EP165, EP170 programmers.
LOCKOUT PURGE 3-P INTLK OPEN	The running interlock circuit (3-P) has opened during the purge period or failed to close within the first 10 seconds of purge on non-recycle programmers, or has not closed within 10 minutes on recycle programmers.
LOCKOUT 13-3 FUEL VALVE END SWITCH	The fuel valve end switch wired between terminals 13 and 3 opened during purge or at start up.
LOCKOUT PURGE M-D LIMIT OPEN	The control has held for more than 10 minutes waiting for the low fire switch (M-D) to close.
LOCKOUT PTFI 3-P INTLK OPEN	The running interlock circuit (3-P) has opened during the pilot trial for ignition period. Applies to non-recycle programmers only.
LOCKOUT MTFI 3-P INTLK OPEN	The running interlock circuit (3-P) has opened during the main trial for ignition period. Applies to non-recycle programmers only.
LOCKOUT AUTO 3-P INTLK OPEN	The running interlock circuit (3-P) has opened during the main burner on period. Applies to non-recycle programmers only.
LOCKOUT STANDBY FALSE FLAME	Flame has been sensed during the burner off time (term. L1-13 open) or during the purge period for sixty (60) seconds.
LOCKOUT PTFI FLAME FAIL	A flame failure occurred during the pilot trial for ignition period.
LOCKOUT MTFI FLAME FAIL	A flame failure occurred during the main trial for ignition period.
LOCKOUT AUTO FLAME FAIL	A flame failure occurred during the main burner on period.
LOCKOUT PTFI SCANNER NOISE	This message appears because of ignition cable noise. Reroute scanner wires away from high voltage ignition cables. Check for proper spark gap or cracked porcelain. Check for proper grounding of wiring base and power supply. Replace worn ignition cable and/or faulty connections.

LOCKOUT PTFI SHORT CIRCUIT TERM 5,6,7	Excessive current or short circuit detected on terminals 5, 6, or 7 during PTFI, MTFI, or Auto. The control will lockout upon sensing this condition on two consecutive cycles.
LOCKOUT PTFI FUEL VALVE STATE CHANGE	During pilot trial for ignition period, voltage sensed on terminal 7 is different from the previous cycle. (e.g.: jumper added or removed between term. 7 and 5 or 6).
LOCKOUT AUTO LINE FREQUENCY NOISE	Electrical noise detected on terminals L1 and L2.
LOCKOUT AC POWER FAIL	A power interruption to terminals L1 and L2 has caused the control to lockout. Applies to EP165 programmer only.

CHECK MESSAGES

LOCKOUT STANDBY 3-P INTLK CLOSED	Dipswitch #6 (3-P Proven Open to Start) is set in the Up position (Enabled). At the start of the cycle, the 3-P circuit was closed, and the control has waited 60 seconds for the 3-P circuit to open.
LOCKOUT PURGE D-8 LIMIT OPEN	The control has held for more than 10 minutes waiting for the high fire switch (D-8) to close. Applies to EP160, EP161, EP165, EP170 programmers.
LOCKOUT PURGE 3-P INTLK OPEN	The running interlock circuit (3-P) has opened during the purge period or failed to close within the first 10 seconds of purge on non-recycle programmers, or has not closed within 10 minutes on recycle programmers.
LOCKOUT 13-3 FUEL VALVE END SWITCH	The fuel valve end switch wired between terminals 13 and 3 opened during purge or at start up.
LOCKOUT PURGE M-D LIMIT OPEN	The control has held for more than 10 minutes waiting for the low fire switch (M-D) to close.
LOCKOUT PTFI 3-P INTLK OPEN	The running interlock circuit (3-P) has opened during the pilot trial for ignition period. Applies to non-recycle programmers only.
LOCKOUT MTFI 3-P INTLK OPEN	The running interlock circuit (3-P) has opened during the main trial for ignition period. Applies to non-recycle programmers only.
LOCKOUT AUTO 3-P INTLK OPEN	The running interlock circuit (3-P) has opened during the main burner on period. Applies to non-recycle programmers only.

LOCKOUT STANDBY FALSE FLAME	Flame has been sensed during the burner off time (term. L1-13 open) or during the purge period for sixty (60) seconds.
LOCKOUT PTFI FLAME FAIL	A flame failure occurred during the pilot trial for ignition period.
LOCKOUT MTFI FLAME FAIL	A flame failure occurred during the main trial for ignition period.
LOCKOUT AUTO FLAME FAIL	A flame failure occurred during the main burner on period.
LOCKOUT PTFI SCANNER NOISE	This message appears because of ignition cable noise. Reroute scanner wires away from high voltage ignition cables. Check for proper spark gap or cracked porcelain. Check for proper grounding of wiring base and power supply. Replace worn ignition cable and/or faulty connections.
LOCKOUT PTFI SHORT CIRCUIT TERM 5,6,7	Excessive current or short circuit detected on terminals 5, 6, or 7 during PTFI, MTFI, or Auto. The control will lockout upon sensing this condition on two consecutive cycles.
LOCKOUT PTFI FUEL VALVE STATE CHANGE	During pilot trial for ignition period, voltage sensed on terminal 7 is different from the previous cycle. (e.g.: jumper added or removed between term. 7 and 5 or 6).
LOCKOUT AUTO LINE FREQUENCY NOISE	Electrical noise detected on terminals L1 and L2.
LOCKOUT AC POWER FAIL	A power interruption to terminals L1 and L2 has caused the control to lockout. Applies to EP165 programmer only.

DIAGNOSTIC MESSAGES

LOCKOUT AUTO CHECK AMPLIFIER	POSSIBLE CAUSE — High electrical noise. — Defective field wiring. — Defective amplifier. — Defective IR scanner.	SOLUTION — Check for proper ground on power supply. — Install noise suppressor on power supply (P/N 60-2333). — Make sure line phase on interlock circuit is the same as found on L1/L2 power supply to E 100. — Replace amplifier. — Replace IR cell.
LOCKOUT PTFI CHECK CHASSIS	— Voltage on terminal 7 at improper time.	— Check wiring to terminal 7.
LOCKOUT PURGE CHECK PROGRAMMER	— Voltage on terminal 5 or 6 at improper time.	— Check wiring to terminals 5 and 6.
LOCKOUT AUTO CHECK SCANNER	— Flame signal detected during shutter close time on 45UV5 scanner.	— Stuck scanner shutter. Replace 45 UV5 scanner.
LOCKOUT AUTO CHECK EXPANSION MODULE	— The E300 Expansion Module has a defective optocoupler.	— Replace E300 Expansion Module.
LOCKOUT AUTO AUTO CHECK AMPLIFIER FAIL	— Amplifier has failed diagnostic checks.	— Replace amplifier.

HISTORICAL INFORMATION /SYSTEM SUB-MENUS

At any time the control is powered, the SCRL key will scroll through and display the total number of burner cycles, burner lockouts, and system hours on the bottom line of the ED510 display. The top line will continue to show the current run mode of the control (e.g. PURGE, AUTO, etc.). Following the historical information, the SCRL key will display four (4) System Sub-menus providing the following information and/or functions:

- Lockout History (with burner cycle and burner hour time stamp).
- E300 Message Select (to program messages associated with the E300 Expansion Module).
- Program Setup (to display programmer type, purge timing, FFRT timing, etc.).
- System Information (status of M-D circuit, average pilot flame signal, etc.).

The system sub-menus require the MODE key to gain access to the information associated with each sub-menu. An arrow is displayed in the lower right hand corner of the display to indicate a system sub-menu. The order in which the information is displayed every time the SCRL key is pressed is as follows:

AUTO 40 BNR CYCLES 385	Number of burner operating cycles. (L1-13 closed). (385 burner cycles in this example.)
AUTO 40 BNR LOCKOUTS 21	Number of burner lockouts. (21 lockouts in this example.)
AUTO 40 SYS HOURS 233	Number of hours the control has been powered. (233 hours in this example.)
AUTO 40 LOCKOUT HISTORY %	Sub-menu to display the cause of the last 6 lockouts. The MODE key is required to display the actual lockouts.
AUTO 40 E300 MSG SELECT %	Sub-menu to program the messages associated with the operation of the E300 expansion module. The MODE key is required to enter the sub-menu.
AUTO 40 PROGRAM SETUP %	Sub-menu to display various operating parameters of the programmer and amplifier. The MODE key is required to enter the sub-menu.
AUTO 40 SYSTEM INFO %	Sub-menu to display information pertaining to the operation of the control. The MODE key is required to enter the sub-menu.

LOCKOUT HISTORY

The sub-menu "LOCKOUT HISTORY" will display the last six (6) lockouts, along with the burner cycle and burner hour when the lockout occurred. When the MODE key is pressed, the screen will display the most recent lockout condition and the number of that lockout (e.g. LO #127 represents the 127th lockout of that control). The SCRL key will display the Burner Hour, followed by the Burner Cycle when the lockout occurred. The SCRL key will advance to the next lockout, and repeat the sequence listed above. The MODE key will exit the sub-menu.

PRES S	SCREEN DISP LAYS	DESCRIPTION
SCRL	AUTO 45 LOCKOUT HIS TORY >	Scrolling through the historical information. Control has released to auto modulation , flame signal strength = 45.
MODE	LO #158 PU RGE D-8 LIMIT OPE N	The last (most recent) lockout condition. This is the 158th lockout of the control.
SCRL	LO #158 PU RGE @ BNR HOURS 136	The last lockout occurred after 136 hours of burner operation.
SCRL	LO #158 PU RGE @ BNR CYCLE 744	The last lockout occurred on the 744 burner cycle.
SCRL	LO #157 AU TO 3-P INTLK OPE N	The next to last lockout condition. This is the 157th lockout of the control.
MODE	AUTO 45 FLAME SIGNAL	Screen has returned to the run message. Control has released to auto modulation, flame signal strength = 45.

E300 MESSAGE SELECT (Flame-Monitor system only)

The sub-menu “E300 MSG SELECT” will allow the user to modify the lockout alarm messages associated with the operation of the E300 Expansion Module. The various safety limits had to be wired in the exact order that was shown in the E3001 Product Bulletin for the E300. For example, the low water cutoff had to be wired between terminals 23 and 24 of the 60-1950 wiring base of the E300. With the EP style programmers (Engineering code 28 or later), the user will now be able to select which message applies to the individual terminals. The messages associated with the E300 are divided into four (4) groups: Recycle, Non-recycle, Gas Select, and Oil Select. The Recycle group pertains to the limits that are connected between terminals L1 and 13 of the E100/E110 FLAME-MONITOR. These are terminals 20-21, 21-22, and 22- 13.

Note: Refer to Bulletin E-3001 for a wiring diagram of the E300 terminals.

The Non-Recycle group pertains to the limits that are connected between terminals 3 and P of the E100/E110 FLAME-MONITOR. These are terminals 3-23, 23-24, 30-31, 31-32, 32-33, 33-34, 34-35, and 35-P. The Gas Select group pertains to the terminals associated with the gas interlocks of the E300. These are terminals 25-27, 27-30.

The Oil Select group pertains to the terminals associated with the oil interlocks of the E300. These are terminals 26-28, 28-29, and 29-30. The lockout messages associated with the above terminals can be modified via the ED510 Display. The selection of available messages are dependent on each group. For example, the message “Low Oil Pressure” is a selection only for the Oil Select group. The default message for a particular interlock is the standard message for those terminals as indicated in the E3001 bulletin. For example, the default message for terminals 20-21 is “L1-13 AUX #1 OPEN.”

TO MODIFY THE E300 MESSAGES

All three keys: Mode, Reset and Scroll, are used to modify the E300 messages. The Mode key is used to enter or exit the sub-menu associated with the E300 messages. The Scroll key is used to advance through the various terminals or selectable messages. The Reset key is used to modify a terminal message and select a new message. To modify the E300 messages:

Press the Scroll key until the ED510 displays:

E300 MSG SELECT Press the Mode key and the screen displays:

E300 TERM #20-21

L1-13 AUX#1 OPEN or programmed message.

Press the Scroll key and the screen displays:

E300 TERM #21-22

L1-13 AUX#2 OPEN or programmed message.

To change the message, press and hold the Reset key for one (1) second. When the Reset key is released, the screen displays:

MDFY TERM #21-22

L1-13 AUX#2 OPEN

Press the Scroll key to display the available messages for the particular group being modified. See attached List of available messages for each group.

When the messages displayed is appropriate for the terminals, press and hold the Reset key for one (1) second.

When the Reset key is released, the screen displays:

E300 TERM #21-22

LOW WATER or programmed message.

Press the Mode key to exit the E300 Message Sub-menu.

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 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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Documents / Resources



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ED510 Display Module, ED510, Display Module, Module

References

- [Fireye | Flame Safeguard and Combustion Controls](#)