



# MART1, MART3, MART1T, MAUV1, MAUV3 and MAUV1T

AMPLIFIER MODULES  
FOR USE WITH THE FIREYE MODULAR  
M-SERIES II CONTROL



Year 2000 Compliant in accordance with BSI document DISC PD2000-I:1998

## DESCRIPTION

The Fireeye MART1, MART3, MART1T, MAUV1, MAUV3 and MAUV1T are Amplifier Modules used with the Fireeye Modular M-SERIES II control. These amplifier modules provide flame scanning capabilities using any of the Fireeye standard ultraviolet scanners (self-check scanners not applicable), flame rods, and photocells. The Flame Failure Response Time (FFR.T.) of the control is determined by the selection of the amplifier module (see Ordering Information). Test jacks are provided on the amplifier modules to permit flame signal measurement during operation.

After scanner selection, the proper amplifier module **must** be used in the Modular M-SERIES II chassis (see Ordering Information). The amplifier module incorporates a plug-in design for ease of installation.

The programmer module determines the operational characteristics of the control (e.g. relight, purge timing, etc.).

For proper and safe application of this product, you must refer to bulletins C-4000 or C-4000E for a detailed description of the operation of the Modular M-SERIES II control, including installation instructions, operating sequences for the programmer modules, etc. Also follow the scanner installation and wiring instructions found in bulletins C-4000 or C-4000E for proper flame scanning operation.



**WARNING** Selection of this control for a particular application should be made by a competent professional, licensed by a state or other government agency. Inappropriate application of this product could result in an unsafe condition hazardous to life and property. Installation should not be considered complete until pilot turndown and other appropriate performance tests have been successfully completed.

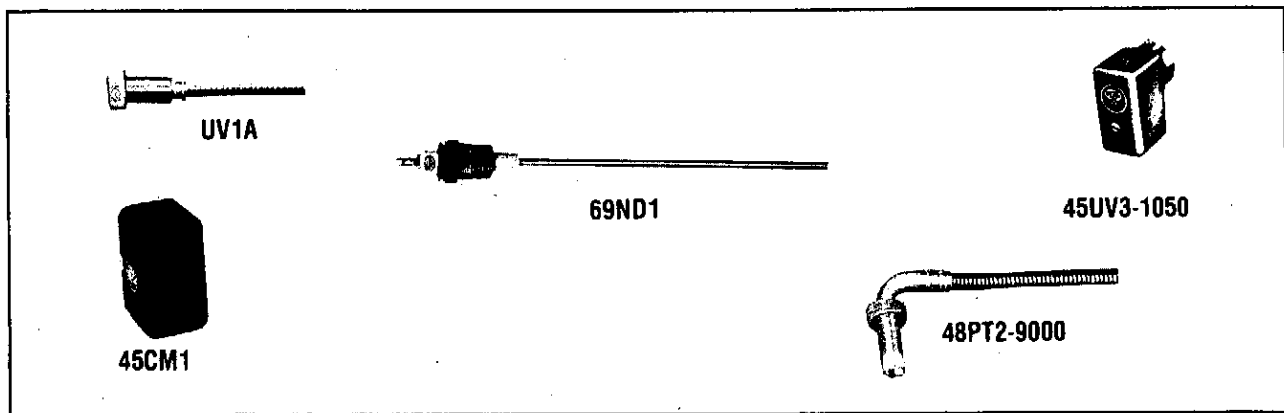


## ORDERING INFORMATION

### Flame Amplifier Selection:

P/N	DESCRIPTION	USE WITH SCANNER
MAUV1	UV amplifier, 2-4 second F.F.R.T.	UV1A, UV2, UV8A, 45UV3-1050
MAUV3	UV amplifier, 3 second F.F.R.T.	UV1A, UV2, UV8A, 45UV3-1050
MAUV1T	UV amplifier, .8 second F.F.R.T.	UV1A, UV2, UV8A, 45UV3-1050
MART1	Flame rectification amplifier 2-4 second F.F.R.T.	45CM1, 69ND1
MART3	Flame rectification amplifier, 3 second F.F.R.T.	45CM1, 69ND1
MART1T	Flame rectification amplifier .8 second F.F.R.T.	45CM1, 69ND1

## FLAME SCANNER SELECTION



UV SCANNERS:	
UV1A3	1/2" NPT connector, 3' flex. cable
UV1A6	1/2" NPT connector, 6' flex. cable
UV2	3/8" NPT connector, 3' flex. cable
UV8A	1/2" NPT 90.degree angle head, 6' unshielded leads
45UV3-1050	3/4" sleeve/set screw mount

FLAME DETECTORS:	
45CM1-1000	Photocell with filter
45CM1-1000Y	Photocell without filter
69ND1-1000K4	12 inch flame rod, 1/2" NPT connector
69ND1-1000K6	18 inch flame rod, 1/2" NPT connector
69ND1-1000K8	24 Inch flame rod, 1/2" NPT connector



## APPROVALS

AGENCY APPROVALS						
	UL	CSA	FM	AGA	EC230	EC298
MAUV1	✓	✓	✓	✓		
MAUV3					✓	✓
MAUV1T	✓	✓	✓	✓	✓	✓
MART1	✓	✓	✓	✓		
MART3					✓	✓
MART1T	✓	✓	✓	✓	✓	✓

**Underwriters Laboratories Inc.:** Listed Guide MCCZ — File MP 1537

**Underwriters Laboratories Inc.:** Recognized Components Guide MCCZ2 File MP1537

**Canadian Standards Association:** Guide 300-1-0.2 Class 2642 Oil File LR7989  
Guide 140-A-2 Class 2632 Gas File LR 7989

**American Gas Association**

**EN230**

**EN298**

**Factory Mutual**

**ANS Z21.20 Automatic Ignition Systems.**

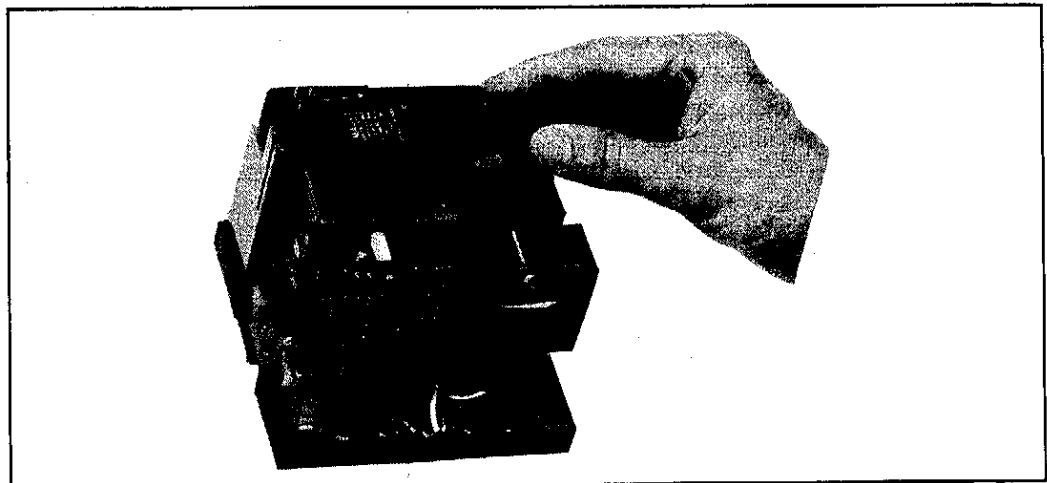


**Remove power from the control and remove the control from its wiring base before proceeding.**

## INSTALLATION

The amplifier modules are used with the Fireeye Modular M-SERIES II Base Chassis (P/N MC120, MC120E, MC120P, MC120R, MC120RE for 120VAC, P/N MC230, MC230R for 240VAC). They are installed in the chassis by grabbing hold of the amplifier module by the edges of its printed circuit board, aligning the module with the guide slots on the opening in the middle of the chassis, and inserting the module into the pin connectors.

The amplifier modules are designed to fit in the proper slot only. **DO NOT FORCE THEM.**





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(Supersedes August 1995)

**WARRANTIES**

Fireye guarantees for one year from the 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 manufactured or sold by Fireye shall be limited exclusively to the right to replacement or repair. F.O.B. Derry, N.H., as above provided. In no event shall Fireye be liable for consequential or special damages of any nature which may arise in connection with such product or part.

**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.





# MP100, MP100E, MP101, MP102, MP102E, MP230, MP230H, MP560, MP561, and MP562

**PROGRAMMER MODULES FOR USE WITH THE  
FIREYE MODULAR M-SERIES II CONTROL**

## DESCRIPTION

The Fireye MP100, MP100E, MP101, MP102, MP102E, MP230, MP230H, MP560, MP561 and MP562 Programmer Modules are used with the Fireye Modular M-Series II control. The operational characteristics of the control are determined by the selection of the programmer module (e.g. re-ignition, 2-stage capability, pilot cutoff, etc.). The programmer module incorporates a plug-in design for easy installation.

Some programmer modules (MP230, MP230H, MP560, MP561, and MP562) are equipped with a series of dipswitches to select Purge Timing, Pilot Trial for Ignition (PTFI) Timing, and Recycle or Non-Recycle operation. LED indicator lights are on all programmer modules, indicating the operating status of the control. A "check-run" switch is provided on the MP560, MP561 and MP562 programmer modules to assist in testing size and stabilization of the pilot.

Flame Failure Response Time (FFRT) is determined by the selection of the amplifier module. Test jacks are also provided on the flame amplifier module to permit flame signal measurement during operation. For proper and safe application of this product, you must refer to Fireye bulletin C-4000 or C-4000E for a detailed description of the various programmer modules, including installation instructions, amplifier selection, operating sequences for each programmer module, etc.



**WARNING: Selection of this control for a particular application should be made by a competent professional, licensed by a state or other government agency. Inappropriate application of this product could result in an unsafe condition hazardous to life and property. Installation should not be considered complete until pilot turndown and other appropriate performance tests have been successfully completed.**

## PROGRAMMER MODULE SELECTION

Part Number	DESCRIPTION
MP100/MP100E	Relight operation.
MP101	Same as MP100, except will ignore flame signal in off cycle.
MP102/MP102E	Operates like the MP100, except the standing pilot and relight features are eliminated. Ignition safety time is 5 seconds. Control will lockout on flame failure.
MP230	Selectable purge timing, trial-for-ignition timing, and recycle/non-recycle operation.
MP230H	Selectable purge timing, trial-for-ignition timing, pilot stabilizing period, and recycle/non-recycle operation. 10 second main flame trial-for-ignition. For use with two-stage burners.
MP560	Selectable purge timing, pilot-trial-for-ignition timing, pilot stabilizing period, and recycle/non-recycle operation. 10 second main flame trial-for-ignition, check-run switch.
MP561	Selectable purge timing, pilot-trial-for-ignition timing, and recycle/non-recycle operation. 10 second main flame trial-for-ignition, check-run switch.
MP562	Same as MP560, with lockout on loss of air flow. Non-recycle operation.

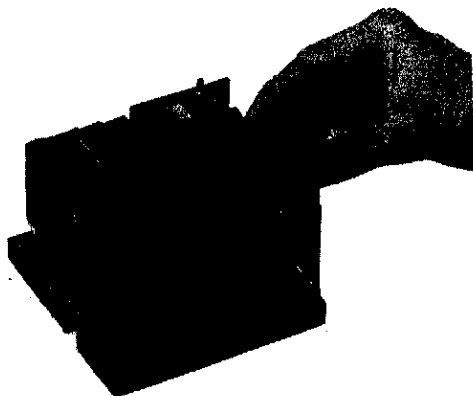
Programmers with the suffix "E" (e.g. MP100E) are for use with the MC230 and MC230R chassis only.



**WARNING:** Remove power from the control and remove the control from its wiring base before proceeding.

## INSTALLATION

The Programmer Modules are used with the Fireeye modular M-Series II Chassis (P/N MC120, MC120E, MC120P, MC120R and MC120RE for 120VAC, MC230 and MC230R for 240 VAC). They are installed in the chassis by grabbing hold of the programmer module by the ridged finger grips on the side on the module, aligning the module with the guide slots on the opening farthest from the transformer, and inserting the module into the pin connectors.



The programmer modules are designed to fit in the proper slot only. **DO NOT FORCE THEM.**  
**Replaceable Fuse:** The programmer modules are designed with a field-replaceable fuse. The fuse is located on the printed circuit board near the connectors. The fuse will open as a result of an overload condition on terminals 3, 4, or 5. In the event the fuse opens, remove the fuse (using a small screwdriver) and install a Fireeye replacement fuse (P.N 23-176) or equivalent 2AG, 8 amp fuse (e.g. Littlefuse #225008) In programmers used with the MC230 and MC230R, use replacement fuse P.N 23-183 or equivalent (3.5 amp, 2AG, SLO-BLO) Littlefuse #22903.5.

## APPROVALS

AGENCY APPROVALS						
	UL	CSA	FM	AGA	EN230	EN298
MP100	✓	✓	✓	✓	✓	✓
MP100E					✓	✓
MP101	✓	✓	✓			
MP102					✓	✓
MP102E					✓	✓
MP230	✓	✓	✓	✓		
MP230H	✓	✓	✓	✓		
MP560	✓	✓	✓	✓		
MP561	✓	✓	✓	✓		
MP562	✓	✓	✓			

**Underwriters Laboratories Inc.**  
**Canadian Standards Association:**

Listed MCCZ File MP1537  
 Guide 300-1-0.2 Class 2642 Oil File LR 7989  
 Guide 140-A-2 Class 2632 Gas File LR7989  
 Certification Report #C1715001

**AGA**  
**Factory Mutual**  
**EN230 EN298**

ANS Z21.20 Automatic Ignition Systems.

Approvals do not apply to MC230 and MC230R Chassis and associated programmers.





### WIRING BASE (COMMON FOR ALL CONTROLS):

61-3060 Closed wiring base, surface mounting  
61-5042 Open wiring base, cabinet mounting

For a complete system, choose one of each of the following:

- Chassis
- UV Scanner or Flame Detector
- Programmer Module
- Wiring Base
- Amplifier Module



**WARNING: Installer must be trained and qualified. Follow the burner manufacturer's instructions, if supplied. Otherwise, proceed as follows:**

## INSTALLATION OF CONTROL, SCANNERS, AND FLAME DETECTORS

### Wiring Base

Mount the wiring base on the burner or on a panel. The location should be free from excessive vibration and within the specified ambient temperature rating. The base may be mounted in any angular position.

All wiring should comply with applicable electrical codes, regulations, and local ordinances. Use moisture resistant wire suitable for at least 90 degrees C. Circuit recommendations are found on pages 24 through 28. Consult the factory for assistance with non-standard applications.

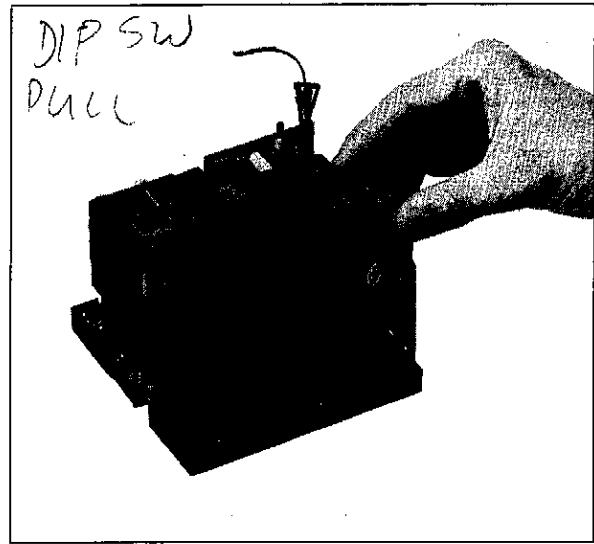
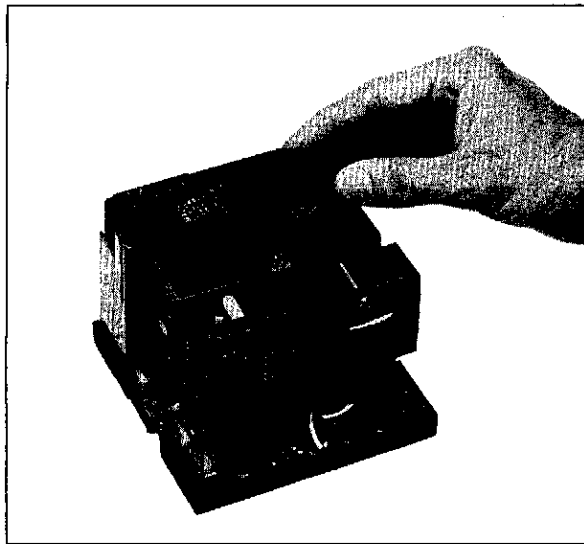


**WARNING: Controls require safety limits utilizing isolated mechanical contacts. Solid state limit switches are not acceptable and should not be used due to their high leakage currents.**

### Installing the Programmer and Amplifier Modules



**WARNING: Remove power from the control before proceeding.**



Select the appropriate programmer and amplifier modules for your application. Remove the dust cover from the chassis. Insert the amplifier module into the slot in the center of the chassis and gently push the module into position. Insert the programmer module into the slot at the right side of the chassis and gently push the module into position.

*NOTE: Refer to Programmer dipswitch settings on page 12 for the proper setting of the dipswitches for those programmers with this feature.*



**WARNING: Turn off the power when installing or removing the control.**