

# 7800 SERIES EC7823/RM7823 Relay Module

## SPECIFICATION DATA



## APPLICATION

The Honeywell EC7823/RM7823 is a microprocessor based Flame Detector Relay that can be fitted with any 7800 SERIES amplifier to provide relay action from one relay with 2 single poles, double throw (spdt) circuits when flame is present or not present. The EC7823/RM7823 Relay Module, Q7800 Wiring Subbase and Amplifier are required to complete the system. Options include Keyboard Display Module, Personal Computer Interface, DATA CONTROLBUS MODULE<sup>a</sup>, Remote Display Module, First-Out Expanded Annunciator and COMBUSTION SYSTEM MANAGER<sup>a</sup> Software.

Functions provided by the EC7823/RM7823 include flame monitoring, system status indication, system or self-diagnostics and troubleshooting.

The EC7823/RM7823 is a flame detector relay only. Suitable primary control must be used to provide safe-start check, safety lockout, load switching and other required in flame safeguard systems.

## FEATURES

- **Safety features:**
  - Dynamic AMPLI-CHECK™.
  - Dynamic self-check logic.
  - Tamper resistant logic.
- Access for external electrical voltage checks.
- Application flexibility with interchangeable plug-in flame amplifiers.
- Communication interface capability.
- Dependable, long-term operation provided by microcomputer technology.
- System and device diagnostics are provided by an optional 2 row by 20 column Vacuum Fluorescent Display (VFD) located on the optional Keyboard Display Module.
- Three (LEDs) for status information. See Fig. 1.
- EC7823/RM7823 provide either 0.8 or 3.0 second FFRT, depending on amplifier selected.
- Local or remote annunciation of EC7823/RM7823 operation and fault information (optional).
- Nonvolatile memory; EC7823/RM7823 retains history files after loss of power.
- Remote reset (optional).
- Report generation (optional).
- Shutter drive output.
- Burner controller data (optional):
  - Flame signal strength.
  - Total hours of operation.
  - Total cycles of operation.
  - Fault history providing the six most recent faults:
    - Cycles of operation at the time of the fault.
    - Fault message and code.
    - Hours of operation at the time of the fault.
  - Diagnostic information:
    - Device type.
    - Flame amplifier type.
    - Flame failure response time.
    - Manufacturing code.
    - Software revision and version of EC7823/RM7823 and optional Keyboard Display Module.



## SPECIFICATIONS

### Electrical Rating see Tables 1 and 2:

RM7823:

Voltage and Frequency: 120 Vac (+10%/-15%),  
50 or 60 Hz ( $\pm 10\%$ ).

EC7823:

Voltage and Frequency: 220 to 240 Vac (+10%/-15%),  
50 or 60 Hz ( $\pm 10\%$ ).

Power Dissipation: 10W maximum.

Maximum Total Connected Load: 2000 VA.

Fusing: Total Connected Load: 20A maximum, fast-acting fuse.

### Approval Bodies:

RM7823:

Underwriters Laboratories Inc.: listed, file no. MP268,  
guide no. MCCZ.

Canadian Standards Association: certified, LR9S329-3.

Factory Mutual: Report J.I.OYOA9.AF.

IRI: acceptable.

Federal Communications Commission: Part 15,  
Class B Emissions.

EC7823:

Factory Mutual: Report J.1.OYOA9.AF

### Mounting:

Q7800A for panel mount.

Q7800B for wall or burner mount.

### Required Components:

Plug-in Flame Signal Amplifier, see Table 2.

Q7800A, Q7800B1003 or Q7800B1011 (wall mount).

### Accessories:

Keyboard Display Modules (KDM):

S7800A1001 English language.

S7800A1035 French language.

S7800A1043 German language.

S7800A1050 Italian language.

S7800A1068 Spanish language.

S7800A1118 Katakana (Japanese) language

S7800A1126 Portuguese language.

S7800B1009 Chinese language.

### Communications:

Q7700A1014 Network Interface Unit, 120 Vac,  
50/60 Hz applications, external modem required.

Q7700B1004 Network Interface Unit with universal  
100 to 250 Vac, 50/60 Hz external power supply,  
external modem required.

QS7800A1001 ControlBus Module, standard.

QS7800B1000 ControlBus Module, multidrop.

QS7800C1009 ControlBus Module,  
data acquisition modules.

QS7850A1006 ControlBus Module,  
General Purpose Interface.

ZM7850A1001 Combustion System Manager™ software.

ZS7810A1009 Data ControlBus™ Module  
(if no KDM is used).

S7810B1007 Data ControlBus™ Module,  
Multi-Drop Switch Module.

S7810M ModBus™ Module.

### Miscellaneous:

A7800A1002 7800 SERIES Tester.

S7820A1007 Remote Reset.

S7830A1005 Expanded Annunciator, 120 Vac, 50/60 Hz.

203541 Data ControlBus Connector, 5-wire.

203765 Remote Display Mounting Bracket.

221729 Dust Cover, Relay Module.

204718A Keyboard Display Module Cover, NEMA 4, clear.

204718B Keyboard Display Module Cover, NEMA 1, clear.

204718C Keyboard Display Module Cover, NEMA 4,  
clear with reset button.

205321B Flush Display mounting kit.

221818A Extension Cable, display, 5 ft (1524 mm).

221818C Extension Cable, display, 10 ft (3048 mm).

123514A Rectification Flame Simulator.

203659 Ultraviolet Flame Simulator.

203968A Remote Display Power Supply, 13 Vdc, plug-in.

### Environmental Ratings:

Ambient Temperature:

Operating: -40°F to +140°F (-40°C to +60°C).

Storage: -40°F to +150°F (-40°C to +66°C).

Humidity: 85 percent RH continuous, noncondensing.

Vibration: 0.5G environment.

**Dimensions:** Refer to Fig. 1.

**Weight:** EC7823/RM7823 with Dust Cover:

1 pound 13 ounces, unpacked.

### IMPORTANT

*Flame Detection System available for use with  
the EC7823/RM7823. To select your Plug-in  
Flame Signal Amplifier applicable Flame Detector,  
see Table 3.*

**Table 1. Terminal Ratings for RM7823A.**

Terminal No.	Description	Ratings
G	Flame Sensor Ground <sup>a</sup>	—
Earth G	Earth Ground <sup>a</sup>	—
L2(N)	Line Voltage Common	—
3	Line Voltage Supply (L1)	120 Vac (+10/-15%), 50/60 Hz (±10%).
4-7	Unused	—
8	9KA Common	—
9	9KA1 N.O.	9.8 AFL, 58.8 ALR at 120 Vac.
10	9KA2 N.C.	1A Pilot Duty at 120 Vac.
F(11)	Flame Sensor	60 to 220 Vac, current limited.
12	Unused.	—
13	9KB Common	—
14	9KB1 N.C.	1A Pilot Duty at 120 Vac; also rated for 5V control circuits.
15	9KB2 N.O.	1A Pilot Duty at 120 Vac; also rated for 5V control circuits.
16-21	Unused.	—
22	Shutter	120 Vac, 0.5A.

<sup>a</sup> The RM7823 must have an earth ground providing a connection between the wiring subbase and the control panel or the equipment. The earth ground wire must be capable of conducting the current to blow the 20A fuse (or breaker) in the event of an internal short circuit. The RM7823 needs a low impedance ground connection to the equipment frame which, in turn, needs a low impedance connection to earth ground. For a ground path to be low impedance at RF frequencies, the connection must be made with minimum length connections having maximum surface areas. Wide straps or brackets rather than leadwires are preferred. Be careful to verify that mechanically tightened joints along the ground path, such as pipe or conduit threads or surfaces held together with fasteners, are free of nonconductive coatings and are protected against mating surface corrosion.

**Table 2. Terminal Ratings for EC7823A.**

Terminal No.	Description	Ratings
G	Flame Sensor Ground <sup>a</sup>	—
Earth G	Earth Ground <sup>a</sup>	—
L2(N)	Line Voltage Common	—
3	Line Voltage Supply	220-240 Vac (+10%/-15%), 50/60 Hz (±10%)
8	9KA Common	—
9	9KA1 N.O.	220-240 Vac, 4A at PF = 0.5, 20A inrush.
10	9KA2 N.C.	220-240 Vac, 2A at PF = 0.2.
F(11)	Flame Sensor	16 to 220 Vac, current limited.
13	9KB Common	—
14	9KB1 N.C.	220-240 Vac, 0.5A at PF = 0.5.
15	9KB2 N.O.	220-240 Vac, 0.5A at PF = 0.5
22	Shutter	220-240 Vac, 0.25A.

<sup>a</sup> The EC7823 must have an earth ground providing a connection between the wiring subbase and the control panel or the equipment. The earth ground wire must be capable of conducting the current to blow the 20A fuse (or breaker) in the event of an internal short circuit. The EC7823 needs a low impedance ground connection to the equipment frame which, in turn, needs a low impedance connection to earth ground. For a ground path to be low impedance at RF frequencies, the connection must be made with minimum length connections having maximum surface areas. Wide straps or brackets rather than leadwires are preferred. Be careful to verify that mechanically tightened joints along the ground path, such as pipe or conduit threads or surfaces held together with fasteners, are free of nonconductive coatings and are protected against mating surface corrosion.

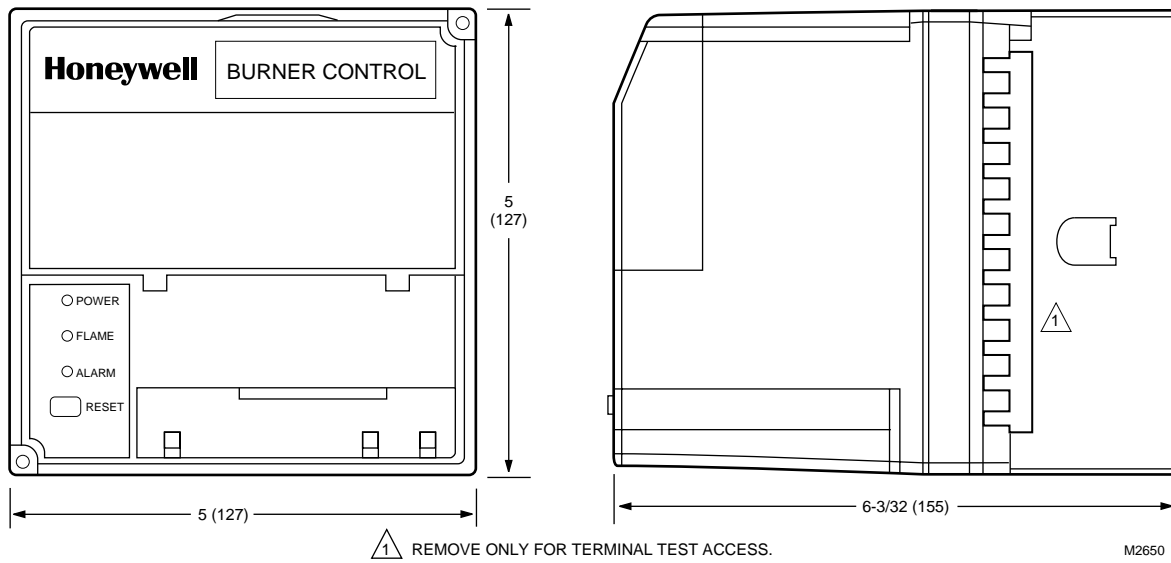
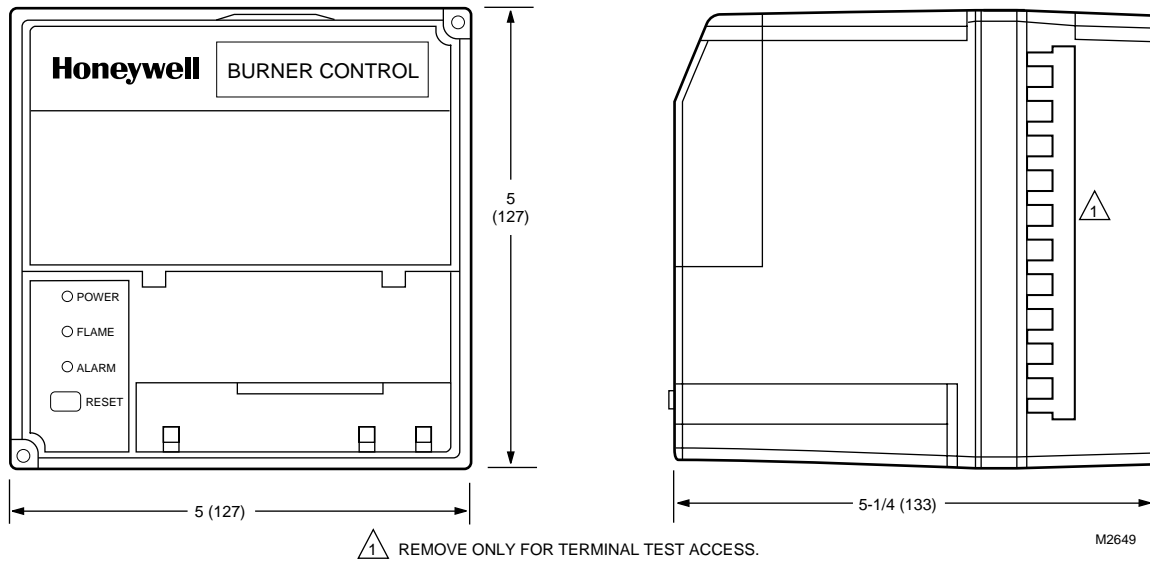


Fig. 1. Mounting dimensions of EC7823/RM7823 Relay Module and Q7800A,B Subbase in in. (mm).

Table 3. Flame Detection System.

Plug-in Flame Signal Amplifiers					Applicable Flame Detectors		
Type	Color	Self-Checking	Model	Flame Failure Response Time	Fuel	Type	Models
Rectification	Green	No	R7847A	0.8 or 3 sec.	Gas	Rectifying Flame Rod Holders <sup>a</sup>	C7004, C7007, C7011. Complete Assemblies: C7008, C7009, Q179.
					Oil	Rectifying Photocell	C7003, C7010, C7013, C7014.
				3 sec.	Gas, oil, coal.	Ultraviolet (Purple Peeper®)	C7012A,C <sup>b</sup> .
		Dynamic AMPLI-CHECK™	R7847B <sup>c</sup>	0.8 or 3 sec.	Gas	Rectifying Flame Rod Holders <sup>a</sup>	C7004, C7007, C7011. Complete Assemblies: C7008, C7009, Q179.
					Oil	Rectifying Photocell <sup>d</sup>	C7003, C7010, C7013, C7014.
				3 sec.	Gas, oil, coal	Ultraviolet (Purple Peeper®)	C7012A,C <sup>b</sup> . C7012E,F.
Infrared	Red	No	7848A	3 sec.	Gas, oil, coal	Infrared (Lead Sulfide)	C7015.
		Dynamic AMPLI-CHECK™	R7848B <sup>c</sup>				
Ultraviolet	Purple	No	R7849A	0.8 or 3 sec.	Gas, oil	Ultraviolet (Minipeeper)	C7027, C7035, C7044 <sup>b</sup> .
		Dynamic AMPLI-CHECK™	R7849B <sup>c</sup>			Ultraviolet	
		Dynamic Self-Check	R7861A <sup>e,f</sup>	3 sec		Gas, oil, coal	Ultraviolet (Adjustable Sensitivity)
	Blue	R7886A <sup>e,f</sup>					
Optical	White	Dynamic AMPLI-CHECK®	R7851B	0.8/1 or 2/3 sec.		Optical (UV, IR, Visible Light).	C7927, C7935, C7915, C7962.

<sup>a</sup> Order flame rod separately; see holder instructions.

<sup>b</sup> The C7012A,C, C7027, C7035 and C7044 Flame Detectors should be used only on burners that cycle on-off at least once every twenty-four hours. Appliances with burners that remain on continuously for twenty-four hours or longer should use the C7012E,F Flame Detector with the R7847C Amplifier; the C7061A Flame Detector with the R7861 Amplifier, or the C7076A,D Flame Detector with the R7886A Amplifier as the ultraviolet flame detection system.

<sup>c</sup> Circuitry tests the flame signal amplifier 12 times a minute during burner operation and shuts down the boiler if the amplifier fails.

<sup>d</sup> Use only Honeywell Photocell, part number 38316.

<sup>e</sup> Circuitry tests all electronic components in the flame detection system (amplifier and detector) at least 12 times a minute during burner operation and shuts down the burner if the detection system fails.

<sup>f</sup> 220 to 240 Vac application. Requires 220-240 Vac to 120 Vac, 10 VA stepdown transformer to operate the shutter.