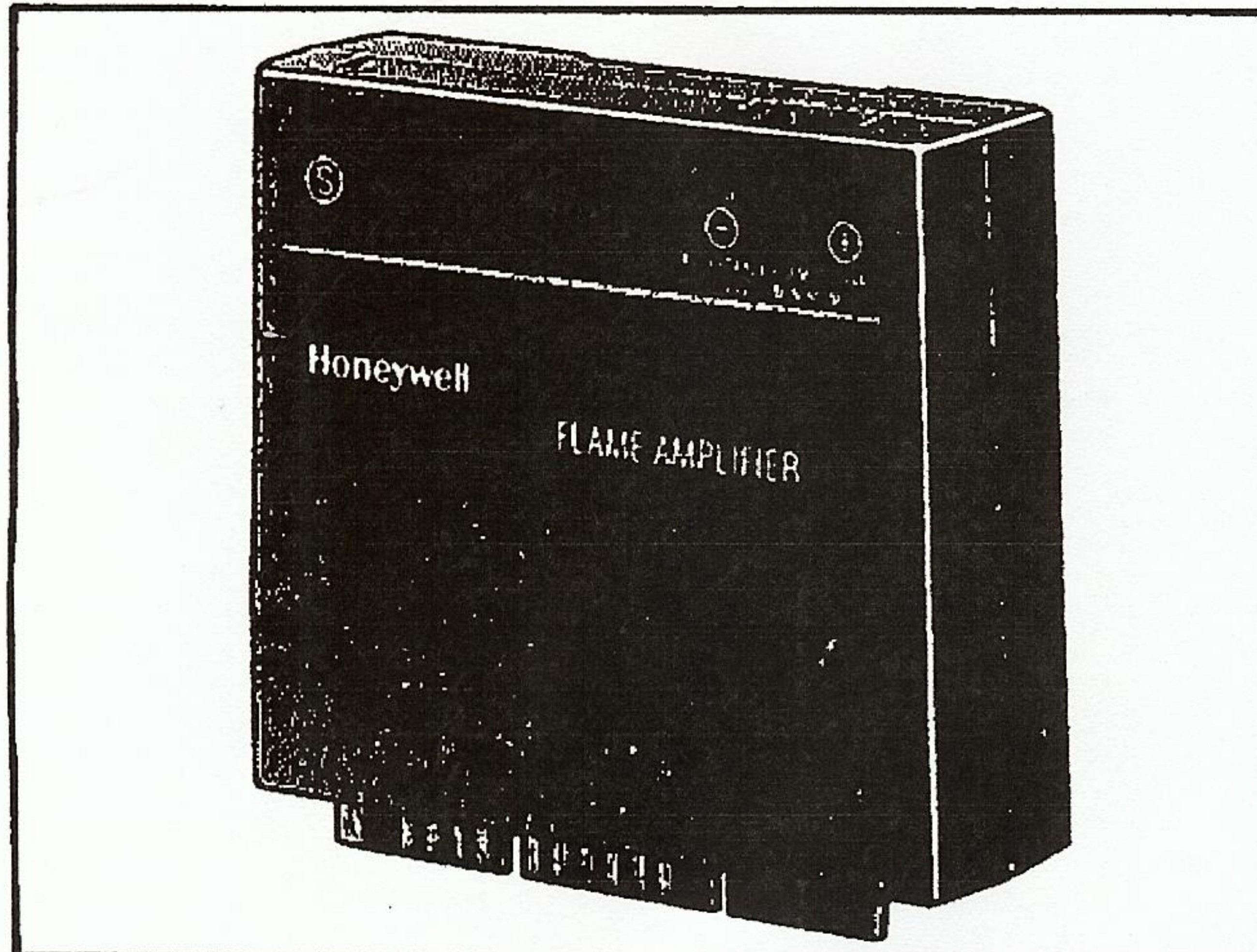# Honeywell

R7824, R7847, R7848, R7849, R7851, R7852, R7861, R7886 Amplifiers for 7800 SERIES and R7140 Relay Modules

PRODUCT DATA

APPLICATION

The R7824C Rectification Flame Amplifier is a solid state plug-in amplifier that responds to a rectified signal from a C7024E,F Self-Check Ultraviolet Flame Detector to indicate the presence of flame when used with the 24 Vdc RM7824 Relay Module.

The R7847A,B Rectification Flame Amplifiers are solid state plug-in amplifiers that respond to a rectified signal from a rectification type flame detector to indicate the presence of flame when used with 7800 SERIES and R7140 Relay Modules.

The R7847C Self-Check Rectification Flame Amplifier is a solid state plug-in amplifier that responds to a rectified signal from a C7012E,F Self-Check Ultraviolet Flame Detector to indicate the presence of flame when used with 7800 SERIES and R7140 Relay Modules. This is not European Community (CE) approved for EC7810, EC7820, EC/RM7830 or EC/RM7850 Relay Modules.

The R7848A,B Infrared Flame Amplifiers are solid state plug-in amplifiers that respond to an infrared signal from a C7015 Infrared Flame Detector to indicate the presence of flame when used with 7800 SERIES and R7140 Relay Modules.

The R7849A,B Ultraviolet Flame Amplifiers are solid state plug-in amplifiers that respond to an ultraviolet signal from a C7027, C7035 or C7044 Ultraviolet Flame Detector to indicate the presence of flame when used with 7800 SERIES and R7140 Relay Modules.

The R7851B Optical Flame Amplifiers are solid state plug-in amplifiers that respond to optical signals from C7927 and C7962 Flame Detectors to indicate the presence of flame when used with 7800 SERIES and R7140 Relay Modules.

The R7852A,B Infrared Flame Amplifiers are solid state plug-in amplifiers that respond to an infrared signal from a C7915 Infrared Flame Detector to indicate the presence of flame when used with 7800 SERIES and R7140 Relay Modules.

The R7851C Dynamic Self-Check Optical Flame Amplifier is a solid state plug-in amplifier that responds to ultraviolet signals from C7961E Dynamic Shutter-Check ultraviolet flame detectors to indicate the presence of flame when used with 7800 SERIES and R7140 Relay Modules.

The R7861A Self-Check Ultraviolet Flame Amplifier is a solid state plug-in amplifier that responds to an ultraviolet signal from a C7061 Self-Check Ultraviolet Flame Detector to indicate the presence of flame when used with 7800 SERIES and R7140 Relay Modules.

The R7886A Dynamic Self-Check Ultraviolet Amplifier is a solid state plug-in amplifier that responds to a pulsed direct current signal from a C7076A,C Ultraviolet Flame Detector with adjustable sensitivity to indicate the presence of flame when used with 7800 SERIES and R7140 Relay Modules.

Contents

FEATURES

- **Flame failure response time of 0.8 or 1 second; or 2.0 or 3.0 seconds, depending on the amplifier and relay module selected. See Table 1.**

- **Plug-in to 7800 SERIES and R7140 Relay Module through printed circuit board edge connector keyed for proper orientation.**

- **Flame signal test jacks measure amplifier flame signal voltage.**

- **0.0 to 5.0 Vdc Flame signal strength reading range.**

- **Color coded label identifies flame detection type:**
  - — Green—rectification. Red—infrared.
  - — Purple—ultraviolet. Blue—pulsed rectification.
  - — White—optical.

- **R7847B, R7848B, R7849B Dynamic Ampli-Check® circuitry tests all flame amplifier components 12 times per minute. The 7800 SERIES and R7140 Relay Module locks out on safety shutdown with amplifier failure.**

- **R7824C Dynamic Self-Check Rectification Amplifier, R7851C Dynamic Self-Check Optical Flame Amplifier, R7861 Self-Check Ultraviolet Flame Amplifier and R7886A Dynamic Self-Check Ultraviolet Amplifier test the detectors and *all* electronic components in the flame detection system 12 times per minute. The 7800 SERIES and R7140 Relay Module locks out on safety *shutdown* with flame detection system failure.**

NOTE: R7824C, Series 2 or greater, pulse shutter when signal of 1.5 Vac is sensed. Display readings of 0.7 to 2.4 Vdc are common.

SPECIFICATIONS

Models:
Flame Detection Systems (see Table 2):
Rectification:
   R7824C for use with C7024E,F Solid State Ultraviolet Detectors.
   R7847A,B for use with flame rods or C7012A,C Solid State Ultraviolet Detectors.

Infrared:
   R7848A,B for use with C7015 Infrared (lead sulfide) Detector.
   R7852A,B for use with C7915 Infrared (lead sulfide) Detector.
Ultraviolet:
   R7849A,B for use with C7027/C7035/C7044 Minipeeper Ultraviolet Detectors.
   R7861A for use with C7061A Ultraviolet Detector.
   R7886A for use with C7076A,D Ultraviolet Detectors with adjustable sensitivity.
Optical:
   R7851B for use with C7927 and C7962 Flame Detectors.
   R7851C for use with C7961E Flame Detectors.

NOTE: R7824C, Series 2 or greater, pulse shutter when signal of 1.5 Vac is sensed. Display readings of 0.7 to 2.4 Vdc are common.

Flame Failure Response Time: See Table 1.

Flame Signal (Volts dc):
Minimum Acceptable: 1.25 Vdc.
Flame Signal Voltage Range (displayed on Keyboard Display Module or measured with a 1M ohm/volt meter plugged into amplifier test jacks): 0.0 to 5.0 Vdc.

Environmental Ratings:
Ambient Temperature:
   Operating: -40°F to 140°F (-40°C to 60°C).
   Storage: -40°F to 150°F (-40°C to 65°C).
Humidity: Operating 85% rh continuous, noncondensing.
Vibration: Continuous 0.5G environment.

Weight: 2.5 oz (71g), unpacked.

Dimensions: See Fig. 1.

Approvals:
Underwriters Laboratories Inc. Listed: File no. MP268, Guide no. MCCZZ: R7847A, R7847B, R7847C, R7861A, R7886A, R7848A, R7848B, R7849A, R7849B, R7851B, R7851C.
Underwriters Laboratories Inc. Component Recognized: File no. MP268, Guide no. MCCZZ: R7824C.
Canadian Standards Association Certified: LR95329-3.
Factory Mutual Approved: Report J.I.1V9A0.AF. (R7851B, Report Number 3011020, June 16 2003, R7851C Pending.)
Industrial Risk Insurers: Acceptable.

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:
1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
   1885 Douglas Drive North
   Minneapolis, Minnesota 55422-4386
In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.
International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

EPRI Edgemont Precision Rebuilders, Inc
Matlack Industrial Center
207 Carter Dr Unit C
West Chester, PA 19382
800-356-3774

Table 1. Relay Module Flame Failure Response Time (FFRT).

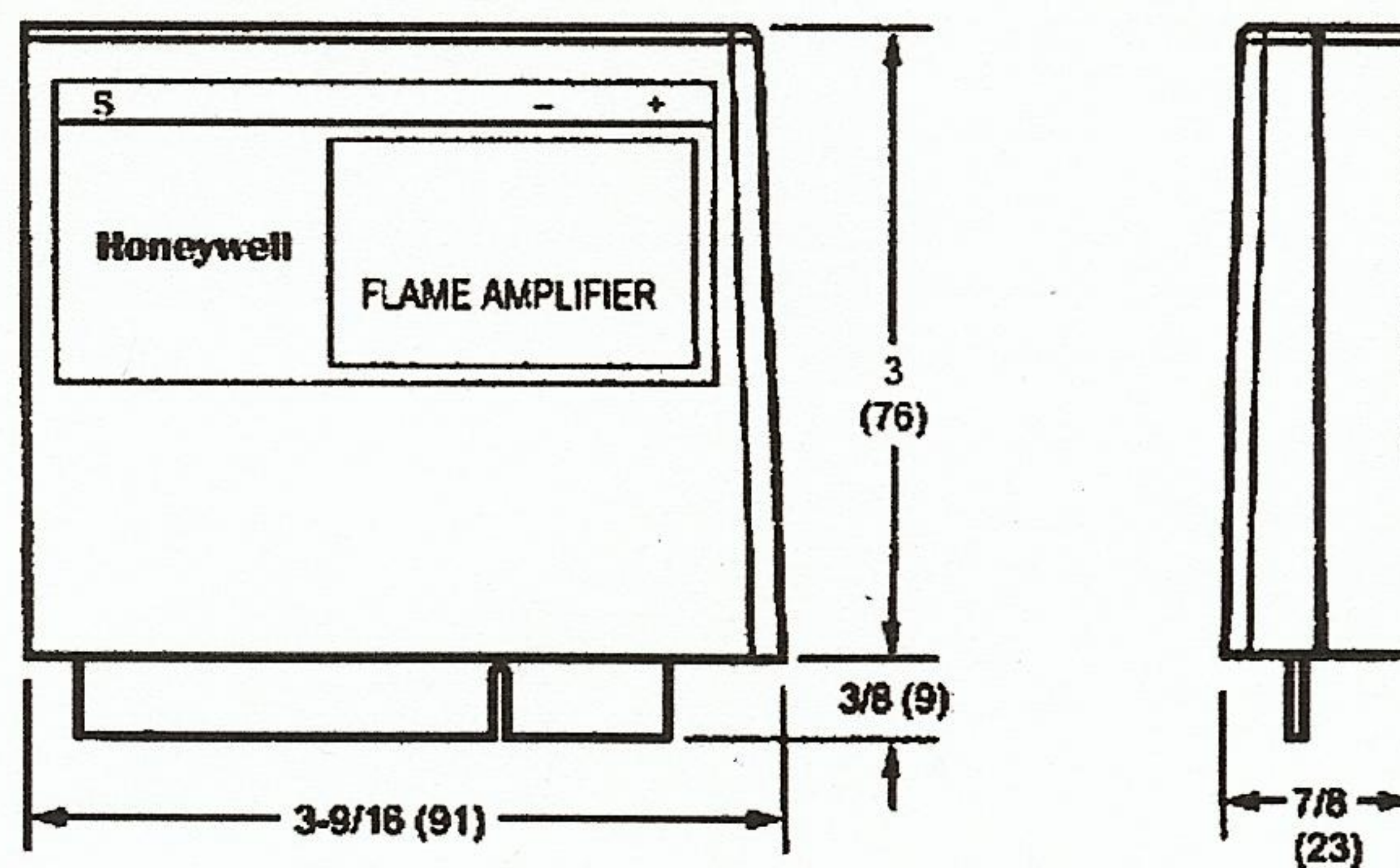| Relay Module	Flame Failure Response Time (FFRT) in seconds	
	0.8 or 1	2.0 or 3.0
EC7810, EC7820, EC/RM7830, EC/RM7850	1.0	2.0
EC/RM7823, EC/RM7885, EC/RM7890, RM7895, RM7896, RM7897, RM7898, RM7888, RM7838, RM7800, RM7840, R7140	0.8	3.0
RM7824	N/A	3.0

M11460

Fig. 1. Flame amplifier dimensions in in. (mm).

NOTE: EN298 Approved: When these amplifiers are used with an EC7810, EC7820, EC/RM7830, or EC/RM7850 Relay Module.

Accessories:
Flame Simulators:
    Rectification: 123514A.
    Ultraviolet: 203659.
Flame Detectors (ordered separately): select from Table 2.

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Table 2. Flame Detection Systems.

Plug-in Flame Signal Amplifiers					Applicable Flame Detectors		
Type	Color	Self-Checking	Model	Flame Failure Response Time (sec)[a]	Fuel	Type	Models
Rectification	Green	Dymanic Self-Check	R7824C[b,c,h]	3	Gas, oil, coal	Ultraviolet (Purple Peeper®)	C7024E,F
		No	R7847A[g]	0.8/1 or 2/3	Gas	Rectifying Flame Rod Holders[i]	C7004, C7007, C7011 Complete Assemblies: C7008, C7009, Q179
		No	R7847A[g]	2/3	Gas, oil, coal	Ultraviolet (Purple Peeper®)	C7012A,C.
		Dynamic Ampli-Check®	R7847B[d,g]	0.8/1 or 2/3	Gas	Rectifying Flame Rod Holders[i]	C7004, C7007, C7011 Complete Assemblies: C7008, C7009, Q179
		Dynamic Ampli-Check®	R7847B[d,g]	2/3	Gas, oil, coal	Ultraviolet (Purple Peeper®)	C7012A,C
Infrared	Red	No	R7848A	2/3	Gas, oil, coal	Infrared (Lead Sulfide)	C7015
		Dynamic Ampli-Check®	R7848B[d]	2/3	Gas, oil, coal	Infrared (Lead Sulfide)	C7015
	Red/ White	No	R7852A	2/3	Gas, oil, coal	Infrared (Lead Sulfide)	C7915
		Dynamic Ampli-Check®	R7862B[d]	2/3	Gas, oil, coal	Infrared (Lead Sulfide)	C7915
Ultraviolet	Purple	No	R7849A	0.8/1 or 2/3	Gas, oil	Ultraviolet (Minipeeper)	C7027, C7035, C7044[f]
		Dynamic Ampli-Check®	R7849B[d]	0.8/1 or 2/3	Gas, oil	Ultraviolet (Minipeeper)	C7027, C7035, C7044[f]
		Dynamic Self-Check	R7861A[c,e]	0.8/1 or 2/3	Gas, oil, coal	Ultraviolet	C7061
	Blue	Dynamic Self-Check	R7886A[c,e]	2/3	Gas, oil, coal	Ultraviolet (Adjustable Sensitivity)	C7076
Optical	White	Dynamic Ampli-Check®	R7851B	0.8/1 or 2/3	Gas, oil, coal	Optical (UV, Visible Light)	C7927, C7962
		Dynamic Self-Check	R7851C[c]	2/3	Gas, oil, coal	Optical (UV only)	C7961

[a] Flame Failure Response Time (FFRT) depends on selection of amplifier and 7800 SERIES and R7140 Relay Module.

[b] R7824C is used only with the 24 Vdc RM7824 Relay Module and C7024E,F Flame Detectors.

[c] Circuitry tests all electronic components in flame detection system (amplifier and detector) 12 times a minute during burner operation and shuts down burner if detection system fails.

[d] Circuitry tests flame signal amplifier 12 times a minute during burner operation and shuts down burner if amplifier fails.

[e] 200/220/240 Vac applications require a 120 Vac, 10 VA minimum stepdown transformer (not provided) to drive the shutter. Applies to R7886A series 2 or greater; R7861 series 1 or greater. Fig. 2 shows flame detector wiring.

[f] Use C7027, C7035 and C7044 Flame Detectors only on burners that cycle on-off at least once every twenty-four hours. Use C7061A Ultraviolet Detector with R7861A Amplifier or C7076A Flame Detector with R7886A Amplifier as ultraviolet flame detection system for appliances with burners that remain on continuously for twenty-four hours or longer.

[g] R7847A,B Amplifiers with 0.8/1 second FFRT should **NOT** be used with C7012A,C Solid State Ultraviolet Detectors.

[h] R7824C Series 2 and greater check flame detector system when flame reaches 1.5 Vdc or at 4.5 seconds, whichever occurs first.

NOTE: R7824C, Series 2 or greater, pulse shutter when signal of 1.5 Vdc is sensed. Display readings of 0.7 to 2.4 Vdc are common.

[i] Order flame rod separately; see flame detector Instructions for holder.

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