Honeywell

R7824, R7847, R7848, R7849, R7851, R7861, R7886 Amplifiers for 7800 SERIES 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 Relay Modules.

The R7851B Optical Flame Amplifiers are solid state plug-in amplifiers that respond to optical signals from C7927, C7935, C7915 and C7962 Flame Detectors to indicate the presence of flame when used with 7800 SERIES Relay Modules.

he R7861A Self-Check Ultraviolet Flame Amplifier is a solid state plug-in amplifier that responds to an ultraviolet signal from a C7061A Self-Check Ultraviolet Flame Detector to indicate the presence of flame when used with 7800 SERIES 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 Relay Modules.

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 an 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 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 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 Relay Modules.

FEATURES

- **Flame failure response time (FFRT) 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 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 (see Table 2):**
  - **— 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 Relay Module locks out on safety shutdown with amplifier failure.**

- **R7824C and R7847C Dynamic Self-Check Rectification 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 Relay Module locks out on safety shutdown with flame detection system failure.**

NOTE: R7824C, Series 2 or greater, and R7847C, series 4 or greater, pulse shutter when signal of 1.5 Vac is sensed.

SPECIFICATIONS

Models:
Flame Detection Systems (see Table 2):
Rectification:
    R7824C for use with C7024E,F Solid State Ultraviolet Detectors.
    R7847A for use with flame rods, rectifying photocells or C7012A,C Solid State Ultraviolet Detectors.
    R7847B for use with flame rods, rectifying photocells or C7012A,C Solid State Ultraviolet Detectors.
    R7847C for use with C7012E,F Solid State Ultraviolet Detectors.
Infrared:
    R7848A for use with C7015 Infrared (lead sulfide) Detector.
    R7848B for use with C7015 Infrared (lead sulfide) Detector.
Ultraviolet:
    R7849A for use with C7027/C7035/C7044 Minipeeper Ultraviolet Detectors.
    R7849B 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, C7935, C7915 and C7962 Flame Detectors.

Flame Failure Response Time : See Table 1.

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

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

Flame Signal (Volts dc):
Minimum Acceptable: 1.25 Vdc.
Flame Signal Voltage Range (displayed on Keyboard Display Module or measured with a 1M ohm voltmeter 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.
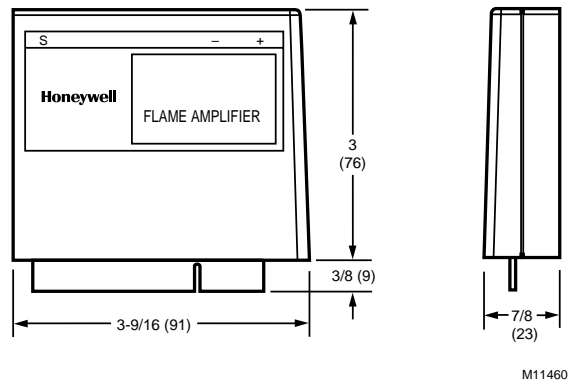Vibration: Continuous 0.5G environment.

Dimensions: See Fig. 1.

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

Weight: 2.5 oz (71 g), unpacked.

Approvals:
Underwriters Laboratories Inc. Listed: File no. MP268, guide no. MCCZZ: R7847A, R7847B, R7847C, R7861A, R7886A, R7848A, R7848B, R7849A, R7849B, R7851B.
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.
Industrial Risk Insurers Acceptable.

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

Accessories:
Flame Simulators:
    Rectification: Part no. 123514A.
    Ultraviolet: Part no. 203659.
Flame Detectors ordered separately:

⚠ **CAUTION**
Equipment Damage Hazard.
Can cause equipment damage and failure.
Incorrect combination of relay module, amplifier and flame detector can cause equipment damage.

In infrared applications (C7015 Infrared Flame Detector and R7848 Amplifier) using the RM7890 Relay Module with soft revision 4004 or less requires a ten second delay to start sequence. This applies only to the initial powering of the RM7890.

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	Dynamic Self-Check	R7824C[b,c,i]	3	Gas, oil, coal	Ultraviolet (Purple Peeper)	C7024E,F.
		No	R7847A[h]	0.8/1 or 2/3	Gas	Rectifying Flame Rod Holders[j]	C7004, C7007, C7011. Complete Assemblies: C7008, C7009, Q179.
		No	R7847A[h]	0.8/1 or 2/3	Oil	Rectifying Photocell	C7003, C7010, C7013, C7014.[d]
		No	R7847A[h]	2/3	Gas, oil, coal	Ultraviolet (Purple Peeper®)	C7012A,C.
		Dynamic AMPLI-CHECK®	R7847B[e,h]	0.8/1 or 2/3	Gas	Rectifying Flame Rod Holders[b]	C7004, C7007, C7011. Complete Assemblies: C7008, C7009, Q179.
		Dynamic AMPLI-CHECK®	R7847B[e,h]	0.8/1 or 2/3	Oil	Rectifying Photocell	C7003, C7010, C7013, C7014.[d]
		Dynamic AMPLI-CHECK®	R7847B[e,h]	2/3	Gas, oil, coal	Ultraviolet (Purple Peeper®)	C7012A,C.
		Dynamic Self-Check	R7847C[c,f,i]	2/3	Gas, oil, coal	Ultraviolet (Purple Peeper®)	C7012E,F.
Infrared	Red	No	R7848A	2/3	Gas, oil, coal	Infrared (Lead Sulfide)	C7015.
		Dynamic AMPLI-CHECK®	R7848B[e]	3 sec	Gas, oil, coal	Infrared (Lead Sulfide)	C7015.
Ultraviolet	Purple	No	R7849A	0.8/1 or 2/3	Gas, oil	Ultraviolet (Minipeeper)	C7027, C7035, C7044[g].
		Dynamic AMPLI-CHECK®	R7849B[d]	0.8/1 or 2/3	Gas, oil	Ultraviolet (Minipeeper)	C7027, C7035, C7044[g].
		Dynamic Self-Check	R7861A[c,f]	0.8/1 or 2/3	Gas, oil, coal	Ultraviolet	C7061.
	Blue	Dynamic Self-Check	R7886A[c,f]	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, IR, Visible Light)	C7927, C7935, C7915, C7962

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

[b] R7824C is used only with the 24 Vdc RM7824 Relay Module and C7024E,F Flame Detectors. Order flame rod separately; see flame detector Instructions for holder.

[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] Use only Honeywell part no. 38316 Photocell.

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

[f] 200/220/240 Vac applications require a 120 Vac, 10 VA minimum stepdown transformer (not provided) to drive the shutter. Applies to R7847C series 3 or greater; R7886A series 2 or greater; R7861, series 1 or greater. Figure 2 shows flame detector wiring.

[g] Use C7027, C7035 and C7044 Flame Detectors only on burners that cycle on-off at least once every twenty-four hours. Use C7012E,F Flame Detector with R7847C Amplifier, 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 for twenty-four hours continuously or longer.

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

[i] R7824C Series 2 and greater and R7847C Series 4 and greater check flame detector system when flame reaches 1.5 Vdc or at 4.5 seconds, whichever occurs first.

[j] Order flame rod separately; see flame detector instructions for holder.

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