

7800 SERIES RM7890D, RM7895E,F Relay Modules

SPECIFICATION DATA



APPLICATION

The Honeywell RM7890D, RM7895E,F is a microprocessor based integrated burner control for automatically fired gas, oil, or combination fuel single burner Infrared Heater applications. The RM7890D, RM7895E,F System consists of the Relay Module, Wiring Subbase and Amplifier. A Purge Card is required for the RM7895E,F to complete the system. Options include Keyboard Display Module (KDM), Personal Computer Interface, DATA CONTROLBUS™ MODULE, Remote Display Module, First-Out Expanded Annunciator and COMBUSTION SYSTEM MANAGER™ Software.

The Relay Module is programmed to provide a level of safety, functional capability and features beyond the capacity of conventional controls.

Functions provided by the RM7890D, RM7895E,F include automatic burner sequencing, flame supervision, system status indication, system or self-diagnostics and troubleshooting.

Higher impressed flame rod voltage makes the RM7090D, RM7895E,F suitable for infrared heaters and some unstable/hard to sense flame rod applications.

FEATURES

- Safety features:
 - Interlock check.
 - Closed loop logic test.
 - Dynamic AMPLI-CHECK™.
 - Dynamic input check.
 - Dynamic safety relay test.
 - Dynamic self-check logic.
 - Internal hardware status monitoring.
 - Tamper resistant timing and logic.
- Access for external electrical voltage checks.
- Dynamic airflow switch check feature (RM7895F).
- Application flexibility.
- Dependable, long-term operation provided by microcomputer technology.
- Five Light Emitting Diodes (LEDs) for sequence information, see Fig. 1.
- Interchangeable plug-in flame amplifiers.
- Nonvolatile memory; retains history files and sequencing status after loss of power.
- Selectable recycle or lockout on loss of airflow (RM7895E,F).
- Selectable recycle or lockout on loss of flame.

OPTIONAL FEATURES

- Communication interface capability.
- First-out annunciation and system diagnostics are provided by a 2 row by 20 column Vacuum Fluorescent Display (VFD) located on the optional KDM.
- First-out expanded annunciation with 26 LEDs for limits and interlocks.
- Local or remote annunciation of RM7890D, RM7895E,F operation and fault information.
- Report generation.
- Remote reset.
- Burner controller data using S7800 Keyboard Display:
 - Expanded annunciator status.
 - Flame signal strength.



- Hold status.
- Lockout/alarm status.
- Sequence status.
- Sequence time.
- Total cycles of operation.
- Total hours of operation.
- Fault history providing for the six most recent faults:
 - Cycles of operation at the time of the fault.
 - Expanded annunciator data at the time of the fault.
 - Fault message and code.
 - Hours of operation at the time of the fault.
 - Sequence status at the time of the fault.
 - Sequence time at the time of the fault.
- Diagnostic information:
 - Device type.
 - Flame amplifier type.
 - Flame failure response time.
 - Manufacturing code.
 - On/Off status of all digital inputs and outputs.
 - Selected prepurge time (RM7895E,F).
 - Software revision and version of RM7890D, RM7895E,F and optional Keyboard Display Module.
 - Status of configuration jumpers.

Power Dissipation: RM7890/RM7895: 10W maximum in the Run mode.
 Maximum Total Connected Load: 2000 VA.
 Fusing: Total Connected Load: 15A fast blow, type SC.

Environmental Ratings:

Ambient Temperature:
 Operating: -40° to 140°F (-40° to 60°C).
 Storage: -40° to 150°F (-40° to 66°C).
 Humidity: 85% RH continuous, noncondensing.
 Vibration: 0.5G environment.
 Weight of RM7890/RM7895 with Dust Cover: 1 pound 13 ounces, unpacked.

Dimensions: See Fig. 2.

SPECIFICATIONS

Electrical Ratings, see Table 1:

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

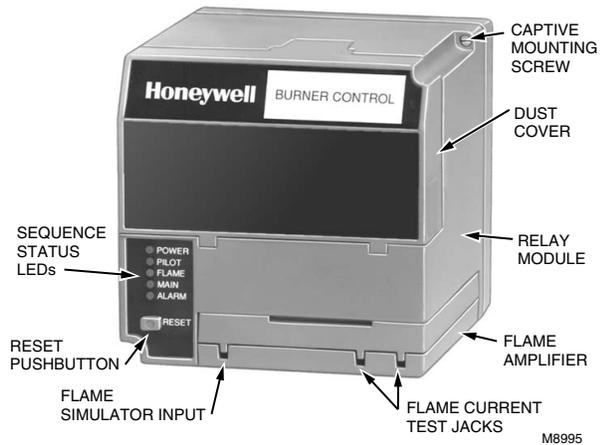


Fig. 1. Relay Module and sequence status LEDs.

Table 1. RM7890D, RM7895E,F Terminal Ratings.

Terminal No.	Description	Ratings
G	Flame Sensor Ground	—
Earth G	Earth Ground ^a	—
L2(N)	Line Voltage Common	—
3 (RM7890D)	Line Voltage Supply	120 Vac (+10%/-15%), 50/60 Hz (±10%).
3 (RM7895E,F)	Alarm	120 Vac, 1A pilot duty.
4 (RM7890D)	Alarm	120 Vac, 1A pilot duty. ^a
4 (RM7895E,F)	Burner Motor	120 Vac, 9.8AFL, 58.8ALR (inrush).
5 (RM7890D)	Unused	—
5 (RM7895E,F)	Line Voltage Supply	120 Vac (+10%/-15%), 50/60 Hz (±10%). ^b
6 (RM7890D)	Burner Controller and Limits	120 Vac 8A Run, 43A inrush. ^b
6 (RM7895E,F)	Burner Controller and Limits	120 Vac, 1 mA.
7 (RM7890D)	Unused	—
7 (RM7895E,F)	Airflow Interlock	120 Vac, 8A run, 43A inrush.
8	Pilot Valve/Ignition	120 Vac. ^c
9	Main Fuel Valve	
10	Ignition	
F(11)	Flame Sensor	60–345 Vac, current limited.
12 to 22	Unused	—

^a The RM7890D and RM7895 must have an earth ground providing a connection between the wiring subbase and the control panel or equipment. The earth ground wire must be capable of conducting the current to blow a 15A Fast Blow, Type SC, fuse (or equivalent) in the event of an internal short circuit. The RM7890D and RM7895 need a low impedance ground connection to the equipment frame, which, in turn, needs a low impedance connection to earth ground.

^b 2000 VA maximum connected load to the Relay Module.

^c See Table 2 and 3.

Table 2. Combinations for terminals 8, 9 and 10.

Combination Number	Pilot Fuel 8	Main 9	ignition 10
1	C	F	No Load
2	B	F	No Load
3	No Load	F	No Load
4	F	F	A
5	No Load	F	A
6	D	F	A
7	No Load	F	A
8	D	D	A
9	No Load	D	A

Table 3. Composition of each combination.

A	B	C	D	F
4.5A ignition	50 VA Pilot Duty plus 4.5A ignition.	180 VA Ignition plus Motor valves with: 650 VA inrush, 360 VA open, 2550 VA hold.	2A Pilot Duty	65 VA Pilot Duty plus Motor valves with: 3850 VA inrush, 700 VA Open, 250 VA hold.

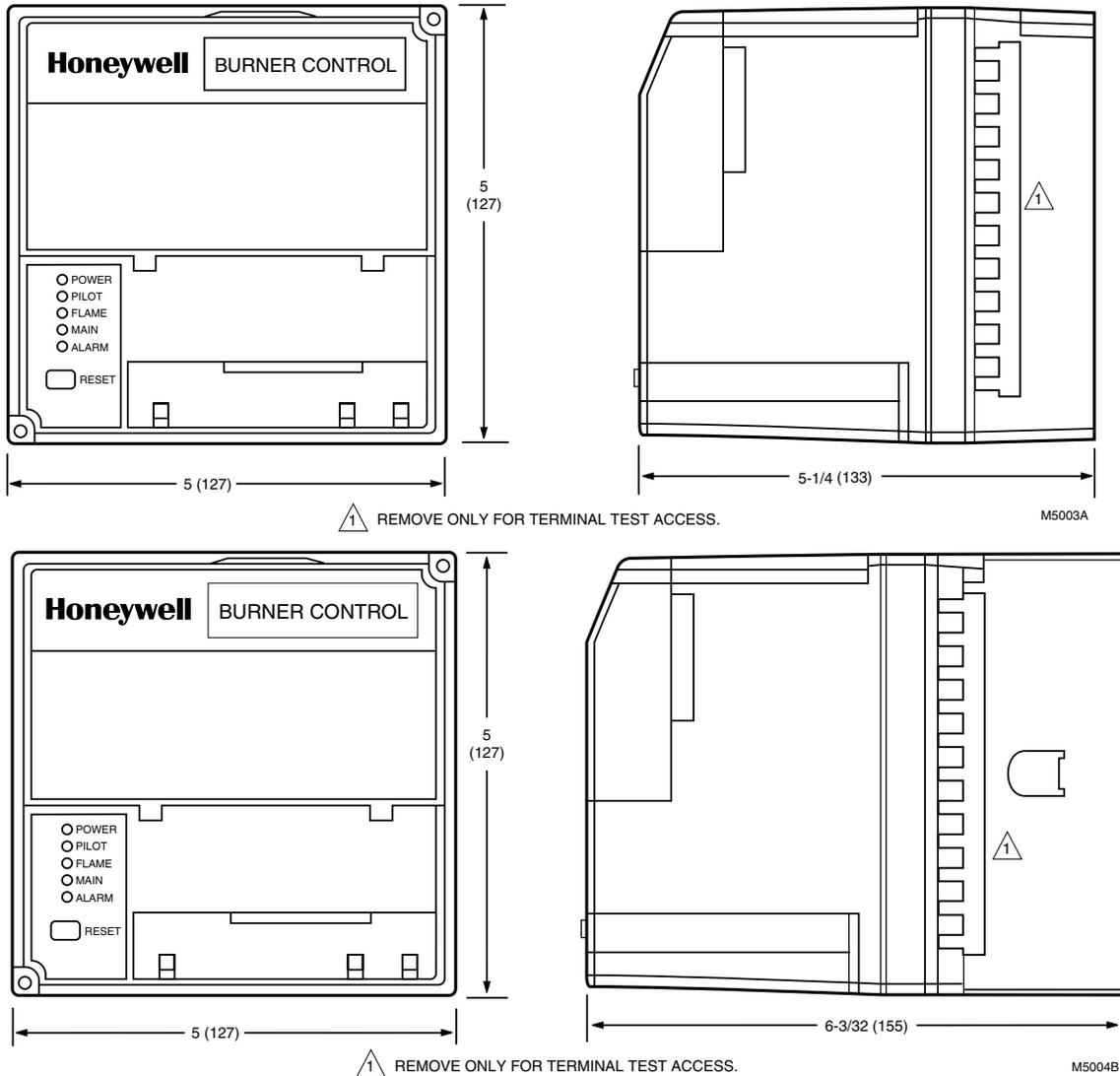


Fig. 2. Mounting dimensions of RM7890D and RM7895E,F Relay Module, Q7800A Subbase and Q7800B Subbase, respectively, in in. (mm).

Table 4. Sequence timing for normal operation.

Device	Initiate	Standby	Purge	Flame Establishing Period - Pilot	AFSC ^c
RM7890D	10 sec.	a	No	15 or 30 sec.	No
RM7895E		a	b		No
RM7895F		a	b		Yes

^a STANDBY and RUN can be an infinite time period.

^b PURGE will be determined by which ST7800 Purge Card is selected.

^c AFSC is Air Flow Switch Check.

Table 5. Flame Detection System.

Plug-In Flame Signal Amplifiers				Applicable Flame Detectors			
Type	Color	Self-Checking	Model	Flame Failure Response Time (seconds)	Fuel	Type	Models
Rectification	Green	No	R7847A	0.8 or 3.0	Gas	Rectifying Flame Rod Holders ^b	C7004, C7007, C7011. Complete Assemblies: C7008, C7009, Q179.
		Dynamic AMPLI-CHECK™	R7847B ^a				
Infrared	Red/White	No	R7852A	0.8 or 3.0	Gas, Oil	Infrared	C7915
		Dynamic AMPLI-CHECK™	R7852B				
	Red	No	R7848A	0.8 or 3.0	Gas, Oil	Infrared	C7015
		Dynamic AMPLI-CHECK™	R7848B				
Optical	White	AMPLI-CHECK™	R7851B	0.8 or 3.0	Gas	Visible	C7962

^a Circuitry tests the flame signal amplifier at least 12 times a minute during burner operation and shuts down the burner if the amplifier fails.

^b Order flame rod separately; see holder instructions.

Approval Bodies:

Underwriters Laboratories Inc. listed, File No. MP268, Guide No. MCCZ.

Canadian Standards Association certified, LR9S329-3.

Factory Mutual approved: OW7A4.AF.

IRI acceptable.

Federal Communications Commission: Part 15, Class B—Emissions.

Mounting:

Q7800A for panel mount or Q7800B for wall or burner mount.

Required Components:

Plug-in Flame Signal Amplifier, see Table 2.

Plug-in Purge Timer Cards: selectable ST7800A models: two seconds to 30 minutes (RM7895E,F only).

Wiring Subbase Q7800A or Q7800B.

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.

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.

QS7850A1001 ControlBus Module, General Purpose Interface.

ZM7850A1001 Combustion System Manager™ software.

S7810A1009 Data ControlBus™ Module (if no KDM is used).

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

S7810M1003 ModBus Module.

Miscellaneous:

A7800A1002 7800 SERIES Tester.

S7820A1007 Remote Reset Module.

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, 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.

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