

## 7800 SERIES RM7896D Relay Module

### INSTALLATION INSTRUCTIONS

#### APPLICATION

The Honeywell RM7896D1027 is a microprocessor based integrated burner control for automatically fired gas, oil, or combination fuel single burner applications. The RM7896D1027 consists of the Relay Module. Subbase, Amplifier and Purge Card are required to complete the system. Options include Keyboard Display Module, Personal Computer Interface, Data ControlBus™ Module, Remote Display Module, First-Out Expanded Annunciator and Combustion System Manager® Software.

NOTE: The RM7896D1027 differs from the standard RM7896D as follows:

1. Ignition terminal no. 10 shuts off five seconds into the Pilot flame Establishing Period.
2. Post Purge has 60 seconds duration.
3. PURGE STATUS LED replaces the FLAME LED.
4. POWER LED blinks a fault code when device/ system is in alarm.

This document covers the following models:  
RM7896D1027  
RM7896D2027

This document provides installation and static checkout instructions. Other applicable publications are:

**Table 1. Other applicable publications**

Form Number	Description
63-2278	Q7700A Network Interface Unit Product Data
65-0084	Q7800A,B 22-Terminal Wiring Subbase Product Data
65-0090	S7800A 2-line VFD Keyboard Display Module Product Data
32-00110	S7800A 4-Line LDC Keyboard display module product data
65-0091	S7810A Data ControlBus Module™ Product Data

Form Number	Description
65-0095	S7820 Remote Reset Module Product Data
65-0097	221729C Dust Cover Packing Sheet
65-0101	S7830 Expanded Annunciator Product Data
32-00235	R7824, R7847, R7848, R7849, R7851, R7861, R7886 Flame Amplifiers for the 7800 SERIES Product Data
65-0131	221818A Extension Cable Assembly Product Data
65-0229	7800 SERIES RELAY MODULES Checkout and Test
32-00156	RM7895A,B,C,D/EC7895A,C; RM7896A,C,D 7800 SERIES RELAY MODULES

#### SPECIFICATIONS

##### SIL 3 Capable:

SIL 3 Capable in a properly designed Safety Instrumented System. See form 65-0312 for Certificate Agreement

##### APPROVALS:

Underwriters Laboratories Inc. Listed: File No. MP268.  
UL 372 and 60730-2-5 / CSA C22.2 No. 60730-2-5.  
Factory Mutual Approved: Report No. 1V9A0 AF.  
Swiss Re (formerly Industrial Risk Insurers): Acceptable.  
Federal Communications Commission: Part 15, Class B, Emissions.  
Exida: Certificate HCC 1702010 C001. IEC 61508:2010 Parts 1-7, SIL 3 capable.  
EAC Russia



## INSTALLATION

### WARNING

**Fire or Explosion Hazard.**  
**Can cause severe injury, death or property damage.**

Prevent possible hazardous burner operation. Verify safety requirements each time a control is installed on a burner.

### When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and marked on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced, flame safeguard service technician.
4. After installation is complete, check out the product operation as provided in the instructions.

### WARNING

**Electrical Shock Hazard.**  
**Can cause serious injury or death.**

Disconnect the power supply before beginning installation. More than one power supply disconnection can be involved.

1. Wiring connections for the RM7896 are unique. Refer to Fig. 3 for proper subbase wiring.
2. Wiring must comply with all applicable codes, ordinances and regulations.
3. Wiring, where required, must comply with NEC Class 1 (Line Voltage) wiring.
4. Loads connected to the RM7896 must not exceed those listed on the device label or in the specifications in form 32-00156.
5. Limits and interlocks must be rated to simultaneously carry and break current to the ignition transformer, pilot valve, and main fuel valve(s).
6. All external timers must be listed or component recognized by authorities who have jurisdiction for the specific purpose for which they are used.

### IMPORTANT

1. For on-off gas-fired systems, some authorities who have jurisdiction prohibit the wiring of any limit or operating contacts in series between the flame safeguard control and the main fuel valve(s).
2. Two flame detectors can be connected in parallel with the exception of Infrared Flame Detectors (C7015).
3. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the Instructions Manual, can cause interference with radio communication. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case, users at their own expense will be required to take whatever measures may be required to correct the interference. Any unauthorized modification of this equipment can result in the revocation of the owner's authority to continue its operation.

### Canadian EMI:

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

### Humidity

Install the RM7896D where the relative humidity never reaches the saturation point. The RM7896D is designed to operate in a maximum 85 percent relative humidity continuous, noncondensing moisture environment. Condensing moisture can cause a safety shutdown.

### Vibration

Do not install the RM7896D where it can be subjected to vibration in excess of 0.5G continuous maximum vibration.

### Weather

The RM7896D is not designed to be weather tight. If installed outdoors, the RM7896D must be protected by an approved weather-tight enclosure.

## Relay Module and Subbase Compatibility

NOTE: There are several different subbase models that can be purchased. It is important to note which subbase is compatible with the relay module when purchasing new, repair or replacement parts.

### Series 1000 Relay Modules

All relay product codes that start with a 1 (example: RM7840G1014/U) can be used with existing subbase Q7800A1003/U and Q7800A1005/U.

### Series 2000 Relay Modules

All relay product codes that start with a 2 (example: RM7840G2014/U) must be used with subbase Q7800A2003/U and Q7800A2005/U.

### Subbase Compatibility

Any Relay Module in the 1000 Series with a Software Revision level number starting with a "5" or greater will be compatible with all subbase models both installed and newly purchased. This includes (Q7800A1005/U, Q7800B1003/U), and the 2000 Series subbases (Q7800A2005/U, Q7800B2003/U).

See Fig. 1 for Software Revision Level number location on the label (located on the rear of the relay module).

Any relay module in the new 2000 series will only be able to be installed on subbase Q7800A2005/U, Q7800B2003/U and will not be backward compatible with any Q7800A1003/U and Q7800A1005/U subbases already installed in the field.



Fig. 1. Software Revision Location

### IMPORTANT

Make sure to check the relay model number and the software revision level on the relay.

- If you attempt to place a 2000 series relay on a non-compatible 1000 series subbase, you will receive an error code of 101. This indicates that you must
  - change out the subbase to a Q7800A2003/U or Q7800A2005/U
  - or
  - choose a compatible 1000 series relay module

## Mounting Wiring Subbase

NOTE: For installation dimensions, see Fig. 2 or 3.

- Mount the subbase in any position except horizontally with the bifurcated contacts pointing down. The standard vertical position is recommended. Any other position decreases the maximum ambient temperature rating.
- Select a location on a wall, burner or electrical panel. The Q7800 can be mounted directly in the control cabinet. Be sure to allow adequate clearance for servicing, installation, access and removal of the RM7896D, dust cover, flame amplifier, flame amplifier signal voltage probes, Run/Test Switch, electrical signal voltage probes and electrical field connections.
- For surface mounting, use the back of the subbase as a template to mark the four screw locations. Drill the pilot holes.
- Securely mount the subbase using four no. 6 screws.

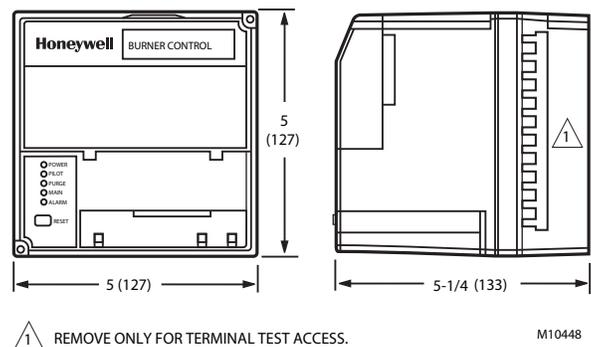


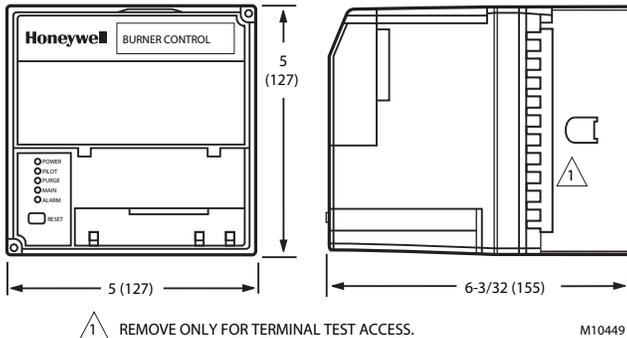
Fig. 2. Mounting dimensions of RM7896D Relay Module and Q7800A Subbase in in. (mm).

NOTES: You might receive an error code 101 (via KDM) if one of the following conditions exist:

- The screws securing the relay to the subbase are not tight enough, re-tighten to insure there is no gap between the relay and the subbase.
- If you attempt to place a 2000 series relay on a non-compatible 1000 series subbase, This indicates that you must:
  - Change out the subbase to a Q7800A2003/U or Q7800A2005/U
  - Choose a compatible 1000 series relay module

## WIRING

- For proper wiring, refer to Fig. 3. For proper remote wiring of the Keyboard Display Module, refer to the Specifications for the Keyboard Display Module 4-line LCD KDM (32-00110), Network Interface Unit (63-2278), Data ControlBus™ Module (65-0091) or Extension Cable Assembly (65-0131).



**Fig. 3. Mounting dimensions of RM7896D Relay Module and Q7800B Subbase in in. (mm).**

## ⚠ WARNING

### Electrical Shock Hazard and Equipment Damage Hazard.

#### Can cause serious injury, death, or damage to equipment.

Disconnect power supply from main disconnect before beginning installation. More than one disconnection can be involved

- To prevent electrical shock and equipment damage, disconnect the power supply from the main disconnect before beginning installation. More than one disconnection can be involved.
- All wiring must comply with all appropriate electrical codes, ordinances and regulations. Wiring, where required, must comply with NEC Class 1 (Line Voltage) wiring. Recommended wire size and type: use no. 14, 16 or 18 copper conductor ((TTW60C or THW75C or THHN90C) 600 volt insulation wire for all line voltage terminals. For high temperature installations, use wire selected for a temperature rating above the maximum operating temperature. All leadwires must be moisture resistant.
- Recommended grounding practices:
  - Use the earth ground to provide a connection between the 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 event of an internal short circuit. The RM7896D 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 conductors that have a maximum surface area. Wide straps or brackets are preferred rather than leadwires. Be careful to make sure 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.

- RM7896D: Each relay module has an earth ground terminal that must be grounded to the metal control panel with wire as short as possible. Each ground wire must be capable of carrying a fault current equal to the rating of the protective fuse (20A). A number 14 copper conductor is adequate, but wide straps or brackets are preferred rather than leadwires.
- Recommended wire routing for flame detector leadwires:
    - Do not run high voltage ignition transformer wires in the same conduit with the flame detection wiring.
    - Do not route scanner wires in a conduit with line voltage circuits.
    - Enclose scanner wires without armor cable in metal cable or conduit.
    - Follow directions in flame detector Instructions.
  - Maximum wire lengths:
    - For the RM7896D, the maximum length of leadwire to the terminal inputs is 300 feet (91.4 meters) (Control and Airflow Interlock).
    - For the flame detector leadwires, the maximum flame sensor leadwire length is limited by the flame signal strength.
  - Make sure loads do not exceed the terminal ratings. Refer to the label on the RM7896D or to the ratings in the Specifications; see Table 1 in form 32-00156.
  - Check the power supply circuit. The voltage and frequency tolerance must match those of the RM7896D. A separate power supply circuit can be required for the RM7896D with the required disconnect means and overload protection added.
  - Check all wiring circuits and complete the Static Checkout (see Table 4 in form 32-00156) before installing the RM7896D on the subbase.
  - Install all electrical connectors.
  - Restore power to the panel.

## ASSEMBLY

Assembly instructions for the RM7896D1027 are identical to those in 32-00156.

## OPERATION

The RM7896D1027 has the following status LEDs:

- POWER • PILOT • PURGE • MAIN • ALARM

POWER LED provides fault identification when the RM7896D1027 locks out on an alarm. Fault identification is a series of fast and slow blinking LED lights. The fast blinks identify the tens portion of the fault code (three fast blinks is 30) while the slow blinks identify the units portion of the fault code (two slow blinks is 2). Three fast blinks followed by two slow blinks would be fault code 32. This identifies a running interlock on during STANDBY. (See Table 3 for Blinking Fault Code list.)

The LED code repeats as long as the fault exists. To clear the fault, press the RESET button.

See Fig. 5 for the RM7896D1027 operating sequence.

## CHECKOUT

### Static Checkout

#### WARNING

**Electrical Shock Hazard and Equipment Damage Hazard.**

**Can cause serious injury, death or equipment damage.**

Line voltage is present on most terminal connections when power is on. Use extreme care when testing the system. Close all manual fuel shutoff valve(s) before starting these tests.

1. Open the master switch before installing or removing a jumper on the subbase.
2. Before continuing to the next test, remove all test jumpers used in the previous test(s).
3. Replace all limits and interlocks not operating properly. Do not bypass limits and interlocks.

After checking all wiring, perform this checkout before installing the RM7896D1027 on the subbase. These tests verify that the Q7800 Wiring Subbase is wired correctly and that all external controllers, limits, interlocks, actuators, valves, transformers, motors and other devices are operating properly.

#### CAUTION

Equipment Damage Hazard.  
Dielectric test can seriously damage equipment. Do not perform a dielectric test with the RM7896D1027 installed. Internal surge protectors will break down and conduct current. This can cause the RM7896D1027 to fail the dielectric test or destroy the internal lightning and high current transient protection components.

### Equipment Recommended

1. Voltmeter (1M ohm/volt minimum sensitivity) set on the 0 to 300 Vac range.
2. Two jumper wires; no. 14 wire, insulated, 12 inches (305 mm) long, with insulated alligator clips at both ends.

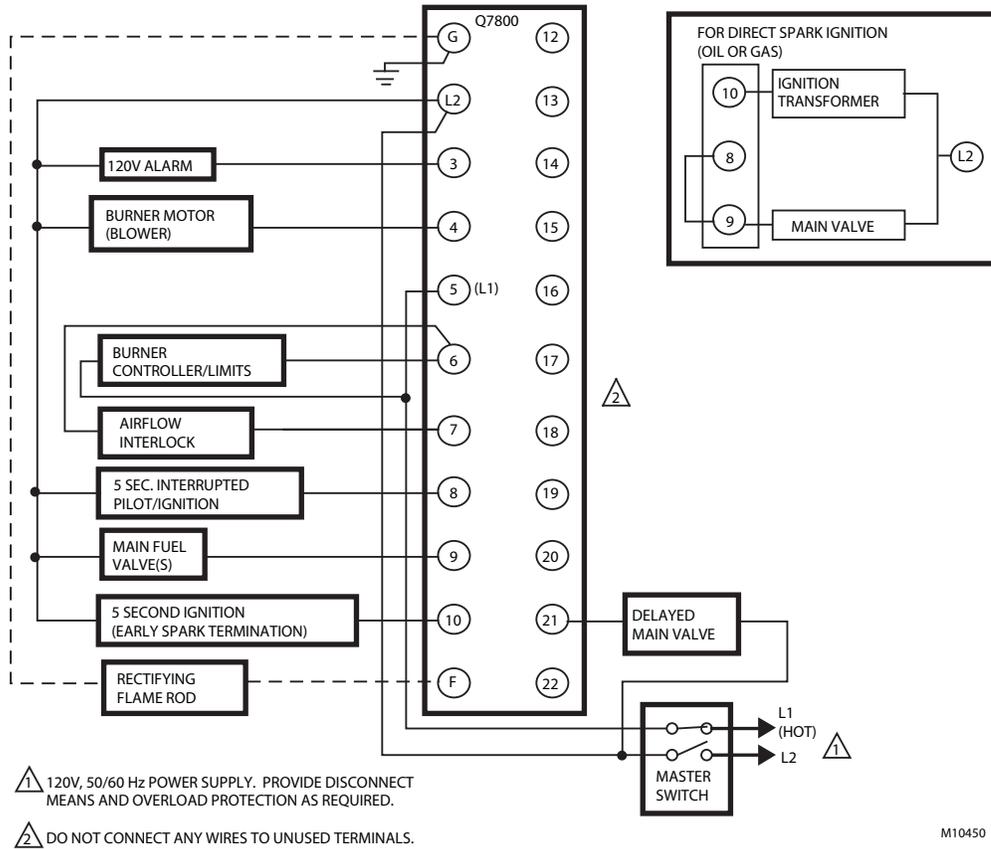
### General Instructions

1. Perform all applicable tests in Table 2, Static Checkout, in the order listed.
2. Make sure that all manual fuel shutoff valves are closed.
3. Raise the setpoint of the operating controller to simulate a call for heat.
4. For each test, open the master switch and install the jumper wire(s) between the subbase wiring terminals listed in the Test Jumpers column of Table 2.
5. Close the master switch before observing operation.
6. Read the voltage between the subbase wiring terminals listed in the Voltmeter column of Table 2.
7. If there is no voltage or the operation is abnormal, check the circuits and external devices described in the last column of Table 2.
8. Check all wiring for correct connections, tight terminal screws, correct wire, and proper wiring techniques. Replace all damaged or incorrectly sized wires.
9. Replace faulty controllers, limits, interlocks, actuators, valves, transformers, motors and other devices as required.
10. Obtain normal operation for each required test before continuing the checkout.
11. After completing each test, be sure to remove the test jumper(s).

The remainder of the RM7896D1027 checkout is the same as provided in form 32-00156.

# TROUBLESHOOTING

Use Table 3 to identify fault code numbers, possible system failure and recommended troubleshooting procedures.



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**Fig. 4. Wiring the RM7896D.**

	00	00	00	10	10				
	INITIATE	STANDBY	START	TIMED PURGE	PFEP 4 OR 10 SEC	MFEP	RUN	POST PURGE 60 SEC	
LED DISPLAY	● POWER	● POWER	● POWER	● POWER	● POWER	● POWER	● POWER	● POWER	
	○	○	○	○ PILOT	● PILOT	● PILOT	○ PILOT	○	
	○	○	○	● PURGE	○ PURGE	○ PURGE	○ PURGE	○	
	○	○	○	○ MAIN	○ MAIN	● MAIN	● MAIN	○	
	○	○	○	○ ALARM	○ ALARM	○ ALARM	○ ALARM	○	
	BURNER								
	BURNER/BLOWER MOTOR (4)								
	(10) IGN. 5 SECONDS								
	PILOT (8)								
MAIN VALVE (9)									
DELAYED MAIN VALV (21)									
OPERATING CONTROLS AND INTERLOCKS MAIN SIGNAL	LIMITS AND BURNER CONTROLLER CLOSED (L1) TO (6)								
	RUNNING ILK CHECK		RUNNING INTERLOCK CLOSED (6) TO (7)				AFSC		
	SAFE START CHECK				MAIN PROVING				SSC

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**Fig. 5. RM7896D operating sequence.**

Table 2. Static checkout.

Test No.	Test Jumpers	Voltmeter	Normal Operation	If Operation is Abnormal, Check the Items Listed Below
 <b>WARNING</b> <b>Explosion Hazard and Electrical Shock Hazard.</b> <b>Can cause serious injury, death or equipment damage.</b> Close all manual fuel shutoff valves before starting these tests.				
<b>IMPORTANT</b> <i>Low fuel pressure limits, if used, could be open. Bypass them with jumpers for the remaining Static Test (if required).</i>				
1	None	5-L2	Line voltage at terminal 5.	<ol style="list-style-type: none"> <li>1. Master switch.</li> <li>2. Power connected to the master switch.</li> <li>3. Overload protection (fuse, circuit breaker) has not opened the power line.</li> </ol>
2	None	6-L2	Line voltage at terminal 6.	<ol style="list-style-type: none"> <li>1. Limits.</li> <li>2. Burner controller.</li> </ol>
3	4-5	7-L2	<ol style="list-style-type: none"> <li>1. Burner motor (fan or blower) starts.</li> <li>2. Line voltage at terminal 7 within 10 seconds.</li> </ol>	<ol style="list-style-type: none"> <li>1. Burner motor circuit.               <ol style="list-style-type: none"> <li>a. Manual switch of burner motor.</li> <li>b. Burner motor power supply, overload protection and starter.</li> <li>c. Burner motor.</li> </ol> </li> </ol>
4	5-10	—	Ignition spark (if ignition transformer is connected to terminal 10).	<ol style="list-style-type: none"> <li>1. Watch for spark or listen for buzz.               <ol style="list-style-type: none"> <li>a. Ignition electrodes are clean.</li> <li>b. Ignition transformer is okay.</li> </ol> </li> </ol>
5	5-8	—	<ol style="list-style-type: none"> <li>1. Ignition spark (if ignition transformer is connected to terminal 8).</li> <li>2. Automatic pilot valve opens (if connected to terminal 8).</li> </ol> <p>NOTE: Refer to wiring diagram of system being tested.</p>	<ol style="list-style-type: none"> <li>1. Watch for spark or listen for buzz.               <ol style="list-style-type: none"> <li>a. Ignition electrodes are clean.</li> <li>b. Ignition transformer is okay.</li> </ol> </li> <li>2. Listen for click or feel head of valve for activation.               <ol style="list-style-type: none"> <li>a. Actuator, if used.</li> <li>b. Pilot valve.</li> </ol> </li> </ol>
6	5-9	—	Automatic fuel valve(s) opens. If using direct spark ignition, check the first stage fuel valve(s) instead of the pilot valve.	Same as test no. 5. If using direct spark ignition, check the first stage fuel valve(s) instead of the pilot valve.
7	5-21	—	Automatic delayed main fuel valve(s) opens.	<ol style="list-style-type: none"> <li>1. Listen for and observe operation of the delayed main fuel valve(s) and actuator(s).</li> <li>2. Valve(s) and actuator(s).</li> </ol>
8	5-3	—	Alarm (if used) turns on.	<ol style="list-style-type: none"> <li>1. Alarm.</li> </ol>
Final	<b>IMPORTANT</b> <i>After completing these tests, open the master switch and remove all test jumpers from the subbase terminals. Also, remove bypass jumpers from the low fuel pressure limits (if used).</i>			

**Table 3. RM7896D1027 Blinking Fault Codes and Recommended Troubleshooting.**

<b>Fault Code</b>	<b>System Failure</b>	<b>Recommended Troubleshooting</b>
Code 1-1 *Low AC Line Voltage*	Low AC line detected.	<ol style="list-style-type: none"> <li>1. Check the relay module and display module connections.</li> <li>2. Reset and sequence the RM7896.</li> <li>3. Check the 7800 power supply and make sure that frequency and voltage meet specifications.</li> <li>4. Check the backup power supply, as appropriate.</li> </ol>
Code 1-2 *AC Quality Problem*	Excessive noise or device running on slow, fast, or AC line dropout detected.	
Code 2-1 *Unexpected Flame Signal*	Flame sensed when no flame is expected during STANDBY or PURGE.	<ol style="list-style-type: none"> <li>1. Check that flame is not present in the combustion chamber; correct any errors.</li> <li>2. Make sure that the flame amplifier and flame detector are compatible.</li> <li>3. Check the wiring and correct any errors.</li> <li>4. Remove the flame amplifier and inspect its connections. Reseat the amplifier.</li> <li>5. Reset and sequence the RM7896D.</li> <li>6. If the code reappears, replace the flame amplifier and/or the flame detector.</li> <li>7. If the fault persists, replace the relay module.</li> </ol>
Code 2-2 *Flame Signal Absent*	No-flame time present at the end of the Pilot Flame Establishing Period; lost during the Main Flame Establishing Period or during Run.	<ol style="list-style-type: none"> <li>1. Measure the flame signal. If one exists, verify that it meets specifications.</li> <li>2. Make sure that the flame amplifier and flame detector are compatible.</li> <li>3. Inspect the main fuel valve(s) and valve connection(s).</li> <li>4. Verify that the fuel pressure is sufficient to supply fuel to the combustion chamber. Inspect the connections to the fuel pressure switches. make sure they are functioning properly.</li> <li>5. Inspect the Airflow Switch and make sure that it is functioning properly.</li> <li>6. Check the flame detector sighting position; reset and recycle. Measure the flame signal strength. Verify that it meets specifications. if not, refer to the flame detector and/or flame amplifier checkout procedures in the installation instructions.</li> <li>7. Replace the flame amplifier and/or the flame detector, if necessary.</li> <li>8. If the fault persists, replace the relay module.</li> </ol>
Code 2-3 *Flame Signal Overrange*	Flame signal value is too high to be valid.	<ol style="list-style-type: none"> <li>1. Make sure the flame detector and flame amplifier are compatible.</li> <li>2. Remove the flame amplifier and inspect its connections. Reset the flame amplifier.</li> <li>3. Reset and sequence the RM7896D.</li> <li>4. Check the flame detector sighting position; reset and recycle. Measure flame strength. Verify that it meets specifications. If not, refer to the flame detector and/or flame amplifier checkout procedures in the installation instructions.</li> <li>5. If the code reappears, replace the flame amplifier and/or the flame detector.</li> <li>6. If the fault persists, replace the relay module.</li> </ol>
Code 3-1 *Running/ Interlock Switch Problem*	Lockout interlock fault during Prepurge.	<ol style="list-style-type: none"> <li>1. Check wiring; correct any errors.</li> <li>2. Inspect the fan; make sure there is no air intake blockage and that it is supplying air.</li> <li>3. Make sure the Lockout Interlock switches are functioning properly and the contacts are free from contaminants.</li> <li>4. Reset and sequence the RM7896D to Prepurge (place the TEST/RUN switch in the TEST position, if available). Measure the voltage between terminal 7 and G (ground); 120 Vac should be present.</li> <li>5. If steps 1 through 4 are correct and the fault persists, replace the relay module.</li> </ol>

**Table 3. RM7896D1027 Blinking Fault Codes and Recommended Troubleshooting. (Continued)**

<b>Fault Code</b>	<b>System Failure</b>	<b>Recommended Troubleshooting</b>
Code 3-2 *Running/ Interlock On During Standby*	Lockout interlock powered at improper point in sequence.	<ol style="list-style-type: none"> <li>1. Check wiring to make sure that the Lockout Interlocks are connected properly between terminals 6 and 7. Correct any errors.</li> <li>2. Reset and sequence the RM7896D.</li> <li>3. If the fault persists, measure the voltage between terminal 6 and G (ground), then between terminal 7 and G. If there is 120 Vac at terminal 6 when the controller is off, the controller switch may be bad or is jumpered.</li> <li>4. If steps 1 through 3 are correct and there is 120 Vac at terminal 7 while the controller is closed and the fault persists, check for a welded or jumpered Running Interlock or Airflow Switch. Correct any errors.</li> <li>5. If steps 1 through 4 are correct and the fault persists, replace the relay module.</li> </ol>
Code 4-1 *Purge Card Problem*	No purge card or the purge card timing has changed from the original configuration.	<ol style="list-style-type: none"> <li>1. Make sure the purge card is seated properly.</li> <li>2. Inspect the purge card and the connector on the relay module for any damage or contaminants.</li> <li>3. Reset and sequence the RM7896D.</li> <li>4. If the fault code reappears, replace the purge card.</li> <li>5. Reset and sequence the RM7896D.</li> <li>6. If the fault code persists, replace the relay module.</li> </ol>
Code 4-2 *Wiring Problem/ Internal Fault*	Pilot (ignition) valve terminal, Main valve, Ignition or Pilot Valve 2 was on when it should be off.	<p> <b>WARNING</b>  <b>Electrical Shock Hazard, Fire or Explosion Hazard.</b>  <b>Can cause serious injury, death or equipment damage.</b>  Remove system power and turn off power supply.</p> <ol style="list-style-type: none"> <li>1. Remove system power and turn off fuel supply.</li> <li>2. Check wiring, correct any errors.</li> <li>3. Inspect Pilot Fuel Valve(s), both places, and connections.</li> <li>4. Reset and sequence the RM7896D.</li> <li>5. If the fault persists, replace the relay module.</li> </ol>
Code 4-3 *Flame Amplifier Problem*	Flame not sensed, or sensed when checked.	<ol style="list-style-type: none"> <li>1. Check wiring; correct any errors.</li> <li>2. Make sure the flame amplifier and flame detector are compatible.</li> <li>3. Remove the flame amplifier and inspect the connections. Reseat the amplifier.</li> <li>4. Reset and sequence the RM7896D.</li> <li>5. If the code reappears, replace the flame amplifier and/or the flame detector.</li> <li>6. If the fault persists, replace the relay module.</li> </ol>
Code 4-4 *Configuratio n Jumper Problem*	The configuration jumpers differ from the sample taken at startup.	<ol style="list-style-type: none"> <li>1. Inspect the jumper connections. Make sure the clipped jumpers were completely removed.</li> <li>2. Reset and sequence the RM7896D.</li> <li>3. If the fault persists, replace the relay module.</li> </ol>
Code 4-5 *Incompatible Subbase*	Installed subbase is incompatible with this relay module.	<ol style="list-style-type: none"> <li>1. Check that the subbase matches the installed Relay module series.</li> <li>2. Replace the relay module with a compatible model.</li> </ol>
Code 6-1 *Internal Faults*	Relay Module self-test failure.	<ol style="list-style-type: none"> <li>1. Reset and sequence the RM7896D.</li> <li>2. If fault reappears, remove power from the device, reapply power, then reset and sequence the RM7896D.</li> <li>3. If the fault persists, replace the relay module.</li> </ol>

**Table 3. RM7896D1027 Blinking Fault Codes and Recommended Troubleshooting. (Continued)**

<b>Fault Code</b>	<b>System Failure</b>	<b>Recommended Troubleshooting</b>
Code 6-2 *Internal Faults*	Relay Module Self-Test failure.	<ol style="list-style-type: none"> <li>1. Reset and sequence the Relay Module.</li> <li>2. If fault reappears, remove power from the device, reapply power, then reset and sequence the Relay Module.</li> <li>3. If fault does not repeat on the next cycle, check for electrical noise being copied into the Relay Module through the external loads or possibly an electrical grounding issue.</li> <li>4. If the fault persists, replace the Relay Module.</li> </ol>
Code 6-3 *Device Specific Fault*	Fault with special OEM input circuits.	<ol style="list-style-type: none"> <li>1. Check wiring and operation of special OEM inputs.</li> <li>2. Reset and sequence the Relay Module.</li> <li>3. If fault reappears, remove power from the device, reapply power, then reset and sequence the Relay Module.</li> <li>4. If the fault does not repeat on the next cycle, check for electrical noise being copied into the Relay Module through the external loads or possibly an electrical grounding issue.</li> <li>5. If the fault persists, replace the Relay Module.</li> </ol>
Code 6-4 *Accessory Fault*	VPS setup	<ol style="list-style-type: none"> <li>1. Make sure RM VP is programmed.</li> <li>2. T6 and T17 powered at the same time—correct wiring.</li> <li>3. Reset control if fault persists. Replace relay module.</li> </ol>
Code 7-7 *Unrecognized Fault*	Unrecognized at this time.	—

## **SAFETY AND SECURITY**

### **Physical device protection**

Device shall be accessible to authorized personnel only – Installation on publicly accessible places is not recommended as this could lead to unwanted and potentially unsafe changes to device (wiring, configuration, etc).

It is recommended to lock the device in an enclosed cabinet with access allowed only to approved and trained personnel. Also, it is strongly advised to keep all the wiring of device physically secure.

Physical protection of the device is applied via Run/Test switch label/seal. It is intended to prevent and detect unauthorized access.

### **Modbus & DDL Interface security**

Any conducts critical to device functionality (DDL, Modbus lines etc.) shall be physically protected (installed outside public access) since they could be damaged or tampered-with by unauthorized people, either accidentally or for purpose. Modbus RS-485 & DDL protocols do not support security features. For DDL interface - only DDL devices shall be connected to the Burner Controller DDL line.

### **License agreement**

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**For More Information**

The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschröder and Maxon. To learn more about our products, visit [ThermalSolutions.honeywell.com](http://ThermalSolutions.honeywell.com) or contact your Honeywell Sales Engineer.

**Honeywell Process Solutions**

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