

# 7800 SERIES S7830 Expanded Annunciator

PRODUCT DATA



## APPLICATION

The S7830 Expanded Annunciator is an enhancement module for use with 7800 SERIES Relay Modules. The S7830 is a microprocessor-based device designed to monitor the status of a series string of limit, control, and interlock contacts for a commercial or industrial burner. The S7830 acts as a system monitor and enhances fault and status messages of the 7800 SERIES burner control.

## FEATURES

- 26 status light emitting diodes (LED).
- Front panel LED array, arranged in a pattern to clearly indicate the flow of line voltage through the string of limits, controls and interlocks.
- Selectable current and first-out LED array display status.
- Power and proper operation indicating LED.
- Common Universal Mounting Subbase (Q7800A or B).
- 21 monitored contact points.
- Access for external electrical voltage checks.
- Communication interface capability.
- Capable of programmable limit or interlock messages using the S7800A1142 Keyboard Display Module (KDM).
- Open Lockout interlocks are indicated with a flashing status LED when used with Relay Module Models with Lockout Interlock feature.
- Hold messages displayed on the KDM are enhanced with the Expanded Annunciator terminal description information that is causing the hold (low water cutoff for example).
- LED operational test.
- 36 additional 7800 SERIES fault and hold messages.

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## SPECIFICATIONS

### Electrical Ratings:

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

Power Dissipation: 4.6W maximum.

Terminal ratings: See Table 1.

**Table 1. Terminal Ratings**

Terminal Number	Description <sup>b</sup>	Rating
1	Earth Ground <sup>a</sup>	—
2	Input Line Voltage (Neutral)	
3	Input Line Voltage (Hot)	120 Vac, +10%/-15%.
4	Main Valve Proof of Closure	120 Vac, +10%/-15%, 2 mA.
5	Burner Switch <sup>b</sup>	
6	Operating Control <sup>b</sup>	
7	Auxiliary Limit # 1 <sup>b</sup>	
8	Auxiliary Limit # 2	
9	Low Water Cutoff <sup>b</sup>	
10	High Limit <sup>b</sup>	
11	Auxiliary Limit # 4 <sup>b</sup>	
12	Oil Select Switch <sup>b</sup>	
13	High Oil Pressure <sup>b</sup>	
14	Low Oil Pressure <sup>b</sup>	
15	High Oil Temperature <sup>b</sup>	
16	Low Oil Temperature <sup>b</sup>	
17	Gas Select Switch <sup>b</sup>	
18	High Gas Pressure <sup>b</sup>	
19	Low Gas Pressure or Atomizing Switch <sup>b</sup>	
20	Air Flow Switch <sup>b</sup>	
21	Auxiliary Interlock # 4 <sup>b</sup>	
22	Auxiliary Interlock # 5 <sup>b</sup>	

<sup>a</sup> The S7830 must have an earth ground providing a connection between the subbase and the control panel or equipment. The earth ground must be capable of conducting the current to blow a 15A fuse (or breaker) in the event of an internal short circuit. The S7830 needs a low impedance ground connection to the equipment frame that, 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 maximum surface areas. Wide straps or brackets, rather than leadwires, are preferred. Be careful to verify that the 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.

<sup>b</sup> The S7800A1142 Keyboard Display Module can change the default description.

## 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, Scarborough, 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.

**Environmental Ratings:\**

Ambient Temperature Range:

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

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

Humidity: 85% continuous, noncondensing.

Vibration: 0.5 G environment.

**Dimensions:** See Fig. 1 and 2.

**Weight:** 1 lb, 6 oz (0.624 kilogram), unpacked.

**Approvals:**

Underwriters Laboratories Inc. Listed: File No. MH17367,  
Guide No. MJAT.

Canadian Standards Association certified: LR95329.

Factory Mutual Approved.

IRI Acceptable.

Federal Communications Commission: Part 15, Class B  
Emissions.

**Required Components;**

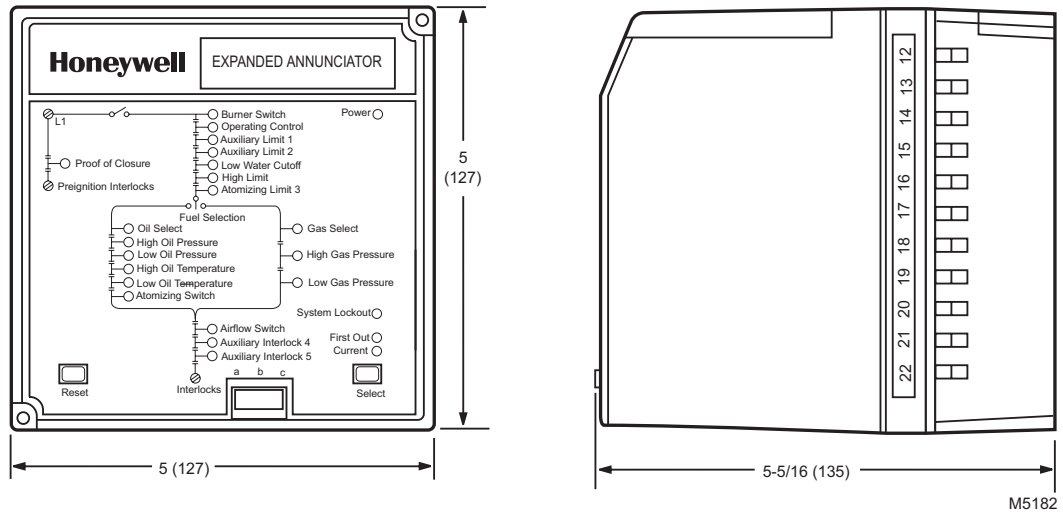
Q7800A or Q7800B universal Wiring Subbase.

RM7800 SERIES Relay Module.

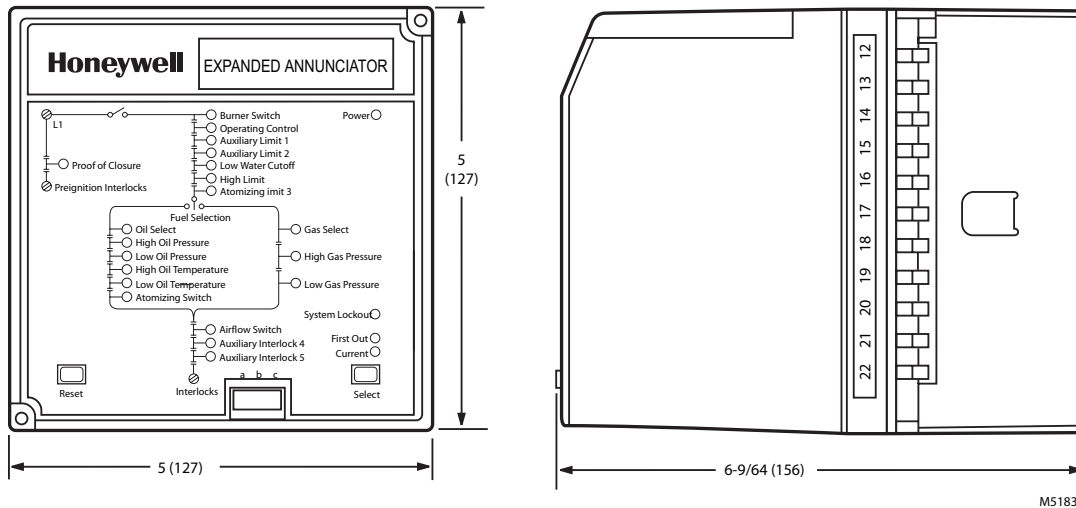
S7800 Keyboard Display Module or S7810 Data ControlBus™  
Module.

**Accessories:**

S7810M Modbus™ Module.



**Fig. 1. Mounting dimensions of S7830 Expanded Annunciator and Q7800A Wiring Subbase in in. (mm).**



**Fig. 2. Mounting dimensions of S7830 Expanded Annunciator and Q7800B Wiring Subbase in in. (mm).**

## PRINCIPAL TECHNICAL FEATURES

The S7830 Expanded Annunciator is an enhancement module for use with 7800 SERIES Relay Modules. The S7830 is a microprocessor-based device designed to monitor the status of a series string of limit, control and interlock contacts for a commercial or industrial burner. The S7830 acts as a system monitor and enhances fault and status messages for the 7800 SERIES burner control.

### ControlBus Communications

The S7830 provides interfaces with the 7800 SERIES Relay module through a three-wire RS-485 interface. Using this communications bus, the S7830 provides additional first-out annunciation, burner hold, and current status information for the control, limit and interlock string of the burner equipment.

### LED Array

The S7830 provides visual indication of the status of the burner equipment control, limit and interlock string. The string of contact and switch points are individually identified with a colored LED. When power is present at the contact point, the LED is lighted. When the contact point is de-energized, the LED is dark. If the contact or switch is identified as the first-out annunciation point, the LED flashes if the RM78X0L, RM7838B,C with the Lockout Feature is used or if the feature is enabled (RM7895, 6, 7, or 8 with JR2 configuration resistor removed).

### Opto-Isolator Coupling

The S7830 uses opto-isolators to monitor the limit string and couple the line voltage input to the microprocessor. An opto-isolator allows a microprocessor to determine the status of line voltage at control, limit or interlock switch points. Using this capability, the microprocessor is able to determine the current as well as first-out status of 23 digital points, each representing specific burner control, limit or interlock switches.

## INSTALLATION

### WARNING

**Fire or Explosion Hazard.**

**Can cause severe injury, death or property damage.**

Verification of safety requirements must be performed **each time** a control is installed on a burner to prevent possible hazardous burner operation.

### 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 on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced flame safeguard technician.
4. After installation is complete, check out the product operation as provided in these instruction.

### WARNING

**Electrical Shock Hazard.**

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

1. Disconnect the power supply before beginning installation to prevent electrical shock and equipment damage. More than one power supply disconnect can be involved.
2. Wiring connections for the S7830 are unique; therefore, refer to Fig. 3, 4, 5 for proper subbase wiring.
3. Wiring must comply with all applicable codes, ordinances and regulations.
4. Wiring must comply with NEC Class 1 (Line Voltage) wiring.
5. The S7830 should not interfere with the proper safety operation of the controls, limits and interlocks it is monitoring. After installation, check each control, limit and interlock to ensure that it is operating properly. **DO NOT PLACE JUMPER WIRES ACROSS THE INSTALLATION CONTROLS, LIMITS AND INTERLOCKS.**

**IMPORTANT**

1. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with these instructions, may cause interference for radio communications. It has been tested and found to comply with the limits of a Class B computing device 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 may cause interference; in which case, the user, at their own expense, may be required to take whatever measures are required to correct this interference.
2. This digital apparatus does not exceed the Class B limits for radio noise, set out in the Radio Interference Regulations of the Canadian Department of Communications.
3. If a control, limit or interlock is not used with the installation, a jumper must be installed in the S7830 wiring subbase. **DO NOT PLACE JUMPER WIRES ACROSS THE INSTALLATION CONTROL, LIMITS AND INTERLOCKS.** For example, if Auxiliary Limit # 1(Aux Limit#1) is not used, place a jumper wire between terminals 6 and 7 on the S7830 wiring subbase.
4. For straight gas burner applications, the oil limit and interlock inputs **DO NOT** need to be jumpered.
5. For straight oil burner applications, the gas limit and interlock inputs **DO NOT** need to be jumpered.
6. For combination gas-oil burner applications, a double pole, double throw (dpdt) fuel select switch is required. See Fig. 3.
7. For communications ControlBus connections in excess of 100 feet (30 meters), a 120 ohm, 1/4 watt minimum, termination resistor may be required across terminals 1(a) and 2(b) of the electrical connectors. Cable shield must be terminated to ground at both ends. If shielded cable is **NOT** used, use three-wire twisted cable.
8. The 7800 SERIES Relay Module control point can be tied into the S7830:
  - For dual fuel burners, from terminals 6 to 11, inclusive.
  - For single fuel burners, from terminals 6 to 9, inclusive.

**Humidity**

Install the S7830 where the relative humidity never reaches the saturation point. The S7830 is designed to operate in a maximum 85% relative humidity, continuous, noncondensing, moisture environment. Condensing moisture can cause erratic operation.

**Vibration**

Do not install the S7830 where it could be subjected to vibration in excess of 0.5G continuous, maximum.

**Weather**

The S7830 is not designed to be weather tight. If installed outdoors, the S7830 must be protected by a weather-tight, NEMA 4, enclosure. Mounting Wiring Subbase

NOTE: For installation dimensions, see Fig. 1 or 2.

1. Mount the subbase in any position except horizontally with the bifurcated subbase contacts pointed down (on the row F). A vertical mounting position is recommended. Any other position decreases the maximum ambient temperature rating.
2. Select a location on a wall, burner surface, or within an electrical control panel. Be sure to allow adequate clearance for electrical voltage probe tests, electrical field connections, and wiring of the RS-485 ControlBus to the 7800 SERIES Relay Module. The S7830 must be within 1000 feet (305 meters) of the 7800 SERIES Relay Module for proper communication of first-out annunciation and current burner status information.
3. Use the back of the subbase as a template to mark the four screw locations and drill pilot holes.
4. Insert four No. 6 screws for mounting, and tighten securely.

**WIRING****⚠ WARNING****Electrical Shock Hazard.**

**Can cause severe injury, death or property damage.**

Disconnect the power supply from the main disconnect before beginning installation to prevent electrical shock and equipment damage. More than one disconnect can be required.

1. Refer to Fig. 3 for proper subbase wiring. The system wiring must follow the order shown in Fig. 3.

NOTE: With the S7800A1142 Keyboard Display Module, you can name the limits and interlocks to match your system.

2. All wiring must comply with all appropriate electrical codes, ordinances and regulations. Wiring, where required, must comply with NEC Class 1 (Line Voltage).
3. Recommended wire size and type:
  - a. Line Voltage:
    - (1) Use No. 14, 16 or 18 gauge (TTW60C or THW75C or THHN90C), 600 volt insulation for all line voltage terminals.
  - b. RS-485 ControlBus:
    - (1) Use three-wire twisted cable. Some installations may require shielded cable; use Belden 8771 or equivalent. For connections in excess of 100 feet (30 meters), a 120 ohm, 1/4 watt minimum, termination resistor may be placed across terminals 1(a) and 2(b) of the electrical connectors.
4. Recommended grounding practices:
  - a. The earth ground provides for 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 15A type SC fast blow fuse (or breaker) in the event of an internal short circuit.
  - b. The S7830 needs a low impedance ground connection to the equipment frame which, in turn, needs a low impedance ground 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 ensure 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 corrosion on mating surfaces.

- c. The ControlBus shielded cable, if used, should be connected to the signal ground terminal 3(c) provided as a part of the S7830 ControlBus connector. The shield should be connected at both ends to earth ground.
5. Recommended Wire Routing:

- a. Do not run high voltage ignition transformer wires in the same conduit or in close proximity with the ControlBus wiring.
  - b. Do not route the ControlBus wires in conduit with line voltage circuits.
6. Maximum wire lengths:
- a. The maximum ControlBus cable length depends on the number of system modules connected, the noise conditions and the cable used. The maximum length of all interconnecting wire is 1000 feet (305 meters).
  - b. S7830 leadwires: the maximum length of the control, limit and interlock leadwires is 500 feet (152 meters) to the terminal inputs.

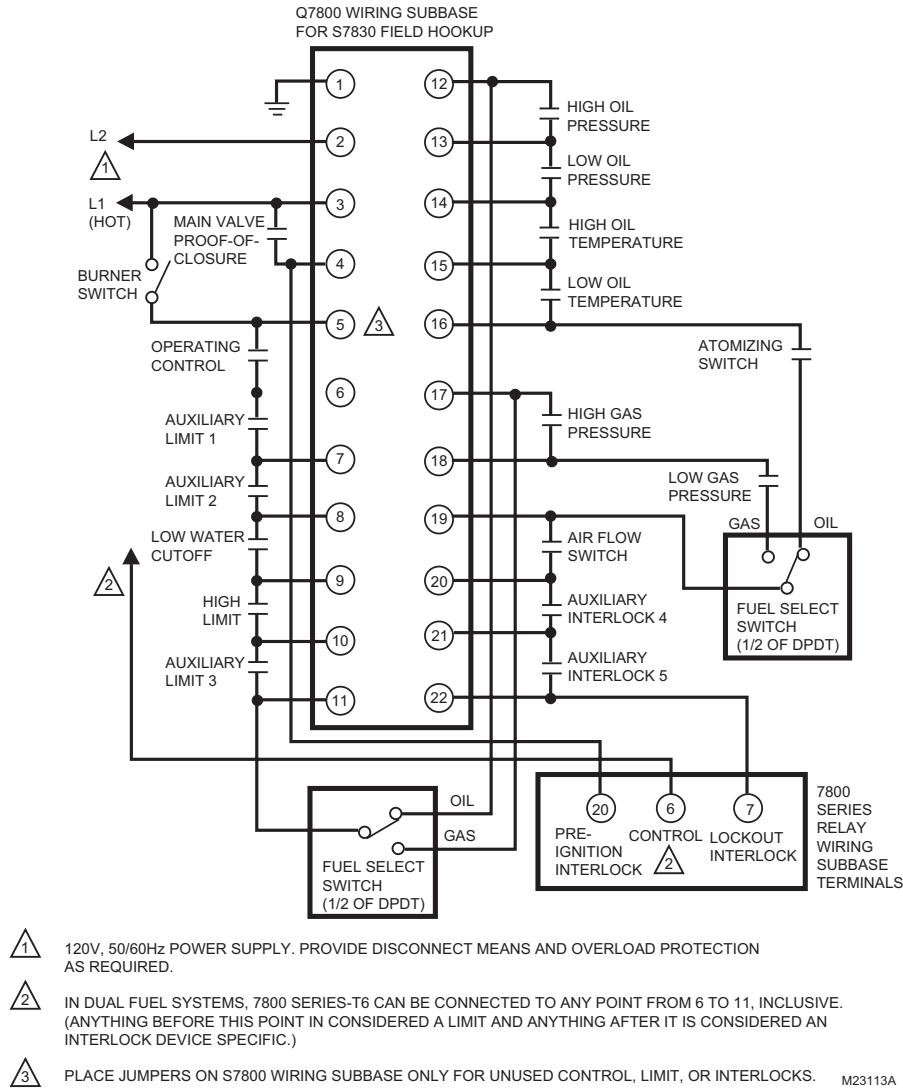
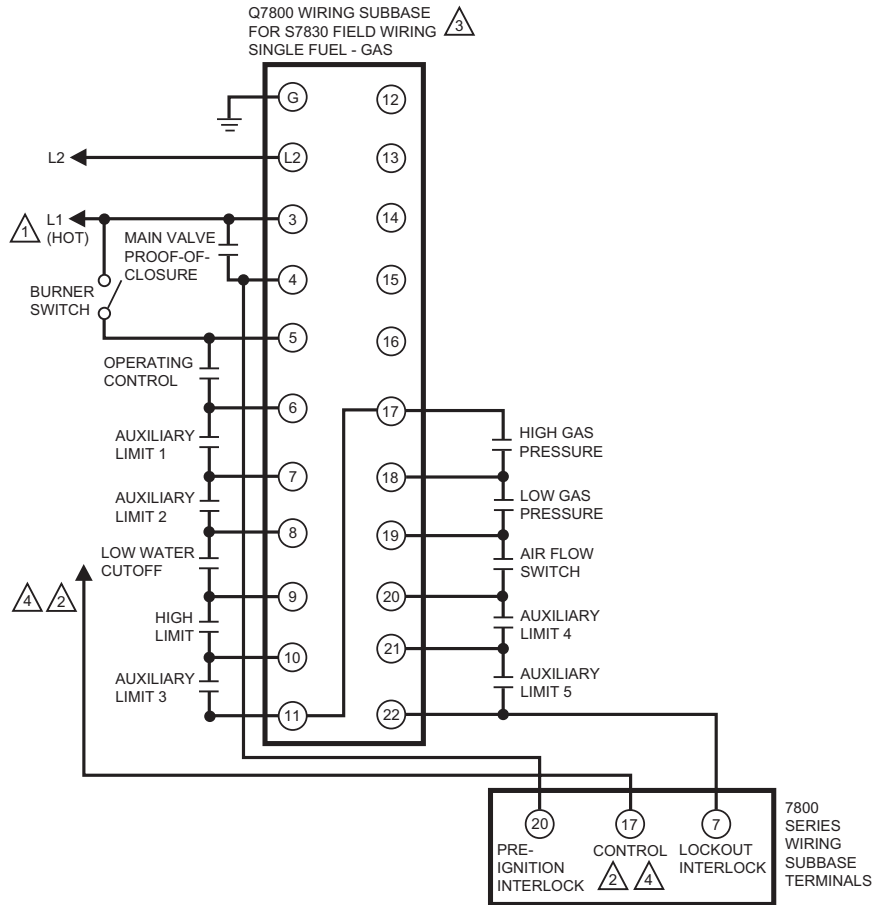


Fig. 3. S7830 wiring hookup—dual fuel.



- △1 120V, 50/60HZ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
  - △2 7800 SERIES TERMINAL 17 CAN BE CONNECTED TO ANY POINT S7830 TERMINAL 17 THROUGH 11 OR 17 THROUGH 19. (ANYTHING BEFORE CONNECTION ARE RUNNING LIMITS AND ANYTHING AFTER IT IS CONSIDERED LOCKOUT INTERLOCKS DEVICE SPECIFIC.)
  - △3 PLACE JUMPERS ON S7830 WIRING SUBBASE ONLY FOR UNUSED CONTROL, LIMIT, OR INTERLOCKS.
  - △4 IF VPS SPLIT, AFTER OR BOTH IS SELECTED – END THE LIMIT STRING WIRING AT TERMINAL 17 OF THE RELAY MODULE. – BEGINNING THE REMAINING LIMITS BY CONNECTING TO L1 OR THE RELAY MODULE'S BLOWER MOTOR TERMINAL. PLEASE NOTE, CONNECTING THE LIMIT STRING TO L1 WILL KEEP THE LIMIT STRING LEDS OF THE S7830 ILLUMINATED WHEN THE SYSTEM IN STANDBY. USING THE BLOWER MOTOR TERMINAL WILL SHUT OFF THE LEDS IN STANDBY. MAKE SURE THE LOAD OF THE BLOWER MOTOR AND THE VALVES AND IGNITION COMBINED DO NOT EXCEED THE RATING OF THE BLOWER MOTOR TERMINAL.
- M27949

**Fig. 4. S7830 wiring hookup—Valve Proving devices with Valve Proving enabled.**

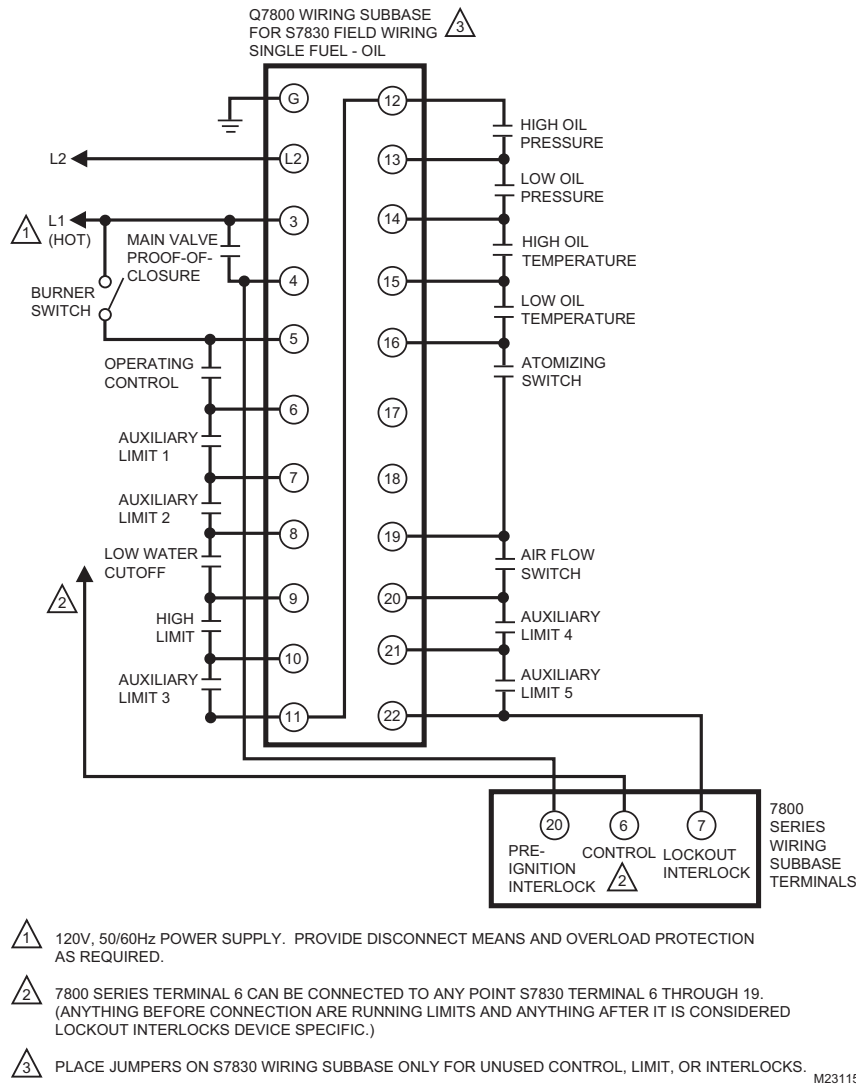


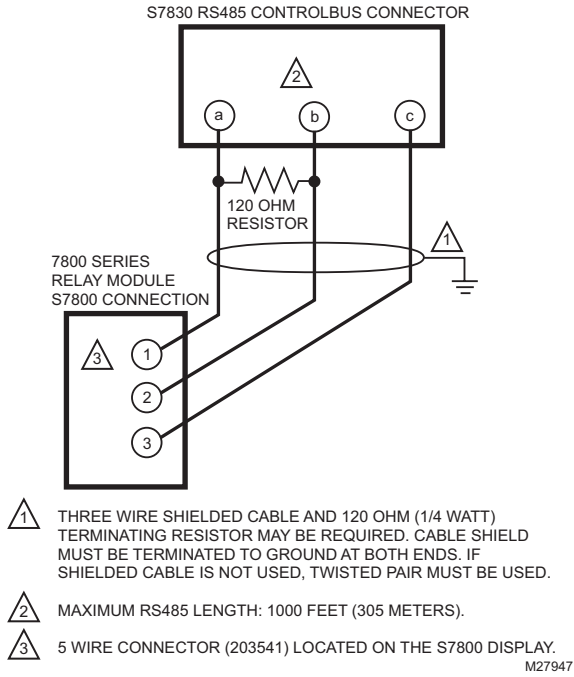
Fig. 5. S7830 wiring hookup—single fuel: oil.

7. Check the power supply circuit. The voltage and frequency tolerance must match those of the S7830. Do not connect the S7830 to a power supply circuit that can have wide line voltage variations. A separate power supply circuit may be required for the S7830. Add the required disconnect means and overload protection.
8. Check all wiring circuits (see Fig. 3) before installing the S7830 on the wiring subbase.
9. Install all electrical connectors.
10. Restore power to the panel.

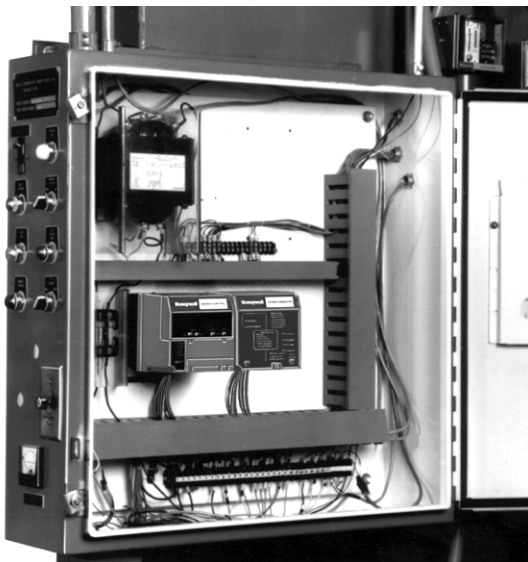
## Mounting the S7830

NOTE: For installation dimensions, see Fig. 1 or 2.

1. Mount the S7830 vertically (see Fig. 3, 4 and 5) or horizontally with the knifeblade terminals pointing downward. When mounted on the Q7800A Wiring Subbase, the S7830 must be in an electrical enclosure.
2. Select the location in the electrical enclosure. Be sure to allow clearances for servicing, electrical signal voltage probes and electrical connections. Allow an optional three inches (8 cm) minimum on both sides of the S7830 for electrical signal voltage probes.
3. Make sure no subbase wiring is projecting beyond the terminal blocks. Tuck in wiring against the back of the subbase so that it does not interfere with the knifeblade terminals or bifurcated contacts.
4. Mount the S7830 by aligning the four L-shaped corner guides and knifeblade terminals with the bifurcated contacts on the wiring subbase and securely tightening the two mounting screws.



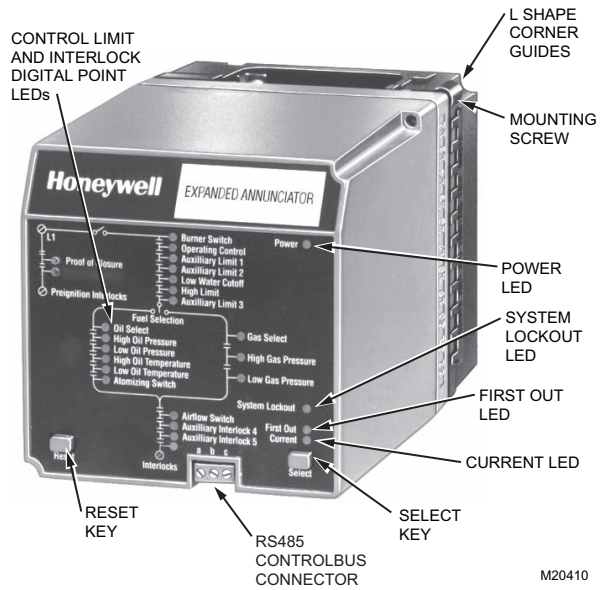
**Fig. 6. Wiring the RS-485 ControlBus.**



**Fig. 7. Electrical panel installation.**



**Fig. 8. Wall or burner installation using Q7800B wiring subbase.**



**Fig. 9. S7830 Expanded Annunciator for cabinet installation using Q7800A wiring subbase.**

## OPERATION

The S7830 is designed to operate in conjunction with 7800 SERIES Relay Modules to enhance information for causes of burner lockouts and sequence status by monitoring up to 21 digital contact points. Current burner status and lockout information is displayed at the S7830 through an array of 26 LED and also on the face of the S7800 Keyboard Display Module. The information from the S7830 is communicated through a three-wire twisted ControlBus communications link to the S7800.

NOTE: Not all 7800 SERIES devices lock out for an open interlock. Annunciation is available as hold messages but an alarm will not be generated.

## First-Out Annunciation

The S7830 does not cause burner lockouts. Only the 7800 SERIES Relay Modules with the lockout feature (RM78X0L, RM7838B, C or RM7895, 6, 7, 8 with configuration resistor feature, JR2 clipped) can cause a burner lockout (safety shutdown) for abnormal interlock conditions. From the time a lockout occurs, the expanded first-out annunciation is communicated as follows:

1. The 7800 SERIES Relay Module causes a lockout due to, for example, the opening of the Lockout Interlock circuit.
2. The 7800 SERIES Relay Module communicates the lockout status, including the time when the fault occurred, to any modules connected to the RS-485 ControlBus communication network.
3. The S7830 recognizes the lockout status of the 7800 SERIES Relay Module and the time when the fault occurred.
4. The S7830 begins to review the status of all switched inputs on a grouping of several line cycles time duration. When identifying a normal status of all switched inputs, the S7830 will advance one line cycle grouping to identify the first switched input that opened after the normal status. This switch point, for example, air flow switch, is identified as the first-out annunciation point.
5. This first-out information is communicated by the S7830 to:
  - a. The 7800 SERIES Relay Module to enhance the lockout display message, for example from Lockout Interlock fault to Airflow Switch fault.
  - b. The array of 26 status LED on the face of the S7830 that are latched to the lockout mode to visually indicate which switch is the first-out point. For the example being used:
    - (1) All LED electrically upstream from the airflow switch will be illuminated constantly.
    - (2) The airflow switch LED will flash on and off to indicate that this switch was the first-out cause of the lockout condition.
    - (3) Any LED electrically downstream from the first-out point will remain dark because the circuit upstream of that point has been broken.
    - (4) The first-out LED will be latched to indicate the mode of the 26-led array.
6. When the lockout is cleared by resetting the 7800 SERIES Relay Module, the S7830 is automatically changed from first-out to current.

## Current Status

The S7830 provides current status information, through the RS-485 ControlBus, defining which switch point is causing a hold condition. The 7800 SERIES Relay Module places the burner in Standby when the control input, terminal 6, opens (terminal 17 on VP devices: RM7898, RM7840G/L and RM7800L). The exact switch causing the burner to enter Standby may be one of several controls, limits or interlocks. The S7830, through the RS-485 ControlBus, communicates the current status of the 21 monitored digital contacts points

twice each second. For example, if the Standby hold is being caused by the Burner Switch being open, the Standby hold message will be enhanced to identify the Burner Switch, providing information that identifies the reason for the hold.

## S7830 User Interface

### LED States

The array of 26 LED can have the following states:

1. Digital Points:
  - a. The digital contact switch points can have one of three states:
    - (1) LED ON indicates power is present at the S7830 terminal monitoring that switch.
    - (2) LED OFF indicates power is absent at the S7830 terminal monitoring that switch.
    - (3) LED FLASHING indicates the switch that is the cause of the lockout, first-out point.
  - b. Digital Points LED:
    - (1) Main Valve Proof of Closure
    - (2) Burner Switch
    - (3) Operating Control
    - (4) Auxiliary Limit # 1
    - (5) Auxiliary Limit # 2
    - (6) Low Water Cutoff
    - (7) High Limit
    - (8) Auxiliary Limit # 3
    - (9) Oil Select Switch
    - (10) High Oil Pressure
    - (11) Low Oil Pressure
    - (12) High Oil Temperature
    - (13) Low Oil Temperature
    - (14) Gas Select Switch
    - (15) High Gas Pressure
    - (16) Low Gas Pressure or Atomizing Switch
    - (17) Air Flow Switch
    - (18) Auxiliary Interlock # 4
    - (19) Auxiliary Interlock # 5
    - (20) Other Preignition Interlock
    - (21) Other Lockout Interlock
2. Power LED
  - a. The Power LED can have one of three states:
    - (1) LED ON indicates an abnormal condition that shows power is present at the S7830, but the device is inoperative (reset the S7830).
    - (2) LED OFF indicates:
      - (a) Power is absent at the S7830.
      - (b) Power is present at the S7830, but the Power LED is defective.
      - (c) Power is present at the S7830, the Power LED is not burned out, but the device is inoperative. (Reset the S7830.)
    - (3) LED FLASHING (OFF briefly every four seconds) indicates power is present at the S7830 and the device is operating properly.
3. System Lockout LED
  - a. The System Lockout LED can have one of two states:
    - (1) LED ON indicates the 7800 SERIES Relay Module is in a lockout state.
    - (2) LED OFF indicates the 7800 SERIES Relay Module is in a normal operating status, power is off, or the LED is defective.

4. First-out LED
  - a. The First-out LED can have one of three states:
    - (1) LED ON indicates the LED array is latched in a mode showing the status at the time of the lockout.
    - (2) LED OFF indicates the LED array is in a Current Status mode, power is off, or the LED is defective.
    - (3) LED FLASHING indicates the Select keypad is being depressed constantly (four seconds or longer) and a lockout is not present.
5. Current LED
  - a. The Current LED can have one of two states:
    - (1) LED ON indicates the LED array is in a Current status.
    - (2) LED OFF indicates the LED array is latched in a first-out mode, power is off or the LED is defective.

## Select Keypad Functions

The Select Keypad provides two functions:

1. When depressed momentarily, the S7830 mode will toggle between lockout (first-out) and Current status. Therefore, the operator can actively switch back and forth between these two modes to define the status of the 21 digital switched inputs.
2. When depressed constantly (four seconds), all 25 LED (exclusive of the POWER LED) in the array will be forced on. This is a means to check to make certain that an LED can illuminate or is operating properly.

## Reset Keypad Function

The Reset Keypad is used to cause an electrical reset of the S7830. If the operation of the S7830 is in question, an attempt can be made to reset the internal microprocessor. It is not necessary to depress the Reset Keypad after a system lockout. Once the 7800 SERIES Relay Module is reset, the S7830 LED array automatically will be reset to the Current status mode.

## Display Messages

The S7830 is used to enhance the lockout and hold information generated by the 7800 SERIES Relay Module, and allows point-by-point interrogation of the digital switch points by using the S7800 Keyboard Display Module. This information is contained within an Expanded Annunciator informational index (see Table 2).

## S7800 Expanded Annunciator Informational Index

Using the S7800 Keyboard Display Module, referring to Table 2, the individual ON/OFF status of 22 digital points can be monitored. The display message values for the Expanded Annunciator Informational Index are also explained in Table 2.

## Hold Messages

Using the S7800 Keyboard Display Module, the S7830 provides 16 HOLD messages. The HOLD messages are summarized in Table 3.

## Lockout Messages

Using the S7800 Keyboard Display Module, the S7830 provides 20 enhanced LOCKOUT messages. The LOCKOUT messages are summarized in Table 4.

**Table 2. Expanded Annunciator Informational Index.<sup>a</sup>**

Selectable Message	Display Value	Description
EA not connected	—	The Expanded Annunciator is not connected.
CS:	Reference Table 5	Current status of Expanded Annunciator (EA) digital switch points.
Valve Close	1 or 0	The main valve proof of closure switch is open (0) or closed (1).
Burner Switch		The burner switch is open (0) or closed (1).
OperControl		The operating control (pressure or temperature) switch is open (0) or closed (1).
Aux Limit 1		An auxiliary limit switch is open (0) or closed (1).
Aux Limit 2		An auxiliary limit switch is open (0) or closed (1).
LWCO		The low water cutoff switch is open (0) or closed (1).
High Limit		The appliance high limit (pressure or temperature) switch is open (0) or closed (1).
Aux Limit 3		An auxiliary limit switch is open (0) or closed (1).
Oil Select		The fuel oil select switch is open (0) or closed (1).
HiOilPres		The high oil pressure limit switch is open (0) or closed (1).
LowOilPres		The low oil pressure limit switch is open (0) or closed (1).
HiOilTemp		The high oil temperature limit switch is open (0) or closed (1).
LowOilTemp		The low oil temperature limit switch is open (0) or closed (1).
Atomize Sw		The oil atomizing proving switch is open (0) or closed (1).
Gas Select		The gas select switch is open (0) or closed (1).
HiGasPres		The high gas pressure limit switch is open (0) or closed (1).

**Table 2. Expanded Annunciator Informational Index.<sup>a</sup>**

Selectable Message	Display Value	Description
LowGasPres	1 or 0	The low gas pressure limit switch is open (0) or closed (1).
Airflow Sw		The airflow interlock switch is open (0) or closed (1).
Aux ILK 4		An auxiliary interlock switch is open (0) or closed (1).
Aux ILK 5		An auxiliary interlock switch is open (0) or closed (1).
EA Fault Code	nnn	The fault code number, identifying the specific Expanded Annunciator fault.
SW Rev.	nnnn	Identifies the software revision of the S7830.

<sup>a</sup> Displayed message can be changed using the S7800A1142 Keyboard Display Module.

**Table 3. Expanded Annunciator Hold Codes.<sup>a</sup>**

Message	Description
BURNER OFF (Burner Switch)	Burner switch is open (0) and keeping the burner in an Off condition.
STANDBY HOLD: (Aux. Limit # 1)	Auxiliary Limit # 1 is open (0) and keeping the burner in Standby.
STANDBY HOLD: (Aux. Limit # 2)	Auxiliary Limit # 2 is open (0) and keeping the burner in Standby.
STANDBY HOLD: (LWCO)	Low water cutoff is open (0) and keeping the burner in Standby.
STANDBY HOLD: (High Limit)	The appliance high limit is open (0) and keeping the burner in Standby.
STANDBY HOLD: (Aux. Limit # 3)	Auxiliary Limit # 3 is open (0) and keeping the burner in Standby.
STANDBY HOLD: (FuelSelectOff)	Both fuel select inputs are open (0) and keeping the burner in Standby.
STANDBY HOLD: (BothFuelSelect)	Both fuel select inputs are closed (1) and keeping the burner in Standby.
STANDBY HOLD: (High Oil Press)	High oil pressure limit is open (0) and keeping the burner in Standby.
STANDBY HOLD: (Low Oil Press)	Low oil pressure limit is open (0) and keeping the burner in Standby.
STANDBY HOLD: (High Oil Temp)	High oil temperature limit is open (0) and keeping the burner in Standby.
STANDBY HOLD: (Low Oil Temp)	Low oil temperature limit is open (0) and keeping the burner in Standby.
STANDBY HOLD: (Atomizing Sw.)	Oil atomizing switch is open (0) and keeping the burner in Standby.
STANDBY HOLD: (High Gas Press)	High gas pressure limit is open (0) and keeping the burner in Standby.
STANDBY HOLD: (Low Gas Press)	Low gas pressure limit is open (0) and keeping the burner in Standby.
STANDBY HOLD: (Circuit Fault)	Control input is not energized.

<sup>a</sup> Displayed message can be changed using the S7800A1142 Keyboard Display Module.

**Table 4. Expanded Annunciator Lockout Codes.<sup>a</sup>**

Message	Description
LOCKOUT nna *Aux.Limit#1*	Auxiliary Limit # 1 was open.
LOCKOUT nnb *Aux.Limit#2*	Auxiliary Limit # 2 was open.
LOCKOUT nnc *LWCO*	Low water cutoff was open.
LOCKOUT nnd *High Limit*	Appliance high limit was exceeded.
LOCKOUT nne *Aux.Limit#3*	Auxiliary Limit # 3 was open.
LOCKOUT nnf *FuelSelectOff*	No fuel was selected.
LOCKOUT nng *BothFuelSelect*	Both fuels were selected.
LOCKOUT nnh *High Oil Press*	Oil pressure was above the high limit setting.
LOCKOUT nni *Low Oil Press*	Oil pressure was below the low limit setting.
LOCKOUT nnj *High Oil Temp*	Oil temperature was above the high limit setting.
LOCKOUT nnk *Low Oil Temp*	Oil temperature was below the low limit setting.
LOCKOUT nnm *Atomizing Switch*	Atomizing switch failed to close.
LOCKOUT nnn *High Gas Press*	Gas pressure was above the high limit setting.
LOCKOUT nno *Low Gas Press*	Gas pressure was below the low limit setting.
LOCKOUT nnp *Airflow Switch*	The airflow switch was open (0) when it should have been closed (1). Or, the airflow switch was closed (1) when it should have been open (0).
LOCKOUT nnq *Aux.ILK#4*	Auxiliary Interlock # 4 was open.
LOCKOUT nnr *Aux.ILK#5*	Auxiliary Interlock # 5 was open.
LOCKOUT nns *Other ILKs*	An interlock, electrically downstream of Auxiliary Interlock # 5, was open.
LOCKOUT nny *Valve Closure*	Main valve proof of closure switch was open.
LOCKOUT nnz *Other PII*	An interlock, electrically downstream of the main valve proof of closure (Valve Closure) was open.

<sup>a</sup> Displayed message can be changed using the S7800A1142 Keyboard Display Module.

**Table 5. Expanded Annunciator Current Status Messages<sup>a</sup>.**

Message	Description
Burner Sw.	Burner Switch
Oper. Control	Operating Control
Aux. Limit # 1	Auxiliary Limit # 1
Aux. Limit # 2	Auxiliary Limit # 2
LWCO	Low Water Cutoff
High Limit	High temperature or pressure limit
Aux. Limit # 3	Auxiliary Limit # 3

Table 5. Expanded Annunciator Current Status Messages (Continued)<sup>a</sup>.

Message	Description
FuelSelectOff	Fuel Select switch is off.
BothFuelSelect	Both fuel select inputs are on.
High Oil Pres.	High Oil Pressure
Low Oil Pres.	Low Oil Pressure
Low Oil Temp.	Low Oil Temperature
Atomizing Sw.	Atomizing Switch
High Gas Pres.	High Gas Pressure
Low Gas Pres.	Low Gas Pressure
Airflow Sw.	Airflow Switch
Aux. ILK # 4	Auxiliary Interlock # 4
Aux. ILK # 5	Auxiliary Interlock # 5

<sup>a</sup> Displayed message can be changed using the S7800A1142 Keyboard Display Module.

## CHECKOUT

Several basic steps can be take to check proper operation of the S7830.

1. Depress and hold the Select keypad for five seconds. All 25 LED (Exclusive of the Power LED) should light.
2. Through the S7800 Keyboard Display Module, access the S7830 Expanded Annunciator Informational Index. If the S7830 is operating properly, it should be possible to access the status of all switched points.
3. Open equipment control, limits, and interlock inputs. The S7830 LED array and S7800 Keyboard Display Module should indicate the cause of the burner lockout and switch point status.

### IMPORTANT

*Restore ALL controls, limits and interlock inputs, altered in step 3, to proper operation. DO NOT PLACE JUMPER WIRES ACROSS THE INSTALLATION CONTROLS, LIMITS AND INTERLOCKS.*

4. If improper operation is identified, check all S7830 wiring against Fig. 3 and correct any errors. If problems persist, reset the S7830. If problems continue to persist, replace the S7830 Expanded Annunciator.

**NOTE:** The S7830 is a monitoring device. If wired correctly, the S7830 will not shut the system down. The S7830 can be removed from the wiring subbase and the equipment should operate in a normal manner and shutdown if limit or interlock were to open.



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