

S7910A Local Keyboard Display Module

PRODUCT DATA



APPLICATION

The S7910A Local Operator interface provides setpoint and control adjustments to parameters of the R7910A SOLA Hydronic Control. The R7910A SOLA is programmed to provide a level of safety, functional capabilities, and features beyond the capacity of conventional controls.

All data is displayed on an LCD with backlight. The S7910A has four function buttons. The function of the bottom two buttons varies according to the operation mode and screen displayed. The right two buttons are used to adjust settings and navigate up and down the displayed data.

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FEATURES

Functions Supported

- Burner control state, sequence
- Rate control manual adjustment
- Lockout code
- Alert and Hold Reason
- CH set point
- DHW set point
- Communication interface with R7910A devices only.
- First out and system status and diagnostics provided through the LCD.
- Local communication of operation and fault information.
- Control Temperatures
 - Outlet temperature
 - Inlet temperature
 - Delta T (Outlet-Inlet)
 - DHW temperature
 - Stack temperature
 - Outdoor temperature
- Set-up
 - Degree F/C toggle
 - Outdoor reset parameter settings
 - Remote firing rate control enable/disable
 - Anti-Short Cycle enable/disable and setting
 - Modbus address setting (1-250)
 - Lead Lag Control
 - LL on/off hysteresis
 - LL baseload %
 - Warm weather shutdown
 - Pilot Hold
 - PIM Operation
- Diagnostics
 - Flame signal measurement (Vdc)
 - Previous Alert
 - Previous Lockout code displayed
 - Outlet Temp high limit
 - Stack temp high limit
 - DHW temp high limit
 - Min/Max/Manual firing rate testing
 - Pilot hold function
- Device Color:
 - S7910A1008-Blue, Screw mounting
 - S7910A1032-White, Snap-in mounting



SPECIFICATIONS

All power and application requirements are controlled by the R7910A controller.

⚠ WARNING

Do not attempt to use this display in applications connecting to devices other than a R7910A.
For information on appropriate environmental requirements see Honeywell Product Data Sheet 66-1171.

Boilers or other equipment provided with these interface devices need to have appropriate instruction sheets issued by the equipment OEM giving instructions on use, or a copy of the Honeywell Product Data Sheet 66-1171 needs to be included with the appliance.

Electrical Ratings:

Voltage and Frequency: 24 VAC powered from R7910A.

Environmental Ratings:

Ambient Temperature Ranges:

Operating: 32°F to +120°F (0 to +49°C).

Storage: -60°F to +150°F (-51 to +66°C).

Humidity: 85% relative humidity continuous, noncondensing.

Vibration: 0.5G environment.

Mechanical:

Dimensions: See Fig. 2.

Weight: 4 oz. (124 grams), unpacked.

Display:

LCD

Approvals:

Underwriters Laboratories Inc. (UL)(cUL) Listed: File No. MH20613 (MCCZ).

Federal Communications Commission:
Part 15, Class B emissions.

Mounting

S7910A1008:

Panel: into cutout (4.44 in. w X 3.44 in. h) using four #8 screws (not provided). See Figure 2.

Wall: Using the wiring backplate.

S7910A1032:

Snap-in model, See Figure 1.

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.

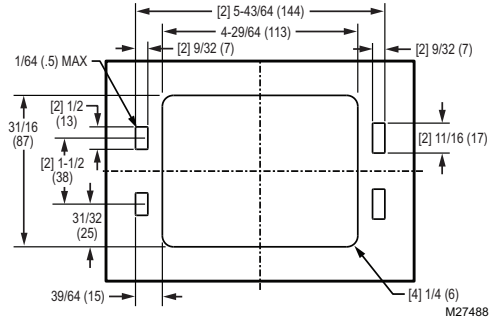


Fig. 1. Approximate dimensions of the S7910A1032 in inches (mm).

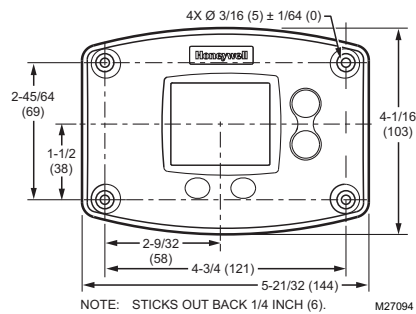


Fig. 2. Approximate dimensions of S7910 in inches (mm)

INSTALLATION

⚠ WARNING

Electrical Shock Hazard.

Can cause severe injury, death or property damage.

Disconnect the power supply before beginning installation to prevent electrical shock and equipment damage.

More than one power supply may have to be disconnected.

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 these instructions.
5. Be sure wiring complies with all applicable codes, ordinances and regulations.

IMPORTANT

1. *This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, can cause interference to radio communications. It has been tested and found to comply with the limits for 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 can cause interference, in which case, users, at their own expense, can 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 for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.*

Humidity

Install the S7910 where the relative humidity never reaches the saturation point. The S7910 is designed to operate in a maximum 85% RH continuous, noncondensing, moisture environment.

Vibration

Do not install the S7910 where it can be subjected to vibration in excess of 0.5G continuous maximum vibration.

Weather

The S7910 is not designed to be weather tight. If installed outdoors, the S7910 must be protected by an approved weather-tight enclosure.

WIRING

Wire the S7910 as shown in Fig. 3 using the wiring backplate provided.

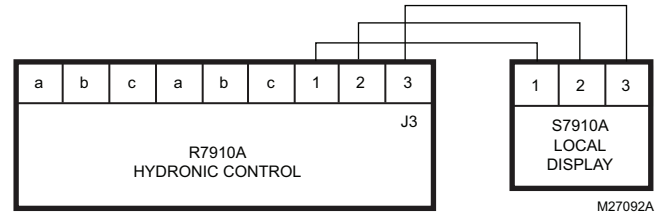


Fig. 3. S7910 wiring diagram.

OPERATION

All data from the S7910 is displayed on an LCD with backlight. The LCD has two main zones:

- the **Numerical Display** contains numbers (degrees, percentages, etc.).
- the **Operating Mode Icons** indicate what mode the S7910 is in.

The S7910 includes four keys. The bottom two keys vary depending on what commands are displayed above them. The two keys on the right adjust the displayed information.

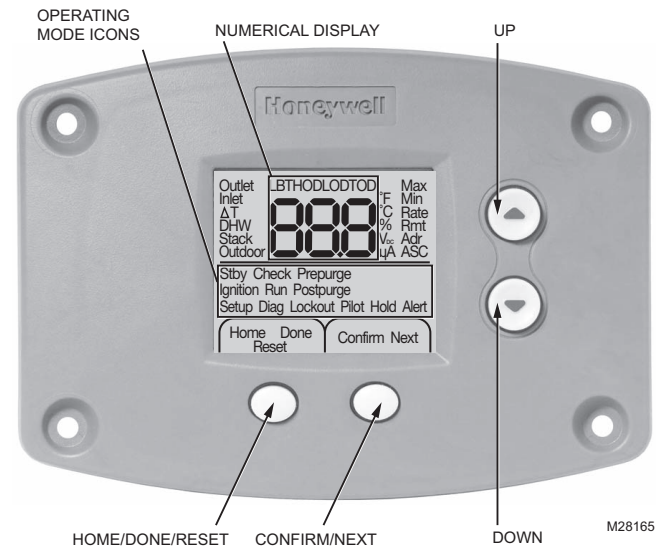


Fig. 4. S7910 user interface.

Three operation modes are available: User Mode, Setup Mode, and Diagnostic Mode.

Startup

At startup, all text on the LCD will be displayed for 2 seconds, followed by the software version number for an additional 2 seconds.

Next the S7910 will switch to outlet temperature display and try to communicate with the R7910A. During this time, dashes will be displayed in the numerical part of the LCD, along with "Outlet" and "°F" or "°C." When the S7910 communicates with an R7910A, it switches to User Mode. If an error occurs, the system switches to Error Mode.

User Mode

In User Mode, the S7910 displays operating data of an R7910A such as Outlet temperature, CH setpoint, or boiler firing rate. The user can change screens by pressing the Next button. Depending on R7910A mode of operation, the S7910 distinguishes between three home screens:

- If CH call for heat is active, the S7910 considers outlet water to be the home screen.
- If DHW call for heat is active, then DHW water temp will be the home screen.
- If lead lag master call for heat is active, then lead lag temperature will be the home screen.

User Mode consists of the items listed in Table 1. Pressing the Next button progresses through the User Mode screens.

If limits are shown, pressing the up down buttons increases or decreases the setpoints.

- Pressing the button changes setpoints in one degree increments.
- Pressing and holding the button changes setpoints in five degree increments.

See Fig. 5 for the User Mode screen flow chart.

Table 1. User Mode Screens.

Screen	Displays
Outlet Water Temp	Display current outlet water temperature
Outlet Setpoint	Display and modify current Outlet (CH) setpoint temperature
Inlet Water Temp	Display current inlet water temperature
Delta Temp	Display delta T temperature ([outlet temperature] - [inlet temperature])
DHW Temp	Display current DHW water temperature
DHW Setpoint	Display and modify current DHW setpoint temperature
Stack Temp	Display current stack temperature
Outdoor Temp	Display current outdoor temperature
Firing Rate	Display current boiler firing rate value
Lead Lag Header Temp	Current LL temp is displayed
Setpoint Temp	Display and modify current LL setpoint temp

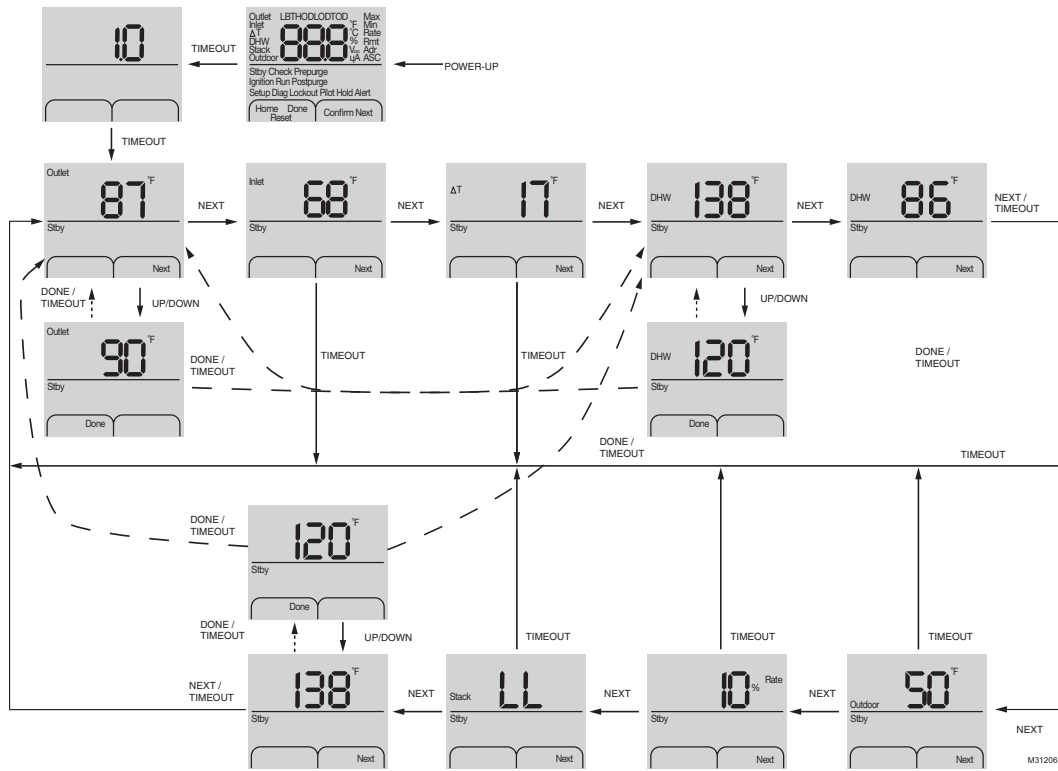


Fig. 5. User Mode screen flow.

After a certain period of user inactivity the S7910 times out and switches to the current home screen. Setpoint changes made

prior to the timeout will be saved. Pressing the Done button after changing a setpoint also saves the new setpoint.

Timeouts for the different screens of the User Mode are shown in Table 2.

Table 2. Timeouts in User Mode.

Screen Displayed	Length of Inactivity that Causes Timeout
Outlet water temp	1 minute
CH water setpoint temp	10 seconds
Inlet water temp	1 minute
Delta T	
DHW water temp	
DHW water setpoint temp	
Stack temp	1 minute
Outdoor temp	
Firing Rate	
Lead Lag Header Temp	
Lead Lag Setpoint Temp	10 seconds

Setup Mode

Pressing and holding both the Up and Down buttons for 3 seconds changes the S7910 from User Mode to Setup Mode.

The Setup icon will be displayed in the Operating Mode portion of the display. The user can change screens by pressing the Next button.

NOTE: Entering Setup Mode will put the R7910 system into Standby. If the system is firing, the R7910 will post-purge and go to Standby. The system will remain in Standby until the Done button is pressed or the inactive timeout time has elapsed.

“LBTHODLOD” in the Numerical display section refers to Outdoor Reset. When Outdoor Reset is Off, pressing the Next button will move to the Rmt icon. When Outdoor Reset is On, pressing the Next button will move into the LBT, HOD, and LOD displays, which will allow setting of the Low Boiler Reset Temperature, High Outdoor Reset Temperature, and Low Outdoor Reset Temperatures.

See Fig. 6 for the Setup Mode screen flow chart.

Table 3. Setup Mode Features

Setting	Definition
°F/°C	Set display to either degrees Fahrenheit or degrees Celsius.
LBTHODLOD	LBTHODLOD (Outdoor Reset) Off or ON. <ul style="list-style-type: none"> • If Off go to Remote Firing Control. • If On go to Low Boiler Reset Temp.
Low Boiler Temp	Display and modify current LBT setpoint temperature
High Outdoor Reset Temp	Display and modify current HOD setpoint temperature.
Low Outdoor Reset Temp	Display and modify current LOD setpoint temperature .

Table 3. Setup Mode Features (Continued)

Setting	Definition																				
Remote Firing Control Remote Firing Address	Display and modify current remote firing control (On or OFF). If On, Set Modbus Address (1 to 250).																				
Lead Lag	Current status of LL is shown "Ldr" (leader or Master), SLA (slave) or OFF along with the setup icon. Pressing the up and down key toggles through the lead lag options. Pressing 'Next' goes to the next setup screen. The Rmt Adr icon indicates SLA configuration, Rmt icon indicates Ldr (Master) configuration.																				
Hysteresis	H5 is displayed to indicate current On/Off hysteresis. Pressing the up/down key increments/decrements the displayed value with 1 degree step.																				
Baseload	Bl is displayed to indicate current baseload in %. Pressing the up/down key increments/decrements the displayed value with 1 % step.																				
Warm Weather Shutdown	Sd is displayed to indicate warm weather temperature. Pressing the up/down key increments/decrements the displayed value with 1 degree step. The 'Sd' icon will blink when waiting for the current WWSD value from the R7910.																				
Anti-short cycle	The Min and ASC icon is displayed to indicate anti-short cycle. Pressing the up/down key increments/decrements the displayed value within range 0.0 to 10.0.																				
Anti-short time display format																					
	<table border="1" style="width: 100%;"> <thead> <tr> <th>Displayed value</th> <th>Anti-short time in seconds</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>0.1</td><td>6</td></tr> <tr><td>.2</td><td>12</td></tr> <tr><td>---</td><td></td></tr> <tr><td>1.0</td><td>60</td></tr> <tr><td>1.1</td><td>66</td></tr> <tr><td>1.2</td><td>72</td></tr> <tr><td>---</td><td></td></tr> <tr><td>10</td><td>600</td></tr> </tbody> </table>	Displayed value	Anti-short time in seconds	0	0	0.1	6	.2	12	---		1.0	60	1.1	66	1.2	72	---		10	600
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10	600																				
Pilot hold	Pilot hold icon along with the setup icon indicates setup mode active. Pressing the up/down key toggles 'On' or 'Off' for pilot hold.																				
PIM operation	Up/down key selects bAC (backup) or rES (restore)																				

Table 3. Setup Mode Features (Continued)

Setting	Definition
Password	PAS informs the user that a three digit password needs to be entered to complete the selected operation. Up/down key increments the flashing digit of the three digit pass code. Next key switches the editable digits. Done key enters the pass code and the selected action (backup or restore) will be exercised. NOTE: This passcode is supplied from the OEM and is maintained within the R7910 device. If performing multiple backup/restore operations, the pass code entry screen is required for each operation.
PIM Error Codes	
	Code Description
	E81 Passcode not recognized
	E82 PIM not detected
	E83 PIM busy or not available
	E84 Data invalid or unrecognized
	E85 PIM vs R7910 mismatch (e.g. model)
	E86 PIM memory not sufficient
	E87 Fatal error occurred
	E88 Command from S7910 not recognized
	E89 Initial scan not finished
	E98 Timeout, no response
	Pressing 'next' returns back to the command screen to repeat the operation that failed. Pressing 'done' exits the setup mode.

After a certain period of user inactivity or if the Done button is pressed, the S7910 switches to the current home screen and the system switches from Standby to normal operation.

Timeouts for the Setup Mode are shown in Table 4.

Table 4. Timeouts in Setup Mode.

Screen Displayed	Length of Inactivity That Causes Timeout
Temperature scale	1 minute
Outdoor reset setting	
Outdoor reset temperatures	
Remote firing control	5 minutes
Remote firing address	
Lead Lag control	
LL on/off hysteresis	
LL Baseload	
Anti-short-cycle	
Pilot hold	
PIM operations	

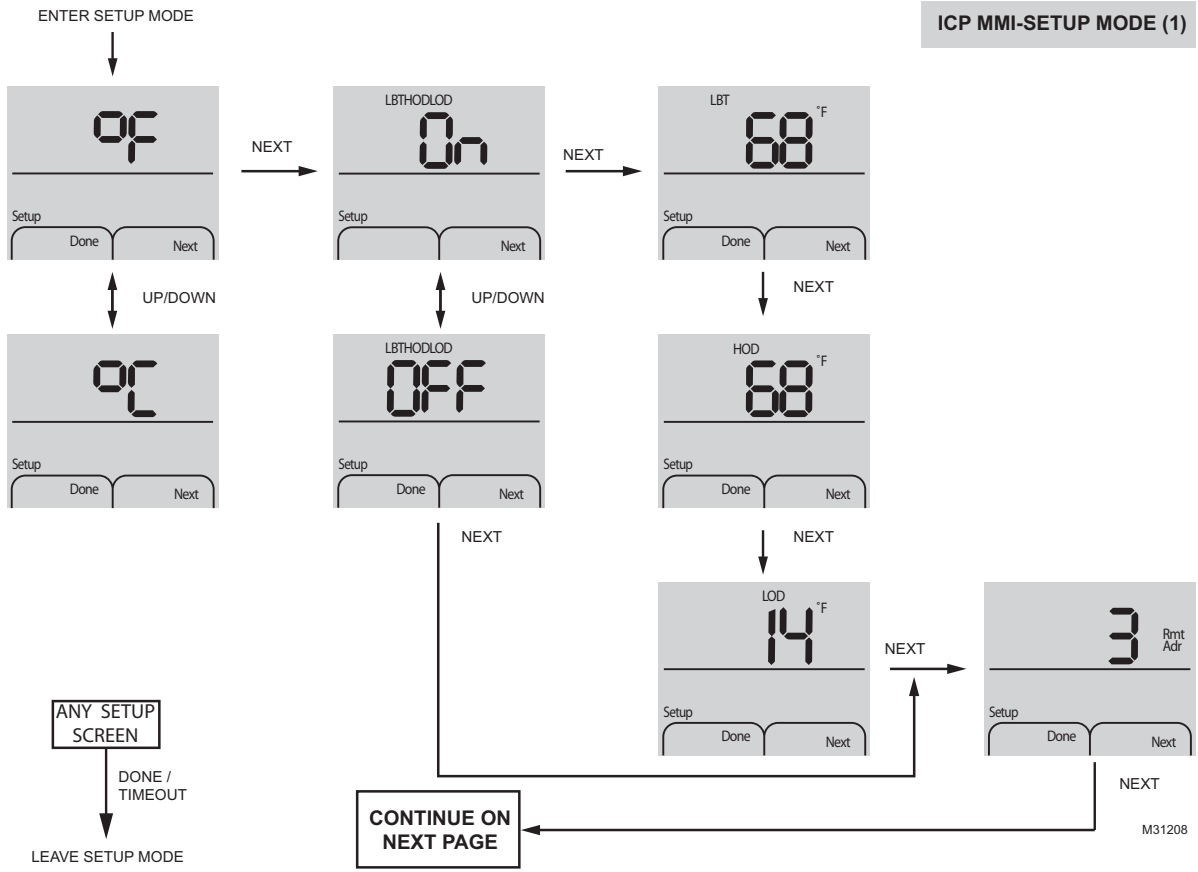


Fig. 6. Setup Mode screen flow Setup mode 1.

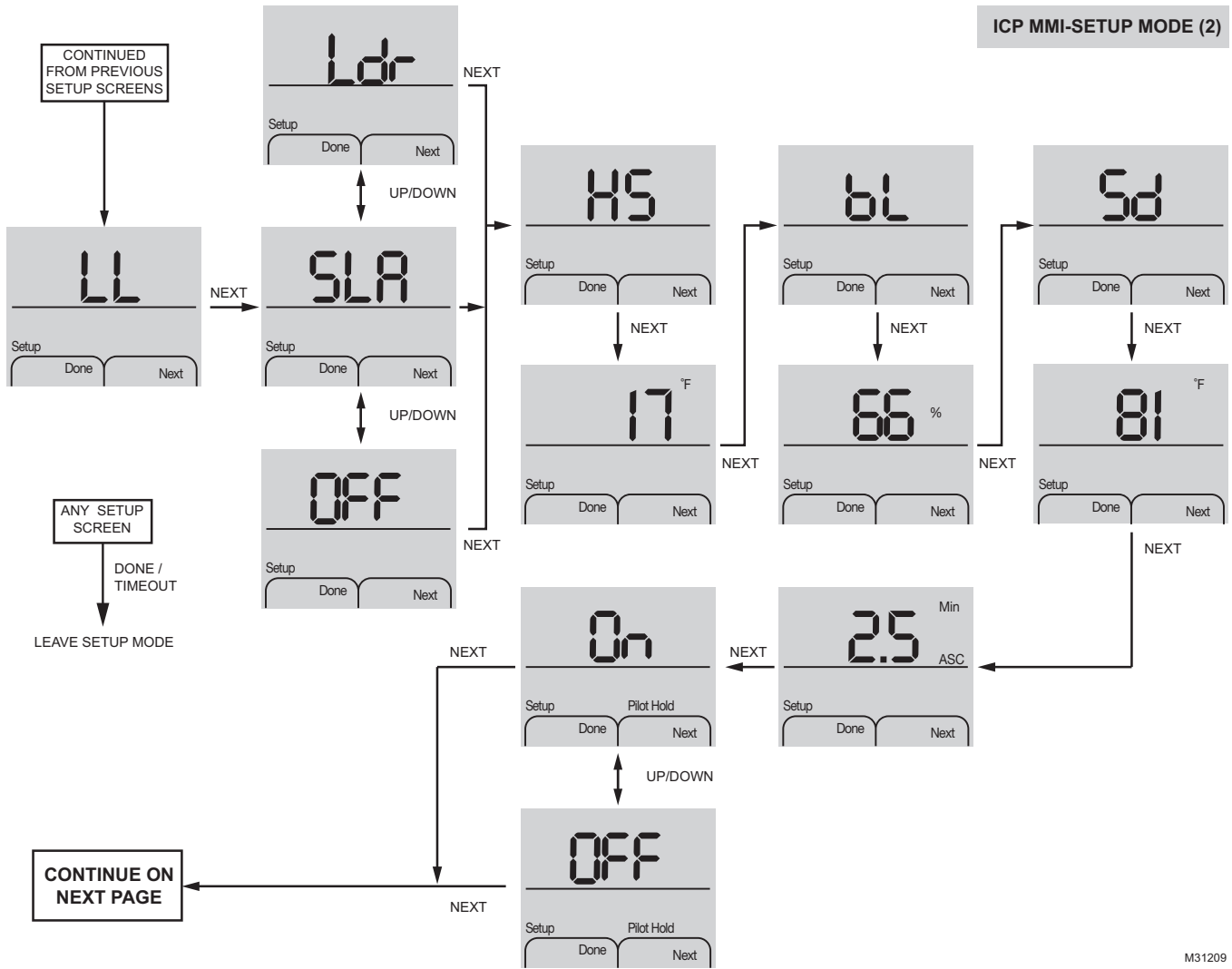


Fig. 7. Setup Mode screen flow Setup mode 2.

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Table 5. Diagnostic Mode Features. (Continued)

Setting	Definition
Outlet Temp High Limit	Display current outlet temperature high limit setting.
Stack Temp High Limit	Display current stack temperature high limit setting.
DHW Temp High Limit	Display current DHW temperature high limit setting.
Firing Rate Adjustment	Display and modify boiler firing rate value.

Alerts

Alerts are abnormal events that do not require manual intervention to reset the R7910. Alerts can be faults from non-safety functions such as a temperature sensor out of range or AC Frequency out of range.

The last received Alert number is displayed with the Diag icon. Pressing the Reset button clears the Alert number.

When a new Alert is received, the Alert icon is displayed, and the S7910 is in User Mode. To clear the Alert number, change to the Diagnostic Mode and press the Reset button. After a certain period of user inactivity or when the Done button is pressed, the S7910 leaves Diagnostic Mode and returns to the User Mode’s current home screen.

Lockouts

Lockouts cause the R7910 to shutdown and require manual or remote reset to clear the lockout. Lockouts always cause the Alarm contacts to close.

The last received Lockout number is displayed with the Diag icon. Pressing the Reset button clears the Lockout number and resets the R7910.

After certain period of user inactivity or when the Done button is pressed, the S7910 leaves Diagnostic Mode and switches to the User Mode’s current home screen.

Pressing the Next button causes the S7910 to display the next screen of the Diagnostic Mode.

Firing Rate Adjustment—Initial Screen

The Min icon is displayed with the Diag icon. This screen indicates that the S7910 is going to enter firing rate adjustment mode.

Pressing the Next button forces the R7910A to enter the state where all calls for heat are ignored and the S7910 switches to the next screen of the Diagnostic Mode.

Firing Rate Adjustment—Minimum Rate

The Min icon is flashing and the Diag icon is solid. In this mode a demand is sent to the R7910A and the burner will start (if not already operating) and is forced to run at 10% of firing rate.

The Firing rate value display is alternated with the outlet temperature display.

After a certain period of user inactivity or when the Done button is pressed, the R7910A is forced to accept all calls for heat and the S7910 leaves the Diagnostic Mode and switches to the User Mode’s current home screen.

If the Next button is pressed, it causes S7910 to display the next screen of the Diagnostic Mode.

Firing Rate Adjustment—Maximum Rate

The Max icon is flashing and the Diag icon is solid. In this mode a demand is sent to the R7910A and the burner will start (if not already operating) and is forced to run at 90% of firing rate.

The Firing rate value display is alternated with the outlet temperature display.

After a certain period of user inactivity or when the Done button is pressed, the R7910A is forced to accept all calls for heat and the S7910 leaves the Diagnostic Mode and switches to the User Mode’s current home screen.

If the Next button is pressed, it causes S7910 to display the next screen of the Diagnostic Mode.

Firing Rate Adjustment—Manual Rate

The Rate icon is flashing and the Diag icon is solid. In this mode a demand is sent to the R7910A and the burner will start (if not already operating) and is forced to run at 90% of firing rate.

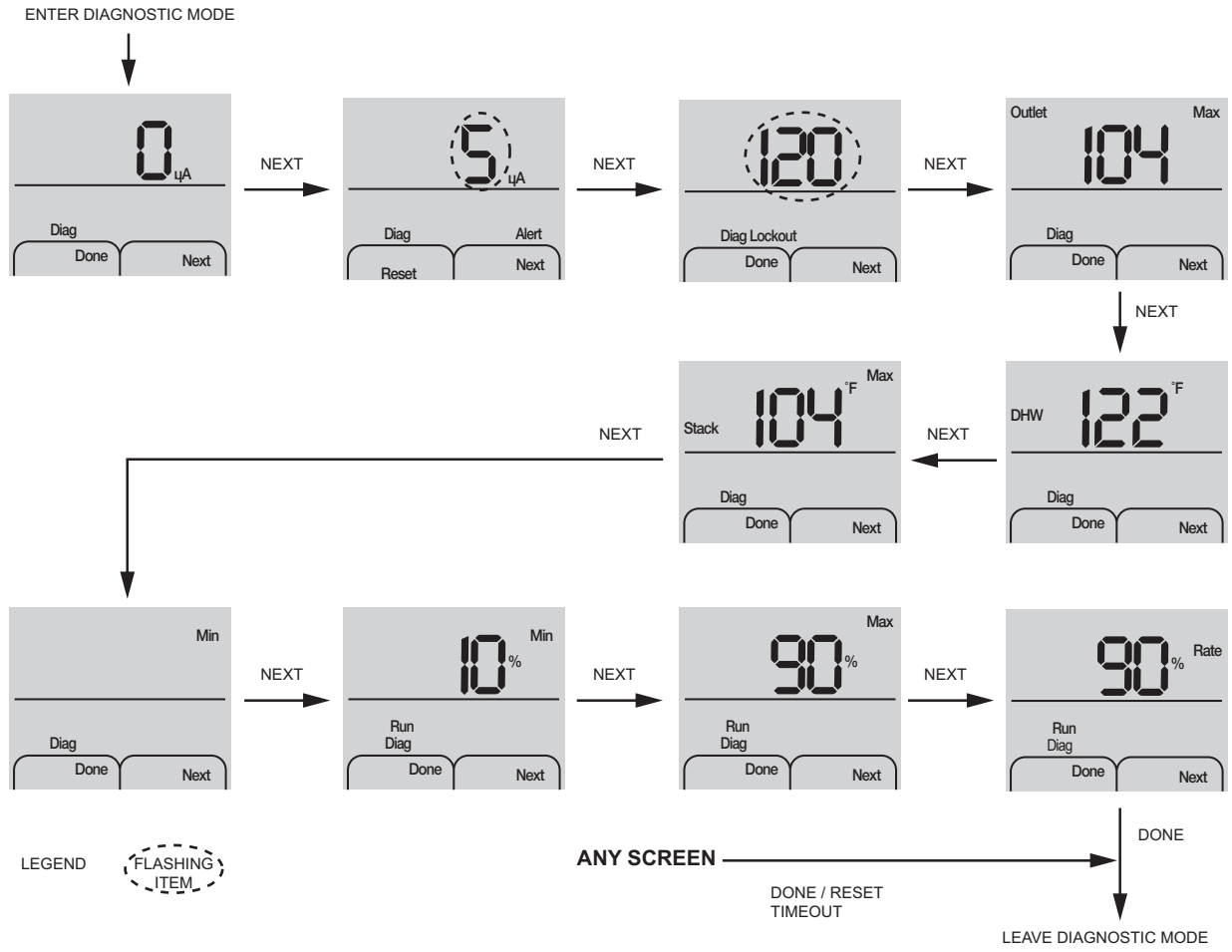
The Firing rate value display is alternated with the outlet temperature display. Pressing the Up or Down buttons changes the displayed firing rate value in 1% increments within a range 10% to 90%.

After certain period of user inactivity or when the Done button is pressed, the R7910A is forced to accept all calls for heat and the S7910 leaves the Diagnostic Mode and switches to the User Mode’s current home screen.

Timeouts for the Diagnostic Mode are shown in Table 6.

Table 6. Timeouts in Diagnostic Mode.

Screen Displayed	Length of Inactivity That Causes Timeout
Flame signal	5 minutes
Previous Alert	
Previous Lockout	
Outlet temp high limit	
DHW temp high limit	
Stack temp high limit	
Firing rate adjustment—initial screen	
Firing rate adjustment—minimum rate	
Firing rate adjustment—maximum rate	
Firing rate adjustment—manual rate	



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Fig. 9. Diagnostic Mode screen flow.

Error Modes

Hold

A Hold code is displayed in the numerical part of the display when a Hold state is received. Burner state sequence icons reflect the current state of the R7910A burner. There is no way to leave this state through user intervention on the S7910.

Lockout

A Lockout code is displayed in the numerical part of the display when a Lockout state is received. When the Reset button is pressed, the R7910A is forced to leave the Lockout state.

Incompatible Model of R7910A Detected

Alert code 980 is displayed as an S7910 internal Alert when an incompatible version of R7910A is detected.

For example:

- S7910 commercial model: R7910 residential model found.
- S7910 residential model: R7910 commercial model found.

There is no way to take S7910 out of this state other than connecting the right device and cycling power to the S7910.

Communication Timeout

Alert code 981 is displayed as an S7910 internal Alert when the R7910A repeatedly does not respond to message queries sent by the S7910. The S7910 continues polling the R7910A in this state to determine when it starts to communicate again. When the communication is restored, the S7910 switches to the User Mode home page and continues normal operation.

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