

Honeywell

SLATE™

Base Module

R8001A1001

INSTALLATION INSTRUCTIONS

SLATE™ Combustion System

ating

Day Setpoint




Heat on

RUNNING

IRING

MODULATING

m

-  Power
-  CPU
-  Fault
- Light Sensor



Scan for more information

Application

SLATE™ brings configurable safety and programmable logic together into one single platform. The platform can easily be customized for almost any requirement or application—offering virtually limitless development opportunities with far less complexity.

The R8001A1001 base module provides communications and power supply for the SLATE system, configurable safety for Burner Control, Flame Amps, Fuel Air Ratio, and Limit modules, and programmable logic for Digital and Analog I/O, and Annunciation. SLATE is a combustion system with configurable safety and programmable logic. The system is modular in format and DIN rail mountable. Modules include:

- Base
- Burner Control Module
- Flame Amp Modules
- Fuel Air Ratio Control Module
- Limit Module
- Analog I/O Module
- Digital I/O Module
- Annunciator Module

Features

Within the SLATE system, the base module provides:

- Power to all modules with multiple voltage options
- External communication protocols Modbus/TCP, BACnet MSTP or IP, and web services
- Overall health of the system
- The ability to do remote troubleshooting
- Network identification of the system as a single device
- Web-based pages (both Honeywell provided and designer customized) for Web browser access to the system
- Module identification for the system
- Event log storage for user lockouts, fault history, and user requested events
- Trend logging for user specified data

Specifications

Electrical Ratings:

Input Voltage and Frequency:

- 24 VDC ($\pm 15\%$),
- 24 VAC ($\pm 15\%$), 50/60 Hz,
- 85-264 VAC, 50/60 Hz

Output Voltage:

- 18 VDC (± 1 VDC)

Power Dissipation:

- 38W max @ 24V (approx. 12 modules),
- 45W max @ 85-264V (approx. 14 modules)

Fusing Total Connected Modules: 5A, slow type, non-replaceable

Terminal Ratings: See Table 1.

Terminal	Description	Rating
E100-1	L1 - line voltage hot	---
E100-2	L2 - line voltage common	---
E100-3	PE - Earth Ground	---

Terminal	Description	Rating
E200-1	Alarm (dry contacts)	120 / 240 VAC, 1A pilot duty
E200-2	Alarm (dry contacts)	120 / 240 VAC, 1A pilot duty
E200-3	Unused	---
E200-4	A (BACnet MS/TP)	---
E200-5	B (BACnet MS/TP)	---
E200-6	GND (BACnet MS/TP)	---
E200-7	VAUX +	3.3-24 VDC output, 250mA max
E200-8	VAUX - ^a	3.3-24 VDC output, 250mA max

^a Do not connect to earth ground.

Table 1. Terminal Ratings.

Environmental Ratings

Ambient Temperature:

Operating: -20°F to +150°F (-29°C to +66°C).

LCD Operating: 32°F to +150°F (0°C to +66°C).

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

Humidity: 95% continuous, noncondensing.

Vibration: 0.5G environment

Dimensions: See Fig. 1

Weight: 2 lb 1 oz (0.94 Kg)

Approvals:

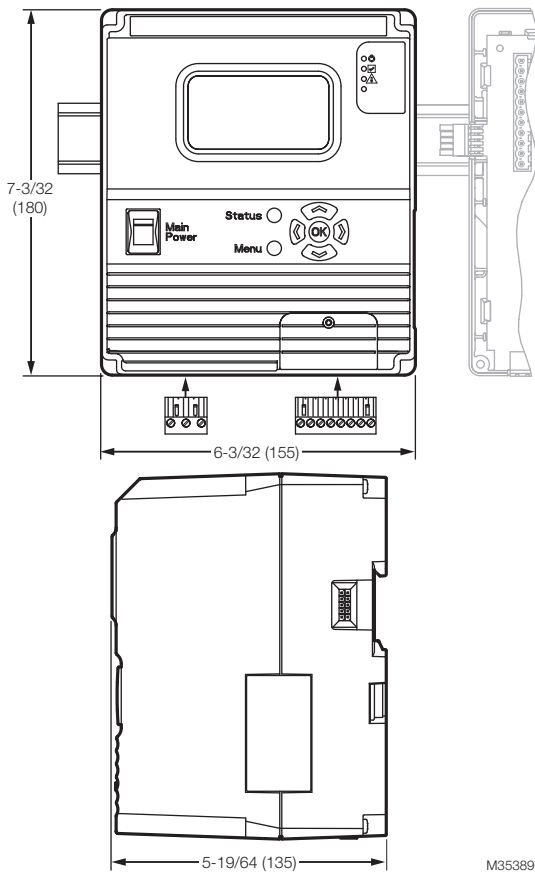
Underwriters Laboratories Inc. Listed, File: MP268.

IRI acceptable.

Federal Communications Commission: Part 15, Class A Emissions.

Must be mounted inside a grounded metal enclosure.

Mounting: DIN Rail (See Fig. 4)



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Fig. 1. Dimensions in in. (mm).

Principal Technical Features

The R8001A1001 base module provides communications and power supply for the SLATE system, configurable safety for Burner Control, Flame Amps, Fuel Air Ratio, and Limit modules, and programmable logic for Digital and Analog I/O, and Annunciation.

Communications

The base module provides communications via Modbus IP RS485, BACNet IP/MSTP (RS-485), and Web Services.

User Interface

The menu-driven user interface provides system status and alerts via a dot matrix display on the front of the module. It is controlled by a 7-button keypad.

LED Array

There are three LEDs on the front of the base module that provide quick identification of system status and problems. This status is broadcast to other modules on the platform bus in case they are affected by the inoperable module(s).




LED	Color	Description
 Power	No light	System does not have power
	Green	System has power
 CPU	Red	No wire sheet or problem with the wire sheet
	Green	Running
 Fault	Red	Fault
	No light	Running

Table 2. LED Descriptions.

LCD Screen

The base module LCD screen will show information about various modules and other parts of the combustion system. Use the arrow keys to navigate the items on the LCD screen, then press OK to select one.

In Fig. 2, Burner6 is in Lockout. For additional information, navigate to that menu item and press OK.

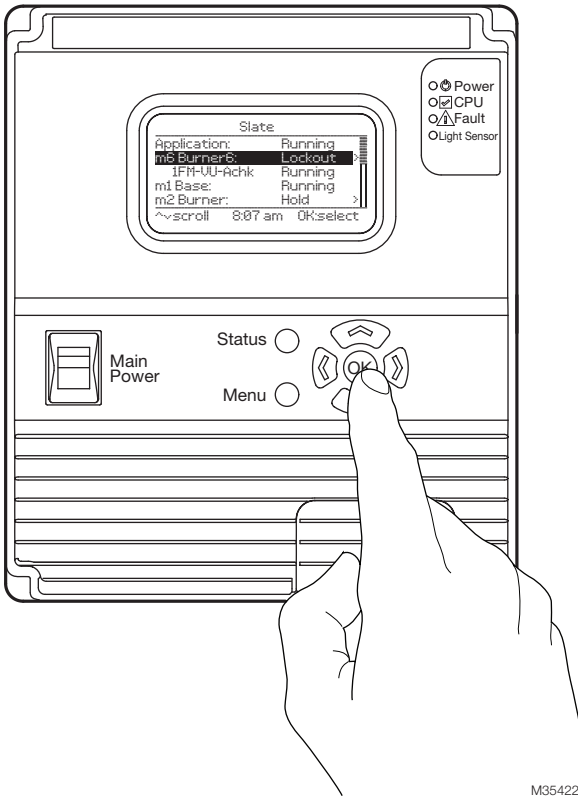


Fig. 2. LCD display showing a fault (Burner6 is in Lockout).

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Additional information, as shown in Fig. 3, is displayed. Use this information to troubleshoot the combustion system.

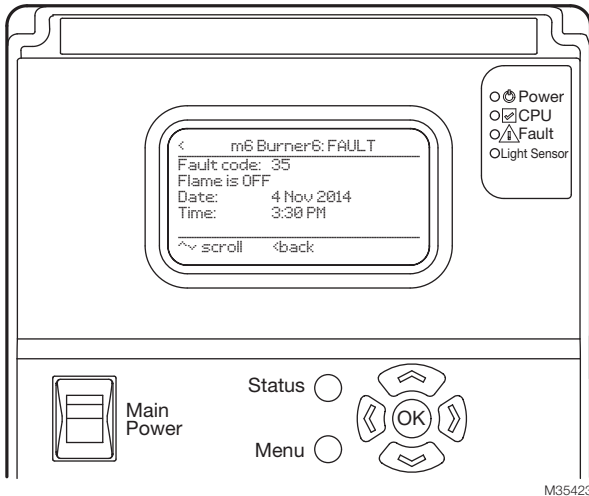


Fig. 3. Additional lockout information.

Light Sensor

SLATE contains a light sensor that is used when the system is exposed to light. This is a power saving feature.

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. After installation is complete, check out the product operation as provided in these instructions.

Wiring

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.

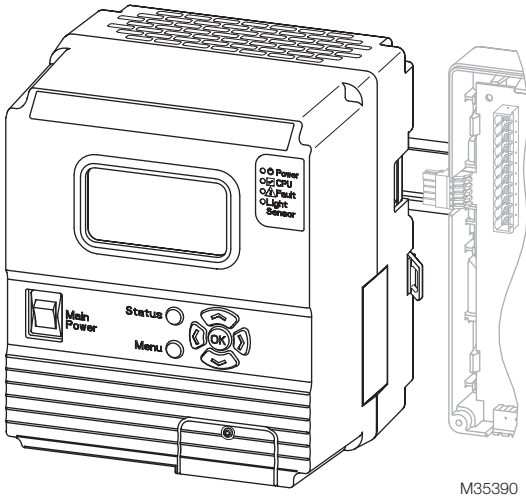
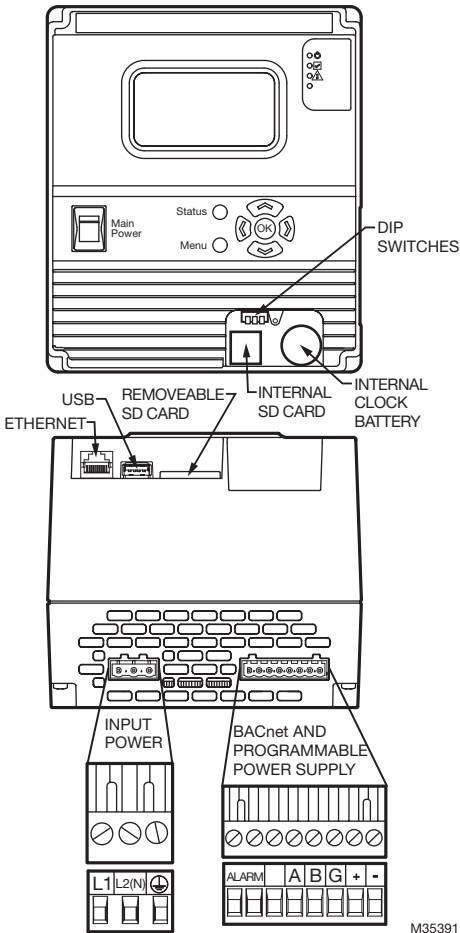


Fig. 4. Installing the Base Module on DIN Rail.

2. Wiring must comply with all applicable codes, ordinances and regulations. See Table 1, Table 3, and “Recommended Grounding Practices” on page 13 for connections and terminals. For DIP switch settings, see “DIP Switches” on page 15.

Note: MS/TP must be wired in a straight line without spurs—no star wiring.



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Fig. 5. Base Module inputs and terminals.

3. Wiring must comply with NEC Class 1 (Line Voltage) wiring.
4. The R8001A1001 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.**

Application	Recommended Wire Size	Recommended Part Numbers
Line voltage terminals	14, 16, or 18 AWG copper conductor, 600 volt insulation, moisture-resistant wire.	TTW60C, THW75C, THHN90C
Communication lines ^a	22 AWG two-wire twisted pair with ground, or five-wire.	Belden 8723 shielded cable or equivalent.
Other terminals	18 AWG wire insulated for voltages and temperatures for given application.	TTW60C, THW75C, THHN90C

^a BACnet MS/TP connections must be wired in daisy chain configuration, 1(a)-1(a), 2(b)-2(b), 3(c)-3(c). The order of interconnection of all the devices is not important. Be aware that the termination DIP switch (number 3) must be used if the SLATE system is at the end of connections over 100 feet.

Table 3. Recommended Wire Sizes and Part Numbers.

Recommended Grounding Practices

Use an Earth ground or a signal ground as described below.

Earth ground (Base, Rectification Flame Amp Module, other modules optional)

1. Use to provide a connection between the base and the control panel of the equipment. Earth ground must be capable of conducting enough current to blow the breaker in the event of an internal short circuit.
2. Use wide straps or brackets to provide minimum length, maximum surface area ground conductors. If a leadwire is required, use 14 AWG copper wire.
3. Make sure that mechanically tightened joints along the ground path are free of nonconductive coatings and protected against corrosion on mating surfaces.

Signal ground

Note the 18V system ground is not electrically connected to earth ground. Follow local codes and appliance recommendations to determine if this should be connected to earth ground.

Recommended wire routing of leadwires

- Do not run high voltage ignition transformer wires in the same conduit with the flame detector or data lines.
- Do not route flame detector or data lines in conduit with line voltage circuits.
- Enclose flame detector leadwires without armor cable in metal cable or conduit.
- Follow directions in flame detector instructions.

Be sure loads do not exceed the terminal ratings. Refer to the labels or terminal ratings in Table 1.

The SLATE system must be mounted in an electrical enclosure. When mounting in an electrical enclosure, provide adequate clearance for servicing, installation and removal of SLATE modules.

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 A 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 A limits for radio noise, set out in the Radio Interference Regulations of the Canadian Department of Communications.*
3. *For straight gas burner applications, the oil limit and interlock inputs DO NOT need to be jumpered.*
4. *For straight oil burner applications, the gas limit and interlock inputs DO NOT need to be jumpered.*
5. *For combination gas-oil burner applications, a double pole, double throw (dpdt) fuel select switch is required.*
6. *Cable shield must be terminated to ground at both ends. If shielded cable is NOT used, use three-wire twisted cable.*



WARNING

Electrical Shock Hazard.

Can cause severe injury, death or equipment 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.

DIP Switches

The SLATE Base Module has three DIP switches. DIP switches 1 and 2 should be On only if no other MS/TP device providing bias resistors is connected.

DIP switch 3 should be On only if SLATE is the last device in the communication chain.



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For more information and detailed instructions on the SLATE display please refer to the SLATE User Guide document located on our website at <http://combustion.honeywell.com/SLATE>

Honeywell

Automation and Control Solutions

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