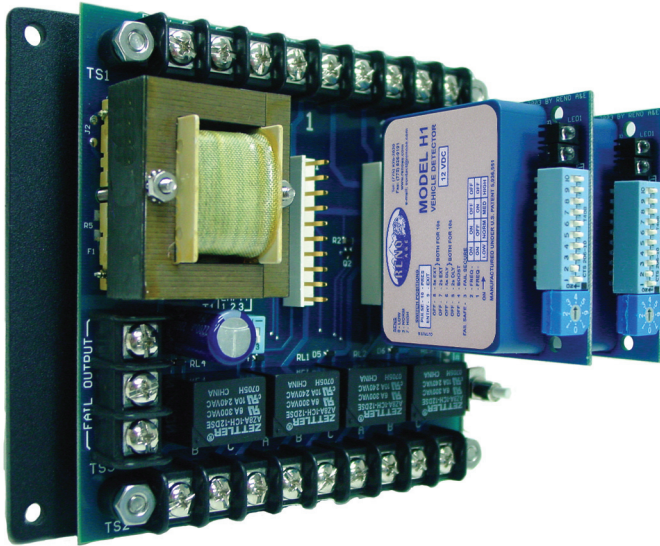


# HM1 SERIES



## MOTHERBOARD



5.00" High x 6.00" Wide x 3.63" Deep  
with detector(s)

Shown with two Model H1 loop detectors  
(Sold separately)

### Ordering Information:

Model HM1-XX-X

↑ R = Relay outputs, Blank = Solid-State outputs  
3, 7, 23, or 24: 3 = 120 VAC input power  
7 = 24 VAC input power  
23 = 12 VDC input power  
24 = 24 VDC input power

NOTE: Solid-State outputs are available only on the Model HM1-23.

- Designed to accept up to three Reno A&E Model H1 single-channel, 12 VDC, vehicle detectors (sold separately).
- Four HM1 input voltages:
  - ◆ 24 VAC
  - ◆ 120 VAC
  - ◆ 12 VDC
  - ◆ 24 VDC
- Available with Relay or Solid-State Outputs.
- Can be configured for Fail-Safe or Fail-Secure operation.
- Three terminal strips allow connection of:
  - ◆ Power input leads and loop inputs
  - ◆ Detector outputs
  - ◆ Fail outputs
- Motherboard reset button resets all detectors.
- Sturdy aluminum mounting plate for secure and easy installation.

Reno A&E

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# HM1 SERIES SPECIFICATION

This is a Performance Specification. It not intended to be used as Operating Instructions.

**General Description:** The HM1 Motherboard consists of a printed circuit board (PCB) attached to a 0.125 inch thick, 5 inch high by 6 inch wide aluminum plate. This configuration facilitates secure mounting of the motherboard. The aluminum plate can be mounted to any solid surface with four #8 screws. Three terminal strips are provided to allow secure connection of power leads, loop leads, detector outputs, and Fail outputs. The HM1 is available in a complete range of voltages: 24 VAC, 120 VAC, 12 VDC, and 24 VDC. The 12 VDC version can be ordered with Relay or Solid-State outputs. Other versions are available with Relay outputs only. The motherboard is designed to accept one, two, or three Reno A&E Model H1 detectors which can be connected via a set of three, 10-pin Molex connectors.

**Terminal Strip TS1:** Terminal strip TS1 is used to connect the main input power to the HM1 Motherboard. The loop leads for Loop 1, Loop 2, and Loop 3 that correspond to the Model H1 detector(s) connected to the motherboard are also attached to terminal strip TS1. (See **Terminal Strip (TS1)** table.)

**Terminal Strip TS2:** Terminal strip TS2 is used to connect the detector outputs to the control equipment inputs. Fail-Safe or Fail-Secure connections can be easily made using this terminal strip. (See **Terminal Strip (TS2)** tables.)

**Terminal Strip TS3:** The Fail Output connections on terminal strip 3 (TS3) can be used to send an indication to an external device whenever a detector experiences a loop failure (open loop or shorted loop) or power failure. A loop failure or power failure of any active detector on the motherboard will cause a Fail output to be sent to the external device. Relay or Solid-State outputs have different connection configurations. (See **Terminal Strip (TS3)** table.)

**DIP Switch SW1:** A three-position DIP switch module mounted on the motherboard is used to configure each of the three Molex 10-pin Molex connectors on the motherboard. (See **DIP Switch (SW1) Settings** table.)

**Reset:** A motherboard mounted pushbutton labeled **RESET** resets all connected Model H1 detectors. The detectors automatically re-tune and are operational within two (2) seconds after being reset. Full sensitivity and hold time requires 30 seconds of operation.

**Relay Outputs:** Rated for maximum continuous current of 6.0 amps, 300 VAC maximum, 150 VDC maximum, and 180 Watts maximum switched power.

**Solid-State Outputs:** Open drain FET. Source to common. Rated for maximum continuous current of 2.5 amps. Rated for up to 15 VDC. Solid-State outputs are available on the 12 VDC version of the HM1 Motherboard only.

**Power:** 120 VAC version (HM1-3): 89 to 135 VAC, 4.20 Watts maximum.  
24 VAC version (HM1-7): 18.8 to 28.8 VAC, 4.27 Watts maximum.  
12 VDC version (HM1-23): 10 to 14 VDC, 173 milliamps maximum.  
24 VDC version (HM1-24): 14 to 34 VDC, 139 milliamps maximum.

**Ruggedized Construction:** The mounting plate is 0.125 inch thick aluminum with a durable powder coated finish. The printed circuit board is 0.062 inch thick FR4 material with 2 oz. copper on both sides and plated through holes. Circuit board components are conformal coated with polyurethane.

**Operating Temperature:** -40° F to +180° F (-40° C to +82° C).

**Connectors:** Two nine-circuit terminal strips and one three-circuit terminal strip. (See **Terminal Strip** tables.) Model H1 detector(s) are connected to the motherboard by means of three Molex 10-pin in-line male connectors labeled **1, 2 and 3**. (See **Detector Pin Assignments** table.)

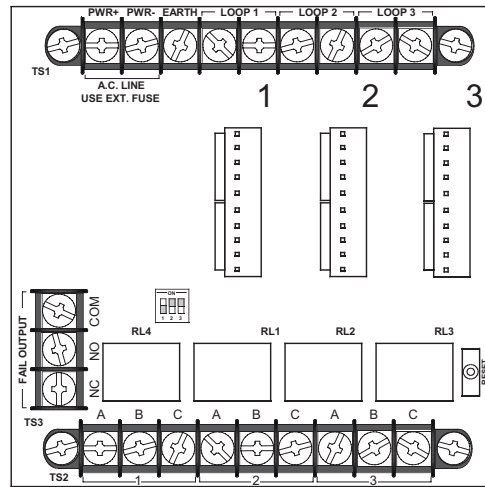
**Size:** 120 VAC Version: 5.00 inches (12.70 cm) high x 6.00 inches (15.24 cm) wide x 1.85 inches (4.70 cm) deep.

Other Versions: 5.00 inches (12.70 cm) high x 6.00 inches (15.24 cm) wide x 1.60 inches (4.06 cm) deep.

NOTE: Depth with Model H1 detector(s) is 3.65 inches (9.27 cm).

**Weight:** HM1-3-R: 1.37 lb (621.42 gm).  
HM1-7-R: 0.86 lb (621.42 gm).  
HM1-23-R: 0.83 lb (390.09 gm).  
HM1-23: 0.75 lb (340.19 gm).  
HM1-24-R: 0.86 lb (390.09 gm).

## HM1 Motherboard Switches, Pushbutton, and Connections



## TABLES

### Terminal Strip 1 (TS1)

Voltage	PWR+	PWR-	EARTH
AC	AC Line	AC Neutral	Ground
DC	DC +	DC -	Ground

### Terminal Strip 2 (TS2)

#### Connection Configuration

Output Type	Output Mode	Normally Open	Normally Closed	Common
Solid-State	Fail-Safe	Terminal A	-	Terminal C
	Fail-Secure	Terminal A	-	Terminal C
Relay	Fail-Safe	Terminal B	Terminal A	Terminal C
	Fail-Secure	Terminal A	Terminal B	Terminal C

### Detect Outputs

Output Type	Fail-Safe Mode				Fail-Secure Mode			
	Call	No Call	Power Failure	Loop Failure	Call	No Call	Power Failure	Loop Failure
Solid-State	A-C	Open	Open	A-C	A-C	Open	Open	Open
Relay	B-C	A-C	B-C	B-C	A-C	B-C	B-C	B-C

### Terminal Strip 3 (TS3)

Output Type	Normal Operation	Loop Failure	Power Failure
Solid-state	NO-COM	Open	Open
Relay	NO-COM	NC-COM	NC-COM

### DIP Switch (SW1) Settings

Switch	On	Off	Factory Default
1	Slot 1: No Detector Present	Slot 1: Detector Present	Off
2	Slot 2: No Detector Present	Slot 2: Detector Present	On
3	Slot 3: No Detector Present	Slot 3: Detector Present	On

### Detector Pin Assignments

Pin	Function
1	Loop
2	Loop
3	DC Common
4	12 VDC (+)
5	Reset
6	FAIL Output
7	DC Common
8	Output A
9	Output B
10	Relay / Solid-State Fail-Safe Operation