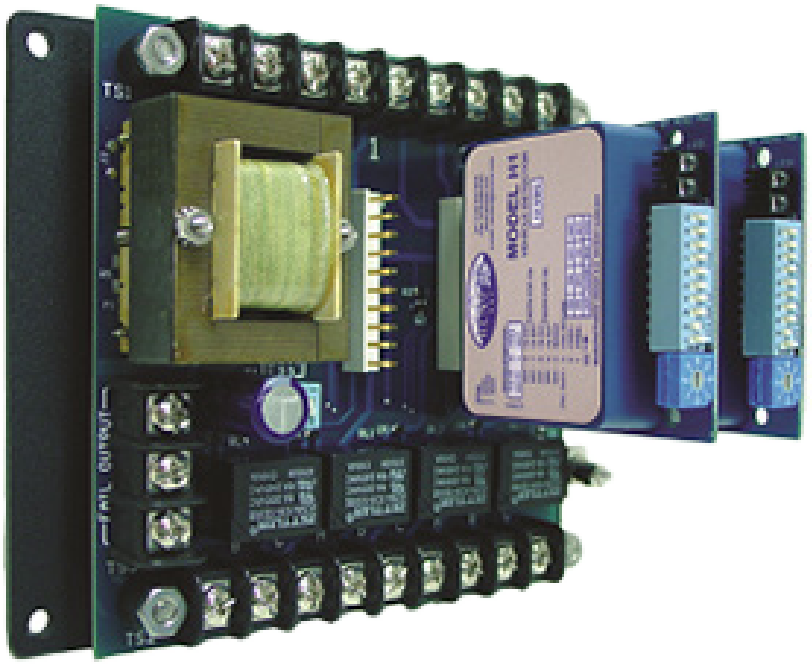
Model HM1
Motherboard

- 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.



5" High x 6" Wide x 3.63" Deep with detectors
**Image shown has 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, and 24 = 24 VDC input power

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

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HM1 Series Specifications

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 push-button 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).

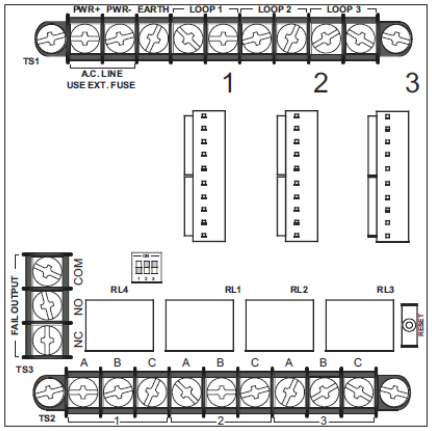
Connectors: Two nine-circuit terminal strips and one three-circuit terminal strip. (See Terminal Strip tables.) Model H1 detector(s) are connected to the motherboard by means of three Molex 10-pin in-line male connectors labeled 1, 2 and 3. (See Detector Pin Assignments table.)

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, Push-button, and Connections



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 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	Slot 1: Yes Detector	OFF
2	Slot 2: No Detector	Slot 2: Yes Detector	ON
3	Slot 3: No Detector	Slot 3: Yes Detector	ON

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

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