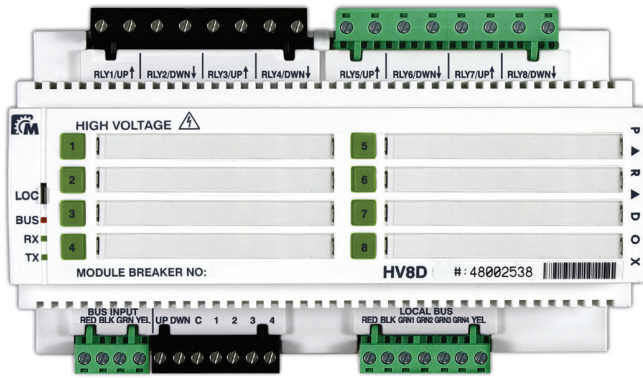




HV8D: 8-Channel High Voltage Output Module



	
Installation/Wiring:	??
Programming 1:	??
Programming 2:	??
Testing:	??
Total Time:	??

DRAFT

Description

Driven by the V32 main controller's 4-wire communication bus (Multibus), the HV8D has 8 outputs that can drive incandescent lights of up to 10A per channel @ 110Vac/230Vac (on/off operation), or 0.5hp shutter motors of up to 8A per channel @ 110Vac/230Vac (variable positions).

The HV8D was designed specifically to offer unique control of shutters that can open/close shutters or blinds to multiple positions and not only fully open or fully closed. When used with the Imperial Dimmer Wall Switches, the system provides up to 32 shutter positions. A short, one-time calibration is required per shutter for efficient control.

The HV8D will also feature a Local Bus (coming soon) to control shutters without the need of the Imperial system. Imperial Dimmer Wall Switches that are connected to the HV8D's local bus are independent from the rest of the system and can control the local outputs.

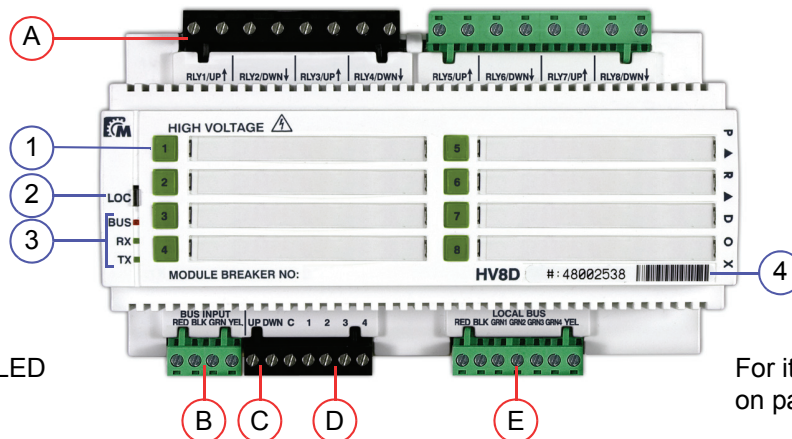
Overview

- 1) Manual output control and status buttons
- 2) Module Locate feature activation (see "Bi-directional Locate Feature" on page 4)
- 3) Multibus status LEDs
- 4) Product serial number

Features

- 8 high-voltage relay outputs: incandescent lights (110/230V, 10A) or 0.5hp motors (110/230V, 8A)
- 2 operating modes: relay mode and shutter mode (pair two outputs for up/down control of a shutter)
- Built-in calibration mode for precise open/close timing
- 4 emergency stop inputs per shutter motor (e.g. IR beam stops the motor when motion is detected).
- Global Up/Down input (e.g. 2-way momentary switch controls all connected shutter motors simultaneously)
- Remote firmware upgradeability via bus
- DIN rail design with manual control for outputs, on-board status display, and removable terminals
- Programming via BabyWare software
- 4 wire connection to the Imperial Multibus with up to 900m (3000ft) distance
- Bi-directional Locate feature from module to software and vice versa

- A) High-voltage relay outputs 1 to 8. Each output pair can be set in Shutter Mode to provide an UP and DOWN output for one shutter.
- B) 4-wire Multibus connection
- C) Global up/down connection for all shutter motors
- D) 4 emergency stop inputs
- E) Local bus connection (future use)



For LED status, refer to "LED Feedback" on page 3.

For items A to E, refer to "Wiring" on page 2.

Related Topics

Installation / Wiring (see Imperial System Guide)

- DIN Rail Enclosure
- System Diagrams and Wiring Tips
- Wire Gauge Selection

Features

- Shutter Calibration (see page 3)
- Bi-directional Locate Feature (see page 4)
- Remote Firmware Upgrade (see page 4)

Applications (see Imperial System Guide)

- Shutters
- Light Control
- Sprinklers
- Macros

BabyWare (see Imperial System Guide)

- BabyWare

Specifications

Operating voltage	120Vac to 230Vac (nominal)
Frequency	50 to 60Hz
Maximum load	10A for incandescent lamps, fluorescent lamps, electronic step-down converters (halogen), and iron-core transformers (extra low-voltage incandescent lamps). 8A for 0.5hp motors.
Multibus	900m (3,000ft)
Current Consumption	min. 40mA max. 500mA
No. of inputs	6 (4 emergency stop and 2 global up/down)
Dimensions	DIN9: 16cm X 10cm X 6cm (6.3" X 4" X 2.5")
Operating Temperature	-10°C to 50°C 14°F to 122°F

Wiring

<p>1 Relay Mode If, in BabyWare, the output is set to Light, Sprinkler, or Custom, it will function as a standard relay output. See "Relay vs. Shutter Mode" on page 3.</p>	<p>The diagram shows the HV8D module with various inputs and outputs. It includes connections for an AC power line with a breaker, a light bulb, and a shutter motor. The module has 8 relays (RLY1-RLY8) with up/down outputs. It also features an emergency stop input, a global up/down input, and a local bus for future use. Two dimmer wall switches are shown: GRN3 Controls (RLY5/RLY6) and GRN1 Controls (RLY1). The module is connected to an Imperial Multibus.</p>
<p>2 Shutter Mode If, in BabyWare, the output is set to Shutter, the related outputs (Up/Down) will be paired for shutter operation. See "Relay vs. Shutter Mode" on page 3.</p>	
<p>3 Local Bus (Future Use) Imperial Dimmer Wall Switches that are connected to the local bus are independent from the rest of the system and can control the shutter outputs. This ensures continued operation of the outputs should the Multibus stop for any reason. This feature also provides the option to add shutter control without the need of the Imperial system. If in relay mode, only the odd numbered outputs can be controlled (e.g. 1, 3, 5, 7).</p>	
<p>4 Global Up/Down By connecting a 2-way momentary switch, all connected shutter motors can be activated together.</p>	
<p>5 Emergency Stop It includes an emergency stop input per shutter motor to connect a device, such as an IR beam, to stop the motor when motion is detected. The motor will also stop when the dial on the dimmer wall switch is pushed.</p>	

WARNING:
It is highly recommended to power the module using an external source (e.g. PS100 or PS27D) and NOT from the Multibus to avoid flickering of the output in case of a loss of bus power. Flickering might cause damage to electrical appliances connected to the outputs.

By default, using the Global button on any dimmer wall switch connected to the Local Bus will control all outputs that are in Shutter Mode

Relay vs. Shutter Mode

If, in BabyWare, the output is set to Light, Sprinkler, or Custom, it will function as a standard relay output. If, in BabyWare, the output is set to Shutter, the related outputs (Up/Down) will be paired for shutter operation. For more information, refer to "Programming an HV8D Module" on page 4. In the example below, outputs 1 and 2 are set to Relay Mode and outputs 3 to 8 are set to Shutter Mode.

Table 1: Example of Combining Modes

Relay	Shutter Mode			Relay Mode		
	Output	Local Bus	Emg. Stop	Output	Local Bus	Emg. Stop
RLY1				1	GRN1	-
RLY2				2	-	-
RLY3	Up	GRN2	2			
RLY4	Down					
RLY5	Up	GRN3	3			
RLY6	Down					
RLY7	Up	GRN4	4			
RLY8	Down					

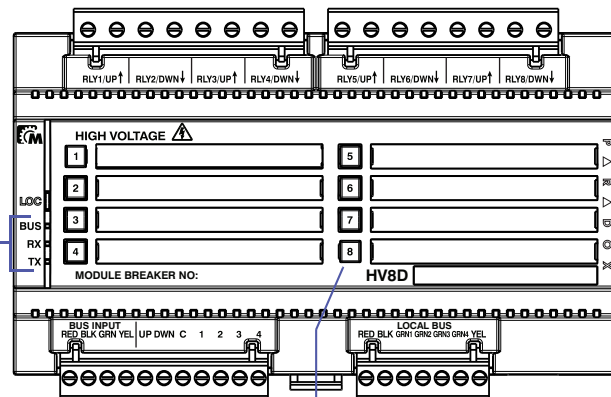
Shutter Calibration

If outputs are set to Shutter Mode (see "Relay vs. Shutter Mode" on page 3), the HV8D must be calibrated to match each shutter's open and closed states. This calibration can be performed locally at the HV8D, or using an Imperial Dimmer Wall Switch (refer to the MCVA2 manual), or using BabyWare (Q2 2009). To calibrate the shutter outputs using the HV8D module:

- To enter shutter calibration mode, press and hold both of the output pair's buttons for four seconds.
 - ⇒ The first LED is off, the second LED is solid.
 - ⇒ The shutter closes.
 - ⇒ The button pair now function as an UP and DOWN button for calibration.
- When the shutter reaches the bottom, press the UP button.
 - ⇒ The shutter opens.
- When the shutter reaches the top, press the DOWN button.
 - ⇒ The shutter closes again.
- When the shutter reaches the bottom, press the UP button.
 - ⇒ The shutter opens to about 50%.
- If the shutter is not at exactly 50%, adjust it manually using the UP and DOWN buttons.
- To exit shutter calibration mode, press both buttons.

LED Feedback

BUS	RX	TX	STATUS
-	Green flash	Green flash	OK (communication in progress)
Red on	-	-	Short on GRN or YEL
	-	Green on	Communication failure/ too many modules
	Green on	Green on	Bus lines reversed (GRN / YEL)
Red flash	-	-	Bus power too low
	Green flash	Green flash	Module locate mode
Blue flash	-	-	Firmware upgrade in progress



OUTPUTS 1 to 8
 Press to activate/deactivate
 On = Output on
 Off = Output off

Bi-directional Locate Feature

Pressing and holding the LOC button for 3 seconds will initiate the Module Locate feature. When a Module Locate is initiated, the module's representation in the BabyWare software will flash and the module's BUS, RX and TX LEDs will flash at 1Hz to indicate that it is in locate mode. A module locate can also be initiated from the BabyWare software. From BabyWare right-click the module's representation and select Locate Physical. The module's BUS, RX and TX LEDs will flash. We highly recommend that after pressing locate and identifying the module, open the programming page and assign the proper physical location label and the outputs' labels and locations. After complete connection, use the space provided on the module to indicate the outputs' description.

Remote Firmware Upgrade

Work in progress...

The HV8D is firmware upgradeable remotely via the V32 controller's Multibus at 57.6Kbps. Using BabyWare connect to the V32 account using any of the connection methods (direct connect, IP static, or IP DNS). Right-click the desired module and select Upgrade (???). A firmware upgrade for a single module or group of modules will take usually less than 10 minutes, which keeps system downtime to a minimum.

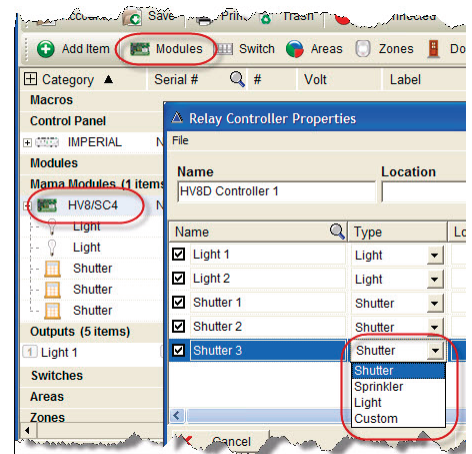
Programming an HV8D Module

- 1) When BabyWare is communicating with the V32 controller and a HV8D module is connected to the Multibus, it automatically appears in the Modules display area. To view the Modules display area, click the **Modules** toggle button. Alternatively, you may wish to add a module to BabyWare before the module is physically connected to the system. Click the **Add Item** button.
- 2) To program a module that already appeared in the system, double-click the module's icon. The HV8D Programming window opens.
- 3) From the Type drop-down list, select Sprinkler, Light, or Customer for Relay Mode, or select Shutter for Shutter Mode.

Related Topics

- If you have trouble locating the module in BabyWare, you can use the Bi-directional Locate Feature (see page 4).

Figure 1: HV8D Programming



Patents: One or more of the following US patents may apply: 7046142, 6215399, 6111256, 6104319, 5920259, 5886632, 5721542, 5287111, 5119069, 5077549 and RE39406 and other pending patents may apply. Canadian and international patents may also apply.

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