



## Technical Bulletin 100:

# Domestic Priority Switch (DPS) /Maintenance Indication Switch (MIS) in MIS Mode; to be used with the Tankless Rack System (TRS) / Multi-Unit Applications

### Introduction:

The Domestic Priority Switch (DPS) /Maintenance Indication Switch (MIS) is a low-voltage/ microprocessor based device capable of on/off switching of 0-24V AC or DC at a maximum amperage of one (1 amp). The DPS/MIS when integrated with the Rinnai Tankless Rack System (TRS) becomes the bridge between each tankless error generated code (via the main PCB) and the respective Building Management System. DPS/MIS will only work with current Rinnai Tankless Water Heater models (**KB and VC series ONLY**). This technology is **NOT** backward compatible.

When configured with a Manifold Electronic Control System (MSB-M or MSB-C1) kit for multi-unit application, whether common vented or individually vented); the DPS/MIS is capable of interfacing with any Building Management System to switch a dedicated 0-24 VAC/DC lamp, indicating that an error had occurred within the tankless water heater bank being monitored. If the BMS being employed is without a Low Voltage Interface, the DPS/MIS shall be configured via an external relay.

### Installation Requirements:

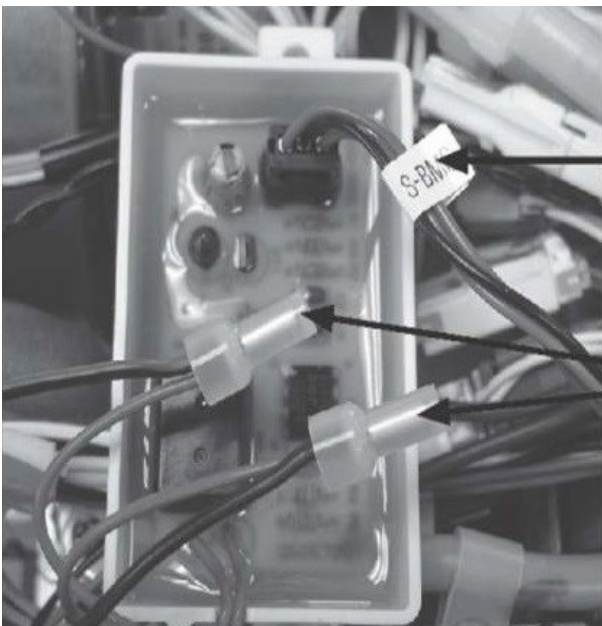


Figure 1: DPS/MIS Location and wire connections

### CAUTION



This unit is supplied with 120 volts. Disconnect incoming power to the unit prior to performing any repairs or installation of internal components or accessories.

#### STEP 1:

Disconnect incoming power from unit.

#### STEP 2:

Remove the water heater front cover.

#### STEP 3:

In the main wiring bundle, locate the wiring tagged "S-BMS or Air-H." Temporarily remove the cable tie and separate this connector from the main bundle. Fasten the cable tie around the remaining bundle.

#### STEP 4:

Place the switch (mounting screw provided if required) inside of the cabinet, adjust the position of the main wiring bundle to accommodate.

#### STEP 5:

Using two of the three crimp connectors supplied with the DPS/MIS (Figure 1: A), connect the wires of the DPS/MIS as indicated in figures 2 and 3. When either the Normally Open (N.O.) or Normally Closed (N.C.) configuration is being employed the third crimp should be placed on the unused wire to ensure it is insulated.

#### STEP 6:

Attach the harness plug labeled "S-BMS or Air-H" to the matching socket on the DPS/MIS (Figure 1: B). Additionally, to configure switch to operate in the MIS mode, dip switch 4 in the SW1 bank of the tankless water heater must be placed in the OFF position (refer to Table 1).

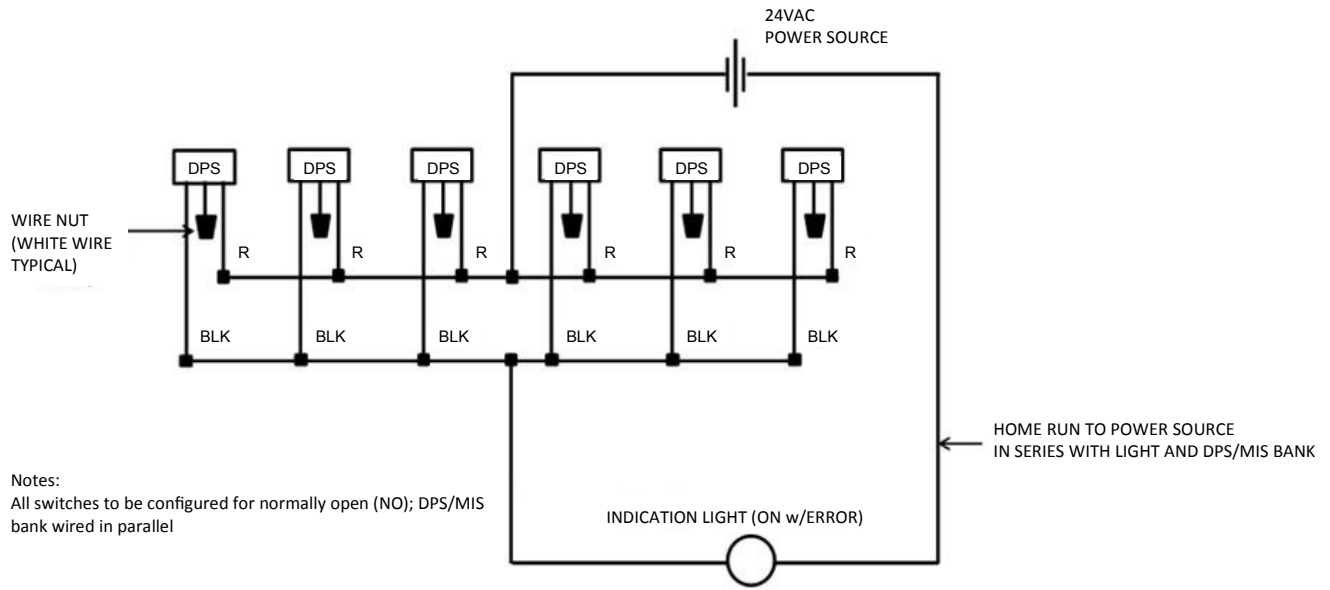


Figure 2: Wiring Diagram for Multiple DPS/MIS in Normally Open (N.O.) Error Mode

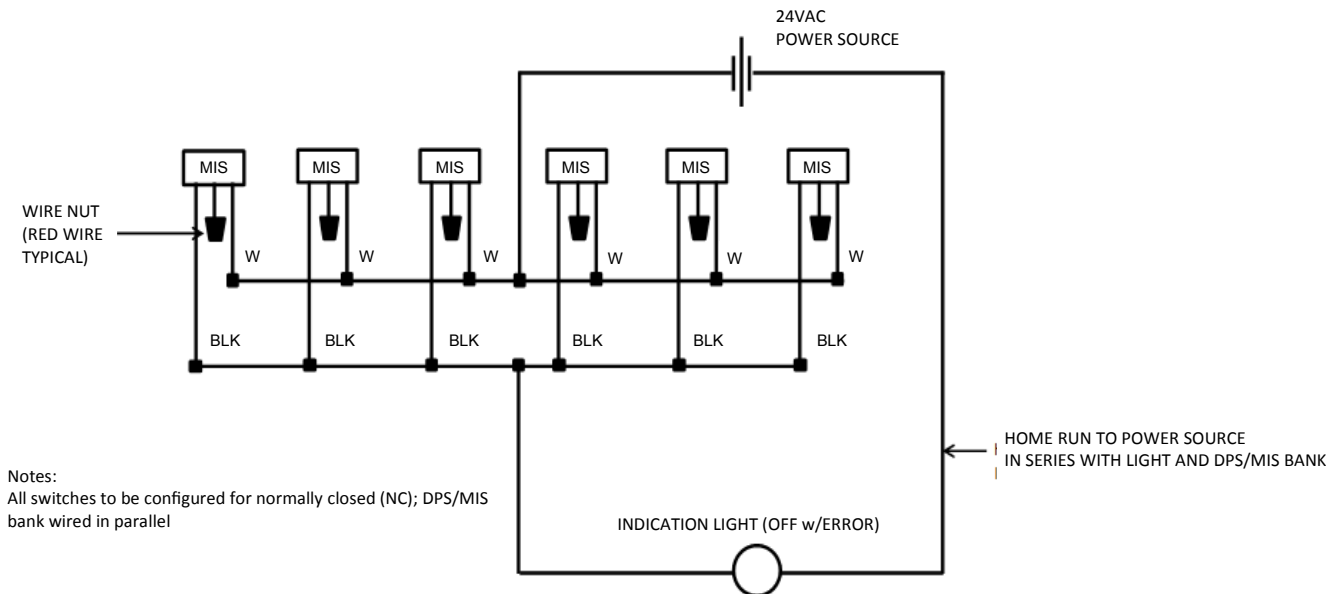


Figure 3: Wiring Diagram for Multiple DPS/MIS in Normally Closed (N.C.) Error Mode

<b>Table 1: Domestic Priority /Maintenance Indication Swith (DPS/MIS)</b>						
Switch Configuration	Required Leads (wires)	Connection	Function	Tankless dipswitch configuration		Associated figures
				ID	Position	
<b>Maintenance Indication (MIS) - Error and LC</b>	White & Black	Connect to BMS	N.C.	Bank 1 (Yellow); #4	OFF	1 & 3
<b>Maintenance Indication (MIS) - Error and LC</b>	Red & Black	Connect to BMS	N.O.	Bank 1 (Yellow); #4	OFF	1 & 2

**Key:**

N.O. - Normally Open

N.C. - Normally Closed

**System Testing -N.O. or N.C. Configuration:**

The N.O. operation can be quickly tested by passing water through the water heater with the gas supply shut off. After several ignition attempts the combustion fan should stop and the temperature controller should display code "11." Within 15 seconds of the code being displayed, the error switch should close. This can be verified by the indication lamp being energized. The switch should remain in the closed position unit reset by a technician. The opposite is true (lamp will de-energized) in N.C. configuration.

To reset water heater, turn off the water flow to the unit with the error or cycle power On and Off to temperature controller, at this point the error switch should return to its original position.

**LC = Lime Check:**

In hard water areas calcium is deposited within the tubes of the heat exchanger, this reduces the heat transfer within the water heater. The water heater detects this and displays an LC error code. Typically, this will not prevent the operation of the unit, but initially provides an indication to the customer that maintenance is required. (Model dependent: an LC code may lockout the unit.) For information regarding LC condition please refer to the tankless water heater owner's manual.

Where an LC condition is present, the error switch will remain in the closed position at all times except where a temperature controller is switched off. The time chart (Figure 4B) shows the relationship between errors indicated by the error switch, and the outputs shown on the temperature controller.

**Response to Errors:**

If an error is currently active, the error code can be read directly from the temperature controller.

Any active error, other than LC, indicates the unit is not currently heating water. (Model dependent: an LC code may lockout the unit.)

Error codes 11 and 12 usually indicate a combustion/combustion sensing issue. To reset an error code 11 or 12, the water flow through the unit must be turned off for a few seconds and then turned back on prior to turning the system back on.

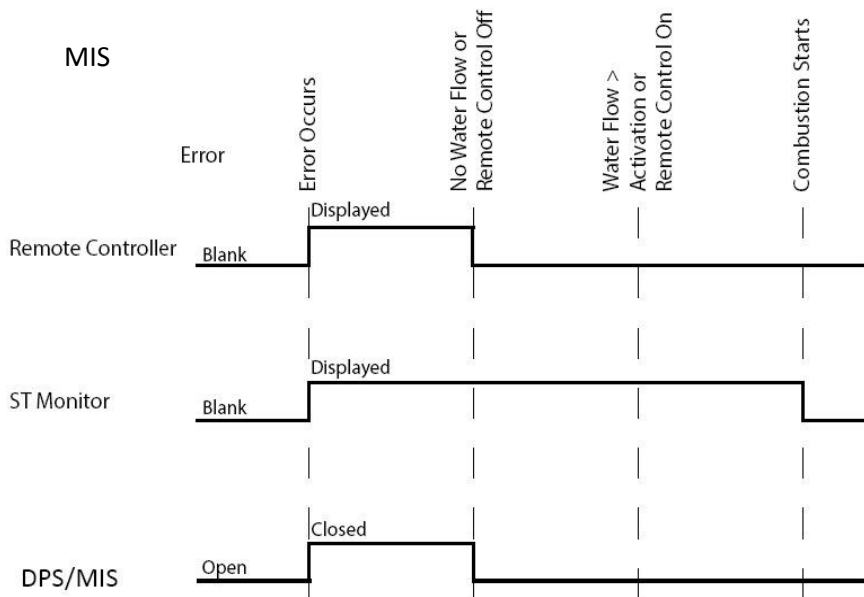
If an error has occurred but is not currently active, the error history can be read from the unit via the temperature controller using the procedure described below.

If no temperature controller is fitted, contact a Rinnai authorized service provider who will be able to access the error history of the unit. The service technician must have a controller available to read the error codes.

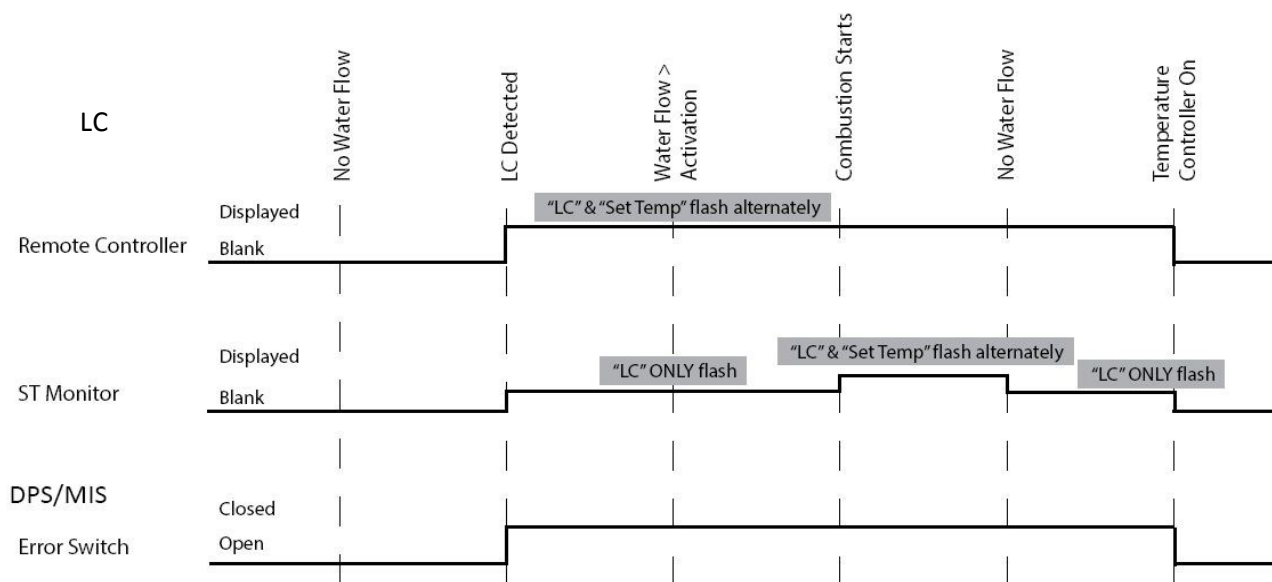
All errors, other than re-setting errors 11 and 12, must be dealt with by a Rinnai authorized service provider. Providing the error code to the service provider at the time of making a service call will ensure the most efficient rectification of the issue.

**Error Code History using a Rinnai Temperature Controller:**

1. With the temperature controller switched on, push and hold the "Power" button.
2. While continuing to hold the "Power" button down, push and release the "Temperature Up" button.
3. Release the power button.
4. The temperature controller should now scroll through the last 10 errors. Record these for advising the service provider.
5. To revert to normal mode, repeat step numbers 1-3 above.



**Figure 4A: MIS Step Diagram**



**Figure 4B: LC Step Diagram**