

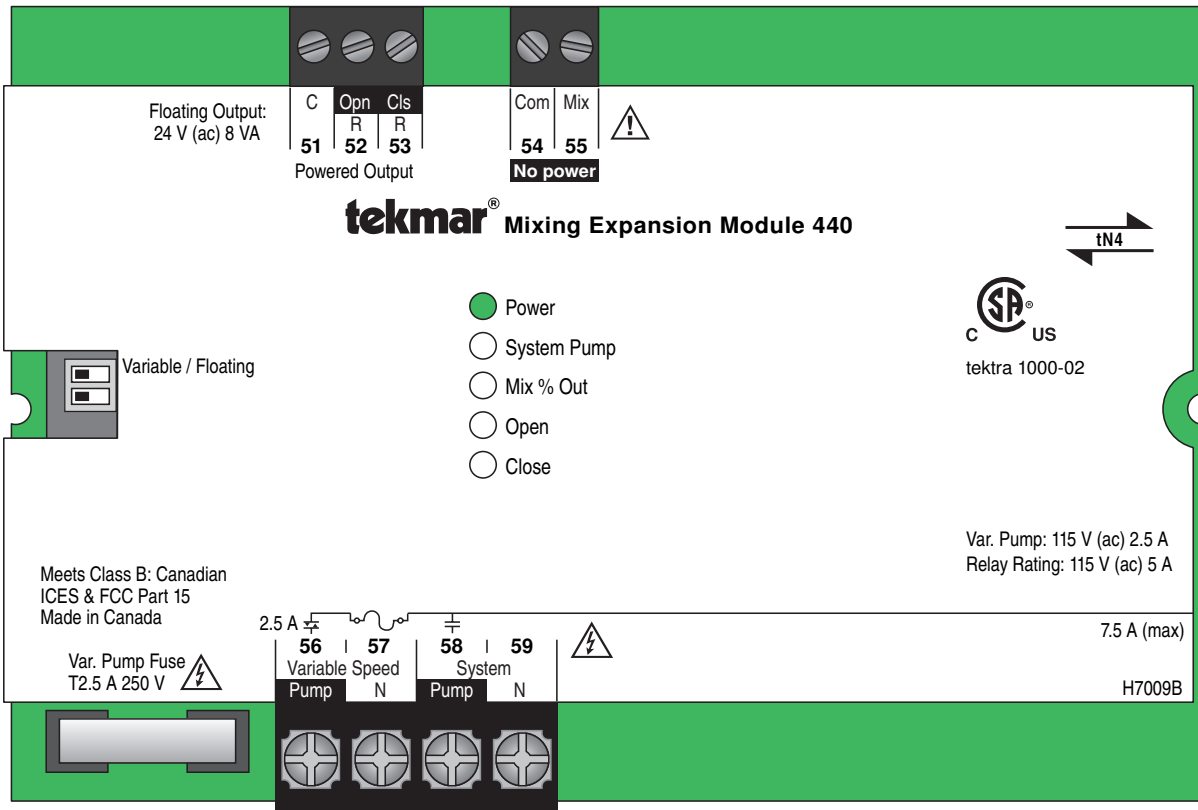
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|--------------------------------------|-------------------------------------|------------------------------|---|--|---|
| <b>1</b>                             | <b>2</b>                            | <b>3</b>                     | <b>4</b>                                    | <b>5</b>                                   | <b>6</b>  |
| <b>Information Brochure</b>          | <b>Application Brochure</b>         | <b>Rough-in Wiring</b>       | <b>Wiring Brochure</b>                      | <b>Data Brochure</b>                       | <b>Job Record</b>                                     |
| Choose controls to match application | Design your mechanical applications | Rough-in wiring instructions | Wiring and installation of specific control | Control settings and sequence of operation | Record settings & wiring details for future reference |

## Introduction

The Mixing Expansion Module 440 provides a system pump output and a single mixing output for either a variable speed injection pump or floating action mixing valve. The 440 cannot operate by itself and requires the use of a tN4 System Control that is capable of operating a Mixing Expansion Module.

## Features:

- tN4 Compatible
- Powered Variable Speed Output
- Powered 24 V (ac) Floating Action Output
- Powered System Pump
- CSA C US Certified for use in USA and Canada



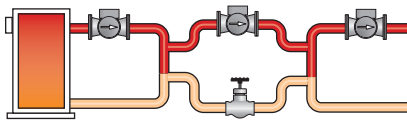
## Sequence of Operation

The tN4 System Control determines the required mix supply water temperature based on its settings and the requirements of the tN4 thermostats connected to the same tN4 bus as the 440.

The 440 operates either a variable speed injection pump or a floating action mixing valve to maintain the required water temperature at its Mix Supply sensor.

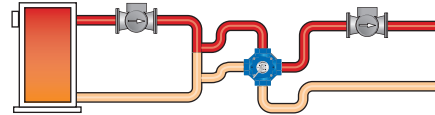
### Variable Speed Injection

A standard wet rotor circulator can be connected to the Variable Speed output on the control. The control increases or decreases the power output to the circulator when there is a requirement for mixing. The circulator speed varies to maintain the correct mixed supply water temperature at the mix supply sensor. For correct sizing and piping of the variable speed injection circulator, refer to essay E 021. A visual indication of the current variable speed output is displayed by the Mix % Out LED.



### Floating Action

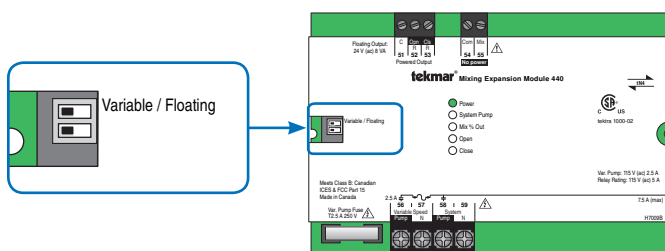
A floating action actuator motor can be connected to the control on the Opn and Cls terminals. The control pulses the actuator motor open or close to maintain the correct supply water temperature at the mix supply sensor when there is a requirement for mixing. The mixing valve that the actuator is connected to can be either a 2-way, 3-way or 4-way valve. A visual indication as to whether the control is currently opening or closing the mixing valve is displayed by the Open and Close LEDs.



### System Pump Operation

The System Pump contact operates based on the settings of the tN4 thermostats connected to the same tN4 bus as the 440.

## DIP Switch Settings



The DIP switches are found on the left hand side of the 440.

### Variable






- The 440 uses the Variable Speed output to control a variable speed injection pump.

### Floating

- The 440 uses the Floating Action output to control a 24 V (ac) floating action actuator.

## LED Status Indicators

### Mixing Expansion Module 440

-  Power
-  System Pump
-  Mix % Out
-  Open
-  Close

Five LEDs provide the status on the 440's outputs.

#### Power LED

**Green:**

- Normal operation.

**Off:**

- No power to the Mixing Expansion Module.

#### System Pump LED

**Green:**

- The System Pump relay is on.

**Off:**

- The System Pump relay is off.

#### Mix % Out LED

**Flashing Green:**

- The rate of flashing represents the output of the mixing device.

**Solid Green:**

- The mixing output is on 100%.

**Off:**

- The mixing output is off.

#### Open LED

**Green:**

- The Open relay is on.

**Off:**

- The Open relay is off.

#### Closed LED

**Green:**

- The Close relay is on.

**Off:**

- The Close relay is off.

## Cleaning the Control

The control's exterior can be cleaned using a damp cloth. Moisten the cloth with water and wring out prior to wiping the control. Do not use solvents or cleaning solutions.

## Limited Warranty and Product Return Procedure

**Limited Warranty** *The liability of tekmar under this warranty is limited. The Purchaser, by taking receipt of any tekmar product ("Product"), acknowledges the terms of the Limited Warranty in effect at the time of such Product sale and acknowledges that it has read and understands same.*

The tekmar Limited Warranty to the Purchaser on the Products sold hereunder is a manufacturer's pass-through warranty which the Purchaser is authorized to pass through to its customers. Under the Limited Warranty, each tekmar Product is warranted against defects in workmanship and materials if the Product is installed and used in compliance with tekmar's instructions, ordinary wear and tear excepted. The pass-through warranty period is for a period of twenty-four (24) months from the production date if the Product is not installed during that period, or twelve (12) months from the documented date of installation if installed within twenty-four (24) months from the production date.

The liability of tekmar under the Limited Warranty shall be limited to, at tekmar's sole discretion: the cost of parts and labor provided by tekmar to repair defects in materials and / or workmanship of the defective product; or to the exchange of the defective product for a warranty replacement product; or to the granting of credit limited to the original cost of the defective product, and such repair, exchange or credit shall be the sole remedy available from tekmar, and, without limiting the foregoing in any way, tekmar is not responsible, in contract, tort or strict product liability, for any other losses, costs, expenses, inconveniences, or damages, whether direct, indirect, special, secondary, incidental or consequential, arising from ownership or use of the product, or from defects in workmanship or materials, including any liability for fundamental breach of contract.

The pass-through Limited Warranty applies only to those defective Products returned to tekmar during the warranty period. This Limited Warranty does not cover the cost of the parts or labor to remove or transport the defective Product, or to reinstall the repaired or replacement Product, all such costs and expenses being subject to Purchaser's agreement and warranty with its customers.

Any representations or warranties about the Products made by Purchaser to its customers which are different from or in excess of the tekmar Limited Warranty are the Purchaser's sole responsibility and obligation. Purchaser shall indemnify and hold tekmar harmless from and against any and all claims, liabilities and damages of any kind or nature which arise out of or are related to any such representations or warranties by Purchaser to its customers.

The pass-through Limited Warranty does not apply if the returned Product has been damaged by negligence by persons other than tekmar, accident, fire, Act of God, abuse or misuse; or has been damaged by modifications, alterations or attachments made subsequent to purchase which have not been authorized by tekmar; or if the Product was not installed in compliance with tekmar's instructions and / or the local codes and ordinances; or if due to defective installation of the Product; or if the Product was not used in compliance with tekmar's instructions.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHICH THE GOVERNING LAW ALLOWS PARTIES TO CONTRACTUALLY EXCLUDE, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, DURABILITY OR DESCRIPTION OF THE PRODUCT, ITS NON-INFRINGEMENT OF ANY RELEVANT PATENTS OR TRADEMARKS, AND ITS COMPLIANCE WITH OR NON-VIOLATION OF ANY APPLICABLE ENVIRONMENTAL, HEALTH OR SAFETY LEGISLATION; THE TERM OF ANY OTHER WARRANTY NOT HEREBY CONTRACTUALLY EXCLUDED IS LIMITED SUCH THAT IT SHALL NOT EXTEND BEYOND TWENTY-FOUR (24) MONTHS FROM THE PRODUCTION DATE, TO THE EXTENT THAT SUCH LIMITATION IS ALLOWED BY THE GOVERNING LAW.

**Product Warranty Return Procedure** All Products that are believed to have defects in workmanship or materials must be returned, together with a written description of the defect, to the tekmar Representative assigned to the territory in which such Product is located. If tekmar receives an inquiry from someone other than a tekmar Representative, including an inquiry from Purchaser (if not a tekmar Representative) or Purchaser's customers, regarding a potential warranty claim, tekmar's sole obligation shall be to provide the address and other contact information regarding the appropriate Representative.



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