

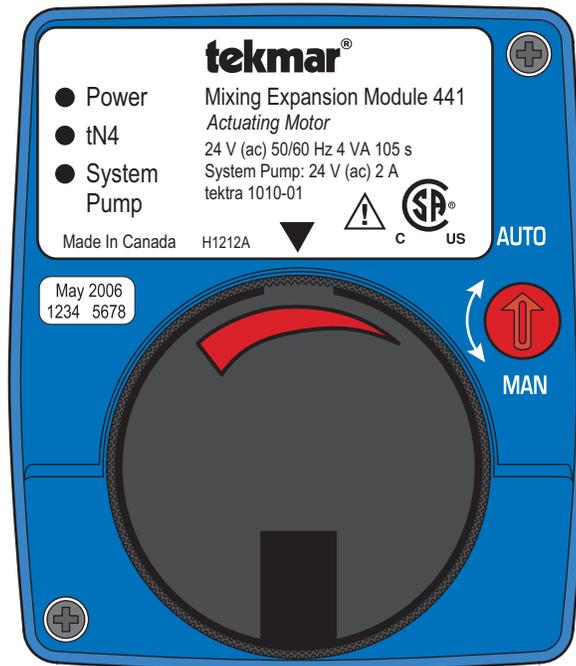
1 Information Brochure Choose controls to match application	2 Application Brochure Design your mechanical applications	3 Rough In Wiring Rough-in wiring instructions	4 Wiring Brochure Wiring and installation of specific control	5 Data Brochure Control settings and sequence of operation	6 Job Record Record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

The Mixing Expansion Module 441 is designed to operate any of the tekmar 3-way and 4-way brass mixing valves from type 710 through type 724. The 441 provides 6 N•m (53 in•lbs) of torque over a 90° rotation. The 441 is controlled through digital communication on tekmarNet®4 systems. The 441 requires the use of a tN4 System Control that includes a mix temperature bus.

Features

- tN4 Compatible
- Actuates Mixing Valves 710-714 and 720-724
- System Pump Signal
- CSA C US Certified for use in USA and Canada



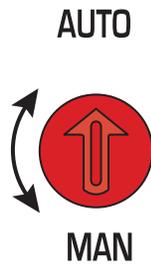
Sequence of Operation

Automatic Operation

Automatic operation of the mixing valve requires the red dial on the front of the 441 to be set to the "AUTO" position.

The tN4 System Control determines the target mix supply water temperature based on its settings and the requirements of the tN4 thermostats and tN4 setpoint devices on the mix tN4 bus. The 441 uses the Mix Supply sensor to measure the water temperature and then operates the mixing valve to maintain the target water temperature. The 441 powers the system pump output with 24 V (ac) whenever a tN4 thermostat or tN4 setpoint control calls for heat on the tN4 mix bus and that tN4 device's Heat 1 Pump (or Heat 2 Pump) setting is set to On.

The position of the mixing valve is indicated by the red stripe on the hand wheel.

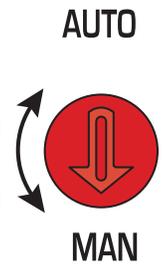


Manual Operation

Manual operation of the mixing valve requires the red dial on the front of the 441 to be set to the "MAN" position.

To change the mixing position, rotate the hand wheel of the 441.

The position of the mixing valve is indicated by the red stripe on the hand wheel.



DIP Switch Setting

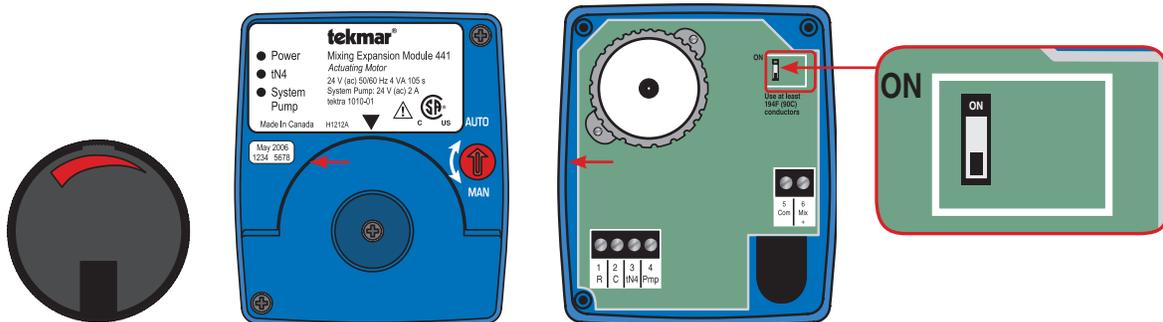
The 441 has a DIP switch located inside the wiring enclosure.

- Step 1: Remove the hand wheel.
- Step 2: Remove the two screws.
- Step 3: Remove the front cover.

The DIP switch selects the direction of rotation to open the mixing valve.

In the OFF position, the actuator moves in the clockwise direction to open the valve.

In the ON position, the actuator moves in the counterclockwise direction to open the valve.



LED Status Indicators

Power LED

- **Green:** Normal operation.
- **Off:** No power to the Mixing Expansion Module.

tN4 LED

- **Solid Green:** The Mixing Expansion Module established tN4 communication to a tN4 System Control.
- **Flashing Green:** Attempting to establish communication with tN4 System Control. This is normal for the first 3 minutes after power is turned on.
- **Off:** There is no tN4 communication to a tN4 system control.

System Pump LED

- **Green:** The system pump relay is on.
- **Off:** The system pump relay is off.

Mixing Expansion Module 441

- Power
- tN4
- System Pump

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.

Error Messages

Power LED	tN4 LED	Error Condition
ON	OFF	tN4 Bus open or short circuit. <ul style="list-style-type: none"> • Check wiring for loose or broken wires. • Check for a short circuit between tN4 and C. • Check polarity on the R and C wires.
ON	FLASHING	Flashing tN4 LED is normal on power up. If flashing tN4 LED continues for more than 3 minutes: <ul style="list-style-type: none"> • Ensure there is a tN4 System Control on the tN4 bus. • Ensure the Mixing Expansion Module is on a mix tN4 bus and NOT on a boiler tN4 bus. • Ensure there are not multiple Mixing Expansion Modules on the same mix tN4 bus. • tN4 System Control will display error message. See tN4 System Control and literature for troubleshooting.

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.



tekmar Control Systems Ltd., Canada
tekmar Control Systems, Inc., U.S.A.
Head Office: 5100 Silver Star Road
Vernon, B.C. Canada V1B 3K4
(250) 545-7749 Fax. (250) 545-0650
Web Site: www.tekmarcontrols.com

