tekmar® - Data Brochure

Power Manager 346

tN4

D346
04/08

1 Information Brochure	2 Application Brochure	3 Rough-in Wiring	4 Wiring Brochure	5 Data Brochure	6 Job Record
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 Power Manager 346 has an internal transformer that powers a tekmarNet®4 (tN4) System Control 420, 421, 422, or 423. The 346 also includes four on-off demand inputs that can be used to provide a tN4 communication message to activate the reset module. This allows a mixture of non-communicating and tN4 communicating controls to use a tN4 System Control.

Features:

- tN4 Compatible
- Four tN4 Buses
- Four On-Off Demand Inputs
- Converts Demands to tN4 Communication
- Three Auxiliary Pumps
- Internal 50 VA Transformer
- CSA C US Certified for use in USA and Canada

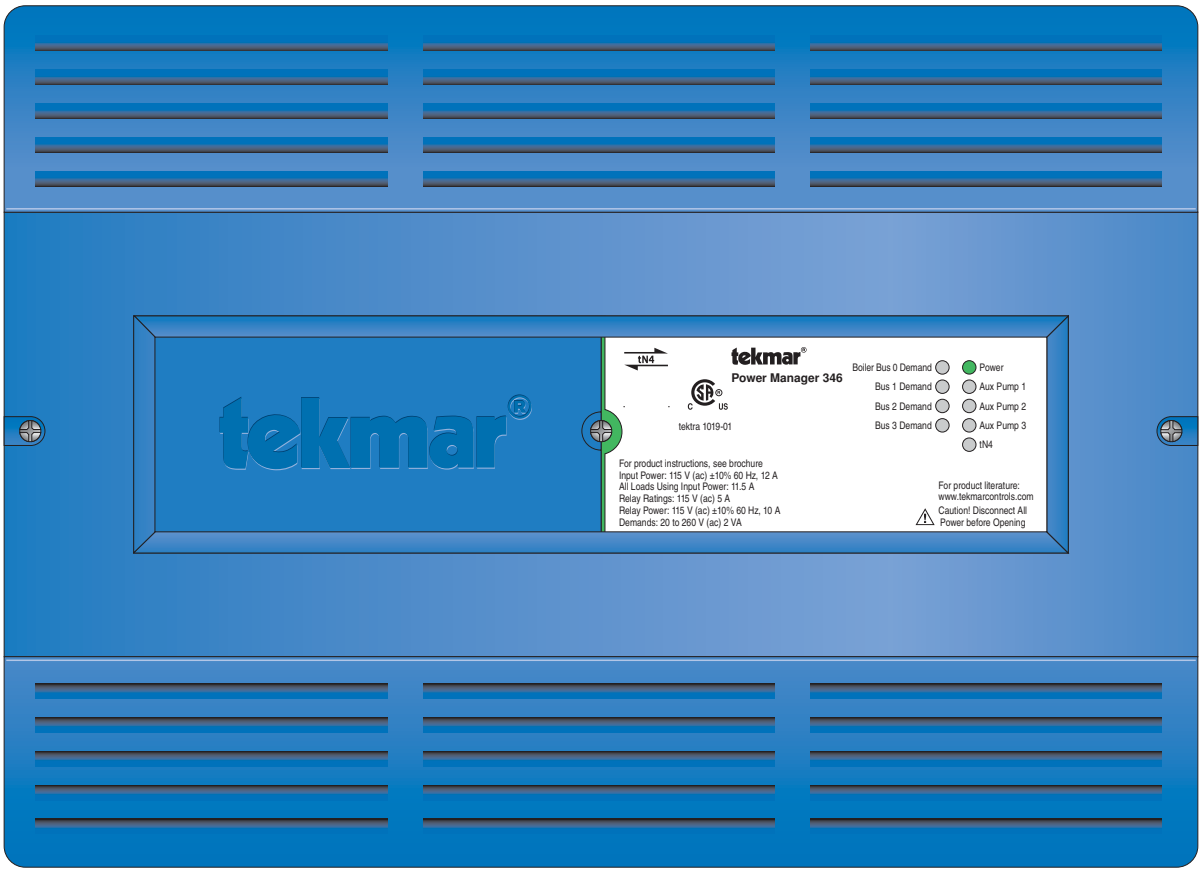
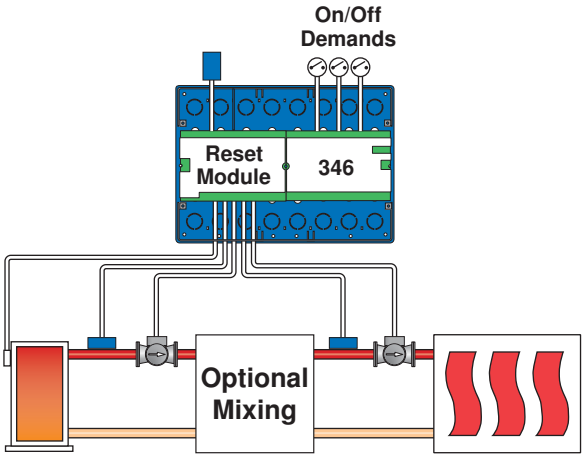


Table of Contents

Sequence of Operation

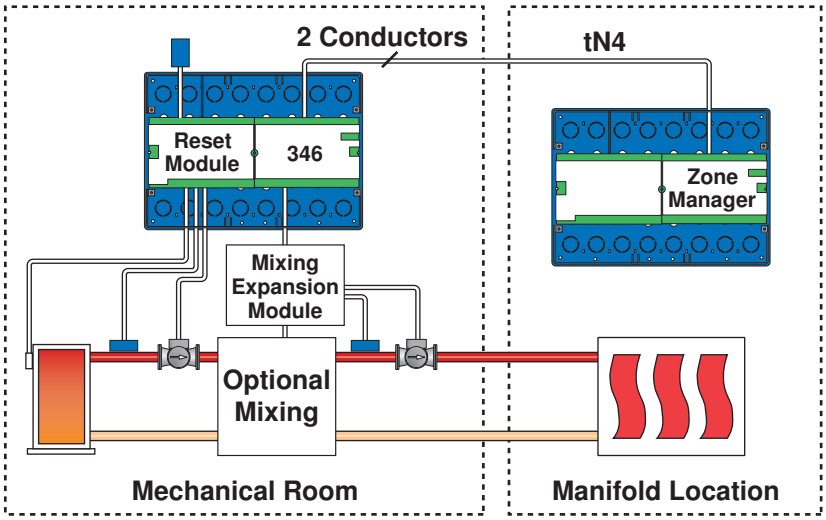
Application 1 - On/Off Demands

One application is to provide a method to convert on-off demands into a tN4 message for an outdoor reset water temperature and send this message to a tN4 reset module. tN4 reset modules include the 420, 421, 422 and 423.

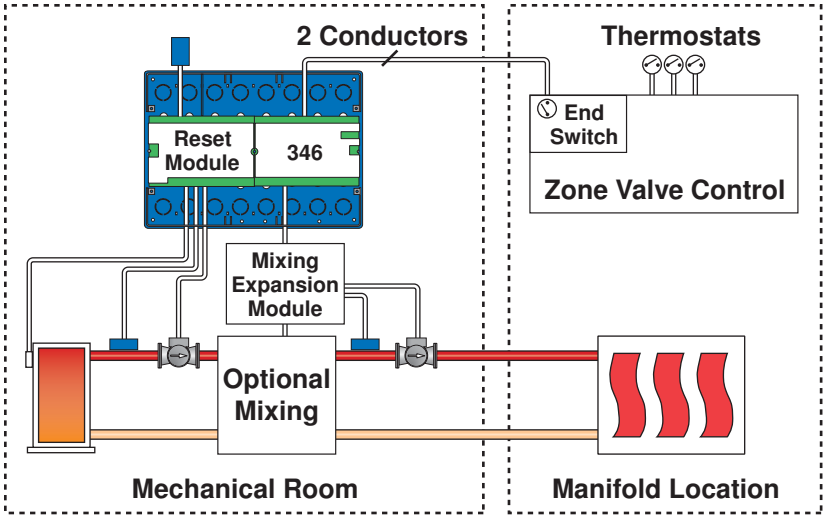


Application 2 - Zoning at Remote Manifolds

The other application is to use the 346 to provide power to a reset module and mixing expansion modules. This allows the reset module, 346, and mixing expansion modules to be located in the mechanical room while the zone managers can be remotely located at the manifold locations.



OR



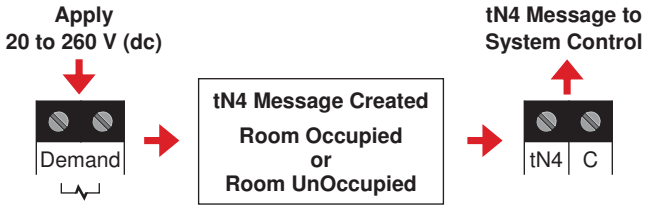
On – Off Demand to tN4 Conversion

The 346 has four demand inputs and four tN4 bus outputs:

Inputs	Outputs
Boiler Demand (0)	tN4 Boiler Bus 0
Demand 1	tN4 Bus 1
Demand 2	tN4 Bus 2
Demand 3	tN4 Bus 3

A demand is a call for heat from a non-tN4 communicating device. When a voltage between 24 to 260 V(ac) is applied to a demand input, a tN4 message to activate the heating occurs on the corresponding tN4 bus. The tN4 bus allows for the demand input and tN4 devices (thermostats and setpoint controls) to be mixed together on the same tN4 bus. The demand input on the 346 is fixed to tN4 address 01 on the bus that the demand is wired to.

When a demand is received, a tN4 message is sent to request a desired Room temperature. The desired Room temperature is used as a factor in the outdoor reset calculation to determine the water temperature for a tN4 bus.



Room Occupied and Unoccupied Settings

When a demand on the 346 is powered, a tN4 message is generated and sent to the reset control. This tN4 message requests a water temperature based upon the desired Room Occupied or Room Unoccupied setting. The Room Occupied temperature has four available preset temperatures selected by the position of two switch settings. Likewise, the Room Unoccupied temperature has four available preset temperatures selected by the position of two other switch settings. The Room Occupied or Room Unoccupied temperature is selected by a schedule master. See Switch Settings section for details.

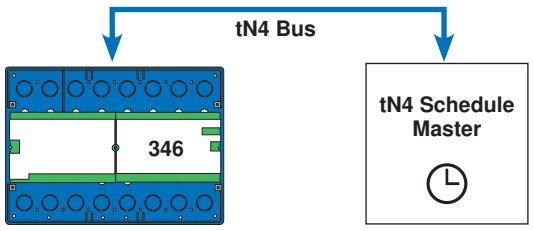
Schedules

Use of schedules on the 346 requires the use of a schedule master device. This can be a Timer 033, a tN4 Programmable Thermostat, or a tN4 Setpoint Control 162. The schedule master maintains the current time and sends messages to schedule members to switch between Occupied and Unoccupied settings.

Each of the four demand inputs can be configured to respond to one of three schedule masters. When a demand is received, the schedule master determines whether the Room Occupied or at the Room Unoccupied temperature in used in the tN4 call for heat message.

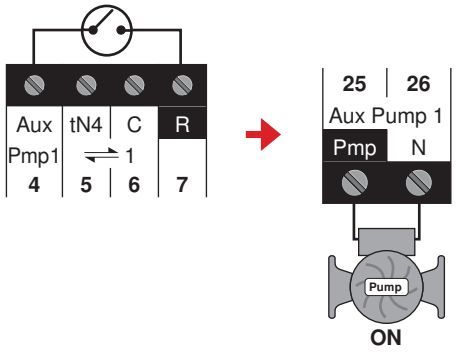
The schedule master that each tN4 bus belongs to is determined using a pair of switch setting positions. The combinations are shown in the Switch Setting section of the brochure.

If the schedule master uses a 4 event schedule (wake, unoccupied, occupied, sleep), the wake time period causes the 346 to operate at the Room Occupied temperature, and the sleep time period causes the 346 to operate at the Room Unoccupied temperature.



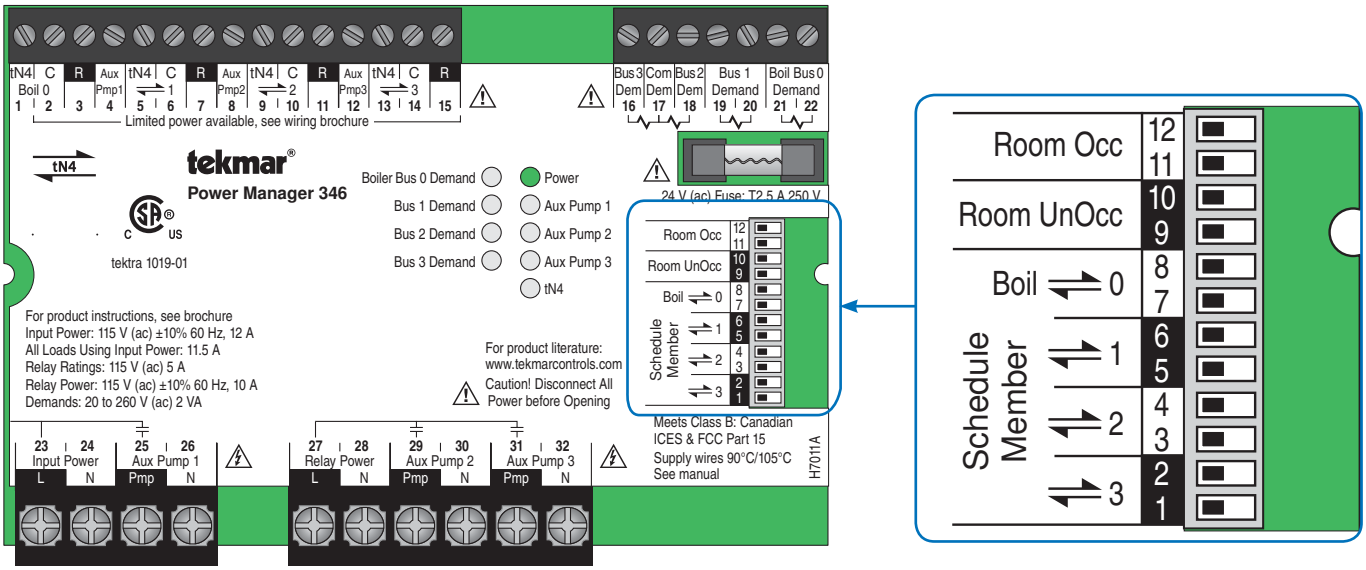
Auxiliary Pumps

The 346 includes three auxiliary pump inputs (terminal 4, 8 and 12) and three powered auxiliary pump outputs (terminals 25, 29 and 31). When the auxiliary pump input is powered with 24 V (ac), the corresponding auxiliary pump output is energized with 120 V (ac).



Switch Settings

With the cover removed, the switch settings are located on the right hand side of the 346.



Room Occupied

The Room Occupied can be set to one of four temperatures using the following switch setting pair combinations:

Temperature	75°F (24.0°C)	72°F (22.0°C)	68°F (20.0°C)	65°F (18.5°C)
Room Occupied	12 / 11	12 / 11	12 / 11	12 / 11

Room Unoccupied

The Room Unoccupied can be set to one of four temperatures using the following combinations:

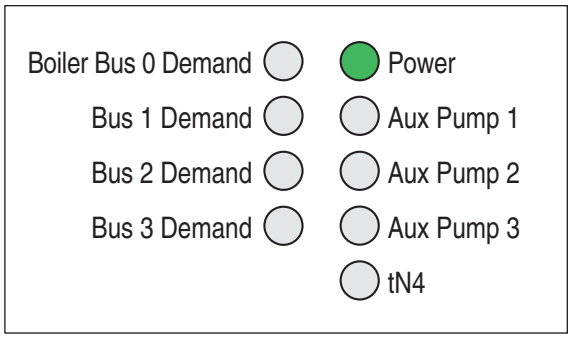
Temperature	50°F (10.0°C)	55°F (13.0°C)	60°F (15.5°C)	65°F (18.5°C)
Room Unoccupied	10 / 9	10 / 9	10 / 9	10 / 9

Schedules

For each tN4 bus, there are a pair of switches that determine which schedule master to follow as a schedule member.

		Member of Schedule		
Bus	**Off**	**1**	**2**	**3**
tN4 Boiler Bus 0	8 / 7	8 / 7	8 / 7	8 / 7
tN4 Bus 1	6 / 5	6 / 5	6 / 5	6 / 5
tN4 Bus 2	4 / 3	4 / 3	4 / 3	4 / 3
tN4 Bus 3	2 / 1	2 / 1	2 / 1	2 / 1

LED Status Indicators



Power LED

Solid Green:
- Normal operation.

Solid Amber:
- Power is present but the fuse for the internal 24 V (ac) transformer is blown.

Off:
- No power to the Input Power terminals on the Power Manager.

Auxiliary Pump 1 LED

Solid Green:
- Auxiliary Pump 1 is on.

Off:
- Auxiliary Pump 1 is off.

Auxiliary Pump 2 LED

Solid Green:
- Auxiliary Pump 2 is on.

Off:
- Auxiliary Pump 2 is off.

Auxiliary Pump 3 LED

Solid Green:
- Auxiliary Pump 3 is on.

Off:
- Auxiliary Pump 3 is off.

tN4 LED

Solid Green:
- The Power Manager has established tN4 communication to a tN4 System Control.

Off:
- There is no tN4 communication to the tN4 System Control.

Boiler Bus 0 LED

Solid Green:
- A Boiler Bus 0 Demand is present.

Off:
- A Boiler Bus 0 Demand is not present.

Bus 1 Demand LED

Green:
- Bus 1 Demand is present.

Off:
- Bus 1 Demand is not present.

Bus 2 Demand LED

Green:
- Bus 2 Demand is present.

Off:
- Bus 2 Demand is not present.

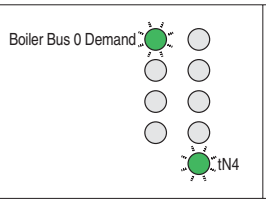
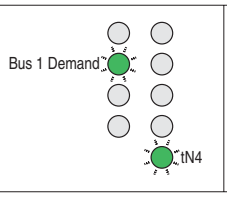
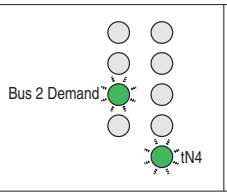
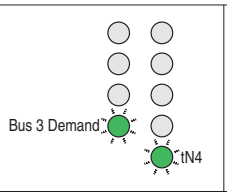
Bus 3 Demand LED

Green:
- Bus 3 Demand is present.

Off:
- Bus 3 Demand is not present.

Flashing LED Indicated Error Messages

When an error is present, two LED will flash together. Once the error has been corrected, the LED will stop flashing.

tN4 and Boiler Bus 0 Demand LED flash	
	Boiler demand is present and there is no tN4 Boiler Bus connection to a tN4 System Control.
tN4 and Bus 1 Demand LED flash	
	Demand 1 is present and there is no tN4 Bus 1 connection to a tN4 System Control.
tN4 and Bus 2 Demand LED flash	
	Demand 2 is present and there is no tN4 Bus 2 connection to a tN4 System Control.
tN4 and Bus 3 Demand LED flash	
	Demand 3 is present and there is no tN4 Bus 3 connection to a tN4 System Control.

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.

tekmar® Control Systems

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

All specifications are subject to change without notice.
Printed in Canada. D346 - 04/08.