

Application Brochure

Smart Steam Control 289



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⚠ WARNING

Please read carefully before proceeding with installation. Your failure to follow any attached instructions or operating parameters may lead to the product's failure.
Keep this Manual for future reference.

THINK SAFETY FIRST



tekmar is not responsible for failures due to connectivity issues, power outages, or improper installation.

One-Pipe Steam System, One Boiler

Application A289-1

Mechanical

Description

A one-pipe steam heating system with one boiler is operated to provide central heating using outdoor reset.

Features:

- Central heating using outdoor reset reduces energy consumption up to 20% compared to operating with a continuous call for heat.
- Indoor feedback with optional wireless mesh indoor sensors to match heating to actual conditions of the building.
- Programmable schedule to reduce energy consumption during unoccupied time periods.
- Automatic warm weather shut down based upon outdoor air temperature.
- Remote access from the Internet through the Nexa web or mobile applications.

Essential System Settings:

Condensate Sensor = On

Auxiliary Sensor = Off

Pressure Sensor = Off

Outdoor Sensor = Control

Legend

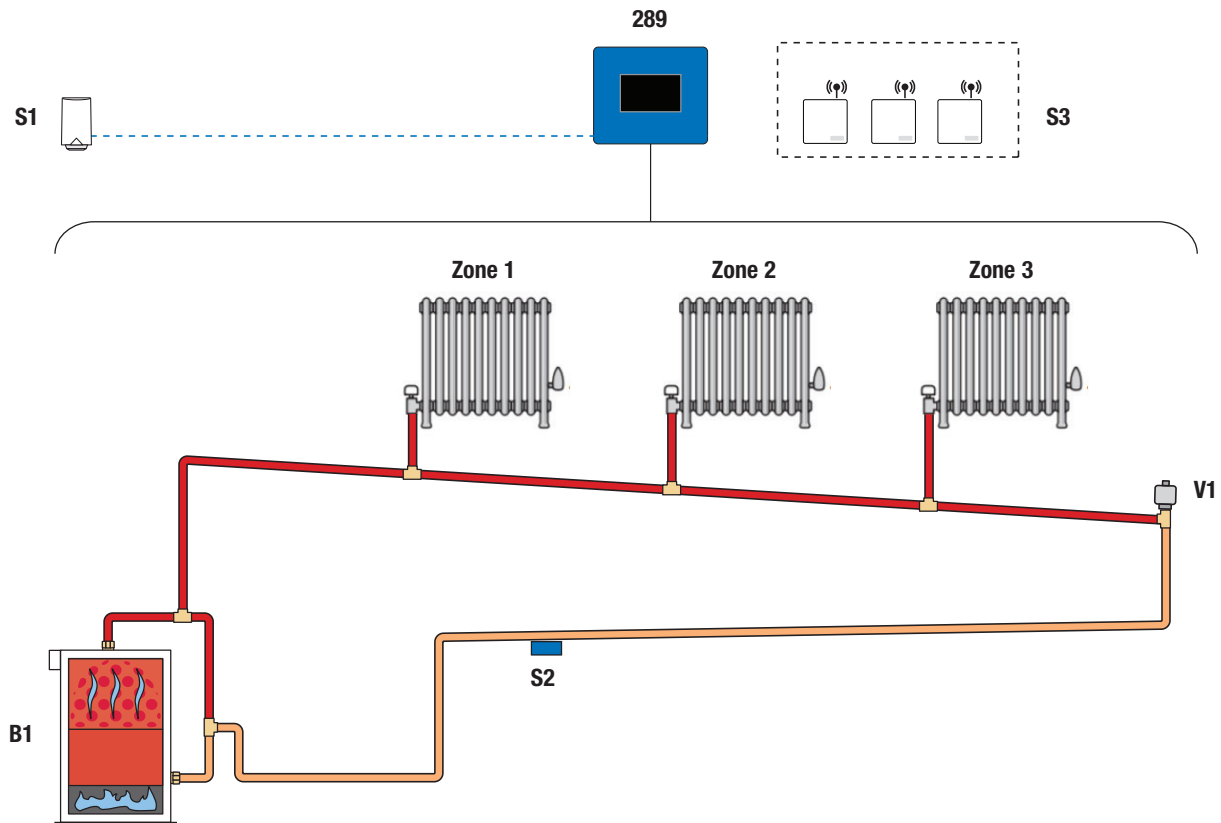
B1 = Steam Boiler

S1 = Outdoor Sensor 070 or Wireless Mesh Outdoor Sensor 043

S2 = Condensate Return Sensor 071

V1 = Main Steam Vent

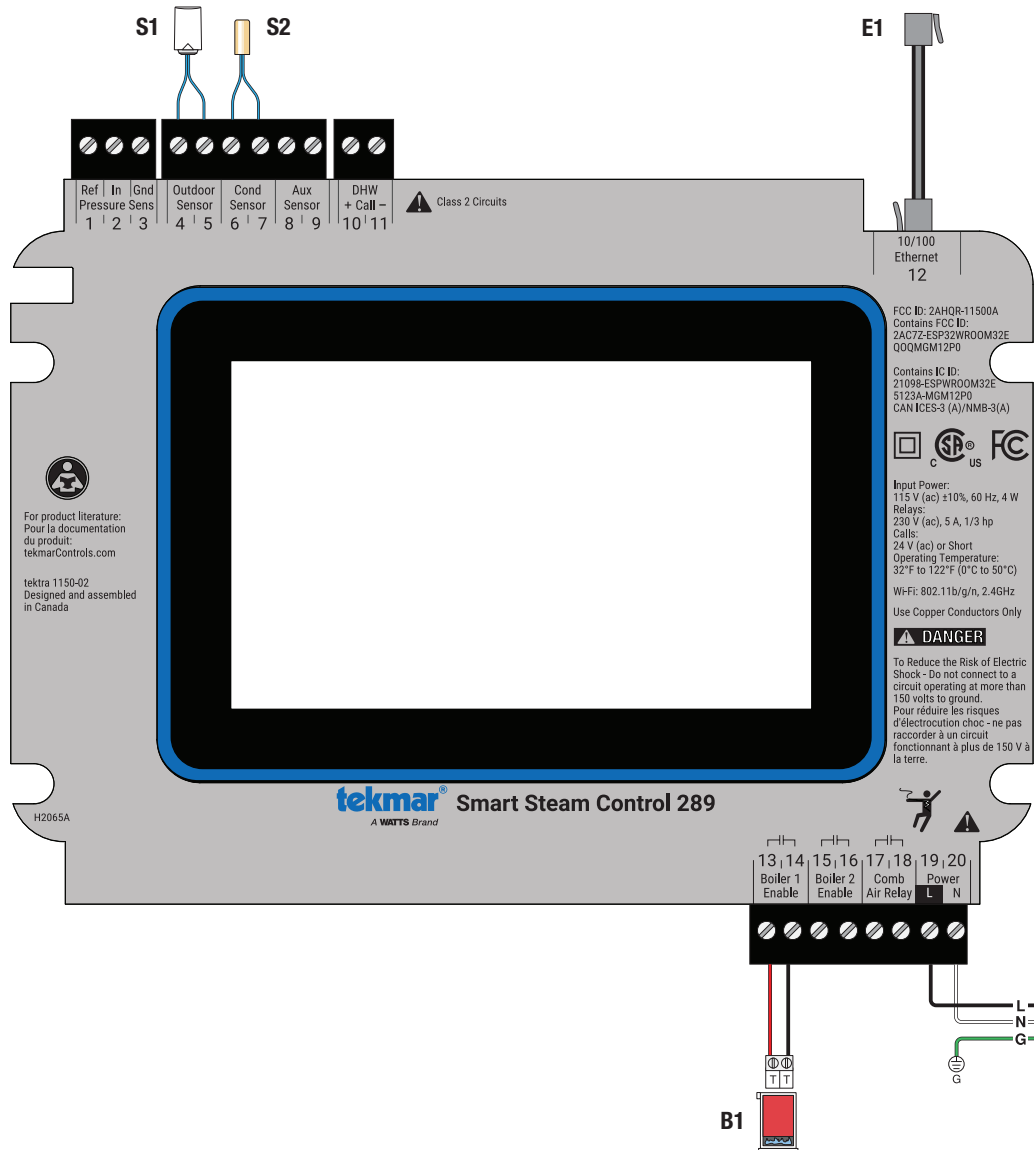
S3 = Wireless Mesh Indoor Sensor 042 (Optional)



Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

Legend

- B1 = Steam Boiler
- E1 = Ethernet (Optional)
- S1 = Outdoor Sensor 070
- S2 = Condensate Return Sensor 071



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Two-Pipe Steam System, One Boiler

Application A289-2

Mechanical

Description

A two-pipe steam heating system with one boiler is operated to provide central heating using outdoor reset. The combustion air damper is opened before the boiler is fired.

Features:

- Central heating using outdoor reset reduces energy consumption up to 20% compared to operating with a continuous call for heat.
- Indoor feedback with optional wireless mesh indoor sensors to match heating to actual conditions of the building.
- Programmable schedule to reduce energy consumption during unoccupied time periods.
- Automatic warm weather shut down based upon outdoor air temperature.
- Remote access from the Internet through the Nexa web or mobile applications.

Essential System Settings:

Condensate Sensor = On

Pressure Sensor = Off

Auxiliary Sensor = Off

Outdoor Sensor = Control

Legend

B1 = Steam Boiler

D1 = Combustion Air Damper

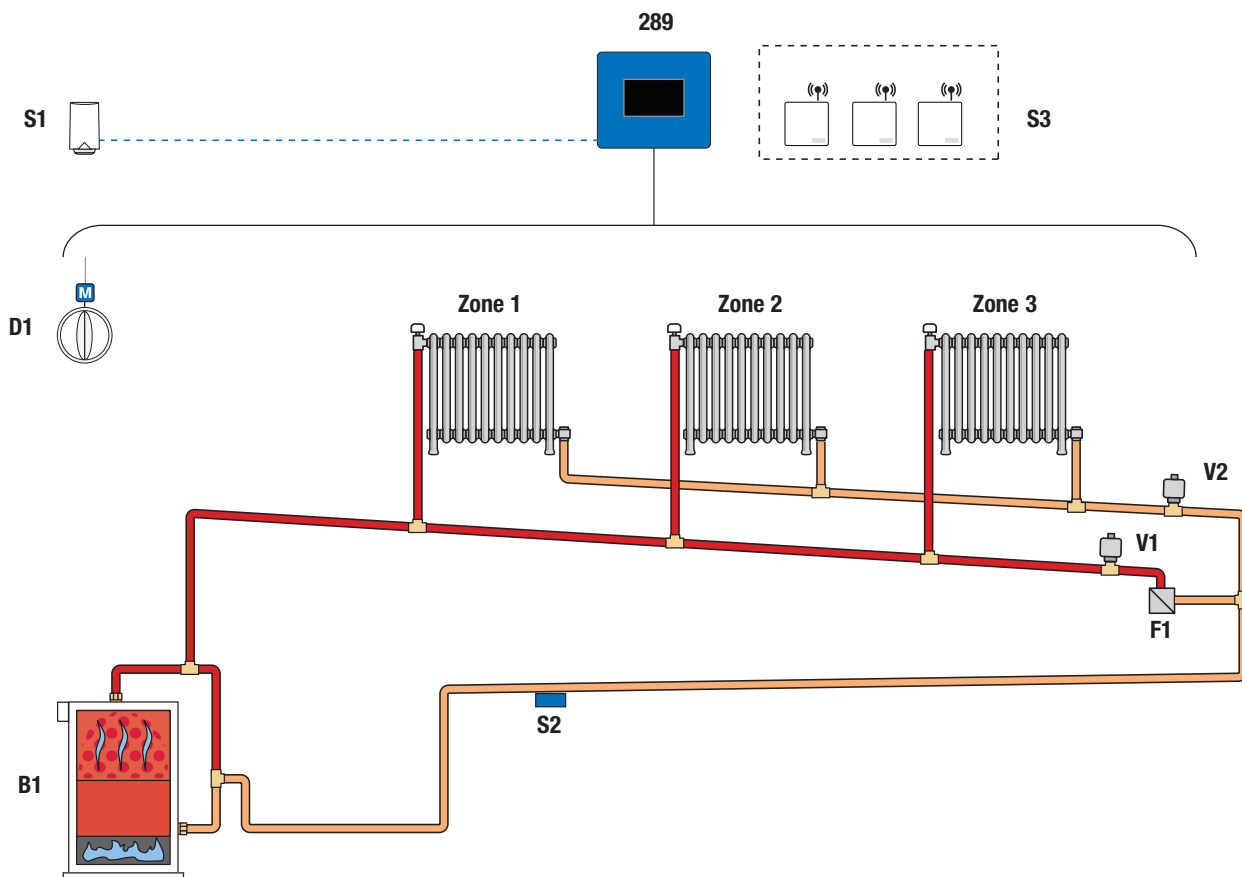
F1 = Float and Thermostatic Trap

S1 = Outdoor Sensor 070 or Wireless
Mesh Outdoor Sensor 043

S2 = Condensate Return Sensor 071

V1, V2 = Main Steam Vent

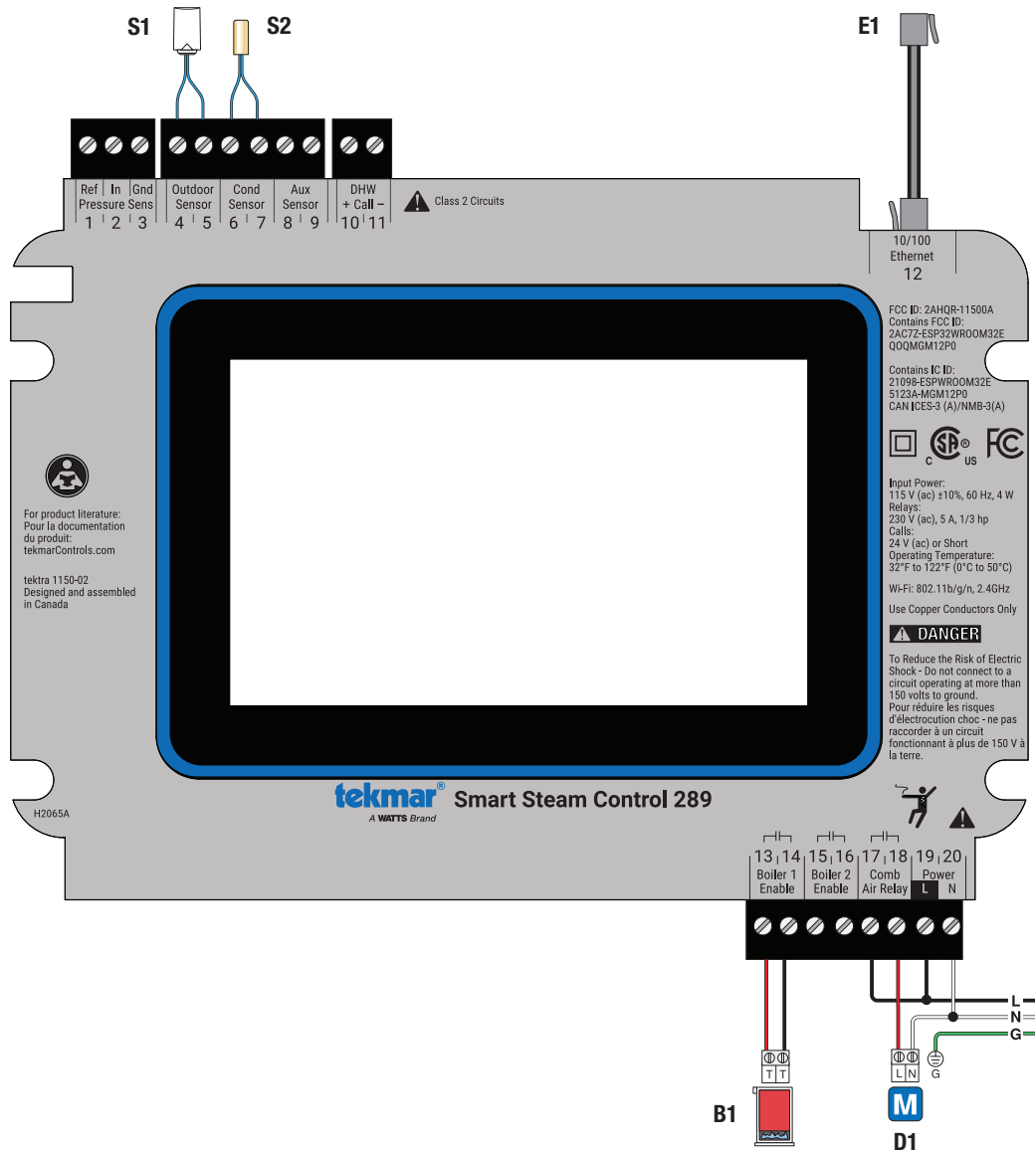
S3 = Wireless Mesh Indoor
Sensor 042 (Optional)



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Legend

- B1 = Steam Boiler
- D1 = Combustion Air Damper
- E1 = Ethernet (Optional)
- S1 = Outdoor Sensor 070
- S2 = Condensate Return Sensor 071



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One-Pipe Steam System, One Boiler with Tankless Coil

Application A289-3

Mechanical

Description

A one-pipe steam heating system with one boiler is operated to provide central heating using outdoor reset. The control operates the boiler to heat a domestic hot water tankless coil and opens the combustion air damper before the boiler fires.

Features:

- Central heating using outdoor reset reduces energy consumption up to 20% compared to operating with a continuous call for heat.
- Programmable schedule to reduce energy consumption during unoccupied time periods.
- Automatic warm weather shut down based upon outdoor air temperature.
- Domestic hot water tankless coil heated on a programmable schedule.
- Remote access from the Internet through the Nexa web or mobile applications.

Essential System Settings:

Condensate Sensor = On

Auxiliary Sensor = Indoor

Pressure Sensor = Off

Outdoor Sensor = Control

Legend

A1 = Domestic Hot Water Aquastat

S2 = Condensate Return Sensor 071

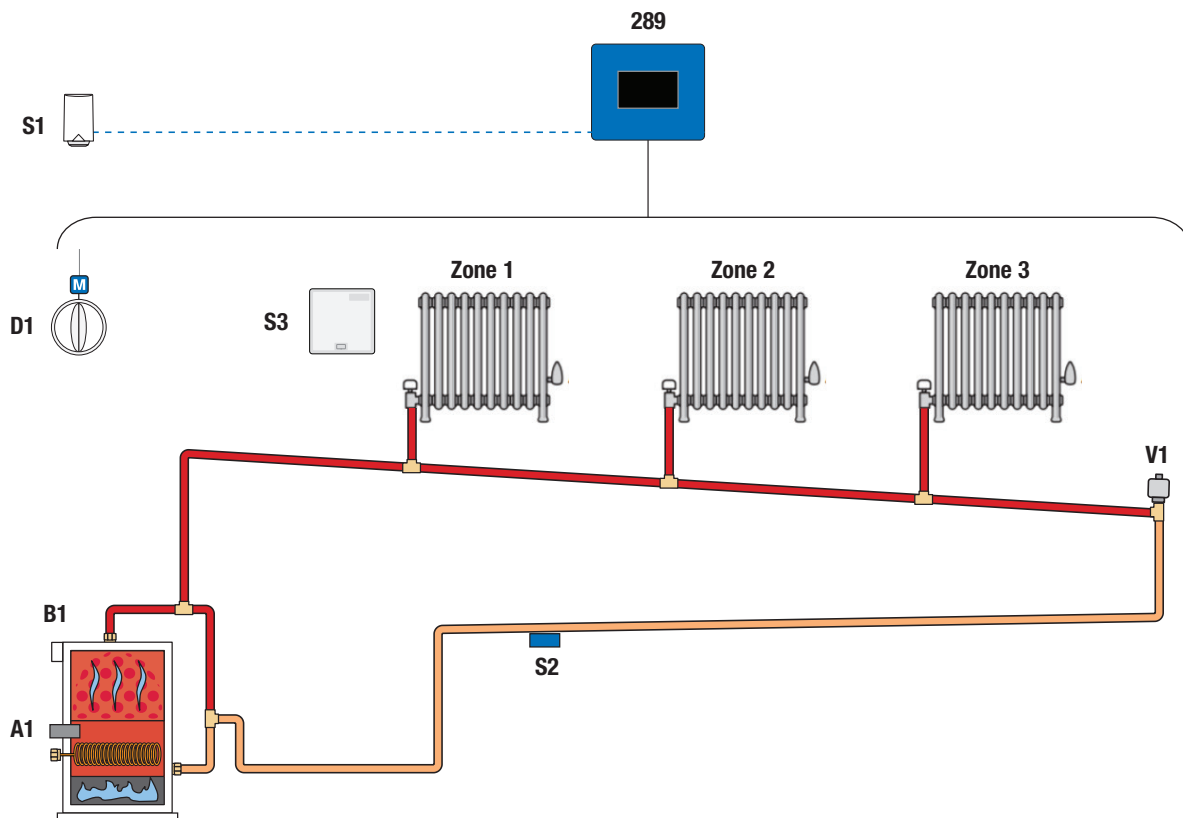
B1 = Steam Boiler

S3 = Indoor Sensor 076, 077 or 084

D1 = Combustion Air Damper

V1 = Main Steam Vent

S1 = Outdoor Sensor 070



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Legend

A1 = Domestic Hot Water Aquastat

B1 = Steam Boiler

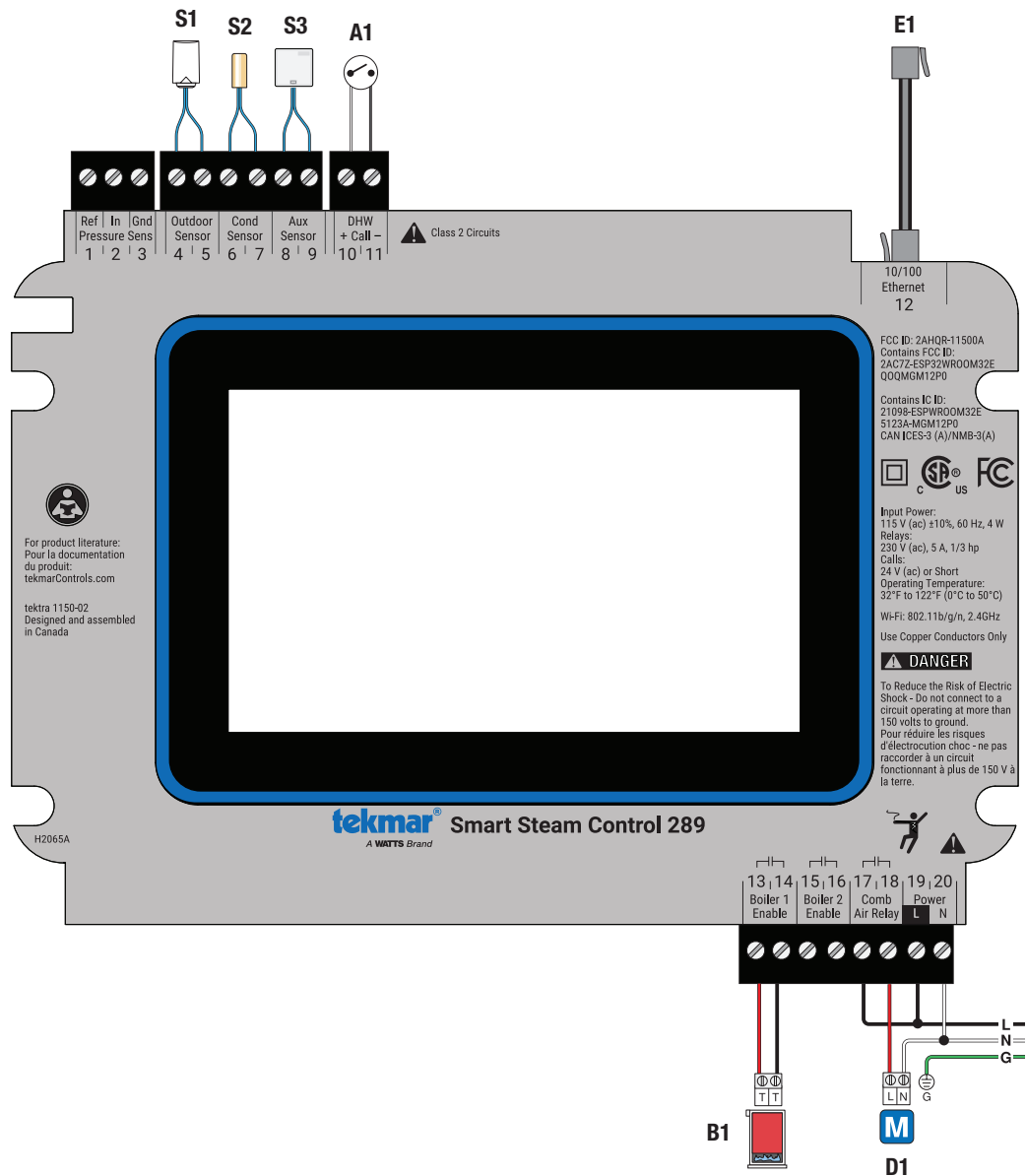
D1 = Combustion Air Damper

E1 = Ethernet (Optional)

S1 = Outdoor Sensor 070

S2 = Condensate Return Sensor 071

S3 = Indoor Sensor 076, 077 or 084



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One-Pipe Steam System, Two Boilers

Application A289-4

Mechanical

Description

A one-pipe steam heating system with two boilers is operated to provide central heating using outdoor reset. The control stages the two boilers based upon the steam pressure setpoint and differential, provides boiler run time rotation to balance the running hours and opens the combustion air damper before the lead boiler fires.

Features:

- Central heating using outdoor reset reduces energy consumption up to 20% compared to operating with a continuous call for heat.
- Programmable schedule to reduce energy consumption during unoccupied time periods.
- Automatic warm weather shut down based upon outdoor air temperature.
- Equal runtime rotation on the boilers
- Remote access from the Internet through the Nexa web or mobile applications.

Essential System Settings:

Condensate Sensor = On

Auxiliary Sensor = Off

Pressure Sensor = On

Outdoor Sensor = Control

Legend

B1, B2 = Steam Boilers

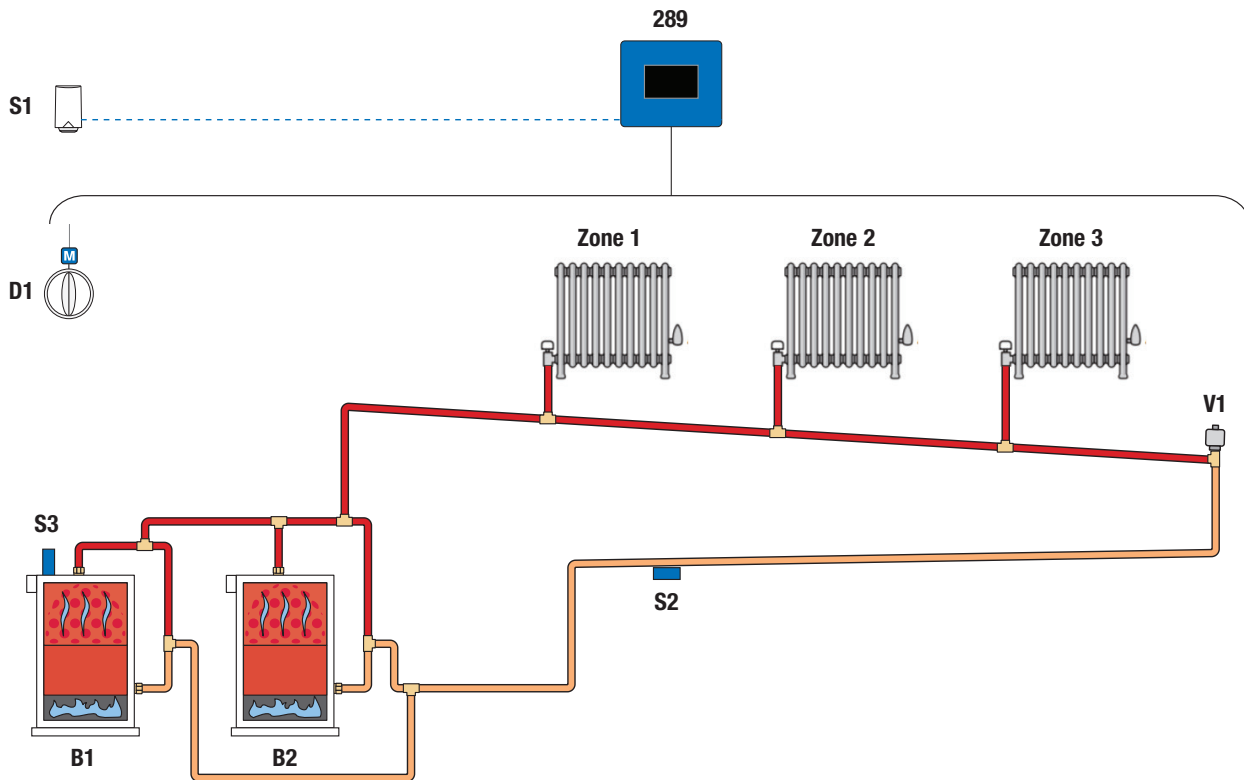
D1 = Combustion Air Damper

S1 = Outdoor Sensor 070

S2 = Condensate Return Sensor 071

S3 = Pressure Sensor 089

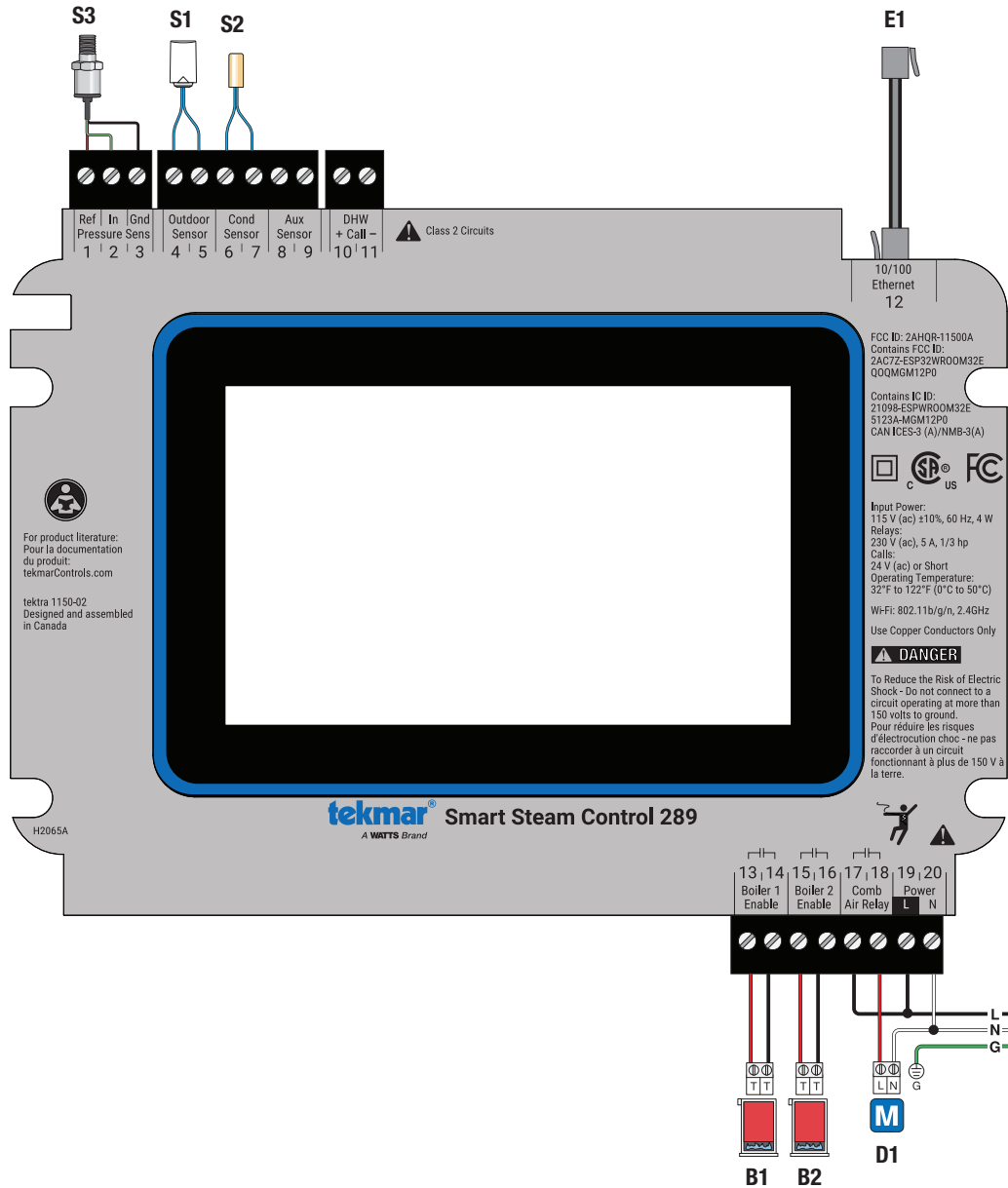
V1 = Main Steam Vent



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Legend

- B1, B2 = Steam Boilers
- D1 = Combustion Air Damper
- E1 = Ethernet (Optional)
- P1 = Pressure Sensor 089
- S1 = Outdoor Sensor 070
- S2 = Condensate Return Sensor 071
- S3 = Pressure Sensor 089



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Specifications

The following are the specifications for the Smart Steam Control 289

- The control shall be able to operate up to two steam boilers or on-off steam valves.
- The control shall use an outdoor reset algorithm to determine the steam heating system on time during a heating cycle.
- The control shall have the ability to measure and display the current outdoor and condensate return temperatures.
- The control shall have the option to measure and display either the indoor air temperature or the boiler flue temperature.
- The control shall have the option to measure the steam pressure.
- The control shall continually monitor the temperature and pressure sensors and provide an error message upon a control or sensor failure.
- The control shall stage the lag boiler through the steam pressure setpoint and differential.
- The control shall turn on the steam heating system once the measured outdoor temperature exceeds the control's adjustable warm weather shut down setting.
- The control shall have an adjustable steam established setting that is based upon the condensate return temperature.
- The control shall have an adjustable cool down differential setting that is based upon the condensate return temperature.
- The control shall record and display the running hours of the steam boilers.
- The control shall record and display the number of cycles of the steam boilers.
- The control shall have a time clock that includes a four-hour backup in the event of a power loss.
- The control shall have a seven-day, four-event programmable schedule stored in non-volatile memory.
- The control shall have temperature settings that follow a programmable schedule.
- The control shall have an early start feature to quickly recover when switching from the setback temperature to the regular operating temperature.
- The control shall have an input to turn on a steam boiler to heat a domestic hot water tankless coil.
- The control shall have an output to open a combustion air damper.
- The control shall have manual override options to test boiler and combustion air damper operation, suspend boiler operation, and operate the system with a maximum heat output.
- The control shall have an optional passcode to prevent unauthorized access to the home screen and settings.
- The control shall have the option to connect to the Internet using Ethernet or Wi-Fi.
- The control shall have the ability to automatically set the time and date from the Internet.
- The control shall have the ability to retrieve the local outdoor air temperature through the Internet.
- The control shall have the ability to be remotely monitored and adjust settings through a web and/or mobile application.
- The control shall have the ability to send notifications through email, text, or mobile app push notification in the event of a sensor fault or alert condition.

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A **WATTS** Brand

A-T-289 2612

All specifications are subject to change without notice

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