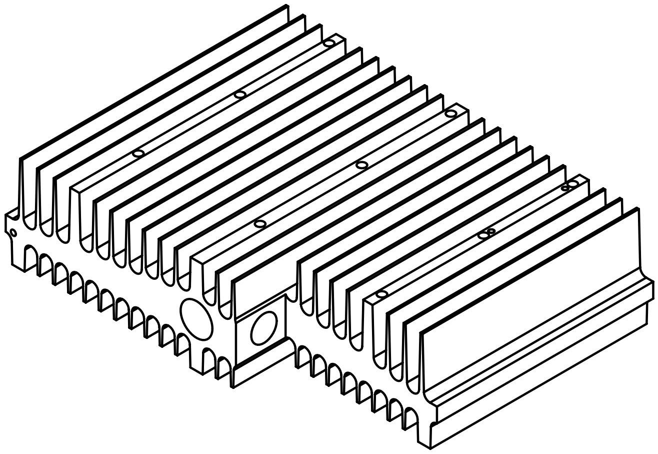
AMETEK®
PROCESS INSTRUMENTS

ESSENTIAL HEALTH and SAFETY

99XX Heater
ATEX-IECEx Zone 1



PN 10238-15-5_English,Rev B

To obtain a PDF of this manual, visit our Products page at www.ametekpi.com.

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Overview

About This Document

This document describes the components that make up the different configurations of the 99XX Heater Assembly, how and where the Heater components should be installed, and all relevant safety information required to ensure the safe operation of the 99XX Heater, when used in Zone 1 hazardous locations.

Important Safety Information

This section describes important safety information to avoid personal injury and damage to the equipment while installing, operating, or maintaining the equipment. All safety regulations, standards, and procedures at the installation site must be followed.

All personnel involved with the installation, start-up, operation, or service of the 99XX Heater must review and follow all Warnings, Cautions, and Notes in this document. This information contains important safety and general information about the Heater.

WARNINGS, CAUTIONS, and NOTES contained in this manual emphasize critical instructions as follows:

WARNING

An operating procedure which, if not strictly observed, may result in personal injury or environmental contamination.

CAUTION

An operating procedure which, if not strictly observed, may result in damage to the equipment.

NOTE

Important information that should not be overlooked.

Warnings, Cautions, Notes

Before working on the Heater, read and understand the following Warnings, Cautions, and Notes regarding safety and other required information.

Additional Warnings, Cautions, and Notes included in individual procedures in this manual indicate special conditions to consider during installation, before working on the Heater.

WARNING

Before installing, operating, and performing any service on the 99XX Heater, read and follow all safety information in this document. Misuse of this product could result in personal injury and/or damage to the equipment or its installation site. All regulatory agency and personnel safety procedures for your jurisdiction must be followed.

WARNING

All electrical connections, adjustments, or servicing of the Heater must be performed only by properly trained and qualified personnel.

All electrical connections, materials, and methods (plus all safety standards, policies and procedures) must be made in compliance with local wiring regulations and electrical codes for the hazardous area, as specified by the Owner Company, local electrical-inspection authority, and National/EU regulations.

Follow appropriate regulatory and/or company procedures while working on the Heater electronics.

WARNING

Verify ground continuity of all equipment before applying power. For electrical shock protection, the Heater must be operated from a grounded power source that has a securely connected protective ground contact.

CAUTION

Enclosure joints are not repairable. Do not modify the joints. If they are damaged, the joints that are part of type "d" enclosure will need to be replaced. The unit meets type "d" protection if the specified, certified components are used as intended with no modifications.

NOTE

The 99XX Heater must be protected by a Safety Instrumented System (SIS) that performs the Safety Instrumented Function (SIF) of disconnecting the heater power upon detecting a fault.

Grounding

WARNING

Instrument grounding is mandatory. Performance specifications and safety protection are void if instrument is operated from an improperly grounded power source.

Verify ground continuity of all equipment before applying power.

Warning Labels

These symbols may appear on the instrument to alert you of existing conditions.

Protective Conductor Terminal
(BORNIER DE L'ECRAN DE PROTECTION)
Schutzerde

Caution – Risk of electric shock
(ATTENTION – RISQUE DE DÉCHARGE ÉLECTRIQUE)
Achtung – Hochspannung Lebensgefahr

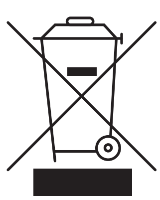
Caution – Refer to accompanying documents
(ATTENTION – SE RÉFERER AUX DOCUMENTS JOINTS)
Achtung – Beachten Sie beiliegende Dokumente

CAUTION – Hot Surface
(ATTENTION – SURFACE CHAUDE)
Achtung – Heiße Oberfläche

Environmental Information (WEEE)

This AMETEK product contains materials that can be reclaimed and recycled. In some cases the product may contain materials known to be hazardous to the environment or human health. In order to prevent the release of harmful substances into the environment and to conserve our natural resources, AMETEK recommends that you arrange to recycle this product when it reached its "end of life."

Waste Electrical and Electronic Equipment (WEEE) should never be disposed of in a municipal waste system (residential trash). The Wheelie Bin marking on this product is a reminder to dispose of the product properly after it has completed its useful life and been removed from service. Metals, plastics, and other components are recyclable and you can do your part by doing one of the following steps:



- When the equipment is ready to be disposed of, take it to your local or regional waste collection administration for recycling.
- If you need further assistance in recycling your AMETEK product, contact us through our Customer Support page at www.ametekpi.com/customersupport/aftermarket.

Classified, Hazardous Area Protection Components and Functions

The 99XX Heater is designed for safe use in Zone 1 hazardous locations. The 99XX Heater and its Temperature Control Module form a Safety Instrumented System with a Safety Integrity Level of 2 (SIL 2), and Hardware Fault Tolerance of '0'. This is in accordance with EN 50495:2010 for equipment in Zone 1 hazardous locations.

The 99XX Heater must be installed and operated in accordance with this instruction manual.

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ABOUT THE 99XX HEATER

The 99XX Heater consists of a flameproof assembly (Figures 1.1, 1.2, and 1.3) and a Temperature Control Module (Figure 2). While the 99XX Heater can be mounted in a Zone 1 hazardous locations, the Temperature Control Module must be mounted in a safe area (per Special Conditions listed in the 99XX Heater Specifications table in this document).

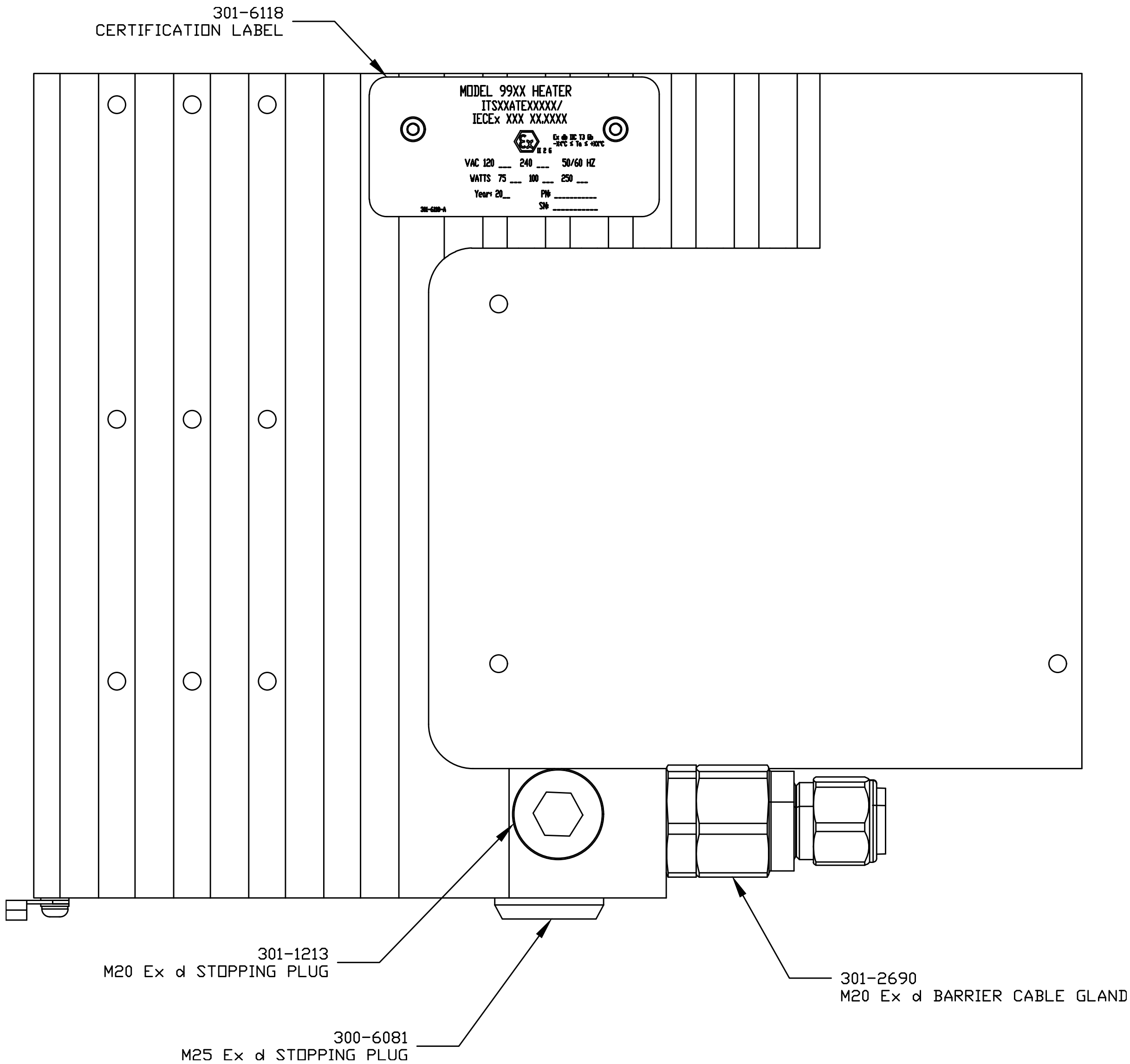

Figure 1.1.
99XX Heater (ST-A), maximum 60 °C (140 °F), with potted cable gland, Heater Plate Part No. 301-5841.

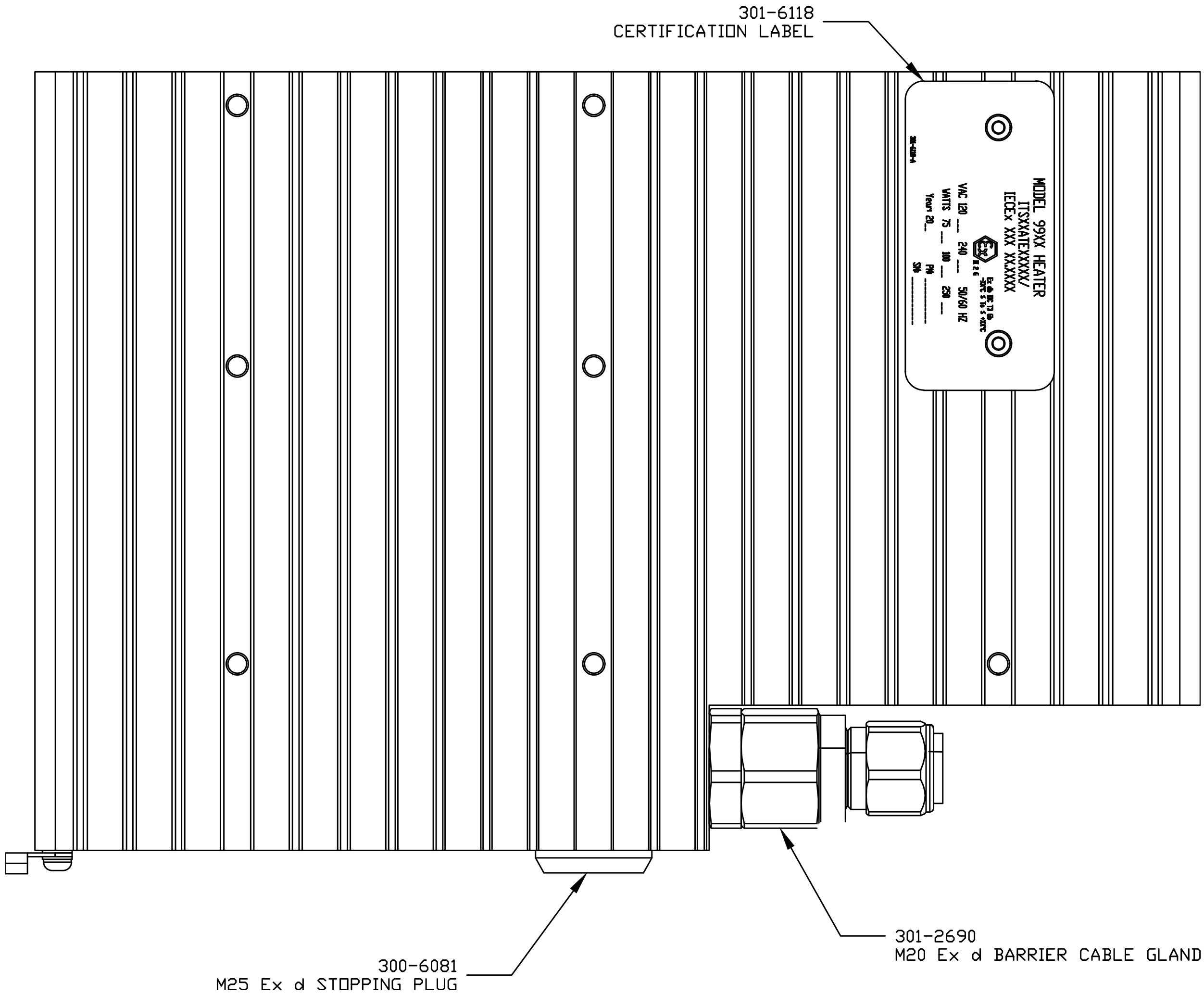

Figure 1.2.
99XX Heater (ST-B), maximum 60 °C (140 °F), with potted cable gland, Heater Plate Part No. 301-5842.

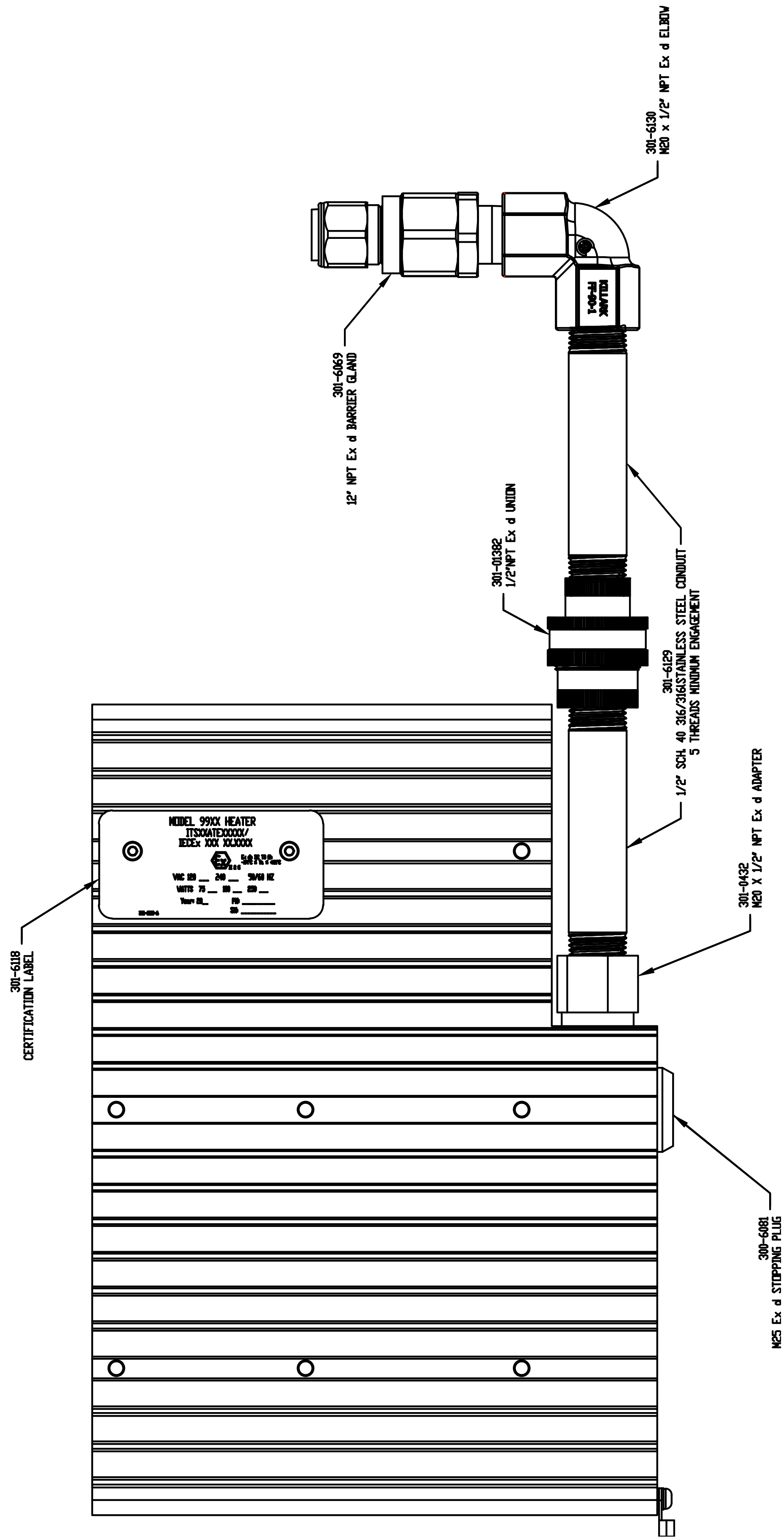

Figure 1.3.
99XX Heater (HT-A), maximum 190 °C (374 °F), with conduit and potted cable gland, Heater Plate Part No. 301-5842.

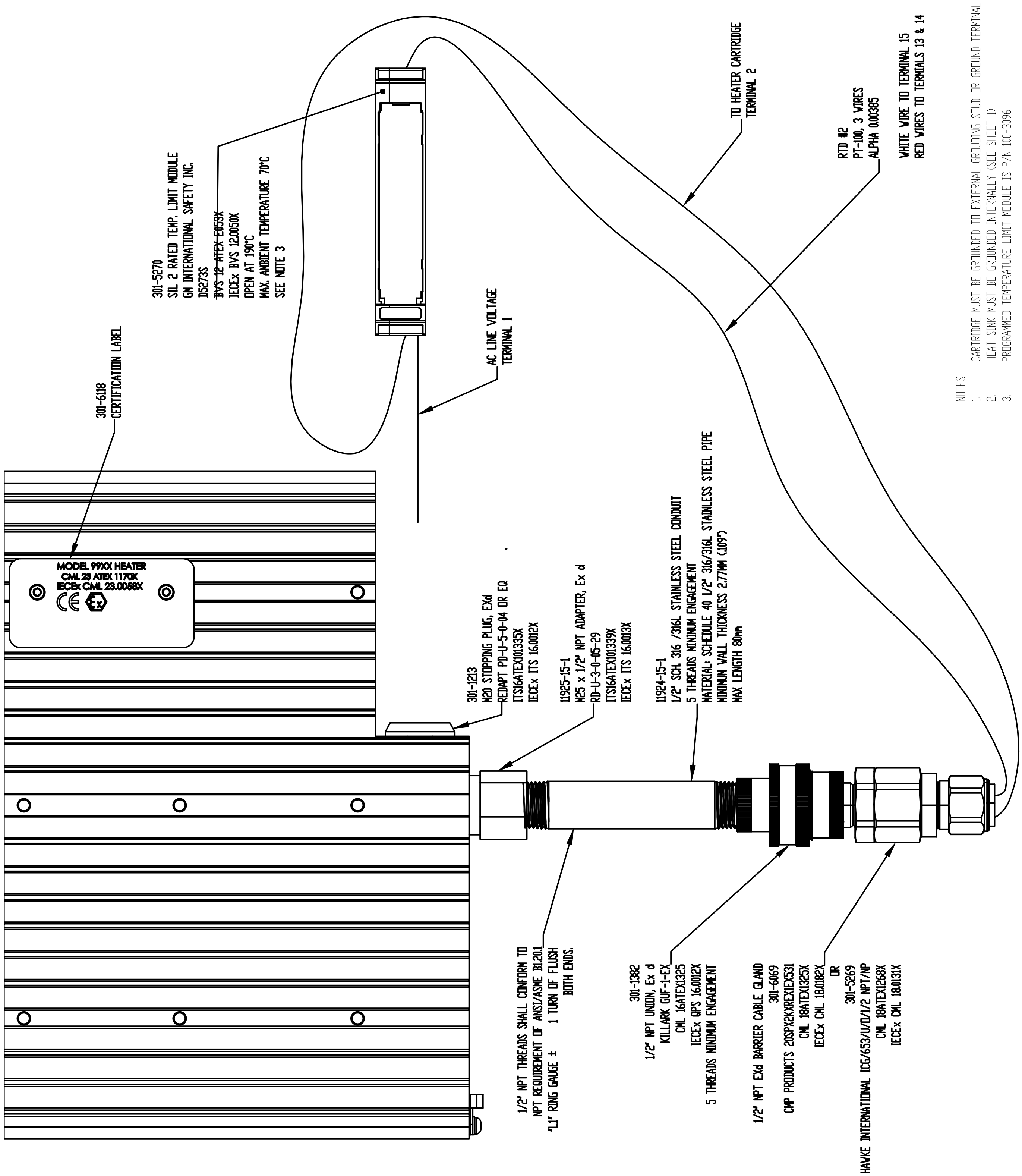

Figure 1.4.
99XX Heater (HT-B), maximum 190 °C (374 °F), with conduit and potted cable gland, Heater Plate Part No. 301-5842.

The 99XX Heater assembly is available in three (3) configurations, and each Heater configuration has three (3) 100 Ohm RTDs and one (1) Heater Cartridge embedded inside its heater plate. The different configurations include:

- A maximum 60 °C (140 °F) version (Figure 1.1) – 99XX ST-A, with a 75 W Heater Cartridge. Available in a 120 VAC version (Part No. 301-5915) and a 240 VAC version (Part No. 301-5919).

- A maximum 60 °C (140 °F) version (Figure 1.2) – 99XX ST-B, with a 100 W Heater Cartridge. Available in a 120 VAC version (Part No. 301-6137) and a 240 VAC version (Part No. 301-6136).

- A maximum 190 °C (374 °F) version (Figure 1.3) – 99XX HT-A, with a 250 W Heater Cartridge. Available in a 120 VAC version (Part No. 301-5920) and a 240 VAC version (Part No. 301-5921).

- A maximum 190 °C (374 °F) version (Figure 1.4) – 99XX HT-B, with a 250 W Heater Cartridge. Available in a 120 VAC version (Part No. 301-5920) and a 240 VAC version (Part No. 301-5921).

One of the embedded RTDs is used by the Temperature Control Module to disconnect the AC power to the Heater Cartridge when the temperature measured by the RTD exceeds the set point programmed into the module.

The 99XX Heater has a T6...T3 rating (maximum surface temperature of 85 °C, 100 °C, 135 °C, 200 °C, respectively) that is limited by the Temperature Control Module, which is pre-programmed to disconnect power to the Heater Cartridge when the temperature exceeds 190 °C (374 °F) for the High Temperature version, and 60 °C (140 °F) for the Standard Temperature versions.

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WARNING

The Heater Cartridge must be grounded to an external grounding stud or ground terminal. The Heat Sink must be grounded internally.

Mounting Locations of the Heater and Temperature Control Module

NOTE

A pre-programmed Temperature Control Module is an integral component of the 99XX Heater. Use only the specific pre-programmed module corresponding to the particular 99XX Heater configuration.

The 99XX Temperature Control Module must be mounted in a safe area (per Special Conditions listed in the 99XX Heater Specifications table in this document). See Figure 2 for an example of a typical installation, and see Figure 3 for Heater Cartridge and RTD to Temperature Control Module wiring terminations.

NOTE

The 99XX Heater is intended for use in AMETEK analyzers. Each analyzer will come with a wiring diagram illustrating all electrical connections. Figure 3 shows the wiring connections needed for the Temperature Control Module to function.

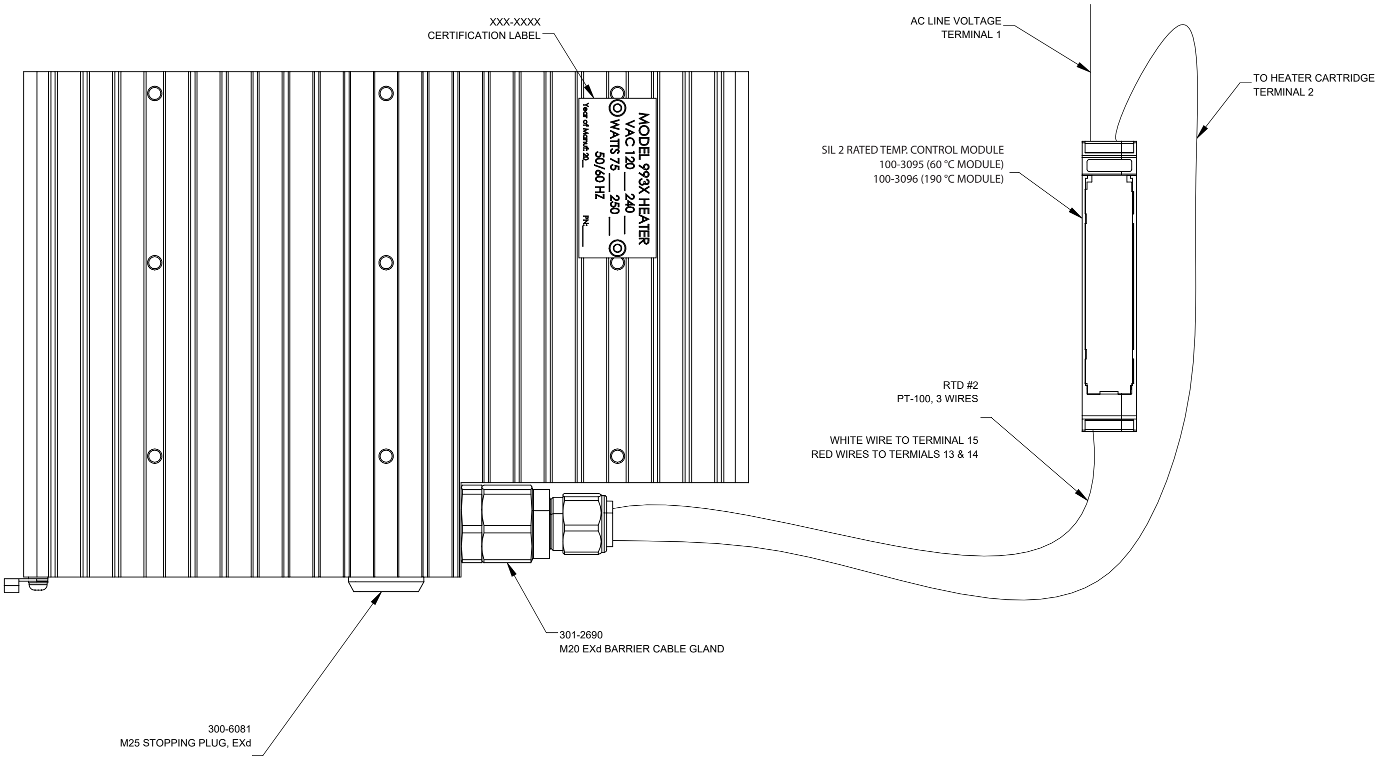

Figure 2.
99XX Heater-to-Temperature Control Module mounting locations and general wiring terminations diagram, Heater Plate Part No. 301-5842.

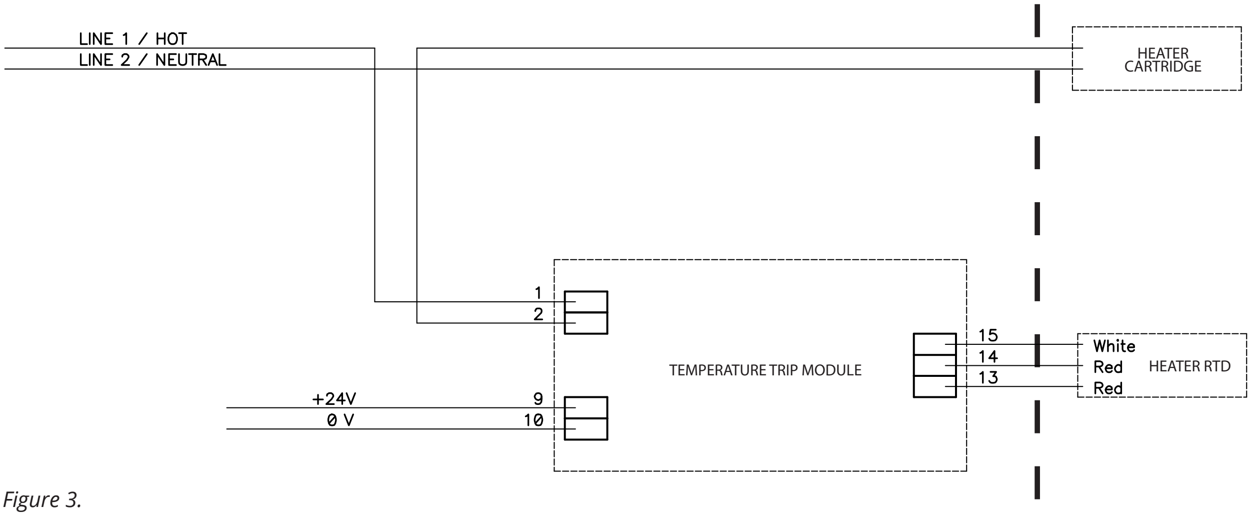

Figure 3.
99XX Heater/Temperature Control Module wiring terminations.

- The Heater Cartridge AC Power return wire must be connected to Line 2.
- The Heater Cartridge ground wire must be securely connected to either a grounding stud or grounding terminal block.

NOTE

The other two (2) RTDs from the Heater Plate are used by the 99XX Analyzer for temperature control purposes. Refer to the analyzer wiring diagram for the termination locations where of these RTDs.

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99XX Heater Specifications

Specification	Description
Power Consumption	Heater Cartridge: 250 W maximum (AC) – 99XX HT-A 250 W maximum (AC) – 99XX HT-B 75 W maximum (AC) – 99XX ST-A 100 W maximum (AC) – 99XX ST-B Temperature Control Module: 1.5 W (DC)
Electrical Requirements	Heater Cartridge: 120 VAC ±10 %, 47–63 Hz 240 VAC ±10 %, 47–63 Hz Temperature Control Module: 18–30 VDC
Environmental	Ambient Temperature Temperature Control Module: -40 °C to +70 °C (-40 °F to +158 °F) Tamb, Heater, versions 99XX- ST-A, 99XX- ST-B, and 99XX- HT-A: -20 °C to +80 °C (-4 °F to +176 °F)
Physical Dimensions	**99XX ST-A** / **99XX ST-B** Width: 300 mm (11.81") / 300 mm (11.81") Height: 215 mm (14.57") / 240 mm (9.45") Depth: 75 mm (2.95") / 60 mm (2.36") Weight: 5.58 kg (12.3 lb) / 4.4 kg (9.7 lb) **99XX HT-A** / **99XX HT-B** Width: 470 mm (18.5") / 300 mm (11.81") Height: 215 mm (14.57") / 440.2 mm (17.33") Depth: 75 mm (2.95") / 75 mm (2.95") Weight: 5.9 kg (13.0 lb) / 5.77 kg (12.71 lb) ST-A/ST-B (Standard Temperature Heater, Versions A & B); HT-A/HT-B (High Temperature Heater, Versions A & B)

Specification	Description
Special Conditions	1. **99XX HT-A/HT-B Heater only:** Cable gland at the end of the stainless steel pipe shall be installed in an ambient of -20 °C to +80 °C (-4 °F to +176 °F). 2. **SIL 2 Temperature Control Module:** End product must ensure appropriate ATEX and IECEX Zone 1 protection method. 3. **End product protection:** IPX4 minimum. 4. **Tx Temperature Classification:** To maintain a Tx temperature classification, the heater must be controlled by a SIL-rated temperature device set to activate at xx °C as follows: Tx xx °C T6 75 T5 90 T4 125 T3 190

99XX Heater Approvals and Certifications

EU	ATEX Directive 2014/34/EU RoHS Directive 2011/65/EU Low Voltage Directive 2014/35/EU ATEX Certificate No.:	 CML 23 ATEX 1170X Ex II 2 G Ex db IIC T6...T3 Gb, -20 °C ≤ +80 °C
IECEx	IECEx Certificate No.:	IECEx CML 23.0058X Ex db IIC T6...T3 Gb, -20 °C ≤ +80 °C
Safety Integrity Level (SIL)	Temperature Control Module:	SIL 2 per IEC 61511 SIS SIL 1 per EN 50495:2010/ IEC 61508:2010

99XX Heater Marking

A 99XX Heater with ATEX or IECEx certification is marked with the label shown below.

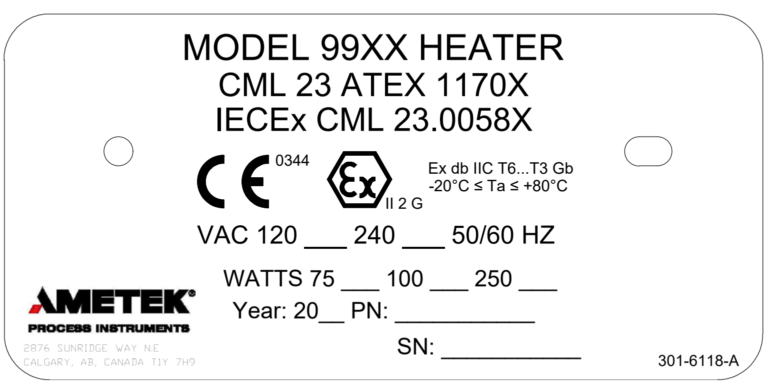

Figure 4.
99XX Heater certification label.

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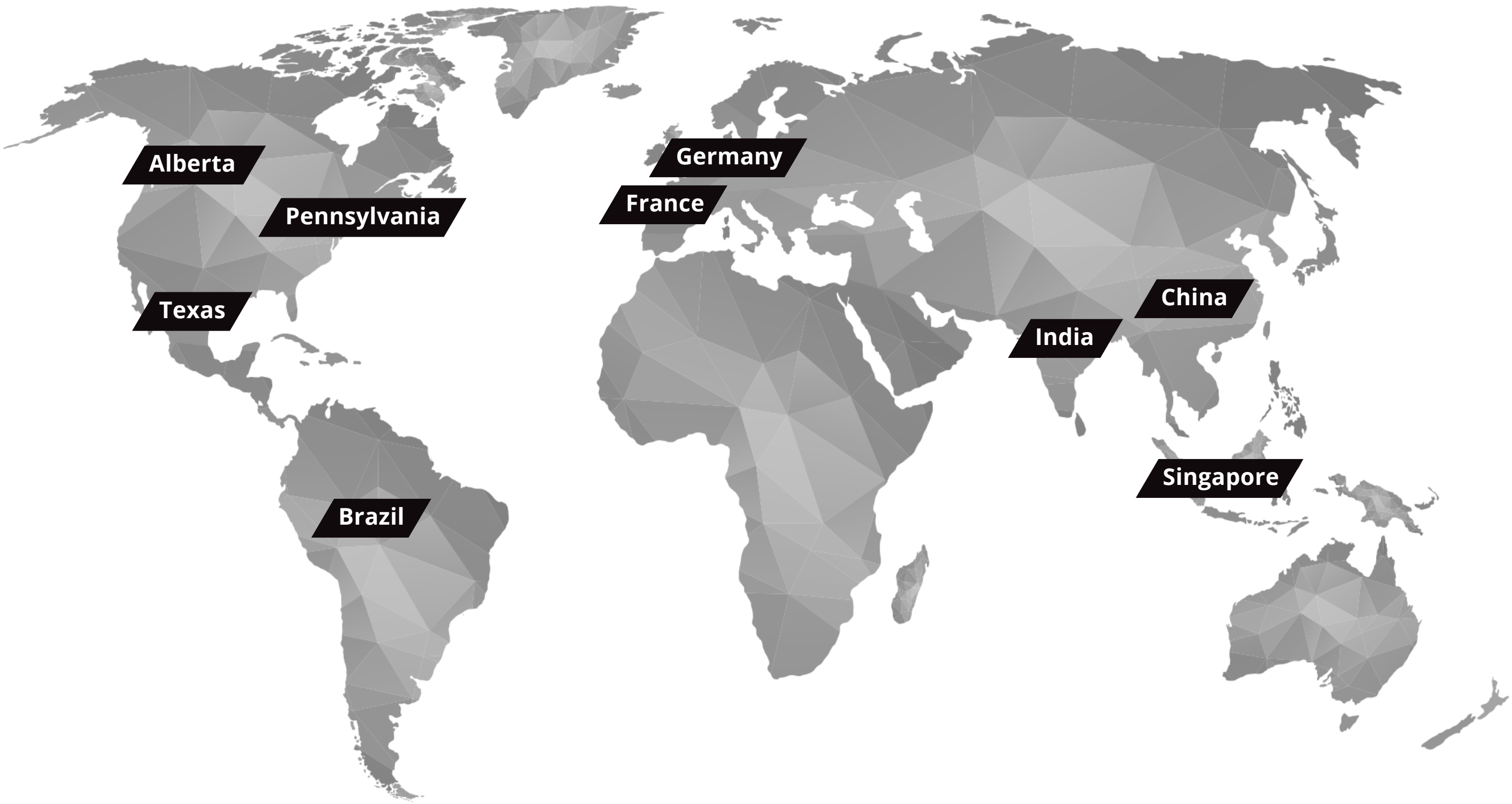

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