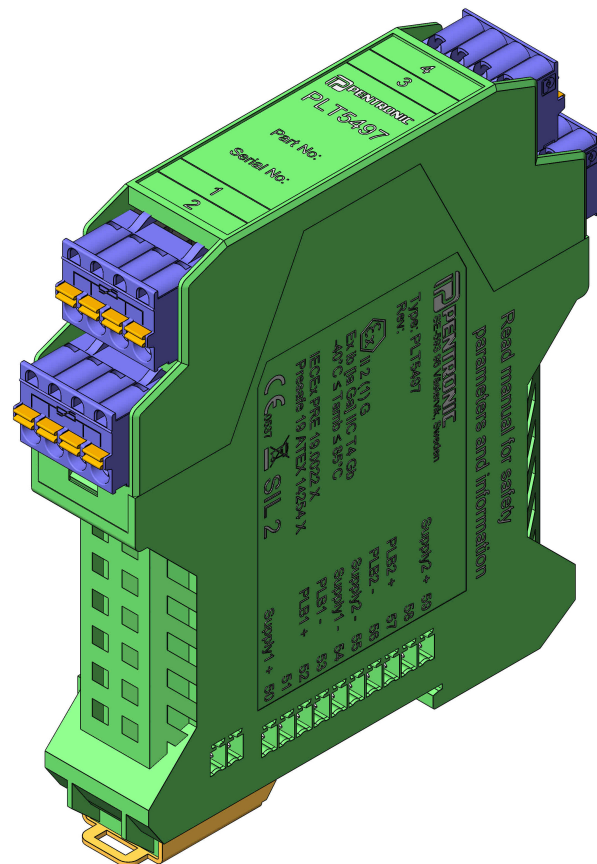


Ex Safety instructions

PLB5000 Temperature transmitter

PLT5497



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1 | General information

1.1 Technical and commercial support

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1.2 About Pentronic AB

Pentronic is one of Europe's largest manufacturers of industrial temperature sensors. In Scandinavia Pentronic is the leading supplier of equipment for temperature measurement to industry, research and education. Pentronic manufactures temperature sensors in its own facility, primarily Pt100 and thermocouples.

Pentronic collaborates with world leading manufacturers of calibration equipment, measurement and control instrumentation, optical temperature measurement and measurement equipment for moisture, thickness and flow.

1.3 Document history

See table 1.1 for correlation between product revision of the PLT5497 transmitter and the revision of this document. To locate the product revision of the transmitter see section 4.

Table 1.1: Document history

Document number	Document revision	Release date	Revision notes	Product revision
7-5-0-1-1/626	1.0 (58609)	2020-11-20	First release	1.0.X
7-5-0-1-1/626	2 (79796)	2026-08-14	Revised for certificate issue 1	1.0.X

2 | Introduction

2.1 Scope and purpose

The Ex safety instruction manual shall be read and used by qualified personnel during installation and commissioning of the PLT5497 transmitter. These instructions are provided as an addendum to the standard product manual.

The safety instructions in this document apply to PLT5497 transmitter with IECEx approval **IECEx PRE 19.0022X** and ATEX approval **Presafe 19 ATEX 14254X**.

2.2 Documentation, standards and directives

The safety instructions shall be read in conjunction with the product documentation stated in table 2.1.

Table 2.1: Product documentation

Document
<i>PLT5497 SIL Safety manual</i>
<i>PLZ5291 Ex Safety instructions</i>
<i>PLG5465 Ex Safety instructions</i>
<i>PCX5451 Data sheet</i>

Compliance with the essential health and safety requirements is ensured by conformity to the directives and standards listed in table 2.2 and table 2.3.

Table 2.2: Associated directives

Directive	Title
2014/30/EU	DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electro-magnetic compatibility
2014/34/EU	DIRECTIVE 2014/34/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres
2011/65/EU	RoHS DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Table 2.3: Associated standards

Standard	Title
IEC 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 1: General requirements
IEC 61508-2:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems
IEC 61508-3:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 3: Software requirements
EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use – EMC requirements– Part 1: General requirements
IEC 61326-3-1:2008	Electrical equipment for measurement, control and laboratory use - EMC requirements- Part 3-1: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) - General industrial applications
EN 55011:2009	Industrial, scientific and medical equipment - Radio frequency disturbance characteristics - Limits and methods of measurement with amendment EN 55011:2009/A1:2010
EN IEC 60079-0:2018	Explosive atmospheres – Part 0: Equipment – General requirements
EN 60079-11:2012	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-0:2017 Edition:7.0	Explosive atmospheres – Part 0: Equipment – General requirements
IEC 60079-11:2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

3 | Equipment categorization

The PLT5497 transmitter is an intrinsically safe temperature transmitter intended for industrial applications in potentially explosive atmospheres and certified for use in Zone 1 in accordance with Directive 2014/34/EU and IECEx.

Ex marking:



II 2(1) G

Ex ib [ia Ga] IIC T4 Gb $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}$

In addition to the requirements in this document, the requirements of IEC/EN 60079-14 and IEC/EN 60079-25 installation instructions shall be observed.

3.1 General safety instructions

The following instructions shall be observed to ensure safety:

- Installation and commissioning of this transmitter shall be performed by qualified personnel.
- These operating instructions shall always be available to all persons carrying out installation and operation.
- Before installation ensure that the area group and the temperature class comply with the application area rating.
- Before installation, ensure there is no visible damage to the transmitter.
- Do not operate the transmitter outside the electrical, thermal and mechanical specifications.
- In case of malfunction of the transmitter, the product shall be put out of service immediately. Pentronic AB must be informed when a transmitter is required to be replaced due to failure. Please contact Pentronic AB at quality@pentronic.se and ask for the Product return instructions or visit www.pentronic.se for return form.
- Modifications of the transmitter are not permitted.
- The transmitter is only intended to be used with compatible parts included in the PLB5000 cable-bus-based temperature measurement system.

4 | Product marking

Information regarding identification, Ex marking, connection, sensor type etc is found on the front and side of the transmitter, see figure 4.1.

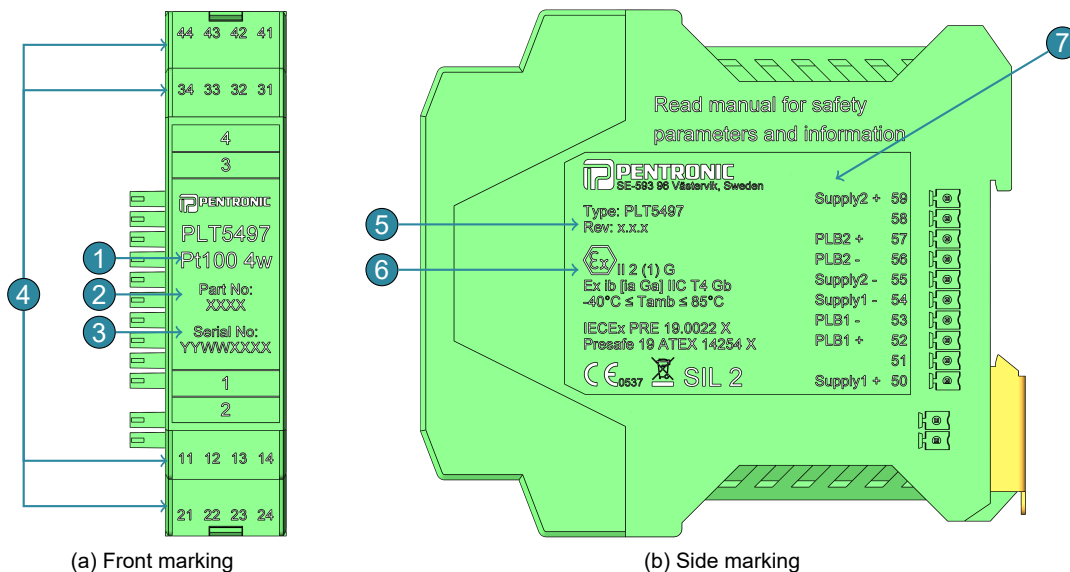


Figure 4.1: Product marking of the PLT5497 transmitter

- ① Supported sensor input e.g TC N, PT100 4-wire etc
- ② Part number
- ③ Serial number (YYWWXXXX)
- ④ Measurement channel, 1 (11...14), 2 (21...24), 3 (31...34) and 4 (41...44)
- ⑤ Product revision of transmitter (unique identification of HW and SW)
- ⑥ Ex-marking (Ex ib [ia Gb] IIC T4 Gb)
- ⑦ Supply and bus connection (50...59)

NOTE! Verify that the revision of this document correlates with the revision on the product (see table 1.1)

5 | Ex safety parameters

All inputs and outputs of the PLT5497 transmitter are intrinsically safe. Any connected equipment shall comply with the Ex safety parameters specified below.

DC/DC Supply bus 1 and 2

U_i :	13.9V
I_i :	1.26A
P_i :	5.3W
C_i :	1 nF
L_i :	<i>negligible</i>

Sensor channel 1 - 4

U_o :	5.88V
I_o :	44.5mA
P_o :	65.4mW
C_o :	18.5 μ F
L_o :	17.9mH
R_i :	132.26 Ω

PLB Bus 1

U_i, U_o :	4.02V
I_i, I_o :	45.1mA
P_i, P_o :	45.3mW
C_i :	15.5 μ F
L_i :	<i>negligible</i>
R_i :	89.3 Ω
C_o :	519.5 μ F
L_o :	17.4mH

PLB Bus 2

U_i, U_o :	4.02V
I_i, I_o :	45.1mA
P_i, P_o :	45.3mW
C_i :	6.65 μ F
L_i :	<i>negligible</i>
R_i :	89.3 Ω
C_o :	528 μ F
L_o :	17.4mH

6 | Installation requirements

In addition to the requirements in this document, the requirements of IEC/EN 60079-14 and IEC/EN 60079-25 installation instructions shall be observed.

6.1 Specific conditions of use

6.1.1 Protective enclosure and controlled environment

The PLT5497 transmitter shall be installed in a controlled environment to achieve pollution degree 2 or better. It shall be installed in an Ex "eb" certified enclosure/cabinet with ingress protection of IP54 or better. The certificate for the enclosure/cabinet shall have an ambient temperature range equal to, or better than $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}$.

When used for non-ex applications, the transmitter shall be installed in an appropriate enclosure, e.g. an instrument cabinet.

6.2 Ambient temperature

The transmitter is certified for temperature class T4 with an ambient temperature between -40°C and $+85^{\circ}\text{C}$. Ensure that the transmitter complies with the expected environmental limits of the application and that ambient temperature of the application is within these limits.

6.3 Supply and databus connection via PLZ5291

In Ex installations the communication and power to the transmitter shall be provided via the PLB5000 isolation barrier PLZ5291. For more information regarding the PLZ5291 consult the *PLZ5291 Ex Safety instructions*.

6.4 Connection of Functional Earth

The transmitter is equipped with a functional earth (FE). The FE connection shall be used only as required for functional and EMC purposes and is not an Ex safety requirement. The Functional Earth is connected via the DIN rail mount, ensure that the DIN rail is connected to a suitable earth connection.

6.5 Connection of temperature sensors

The ex ia rated sensor connections are intended for connection of temperature sensors such as thermocouple (e.g. Type K/J/T) and RTD elements (e.g. PT100 and PT1000). When used in hazardous areas the temperature sensors shall be intrinsic safe or comply with the definition of simple apparatus and comply with the transmitters Ex safety parameters.

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