Installation and Operating Instructions

HL30 Miniature Sensor CE / ATEX – II3G EX IC IIC T4 GC (-56°C ≤ TAMBIENT, TPROCESS ≤ 125°C)

NOTICE

Important! The selection and installation of temperature sensors is critical to ensure proper function and reliability of the sensor and associated equipment. Read and follow the requirements of these instructions and all applicable Codes, Standards and Regulations that pertain to the installation and use of this equipment. The information provided in this document constitutes recommended procedures based on industry practice and experience with stated equipment, materials and specific conditions. This information alone cannot guarantee satisfactory results under all conditions of installation and use. These installation instructions are recommendations only and Pyromation Inc. assumes no liability for any resulting outcomes. Pyromation sales and engineering personnel are available to assist in determining the best sensor assemblies for each application, however, the user is obligated to ultimately verify the suitability of Pyromation products and the use of these procedures for each process. Pyromation cannot be held responsible for damages caused by non-compliance with the recommended instructions or the improper installation and/or use of the devices described in this document.

⚠WARNING

- Risk of Electric Shock! The devices and procedures required for installation may result in work on or near energized electric circuits. To prevent injury, all equipment must be de-energized prior to the start of work.
- Risk of burns! Temperature sensors may be installed in equipment when the sensor and associated equipment are at high or low relative temperatures that could result in a burn. Allow equipment to cool down sufficiently before performing installation, service, maintenance or removal. When dismounting there is a risk that dangerously hot or cold media may escape.
- Residual media in dismounted instruments can result in risk to persons, the environment and equipment. Ensure that process piping or containment is clear of material at the area of the installation and that no pressure is present. Personnel must use appropriate precautions when working on equipment, and after equipment is removed it should be properly cleaned.
- Equipment installed within Explosive Atmospheres - Explosions could result in death or serious injury. Installation of all equipment in an explosive environment must be in accordance the manufacturer's instructions and the appropriate local, national, and international standards, codes and practices. Ensure that explosive atmosphere is not present prior to performing any installation, adjustment or maintenance activities.
- Install this equipment in accordance with the manufacturer's instructions and all relevant standards and regulations (e.g. EN/IEC 60079-11, EN/IEC 60079-14).
- Supply wiring must be suitable for temperatures 5 degrees Celsius above the surrounding (ambient) temperature.
- After installation re-install covers or access guards that were removed, and secure all locking features, and keep the locking feature locked at all times when the explosive atmosphere is present.
- Substitution of components may impair the suitability for the approved classifications.
- Temperature sensors and assemblies may contain electrical and electronic equipment. Ensure that all equipment and packaging is disposed in accordance with local laws and regulations.

NOTICE

Personnel/Qualifications: The commissioning, installation and maintenance of devices and equipment described in this document must be handled by personnel authorized by the plant operator/organization. These personnel must read and understand the product specifications and the installation/maintenance instructions prior to taking any action. Installers and users must observe the applicable regulations/codes required by their particular industry and country with regard to the installation, functional testing, repairs, maintenance and disposal of electrical devices.

– Make sure that the ambient temperature range in the area of the application is appropriate for the sensor and equipment being installed – which includes the temperature limits related to the sensor, the sensor wire termination and associated enclosure.
– Prior to installation, check to ensure that sensor and assemblies are undamaged; and where applicable, the application and certification markings are appropriate for the installation. Do not use sensors or assemblies that are damaged or not functioning properly or otherwise are not appropriate for the installation, location or use.

Explanation of Symbols

⚠WARNING Indicates a potentially hazardous situation that can result in serious injury or death if not avoided.

NOTICE Used to address practices not related to physical injury.

1. **Contact / Questions?** Make note of the assembly P/N, and SO as listed on the nameplate or labels. Contact your local distributor or representative with any questions, or get in touch with Pyromation if no local service is available. Company contact information is shown at the bottom of each document page.

   ADDITIONAL INFORMATION REQUIRED FOR INSTALLATION IN ATEX/IEC EXPLOSIVE / HAZARDOUS ATMOSPHERES:
   – Control Drawing – (supplied by Pyromation) Drawing – S017301
   – Plant schematics to understand the temperature measurement system's connection to the facility and total overall operation.

2. **Product Description:** These products are resistance temperature device (RTD) or thermocouple temperature sensors encased in a cylindrical metal enclosure and supplied with lead-wires for connection to equipment or facilities instrumentation wiring. These sensor assemblies are supplied in configurations that allow for insertion of the temperature sensor into or onto equipment for measuring localized temperatures.

3. **Equipment Marking / Labeling**

   NOTICE

   – Ensure that the Explosive Atmosphere markings are applicable to your geographic requirements and regulations. Pyromation is a global supplier of sensor assemblies; some assemblies may have Explosive Atmosphere / Hazardous Atmosphere markings for multiple geographic regions.
   – These instructions apply only to equipment with the marking/label as described here-in. Each assembly will contain one or more labels or data plates that provide the following identification. Ensure that the product marking corresponds to the installation requirements.

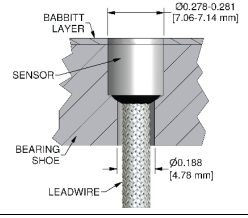
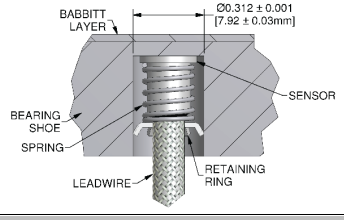
   – **Labels affixed to the assembly with the following information**
   Label 1 (yellow) or equivalent:
   - SO: (sales order number)
   - SN: (serial number)
   Label 2 (white) affixed or supplied:
   - CE and ATEX marking, may include optional or alternate T-code and Ambient/Process Temperature Limits.
   - HL30 Pyromation Inc., Fort Wayne IN USA (Pyromation Model/Configuration Code, and manufacturing location).

4. **Product conformity, and rating**
   Assemblies – CE and ATEX marking (see also the Declaration of Conformity):
   EU Directive 2014/34/EU (ATEX)
   ATEX Category: II 3 G
   ATEX Protection Type: Ex ic IIC T4 Gc (Ta: -56°C to 125°C - see Special Application Note below for alternate temperature).
   Applicable Standards: EN 60079-0:2018, EN 60079-11:2012

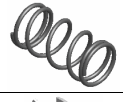
   Marking/Label: CE Ex II3G Ex ic IIC T4 Gc Ta: -56°C to +125°C
   – Ambient/Process: Temperature: Ambient Temp. and T-code as specified below; Pressure – 0.8–1.1 bar;
   – Sensor electrical parameters – Simple Apparatus: Pmax ≤ 25 mW, V ≤ 1.5 V, I ≤ 100 mA.
   – Normal Operation: 100 Ω at 0 °C platinum RTD Sensor current should not exceed 1 mA. The thermocouple sensor circuit should measure sensor output voltage, with no external power applied. Continuous operation with higher current or power may result in erroneous temperatures and sensor self-heating. Higher current/power must be evaluated in-situ to ensure the resulting sensor temperature is within the required limits for the T-Code.

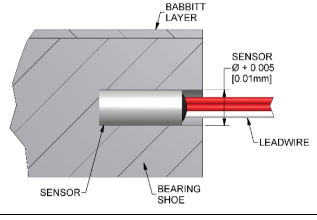
5. **Installation Area - Environmental / Temperature:**
   – **"X" Special Application Note:** The T-code (or maximum temperature) for the assembly is dependent upon process (sensor ambient) temperature. Maximum Ta=190°C. For T-code of T4, the sensor / process temperature must not exceed 125°C. If Ta>125°C and Ta≤190°C, then T3.
   – Ensure that the sensor and wiring are properly secured and supported within the parent equipment and installation. The sensor must make good thermal contact within equipment or component. Ensure that mounting and retention materials are suitable for the operating temperatures. RTD and Thermocouple sensor wiring must be properly separated and isolated from other circuits and voltage levels.
   – Install per Pyromation Control Drawing S017301.

Installation Instructions

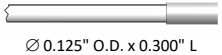
CASE STYLE	INSTALLATION	ILLUSTRATION	CASE DIMENSIONS
A	Install sensor just below the Babbitt layer – near the bearing shoe surface, then puddle the Babbitt metal over the sensor tip and smooth.		 ∅ 0.275" O.D. x 0.250" L
B	This sensor is designed with a spring and retaining washer that allows for spring loading. Slide the spring and washer over the leads. Insert the sensor tip into a hole bored into the bearing shoe and push down on the retaining ring to compress the spring and secure the sensor.		 ∅ 0.188" O.D. x 0.250" L Flange 0.250" O.D. x 0.030" L

Accessories

PART NUMBER	DESCRIPTION	ILLUSTRATION
12920	Spring	
12919	Retaining Washer	
10494	Retaining Ring	

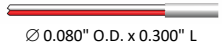
C & D	Bore the sensor hole in the bearing shoe near, but not touching the Babbitt surface. Insert sensor and secure by potting/bonding with epoxy.	

CASE STYLE C



∅ 0.125" O.D. x 0.300" L

CASE STYLE D



∅ 0.080" O.D. x 0.300" L

EU Declaration of Conformity

pyromation

CE

Company **Pyromation LLC, 5211 Industrial Road, Fort Wayne, IN 46825 USA**
declares as manufacturer under sole responsibility, that the product

Product **Model HL30 Miniature sensors (RTD or Thermocouple)** supplied with CE, ATEX, and HL30 designation or marking indicating conformity with the below listed Directives and Standards.

Regulations conforms to following European Directives:

ATEX 2014/34/EU

Standards applied harmonized standards or normative documents:

EN 60079-0 (2018)
EN 60079-11 (2012)

Special Application Note (X): (1) Sensors must be used in accordance with Pyromation Instructions and Control Drawing S017301 and (2) Alternate Ta and T-Code may be specified on the specific item label. Maximum Ambient or Process Temperature is +190°C. For Ta (or Process Temperature) greater than 125°C and less than 190°C the T-Code is T3.

Marking CE Ex II 3 G Ex ic IIC T4 Gc Ta: -56°C to +125°C (see Special Application Note)

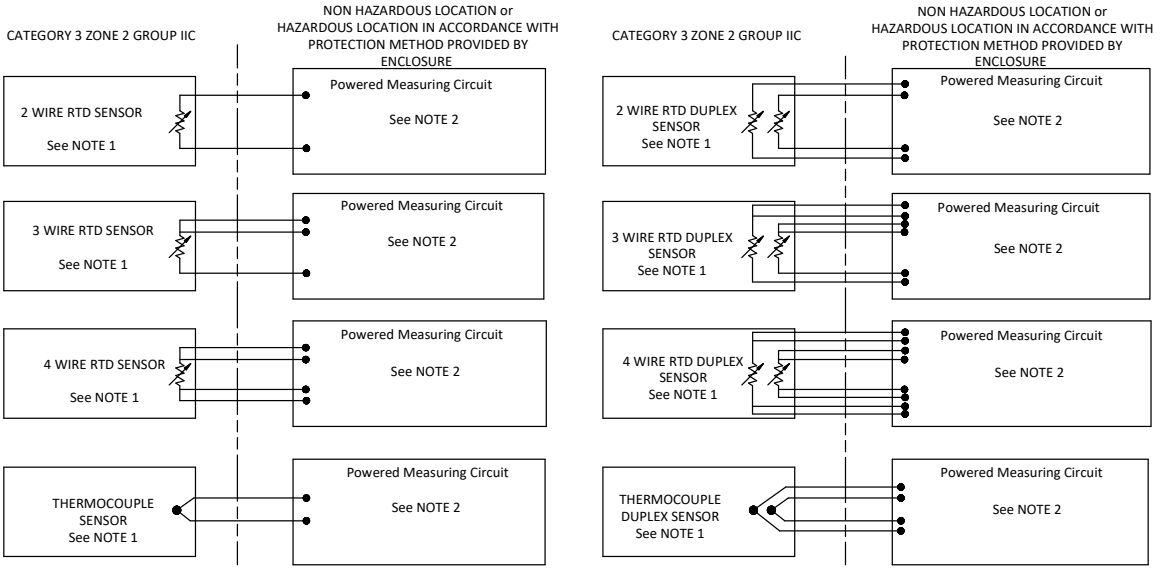
Certification

EU - Certificate No.	EU02114EN_0219
Module A of 2014/34/EU Annex VIII	
Quality assurance	DNV GL (76226)

Fort Wayne, 05.10.2023
Pyromation LLC

Eric Sawyer
General Manager / Hauptgeschäftsführer / Directeur général

MINIATURE TEMPERATURE SENSORS MODEL HL30



NOTE 1:
The RTD or Thermocouple sensor is Simple Apparatus with the following entity (limiting) parameters: $P \leq 25$ mA, $V \leq 1.5$ V dc, $I \leq 100$ mA, Ci=0, Li=0.
NORMAL OPERATION: 100 Ω @ 0 °C platinum RTD sensor current should not exceed 1 mA. Thermocouple sensor circuit should measure output voltage with no external power applied. Continuous operation with higher current or power may result in erroneous temperatures and sensor self-heating. Higher current/power should be evaluated in-situ to to ensure the resulting sensor temperature is within the limits of the T-code.

NOTE 2:
The Powered Measuring Circuit, Associated Apparatus and energy limiting devices must be selected in accordance with EN-60079-11 for the installation Zone and Group. The System Design and Installation must be in accordance with manufacturers instructions, applicable regulations, codes and standards. Associated Apparatus and Field Wiring, located inside or outside of the hazardous area must be appropriate for its location and for use with Simple Apparatus and/or RTDs/Thermocouples. Substitution of components may impair suitability for Explosive Atmospheres. Calculation of Field Wiring Ca and La: Include the supplied RTD or Thermocouple lead-wires in the field wiring calculation, typical lead-wire cable parameters are: C=200 pF/m (60 pF/ft) and L=1 µH/m (0.3 µH/ft).

TITLE:		PART NUMBER:	DATE:	
CONTROL DRAWING FOR MODEL HL30 SENSORS			11/7/2019	
	SIZE: A	DRAWING NO: S017301	REV: B	SCALE: N/A

pyromation inc beyond measure
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