Installation and Operating Instructions

HL05/HL07/HL09 ; HL06/HL08 (US/CAN ; IECEx/ATEX)

Hazardous Location RTD / Thermocouple Temperature Sensor

NOTICE

Important! The selection and installation of temperature sensors is critical to ensure proper function and reliability. 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. Retain Installation Instructions for future use. 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 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

- Read and follow all hazard warnings provided on equipment nameplates/labels and supplied Installation and Use instructions.
- 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 where the sensor and associate 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 with 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 60079-14, US and Canada Electric Codes).
- Supply wiring must be suitable for temperatures above the surrounding (ambient) temperature, see Installation drawing and applicable standards and codes for specific requirements.
- All enclosure entry devices, cable glands, conduit or stopping plugs must be appropriately rated for the installation – see Installation Instruction drawing for additional requirements. All openings must have an appropriate cable gland, conduit system, or plug installed.
- After installation re-install covers or access guards that were removed, secure all locking features, and keep the locking feature locked at all times the explosive atmosphere may be present.
- Substitution of components may impair the suitability for the approved classifications.
- Temperature sensors and assemblies contain electrical and electronic equipment. Ensure that all equipment and packaging is disposed in accordance with local laws and regulations.

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.

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.

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 contact 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/IECEx EXPLOSIVE / HAZARDOUS ATMOSPHERES:
   - Installation Instruction Drawing – *Refer to product label for the drawing number*
   - Transmitter – Instructions – available on Pyromation website: www.pyromation.com/TechInfo/Docs
   - 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 detector (RTD) and thermocouple temperature sensors encased in a cylindrical metal sheath welded closed on the process end and attached to a field wiring enclosure at the opposite end. The field wiring enclosure provides a housing for containing either a connection block or a transmitter device, which are connected to facilities instrumentation wiring. The connection of facilities instrumentation wiring is via a ½" or ¾" NPT conduit opening at the field wiring enclosure.
   These sensor assemblies are supplied in configurations that allow for insertion/attachment of the temperature sensor into an area or process; the assemblies may or may not be installed into an existing thermowell depending upon the configuration. Refer to Pyromation Installation instruction drawing to ensure the sensor assembly is installed properly.

3. **Equipment Marking / Labeling**

NOTICE

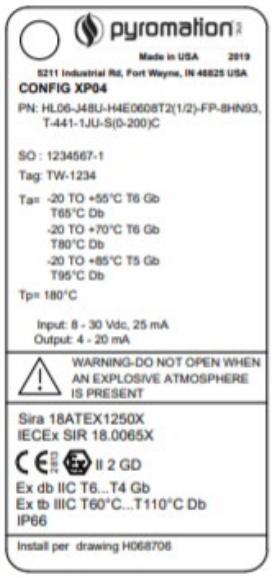
- Ensure that the Explosive Atmosphere markings are applicable to your geographic requirements and regulations. Pyromation is a global supplier of sensor assemblies; some assemblies may have Explosive Atmosphere / Hazardous Location markings for multiple geographic regions.
- These instructions apply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

- **Nameplate affixed to the assembly with the following information**

  (Note – the nameplate will be either black background with white letters or grey background with black letters, the information may be arranged slightly different on specific assemblies)

  CONFIG CODE: XP01…XP07, XP08, XP09 (US/CAN - XP, DIP; IECEx/ATEX – Ex db, tb);
  XP08, XP09, MG01, RT01, BS01 (US/CAN – NI/NIFW)
  EL01…EL07 (US/CAN – AEx ia, Ex ia; IECEx/ATEX – Ex ia, [ia Ga], ib)
  PN: (w/ first 4 characters: HL05, HL07, HL09, HL06, HL08)
  SO
  Ta and T-code
  CE marking as applicable
  ATEX – rating and certificate as applicable (PN: HL06… , HL08…)
  IECEx – rating and certificate as applicable (PN: HL06… , HL08…)
  US/CAN – rating and certification mark as applicable (PN: HL05… , HL07… , HL09…)
  Install per drawing – Installation Instruction drawing

Sample Label



4. **Product conformity, and rating:**

CE and ATEX marking (see also the Declaration of Conformity) – refer to product marking for Haz. Location - Ex db, tb or Ex ia:

Sira 18ATEX1250X; CSANe 21ATEX2080X: Ex db, tb; Ex ia

EU Directives: 2014/34/EU (ATEX), 2014/30/EU (EMC), 2014/53/EU (RED – with Bluetooth)

CE marking, ATEX Category, ATEX Protection Type – As listed on label and Installation Instruction drawing

IECEx Certification and marking – refer to product marking for Haz. Location - Ex tb, db or Ex ia:

IECEx SIR 18.0065X; IECEx SIR 21.0019: Ex db, tb; Ex ia

IECEx Protection Type – As listed on label and Installation Instruction drawing

US/CAN Certification and marking – refer to product marking for Haz. Location - Intrinsic Safety or XP/DIP:

Protection Type – As listed on label and Installation Instruction drawing.

5. **Installation Area - Environmental / Temperature:**

General

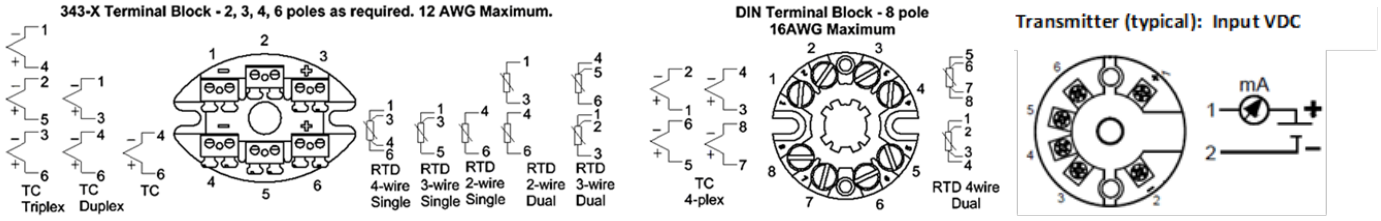
- See Installation Instruction drawing: "Specific Conditions of Use", and "Installation Notes for configuration codes"
- Assemblies with Transmitters: See Transmitter instructions. Use in accordance with the assembly rating Label and Installation Instruction drawing. The Hazardous Location rating on the label applies to the supplied assembly of sensor, connection head and transmitter; within the transmitter instructions, sensors are fixed or integral sensors.
- These Temperature Measurement Assemblies are intended for fixed installations, the approximate mass with 1000 mm long, 40mm diameter thermowell does not exceed 20 Kg, the equipment is not provided with lifting means, appropriate work procedures should be applied when handling this equipment.

Temperature Parameters

- Ta:, T-code, Dust-Surface-Temperature: See Installation Instruction drawing and product label.
- The process temperature (Tp) must not exceed the temperature limits specified on the installation Instruction drawing.
- The maximum allowable ambient temperature (Ta) at the field wiring enclosure must not exceed temperature limits specified on the Nameplate and Installation drawing.

Electrical Parameters

- Electrical rating/Power supply: Refer to Installation Instruction drawing and Transmitter Instructions and Specifications.
- US/CAN -– unless specified otherwise, equipment must be supplied by a source that does not exceed is category "CLASS 2" and "SELV" as specified by Canadian Electric Code C22.2 and National Electrical Code NFPA 70.
- Circuit Diagrams: See Transmitter specifications and instructions for additional details. Note – terminal blocks are provided with the required number of poles for the supplied sensor(s), sensor lead-wires are color coded – ensure field wiring connections are correctly connected to the terminal block/transmitter and measurement system.



Environment

- All equipment: ambient pressure: 0.8 – 1.1 bar (80 to 110 kPa); Outdoor Use, Altitude 5000m, Wet locations.
- Thermowells – material and process pressure: Ensure the thermowell material and MAWP is suitable for the intended use.

Field wiring enclosure (field wiring connections):

- See Installation Instruction drawing. Entry devices including cable glands, conduit seals and stopping plugs must be suitable for the area and protection type and ingress protection. All unused entries must be fitted with stopping plugs.

6. **Installation Instructions, General: Refer to Installation Instruction for additional requirements**:

- Verify that lagging or thermal insulation and the resulting ambient temperature is adequate for the sensor assembly design, the ambient temperature at the field wiring enclosure must be in accordance with the nameplate markings.
- The assembly must be installed with appropriate mounting connections and other support as necessary to prevent damage from external force, impact, vibration and environment to the enclosure, sensor, process connection and field wiring.
- The field wiring enclosure is provided with an internal screw for attachment of electrical system ground/earth conductor.
- Assemblies that include a transmitter - Refer to transmitter specifications and instructions.
- Once the sensor is secure in the process and the field wiring enclosure is in the desired position, the field wiring conduit or flex cable can be connected to the conduit opening of the enclosure using an appropriate entry device.
- Remove the field wiring enclosure cover (the locking feature may have to be loosened or removed), and make the required sensor and electrical connections (refer to transmitter specifications and instructions). Complete the installation, install wiring, cable glands or conduit system, install all removed covers and as applicable engage cover locking devices.
- Temperature sensors and assemblies contain electrical and electronic equipment. Ensure that all equipment and packaging is disposed in accordance with local laws and regulations.