TRIB'ATEX – SPX50
INSTRUCTIONS

The trib'atex-SPX50 is available in two versions:

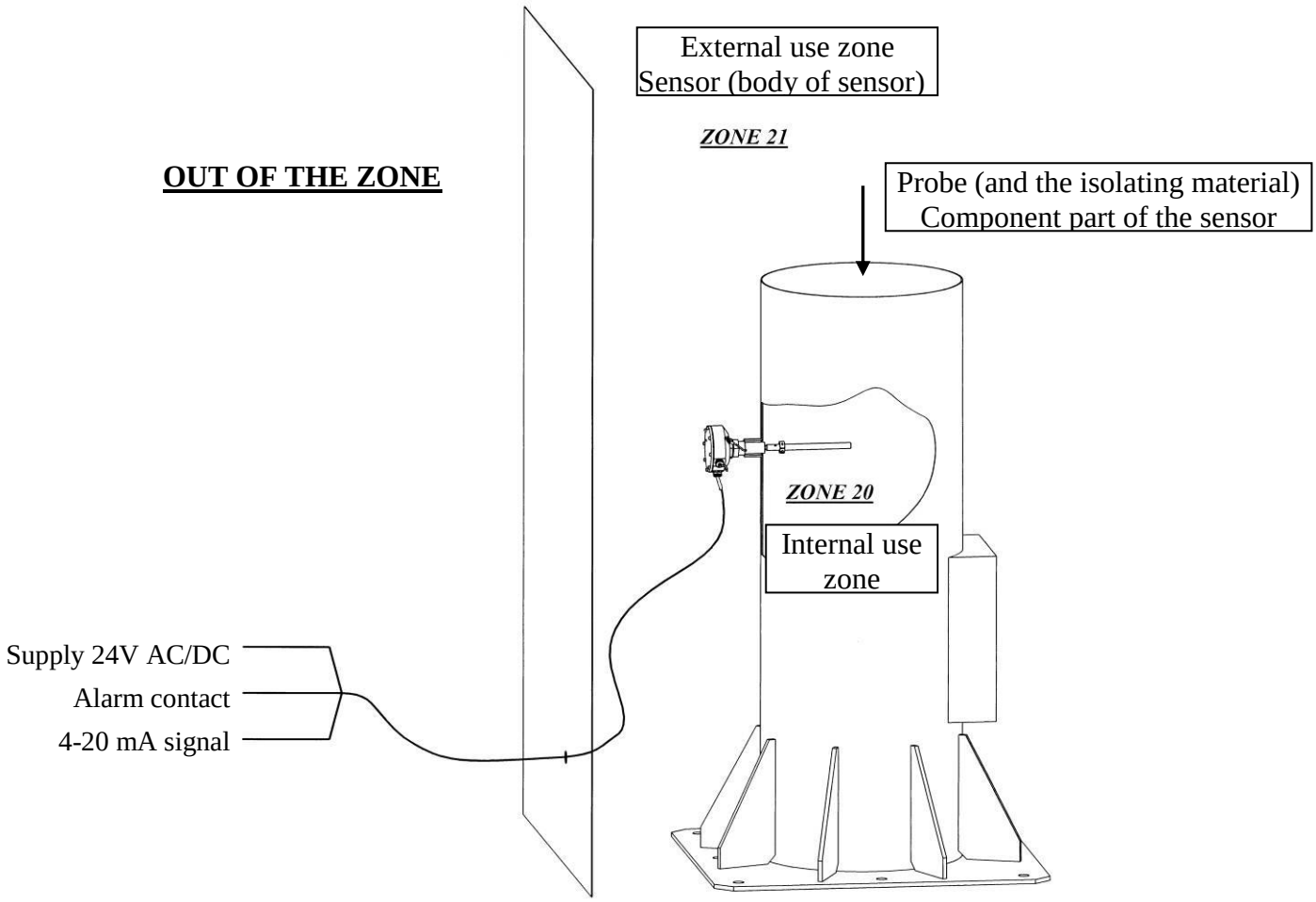
- alarm version / 4-20 mA transmitter,
- network version.

The trib'atex-SPX50 can be used in explosive atmospheres category II.2D or II.3D. according to ATEX 2014/34/EU directive. The probe (and the isolating material) component part of the sensor can be in a flow II.1.D.

DESCRIPTION
For use in explosive atmospheres due to combustible dust.

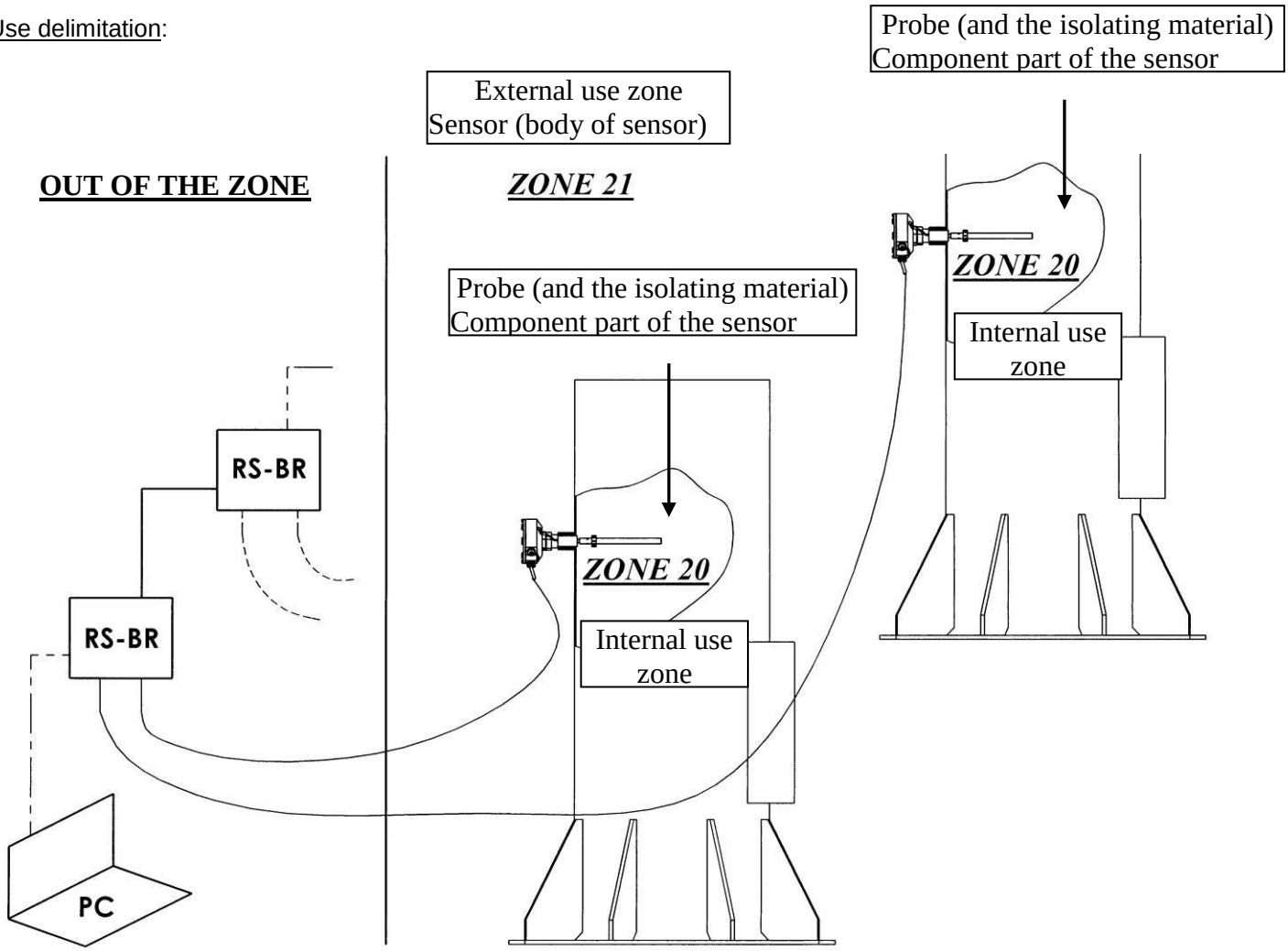
TRIB'ATEX SPX50 alarm version / 4-20 mA transmitter

Use delimitation:



INTERNAL use zones: Zone 20 or 21 or 22 or safe
EXTERNAL use zones: Zone 21 or 22 or safe

Use delimitation:



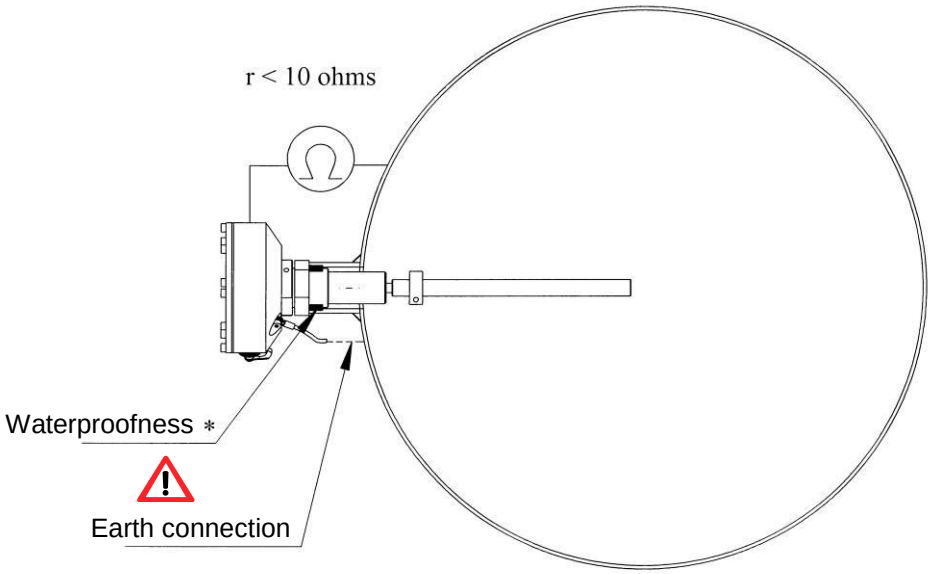
The trib'atex-SPX50 are connected to RS-BR interface units.

INTERNAL use zones: Zone 20 or 21 or 22 or safe
EXTERNAL use zones: Zone 21 or 22 or safe

MECHANICAL RECOMMENDATION OF ASSEMBLY OF THE SENSOR:

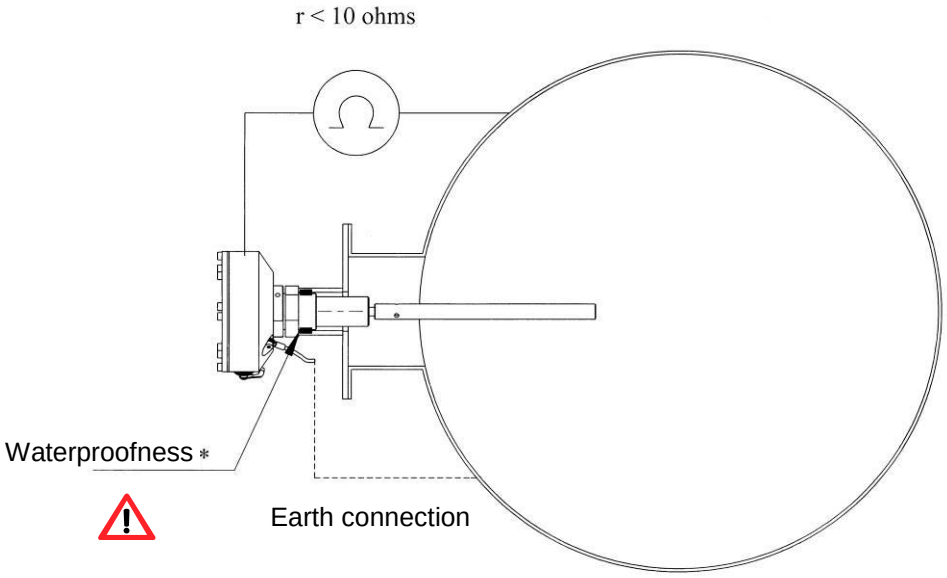
Due to its setting-up in explosive zone, the installation where dust rejection controls are realized must be earthed. The continuity of earth between the sensor and the installation must be assured, the resistance in continue has to be < 10 ohms.

Case n° 1 – with welded sleeve nut
Maxi length sleeve nut recommended: 40 mm



* Refer to the chapter “waterproofness of the mechanical assembly”

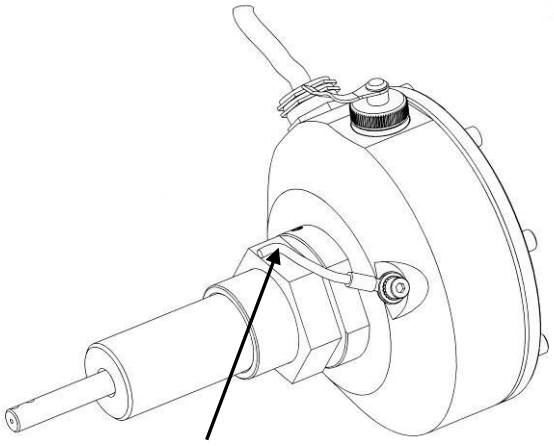
Case n° 2 - On normalized sample plate with welded sleeve nut
Maxi length sleeve nut recommended: 40 mm



* Refer to the chapter “waterproofness of the mechanical assembly”

Important : When the equipment is designed with a thermal insulation, the external part of the sensor (body of sensor) has to be out of the thermal insulation (see temperature of running).

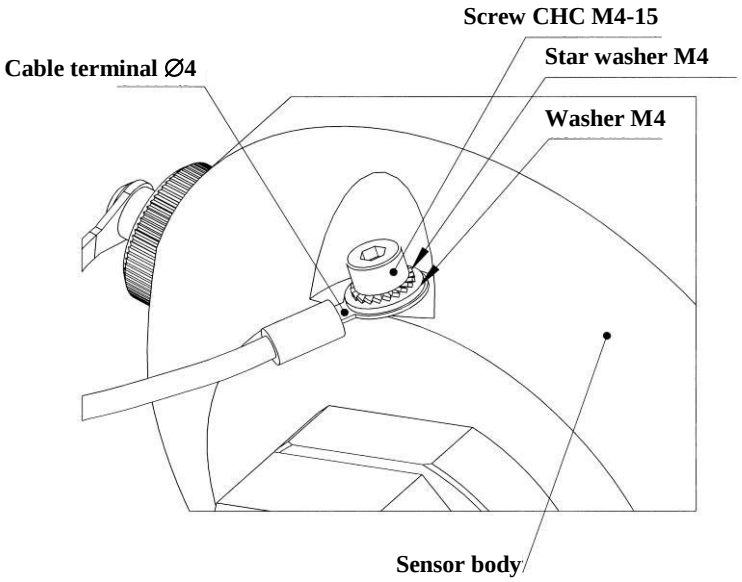
EARTH CONNECTION CONNECTING



Earth conducting: section 1,5 mm² mini.

The earth continuity must be assured between the sensor and the equipment which receives it (duct, pipe, etc.). The earth connection has to be made with a conductor (not supplied) with section 1,5 mm ² minimum. The earth continuity must be checked.

- Sensor side connecting:



The earth connection must be realized according to the rules of conduct, by qualified personnel.

Screw and cable terminal for 1,5 mm² conducting are supplied.

- Equipment side connecting:

The connection must be realized according to the rules of conduct, by qualified personnel.

WATERPROOFNESS OF THE MECHANICAL ASSEMBLY

The mechanical assembly of the sensor on the equipment must be realized so as to assure a waterproofness between the internal zone and the external zone.

The waterproofness level must be realized by taking into account the people safety and the zonings.

The mechanical assembly must be realized according to plans case 1 or case 2 or similar.

In every case, the sensor has to come to screw on a sleeve nut 1 " and will be blocked by the nut. To fit the sensor between two nuts isn't authorized. One nut is supplied, the sleeve nut is not supplied.

Apply a product of waterproofness threading to the threading of the sensor before screwing on the sleeve nut.

The characteristics of the product of waterproofness have to be in compliance with the characteristics led by the exploitation data, temperature, nature of the checked flow, the materials in contact, etc. …

Example of product of waterproofness threading for an application all stainless assembly, temperature of the flow < 125 ° C flow without acid compound, without danger towards the people safety: LOCTITE 577.

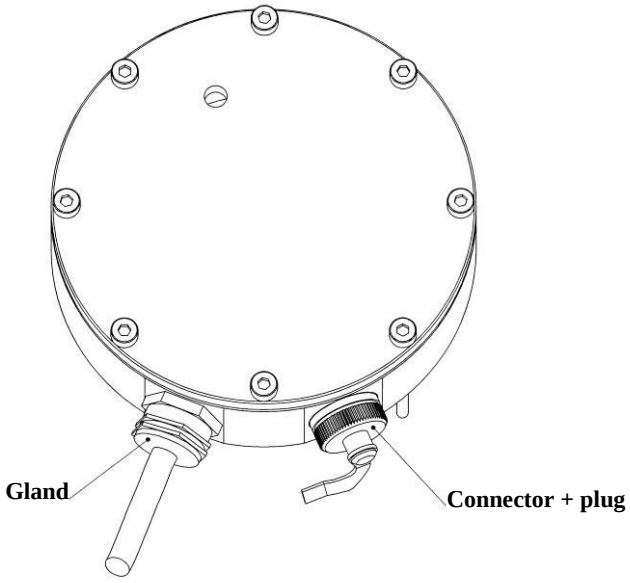
In every case, consult the special instructions, the safety data form referring to the used product.

CHARACTERISTICS:

➢ **General:**

The trib'atex-SPX50 is equipped with:
- a cable input → Gland NEWCAP-MS M16 N°6 for device connection.
- a circular connector → connector BINDER serial 723 female Ref. 09 0174 00 08 for adjustments by pocket or PC connection.

The connector is equipped with a plug.



➢ **Sensor:**

- Mains supply 24V AC/DC

- Consumption < 100 mA

- Outputs:
  ➘ Trib'atex-SPX50 alarm version / transmitter:

  ▪ Trib'atex-SPX50 alarm version only → Inverter contact free from potential
  Use limit of the contact, 24V AC/DC 1A - Class AC1
  Contact to protect by the user

  ▪ Trib'atex-SPX50 transmitter version only → Loop (2 wires) - 4-20 mA signal loop supply
  24V DC supplied by the sensor
  Maxi load 500 Ω
  Without galvanic isolating in comparison with supply

  ▪ Trib'atex-SPX50 alarm version and transmitter → Inverter contact free from potential
  Use limit of the contact, 24V AC/DC 1A - Class AC1
  Contact to protect by the user
  Loop (2 wires) - 4-20 mA signal loop supply
  24V DC supplied by the sensor
  Maxi load 500 Ω
  Without galvanic isolating in comparison with supply

➘ Trib'atex-SPX50 network version: → Inverter contact free from potential
Use limit of the contact, 24V AC/DC 1A
Class AC1
Contact to protect by the user

→ Connection RS485 4 wires
normalized voltage differential 5V
Without galvanic isolating in comparison with supply

➘ Common to all versions, connector outputs → 1 supply 24V DC 100 mA for supply of the pocket of adjustment SPX50
1 RS232 connection normalized voltage differential
+12V DC –12V DC with mass of reference
Without galvanic isolating in comparison with supply

-Protection — By auto-reset fuse Polyswitch Raychem RXE017

-Storage temperature — -20 to 70°C

-Running temperature
Sensor (out of the duct) — 0-60°C

Temperature of the controlled flow:
According to the temperature of the controlled flow, the sensor will be equipped with a thermal separator or not, the nature of the insulating probe / sensor will be different. The temperature class is defined according to the below board.

Temperature of the controlled flow	Insulating material	Sensor equipped with the thermal separator	Defined temperature class
≤ 85° C	PTFE	NO	100° C
> 85° C, ≤ 250° C	PTFE	YES	125° C
> 250° C, ≤ 350° C	CERAMIC	YES	125° C

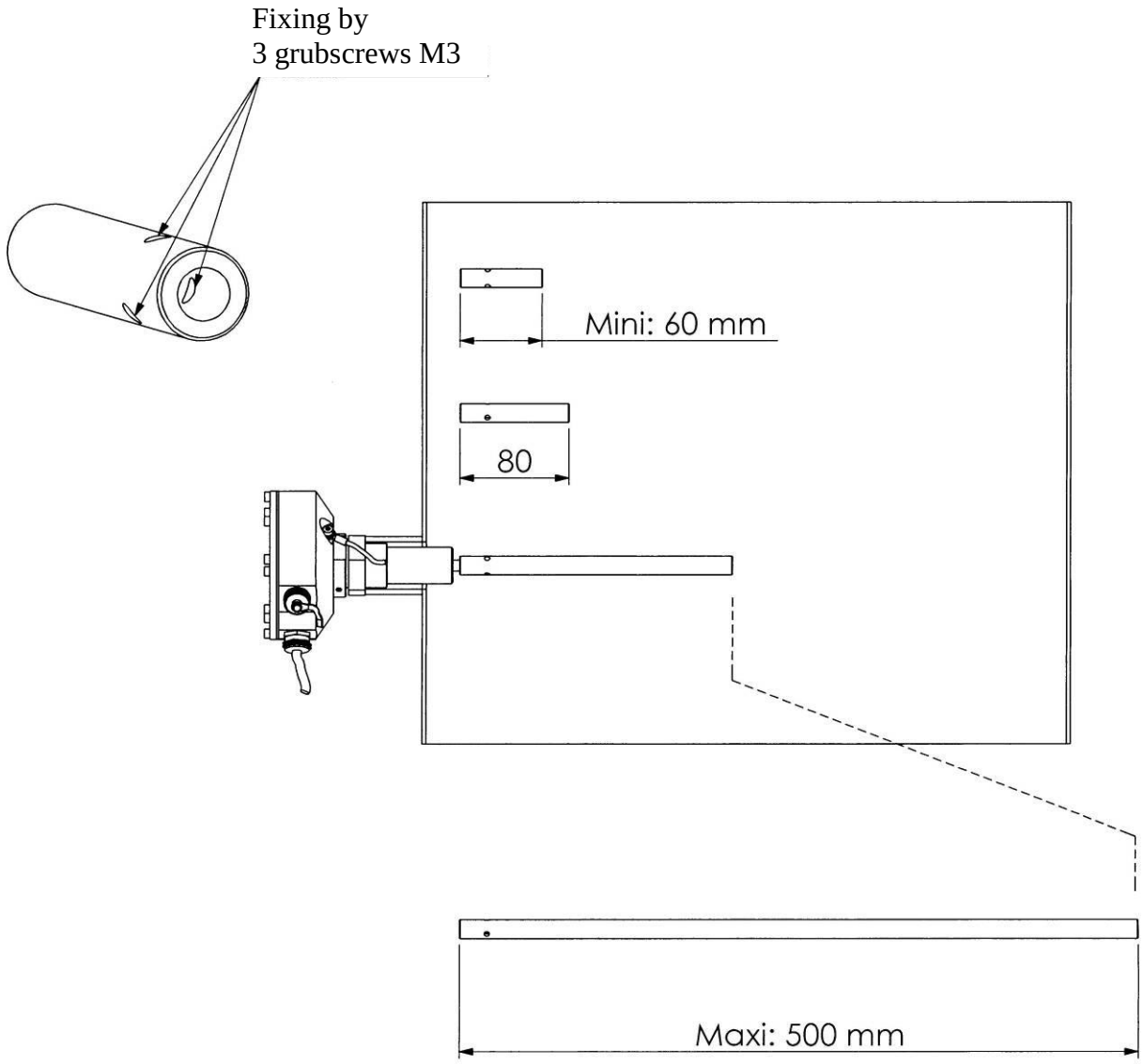
-Material
- Lexan — Polycarbonate lexan 8B35 épaisseur 250 microns
  Thickness of the permanent acrylic adhesive 112 microns
- PG — Body / joint NEWCAP-MS M16 N°6
- Connector — Body BINDER serial 723 female Ref. 09 0174 00 08
  Protection plug Ref. 081080000000
- Sensor body + nut + support of probe — Inox 316 TI or 316 L or 304
- Sensor isolating / probe — PTFE controlled flow < 85° C
  PTFE controlled flow > 85° C, ≤ 250° C
  Ceramic controlled flow > 250° C, ≤ 350° C

➢ **Probe:**

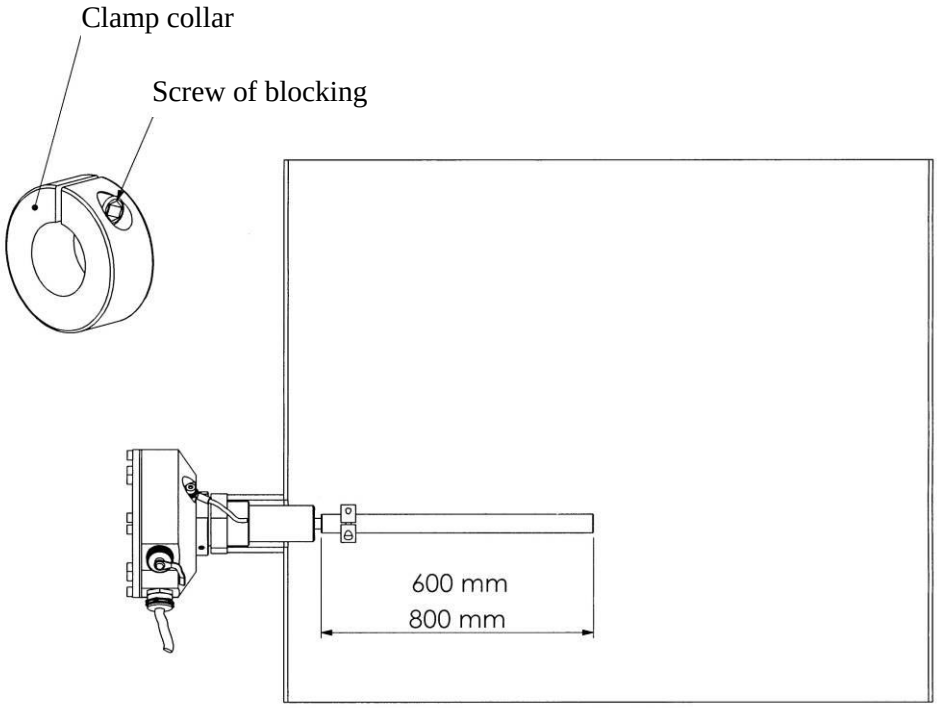
The sensor is equipped with a probe which specificities are determined according to the installation to control, its setting-up, the flow. The definition of the probe is established to the specifications and confirmed with order.

Stainless steel bar	inox 316 TI or 316 L or 304
Stainless steel tube	inox 316 TI or 316 L or 304

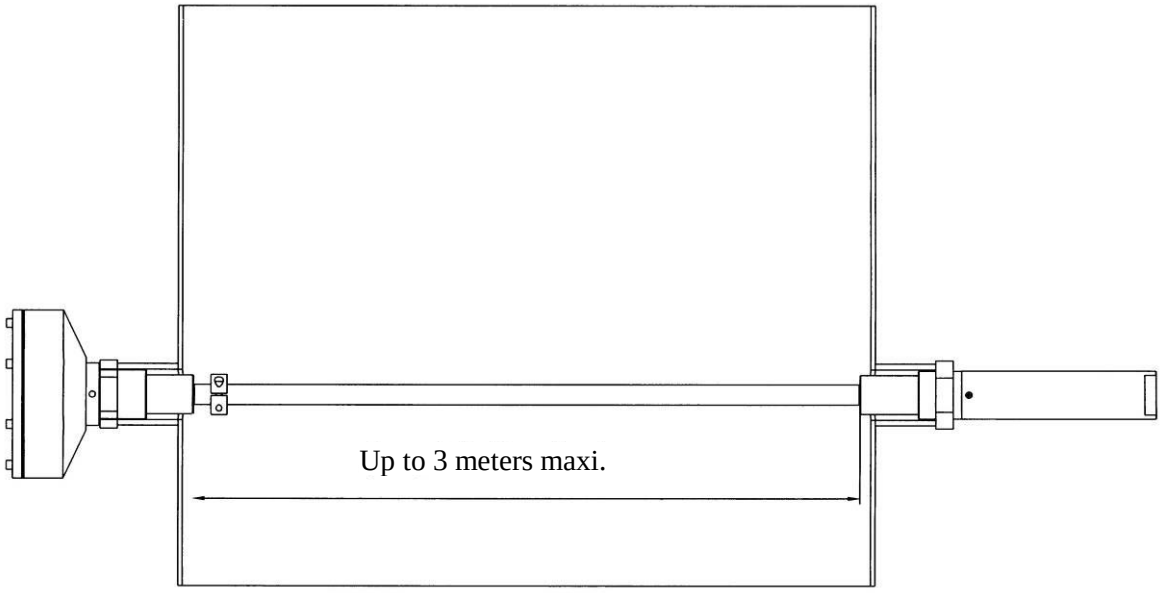
Different kind of probe:
Probes bar, lengths from 60 to 500 mm: fixing on the support of the probe by 3 grubscrews in inox 316L.



Probes tube, lengths from 600 to 800 mm: fixing by clamp collar in tanned steel:



Crossing probes in tube up to 3 meters:



According to the flow to control, the probe can be supplied with a specific coating. Generally, this coating is used to avoid build up on the probe in the time and to minimize the maintenance operations.

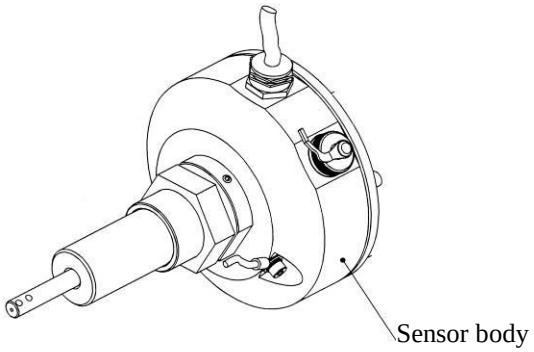
Type of coating proposed, directly applied to the probe:

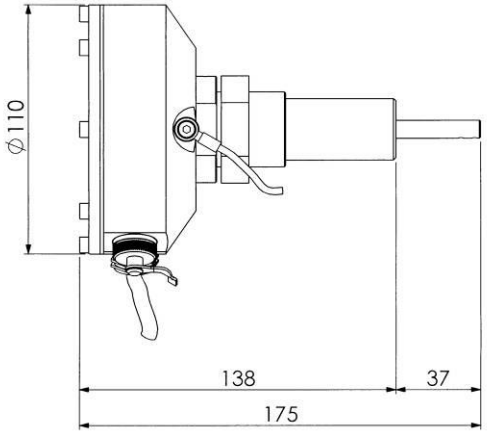
Halar

Nature	Fluoride resin ECTFE
Thickness	400 to 600 approximately microns

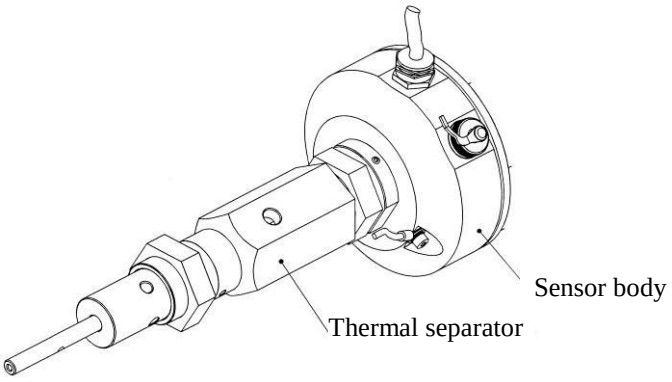
Attention, with a coating of Halar type, the sensor use temperature is limited according to the flow nature and its temperature. Consult us.

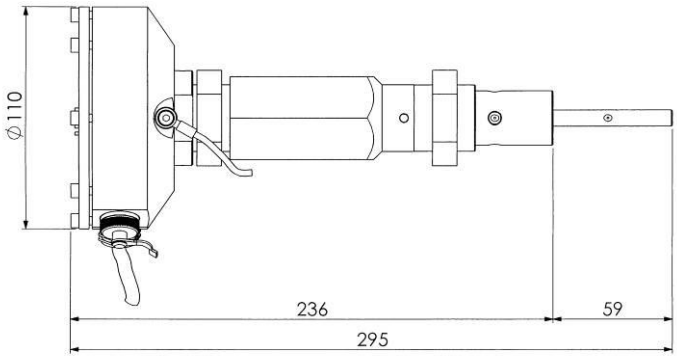
Sensor without thermal separator:





Sensor with thermal separator:



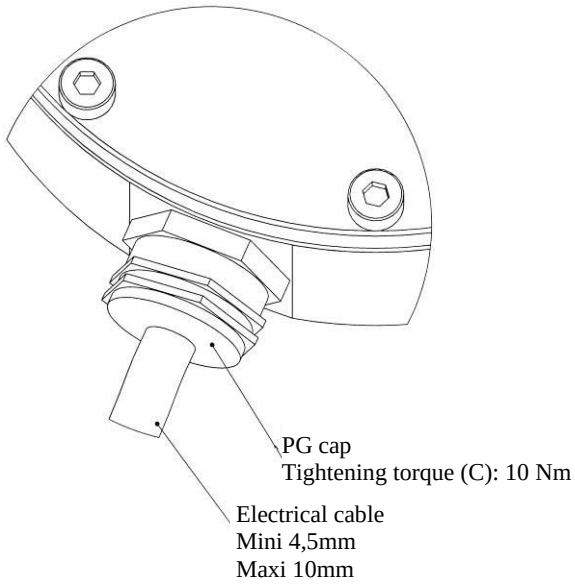


➢ **Cable input:**

Trib'atex-SPX50 connections are made by a cable via the input gland.

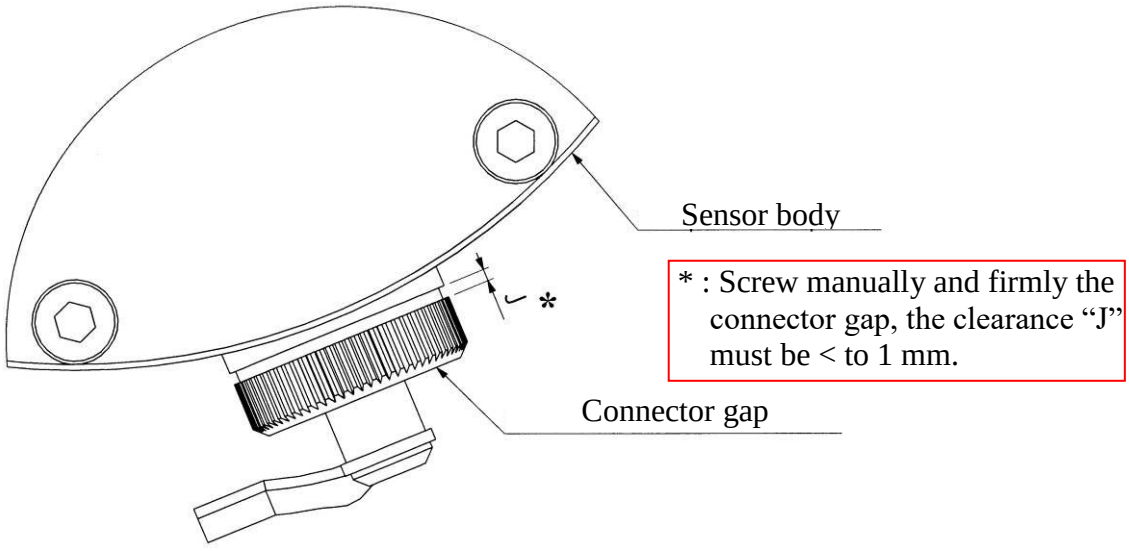
Maxi. diameter of the cable: 10 mm.
Mini. diameter of the cable: 4,5 mm.

Tightening torque to apply on the gland cap: 10 Nm.



➢ **Trib'atex-SPX50 circular connector:**

Check that the plug is normally screwed, the gap must be easily screwed.
About two turns have to be made before the final tightening. The final tightening has to be made firmly.
Out of adjustments (see « **ADJUSTMENTS » page 13**), the gap has to be screwed on the circular connector. It's not necessary and not recommended to use a tool (thread degradation).

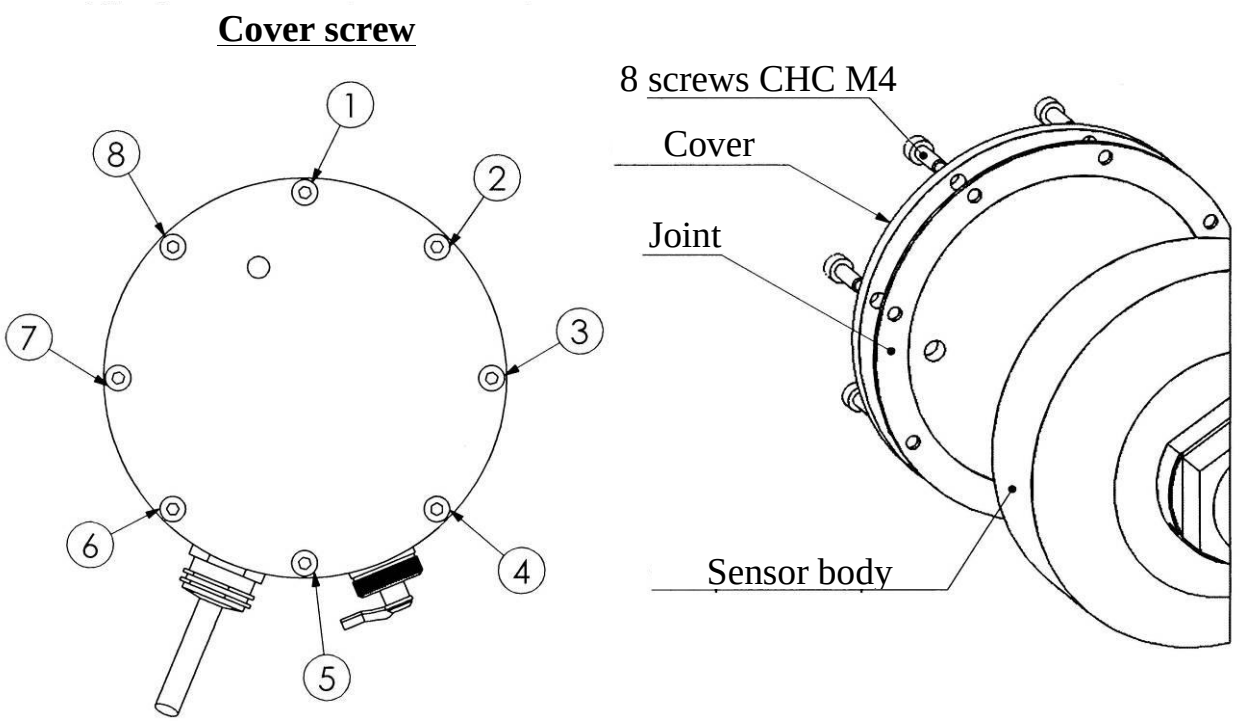


CONNECTIONS:

- Connections have to be made by qualified personnel.
- Connections have to be made **POWER OFF**.
- You have to enquire into characteristics defined in technical notice Ref. FI 72.0065.E and Trib'atex- SPX50 instructions Ref. FI 72.0242.E.

You have to remove the cover that constitutes the trib'atex SPX50 front panel in order to have access to the connection strip.

- **Cover removing:**



- Unscrew / remove the eight screws CHC of the cover fixing with a hexagonal wrench 3 mm.
- Put the cover / joint down.
- Put the whole removed pieces on a clean surface, no rugged (on a clean and soft rag) to avoid scratching it / damaging the plan of cover joint, degrading the joint.
- Proceed to connections. Refer to technical notice Ref. FI 72.0065.E, chapter **« ELECTRICAL CONNECTIONS ».**
- (For trib'atex-SPX50 network version, don't forget to position connector S1 switches according to required encoding of the sensor in the network).
- Before reassembling the cover, check the conductors location in the sensor body. Conductors mustn't be between the cover / joint and the sensor body when reassembling. The maxi. advised connectors length after the gland of cable input is 5 cm.

➢ **Cover reassembling:**

- Clean the joint plan on the trib'atex-SPX50 body with a soft rag. The joint plan mustn't have dust, scratch, impact.
- Clean the joint plan of the cover.
- Clean the joint if it's necessary. The joint mustn't have dust, tear, default that could cause problem of waterproofness between cover and body.
- Check cabling wires location, these mustn't be between cover / joint and trib'atex-SPX50 body when cover / joint reassembling.
- Reassemble the whole cover / joint on the trib'atex-SPX50 body screwing the eight screws without tightening them.
- Tighten the eight screws progressively in this order: 1 5 3 7 2 6 8 4. Final tightening torque must be to 2 Nm for each screw.

ADJUSTMENTS:

Trib'atex-SPX50 has to be adjusted at start-up and regularly in the time (calibration, controls).

➘ Trib'atex-SPX50 alarm version and/or transmitter:

Adjustments can be made by SPX50 pocket or PC via a serial connection. SPX50 pocket and the PC serial cable have to be connected on the trib'atex-SPX50 sensor via the circular connector.

Trib'atex-SPX50 adjustments must be made out of an ATEX atmosphère (in atmosphere where no explosion risk may exist).

As trib'atex-SPX50 use limit is zone 21 for the body, trib'atex-SPX50 constitutive part, use zone must be declared sure during trib'atex-SPX50 adjustments (atmosphere where no explosion risk may exist).

After adjustments, circular connector plug must be well put and screwed, Refer characteristics « **trib'atex-SPX50 circular connector » page 11.**

➘ Trib'atex-SPX50 network version:

Trib'atex-SPX50 network version are connected to RS-BR interface units. The first one is connected to a PC.

Adjustments can be made with a PC. Because of use delimitations, RS-BR units and PC in sure zone, there's no special caution to take.

Nevertheless, trib'atex-SPX50 network version are also equipped with a circular connector. Pocket or PC adjustments via the serial cable are possible. In this case, adjustments for trib'atex-SPX50 alarm and/or transmitter version are applied.

General safety, assembly, commissioning and maintenance instructions

➢ **Introduction:**

We draw the attention of the user on the special conditions for safe use (mentioned in the annex of the EC-type examination certificate INERIS 03ATEX0265X and the addition INERIS 03ATEX0265X/01 and INERIS 03ATEX0265X/02): Connection with the external electric circuits must be carried out according to indications stated in the instructions. The user will have to follow the instructions relating to the adjustments of the sensor.

1. GENERAL DETAILS

The following instructions should be read in conjunction with:

- standard NF C 15100, heading 424
- standards EN 61241-0 : 2006 et EN 61241-1 : 2004 (electrical equipment designed to be used in the presence of combustible dust. Part 0 and 1: electrical equipment protected by enclosures « tD »)
- standard EN 1127-1:1997 (basic concepts and methodology – Atmosphères explosives)
- Decrees, orders, laws, directives, application circulars, standards, good practices and any other document relating to the installation location.

To date, the changes in standard including the NF EN 60079 and EN 1127-1 does not impact the ATEX product certification.
We cannot be held responsible if these are not complied with.
SEFRAM units are designed to be assembled, commissioned and used in accordance with the specifications given in the unit's technical manual.
Our units bear the CE mark as specified in directive ATEX 2014/34/EU. They are designed to be used in explosive atmospheres – category 2/1D – zones 20, 21 et 22.

The user should ensure compatibility between the information given on the identification plate, the explosive atmosphere involved, the usage area and the ambient and surface temperatures.

Marking:
SEFRAM
Place Gutenberg
F-59175 TEMPLEMARS
TRIB'ATEX-SPX..-…(*)
INERIS 03ATEX0265X
(Serial number)
(Year of construction)
Ⓔx II 2/1 D
Ex tD A21/A20 IP65 T100°C à T125°C (**)
Tamb : 0°C to 60°C

WARNINGS :

- DO NOT OPEN WHEN ENERGIZED
- DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
- On the connection when it's present in hazardous area:
  DO NOT SEPARATE WHEN ENERGIZED
- READ THE INSTRUCTIONS BEFORE OPENING

(*) Type of manufacturing is completed by numbers and/or letters corresponding to variants manufacturers.
(**) Tmax of surface according to the nature of the thermal separator and temperature of the fluid measures

2. ASSEMBLY, COMMISSIONING and MAINTENANCE

The assembly, commissioning, usage and maintenance operations must be performed by qualified, competent and authorised personnel. Personnel working on these units must be familiar with the current safety rules and requirements, especially the concept of protection. **Use the effective standards of installation and maintenance: EN60079-14, EN 60079-17 or other national standards.**
Different connections, electrical and mecanical assemblies must be made by qualified personnel in accordance with good practices.

To reduce the risks of fire caused by electrical equipment in dangerous areas as much as possible, the equipment must be correctly inspected and maintained. These operations must include a check to ensure that the original design conditions (type of dust, maximum thickness of the layer, etc) have not altered.

Note: correct operational running of the unit is not in itself an indication that it complies with the recommendations for using the equipment in complete safety.

The recommendations in terms of equipment inspection and maintenance protected by enclosures against the ingress of combustible dust are described below:

➢ **Isolation**:

When carrying out connections or repairs on the probe or the cable, in a dangerous zone, the control unit must be isolated from all power sources including neutral, and effective measures must be taken to prevent the equipment from being accidentally switched on whilst the unit is open, connection out of atex presence.

➢ **Maintenance**:

The maintenance has to be made out of the zone declared explosive.

Except the check of the probe state plunged into the flow to be controlled, the equipment does not require a particular maintenance. The check periodicity of the probe state is defined by the nature of the controlled flow.

The dismantling of the sensor has to be made, control unit out of power and installation in stop !!!
In main rules, it is necessary to take all the indispensable measures to avoid or eliminate the appearance of electrostatic loads.

Example for sensor set on sleeve nut threaded

-Disconnect the sensor from the connection cable.
-Loosen the nut of blocking.
-Turn the sensor in the hourly inverse sense so as to disengage the threading of the sleeve nut.
-As soon as the threading is disengaged of the sleeve nut, make the whole sensor/probe slide on a wet rag placed at the level of the sleeve nut.
-Check the probe state, if necessary clean it. At the end of cleaning, dust with a wet rag on the whole probe / sensor.
For the reassembly, avoid the contact between the probe and the sleeve nut, turn the sensor clockwise to screw it on the sleeve nut, block the nut of tightening, re-connect the sensor to the cable, put back the control unit under power.

➢ **Examination**:

Check after every manipulation of the sensor
-the tightening of the cable/sensor gland.
-the tightening of cable/sensor connector.
-the earth continuity between the sensor and the installation.

➢ **Adjustments:**

Adjustments have to be made to the control unit out of zone.

In the case where the connector used for the settings is present in a explosive zone and a cable is linked to the connector, the cable and the connector must not be separated under-voltage.

If you experience any problems or have any queries about these operations, please contact SEFRAM.

SPARE PARTS: Please contact EXCLUSIVELY SEFRAM.

DECLARATION UE DE CONFORMITE
EU DECLARATION OF CONFORMITY

Le fabricant soussigné :
The manufacturer undersigned :

SEFRAM – Place Gutenberg – 59175 TEMPLEMARS

Déclare que l'équipement destiné à être mis sur le marché afin d'être utilisé en atmosphères explosibles, désigné ci-après
Herely declares that the equipment below, intended for use in potentially explosive atmospheres.

TRIB'ATEX-

est conforme :
conforms to :

- au décret n° 2015-799 du 1 juillet 2015 portant transposition de la directive 2014/34/UE du 29 mars 2014 en ce qui concerne les exigences essentielles et les procédures d'évaluation de la conformité qui lui sont applicables,
  decree n° 2015-799 of 1st july 2015 about Directive 2014/34/EU of 29 march 2014 concerning essential requirements and the procedures applying to the assessment of compliance,

- aux directives suivantes :
  ATEX : 2014/34/UE, « CE » : 93/68/CEE, Basse Tension : 2014/35/UE et CEM : 2014/30/UE
  the following directives :
  ATEX : 2014/34/EU, « CE » marking : 93/68/EEC, Low Voltage : 2014/35/EU, EMC : 2014/30/EU

- aux normes : NF C 15100 – EN 61241-0 :2006 – EN 61241-1 :2004 – EN 1127-1 : 1997
  standards : NF C 15100 – EN 61241-0 :2006 – EN 61241-1 :2004 – EN 1127-1 : 1997

  Note : Les normes utilisées ne sont plus celles qui sont harmonisées, mais la conformité du matériel n'est pas impactée par les modifications des normes de la série EN 60079 et plus particulièrement la EN 60079-0 :2018, EN 60079-31 :2014 et EN 1127-1 :2019.
  Note: The standards used are not those that are harmonized, but the conformity of the equipment is not affected by changes in standards of the series EN 60079 and especially the EN 60079-0: 2018, EN 60079-31:2014 and EN 1127-1:2019.

- au type ayant fait l'objet de l'attestation d'examen CE de type INERIS 03ATEX0265X (cat 2/1D) délivrée par :
  type has described in the EC-type-examination certificate INERIS 03ATEX0265X (cat 2/1D) delivered by :
  INERIS (Institut National de l'Environnement Industriel et des Risques) – n° identification 0080
  Parc Technologique – 60550 VERNEUIL-EN-HALATTE

- au système d'assurance qualité notifié par l'INERIS (Institut National de l'Environnement Industriel et des Risques) – n° identification 0080 - Parc Technologique – 60550 VERNEUIL-EN-HALATTE – N° de notification INERIS 18ATEXQ403,
  the quality assurance system notified by INERIS (Institut National de l'Environnement Industriel et des Risques) – identification number 0080 - Parc Technologique – 60550 VERNEUIL-EN-HALATTE – Notification number INERIS 18ATEXQ403.

Fait à Templemars, le 8 janvier 2021
Templemars, the 8th january 2021

Signataire : Cyrille MARCHAL
Président - *Chairman*

L'organisme, notifié intervenant dans le phase de contrôle de la production ou du produit est :
The notified body involving in the production or equipement control stage is :
INERIS (Institut National de l'Environnement Industriel et des Risques) – n° identification 0080
Parc Technologique – 60550 VERNEUIL-EN-HALATTE

FI 72.0339.0121