# ATEX INSTRUCTIONS MANUAL
## Pressure gauges
(complement to the mounting/setting leaflet)
## M5200 ... Series

## SAFETY PRECAUTIONS

**You must read carefully all the instructions of this manual. You must not start the installation before taking these instructions into account. This equipment might receive some hazardous voltages. If you do not consider these instructions, you risk facing serious corporal and/or material injuries.**

**Before setting up your installation, check the model suit your application. The wiring of this equipment must be executed with the in force rules by a qualified staff.**

## 1 GENERAL INFORMATION

### 1.1 PREMISE

- The pressure gauge described in the operating instructions has been designed and manufactured using state-of-the-art technology.

All components are subject to stringent quality and environmental criteria during production. Our management systems are certified to ISO 9001 and ISO 14001.

- These operating instructions contain important information on handling the pressure gauge. Working safely requires that all safety instructions and work instructions are observed.
- Observe the relevant local accident prevention regulations and general safety regulations for the pressure gauges range of use.
- The operating instructions are part of the product and must be kept in the immediate vicinity of the pressure gauge and readily accessible to skilled personnel at any time.
- Skilled personnel must have carefully read and understood the operating instructions, prior to beginning any work.
- The manufacturer's liability is void in the case of any damage caused by using the product contrary to its intended use, non-compliance with these operating instructions, assignment of insufficiently qualified skilled personnel or unauthorized modifications to the pressure gauge.
- The general terms and conditions contained in the sales documentation shall apply.
- Subject to technical modifications.

**WARNING** When instrument is installed on dangerous fluids like oxygen, acetylene, or fluids that are inflammables or toxics or dangerous for the environment, please check carefully that instrument is suitable for these applications.
**WARNING** Especially for use with oxygen the instrument dial must show the word "OXYGEN" and the international symbol of "Oil-free". Pressure gauges must not come in contact with oils or greases not compatibles with oxygen.
**WARNING** In the event of installation in potentially explosives atmospheres, the instrument dial must show the markings foreseen from ATEX 94/9/EC directive. Installation is possible only following the rules foreseen

### 1.2 NOTES ON APPLICABILITY OF PRESSURE DEVICES DIRECTIVE (PED 97/23/CE)

- ITEC diaphragm pressure gauges P400 are considered "pressure accessories", according art. 1 clause 1.2.4. .
- P400 are designed for pressure lower than 200 bar and must not be marked with CE logo and are manufactured according to art. 3 clause 3 "sound engineering practice" (SEP) and following EN 837.3 European norm.

### 1.3 INSTRUMENTS MEASURING RANGE

Verify that measuring range of instrument is suitable with working conditions of the pressure circuit/plant. Normal operating pressure must be:

- Within 75 % of dial range for steady pressures
- Within 60 % of dial range for pulsating pressures

The choice of non suitable range, or not suitable model, or non-suitable installation, causes not proper functioning and shorter working life of instrument.

### 1.4 ADMITTED OVER PRESSURES

Accidental over pressures are admitted for short periods, provided that they remain within the values indicated in the catalogue.

### 1.5 AMBIENT TEMPERATURE

Instruments are designed to work with an ambient temperature between -40°C/+60°C. It is recommended to verify that the pressure gauge installation position is not subject to direct heat sources, both for convention or radiation: if this is not possible, please foresee a protective screen. Temperature variations of sensing element, compared with reference temperature, causes indications drift (accuracy errors) lower than ±0.8 % of read value, every 10°C of ambient temperature variation.

### 1.6 PROCESS FLUID TEMPERATURE

Instruments are designed to work with a process fluid temperature up to 100°C.
If instrument is filled with dampening fluid, maximum temperatures admitted of process fluid, are indicated in table 1. In event of installations on steam, we recommend to follow installation sketches of Figure 1 and suggestions indicated in paragraph 2.3.

### 1.7 MECHANICAL VIBRATIONS

Verify that chosen position for the installation is not subjected to continuous mechanical vibrations, because this will cause accuracy errors and shorter working life of instrument. If this is not possible, it is recommended to use instruments filled with dampening liquid.

### 1.8 PULSATING PRESSURES

In the event that instrument is subjected to pulsating pressures, please foresee a dampening protection, like mechanical dampeners (screw type or porous disc type) or restriction screw inserted into the socket. These accessories are available upon request.

### 1.9 INSTALLATION IN POTENTIALLY EXPLOSIVES ATMOSPHERES (GAS AND DUST)

#### 1.9.1 DIAL MARKING

**II 2 GD c**

#### 1.9.2 SPECIFICATIONS

Operating temperatures

Ambient: -20 … +60°C
With option silicone oil filling: -40 … +60°C
Medium: The permissible medium temperature does not only depend on the instrument design, but also on the ignition temperature on the surrounding gases, vapors or dust. Both aspects have to be taken into account. For permissible maximum medium temperatures see table 1.

Attention: With gaseous substances, the temperature may increase as a result of compression warming. In this case it may be necessary to throttle the rate of change of pressure or reduce the permissible medium temperature.

Table 1: Temperature classification

| Ambient temperature | Maximum process temperature | | | Temperature class | |
|---|---|---|---|---|---|
| | Dry | Liquid filled | | Gas | Dust |
| | | Glycerine | Silicon oil | | |
| -25/+65°C | 60°C | 60°C | 60°C | T6 | T85°C |
| | 85°C | 85°C | 85°C | T5 | T100°C |
| | 110°C | 100°C | 100°C | T4 | T135°C |

## 2 INSTALLATION

### 2.1 PROCESS INSTALLATION

For the process installation of the instrument, we recommend to use the key flat foreseen on the instrument socket.

**WARNING:** Do not use the case for to screw or lock the instrument to the process connection.

In the event that instrument will be surface or panel mounted, it is necessary to foresee a flexible piping to connect it to the process.
The sealing of process connection is normally guaranteed by using:
A flat gasket, if using cylindrical connections
A sealing material, such as PTFE tape, if using tapered connections (NPT or BSPT).
The serration torque depends only from gasket type.

**WARNING:** When pressure is applied for the first time to the mounted instrument, please check the sealing of the connection, especially when instrument is mounted with dangerous and/or toxic and/or aggressive fluids. Please be very careful with this check, if process fluid is dangerous.

## 3 CALIBRATION AND CHECK

As good practice, is better to make a complete check of the instruments twice per year.
The calibration check is normally made by comparing the instrument with a suitable test instrument. Check is carried out on the main divisions of the dial, following the prescription of European normative EN 837.
It is possible to make a fast check of functioning and accuracy of the instrument, verifying the pointer indication at beginning of scale (zero indication).
If zero pointer indication, at atmospheric pressure, is within the 2% of range, it will be highly probable that instrument is in good efficiency. A zero drift of more than 2% could mean a stress fatigue of the instrument.
Every pressure gauge that has been subjected to abnormal working conditions must be substituted.

**WARNING:**
The check of the instrument, during the working operations, will be possible only if the same is equipped with relevant manifold and if the process fluid is not toxic or dangerous. (See typical installation Figure 2).
Every instrument that, also apparently, shows elevated indication errors, must be immediately removed from the service, especially if process fluid is dangerous or toxic.

## 4 MAINTENANCE

The instrument doesn't need any particular maintenance.
Do not lubricate the moving parts because this could attract dust and to form particles and impurities that could produce malfunctions or accuracy errors.

**WARNING:** In event of accidental breaking of instrument transparent, it is necessary to substitute it immediately, taking care of removing all the small pieces into the case. The substitution of transparent is mandatory if instrument is mounted in potentially explosives atmospheres with dust.

### 4.1 ZERO ADJUSTMENT OF INSTRUMENT

If the instrument needs zero adjustment, after removing bayonet ring and transparent, is necessary to act on the micrometric screw, situated on the pointer. We suggest using proper tools to open the bayonet ring, if it is strongly closed. (e.g. opening belt)

### 4.2 INSTRUMENTS WITH LIQUID FILLING

The level of dampening fluid must be periodically controlled. If a further filling is necessary, we recommend however to don't fill over 75 % of case diameter.

### 4.3 CLEANING

External cleaning of the instrument could be done by using a sponge with soaped water.
Internal cleaning, necessary in case you need to verify calibration with a hydraulic press, could be made by using compressed air inside the socket hole. Please be careful to the process fluid traces that could remain inside the sensing element, especially if fluid is toxic or dangerous.

**WARNING :** The instruments that are mounted in potentially explosives atmospheres due to burnable dust, must be periodically externally cleaned for to avoid the dust accumulation.

## 5 PUT OUT OF SERVICE

Before to dismount the instrument from the working circuit is necessary to control that:
- Instrument is isolated from process fluid
- No pressure is present inside the instrument
- Temperature of the case is not excessive

Please be careful to the process fluid traces that could remain inside the sensing element, especially fluid is toxic or dangerous.

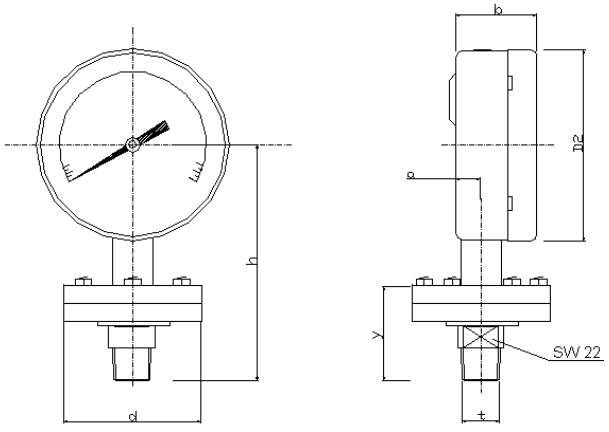
## 6 DEMOLITION

The instrument is essentially made in stainless steel. Therefore, after removing transparent, gasket, plugs and after removing all the process fluid traces from the wetted parts (especially if fluid is dangerous for peoples or ambient) the instrument could be recycled or scrape

## 7 DIMENSIONS

PRESSURE GAUGES SERIES M5200

Outline dimensions and weights for direct mounting type




| CASE diameter | Range | d | a | b | D2 | t | h±2 | y | Weight |
|---|---|---|---|---|---|---|---|---|---|
| 100 | 10 to 16 mbar | 174 | 17 | 49.5 | 101 | ½" BSP or NPT | 135 | 55 | 2.6kg |
| 160 | 10 to 16 mbar | 174 | 17 | 49.5 | 161 | ½" BSP or NPT | 165 | 55 | 3.2 kg |
| 100 | 25 to 250 mbar | 150 | 17 | 49.5 | 101 | ½" BSP or NPT | 135 | 55 | 2.4 kg |
| 160 | 25 to 250 mbar | 150 | 17 | 49.5 | 161 | ½" BSP or NPT | 165 | 55 | 3.0 kg |
| 100 | 0,4 to 40 bar | 100 | 17 | 49.5 | 101 | ½" BSP or NPT | 135 | 55 | 1.8 kg |
| 160 | 0,4 to 40 bar | 100 | 17 | 49.5 | 161 | ½" BSP or NPT | 165 | 55 | 2.2 kg |

# DECLARATION DE CONFORMITE
## *STATEMENT OF CONFORMITY*

*We,* REGULATEURS GEORGIN - 14/16 rue Pierre SEMARD - 92320 CHATILLON - *FRANCE*

Declare under our own responsability that **Manometers series M5200,** manufactured according technical specification SP 04 Rev 1 of 11/11 comply to the essential requirements of Directive **ATEX 94/9/CE**

The instruments M5200 does not contain potential source of ignition. Their maximum surface temperature depends only from the operating conditions (maximum temperature of process fluid)

The conformity to the Directive is evalued with form VIII (manufacturing internal checks);

The technical file N° FT04/2001 was deposited at the notified body :

IMQ [Number : 0051]
Via Quintiliano 43
20138 Milano – Italia

The instruments are classified as :

| Type | Marquage / Marked | Normes / Standards |
|---|---|---|
| M5200 | Ex II 2GD c T(see table) IP65 T(see table) | EN 13463-1 :2009<br>EN13463-5 :2004 |

The temperature classification depends only from the operating conditions, according the following table :

| Ambiant temperature | Maximum operative temperature | | | Temperature class (Gas) | Temperature class (Dust) |
|---|---|---|---|---|---|
| | Standard | Liquid filled (Glycerin) | Liquid filled (Silicone) | | |
| -20 … +60°C | 60 | 60 | 60 | T6 | T 85°C |
| | 85 | 85 | 85 | T5 | T 100°C |
| | 100 | 100 | 100 | T4 | T 135°C |

Châtillon, le 05/06/09

*The Product Manager*
Cyril LINTANFF

CERTF_CE_ATEX M5200 ATEX.DOC MARQUAGE CE ATEX - Indice D