# SERVO INCLINOMETER/ACCELEROMETER SX 41200 SERIES


## SPECIFICATIONS

- 6 ranges : ± 3,00 ° (0,05 G) - 0,5 $ms^{-2}$
  ± 5,75 ° (0,10 G) - 1,0 $ms^{-2}$
  ± 14,50 ° (0,25 G) - 2,5 $ms^{-2}$
  ± 30,00 ° (0,50 G) - 5,0 $ms^{-2}$
  ± 45,00 ° (0,70 G) - 7,0 $ms^{-2}$
  ± 90,00 ° (1,00 G) -10,0 $ms^{-2}$
- High performance.
- Excellent temperature stability.
- Very high resistance to shock and vibration (French military specification GAM T 13).
- Rugged, watertight and miniature housing.
- Conforms to European Standard of Electromagnetic Compatibility.

## GENERAL DESCRIPTION

The SX 41200 series inclinometer/accelerometer is a closed loop instrumentation transducer. The sensing element is a galvanometer pendulum associated with an optical position sensor. The instrument is powered by a single unregulated voltage (10 to 30 V). It features a bidirectional output (± 5,0 V).

Two versions are available :

- Output voltage proportional to the sine of the angle (component of the gravity acceleration).
- Output voltage proportional to the angle.

Together, the hardness of the housing and the hydromechanical damping allow it to be used under severe environments (shocks, vibrations).

## PRINCIPLE OF OPERATION

When the instrument is submitted to a certain angle, alpha, the pendulous mass tends to move in the direction of the inclination. Its position is detected and converted into a current which feeds back to the galvanometer in order to bring it back to its initial position. This current, proportional to the measured gravity, passes through a precision resistor and provides the output voltage.

An output amplifier gives a low output impedance.

## APPLICATIONS

**Industry**

- Alignment of structures (rolling mills, alternators, …).
- Safety purpose (cranes, offshore platforms, …).
- Levelling (roads, railway tracks, …).
- Angular measurements..

**Defense**

- Positionning of shooting platforms, radar antennas, …
- Detection of ship roll and pitch, …

**Railway**

- ATC, ATP





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## GENERAL SPECIFICATIONS (at 25 °C)

| | |
|---|---|
| Excitation voltage | 10 to 30 V<br>35 mA max. |
| Output | ± 5 VDC ± 5 % or ± 4-20 mA<br>(15 V power supply minimum and 300 Ohm max. load) |
| Non linearity error<br>(least squares method) | ± 0,05 % FSO (Full Scale Output) standard ;<br>± 0,02 % FSO optional (except ± 90° range) |
| Initial unbalance | ≤ 0,15 % FSO |
| Non repeatability and hysteresis | ≤ 0,001 % FSO |
| Output noise | ≤ 2 mV rms |
| Output impedance | ≤ 10 Ohm |
| Bandwidth | 3 to 15 Hz according to range |
| Cross axis sensitivity | ≤ 0,005 g/g |
| Housing/sensitive axis alignment | ± 0,5° |
| Thermal zero drift | ≤ 0,01 % FSO/°C |
| Thermal sensitivity drift | ≤ 0,01 % reading/°C |
| Weight | 250 g |
| **Environmental characteristics** | |
| Operating temperature range | - 40 to + 80 °C |
| Storage temperature | - 55 to + 85 °C |
| Sine vibrations | 5 G eff. from 10 to 500 Hz |
| Shocks | 200 G - 6 ms |
| Airplane transportation | - 40 °C - 265 mbar |
| Protection | IP65 |
| Electromagnetic compatibility norms | NF EN 61326 (Industrial) |
| Railway applications | EN 50155 |

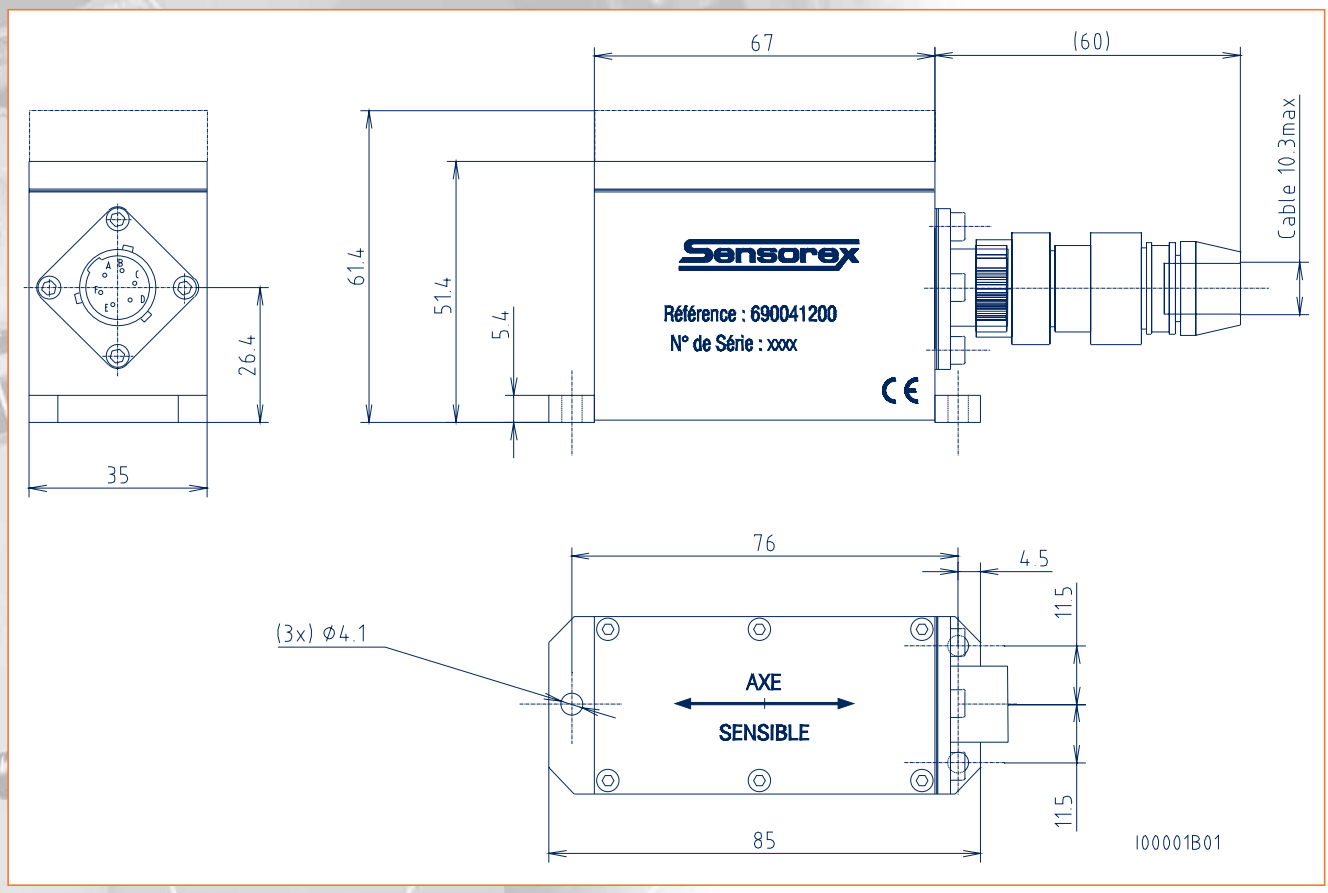
## SELECTION GUIDE

| Range | ± 5 V output | 4-20 mA output |
|---|---|---|
| ± 3° | 41289 | 41285 |
| ± 5,75° | 41219 | 41215 |
| ± 14,5° | 41229 | 41225 |
| ± 30° | 41239 | 41235 |
| ± 45° | 41249 | 41245 |
| ± 90° | 41259 | 41255 |

## OPTIONS

- 0,02 % linearity
- Special bandwidth.
- Zero offset (unipolar output).
- Special range and output signal.

# INTERFACE DRAWING




# CONNECTION

**Connector HE301B (plug supplied)**

- A : + V power supply
- B : 0 V power supply
- C : Signal output voltage (high)
- D : Signal output voltage (low)
- E : NC
- F : NC





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