

# SERVO INCLINOMETER/ACCELEROMETER SX 41200 SERIES



## SPECIFICATIONS

- 6 ranges :
 

$\pm 3,00^\circ$	(0,05 G)	- 0,5 ms <sup>-2</sup>
$\pm 5,75^\circ$	(0,10 G)	- 1,0 ms <sup>-2</sup>
$\pm 14,50^\circ$	(0,25 G)	- 2,5 ms <sup>-2</sup>
$\pm 30,00^\circ$	(0,50 G)	- 5,0 ms <sup>-2</sup>
$\pm 45,00^\circ$	(0,70 G)	- 7,0 ms <sup>-2</sup>
$\pm 90,00^\circ$	(1,00 G)	- 10,0 ms <sup>-2</sup>
- 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 ( $\pm 5,0$  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

- Positioning of shooting platforms, radar antennas, ...
- Detection of ship roll and pitch, ...

### Railway

- ATC, ATP

## GENERAL SPECIFICATIONS (at 25 °C)

Excitation voltage	10 to 30 V 35 mA max.
Output	$\pm 5$ VDC $\pm 5$ % or $\pm 4$ -20 mA (15 V power supply minimum and 300 Ohm max. load)
Non linearity error (least squares method)	$\pm 0,05$ % FSO (Full Scale Output) standard ; $\pm 0,02$ % FSO optional (except $\pm 90^\circ$ range)
Initial unbalance	$\leq 0,15$ % FSO
Non repeatability and hysteresis	$\leq 0,001$ % FSO
Output noise	$\leq 2$ mV rms
Output impedance	$\leq 10$ Ohm
Bandwidth	3 to 15 Hz according to range
Cross axis sensitivity	$\leq 0,005$ g/g
Housing/sensitive axis alignment	$\pm 0,5^\circ$
Thermal zero drift	$\leq 0,01$ % FSO/ $^\circ$ C
Thermal sensitivity drift	$\leq 0,01$ % reading/ $^\circ$ 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

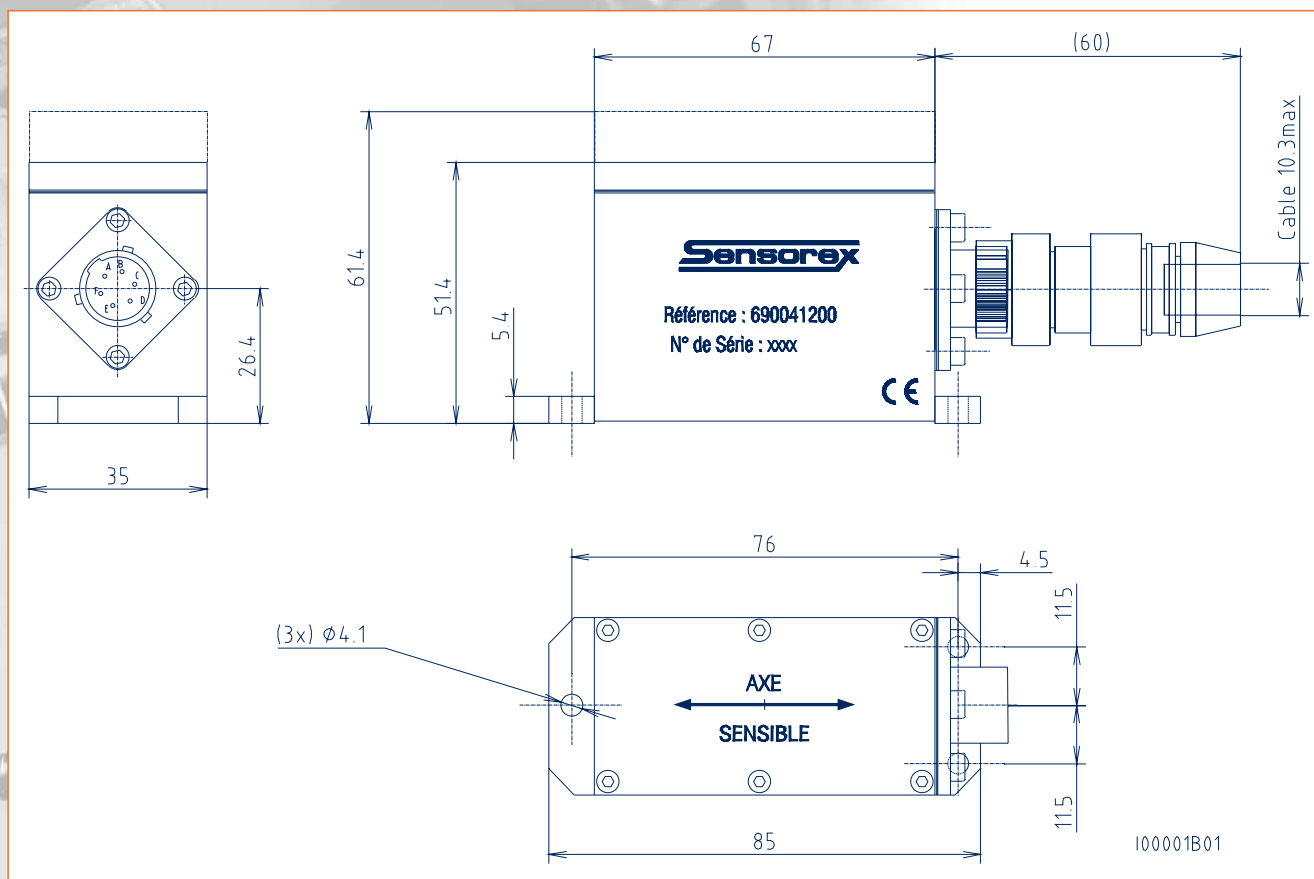
### SELECTION GUIDE

Range	$\pm 5$ V output	4-20 mA output
$\pm 3^\circ$	41289	41285
$\pm 5,75^\circ$	41219	41215
$\pm 14,5^\circ$	41229	41225
$\pm 30^\circ$	41239	41235
$\pm 45^\circ$	41249	41245
$\pm 90^\circ$	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