



# SENSOR

## 6-DOF INERTIAL SENSOR

# AH-6120LR

# AP-6110LR

- 3-axis gyro plus 3-axis accelerometer
- Factory adjusted accuracy scale factor and bias
- Analog output for mixed signaling systems
- Low noise and stability over temperature angular rate detection
- Low current consumption
- External dimensions: 10.0 x 8.0 x 3.8 mm

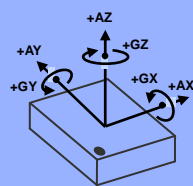
- Recommended application: Motion tracking and measurement, Dead reckoning and Healthcare



Product number (please contact us)

AH-6120LR:X2M000031xxxx00

AP-6110LR:X2M000021xxxx00



Actual size



### Specifications (characteristics)

Item	Symbol	AH-6120LR	AP-6110LR	Conditions / Remarks
Supply Voltage	VDD	3.0V±0.3V	2.85V to 3.6V	
Storage Temperature	TSTG	-40°C to +85°C		
Operating Temperature	TOPR	-40°C to +85°C		
Current consumption	Iop	6.1mA Typ.	6.8mA Typ.	
<b>- Gyro sensor -</b>				
Scale factor	So	1.0mV/(°/s) Typ.	3.0 mV/(°/s) Typ.	Ta=+25°C
Scale factor variation with temp.	-	±3%	-3% to +2%	Based on Ta=+25°C
Bias	Vo	Vr±20mV	Vr±15mV	VDD=3V, Ta=+25°C
Bias variation with temp.	Vo- Vr	±25mV	±24mV	Based on Ta=+25°C
Reference voltage	Vr	1350mV±20mV	1430mV±15mV	Ta=+25°C
Range	I	±1000°/s	±300°/s	
Non linearity	NL	±2% FS	±0.5% FS	Ta=+25°C
LPF bandwidth	BW	223Hz Typ.	200Hz Typ.	90 degree phase delay
Noise density	Nd	0.006(°/s)/√Hz Typ.	0.004(°/s)/√Hz Typ.	AH-6120LR: 10 to 100Hz Ave. AP-6110LR : 1 to 100Hz Ave.
<b>- Accelerometer -</b>				
Scale factor	SF	200mV/G Typ.	400mV/G Typ.	VDD=3V, Ta=+25°C
Scale factor variation with temp.	-	±3% Typ.		Based on Ta=+25°C
Scale factor ratiometric error	-	±1% Typ.		VDD=3V±5%, Ta=+25°C Based on VDD=3V
Bias	-	1500mV Typ.		VDD=3V, Ta=+25°C
Bias variation with temp.	-	±150mG Typ.		VDD=3V, Based on Ta=+25°C
Range	-	±6G Typ.	±3G Typ.	Ta=+25°C
Non linearity	NL	±0.5% FS Typ.		Ta=+25°C
LPF bandwidth	BW	1000Hz Typ.		45 degree phase delay

Product Name  
(Standard form)

AH-6120 LR +/-1000 dps +/-6G

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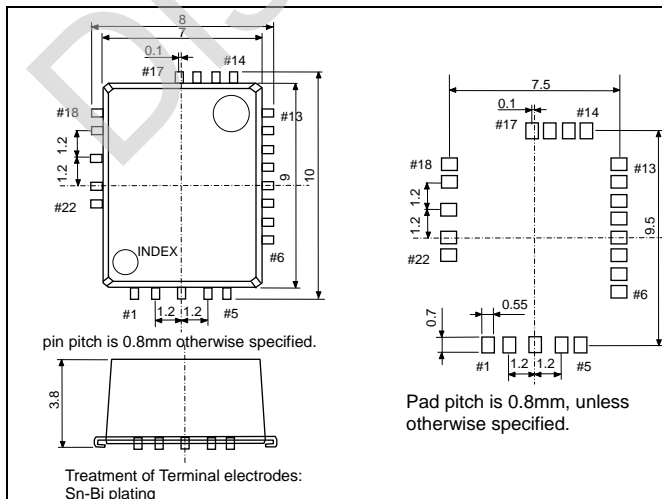
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①Model ②Package type ③Rate range of Gyro sensor ④Rate range of Accelerometer

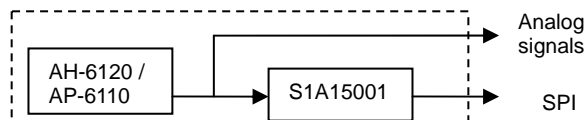
### External Dimensions and recommended footprint

(Unit:mm)



Pin No.	Name	Function	Pin No.	Name	Function
1	GND GY	Y axis gyro ground	12	Reserved	Connect to Pin 10( GND Acc)
2	Vout GY	Y axis gyro angular rate output	13	VDD Acc	Accelerometer power supply
3	Vref GY	Y axis gyro ref. voltage output	14	GND GZ	Z axis gyro ground
4	VDD GY	Y axis gyro power supply	15	VDD GZ	Z axis gyro power supply
5	Reserved	Do not connect	16	Vref GZ	Z axis gyro ref. voltage output
6	Reserved	Connect to Pin 13(VDD Acc)	17	Vout GZ	Z axis gyro angular rate output
7	Vout AX	X axis Acceleration output	18	GND GX	X axis gyro ground
8	Vout AY	Y axis Acceleration output	19	Vout GX	X axis gyro angular rate output
9	Vout AZ	Z axis Acceleration output	20	Vref GX	X axis gyro ref. voltage output
10	GND Acc	Accelerometer ground	21	VDD GX	X axis gyro power supply
11	Reserved	Do not connect	22	Reserved	Do not connect

An evaluation board with dedicated AFE-IC(S1A15001) is available (AH-6120LR EB02, AP-6110LR EB02) which enables output to both analog and digital signals.



## PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.





## WORKING FOR HIGH QUALITY

In order provide high quality and reliable products and services than meet customer needs,

Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired ISO/TS 16949 certification that is requested strongly by major automotive manufacturers as standard.

ISO/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

### ► Explanation of the mark that are using it for the catalog

	► Pb free.
	► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
	► Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
	► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc ).

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