

Product Selector Guide — Motion

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Product	ICG-20660L	IAM-20680	ICM-20600	ICM-20602	ICM-20648	ICM-20649	ICM-20689	ICM-20948	ICM-30630	ICM-30670	MPU-9250
Market											
Mobile											
Wearable											
Internet of Things											
Drone											
Imaging											
Head Mount Display											
Automotive											
Sports											
Architecture											
# Axes	6	6	6	6	6	6	6	9	6	6	9
Processor(s)	N	N	N	N	DMP	DMP	N	DMP	2DMPs + Cortex M0	CortexM0/DMP	DMP
Software Features					DMP based 6 & 9-axis Cal/Fusion, Android M+ Pedometer	DMP based 6 & 9-Axis Cal/Fusion, Android M		DMP based 6 & 9-Axis Cal/Fusion, Android M + Pedometer	SensorStudio	SensorStudio v2.2	DMP based 9-axis Cal/Fusion
Details											
Package-Pin (mm)	3x3x0.75 LGA, 16-leads	3x3x0.75 LGA, 16-leads	2.5x3x0.91 LGA, 14-leads	3x3x0.75 LGA, 16-leads	3x3x0.9 QFN, 24-leads	3x3x0.9 QFN, 24-leads	4x4x0.9 QFN, 24-leads	3x3x1 QFN, 24-leads	3x3x1 LGA, 24-leads	4x4x0.98 LGA, 32-leads	3x3x1 QFN, 24-leads
Gyro											
FSR (dps)	±250/500/1000/2000	±250/500/1000/2000	±250/500/1000/2000	±250/500/1000/2000	±250/500/1000/2000	±500/1000/2000/4000	±250/500/1000/2000	±250/500/1000/2000	±250/500/1000/2000	±250/500/1000/2000	±250/500/1000/2000
ZRO @ 25°C (dps)	±5	±3.5	±1	±1	±5	±5	±5	±5	±20	±5	±5
ZRO over Temp (dps/°C)	±0.06dps/°C (-20° to +75°C)	±0.28dps/°C (-40° to +85°C)	±0.01 (-40° to +85°C)	±0.01 (-40° to +85°C)	±0.05 (-40° to +85°C)	±0.05dps/°C (-40° to +85°C)	±0.04dps/°C (-40° to +85°C)	±0.05dps/°C (-40° to +85°C)	±0.24dps/°C (-40° to +85°C)	±0.05dps/°C (-40° to +85°C)	±0.24dps/°C (-40° to +85°C)
Sens. Tolerance @ 25°C	±1%	±1.5%	±1%	±1%	±3%	±1%	±2%	±3%	±3%	±2%	±3%
Sens Over Temp	±3% (-20° to +75°C)	±3% (-40° to +85°C)	±2% (-40° to +85°C)	±2% (-40° to +85°C)	±3% (-40° to +85°C)	±3% (-40° to +85°C)	±1.5% (-40° to +85°C)	±3% (-40° to +85°C)	±4% (-40° to +85°C)	±2.5% (-40° to +85°C)	±4% (-40° to +85°C)
Gyro Noise (dps/√Hz)	0.005 TYP	0.005	0.004	0.004	0.011 TYP	0.017 TYP	0.006	0.011 TYP	0.016	0.006	0.01
Accel											
FSR	2/4/8/16g	±2/4/8/16g	±2/4/8/16g	±2/4/8/16g	2/4/8/16g	4/8/16/30g	±2/4/8/16g	2/4/8/16g	±2/4/8/16g	2/4/8/16g	±2/4/8/16g
Component Offset @ 25°C (mg)	X, Y: ±40; Z: ±65	±60 (post solder)	±25	±25	±80	±25	±20	±25	±80	±80	X, Y: ±60; Z: ±80m
Offset Over Temp (mg/°C)	±0.5 (-20° to +75°C)	±0.56 (-40° to +85°C)	X, Y: ±0.5 Z: ±1 (-40° to +85°C)	X, Y: ±0.5 Z: ±1 (-40° to +85°C)	X, Y: ±0.64 Z: ±1 (-40° to +85°C)	±0.8 (-40° to +85°C)	X, Y: ±0.5 Z: ±0.75 (-40° to +85°C)	±0.8 (-40° to +85°C)	X, Y: ±0.64 Z: ±2 (-40° to +85°C)	±1.5 (-40° to +85°C)	±1.5 (-40° to +85°C)
Sens. Tolerance	±1%	±3%	±1%	±1%	±3%	±1%	±2%	±3%	±3%	±3%	±3%
Sens. Over Temp	±2.5% (-20° to +75°C)	±3.25% (-40° to +85°C)	±1.5% (-40° to +85°C)	±1.5% (-40° to +85°C)	±3.25% (-40° to +85°C)	±3.25% (-40° to +85°C)	±1% (-40° to +85°C)	±3.25% (-40° to +85°C)	±3.25% (-40° to +85°C)	±3% (-40° to +85°C)	±3.25% (-40° to +85°C)
Accel Noise (μg/√Hz)	220	170	100	100	190	280	150	190	250	210	300
Bus Interface	SPI; I2C	SPI; I2C	SPI; I2C	SPI; I2C	SPI; I2C	SPI; I2C	SPI; I2C	SPI; I2C	SPI; I2C	SPI; I2C	SPI; I2C
FSYNC Support	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Memory	512bytes FIFO	512bytes FIFO	1Kbytes FIFO	1Kbytes FIFO	512bytes FIFO	512bytes FIFO	4Kbytes FIFO	512bytes FIFO	64Kbytes SRAM; 64Kbytes Flash	64KB SRAM (configurable into FIFO, DMP4, CortexM0)	512bytes FIFO
Power	6-Axis: 3mA * 1.8V = 5.4mW	6-Axis Low-Power Mode: 1.9mA * 1.8V = 3.42mW Gyro: 102Hz ODR, 1x avg filter	6-Axis Low-Power Mode: 1.33mA * 1.8V = 2.39mW Gyro: 100Hz ODR, 1x avg filter	6-Axis Low-Power Mode: 1.33mA * 1.8V = 2.39mW Gyro: 100Hz ODR, 1x avg filter	6-Axis Low-Power Mode: 1.9mA * 1.8V = 2.39mW Gyro: 100Hz ODR, 1x avg filter	6-Axis Low-Power Mode: 1.27mA * 1.8V = 2.29mW Gyro: 102Hz ODR, 1x avg filter	6-Axis Low-Power Mode: 1.9mA * 1.8V = 3.42mW Gyro: 100Hz ODR, 1x avg filter	9-Axis: 3.11mA * 1.8V = 5.6mW	6-Axis Low-Power Mode: 1.49mA * 1.8V = 2.68mW Gyro/Accel: 102Hz ODR, 1x avg filter	6-Axis Low-Power Mode: 1.92mA * 1.8V = 3.46mW Gyro: 100Hz ODR, 1x avg filter	9-Axis: 3.7mA * 2.5V = 9.25mW
Compass FSR (μT)								±4900			±4800
Compass Initial Offset								0.15μT/LSB			±300μT

Product Selector Guide — Audio

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Product	INMP411	INMP510	INMP621	ICS-40300	ICS-40180	ICS-40181	ICS-40720	ICS-40618	ICS-40619	ICS-41350	ICS-41352	ICS-43432	ICS-43434
Market													
General													
Mobile													
Wearable													
Internet of Things													
Drone													
Automotive													
Hardware Feature													
Interface Type	Analog	Analog	PDM	Analog	Analog	Analog	Analog	Analog	Analog	PDM	PDM	I ² S	I ² S
Port Location	Bottom	Bottom	Bottom	Bottom	Bottom	Top	Bottom	Bottom	Top	Bottom	Bottom	Bottom	Bottom
Multi-mode Support	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	No	Yes
Package Size (mm)	4.72 x 3.76 x 1.0	3.35 x 2.5 x 0.98	4 x 3 x 1	4.72 x 3.76 x 3.5	3.5 x 2.65 x 0.98	3.5 x 2.65 x 0.98	4 x 3 x 1.2	3.5 x 2.65 x 0.98	3.5 x 2.65 x 0.98	3.5 x 2.65 x 0.98	3.5 x 2.65 x 0.98	4 x 3 x 1	3.5 x 2.65 x 0.98
# of Pins	6	3	5	6	5	6	4	5	6	5	5	7	6
SNR (dBA)													
High Performance Mode	62	65	65	63	65	65	70	67	67	64	64	65	64
Standard Mode	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	64	64	N/A	N/A
Low Power Mode	N/A	N/A	N/A	N/A	N/A	N/A	N/A	67	67	63	63	N/A	64
AOP (dB SPL)													
High Performance Mode	131	124	133	130	124	124	124	132	132	126	120	120	120
Standard Mode	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	120	120	N/A	N/A
Low Power Mode	N/A	N/A	N/A	N/A	N/A	N/A	N/A	129	129	120	120	N/A	120
Sensitivity													
High Performance Mode	-46	-38	-46	-45	-38	-38	-38	-38	-38	-32	-26	-26	-26
Standard Mode	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-26	-26	N/A	N/A
Low Power Mode	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-38	-38	-26	-26	N/A	-26
Sensitivity Tolerance (dB)	±2	±2	±2	±2	±1	±1	±2	±1	±1	±1	±1	±1	±1
Power Consumption (µA)													
High Performance Mode	180	180	1200	220	190	180	285	165	165	650	550	1100	490
Standard Mode	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	430	430	N/A	N/A
Low Power Mode	N/A	N/A	N/A	N/A	N/A	N/A	N/A	55	55	185	185	N/A	230
Sleep			5.5							12	12	7	12
Low Frequency Corner (Hz)	28	60	45	6	60	60	75	50	50	50	50	50	50
Frequency Band (High) (kHz)	>20	>20	>20	>20	>20	>20	>20	>20	>20	>20	85	20	20