MEMS Inertial Sensors

Accelerometers

	Part Number	Range (*g*)	Output Type	Sensing Axes	BW Typ (kHz)	Sensitivity	Noise (*mg*/√Hz)	Voltage Supply (V)	Supply Current (mA)	Temperature Range (°C)	Package	Additional Features
MEMS Accelerometers	ADXL103	±1.7, ±18	Analog	1	2.5	100 mV/*g* to 1000 mV/*g*	0.11	3.0 to 6.0	0.7	–40 to +125	5 mm × 5 mm × 2 mm LCC	Low noise, low tempco
	ADXL78	±35, ±50, ±70	Analog	1	0.4	27 mV/*g* to 55 mV/*g*	1.1	4.75 to 5.25	2.2	–40 to +105	5 mm × 5 mm × 2 mm LCC	
	ADXL001	±70, ±250, ±500	Analog	1	22	2.2 mV/*g* to 16 mV/*g*	3.3	3.135 to 6	2.5	–40 to +125	5 mm × 5 mm × 2 mm LCC	Ultrawide bandwidth
	ADXL203	±1.7, ±5, ±18	Analog	2	2.5	100 mV/*g* to 1000 mV/*g*	0.11	3.0 to 6.0	0.7	–40 to +125	5 mm × 5 mm × 2 mm LCC	Low noise, low tempco
	ADXL206	±5	Analog	2	2.5	312 mV/*g*	0.11	4.75 to 5.25	0.7	–40 to +175	13 mm × 8 mm × 2 mm SBDIP	Ultrahigh temperature
	ADXL278	±35, ±50, ±70	Analog	2	0.4	27 mV/*g* to 55 mV/*g*	1.1	4.75 to 5.25	2.2	–40 to +105	5 mm × 5 mm × 2 mm LCC	
	ADXL335	±3	Analog	3	1.6	300 mV/*g*	0.15	1.8 to 3.6	0.35	–40 to +85	4 mm × 4 mm × 1.45 mm LFCSP	
	ADXL326	±16	Analog	3	1.6	57 mV/*g*	0.3	1.8 to 3.6	0.35	–40 to +85	4 mm × 4 mm × 1.45 mm LFCSP	
	ADXL337	±3	Analog	3	1.6	300 mV/*g*	0.175	1.8 to 3.6	0.3	–40 to +85	3 mm × 3 mm × 1.45 mm LFCSP	
	ADXL325	±5	Analog	3	1.6	174 mV/*g*	0.25	1.8 to 3.6	0.35	–40 to +85	4 mm × 4 mm × 1.45 mm LFCSP	
	ADXL327	±2	Analog	3	1.6	440 mV/*g*	0.25	1.8 to 3.6	0.35	–40 to +85	4 mm × 4 mm × 1.45 mm LFCSP	
	ADXL377 ***New***	±200	Analog	3	1.6	6.5 mV/*g*	2.4	1.8 to 3.6	0.3	–40 to +85	3 mm × 3 mm × 1.45 mm LFCSP	3-axis, high-*g*
	ADXL350 ***New***	±1, ±2, ±4, ±8	Digital	3	1.6	2 *mg*/LSB	0.25	2.0 to 3.6	0.45 to 0.166	–40 to +85	3 mm × 4 mm × 1.2 mm LGA	Min/max tempco, low power, FIFO
	ADXL312	±1.5, ±3, ±6, ±12	Digital	3	1.6	2.9 *mg*/LSB	0.34	2.0 to 3.6	0.17	–40 to +105	5 mm × 5 mm × 1.45 mm LFCSP	
	ADXL345	±2, ±4, ±8, ±16	Digital	3	1.6	3.9 *mg*/LSB	0.52	2.0 to 3.6	0.03 to 0.14	–40 to +85	3 mm × 5 mm × 1 mm LGA	Low power, FIFO
	ADXL362 ***New***	±2, ±4, ±8	Digital	3	0.2	1 *mg*/LSB	0.18	1.6 to 3.5	0.002	–40 to +85	3 mm × 3.25 mm × 1.06 mm LGA	Ultralow power, deep FIFO, built in multiple sample activity/inactivity detection, external sync
	ADXL346	±2, ±4, ±8, ±16	Digital	3	1.6	3.9 *mg*/LSB	0.34	1.7 to 2.75	0.03 to 0.14	–40 to +85	3 mm × 3 mm × 1 mm LGA	Low power, FIFO
	ADXL213	±1.2	PWM	2	2.5	30%/*g*	0.16	3.0 to 6.0	0.7	–40 to +85	5 mm × 5 mm × 2 mm LCC	Low noise, low offset tempco, PWM output
	ADXL212	±2	PWM	2	0.5	12.5 %/*g*	0.5	3.0 to 5.25	0.7	–40 to +85	5 mm × 5 mm × 2 mm LCC	Low noise, low offset tempco, PWM output
iSensor® MEMS Accelerometer Subsystems	*Digital Accelerometers*											
	ADIS16003	1.7	SPI	2	5.5	—	0.11	5	1.5	–40 to +125	7 mm × 7 mm LGA	Internal temperature sensor
	ADIS16006	5	SPI	2	2.2	—	0.2	5	1.5	–40 to +125	7 mm × 7 mm LGA	Internal temperature sensor
	Inclinometers											
	ADIS16203	±1.7; ±180°	Digital	1	2.25	0.025°/LSB	—	3.3	11 (normal); 0.5 (sleep)	–40 to +125	9 mm × 9 mm LGA	Vertical mount, tilt and acceleration outputs, programmable alarms, digital filtering
	ADIS16209	±1.7; ±180°	Digital	2	0.05	0.025°/LSB	0.19	3.3	11 (normal); 0.14 (sleep)	–40 to +125	9 mm × 9 mm LGA	Dual-mode, high accuracy (0.1°) tilt and acceleration outputs, programmable alarms, digital filtering
	ADIS16201	±1.7; ±90°	Digital	2	2.25	0.1°/LSB	—	3.3	11 (normal); 0.5 (sleep)	–40 to +125	9 mm × 9 mm LGA	Tilt and acceleration outputs, programmable alarms, digital filtering
	ADIS16210	±1.7; ±180°	Digital	3	0.05	—	—	3.3	18 (normal); 0.23 (sleep)	–40 to +125	15 mm × 24 mm × 15 mm module	Tri-axis, single command frame alignment, programmable alarms, serial number and device ID
	Impact Sensors											
	ADIS16204	±70	Digital	2	0.4	8.407 *mg*/LSB	1.8	3.3	12 (normal); 0.15 (sleep)	–40 to +105	9 mm × 9 mm LGA	Programmable event recorder, peak sample/hold
	ADIS16240	±19	Digital	3	1.6	51.4 *mg*/LSB	0.48	3	1 (normal); 0.1 (sleep)	–40 to +85	12 mm × 12 mm BGA	Programmable event recorder, peak sample/hold
	Vibration Sensors											
	ADIS16228 ***New***	±18	Digital	3	5	0.3052 *mg*/LSB	0.248	3.3	40 (normal); 0.23 (sleep)	–40 to +125	15 mm × 24 mm × 15 mm module	Embedded FFT analysis, low noise, multiple capture modes, programmable windowing/filtering, serial number and device ID
	ADIS16223	±70	Digital	3	22	4.768 *mg*/LSB	3.3	3.3	43 (normal); 0.23 (sleep)	–40 to +125	15 mm × 15 mm × 15 mm module	
	ADIS16227	±70	Digital	3	22	1.192 *mg*/LSB	3.3	3.3	43 (normal); 0.23 (sleep)	–40 to +125	15 mm × 15 mm × 15 mm module	Embedded FFT analysis

Gyroscopes (continues on next page)

	Part Number	Range (°/sec)	Output Type	BW Typ (Hz)	In-Run Bias Stability (°/Hr)	Angle Random Walk (°/√Hr)	Linear Acceleration Effect(°/sec/*g*)	Sensitivity	Bias Tempco (°/sec/°C)	Sensitivity Tempco (ppm/°C)	Non-Linearity (% FS)	Voltage Supply (V)	Supply Current (mA)	Start-Up Time (ms)	Temperature Range (°C)	Package	Additional Features
MEMS Gyroscopes (All Single Axis)	ADXRS644	300	Analog	1000	9	0.6	0.015	9 mV/°/sec	—	—	0.1	6	3.5	50	–40 to +105	7 mm × 7 mm × 3 mm BGA	Vibration immune, min/max specs across temperature range, ultralow noise
	ADXRS646	300	Analog	1000	12	0.6	0.015	9 mV/°/sec	—	—	0.1	6	3.5	50	–40 to +105	7 mm × 7 mm × 3 mm BGA	Ultrahigh stability, vibration immune, min/max specs across temperature range, ultralow noise
	ADXRS642	250	Analog	2000	20	1.2	0.03	7 mV/°/sec	0.02	308	0.01	4.75 to 5.25	3.5	50	–40 to +105	7 mm × 7 mm × 3 mm BGA	High vibration immunity, industrial grade typ specs
	ADXRS624	50	Analog	1000	60	2	0.1	25 mV/°/sec	0.07	462	0.1	4.75 to 5.25	3.5	50	–40 to +105	7 mm × 7 mm × 3 mm BGA	Min/max specs across temperature range
	ADXRS623	150	Analog	3000	60	2	0.1	12.5 mV/°/sec	0.14	462	0.1	4.75 to 5.25	3.5	50	–40 to +105	7 mm × 7 mm × 3 mm BGA	Min/max specs across temperature range
	ADXRS622	250	Analog	2500	60	2	0.1	7 mV/°/sec	0.10	308	0.1	4.75 to 5.25	3.5	50	–40 to +105	7 mm × 7 mm × 3 mm BGA	Min/max specs across temperature range
	ADXRS652	250	Analog	2500	60	2	0.1	7 mV/°/sec	0.10	308	0.1	4.75 to 5.25	3.5	50	–40 to +105	7 mm × 7 mm × 3 mm BGA	Industrial grade typ specs
	ADXRS620	300	Analog	2500	60	2	0.1	6 mV/°/sec	0.11	308	0.1	4.75 to 5.25	3.5	50	–40 to +105	7 mm × 7 mm × 3 mm BGA	Min/max specs across temperature range
	ADXRS649	20,000+	Analog	2000	200	15	0.03	0.01 mV/°/sec	—	—	0.1	5	3.5	3	–40 to +105	7 mm × 7 mm × 3 mm BGA	High rotation rate up to 50,000°/sec, industrial grade typ specs
	ADXRS453	300	Digital	77.5	16	0.9	0.01	0.0125°/LSB	0.0034	207	0.05	3.15 to 5.25	6	100	–40 to +105	9 mm × 9 mm × 4 mm LCC VMP, 10 mm × 10 mm × 3.5 mm SOIC	Calibrated over temperature, vibration immune, in-plane and out-of-plane sensing
	ADXRS450	300	Digital	80	25	0.9	0.03	0.0125°/LSB	0.02	462	0.05	3.15 to 5.25	6	100	–40 to +105	9 mm × 9 mm × 4 mm LCC VMP, 10 mm × 10 mm × 3.5 mm SOIC	High vibration immunity, industrial grade typ specs, in-plane and out-of-plane sensing

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Gyroscopes (continued)

	Part Number	Range (°/sec)	Output Type	BW Typ (Hz)	In-Run Bias Stability (°/Hr)	Angle Random Walk (°/√Hr)	Linear Acceleration Effect (°/sec/*g*)	Sensitivity	Bias Tempco (°/sec/°C)	Sensitivity Tempco (ppm/°C)	Non-Linearity (% FS)	Voltage Supply (V)	Supply Current (mA)	Start-Up Time (ms)	Temperature Range (°C)	Package	Additional Features
*i*Sensor MEMS Gyroscope Subsystems (All Single Axis)	ADIS16060	80	Digital	1000	—	—	0.1	0.0122°/LSB	0.11	—	0.1	5	4.3	10	–40 to +105	8 mm × 8 mm × 5 mm LGA	
	ADIS16080	80	Digital	40	—	—	0.2	0.0976°/LSB	—	—	0.15	5	7	35	–40 to +85	8 mm × 8 mm × 5 mm LGA	
	ADIS16136† ***New***	480	Digital	380	3.5	0.167	0.017	0.00007°/LSB	0.00125	35	0.05	5	120	180	–40 to +85	36 mm × 44 mm × 14 mm module	External clock option
	ADIS16133†	1200	Digital	335	6	0.75	0.03	0.05°/LSB	—	16	0.008	5	88	181	–40 to +85	36 mm × 44 mm × 14 mm module	Wide dynamic range
	ADIS16135†	350	Digital	335	6	0.75	0.03	0.0125°/LSB	—	16	0.008	5	88	181	–40 to +105	36 mm × 44 mm × 14 mm module	
	ADIS16265†	320	Digital	330	25	2	0.2	0.0183°/LSB	0.005	25	0.1	5	41	165	–40 to +105	11 mm × 11 mm × 5 mm LGA	Range scaling

†Includes part specific factory calibration, programmable filtering, and digital self-test.
For multiaxis solutions, see the MEMS Inertial Measurement Unit (IMU) selection table.

*i*Sensor MEMS Inertial Measurement Units (IMUs)

		Range				Gyroscope									Accelerometer					
Part Number	Output Type	Gyro (°/sec)	Acceler-ation (*g*)	Magnetometer (gauss)	Barometer (mbar)	In-Run Bias Stability (°/hr)	Angle Random Walk (°/√Hr)	Bias Tempco (°/sec/°C)	Linear Acceleration Effect (°/sec/*g*)	Sensitivity (°/sec/LSB)	Sensitivity Tempco (ppm/°C)	Non-Linearity (% FS)	Alignment (°)	BW Typ (Hz)	In-Run Bias Stability (m*g*)	Start-Up Time (ms)	Voltage Supply (V)	Temperature Range (°C)	Package	Additional Features
4 Degrees of Freedom																				
ADIS16305	Digital	300	3	N/A	N/A	22	1.85	0.006	0.02	0.0125	20	0.1	0.1	330	0.037	180	5	–40 to +85	23 mm × 31 mm × 8 mm module	Low profile
6 Degrees of Freedom																				
ADIS16445 ***New***	Digital	250	5	N/A	N/A	12	0.6	0.005	0.015	0.0025	40	0.1	0.05	330	0.075	—	3.3	–40 to +85	24 mm × 37 mm × 10 mm module	Programmable operation and control, wide dynamic range, external clock option, single command self-test
ADIS16385	Digital	300	5	N/A	N/A	6 (z); 21 (x, y)	0.75 (z); 1.9 (x, y)	0.001 (z); 0.004 (x, y)	0.03 (z); 0.05 (x, y)	0.0031	40	0.1	0.05	330	0.05	210	5	–40 to +105	36 mm × 47 mm × 39 mm module	High precision on yaw axis
ADIS16375	Digital	300	18	N/A	N/A	12	1	0.005	0.013	0.013	40	0.025	0.05	330	0.13	500	3.3	–40 to +85	44 mm × 47 mm × 14 mm module	Continuous bias estimator, single command self-test, delta angle/velocity, continuous bias estimator, programmable FIR filtering
ADIS16362	Digital	300	1.7	N/A	N/A	25	2	0.01	0.05	0.0125	50	0.1	0.05	330	0.041	180	5	–40 to +105	23 mm × 23 mm × 23 mm module	High sensitivity accelerometer, external clocking option, burst mode reads
ADIS16364	Digital	300	5	N/A	N/A	25	2	0.01	0.05	0.0125	50	0.1	0.05	330	0.1	180	5	–40 to +105	23 mm × 23 mm × 23 mm module	Narrowed temperature calibration range, external clocking option, burst mode reads
ADIS16365	Digital	300	18	N/A	N/A	25	2	0.01	0.05	0.0125	50	0.1	0.05	330	0.2	180	5	–40 to +105	23 mm × 23 mm × 23 mm module	Wide temperature calibration range, external clocking option, burst mode reads
ADIS16334	Digital	300	5	N/A	N/A	25	2	0.005	0.05	0.0125	40	0.1	0.05	330	0.1	180	5	–40 to +105	22 mm × 33 mm × 11 mm module	Small footprint/height, single command self-test
ADIS16485 ***New***	Digital	450	18	N/A	N/A	6	0.3	0.0025	0.009	3.052×10^{-7}	35	0.01	0.05	330	0.032	500	3.3	–40 to +85	44 mm × 47 mm × 14 mm module	Programmable FIR filtering, 2.46 kHz sample rate, single command self-test, delta angle/velocity, continuous bias estimator, linear-*g* compensation
ADIS16367	Digital	1200	18	N/A	N/A	47	2	0.01	0.075	0.05	40	0.1	0.05	330	0.2	180	5	–40 to +105	23 mm × 23 mm × 23 mm module	Wide dynamic range, external clocking option, burst mode reads
9 Degrees of Freedom																				
ADIS16405	Digital	300	18	2.5	N/A	25	2	0.01	0.05	0.0125	40	0.1	0.05	330	0.2	220	5	–40 to +105	23 mm × 23 mm × 23 mm module	Magnetometer
10 Degrees of Freedom																				
ADIS16407	Digital	300	18	2.5	10 to 1200	25	1.9	0.01	0.05	0.0125	40	0.1	0.05	330	0.2	220	5	–40 to +105	23 mm × 23 mm × 23 mm module	Barometer
ADIS16488 ***New***	Digital	450	18	2.5	10 to 1200	6	0.3	0.0025	0.009	3.052×10^{-7}	35	0.01	0.05	330	0.1	500	3.3	–40 to +85	47 mm × 44 mm × 14 mm module	Programmable FIR filtering, 2.46 kHz sample rate, programmable soft-iron correction matrix, programmable hard-iron correction, single command self-test, delta angle/velocity, continuous bias estimator, linear-*g* compensation
ADIS16480 ***New***	Digital	450	18	2.5	10 to 1200	6	0.3	0.0025	0.009	3.052×10^{-7}	35	0.01	0.05	330	0.1	500	3.3	–40 to +85	47 mm × 44 mm × 14 mm module	Extended Kalman filter, ±0.1° static angle accuracy, ±0.3° dynamic angle accuracy, programmable FIR filtering, 2.46 kHz sample rate, programmable soft-iron correction matrix, programmable hard-iron correction, single command self-test, delta angle/velocity, continuous bias estimator, linear-*g* compensation
ADIS16448 ***New***	Digital	1000	18	1.9	10 to 1200	14	0.6	0.005	0.015	0.01	40	0.1	0.05	330	0.12	205	3.3	–40 to +85	24 mm × 37 mm × 10 mm module	Programmable operation and control, wide dynamic range, external clock option, single command self-test

All ADI MEMS IMUs include part-specific factory calibration and programmable filtering, unless noted.

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