

Sensor Settings

The basic sensor setup includes the selection of the bandwidth and measurement range for accelerometer and gyroscope.

7.2.1 Accelerometer

The **bandwidth** (3db cutoff frequency) of the digital low-pass filter depends on the chosen ODR as well as the over sampling ratio (OSR). Both can be configured in register ACC 0x40 (ACC_CONF). The following table lists the possible options:

Accelerometer ODR [Hz]	3dB cutoff frequency [Hz]		
	Normal	OSR = 2	OSR = 4
12.5	5.06	3	1
25	10.12	5	3
50	20.25	10	5
100	40.5	20	10
200	80	41	20
400	162 (155 for Z channel)	80	41
800	324 (252 for Z channel)	162 (155 for Z channel)	80
1600	684 (353 for Z channel)	324 (262 for Z channel)	162

The acceleration measurement **range** can be selected via bits <1:0> (acc_range) in register ACC 0x41 (ACC_RANGE) according to the table below.

acc_range <1:0>	Measurement Range	Resolution
00	± 2 g	16384 LSB/g
01	± 4 g	8192 LSB/g
10	± 8 g	4096 LSB/g
11	± 16 g	2048 LSB/g

7.2.2 Gyroscope

The **bandwidth** of filtered rate data is determined by setting bits <3:0> (bw) in register GYR 0x10 (BW) as shown in the following table.

bw <3:0>	Filter Bandwidth [Hz]	ODR [Hz]	Decimation Factor
0111	32	100	20
0110	64	200	10
0101	12	100	20
0100	23	200	10
0011	47	400	5
0010	116	1000	2
0001	230	2000	0
0000	523 (unfiltered)	2000	0
1xxx	reserved	reserved	reserved