

CONVERSION FACTORS

ANGULAR MEASURE

1 revolution = 360° = 21,600 minutes = 1,296,000 seconds » 2pi radians (rad)

1° = 60 minutes (min) = 3600 seconds (s) » 0.0175 rad

1 min = 60 s = 0.0167° » 0.291 mrad

1 s = 0.0167 min = 0.000278° » 4.85 µrad

1 rad » 57.3°; 1 mrad » 3.48 min; 1 µrad » 0.206 s

Sometimes the terms “arcminutes” and “arcseconds” are used to differentiate the units of angle from the units of time. If the context makes the meaning clear, the “arc” prefix need not be used.

Occasionally, the symbols ‘ and “ are used to indicate arcminutes and arcseconds, respectively. Because they can be confused with feet and inches, they should not be used.

LINEAR MEASURE

1 foot (ft) = 12 inches (in) = 304.8 millimeters (mm)

1 in = 25.4 mm

0.001 in = 25.4 micrometer (µm)

1 meter (m) » 3.281 ft » 39.37 in

1 mm » 0.0394 in

1 µm » 39.37 µin

The terms “mil” (= 0.001 in; short for milli-inch) and “micron” (= 1 µm) should not be used.

SPEED

1 rev/min (rpm) = 1/60 rev/s (rps)

1 rad/s » 57.3 deg/s » 0.159 rev/s

1 in/min » 0.423 mm/s

1 mm/min » 0.000657 in/s

BINARY RESOLUTION (Angular Resolution)

N Bits	Counts/rev =2^N	Deg/min/sec	Radians
1	2	180 deg	3.14 rad
2	4	90	1.57
3	8	45	0.79
4	16	22.5	0.39
5	32	11.25	0.20
6	64	5.63	0.10
7	128	2.81	0.05
8	256	1.41	0.02
9	512	42.19 min	12.27 mrad
10	1,024	21.09	6.14
11	2,048	10.55	3.07
12	4,096	5.27	1.53
13	8,192	2.64	0.77
14	16,384	1.32	0.38
15	32,768	39.55 sec	0.19
16	65,536	19.78	95.87 microrad
17	131,072	9.89	47.94
18	262,144	4.95	23.97
19	524,288	2.47	11.98
20	1,048,576	1.24	5.99
21	2,097,152	0.62	3.00
22	4,194,304	0.31	1.50
23	8,388,608	0.15	0.75
24	16,777,216	0.08	0.37
25	33,554,432	0.04	0.19
26	67,108,864	0.02	0.09