



# MODEL:12GFN20



输出功率：约0.1~1.5W  
精密金属齿轮减速电机

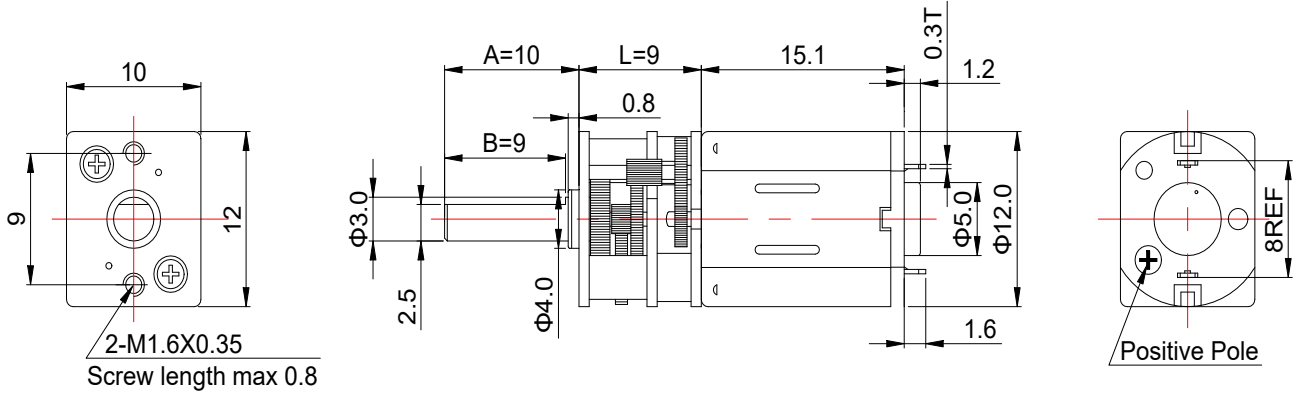
典型应用： 电子门锁  
智能家居  
智能机器人  
电动玩具

OUTPUT:APPROX 0.1~1.5W  
Precision Metal Gear Motor

Typical Applications: Electronic Door Lock  
Smart Home  
Smart Robot  
Electric Toys

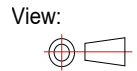
## 1.OUTLINE DRAWING:

UNIT:MM



- Customizable Parameters:
1. Length L、A and B
  2. Electric Performance
  3. Output shaft specifications
  4. Reduction Ratio

WEIGHT: 9.8g(Approx)



## 2.GEARBOX REDUCTION RATIO:

| Gearbox Length (mm) | Stage Number | Reduction Ratio |        |       |       |       |  | Rated Troque | Bearable Maximum Instant Torque |
|---------------------|--------------|-----------------|--------|-------|-------|-------|--|--------------|---------------------------------|
|                     |              | g.cm            |        |       |       |       |  |              |                                 |
| 9                   | 2            | 3/1             | 5/1    | 10/1  |       |       |  | 200          | 500                             |
|                     | 3            | 17/1            | 20/1   | 30/1  | 36/1  |       |  | 300          | 600                             |
|                     | 4            | 50/1            | 75/1   | 100/1 |       |       |  | 400          | 800                             |
|                     | 5            | 150/1           | 210/1  | 250/1 | 298/1 | 380/1 |  | 500          | 1200                            |
| 12.5                | 7            | 625/1           | 1000/1 |       |       |       |  | 800          | 1600                            |

## 3.MOTOR PERFORMANCE :

1mN.m≈10.2g.cm≈0.142oz.in

| FF-N20TA (High-power,Metal brushes) 12.0VDC 30000rpm |                     |                    |             |         |             |                       |             |        |       |        |             |
|--|---------------------|--------------------|-------------|---------|-------------|-----------------------|-------------|--------|-------|--------|-------------|
| MODEL  | REDUCTIO<br>N RATIO | VOLTAGE            |             | NO LOAD |             | AT MAXIMUM EFFICIENCY |             |        |       | STALL  |             |
|  |                     | OPERATING<br>RANGE | NOMINA<br>L | SPEED   | CURREN<br>T | SPEED                 | CURREN<br>T | TORQUE | OUPUT | TORQUE | CURREN<br>T |
|  |                     |                    | V           | rpm     | A           | rpm                   | A           | g.cm   | W     | g.cm   | A           |
| 12GFN20-5-126000                                     | 5/1                 | 3.0~12.0           | 12.0        | 6000    | 0.03        | 4700                  | 0.2         | 20     | 0.96  | 92     | 0.75        |
| 12GFN20-10-123000                                    | 10/1                | 3.0~12.0           | 12.0        | 3000    | 0.03        | 2350                  | 0.2         | 40     | 0.96  | 185    | 0.75        |
| 12GFN20-20-121500                                    | 20/1                | 3.0~12.0           | 12.0        | 1500    | 0.03        | 1180                  | 0.2         | 70     | 0.85  | 335    | 0.75        |
| 12GFN20-30-121000                                    | 30/1                | 3.0~12.0           | 12.0        | 1000    | 0.03        | 780                   | 0.2         | 110    | 0.88  | 498    | 0.75        |
| 12GFN20-50-12600                                     | 50/1                | 3.0~12.0           | 12.0        | 600     | 0.03        | 473                   | 0.2         | 160    | 0.78  | 760    | 0.75        |
| 12GFN20-75-12400                                     | 75/1                | 3.0~12.0           | 12.0        | 400     | 0.03        | 315                   | 0.2         | 240    | 0.78  | 1138   | 0.75        |

|                   |        |          |      |     |      |     |      |      |      |       |      |
|-------------------|--------|----------|------|-----|------|-----|------|------|------|-------|------|
| 12GFN20-100-12300 | 100/1  | 3.0~12.0 | 12.0 | 300 | 0.03 | 236 | 0.2  | 320  | 0.77 | 1518  | 0.75 |
| 12GFN20-150-12200 | 150/1  | 3.0~12.0 | 12.0 | 200 | 0.03 | 155 | 0.2  | 450  | 0.72 | 2035  | 0.75 |
| 12GFN20-210-12142 | 210/1  | 3.0~12.0 | 12.0 | 142 | 0.03 | 112 | 0.2  | 600  | 0.69 | 2850  | 0.75 |
| 12GFN20-250-12120 | 250/1  | 3.0~12.0 | 12.0 | 120 | 0.03 | 95  | 0.2  | 700  | 0.68 | 3390  | 0.75 |
| 12GFN20-298-12100 | 298/1  | 3.0~12.0 | 12.0 | 100 | 0.03 | 80  | 0.19 | 800  | 0.66 | 4040  | 0.75 |
| 12GFN20-380-1279  | 380/1  | 3.0~12.0 | 12.0 | 79  | 0.03 | 66  | 0.16 | 800  | 0.54 | 5150  | 0.75 |
| 12GFN20-1000-1230 | 1000/1 | 3.0~12.0 | 12.0 | 30  | 0.03 | 27  | 0.11 | 1000 | 0.28 | 10700 | 0.75 |

**FK-N20TA (High-power,carbon brushes(HPCB) 6.0VDC 30000rpm**

| MODEL             | REDUCTIO<br>N RATIO | VOLTAGE            |             | NO LOAD |             | AT MAXIMUM EFFICIENCY |             |        |       | STALL  |             |
|-------------------|---------------------|--------------------|-------------|---------|-------------|-----------------------|-------------|--------|-------|--------|-------------|
|                   |                     | OPERATING<br>RANGE | NOMINA<br>I | SPEED   | CURREN<br>T | SPEED                 | CURREN<br>T | TORQUE | OUPUT | TORQUE | CURREN<br>T |
|                   |                     |                    | V           | rpm     | A           | rpm                   | A           | g.cm   | W     | g.cm   | A           |
| 12GFN20-5-066000  | 5/1                 | 2.0~6.0            | 6.0         | 6000    | 0.1         | 4700                  | 0.4         | 20     | 0.96  | 92     | 1.7         |
| 12GFN20-10-063000 | 10/1                | 2.0~6.0            | 6.0         | 3000    | 0.1         | 2350                  | 0.4         | 40     | 0.96  | 185    | 1.7         |
| 12GFN20-20-061500 | 20/1                | 2.0~6.0            | 6.0         | 1500    | 0.1         | 1180                  | 0.4         | 70     | 0.85  | 335    | 1.7         |
| 12GFN20-30-061000 | 30/1                | 2.0~6.0            | 6.0         | 1000    | 0.1         | 780                   | 0.4         | 110    | 0.88  | 498    | 1.7         |
| 12GFN20-50-06600  | 50/1                | 2.0~6.0            | 6.0         | 600     | 0.1         | 473                   | 0.4         | 160    | 0.78  | 760    | 1.7         |
| 12GFN20-75-06400  | 75/1                | 2.0~6.0            | 6.0         | 400     | 0.1         | 315                   | 0.4         | 240    | 0.78  | 1138   | 1.7         |
| 12GFN20-100-06300 | 100/1               | 2.0~6.0            | 6.0         | 300     | 0.1         | 236                   | 0.4         | 320    | 0.77  | 1518   | 1.7         |
| 12GFN20-150-06200 | 150/1               | 2.0~6.0            | 6.0         | 200     | 0.1         | 155                   | 0.4         | 450    | 0.72  | 2035   | 1.7         |
| 12GFN20-210-06142 | 210/1               | 2.0~6.0            | 6.0         | 142     | 0.1         | 112                   | 0.4         | 600    | 0.69  | 2850   | 1.7         |
| 12GFN20-250-06120 | 250/1               | 2.0~6.0            | 6.0         | 120     | 0.1         | 95                    | 0.4         | 700    | 0.68  | 3390   | 1.7         |
| 12GFN20-298-06100 | 298/1               | 2.0~6.0            | 6.0         | 100     | 0.1         | 80                    | 0.38        | 800    | 0.66  | 4040   | 1.7         |
| 12GFN20-380-0679  | 380/1               | 2.0~6.0            | 6.0         | 79      | 0.1         | 66                    | 0.32        | 800    | 0.54  | 5150   | 1.7         |
| 12GFN20-1000-0630 | 1000/1              | 2.0~6.0            | 6.0         | 30      | 0.1         | 27                    | 0.22        | 1000   | 0.28  | 10700  | 1.7         |

**FF-N20TA (High-power,Metal brushes) 6.0VDC 30000rpm**

| MODEL             | REDUCTIO<br>N RATIO | VOLTAGE            |             | NO LOAD |             | AT MAXIMUM EFFICIENCY |             |        |       | STALL  |             |
|-------------------|---------------------|--------------------|-------------|---------|-------------|-----------------------|-------------|--------|-------|--------|-------------|
|                   |                     | OPERATING<br>RANGE | NOMINA<br>I | SPEED   | CURREN<br>T | SPEED                 | CURREN<br>T | TORQUE | OUPUT | TORQUE | CURREN<br>T |
|                   |                     |                    | V           | rpm     | A           | rpm                   | A           | g.cm   | W     | g.cm   | A           |
| 12GFN20-5-066000  | 5/1                 | 2.0~6.0            | 6.0         | 6000    | 0.07        | 5000                  | 0.37        | 18     | 0.92  | 115    | 1.95        |
| 12GFN20-10-063000 | 10/1                | 2.0~6.0            | 6.0         | 3000    | 0.07        | 2500                  | 0.37        | 36     | 0.92  | 230    | 1.95        |
| 12GFN20-20-061500 | 20/1                | 2.0~6.0            | 6.0         | 1500    | 0.07        | 1260                  | 0.37        | 65     | 0.84  | 410    | 1.95        |
| 12GFN20-30-061000 | 30/1                | 2.0~6.0            | 6.0         | 1000    | 0.07        | 840                   | 0.37        | 100    | 0.86  | 615    | 1.95        |
| 12GFN20-50-06600  | 50/1                | 2.0~6.0            | 6.0         | 600     | 0.07        | 505                   | 0.37        | 150    | 0.78  | 940    | 1.95        |
| 12GFN20-75-06400  | 75/1                | 2.0~6.0            | 6.0         | 400     | 0.07        | 335                   | 0.37        | 225    | 0.77  | 1410   | 1.95        |
| 12GFN20-100-06300 | 100/1               | 2.0~6.0            | 6.0         | 300     | 0.07        | 252                   | 0.37        | 300    | 0.78  | 1880   | 1.95        |
| 12GFN20-150-06200 | 150/1               | 2.0~6.0            | 6.0         | 200     | 0.07        | 168                   | 0.37        | 400    | 0.69  | 2522   | 1.95        |
| 12GFN20-210-06142 | 210/1               | 2.0~6.0            | 6.0         | 142     | 0.07        | 120                   | 0.37        | 550    | 0.68  | 3530   | 1.95        |

|                   |        |         |     |     |      |      |      |      |      |       |      |
|-------------------|--------|---------|-----|-----|------|------|------|------|------|-------|------|
| 12GFN20-250-06120 | 250/1  | 2.0~6.0 | 6.0 | 120 | 0.07 | 100  | 0.37 | 670  | 0.69 | 4200  | 1.95 |
| 12GFN20-298-06100 | 298/1  | 2.0~6.0 | 6.0 | 100 | 0.07 | 84   | 0.38 | 800  | 0.69 | 5010  | 1.95 |
| 12GFN20-380-0679  | 380/1  | 2.0~6.0 | 6.0 | 79  | 0.07 | 59   | 0.3  | 800  | 0.48 | 6390  | 1.95 |
| 12GFN20-1000-0630 | 1000/1 | 2.0~6.0 | 6.0 | 30  | 0.07 | 27.5 | 0.22 | 1000 | 0.28 | 13330 | 1.95 |

**FF-N20TA (Medium-power, Metal brushes) 6.0VDC 21000rpm**

| MODEL             | REDUCTIO<br>N RATIO | VOLTAGE            |             | NO LOAD |             | AT MAXIMUM EFFICIENCY |             |        |       | STALL  |             |
|-------------------|---------------------|--------------------|-------------|---------|-------------|-----------------------|-------------|--------|-------|--------|-------------|
|                   |                     | OPERATING<br>RANGE | NOMINA<br>L | SPEED   | CURREN<br>T | SPEED                 | CURREN<br>T | TORQUE | OUPUT | TORQUE | CURREN<br>T |
|                   |                     |                    | V           | rpm     | A           | rpm                   | A           | g.cm   | W     | g.cm   | A           |
| 12GFN20-5-064200  | 5/1                 | 3.0~6.0            | 6.0         | 4200    | 0.035       | 3480                  | 0.17        | 12     | 0.43  | 70     | 0.78        |
| 12GFN20-10-062100 | 10/1                | 3.0~6.0            | 6.0         | 2100    | 0.035       | 1750                  | 0.17        | 24     | 0.43  | 142    | 0.78        |
| 12GFN20-20-061050 | 20/1                | 3.0~6.0            | 6.0         | 1050    | 0.035       | 875                   | 0.17        | 36     | 0.32  | 252    | 0.78        |
| 12GFN20-30-06700  | 30/1                | 3.0~6.0            | 6.0         | 700     | 0.035       | 583                   | 0.17        | 63     | 0.38  | 378    | 0.78        |
| 12GFN20-50-06420  | 50/1                | 3.0~6.0            | 6.0         | 420     | 0.035       | 350                   | 0.17        | 100    | 0.36  | 578    | 0.78        |
| 12GFN20-75-06280  | 75/1                | 3.0~6.0            | 6.0         | 280     | 0.035       | 231                   | 0.17        | 150    | 0.36  | 866    | 0.78        |
| 12GFN20-100-06210 | 100/1               | 3.0~6.0            | 6.0         | 210     | 0.035       | 173                   | 0.17        | 200    | 0.35  | 1155   | 0.78        |
| 12GFN20-150-06140 | 150/1               | 3.0~6.0            | 6.0         | 140     | 0.035       | 116                   | 0.17        | 260    | 0.31  | 1550   | 0.78        |
| 12GFN20-210-06100 | 210/1               | 3.0~6.0            | 6.0         | 100     | 0.035       | 81                    | 0.17        | 400    | 0.33  | 2170   | 0.78        |
| 12GFN20-250-0684  | 250/1               | 3.0~6.0            | 6.0         | 84      | 0.035       | 69                    | 0.17        | 450    | 0.32  | 2580   | 0.78        |
| 12GFN20-298-0670  | 298/1               | 3.0~6.0            | 6.0         | 70      | 0.035       | 58                    | 0.17        | 500    | 0.30  | 3076   | 0.78        |
| 12GFN20-380-0655  | 380/1               | 3.0~6.0            | 6.0         | 55      | 0.035       | 46                    | 0.17        | 650    | 0.31  | 3923   | 0.78        |
| 12GFN20-1000-0621 | 1000/1              | 3.0~6.0            | 6.0         | 21      | 0.035       | 18                    | 0.13        | 1000   | 0.18  | 8190   | 0.78        |

**FF-N20TA (Low-power, Metal brushes) 6.0VDC 14000rpm**

| MODEL             | REDUCTIO<br>N RATIO | VOLTAGE            |             | NO LOAD |             | AT MAXIMUM EFFICIENCY |             |        |       | STALL  |             |
|-------------------|---------------------|--------------------|-------------|---------|-------------|-----------------------|-------------|--------|-------|--------|-------------|
|                   |                     | OPERATING<br>RANGE | NOMINA<br>L | SPEED   | CURREN<br>T | SPEED                 | CURREN<br>T | TORQUE | OUPUT | TORQUE | CURREN<br>T |
|                   |                     |                    | V           | rpm     | A           | rpm                   | A           | g.cm   | W     | g.cm   | A           |
| 12GFN20-5-062800  | 5/1                 | 3.0~6.0            | 6.0         | 2800    | 0.025       | 2170                  | 0.1         | 10     | 0.22  | 45     | 0.35        |
| 12GFN20-10-061400 | 10/1                | 3.0~6.0            | 6.0         | 1400    | 0.025       | 1085                  | 0.1         | 20     | 0.22  | 90     | 0.35        |
| 12GFN20-20-06700  | 20/1                | 3.0~6.0            | 6.0         | 700     | 0.025       | 544                   | 0.1         | 40     | 0.22  | 180    | 0.35        |
| 12GFN20-30-06465  | 30/1                | 3.0~6.0            | 6.0         | 465     | 0.025       | 361                   | 0.1         | 60     | 0.22  | 270    | 0.35        |
| 12GFN20-50-06280  | 50/1                | 3.0~6.0            | 6.0         | 280     | 0.025       | 217                   | 0.1         | 80     | 0.18  | 360    | 0.35        |
| 12GFN20-75-06185  | 75/1                | 3.0~6.0            | 6.0         | 185     | 0.025       | 144                   | 0.1         | 120    | 0.18  | 545    | 0.35        |
| 12GFN20-100-06140 | 100/1               | 3.0~6.0            | 6.0         | 140     | 0.025       | 109                   | 0.1         | 160    | 0.18  | 726    | 0.35        |
| 12GFN20-150-0693  | 150/1               | 3.0~6.0            | 6.0         | 93      | 0.025       | 73                    | 0.1         | 210    | 0.16  | 975    | 0.35        |
| 12GFN20-210-0666  | 210/1               | 3.0~6.0            | 6.0         | 66      | 0.025       | 51                    | 0.1         | 300    | 0.16  | 1360   | 0.35        |
| 12GFN20-250-0656  | 250/1               | 3.0~6.0            | 6.0         | 56      | 0.025       | 44                    | 0.1         | 350    | 0.16  | 1620   | 0.35        |
| 12GFN20-298-0646  | 298/1               | 3.0~6.0            | 6.0         | 46      | 0.025       | 35                    | 0.1         | 450    | 0.16  | 1935   | 0.35        |

|                   |        |         |     |    |       |      |      |      |      |      |      |
|-------------------|--------|---------|-----|----|-------|------|------|------|------|------|------|
| 12GFN20-380-0636  | 380/1  | 3.0~6.0 | 6.0 | 36 | 0.025 | 28   | 0.1  | 550  | 0.16 | 2466 | 0.35 |
| 12GFN20-1000-0614 | 1000/1 | 3.0~6.0 | 6.0 | 14 | 0.025 | 11.2 | 0.09 | 1000 | 0.11 | 5150 | 0.35 |

| FF-N20TA (Low-power, Metal brushes) 3.0VDC 12000rpm |                 |                 |         |         |         |                       |         |        |        |        |         |
|---|-----------------|-----------------|---------|---------|---------|-----------------------|---------|--------|--------|--------|---------|
| MODEL   | REDUCTION RATIO | VOLTAGE         |         | NO LOAD |         | AT MAXIMUM EFFICIENCY |         |        |        | STALL  |         |
|   |                 | OPERATING RANGE | NOMINAL | SPEED   | CURRENT | SPEED                 | CURRENT | TORQUE | OUTPUT | TORQUE | CURRENT |
|   |                 |                 | V       | rpm     | A       | rpm                   | A       | g.cm   | W      | g.cm   | A       |
| 12GFN20-5-032400                                    | 5/1             | 2.0~4.0         | 3.0     | 2400    | 0.04    | 1890                  | 0.15    | 10     | 0.19   | 46     | 0.56    |
| 12GFN20-10-031200                                   | 10/1            | 2.0~4.0         | 3.0     | 1200    | 0.04    | 1085                  | 0.15    | 20     | 0.22   | 92     | 0.56    |
| 12GFN20-20-03600                                    | 20/1            | 2.0~4.0         | 3.0     | 600     | 0.04    | 473                   | 0.15    | 36     | 0.17   | 170    | 0.56    |
| 12GFN20-30-03400                                    | 30/1            | 2.0~4.0         | 3.0     | 400     | 0.04    | 315                   | 0.15    | 54     | 0.17   | 255    | 0.56    |
| 12GFN20-50-03240                                    | 50/1            | 2.0~4.0         | 3.0     | 240     | 0.04    | 189                   | 0.15    | 82     | 0.16   | 390    | 0.56    |
| 12GFN20-75-03160                                    | 75/1            | 2.0~4.0         | 3.0     | 160     | 0.04    | 125                   | 0.15    | 125    | 0.16   | 585    | 0.56    |
| 12GFN20-100-03120                                   | 100/1           | 2.0~4.0         | 3.0     | 120     | 0.04    | 95                    | 0.15    | 160    | 0.16   | 780    | 0.56    |
| 12GFN20-150-0380                                    | 150/1           | 2.0~4.0         | 3.0     | 80      | 0.04    | 63                    | 0.15    | 220    | 0.14   | 1045   | 0.56    |
| 12GFN20-210-0357                                    | 210/1           | 2.0~4.0         | 3.0     | 57      | 0.04    | 45                    | 0.15    | 300    | 0.14   | 1460   | 0.56    |
| 12GFN20-250-0348                                    | 250/1           | 2.0~4.0         | 3.0     | 48      | 0.04    | 38                    | 0.15    | 360    | 0.14   | 1740   | 0.56    |
| 12GFN20-298-0340                                    | 298/1           | 2.0~4.0         | 3.0     | 40      | 0.04    | 31                    | 0.15    | 450    | 0.14   | 2075   | 0.56    |
| 12GFN20-380-0631                                    | 380/1           | 2.0~4.0         | 3.0     | 31      | 0.04    | 24                    | 0.15    | 550    | 0.14   | 2645   | 0.56    |
| 12GFN20-1000-0312                                   | 1000/1          | 2.0~4.0         | 3.0     | 12      | 0.04    | 9.8                   | 0.14    | 1000   | 0.10   | 5520   | 0.56    |