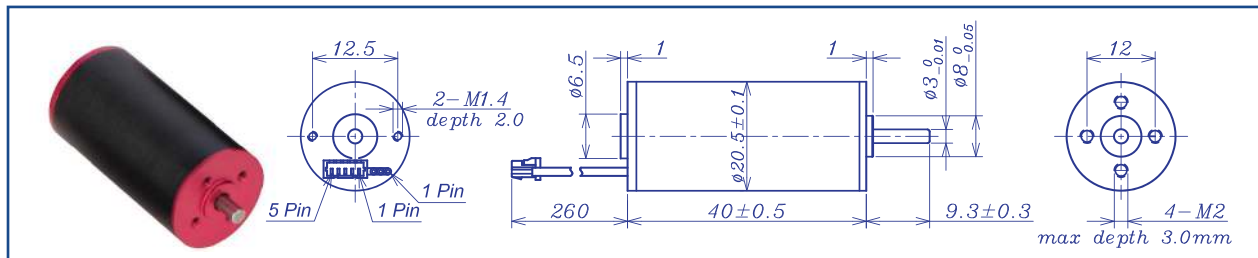


AM-BL2040AE Series

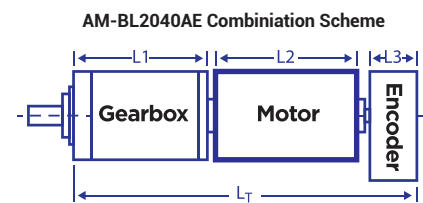


|  |                  | Brushless Motor  |        |       | Ball Bearings |       |       |       |       |
|--|------------------|------------------|--------|-------|---------------|-------|-------|-------|-------|
| Motor Model                              |                  |                  | 1226   | 1220  | 1216          | 1820  | 1817  | 2420  | 2417  |
| Nominal voltage                          |                  | V                | 12     | 12    | 12            | 18    | 18    | 24    | 24    |
| No load speed ±12%                       |                  | rpm              | 26000  | 20360 | 16260         | 19500 | 17350 | 20000 | 16600 |
| No load current Max 150%                 |                  | mA               | 350    | 190   | 180           | 150   | 140   | 110   | 95    |
| Recommend limit for continuous operating | Max cont. torque | mN.m             | 8.5    | 12.3  | 13.3          | 11.7  | 11.9  | 12.3  | 12.3  |
|  | Rated Speed      | rpm              | 23943  | 17399 | 13404         | 16737 | 14340 | 17144 | 13836 |
|  | Rated Current    | mA               | 2300   | 2400  | 2100          | 1500  | 1360  | 1200  | 1000  |
|  | Rated Power      | W                | 21.2   | 22.4  | 18.7          | 20.5  | 17.8  | 22.1  | 17.8  |
| Starting current                         |                  | mA               | 25000  | 15385 | 11111         | 9677  | 7171  | 7742  | 5530  |
| Stall torque                             |                  | mN.m             | 107    | 84    | 76            | 83    | 68    | 86    | 74    |
| Maximum power output                     |                  | W                | 72.9   | 45.0  | 32.3          | 42.2  | 31.0  | 45.1  | 32.0  |
| Maximum Efficiency                       |                  | %                | 78     | 79    | 76            | 77    | 74    | 78    | 76    |
| Terminal resistance ±12%                 |                  | Ω                | 0.48   | 0.78  | 1.08          | 1.86  | 2.51  | 3.1   | 4.34  |
| Inductance (1KHz)                        |                  | mH               | 0.034  | 0.061 | 0.097         | 0.17  | 0.22  | 0.29  | 0.42  |
| Mechanical time constant                 |                  | ms               | 2.9    | 2.9   | 2.5           | 2.8   | 3.0   | 2.7   | 2.7   |
| Moment of inertia                        |                  | gcm <sup>2</sup> | 1.13   | 1.13  | 1.13          | 1.13  | 1.13  | 1.13  | 1.13  |
| Torque constant                          |                  | mN.m/A           | 4.3    | 5.6   | 6.9           | 8.7   | 9.7   | 11.3  | 13.6  |
| Speed constant                           |                  | rpm/V            | 2197   | 1718  | 1377          | 1100  | 983   | 845   | 704   |
| Speed/torque gradient                    |                  | rpm/mN.m         | 4242.7 | 241.1 | 214.5         | 235.8 | 254.0 | 232.0 | 225.1 |
| Weight                                   |                  | g                | 65.9   | 66.2  | 66.6          | 65.7  | 65.4  | 65.1  | 65.9  |

| ADDITIONAL INFORMATION                        |          |  |              |
|---|----------|--|--------------|
| Motor thermal resistance:                     | 15 K/W   | Motor thermal time constant:           | 637S         |
| Axial (dynamic):                              | 2.5 N    | Radial (5mm from mounting face):       | 16.0 N       |
| Press-fit force (static):                     | 50 N     | Max allowable screw depth into flange: | 3.0 mm       |
| Maximum radial play (5mm from mounting face): | ≤0.02 mm | Axial play:                            | 0 (<4.0N)    |
| Maximum winding temperature:                  | 125°C    | Ambient temperature range:             | -30 to 65°C  |
| Standard rear shaft diameter:                 | 3 mm     | Standard rear shaft length "L":        | 0/3.7/5.5 mm |

| Connection (AWG 24#)                           |            | Total Length: L <sub>T</sub> =L <sub>1</sub> +L <sub>2</sub> +L <sub>3</sub> |         |         |          |          |
|--|------------|--|---------|---------|----------|----------|
| Cable  | Winding    | L1:16GP  | L1:20GP | L2:BL16 | L3:EN16S | L3:EN16T |
| Cable 1: Yellow                                | Winding A  | 18.8   | 22.2    | 40.0    | 10.7     | 12.0     |
| Cable 2: Red                                   | Winding B  | 23.6   | 27.4    |         |          |          |
| Cable 3: Blue                                  | Winding C  | 28.4   | 32.6    |         |          |          |
| Plug definition (AWG 28#)<br>Molex: 51021-0500 |            |  |         |         |          |          |
| Plug 1: Red                                    | Hall 3~16V |  |         |         |          |          |
| Plug 2: Black                                  | Hall GND   |  |         |         |          |          |
| Plug 3: Yellow                                 | Hall A     |  |         |         |          |          |
| Plug 4: Red                                    | Hall B     |  |         |         |          |          |
| Plug 5: Blue                                   | Hall C     |  |         |         |          |          |

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



**Recommended Gearbox:**  
Planetary Gearbox:  
AM-20GP  
AM-24GP

**Recommended Encoder:**  
Encoder S: AM-EN1611S\*\*\*  
2~3 Channels  
Encoder T: AM-EN1612T\*\*\*  
2~3 Channels

For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.  
At elevated ambient temperatures, load current must be reduced.

Download datasheet: <https://assunmotor.com/documents-download>