**BL3564****Report for Brushless Motor Testing Data Sheet****Series No: BL3564- - P 2**

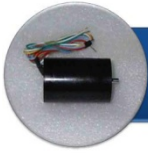
| No. | Testing Item                        |                     | Tested Values              |        |        |        |        | Unit                               |
|-----|-------------------------------------|---------------------|----------------------------|--------|--------|--------|--------|------------------------------------|
| 1   | Nominal voltage                     | $U_N$               | 12                         | 12     | 18     | 18     | 24     | V                                  |
| 2   | Terminal resistance, phase to phase | R                   | 1.8                        | 1      | 2.9    | 1.8    | 2.5    | $\Omega$                           |
| 3   | Output power                        | $P_{2max}$          | 19.05                      | 34.75  | 26.16  | 43.04  | 55.70  | W                                  |
| 4   | Efficiency                          | $\eta_{max}$        | 71                         | 75     | 67     | 73     | 76     | %                                  |
| 5   | No-load speed                       | $n_o$               | 4250                       | 6500   | 4670   | 6815   | 6500   | rpm                                |
| 6   | No-load current                     | $I_o$               | 0.16                       | 0.21   | 0.2    | 0.22   | 0.16   | A                                  |
| 7   | Stall torque                        | $M_H$               | 171.23                     | 204.21 | 213.97 | 241.24 | 327.30 | mNm                                |
| 8   | Friction torque                     | MF                  | 4.21                       | 3.64   | 7.12   | 5.43   | 5.55   | mNm                                |
| 9   | Speed constant                      | $k_n$               | 362.88                     | 551.31 | 268.08 | 387.13 | 275.42 | rpm/V                              |
| 10  | Back-EMF constant                   | $k_E$               | 2.76                       | 1.81   | 3.73   | 2.58   | 3.63   | mV/rpm                             |
| 11  | Torque constant                     | $k_M$               | 26.32                      | 17.32  | 35.62  | 24.67  | 34.67  | mNm/A                              |
| 12  | Current constant                    | $k_I$               | 0.04                       | 0.06   | 0.03   | 0.04   | 0.03   | A/mNm                              |
| 13  | Slope of n-M curve                  | $\Delta n/\Delta M$ | 24.82                      | 31.83  | 21.83  | 28.25  | 19.86  | rpm/mNm                            |
| 14  | Mechanical time constant            | $\tau_n$            | 9.26                       | 11.88  | 8.15   | 10.54  | 7.41   | ms                                 |
| 15  | Rotor inertia                       | J                   | 35.64                      | 35.64  | 35.64  | 35.64  | 35.64  | gcm <sup>2</sup>                   |
| 16  | Angular acceleration                | $\alpha_{max}$      | 48.04                      | 57.30  | 60.04  | 67.69  | 91.83  | 10 <sup>3</sup> rad/s <sup>2</sup> |
| 17  | Sensor                              |                     | Hall Sensor                |        |        |        |        |                                    |
| 18  | Driver                              |                     | DR3006                     |        |        |        |        |                                    |
| 19  | Weight                              |                     | 300                        |        |        |        |        | g                                  |
| 20  | Operating temperature range         |                     | -30~+85                    |        |        |        |        |                                    |
| 21  | Commutation                         |                     | Electronically commutation |        |        |        |        |                                    |
| 22  | Ball Bearing                        |                     | EZO & NMB                  |        |        |        |        |                                    |
| 23  | Housing material                    |                     | Aluminum, black anodized   |        |        |        |        |                                    |
| 24  | Magnet material                     |                     | Sintered Nd-Fe-B           |        |        |        |        |                                    |
| 25  | Direction of rotation               |                     | Electronically reversible  |        |        |        |        |                                    |

**The Operating Data For  $\eta_{max}$  of Customer's Specifications**

|    |                  |              |       |       |       |       |       |     |
|----|------------------|--------------|-------|-------|-------|-------|-------|-----|
| 26 | Output Power     | $P_{2opt}$   | 8.74  | 14.22 | 13.28 | 19.15 | 22.37 | W   |
| 27 | Efficiency       | $\eta_{opt}$ | 71    | 75    | 67    | 73    | 76    | %   |
| 28 | Speed            | $n_{opt}$    | 3111  | 4984  | 3250  | 5057  | 5016  | rpm |
| 29 | Load Current     | $I_{opt}$    | 1.02  | 1.57  | 1.10  | 1.47  | 1.23  | A   |
| 30 | Operating Torque | $M_{opt}$    | 26.85 | 27.25 | 39.04 | 36.18 | 42.61 | mNm |

**Note:**

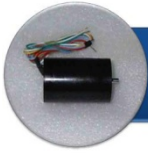
- (1) The  $I_o$  is pure current of motor in this data sheet that means it not included the driver's current.
- (2) This type of motor can be assemble for planetary Gearbox which type of IG32 and made from Shayang Ye Co., Taiwan, and please to see Gearbox' s sheet attached if you have need it.

**BL3564****Report for Brushless Motor Testing Data Sheet****Series No: BL3564- - P 2**

| No.  | Testing Item                        |                     | Tested Values              |        |        |        |        | Unit                               |
|--|-------------------------------------|---------------------|----------------------------|--------|--------|--------|--------|------------------------------------|
| 1  | Nominal voltage                     | $U_N$               | 24                         | 24     | 24     | 24     | 24     | V                                  |
| 2  | Terminal resistance, phase to phase | R                   | 1.6                        | 6      | 3.1    | 2      | 1.8    | $\Omega$                           |
| 3  | Output power                        | $P_{2max}$          | 86.32                      | 22.47  | 44.32  | 67.74  | 76.09  | W                                  |
| 4  | Efficiency                          | $\eta_{max}$        | 73                         | 67     | 72     | 68     | 71     | %                                  |
| 5  | No-load speed                       | $n_o$               | 10000                      | 4980   | 7460   | 10200  | 8400   | rpm                                |
| 6  | No-load current                     | $I_o$               | 0.31                       | 0.13   | 0.18   | 0.36   | 0.33   | A                                  |
| 7  | Stall torque                        | $M_H$               | 329.71                     | 172.31 | 226.91 | 253.69 | 346.00 | mNm                                |
| 8  | Friction torque                     | MF                  | 6.96                       | 5.79   | 5.40   | 7.85   | 8.78   | mNm                                |
| 9  | Speed constant                      | $k_n$               | 425.46                     | 214.47 | 318.23 | 438.14 | 358.88 | rpm/V                              |
| 10   | Back-EMF constant                   | $k_E$               | 2.35                       | 4.66   | 3.14   | 2.28   | 2.79   | mV/rpm                             |
| 11   | Torque constant                     | $k_M$               | 22.44                      | 44.53  | 30.01  | 21.79  | 26.61  | mNm/A                              |
| 12   | Current constant                    | $k_I$               | 0.04                       | 0.02   | 0.03   | 0.05   | 0.04   | A/mNm                              |
| 13   | Slope of n-M curve                  | $\Delta n/\Delta M$ | 30.33                      | 28.90  | 32.88  | 40.21  | 24.28  | rpm/mNm                            |
| 14   | Mechanical time constant            | $\tau_m$            | 11.32                      | 10.79  | 12.27  | 15.01  | 9.06   | ms                                 |
| 15   | Rotor inertia                       | J                   | 35.64                      | 35.64  | 35.64  | 35.64  | 35.64  | gcm <sup>2</sup>                   |
| 16   | Angular acceleration                | $\alpha_{max}$      | 92.51                      | 48.35  | 63.67  | 71.18  | 97.08  | 10 <sup>3</sup> rad/s <sup>2</sup> |
| 17   | Sensor                              |                     | Hall Sensor                |        |        |        |        |                                    |
| 18   | Driver                              |                     | DR3006                     |        |        |        |        |                                    |
| 19   | Weight                              |                     | 300                        |        |        |        |        | g                                  |
| 20   | Operating temperature range         |                     | -30~+85                    |        |        |        |        |                                    |
| 21   | Commutation                         |                     | Electronically commutation |        |        |        |        |                                    |
| 22   | Ball Bearing                        |                     | EZO & NMB                  |        |        |        |        |                                    |
| 23   | Housing material                    |                     | Aluminum, black anodized   |        |        |        |        |                                    |
| 24   | Magnet material                     |                     | Sintered Nd-Fe-B           |        |        |        |        |                                    |
| 25   | Direction of rotation               |                     | Electronically reversible  |        |        |        |        |                                    |
| <b>The Operating Data For <math>\eta_{max}</math> of Customer's Specifications</b> |                                     |                     |                            |        |        |        |        |                                    |
| 26   | Output Power                        | $P_{2opt}$          | 37.55                      | 11.44  | 20.11  | 33.58  | 35.30  | W                                  |
| 27   | Efficiency                          | $\eta_{opt}$        | 73                         | 67     | 72     | 68     | 71     | %                                  |
| 28   | Speed                               | $n_{opt}$           | 7490                       | 3460   | 5489   | 7192   | 6119   | rpm                                |
| 29   | Load Current                        | $I_{opt}$           | 2.13                       | 0.71   | 1.17   | 2.05   | 2.07   | A                                  |
| 30   | Operating Torque                    | $M_{opt}$           | 47.90                      | 31.58  | 35.01  | 44.62  | 55.12  | mNm                                |

**Note:**

- (1) The  $I_o$  is pure current of motor in this data sheet that means it not included the driver's current.
- (2) This type of motor can be assemble for planetary Gearbox which type of IG32 and made from Shayang Ye Co., Taiwan, and please to see Gearbox' s sheet attached if you have need it.

**BL3564****Report for Brushless Motor Testing Data Sheet****Series No: BL3564- - P 2**

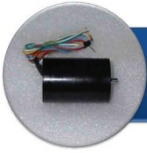
| No. | Testing Item                        |                     | Tested Values              |        |  |  | Unit                               |
|-----|-------------------------------------|---------------------|----------------------------|--------|--|--|------------------------------------|
| 1   | Nominal voltage                     | $U_N$               | 24                         | 30     |  |  | V                                  |
| 2   | Terminal resistance, phase to phase | R                   | 0.7                        | 1      |  |  | $\Omega$                           |
| 3   | Output power                        | $P_{2max}$          | 198.93                     | 218.30 |  |  | W                                  |
| 4   | Efficiency                          | $\eta_{max}$        | 76                         | 77     |  |  | %                                  |
| 5   | No-load speed                       | $n_o$               | 14580                      | 16400  |  |  | rpm                                |
| 6   | No-load current                     | $I_o$               | 0.57                       | 0.45   |  |  | A                                  |
| 7   | Stall torque                        | $M_H$               | 521.17                     | 508.44 |  |  | mNm                                |
| 8   | Friction torque                     | MF                  | 8.81                       | 7.74   |  |  | mNm                                |
| 9   | Speed constant                      | $k_n$               | 617.77                     | 554.99 |  |  | rpm/V                              |
| 10  | Back-EMF constant                   | $k_E$               | 1.62                       | 1.80   |  |  | mV/rpm                             |
| 11  | Torque constant                     | $k_M$               | 15.46                      | 17.21  |  |  | mNm/A                              |
| 12  | Current constant                    | $k_I$               | 0.06                       | 0.06   |  |  | A/mNm                              |
| 13  | Slope of n-M curve                  | $\Delta n/\Delta M$ | 27.98                      | 32.26  |  |  | rpm/mNm                            |
| 14  | Mechanical time constant            | $\tau_n$            | 10.44                      | 12.04  |  |  | ms                                 |
| 15  | Rotor inertia                       | J                   | 35.64                      | 35.64  |  |  | gcm <sup>2</sup>                   |
| 16  | Angular acceleration                | $\alpha_{max}$      | 146.23                     | 142.66 |  |  | 10 <sup>3</sup> rad/s <sup>2</sup> |
| 17  | Sensor                              |                     | Hall Sensor                |        |  |  |                                    |
| 18  | Driver                              |                     | DR3006                     |        |  |  |                                    |
| 19  | Weight                              |                     | 300                        |        |  |  | g                                  |
| 20  | Operating temperature range         |                     | -30~+85                    |        |  |  |                                    |
| 21  | Commutation                         |                     | Electronically commutation |        |  |  |                                    |
| 22  | Ball Bearing                        |                     | EZO & NMB                  |        |  |  |                                    |
| 23  | Housing material                    |                     | Aluminum, black anodized   |        |  |  |                                    |
| 24  | Magnet material                     |                     | Sintered Nd-Fe-B           |        |  |  |                                    |
| 25  | Direction of rotation               |                     | Electronically reversible  |        |  |  |                                    |

**The Operating Data For  $\eta_{max}$  of Customer's Specifications**

|    |                  |              |       |       |  |  |     |
|----|------------------|--------------|-------|-------|--|--|-----|
| 26 | Output Power     | $P_{2opt}$   | 79.83 | 84.24 |  |  | W   |
| 27 | Efficiency       | $\eta_{opt}$ | 76    | 77    |  |  | %   |
| 28 | Speed            | $n_{opt}$    | 11255 | 12828 |  |  | rpm |
| 29 | Load Current     | $I_{opt}$    | 4.38  | 3.65  |  |  | A   |
| 30 | Operating Torque | $M_{opt}$    | 67.76 | 62.74 |  |  | mNm |

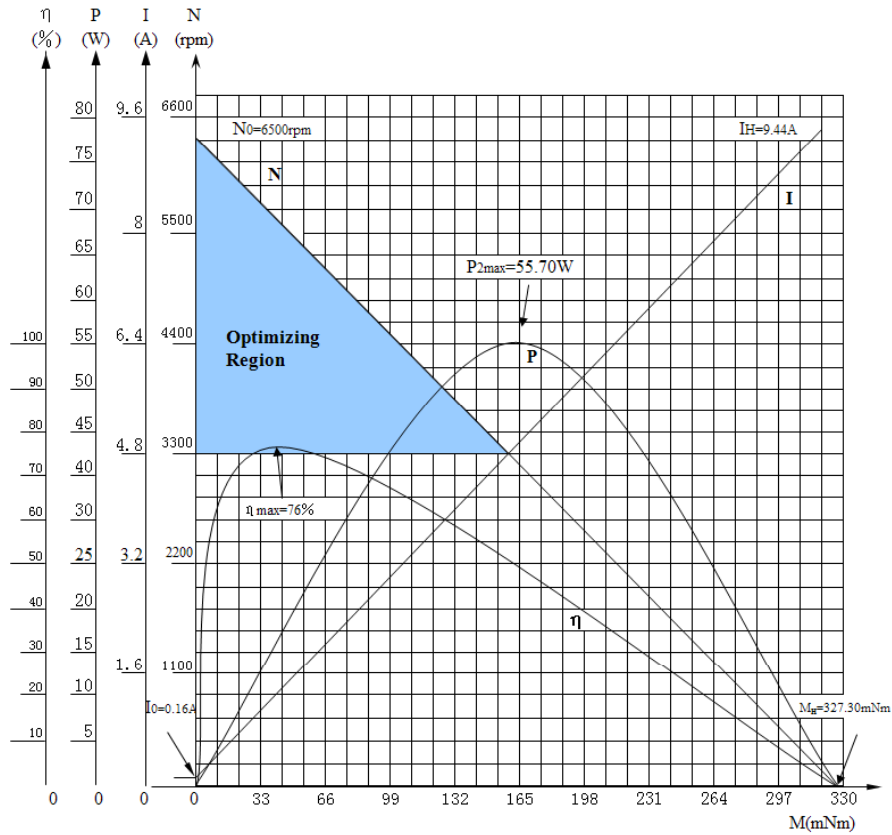
**Note:**

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# BL3564

## Operating Curve



Note:(1)The  $I_0$  is pure current of motor in this curve drawing that means it not included the driver's current.

(2)We have suggested there has a optimizing region for this motor's operating as hatched in drawing.

## Drawing

