

# TMRW4AL Torque Motor

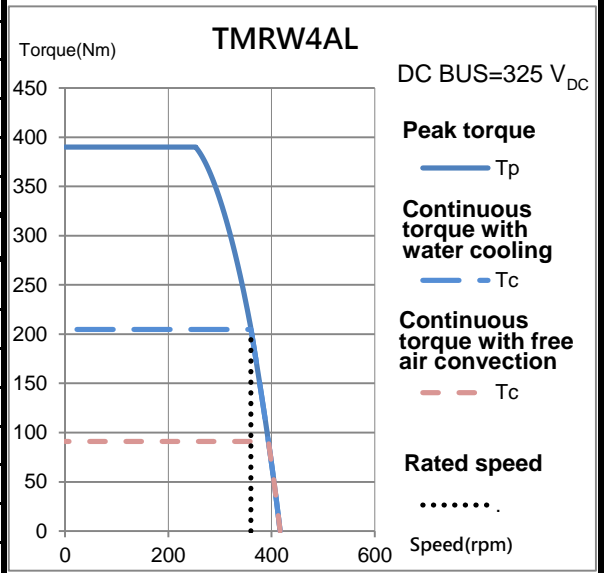
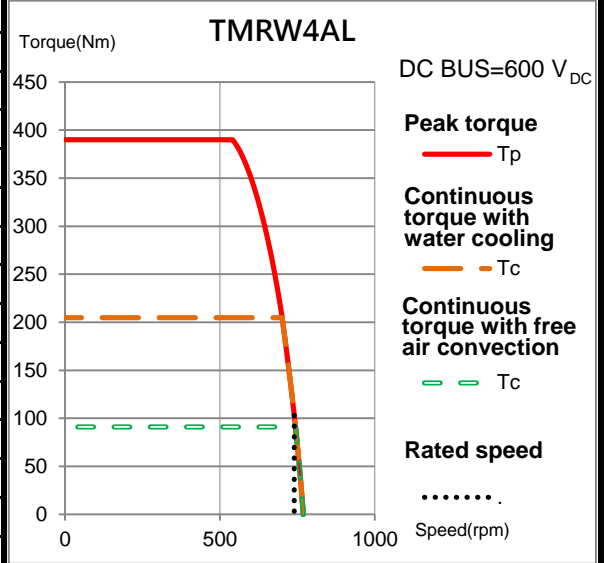
## Electrical specifications

| Winding code : SB                 | Symbol   | Unit           | Free air convection         | Water cooling |
|-----------------------------------|----------|----------------|-----------------------------|---------------|
| Continuous torque                 | $T_c$    | Nm             | 91                          | 205           |
| Continuous current                | $I_c$    | $A_{rms}$      | 12                          | 27            |
| Stall torque                      | $T_s$    | Nm             | 64                          | 144           |
| Stall current                     | $I_s$    | $A_{rms}$      | 8.4                         | 18.9          |
| Peak torque(for 1sec.)            | $T_p$    | Nm             | 260.7                       | 390           |
| Peak current(for 1sec.)           | $I_p$    | $A_{rms}$      | 36                          | 72.9          |
| Torque constant                   | $K_t$    | Nm/Arms        | 7.61                        |               |
| Electrical time constant          | $T_e$    | ms             | 4.3                         |               |
| Resistance (line to line at 25°C) | $R_{25}$ | $\Omega$       | 1.06                        |               |
| Inductance (line to line)         | $L$      | mH             | 4.57                        |               |
| Number of poles                   | 2p       |                | 22                          |               |
| Back emf constant (line to line)  | $K_v$    | Vrms/rad/s     | 4.39                        |               |
| Motor constant (at 25°C)          | $K_m$    | Nm/ $\sqrt{W}$ | 6.01                        |               |
| Thermal resistance                | $R_{th}$ | K/W            | 0.41                        | 0.082         |
| Thermal sensor                    |          |                | PTC<br>SNM100+SNM120+Pt1000 |               |
| Max. DC BUS                       |          | $V_{DC}$       | 750                         |               |
| Inertia of rotor                  | $J$      | $kgm^2$        | 0.029                       |               |
| Thermal time constant             | $T_{th}$ | s              | 1800                        | 51            |
| Max. continuous power dissipation | $P_c$    | W              | 313                         | 1585          |
| Max. peak power dissipation       | $P_p$    | W              | 11558                       |               |
| Rated speed(at 600VDC)            |          | rpm            | 740                         |               |

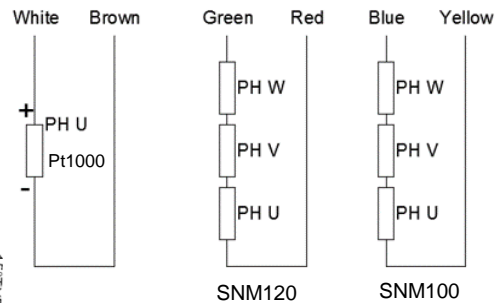
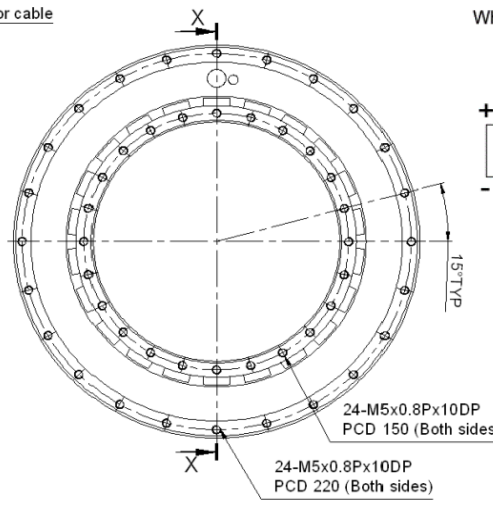
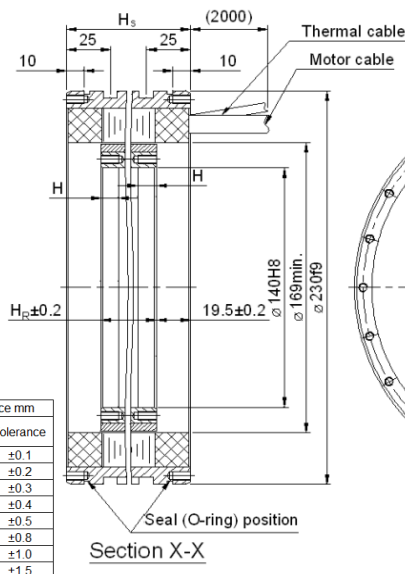
## Mechanical specifications

|  | Symbol         | Unit  | Free air convection | Water cooling |
|--|----------------|-------|---------------------|---------------|
| Mass of rotor                          | $M_r$          | kg    | 4.7                 |               |
| Mass of stator                         | $M_s$          | kg    | 12.7                |               |
| Height of stator                       | $H_s$          | mm    | 140                 |               |
| Height of rotor                        | $H_r$          | mm    | 101                 |               |
| Length of rotor centring fit           | $H$            | mm    | 15                  |               |
| Water temperature difference for $P_c$ | $\Delta\theta$ | K     | -                   | 5             |
| Minimum water flow                     | $q$            | l/min | -                   | 4.6           |
| Max. pressure drop                     | $\Delta p$     | bar   | -                   | 1             |

## T-N curve



## Thermal sensor



| General tolerance mm | Nominal dimension | Tolerance |
|----------------------|-------------------|-----------|
|                      | ~ 6               | ±0.1      |
|                      | > 6 ~ 30          | ±0.2      |
|                      | > 30 ~ 120        | ±0.3      |
|                      | > 120 ~ 300       | ±0.4      |
|                      | > 300 ~ 600       | ±0.5      |
|                      | > 600 ~ 1200      | ±0.8      |
|                      | > 1200 ~ 2400     | ±1.0      |
|                      | > 2400            | ±1.5      |

| Motor wire table  |        |
|-------------------|--------|
| Color or wire no. | Signal |
| U/L1              | PH U   |
| V/L2              | PH V   |
| W/L3              | PH W   |
| Green/Yellow      | GND    |

Except dimensions, all the specifications in the table are in ±10% of tolerance  
This drawing is only for reference, detail dimensions please refer to approval drawing.

Version: 2.00  
Date: 2020/10/23