ETEL

TMB Standard

# CONVENTIONAL TORQUE MOTOR TMB+0990-050

| MOTOR PERFORMANCE | | Winding codes | WB | WD | WH | WP |
|---|---|---|---|---|---|---|
| | | UNIT | WATER COOLING | WATER COOLING | WATER COOLING | WATER COOLING |
| **Tp** | Peak torque | Nm | 6890 | 6890 | 6890 | 6890 |
| **Ti** | Intermittent torque | Nm | 4900 | 4900 | 4900 | 4900 |
| **Tc** | Continuous torque | Nm | 3650 | 3650 | 3650 | 3650 |
| **Ts** | Standstill torque | Nm | 2950 | 2950 | 2950 | 2950 |
| **Ip** | Peak current | Arms | 87.1 | 174 | 348 | 697 |
| **Ii** | Intermittent current | Arms | 44.4 | 88.8 | 178 | 355 |
| **Ic** | Continuous current | Arms | 28.1 | 56.1 | 112 | 225 |
| **Is** | Standstill current | Arms | 21.3 | 42.5 | 85.1 | 170 |
| **ns** | Rated low speed | rpm | 0.047 | 0.047 | 0.047 | 0.047 |
| **nm** | Maximum speed without flux weakening | rpm | 42.8 | 85.6 | 171 | 343 |
| **nm,FW** | Maximum speed with flux weakening | rpm | 156 | 245 | 332 | 415 |
| **τon,p** | Maximum ON time for peak cycle | s | 6.6 | 6.6 | 6.6 | 6.6 |
| **τon,i** | Maximum ON time for intermittent cycle | s | 2.9 | 2.9 | 2.9 | 2.9 |
| **Pp** | Power dissipation @ Ip | W | 61800 | 61800 | 61800 | 61800 |
| **Pi** | Power dissipation @ Ii | W | 19500 | 19500 | 19500 | 19500 |
| **Pc** | Power dissipation @ Ic | W | 7790 | 7790 | 7790 | 7790 |
| **Td** | Max. detent torque (average to peak) | Nm | 18 | 18 | 18 | 18 |

| MOTOR SETTING | | UNIT | | | | |
|---|---|---|---|---|---|---|
| **Kt** | Torque constant | Nm/Arms | 161 | 80.6 | 40.3 | 20.1 |
| **Ku** | Back EMF constant (*) | Vrms/(rad/s) | 92.8 | 46.4 | 23.2 | 11.6 |
| **Km** | Motor constant | Nm/√W | 61.1 | 61.1 | 61.1 | 61.1 |
| **R20** | Electrical resistance at 20°C (*) | Ohm | 4.63 | 1.16 | 0.289 | 0.0723 |
| **Ld/Lq** | Electrical inductance (*) | mH | 67.9 / 56.8 | 17.0 / 14.2 | 4.24 / 3.55 | 1.06 / 0.888 |
| **Isc** | Maximum short-circuit current | Arms | 17.9 | 35.9 | 71.7 | 143 |
| **nb** | Base speed | rpm | 21.3 | 58.7 | 144 | 336 |
| **nb,i** | Base speed at intermittent duty cycle | rpm | 13.8 | 43.9 | 109 | 266 |
| **nb,p** | Base speed at peak duty cycle | rpm | 0.809 | 28.9 | 71.3 | 152 |
| **nn** | Rated speed | rpm | 17.5 | 51.0 | 130 | 200 |
| **Tn** | Rated torque | Nm | 3430 | 2630 | 1680 | 1260 |
| **In** | Rated current | Arms | 27.5 | 39.3 | 48.5 | 75.0 |
| **τth** | Thermal time constant | s | 146 | 146 | 146 | 146 |
| **Rth** | Thermal resistance | K/W | 0.0136 | 0.0136 | 0.0136 | 0.0136 |
| **2p** | Number of poles | - | 176 | 176 | 176 | 176 |
| **J** | Rotor inertia | kg·m² | 4.94 | 4.94 | 4.94 | 4.94 |
| **mr** | Rotor mass | kg | 24.8 | 24.8 | 24.8 | 24.8 |
| **ms** | Stator mass | kg | 115 | 115 | 115 | 115 |

| MOTOR ENVIRONMENT | | UNIT | | | | |
|---|---|---|---|---|---|---|
| **Udc** | Nominal DC bus voltage | VDC | 600 | 600 | 600 | 600 |
| **Di** | Intermittent duty cycle | % | 40 | 40 | 40 | 40 |
| **Dp** | Peak duty cycle | % | 5.0 | 5.0 | 5.0 | 5.0 |
| **Sr** | Rotor exchange surface | m² | 0.410 | 0.410 | 0.410 | 0.410 |
| **θamb** | Ambient temperature | °C | 20 | 20 | 20 | 20 |
| **θmax** | Maximum coil temperature | °C | 130 | 130 | 130 | 130 |
| **θw** | Inlet water temperature | °C | 20 | 20 | 20 | 20 |
| **Δθw** | Water temperature difference for Pc | K | 5.0 | 5.0 | 5.0 | 5.0 |
| **qw** | Minimum water flow for Δθw | l/min | 24 | 24 | 24 | 24 |
| **Δpw** | Max. pressure drop at qw | bar | 1.1 | 1.1 | 1.1 | 1.1 |

**Notes:** (*) terminal to terminal.
Hypotheses and tolerances are in ETEL Integration Manual.
Please refer to ETEL Integration Manual for the mass of the optional cooling jacket and the possible additional pressure drop.

**Caution:** Any use of the motor beyond speed/torque limit could lead to hazardous voltage and serious injuries. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the motor is used in an improper way.

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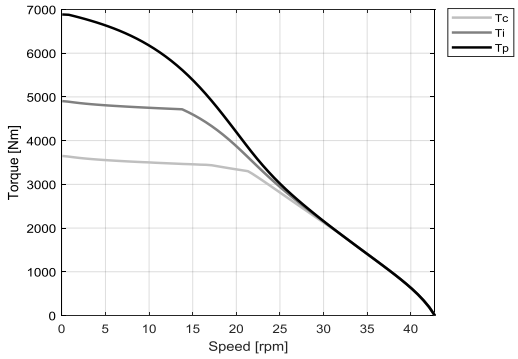
# CONVENTIONAL TORQUE MOTOR TMB+0990-050

## WB - WATER COOLING

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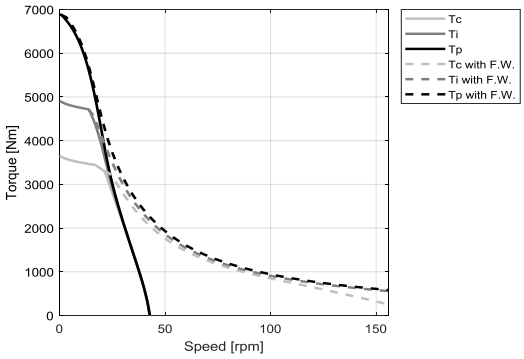
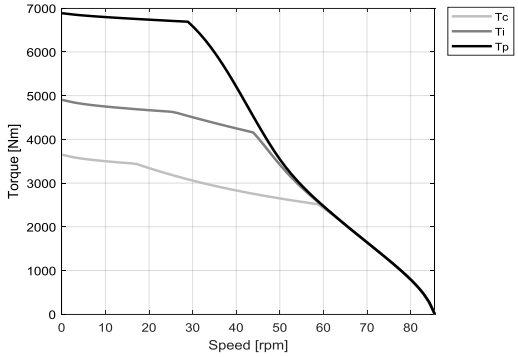



## WD - WATER COOLING

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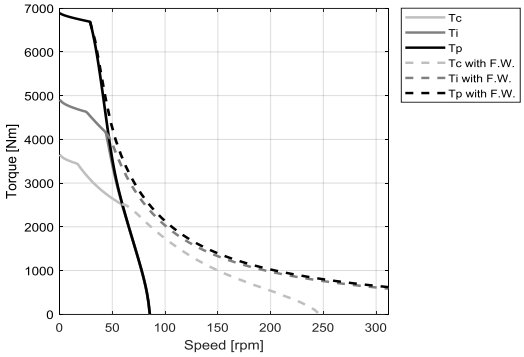
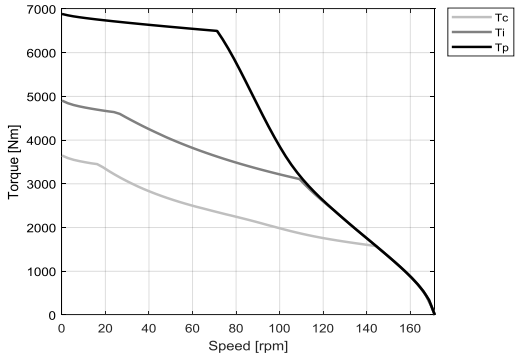
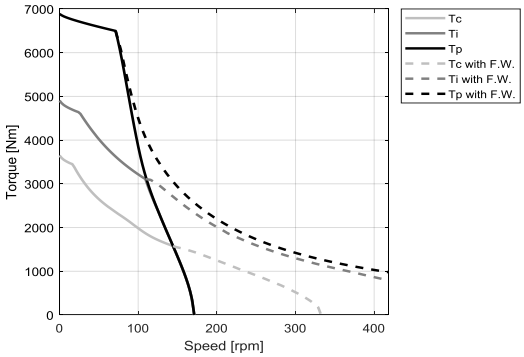



## WH - WATER COOLING




## WH - WATER COOLING

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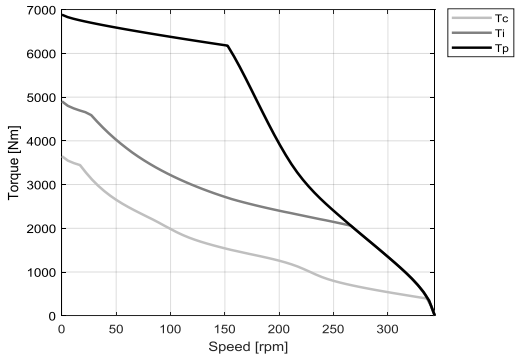


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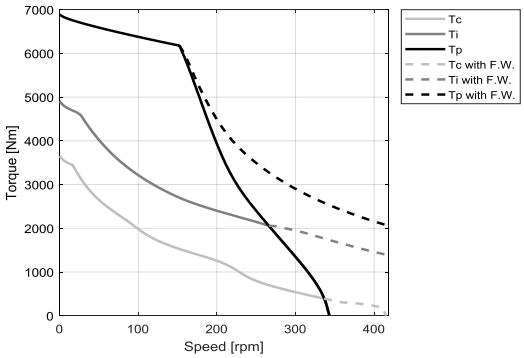


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