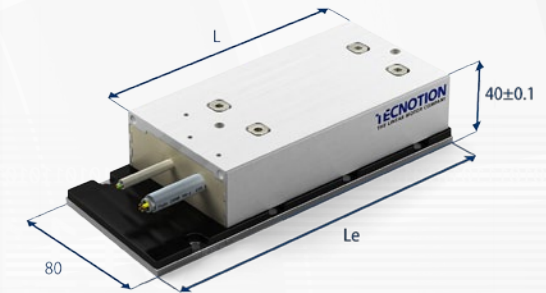


| Parameter                      | Remarks                | Sym              | Unit                  | TL6   |      | TL9  |      | TL12     |      | TL15 |      | TL18      |      | TL24 |      |
|--------------------------------|------------------------|------------------|-----------------------|---|------|------|------|----------|------|------|------|-----------|------|------|------|
|                                |                        |                  |                       | N   | S    | N    | S    | N        | S    | N    | S    | N         | S    | N    | S    |
| Winding type                   |                        |                  |                       | 3-phase synchronous Iron core, 600V <sub>dc</sub> |      |      |      |          |      |      |      |           |      |      |      |
| Motor type, max voltage ph-ph  |                        |                  |                       | 3-phase synchronous Iron core, 600V <sub>dc</sub> |      |      |      |          |      |      |      |           |      |      |      |
| Ultimate Force @ 10°C/s        | magnet @ 25°C          | F <sub>u</sub>   | N                     | 450   |      | 675  |      | 900      |      | 1125 |      | 1350      |      | 1800 |      |
| Peak Force @ 6°C/s             | magnet @ 25°C          | F <sub>p</sub>   | N                     | 400   |      | 600  |      | 800      |      | 1000 |      | 1200      |      | 1600 |      |
| Continuous Force Watercooled   | coils @ 100°C          | F <sub>cw</sub>  | N                     | 210   |      | 315  |      | 420      |      | 525  |      | 630       |      | 840  |      |
| Continuous Force Aircooled*    | coils @ 100°C          | F <sub>c</sub>   | N                     | 200   |      | 300  |      | 400      |      | 500  |      | 600       |      | 800  |      |
| Maximum Speed**                | @ 560 V                | v <sub>max</sub> | m/s                   | 3.5   | 7    | 4    | 7    | 3.5      | 7    | 3.5  | 7    | 3.5       | 7    | 3.5  | 7    |
| Motor Force Constant           | motor @ 25°C           | K                | N/A <sub>rms</sub>    | 93  | 46.5 | 140  | 46.5 | 93       | 46.5 | 112  | 46.5 | 93        | 44.9 | 93   | 46.5 |
| Motor Constant                 |                        | S                | N <sup>2</sup> /W     | 380   |      | 570  |      | 760      |      | 950  |      | 1140      |      | 1520 |      |
| Ultimate Current               | magnet @ 25°C          | I <sub>u</sub>   | A <sub>rms</sub>      | 6.5   | 13.1 | 6.5  | 19.6 | 13.1     | 26.2 | 13.5 | 32.7 | 19.6      | 41   | 26.2 | 52   |
| Peak Current                   | magnet @ 25°C          | I <sub>p</sub>   | A <sub>rms</sub>      | 5.0   | 10.0 | 5.0  | 15.0 | 10.0     | 20.0 | 10.4 | 25.0 | 15.0      | 31.0 | 20.0 | 40.0 |
| Continuous Current Watercooled | coils @ 100°C          | I <sub>cw</sub>  | A <sub>rms</sub>      | 2.26  | 4.5  | 2.26 | 6.8  | 4.5      | 9.0  | 4.7  | 11.3 | 6.8       | 14.0 | 9.0  | 18.1 |
| Back EMF Phase-Phase Peak      |                        | B <sub>emf</sub> | V <sub>dc</sub> / m/s | 76  | 38   | 114  | 38   | 76       | 38   | 92   | 38   | 76        | 38   | 76   | 38   |
| Resistance per Phase           | coils @ 25°C ex. cable | R <sub>f</sub>   | Ω                     | 7.2   | 1.80 | 10.8 | 1.21 | 3.6      | 0.90 | 4.3  | 0.72 | 2.41      | 0.59 | 1.81 | 0.46 |
| Induction per Phase            | l < 0.6 lp             | L <sub>f</sub>   | mH                    | 54  | 14   | 81   | 9.0  | 27       | 7.0  | 32   | 5.4  | 18        | 4.4  | 14   | 3.4  |
| Electrical Time Constant       | coils @ 25°C           | τ <sub>e</sub>   | ms                    | 7.5   |      | 7.5  |      | 7.5      |      | 7.5  |      | 7.5       |      | 7.5  |      |
| Maximum Continuous Power Loss  | all coils              | P <sub>c</sub>   | W                     | 150   |      | 225  |      | 300      |      | 375  |      | 450       |      | 600  |      |
| Thermal Resistance             |                        | R <sub>th</sub>  | °C/W                  | 0.48  |      | 0.32 |      | 0.24     |      | 0.19 |      | 0.16      |      | 0.12 |      |
| Thermal Time Constant          | minimum                | τ <sub>th</sub>  | s                     | 77  |      | 77   |      | 77       |      | 77   |      | 77        |      | 77   |      |
| Watercooling Flow              | for ΔT=3K              | Φ <sub>w</sub>   | l/min                 | 0.7   |      | 1.1  |      | 1.4      |      | 1.8  |      | 2.2       |      | 2.9  |      |
| Watercooling Pressure-drop     | indication             | ΔP <sub>w</sub>  | bar                   | 1   |      | 1    |      | 2        |      | 2    |      | 2         |      | 3    |      |
| Temperature Sensors            |                        |                  |                       | PTC 1kΩ and KTY21-6                               |      |      |      |          |      |      |      |           |      |      |      |
| Coil Unit Weight               | ex. cables             | M                | kg                    | 1.5   |      | 2.0  |      | 2.6      |      | 3.2  |      | 3.8       |      | 5.2  |      |
| Coil Unit Length               | ex. cables             | L                | mm                    | 146   |      | 194  |      | 244      |      | 290  |      | 336       |      | 468  |      |
| Motor Attraction Force         | rms                    | F <sub>a</sub>   | N                     | 950   |      | 1325 |      | 1700     |      | 2075 |      | 2450      |      | 3400 |      |
| Magnet Pitch NN                |                        | τ                | mm                    | 24  |      | 24   |      | 24       |      | 24   |      | 24        |      | 24   |      |
| Cable Weight                   |                        | m                | gr/m                  | 180   |      | 180  |      | 180      |      | 180  |      | 180       |      | 300  |      |
| Cable Type (Power)             | length 1 m             | d                | mm (AWG)              |   |      |      |      | 9.6 (18) |      |      |      | 11.9 (14) |      |      |      |
| Cable Type (Sensor)            | length 1 m             | d                | mm (AWG)              |   |      |      |      | 4.3 (26) |      |      |      | 4.3 (26)  |      |      |      |

\*Max. continuous force depends on the thermal resistance, cooling surface and ambient temperature of your application. Download our simulation tool to check the motor's thermal behavior in the application.

\*\* Actual values depend on bus voltage. Please check the F/V diagram in our simulation tool.



TL6 on 192mm magnet plate shown

**Water cooling**

All TL motors feature integrated cooling channels that allow for the easy setup of a liquid cooled system, at no additional cost.

**Magnet plate dimensions**

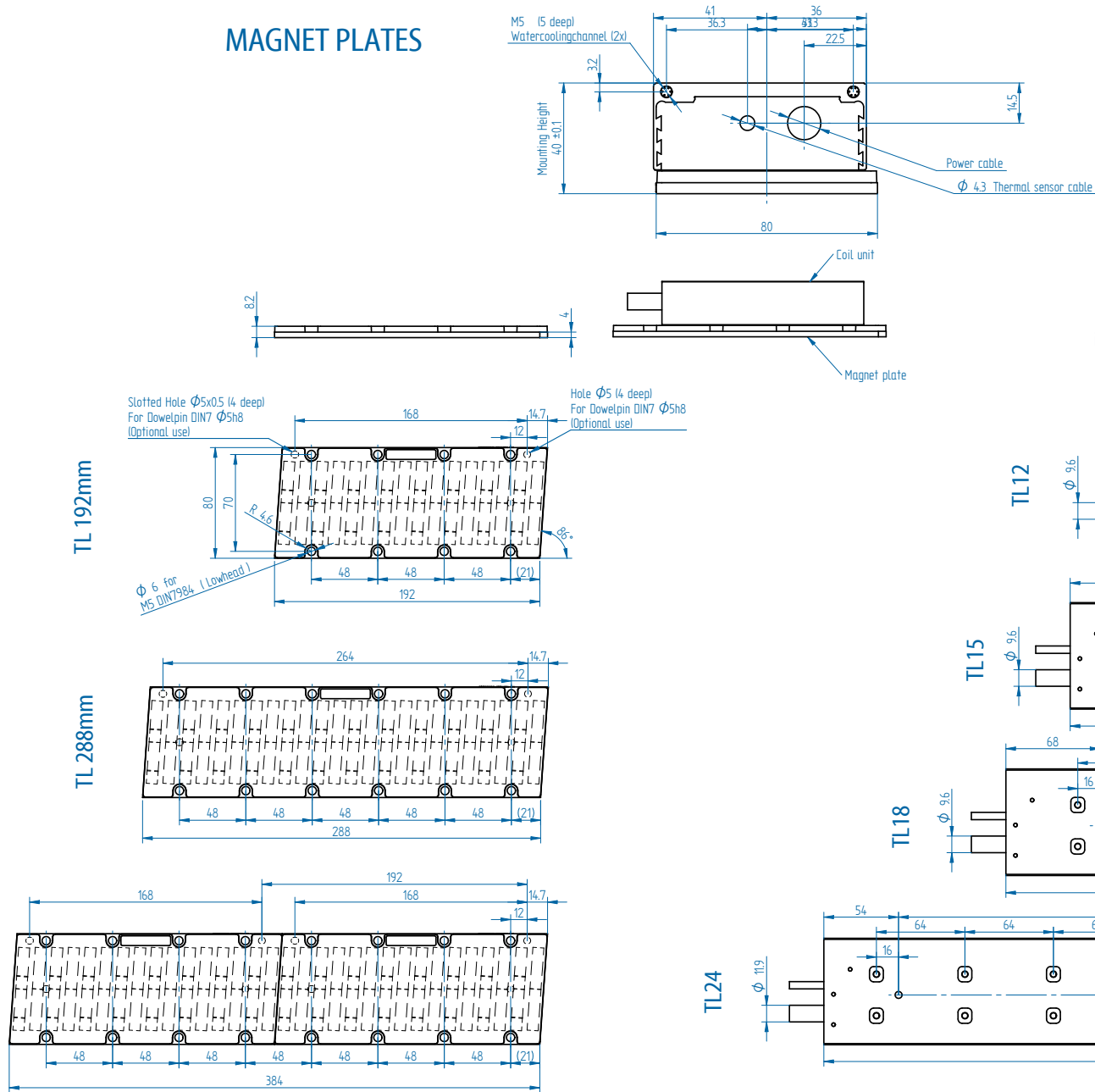
|             |     |     |
|-------------|-----|-----|
| Le (mm)     | 192 | 288 |
| M5 bolts    | 8   | 12  |
| Mass (kg/m) | 3.8 |     |

Magnet plates can be butted together.

All specifications ±10%

Mounting instructions and flatness or parallelism requirements can be found in the Iron Core installation manual. CAD files and 3D models can be downloaded from our website.

## MAGNET PLATES



## COILUNITS

