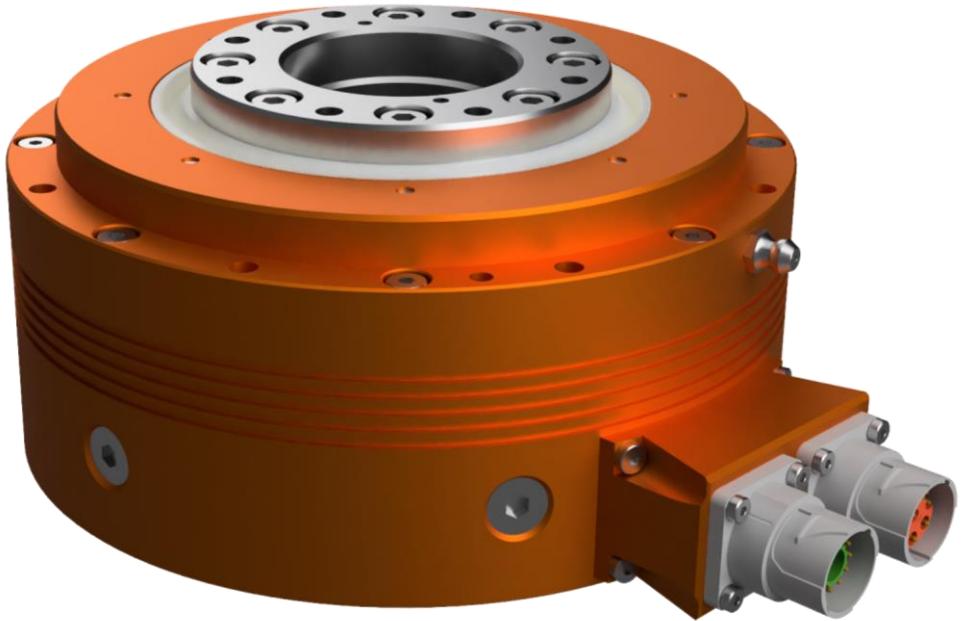




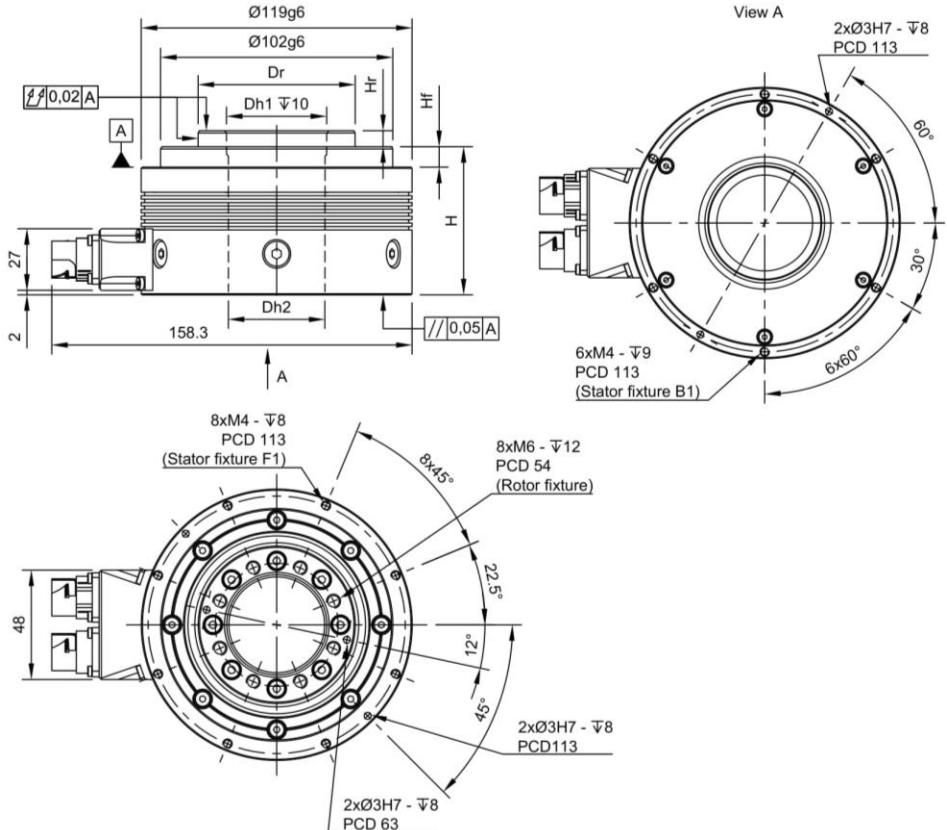
**Dynamic
Motion
Systems**



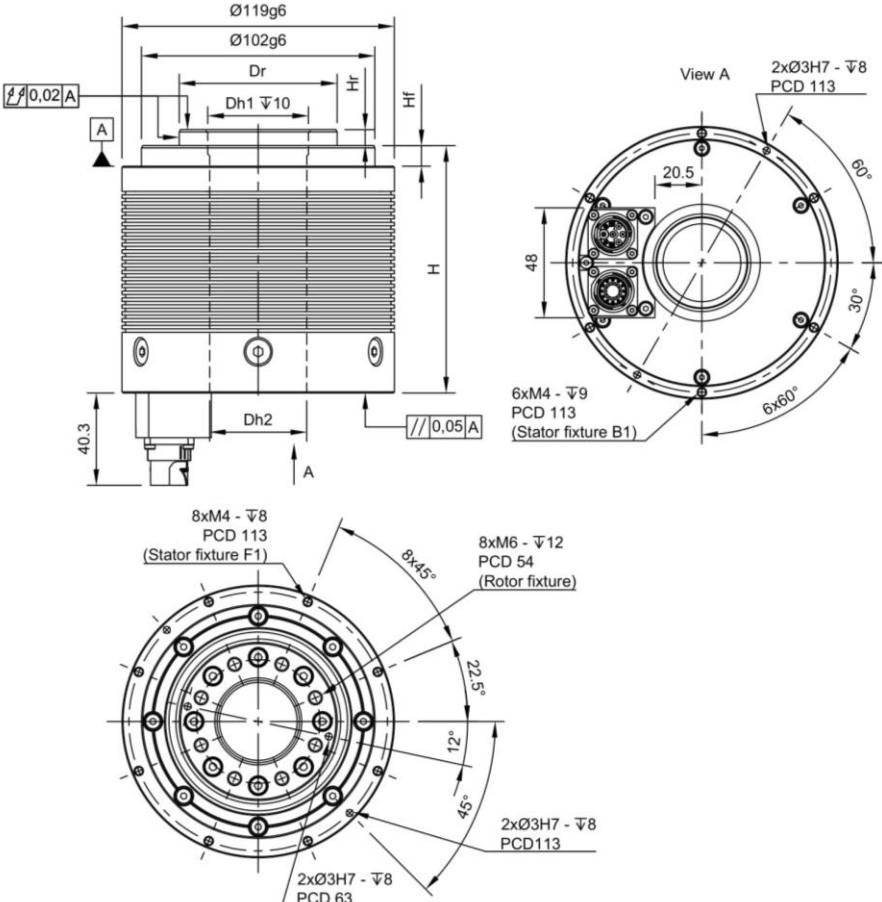
**Servo Motors TH series
(Direct Drive Rotary Table)**

Servo Motors TH B1

TH B1-08-24



TH B1-48



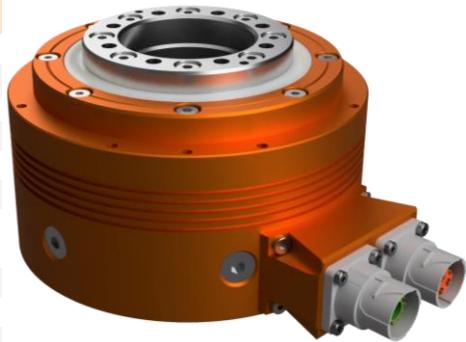
TH B1 CONFIGURATIONS

| ENCODER TYPE | MAGNETIC | | | | OPTICAL | | | |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|
| | CROSSED ROLLER | BALL DEEP GROOVE |
| MAIN BEARING | | | | | | | | |
| ROTOR HEIGHT | 08 | 16 | 24 | 48 | 08 | 16 | 24 | 48 |
| H [mm] | - | - | - | - | 57 | 65 | 74 | 108 |
| H (brake) | - | - | - | - | - | - | - | - |
| D _r | - | - | Ø69 g6 | - | - | - | Ø69 g6 | - |
| D _{h1} | - | - | Ø44 H7 | - | - | - | Ø34 H7 | - |
| D _{h2} | - | - | Ø42 | - | - | - | Ø32 | - |
| H _r | | | | | 7 | | | |
| H _f | | | | | 9 | | | |



Servo Motors TH B1

| Parameter | | Remarks | Symbol | Unit | TH-B1-08 | | | TH-B1-16 | | | TH-B1-24 | | | TH-B1-48 | |
|-----------------------------------|-----------------------|-------------|-----------------|-------------------|--|-------|-------|-------------|-------|-------|----------|-------|----------|----------|------|
| N | Y | Z | N | Y | Z | N | Y | Z | N | Y | Z | N | TH-B1-48 | | |
| Winding type | | Performance | | Vac rms (Vdc) | | | | | | | | | | | |
| Motortype. max voltage ph-ph | 3-Phase synchronous | | Tu | Nm | 2.9 | 3.3 | 3.3 | 6.1 | 7.5 | 6.9 | 10.6 | 11.3 | 10.4 | 28.4 | |
| Ultimate Torque @ 20°C/s increase | | | Tp | Nm | 1.9 | 2.2 | 2.2 | 3.9 | 4.4 | 4.4 | 6.7 | 6.6 | 6.6 | 18.1 | |
| Peak Torque @ 6°C/s increase | | | Tc | Nm | 1.4 | 1.4 | 1.4 | 3.2 | 3.3 | 3.3 | 5.4 | 5.2 | 5.2 | 12.0 | |
| Continuous Torque of motor | coils @100°C | | Tf | Nm | | | | 0.03 - 0.6 | | | | | | | |
| Friction Torque* | Bearing BD type | | nmax | RPM | 784 | 1761 | 3300 | 240 | 783 | 1623 | 0 | 444 | 1028 | 0 | |
| Maximum speed** @48 Volt | @Tc | | nmax | RPM | 6890 | 12286 | 16500 | 3625 | 6534 | 11399 | 1928 | 4439 | 7833 | 1455 | |
| Maximum speed** @ max. voltage | @Tc | | Up to It | Kt | Nm/Arms | 0.30 | 0.17 | 0.10 | 0.60 | 0.33 | 0.19 | 01.07 | 0.50 | 0.29 | 2.86 |
| Motor Torque constant | | | coils @25°C | Km | (Nm) ² /W | 0.021 | 0.022 | 0.022 | 0.061 | 0.065 | 0.065 | 0.127 | 0.115 | 0.120 | 0.40 |
| Motor constant | | | | | | | | | | | | | | | |
| Accuracy | magnetic / optical | | | arcsec | | | | 90 / 6 | | | | | | | |
| Repeatability | magnetic / optical | | | arcsec | | | | 7.2 / 0.019 | | | | | | | |
| Axial runout | | | R _a | µm | | | | 20 | | | | | | | |
| Radial runout | | | R _r | µm | | | | 20 | | | | | | | |
| Max axial load*** | BD | | F _a | N | | | | 500 | | | | | | | |
| Max moment load | BD | | M _s | Nm | | | | 25 | | | | | | | |
| Ultimate Current | | | I _u | Arms | 13.8 | 28.2 | 48.8 | 13.8 | 28.2 | 48.8 | 13.3 | 28.2 | 48.8 | 13.5 | |
| Peak Current | | | I _p | Arms | 7.6 | 15.4 | 26.7 | 7.6 | 15.4 | 26.7 | 7.3 | 15.4 | 26.7 | 7.37 | |
| Maximum Continuous Current | coils @100°C | | I _c | Arms | 4.6 | 8.5 | 14.7 | 5.3 | 9.8 | 17.0 | 5.1 | 10.3 | 17.9 | 4.2 | |
| Back EMF Phase-Phase peak | | | K _e | V/krpm | 25 | 14 | 8 | 51 | 28 | 16 | 92 | 43 | 25 | 244 | |
| Back EMF Phase-Phase RMS | | | K _e | V/krpm | 18 | 10 | 6 | 36 | 20 | 12 | 65 | 30 | 17 | 173 | |
| Coil Resistance per Phase | coils @25°C ex. cable | | R | Ω | 1.38 | 0.43 | 0.14 | 1.93 | 0.57 | 0.19 | 03.02 | 0.74 | 0.24 | 6.84 | |
| Coil induction per Phase | I<0.6I _p | | L | mH | 2.58 | 0.83 | 0.28 | 04.05 | 1.29 | 0.43 | 7.93 | 1.75 | 0.59 | 25.3 | |
| Electrical Time Constant | coils @25°C | | t _e | ms | 1.9 | 2.0 | 1.9 | 2.1 | 2.3 | 2.2 | 2.6 | 2.4 | 2.4 | 3.7 | |
| Poles | | | p | nr | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | |
| Encoder communication interface | | | | | BISS-C / Asynchronous Serial / PWM / SSI | | | | | | | | | | |
| Continuous Power Loss | coils @100°C | | P _c | W | 115 | 115 | 115 | 214 | 214 | 214 | 300 | 300 | 300 | 469 | |
| Temperature Cut-off / Sensor | | | | | PTC 1kΩ / KTY83-122 | | | | | | | | | | |
| Rotor inertia (without magnets) | | | J _R | kg*m ² | 4,8E-04 | | | 5,0E-04 | | | 5,1E-04 | | | 5,6E-04 | |
| Rotor Inertia (with magnets) | | | J _{RM} | kg*m ² | 5,6E-04 | | | 6,5E-04 | | | 7,3E-04 | | | 9,9E-04 | |
| Table Mass | ex. cables | | T _M | kg | 1.7 | | | 2.0 | | | 2.4 | | | 4.0 | |
| Table diameter | | | D | mm | 119 | | | | | | | | | | |



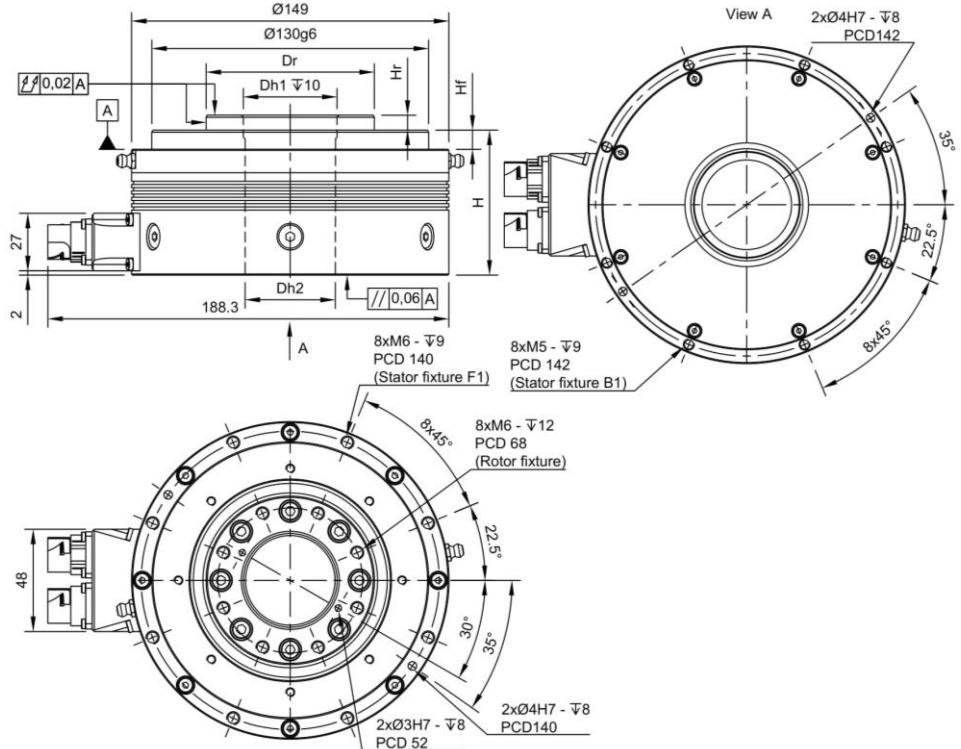
* Actual value depends on bearing type, load applied to shaft, rotational speed and type and material of seals. More precise value will be presented with the individual offer.

** Actual values depends on encoder frequency, bus voltage and bearing construction. In addition, higher speeds may lead to faster wear of seals. Maximum allowable speed for the SM TH B1 series is 16 500 rpm. For a high speed application, please contact DMS. Also please check if your driver maximum output frequency is enough for desired speed n=120*f/p [RPM] .

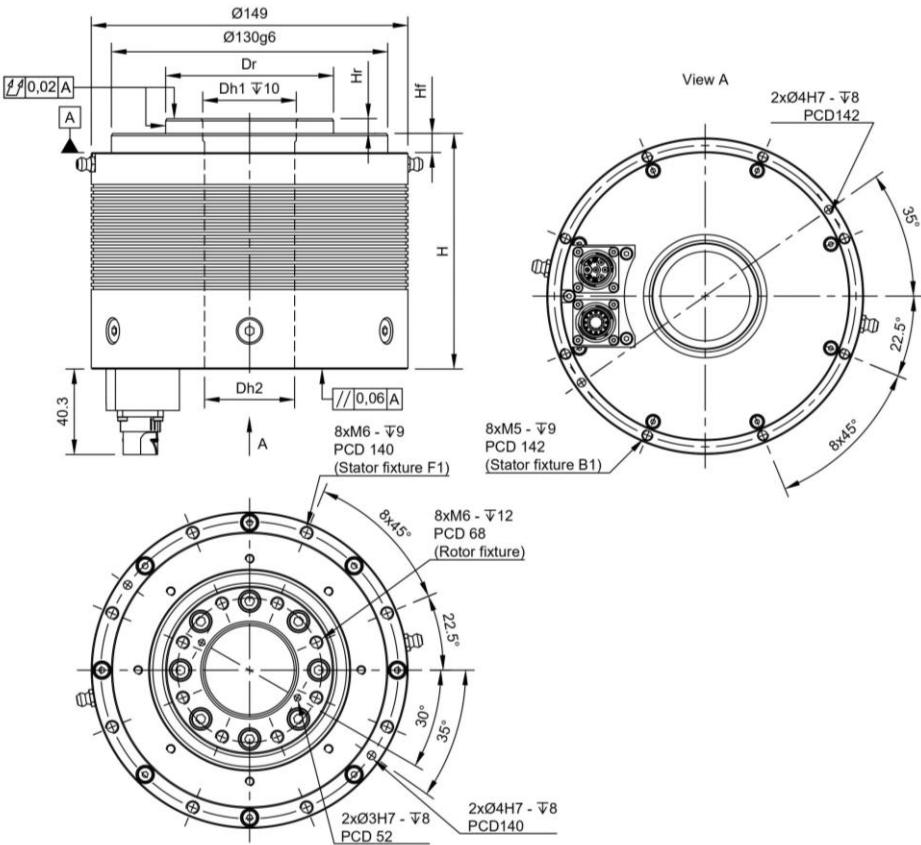
*** Higher loads available on request. The resultant axial force acting on the table shaft must not oscillate in the range containing 150 N towards the face of the shaft. If there is such a risk, consultation with DMS is necessary. Otherwise the bearings may wear quickly and the accuracy of the shaft's axial position may be reduced.

Servo Motors TH B2

TH B2-08-24



TH B2-48



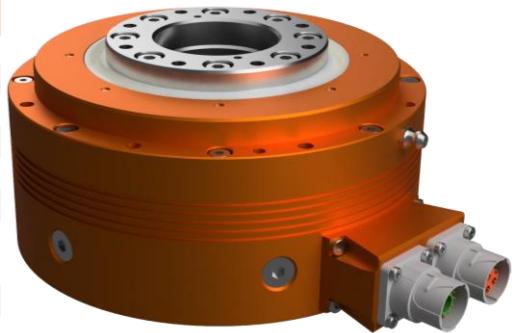
TH B2 CONFIGURATIONS

| ENCODER TYPE | MAGNETIC | | | | OPTICAL | | | |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|
| | CROSSED ROLLER | BALL DEEP GROOVE |
| MAIN BEARING | 08 16 24 48 | 08 16 24 48 | 08 16 24 48 | 08 16 24 48 | 08 16 24 48 | 08 16 24 48 | 08 16 24 48 | 08 16 24 48 |
| ROTOR HEIGHT | 60 68 76 111 | 57 65 74 108 | 73 81 89 111 | 70 78 86 108 | 73 81 89 111 | 70 78 86 108 | 73 81 89 111 | 70 78 86 108 |
| DIMENSION [mm] | H | | | | | | | |
| H (brake) | 73 | 81 | 89 | 111 | 70 | 78 | 86 | 108 |
| D _r | Ø79 g6 | | | | Ø69 g6 | | | |
| D _{h1} | Ø44 H7 | | | | Ø44 H7 | | | |
| D _{h2} | Ø42 | | | | Ø42 | | | |
| H _r | Ø31 | | | | Ø31 | | | |
| H _f | | | | | | | | |
| | 7 | | | | 9 | | | |



Servo Motors TH B2

| | Parameter | Remarks | Symbol | Unit | TH-B2-08 | | | TH-B2-16 | | | TH-B2-24 | | TH-B2-48 | |
|-----------------------------------|---------------------------------|---------------------|----------------------|--|---------------------|-------|-------------|-----------|-------|-------|----------|------|----------|--|
| Performance | Winding type | 3-Phase synchronous | | Vac rms (Vdc) | N | Y | Z | N | Y | Z | N | Z | N | |
| Motortype. max voltage ph-ph | 230 (300) | | | | 20.6 | | | 420 (600) | | | | | | |
| Ultimate Torque @ 20°C/s increase | | Tu | Nm | 5.6 | 6.4 | 6.4 | 11.9 | 13.5 | 13.5 | 20.6 | 20.3 | 55.5 | | |
| Peak Torque @ 6°C/s increase | | Tp | Nm | 3.8 | 4.3 | 4.3 | 7.5 | 8.6 | 8.6 | 13.1 | 12.9 | 35.3 | | |
| Continuous Torque of motor | coils @100°C | Tc | Nm | 2.6 | 2.6 | 2.6 | 5.9 | 6.0 | 6.0 | 10 | 9.5 | 21.9 | | |
| Friction Torque* | Bearing CR type | Tf | Nm | | | | 0.1 – 2.0 | | | | | | | |
| Maximum speed** @ 48 Volt | @Tc | nmax | RPM | 317 | 839 | 1641 | 33 | 345 | 788 | 0 | 478 | 0 | | |
| Maximum speed** @ max. voltage | @Tc | nmax | RPM | 3514 | 6340 | 10807 | 1825 | 3389 | 5930 | 946 | 4040 | 724 | | |
| Motor Torque constant | Up to It | Kt | Nm/Arms | 0.58 | 0.33 | 0.19 | 1.16 | 0.65 | 0.38 | 02.09 | 0.56 | 5.57 | | |
| Motor constant | coils @ 25°C | Km | (Nm) ² /W | 0.058 | 0.061 | 0.061 | 0.167 | 0.177 | 0.180 | 0.344 | 0.310 | 1.08 | | |
| Accuracy | magnetic / optical | | arcsec | | | | 90 / 6 | | | | | | | |
| Repeatability | magnetic / optical | | arcsec | | | | 7.2 / 0.019 | | | | | | | |
| Axial runout | | R _a | µm | | | | 20 | | | | | | | |
| Radial runout | | R _r | µm | | | | 20 | | | | | | | |
| Max axial load*** | BD / CR | Fa | N | | | | 500 / 1000 | | | | | | | |
| Max moment load | BD / CR | Ms | Nm | | | | 25 / 50 | | | | | | | |
| Ultimate Current | | Iu | Arms | 13.8 | 28.2 | 48.8 | 13.8 | 28.2 | 48.8 | 13.3 | 48.8 | 13.5 | | |
| Peak Current | | Ip | Arms | 7.56 | 15.40 | 26.70 | 7.56 | 15.40 | 26.70 | 7.31 | 26.70 | 7.37 | | |
| Maximum Continuous Current | coils @100°C | Ic | Arms | 4.43 | 8.10 | 14.00 | 5.5 | 9.30 | 16.10 | 4.77 | 16.90 | 3.93 | | |
| Back EMF Phase-Phase peak | | Ke | V/krpm | 50 | 28 | 16 | 99 | 56 | 32 | 179 | 48 | 476 | | |
| Back EMF Phase-Phase RMS | | Ke | V/krpm | 35 | 20 | 11 | 70 | 39 | 23 | 126 | 34 | 337 | | |
| Coil Resistance per Phase | coils @25°C ex. cable | R | Ω | 1.93 | 0.58 | 0.20 | 2.70 | 0.80 | 0.27 | 4.23 | 0.34 | 9.58 | | |
| Coil induction per Phase | I<0.6lp | L | mH | 3.74 | 1.20 | 0.40 | 5.87 | 1.87 | 0.62 | 11.50 | 0.85 | 36.6 | | |
| Electrical Time Constant | coils @25°C | τe | ms | 1.9 | 2.1 | 2.0 | 2.2 | 2.4 | 2.3 | 2.7 | 2.5 | 3.8 | | |
| Poles | | p | nr | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | | |
| Encoder communication interface | | | | BISS-C / Asynchronous Serial / PWM / SSI | | | | | | | | | | |
| Thermal | Continuous Power Loss | coils @100°C | Pc | W | 147 | 147 | 147 | 268 | 268 | 268 | 375 | 375 | 577 | |
| Temperature Cut-off / Sensor | | | | | PTC 1kΩ / KTY83-122 | | | | | | | | | |
| Mechanical | Rotor inertia (without magnets) | | JR | kg*m ² | 1.0E-03 | | | 1.1E-03 | | | 1.3E-03 | | 1.7E-03 | |
| | Rotor Inertia (with magnets) | | JRM | kg*m ² | 1.2E-03 | | | 1.5E-03 | | | 1.9E-03 | | 2.9E-03 | |
| | Table Mass | ex. cables | TM | kg | 3.0 | | | 4.2 | | | 3.9 | | 5.5 | |
| | Table diameter | | D | mm | 149 | | | | | | | | | |



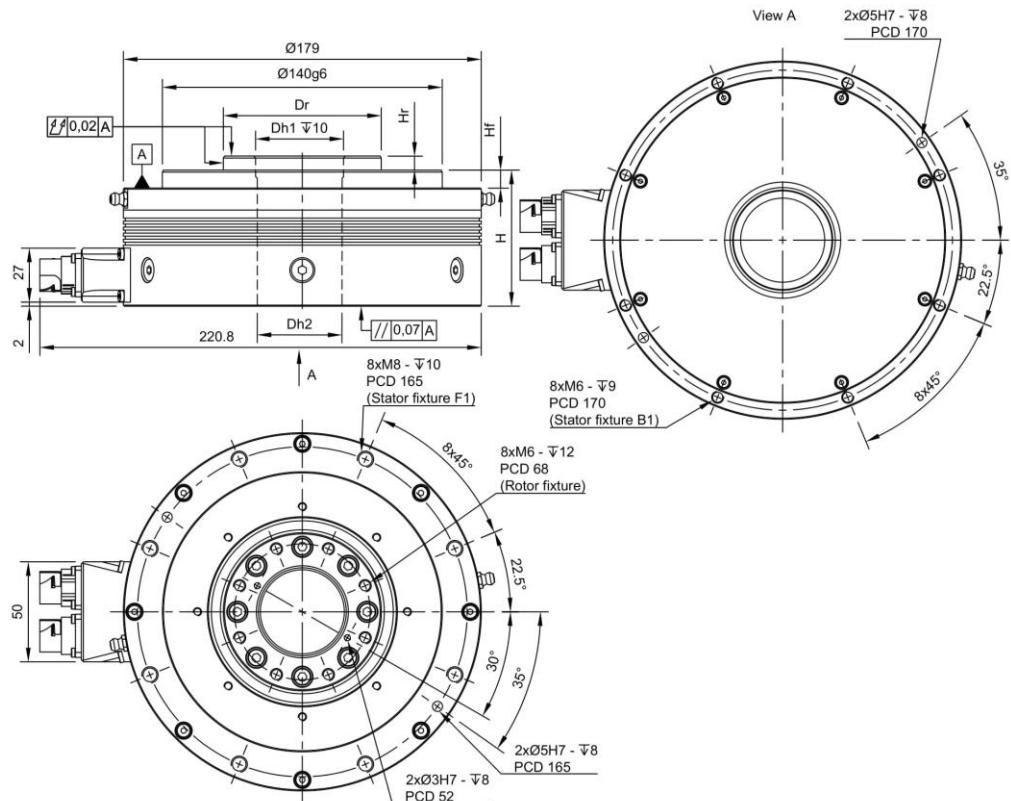
* Actual value depends on bearing type, load applied to shaft, rotational speed and type and material of seals. More precise value will be presented with the individual offer.

** Actual values depends on encoder frequency, bus voltage and bearing construction. In addition, higher speeds may lead to faster wear of seals. Maximum allowable speed for the SM TH B2 series is 14 000 rpm. For a high speed application, please contact DMS. Also please check if your driver maximum output frequency is enough for desired speed n=120*f/p [RPM].

*** Higher loads available on request. The resultant axial force acting on the table shaft must not oscillate in the range containing 150 N towards the face of the shaft. If there is such a risk, consultation with DMS is necessary. Otherwise the bearings may wear quickly and the accuracy of the shaft's axial position may be reduced.

Servo Motors TH B3

TH B3-08-24



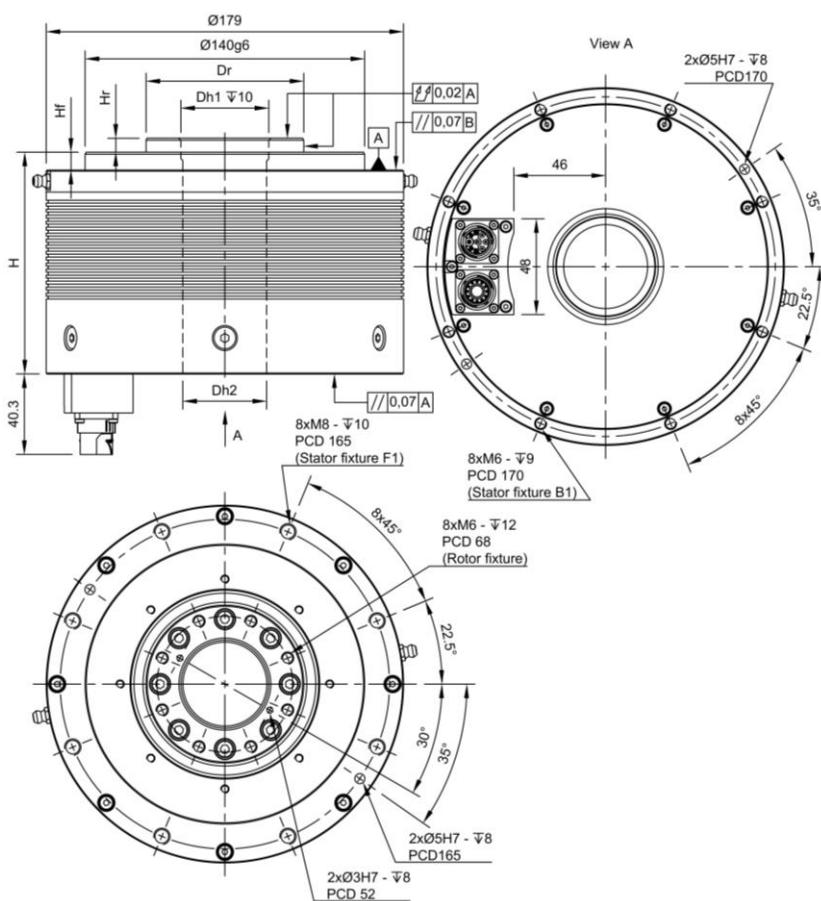
TH B3 CONFIGURATIONS

| ENCODER TYPE | MAGNETIC | | | | | | | | OPTICAL | | | | | | | | | | | | | | | |
|-----------------|----------------|----|----|-----|------------------|----|----|-----|----------------|----|----|-----|------------------|----|----|-----|--|--|--|--|--|--|--|--|
| | CROSSED ROLLER | | | | BALL DEEP GROOVE | | | | CROSSED ROLLER | | | | BALL DEEP GROOVE | | | | | | | | | | | |
| MAIN BEARING | 08 | 16 | 24 | 48 | 08 | 16 | 24 | 48 | 08 | 16 | 24 | 48 | 08 | 16 | 24 | 48 | | | | | | | | |
| ROTOR HEIGHT | 60 | 68 | 76 | 111 | 57 | 65 | 74 | 108 | 73 | 81 | 89 | 111 | 70 | 78 | 86 | 108 | | | | | | | | |
| H H (brake) | 73 | 81 | 89 | 111 | 70 | 78 | 86 | 108 | - | - | - | - | - | - | - | - | | | | | | | | |
| D _r | Ø79 g6 | | | | Ø69 g6 | | | | Ø79 g6 | | | | Ø69 g6 | | | | | | | | | | | |
| D _{h1} | Ø44 H7 | | | | Ø44 H7 | | | | Ø40 H7 | | | | Ø40 H7 | | | | | | | | | | | |
| D _{h2} | Ø42 | | | | Ø42 | | | | Ø31 | | | | Ø31 | | | | | | | | | | | |
| H _r | | | | | | | | | | | | | | | | | | | | | | | | |
| H _f | | | | | | | | | | | | | | | | | | | | | | | | |

7

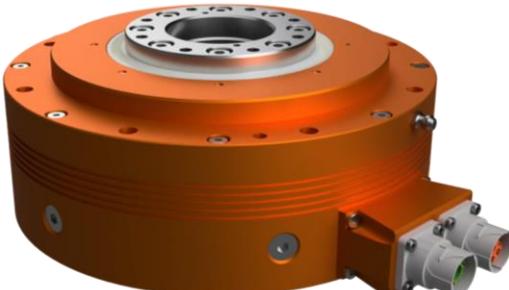
9

TH B3-48



Servo Motors TH B3

| | Parameter | Remarks | Symbol | Unit | TH-B3-08 | | | TH-B3-16 | | | TH-B3-24 | | TH-B3-48 |
|-------------|-----------------------------------|-----------------------|----------------|----------------------|--|------|------|-------------|-------|------|----------|------|-----------|
| Performance | Winding type | | | | N | Y | Z | N | Y | Z | N | Z | N |
| | Motortype. max voltage ph-ph | 3-Phase synchronous | | Vac rms (Vdc) | | | | 230 (300) | | | | | 420 (600) |
| | Ultimate Torque @ 20°C/s increase | | Tu | Nm | 9.3 | 10.6 | 10.6 | 19.6 | 22.4 | 22.4 | 34.1 | 33.6 | 91.6 |
| | Peak Torque @ 6°C/s increase | | Tp | Nm | 6.2 | 7.1 | 7.1 | 12.5 | 14.2 | 14.2 | 21.7 | 21.4 | 58.3 |
| | Continuous Torque of motor | coils @100°C | Tc | Nm | 4.1 | 4.2 | 4.2 | 9.4 | 9.7 | 9.7 | 15.7 | 15.0 | 36.3 |
| | Friction Torque* | Bearing CR type | Tf | Nm | | | | 0.1 – 2.0 | | | | | |
| | Maximum speed** @48 Volt | @Tc | nmax | RPM | 142 | 467 | 965 | 0 | 165 | 441 | 0 | 259 | 0 |
| | Maximum speed** @ max. voltage | @Tc | nmax | RPM | 2145 | 3871 | 6663 | 1084 | 2039 | 3604 | 555 | 2464 | 411 |
| | Motor Torque constant | Up to It | Kt | Nm/Arms | 0.96 | 0.54 | 0.31 | 1.92 | 01.07 | 0.62 | 3.45 | 0.93 | 9.20 |
| | Motor constant | coils @25°C | Km | (Nm) ² /W | 0.12 | 0.13 | 0.13 | 0.35 | 0.38 | 0.38 | 0.73 | 0.67 | 2.29 |
| Electrical | Accuracy | magnetic / optical | | arcsec | | | | 90 / 6 | | | | | |
| | Repeatability | magnetic / optical | | arcsec | | | | 7.2 / 0.019 | | | | | |
| | Axial runout | | R _a | µm | | | | 20 | | | | | |
| | Radial runout | | R _r | µm | | | | 20 | | | | | |
| | Max axial load*** | BD / CR | F _a | N | | | | 500 / 2000 | | | | | |
| | Max moment load | BD / CR | M _s | Nm | | | | 25 / 80 | | | | | |
| | Ultimate Current | | I _u | Arms | 13.8 | 28.2 | 48.8 | 13.8 | 28.2 | 48.8 | 13.3 | 48.8 | 13.5 |
| | Peak Current | | I _p | Arms | 7.6 | 15.4 | 26.7 | 7.6 | 15.4 | 26.7 | 7.3 | 26.7 | 7.4 |
| | Maximum Continuous Current | coils @100°C | I _c | Arms | 4.3 | 7.8 | 13.4 | 4.9 | 9.0 | 15.7 | 4.6 | 16.2 | 3.9 |
| | Back EMF Phase-Phase peak | | K _e | V/krpm | 82 | 46 | 26 | 164 | 92 | 53 | 295 | 79 | 787 |
| Thermal | Back EMF Phase-Phase RMS | | K _e | V/krpm | 58 | 32 | 19 | 116 | 65 | 37 | 209 | 56 | 556 |
| | Coil Resistance per Phase | coils @25°C ex. cable | R | Ω | 2.47 | 0.75 | 0.25 | 3.47 | 01.03 | 0.35 | 5.45 | 0.44 | 12.30 |
| | Coil induction per Phase | I<0.6I _p | L | mH | 4.89 | 1.57 | 0.52 | 7.68 | 2.45 | 0.82 | 15.0 | 1.11 | 47.9 |
| | Electrical Time Constant | coils @25°C | τ _e | ms | 2.0 | 2.1 | 2.1 | 2.2 | 2.4 | 2.4 | 2.8 | 2.5 | 3.9 |
| | Poles | | p | nr | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| | Encoder communication interface | | | | BISS-C / Asynchronous Serial / PWM / SSI | | | | | | | | |
| | Continuous Power Loss | coils @100°C | P _c | W | 174 | 174 | 174 | 326 | 326 | 326 | 441 | 441 | 750 |
| | Temperature Cut-off / Sensor | | | | PTC 1kΩ / KTY83-122 | | | | | | | | |
| | Rotor inertia (without magnets) | | J _R | kg*m ² | 1.2E-03 | | | 1.4E-03 | | | 1.7E-03 | | 2.6E-03 |
| | Rotor Inertia (with magnets) | | JRM | kg*m ² | 1.7E-03 | | | 2.3E-03 | | | 3.1E-03 | | 5.2E-03 |
| Mechanical | Table Mass | ex. cables | T _M | kg | 3.9 | | | 4.5 | | | 5.5 | | 8.5 |
| | Table diameter | | D | mm | 179 | | | | | | | | |

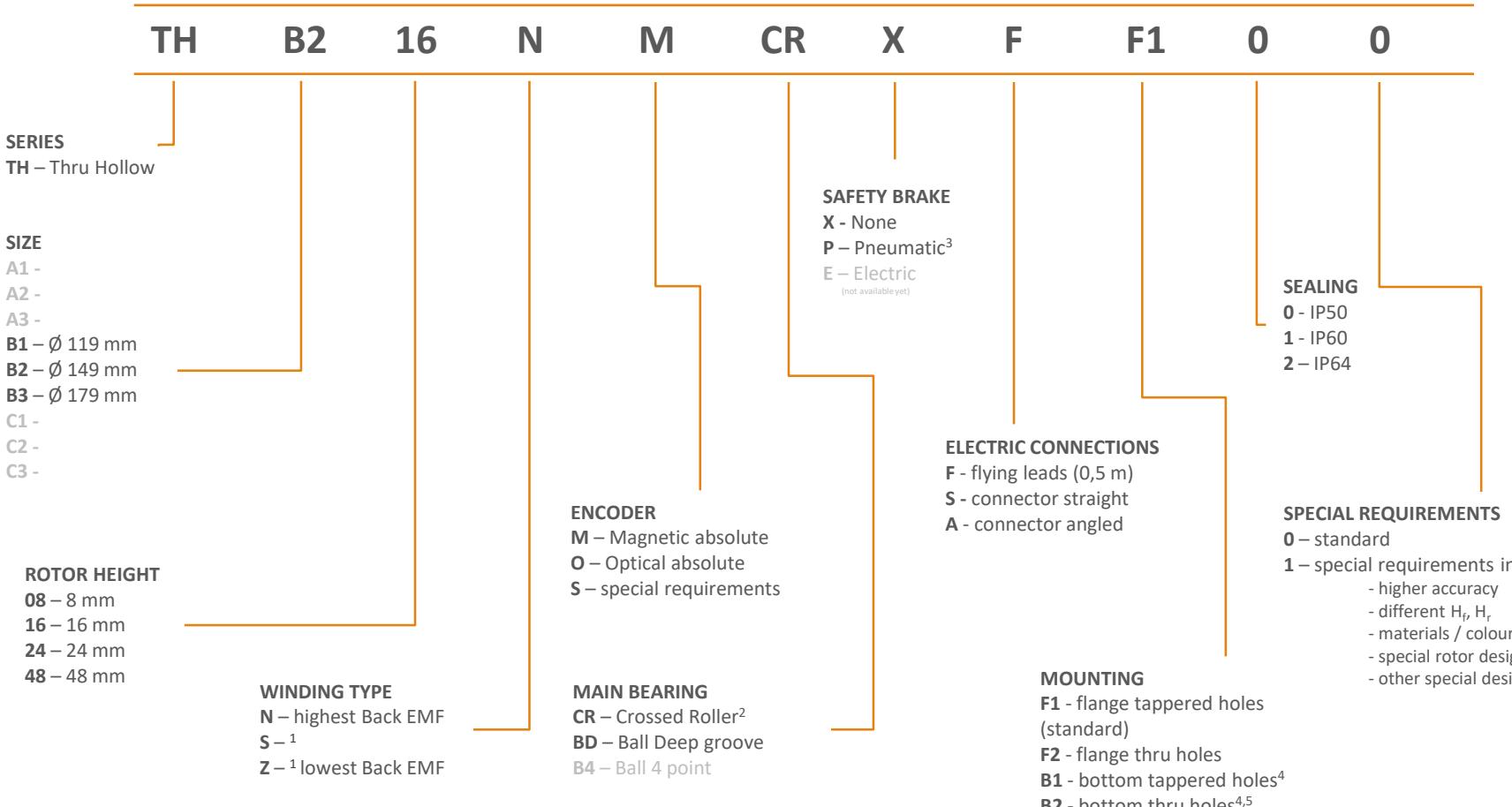


* Actual value depends on bearing type, load applied to shaft, rotational speed and type and material of seals. More precise value will be presented with the individual offer.

** Actual values depends on encoder frequency, bus voltage and bearing construction. In addition, higher speeds may lead to faster wear of seals. Maximum allowable speed for the SM TH B3 series is 12 000 rpm. For a high speed application, please contact DMS. Also please check if your driver maximum output frequency is enough for desired speed n=120*f/p [RPM].

*** Higher loads available on request. The resultant axial force acting on the table shaft must not oscillate in the range containing 150 N towards the face of the shaft. If there is such a risk, consultation with DMS is necessary. Otherwise the bearings may wear quickly and the accuracy of the shaft's axial position may be reduced.

Data sheet – order number



¹- higher current – required bigger connectors

²- available only for SIZE: B2 and B3

³- available only for SIZE: B2 and B3

⁴- only for vertical positions or for smaller loads

5- additional element required

For example: THB208NMCRXSF101

Other information

Available on request:

- Cables for your driver
- Driver, Control panel, software for your machine
- Different shaft design
- Black, silver, blue or hard anodised (olive green) version
- Additional mechanical parts
- Modified or completely new design for your special requirements



Application informations:

- We recommend that you send us a full description of the operation cycle. Based on it, we will be able to propose the best solution.
- Inform us about important aspects of the application, eg hazardous working environment, need to adapt to existing infrastructure/ production line, programming, etc .



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