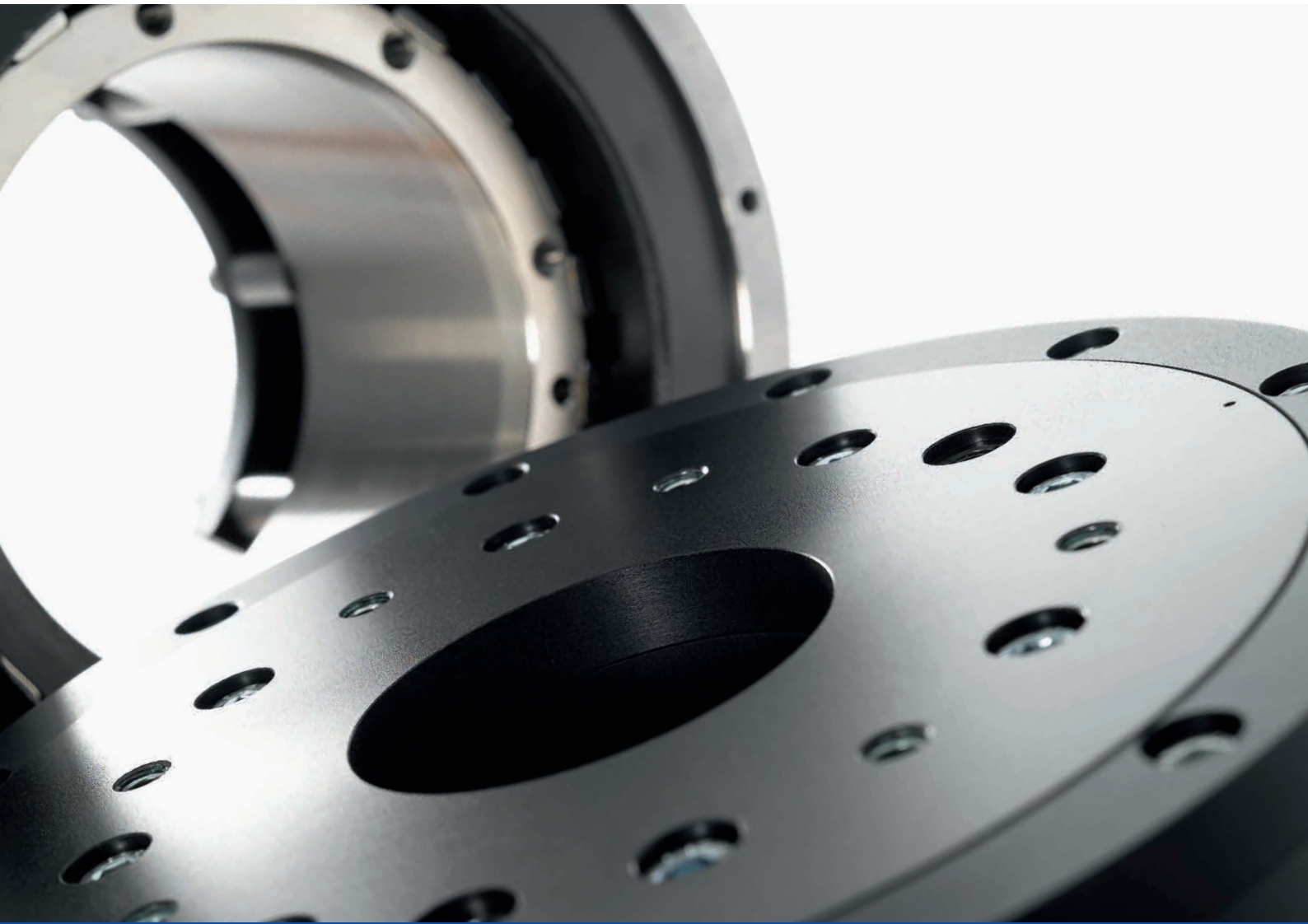


HIWIN®

Motion Control & Systems



Rotary Tables

Welcome to HIWIN

Directly-driven rotary tables from HIWIN have a backlash-free and very rigid design, making them highly versatile. The compact design makes the tables easy to integrate and allows for a space-saving setup. Various diameters and heights simplify the process of selecting the right rotary table. On request, the rotary tables are also supplied as a complete system with drive.

Rotary Tables

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Rotary Tables

Product overview

1. Product overview



HIWIN rotary tables TMS

[Page 9](#)

- Standard series
- Torques up to 450 Nm
- Integrated rotary encoder
- Outer diameter 110 – 300 mm
- With pneumatic clamping as an option



HIWIN rotary tables TMB

[Page 18](#)

- Compact design
- Torques up to 6.4 Nm
- Outer diameter 65 mm
- Integrated rotary encoder



HIWIN rotary tables TMN

[Page 21](#)

- Extremely flat design
- Torques up to 39.6 Nm
- Outer diameter 118 – 230 mm
- Integrated rotary encoder



HIWIN rotary tables TMA

[Page 28](#)

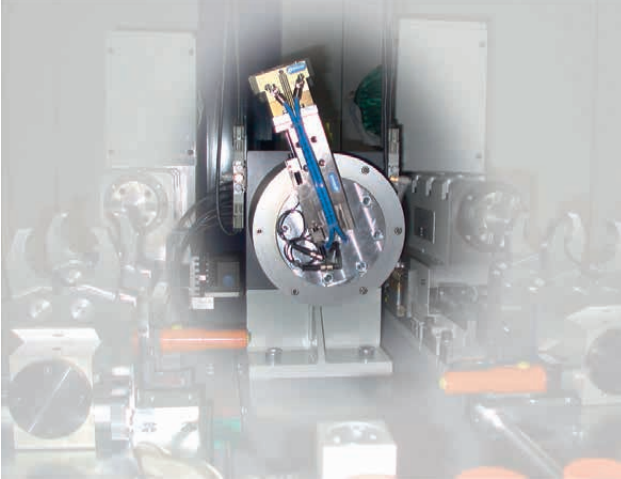
- Air bearings
- Highest accuracy and synchronism
- Integrated rotary encoder

Rotary Tables

Sample applications, TMS series

2. Sample applications

2.1 HIWIN rotary tables optimise transport processes



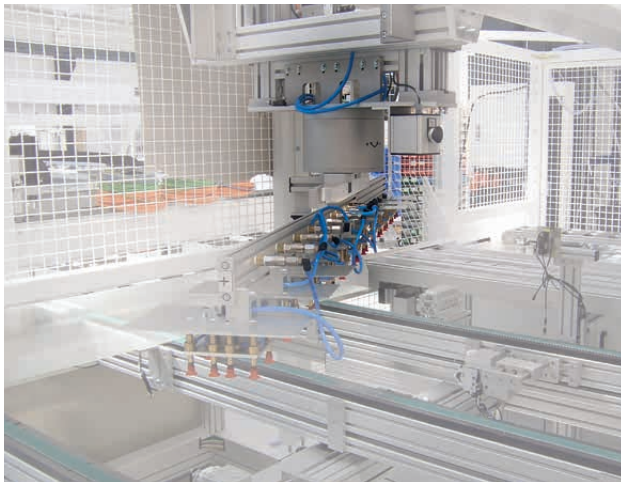
The specification

- Rapid positioning when transporting the work-pieces between the interlinked system parts on a vertical circular path = special requirements apply to acceleration and braking due to the short distances travelled
- Flexible solution, allowing changes or additions to be made during commissioning
- It should be possible for the system to be stopped in any position in order to inspect the parts

Our solution

- Swivel drive minimises the cycle times = saves time and money
- Centrifugal forces are reduced = transport components swiftly and gently to the next station with the gripper arm
- Precision bearing and optical distance measuring system = maximum reproducibility
- Design with hollow shaft = pass cables or mechanisms through with ease
- Direct drive = no gearbox backlash or gearbox mechanisms prone to wear

2.2 HIWIN rotary table in glass plate handling



The specification

- Lay-up station in which the finished strings are drawn in with special vacuum suckers after welding. The strings are then swivelled and deposited either in string boxes or on glass plates
- The current method of holding the Z-axis for the cross bar above toothed belt and servo motor is to be replaced because it takes up too much room and is too heavy
- A high level of torque and a compact design are needed due to the long swivel arm and high inherent weight of the arm
- High speed is needed because of the short cycle times required

Our solution

- Rotary indexing table = high torque and compact design = high throughput, space and cost savings
- Design with hollow shaft = pneumatic hoses and cables can pass through
- Direct drive = no gearbox clearance or gearbox mechanisms prone to wear
- Adaptation to existing control

3. TMS series

3.1 Characteristics of the TMS rotary tables

TMS rotary tables are directly driven rotary tables and do not therefore have a gearbox. The extremely rigid connection between the motor and load, coupled with a high-quality servo drive controller, ensures outstanding acceleration capabilities and movement with good uniformity. Due to the hollow shaft design, TMS rotary tables are especially well suited to automation tasks. Media, cable systems or mechanisms can pass through with ease.

Key features:

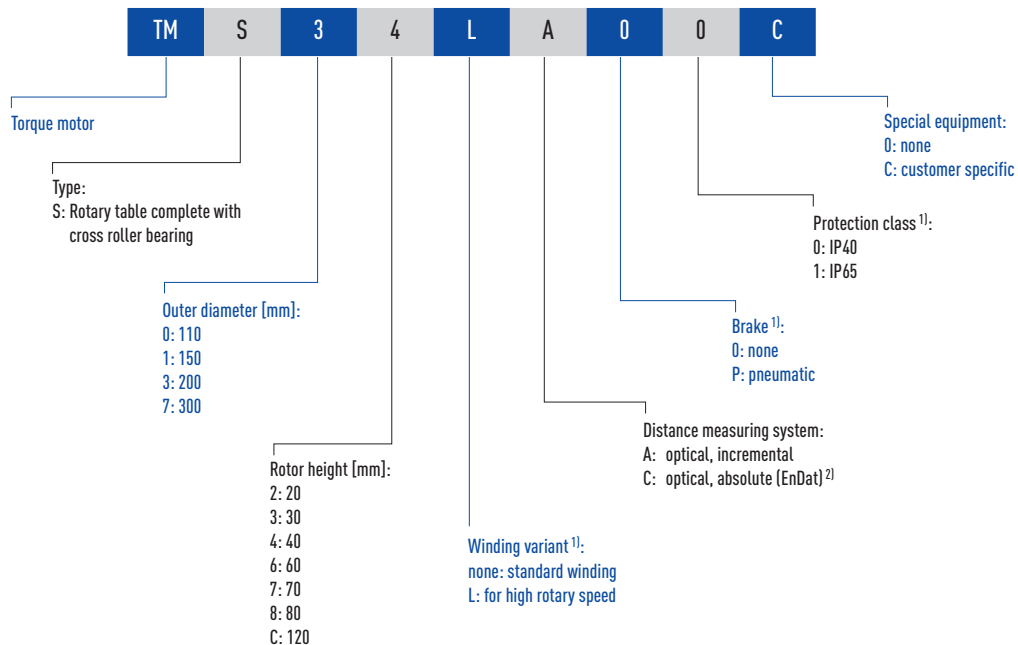
- Backlash-free and extremely dynamic
- Brush-less and high-torque
- Integrated optical rotary encoder
- With pneumatic clamping as an option
- P65 as an option
- Flange version as an option
- Absolute distance measuring system as an option



Typical applications:

- Automation technology
- Pick-and-place machines

3.2 Order code for TMS rotary tables



¹⁾ Options depend on the series; see technical data

²⁾ Available for TMS3X and TMS7X except for TMS32

Rotary Tables

TMS series

3.3 Technical data for TMS0X

Dimensions of the TMS0X HIWIN rotary table

(For values, see [Table 3.1](#))

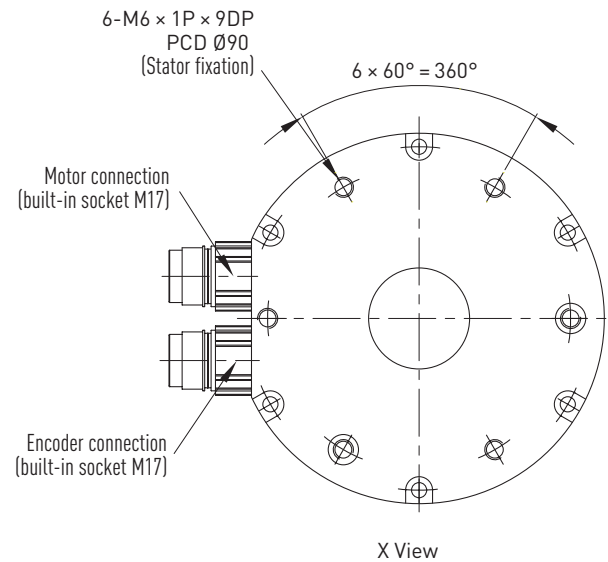
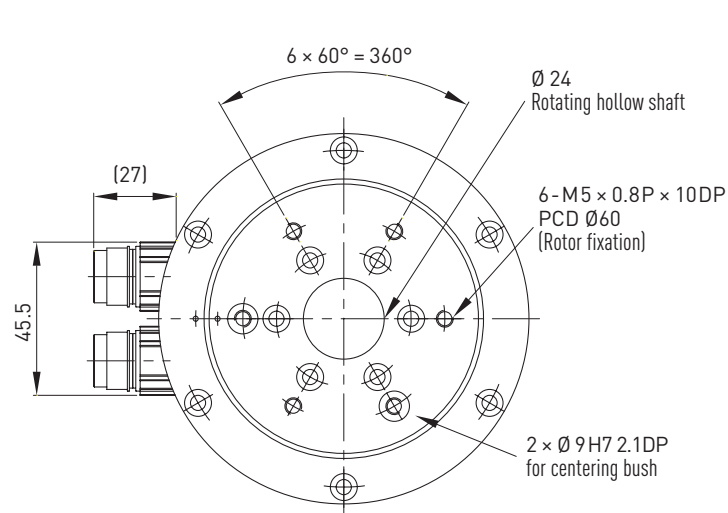
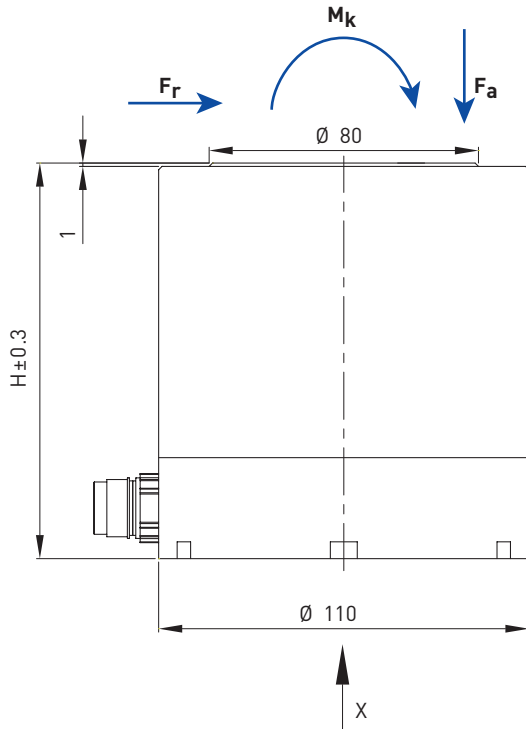


Table 3.1 Technical data for TMS0X HIWIN rotary tables

| | Symbol | Unit | TMS03 | TMS07 |
|---|----------|--------------------------|----------------------|-------|
| Technical data of rotary table | | | | |
| Peak torque (for 1 sec.) | T_p | Nm | 9.3 | 18.6 |
| Continuous torque | T_c | Nm | 3.1 | 6.2 |
| Stall torque | T_s | Nm | 2.17 | 4.34 |
| Inertia of rotating parts | J | kgm ² | 0.003 | 0.006 |
| Weight | M_m | kg | 4 | 7 |
| Max. axial load | F_a | N | 3700 | |
| Max. radial load | F_r | N | 820 | |
| Max. moment of tilt | M_k | Nm | 40 | |
| Nominal speed (at 400 VAC, 30 % duty cycle) | n | 1/min | 700 | |
| Position accuracy | | arc sec | $\pm 45/\pm 10^{2)}$ | |
| Repeating accuracy | | arc sec | ± 3 | |
| Radial run-out | | mm | 0.03 | |
| Axial run-out | | mm | 0.03 | |
| Height | H | mm | 117.5 | 150 |
| Protection class | | | IP40 | |
| Technical data of motor | | | | |
| Peak current (for 1 sec.) | I_p | A_{eff} | 6.0 | |
| Continuous current | I_c | A_{eff} | 2.0 | |
| Motor constant | K_m | Nm/ \sqrt{W} | 0.5 | 0.8 |
| Resistance ¹⁾ | R_{25} | Ω | 7.1 | 11.1 |
| Inductance ¹⁾ | L | mH | 15.2 | 22.2 |
| Electrical time constant | T_e | ms | 2.1 | 2.0 |
| Torque constant | K_t | Nm/ A_{eff} | 1.55 | 3.10 |
| Back emf constant | K_u | $V_{eff}/(\text{rad/s})$ | 0.82 | 1.70 |
| Number of poles | 2p | — | 10 | |
| Thermal resistance | R_{th} | $^{\circ}\text{C/W}$ | 1.76 | 1.13 |
| Thermal sensor | | | PTC SMN 100 | |
| Max. DC Bus | | V | 600 | |

All the specifications in the table (except dimensions) are in $\pm 10\%$ of tolerance at 25 °C ambient temperature

¹⁾ Line-to-line

²⁾ With error mapping

Encoder specifications (optical, incremental)

- 2048 lines/cycle
- Index mark
- Signal output sin/cos 1V_{ss}

Rotary Tables

TMS series

3.4 Technical data for TMS1X

Dimensions of the TMS1X HIWIN rotary table

(For values, see [Table 3.2](#))

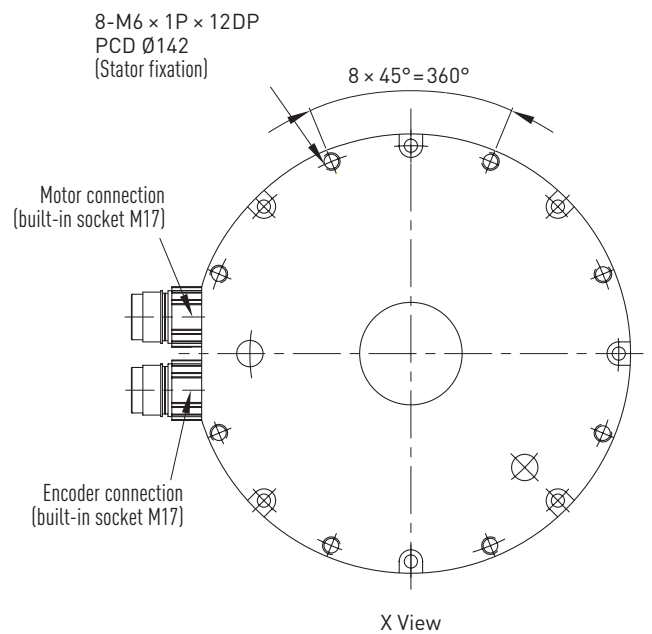
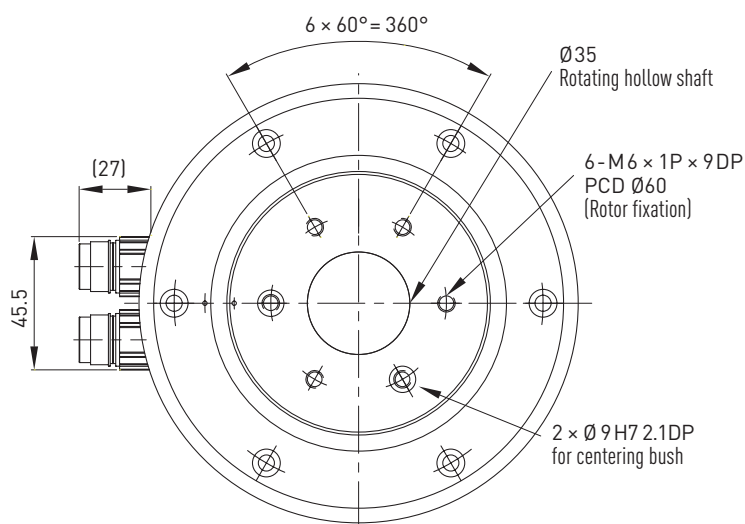
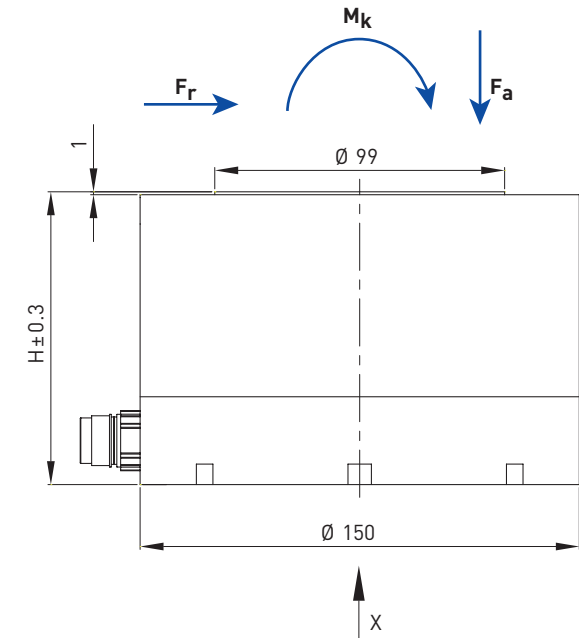


Table 3.2 Technical data for TMS1X HIWIN rotary tables

| | Symbol | Unit | TMS12 | TMS14 | TMS16 | TMS18 |
|---|----------|--------------------------|----------------------|--------|-------|--------|
| Technical data of rotary table | | | | | | |
| Peak torque (for 1 sec.) | T_p | Nm | 15 | 30 | 45 | 60 |
| Continuous torque | T_c | Nm | 5 | 10 | 15 | 20 |
| Stall torque | T_s | Nm | 3.5 | 7 | 10.5 | 14 |
| Inertia of rotating parts | J | kgm ² | 0.006 | 0.0065 | 0.007 | 0.0075 |
| Weight | M_m | kg | 5.7 | 7 | 8.3 | 9.5 |
| Max. axial load | F_a | N | 3700 | | | |
| Max. radial load | F_r | N | 1700 | | | |
| Max. moment of tilt | M_k | Nm | 60 | | | |
| Nominal speed (at 400 VAC, 30 % duty cycle) | n | 1/min | 600 | | | 500 |
| Position accuracy | | arc sec | $\pm 45/\pm 10^{2)}$ | | | |
| Repeating accuracy | | arc sec | ± 3 | | | |
| Radial run-out | | mm | 0.03 | | | |
| Axial run-out | | mm | 0.03 | | | |
| Height | H | mm | 100 | 120 | 140 | 160 |
| Protection class | | | IP40 | | | |
| Technical data of motor | | | | | | |
| Peak current (for 1 sec.) | I_p | A_{eff} | 12 | | | |
| Continuous current | I_c | A_{eff} | 4 | | | |
| Motor constant | K_m | Nm/ \sqrt{W} | 0.6 | 1.0 | 1.3 | 1.6 |
| Resistance ¹⁾ | R_{25} | Ω | 2.6 | 3.9 | 5.2 | 6.5 |
| Inductance ¹⁾ | L | mH | 8.2 | 14.0 | 20.0 | 26.0 |
| Electrical time constant | T_e | ms | 3.2 | 3.6 | 3.8 | 4.0 |
| Torque constant | K_t | Nm/ A_{eff} | 1.25 | 2.50 | 3.75 | 5.00 |
| Back emf constant | K_u | $V_{eff}/(\text{rad/s})$ | 0.6 | 1.2 | 1.8 | 2.4 |
| Number of poles | $2p$ | — | 22 | | | |
| Thermal resistance | R_{th} | $^{\circ}\text{C/W}$ | 1.20 | 0.80 | 0.60 | 0.48 |
| Thermal sensor | | | PTC SNM 100 | | | |
| Max. DC Bus | | V | 600 | | | |

All the specifications in the table (except dimensions) are in $\pm 10\%$ of tolerance at 25 °C ambient temperature

¹⁾ Line-to-line

²⁾ With error mapping

Encoder specifications (optical, incremental)

- 3600 lines/cycle
- Index mark
- Signal output sin/cos 1V_{ss}

Rotary Tables

TMS series

3.5 Technical data for TMS3X

Dimensions of the TMS3X HIWIN rotary table

(For values, see [Table 3.3](#))

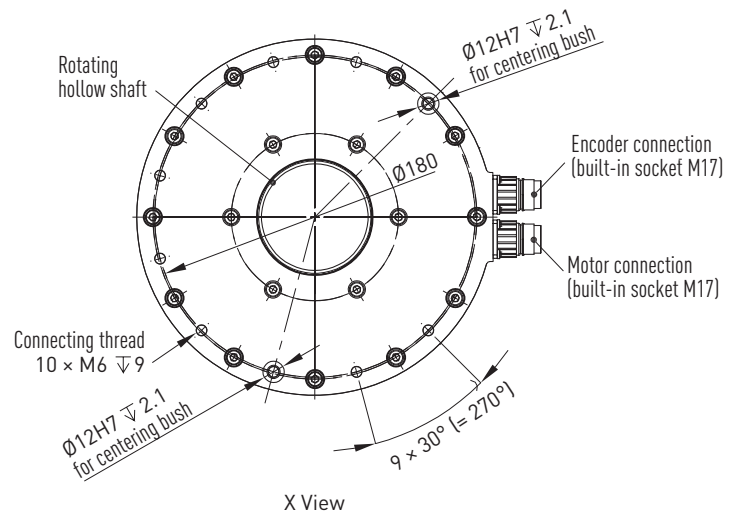
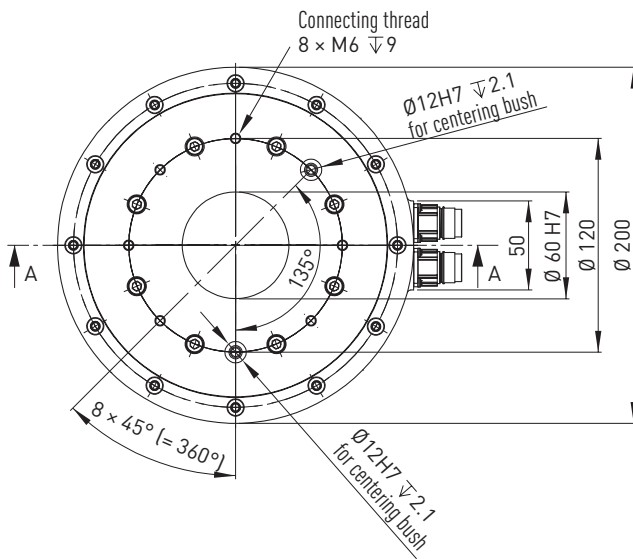
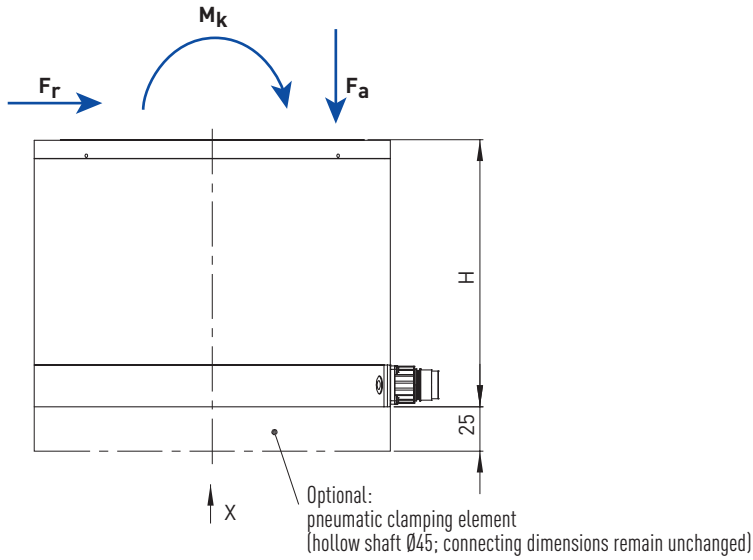


Table 3.3 Technical data HIWIN rotary tables TMS3X

| | Symbol | Unit | TMS32 | TMS34 | TMS34L | TMS38 | TMS38L | TMS3C | TMS3CL |
|---|----------|--------------------------|-----------------------|-------|--------|-------|--------|-------|--------|
| Technical data of rotary table | | | | | | | | | |
| Peak torque (for 1 sec.) | T_p | Nm | 30 | 60 | | 120 | | 180 | |
| Continuous torque | T_c | Nm | 10 | 20 | | 40 | | 60 | |
| Stall torque | T_s | Nm | 7 | 14 | | 28 | | 42 | |
| Inertia of rotating parts | J | kgm ² | 0.014 | 0.020 | | 0.026 | | 0.035 | |
| Weight | M_m | kg | 15 | 21 | | 26 | | 32 | |
| Max. axial load | F_a | N | 8000 | | | | | | |
| Max. radial load | F_r | N | 6500 | | | | | | |
| Max. moment of tilt | M_k | Nm | 240 | | | | | | |
| Nominal speed (at 400 VAC, 30 % duty cycle) | n | 1/min | 700 | 700 | 600 | 450 | 700 | 300 | 600 |
| Position accuracy | | arc sec | $\pm 25/\pm 10^{2)}$ | | | | | | |
| Repeating accuracy | | arc sec | ± 2.5 | | | | | | |
| Radial run-out | | mm | 0.05 | | | | | | |
| Axial run-out | | mm | 0.05 (optional 0.01) | | | | | | |
| Height | H | mm | 130 | 150 | | 190 | | 230 | |
| Protection class | | | IP40; IP65 (optional) | | | | | | |
| Technical data of motor | | | | | | | | | |
| Peak current (for 1 sec.) | I_p | A_{eff} | 10.2 | 10.2 | 20.4 | 10.2 | 20.4 | 10.2 | 20.4 |
| Continuous current | I_c | A_{eff} | 3.4 | 3.4 | 6.8 | 3.4 | 6.8 | 3.4 | 6.8 |
| Motor constant | K_m | Nm/ \sqrt{W} | 1.1 | 1.8 | | 2.8 | | 3.6 | 3.5 |
| Resistance ¹⁾ | R_{25} | Ω | 5 | 7.5 | 1.9 | 12 | 3 | 17.1 | 4.3 |
| Inductance ¹⁾ | L | mH | 22.3 | 34.60 | 8.7 | 65.3 | 16.3 | 101 | 25.3 |
| Electrical time constant | T_e | ms | 4.5 | 4.6 | | 5.4 | | 5.9 | |
| Torque constant | K_t | Nm/ A_{eff} | 3 | 6 | 3 | 12 | 6 | 18 | 9 |
| Back emf constant | K_u | $V_{eff}/(\text{rad/s})$ | 1.5 | 3 | 1.5 | 6 | 3 | 9 | 4.5 |
| Number of poles | $2p$ | — | 22 | | | | | | |
| Thermal resistance | R_{th} | $^{\circ}\text{C/W}$ | 1.1 | 0.73 | | 0.46 | | 0.32 | |
| Thermal sensor | | | PTC SNM 120 | | | | | | |
| Max. DC Bus | | V | 600 | | | | | | |

All the specifications in the table (except dimensions) are in $\pm 10\%$ of tolerance at 25 °C ambient temperature

¹⁾ Line-to-line

²⁾ With error mapping

Encoder specifications

Optical, incremental:

- 3600 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{ss}

Optical, absolute (optional):

- EnDat

Specifications for pneumatic clamping element (optional)

- Clamping torque 110 Nm at 6 bar
- Clamping torque with additional air: 200 Nm at 6 bar
- Suitable for emergency stop due to spring preload

Flange version (optional)



Rotary Tables

TMS series

3.6 Technical data for TMS7X

Dimensions of the TMS7X HIWIN rotary table

(For values, see [Table 3.4](#))

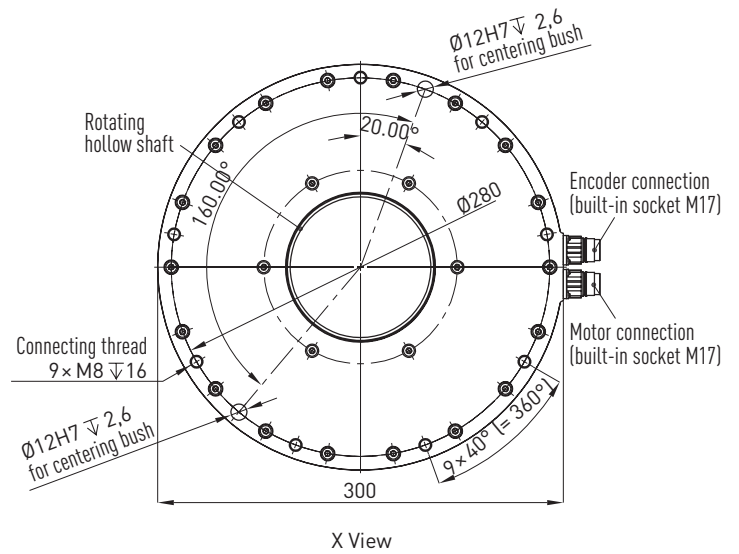
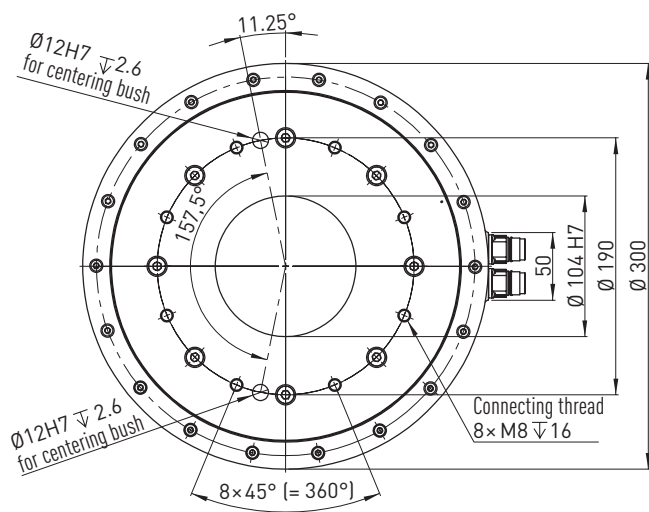
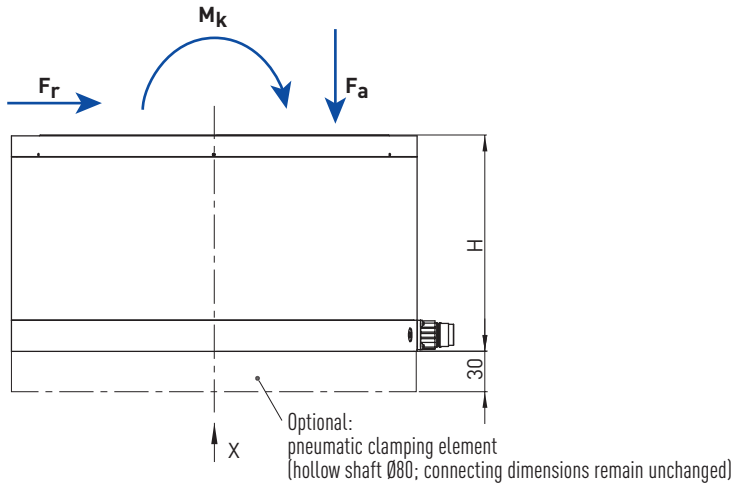


Table 3.4 Technical data for TMS7X HIWIN rotary tables

| | Symbol | Unit | TMS74 | TMS74L | TMS76 | TMS76L | TMS7C | TMS7CL |
|---|----------|--------------------------|-----------------------|--------|-------|--------|-------|--------|
| Technical data of rotary table | | | | | | | | |
| Peak torque (for 1 sec.) | T_p | Nm | 150 | | 225 | | 450 | |
| Continuous torque | T_c | Nm | 50 | | 75 | | 150 | |
| Stall torque | T_s | Nm | 35 | | 52.5 | | 105 | |
| Inertia of rotating parts | J | kgm ² | 0.152 | | 0.174 | | 0.241 | |
| Weight | M_m | kg | 39 | | 44.5 | | 61.5 | |
| Max. axial load | F_a | N | 8000 | | | | | |
| Max. radial load | F_r | N | 6500 | | | | | |
| Max. moment of tilt | M_k | Nm | 360 | | | | | |
| Nominal speed (at 400 VAC, 30 % duty cycle) | n | 1/min | 290 | 500 | 190 | 400 | 80 | 190 |
| Position accuracy | | arc sec | $\pm 25/\pm 10^{2)}$ | | | | | |
| Repeating accuracy | | arc sec | ± 2.5 | | | | | |
| Radial run-out | | mm | 0.05 | | | | | |
| Axial run-out | | mm | 0.05 (optional 0.01) | | | | | |
| Height | H | mm | 160 | | 180 | | 240 | |
| Protection class | | | IP40; IP65 (optional) | | | | | |
| Technical data of motor | | | | | | | | |
| Peak current (for 1 sec.) | I_p | A_{eff} | 10.2 | 20.4 | 10.2 | 20.4 | 10.2 | 20.4 |
| Continuous current | I_c | A_{eff} | 3.4 | 6.8 | 3.4 | 6.8 | 3.4 | 6.8 |
| Motor constant | K_m | Nm/ \sqrt{W} | 3.9 | | 5.1 | 5.0 | 7.7 | |
| Resistance ¹⁾ | R_{25} | Ω | 12.9 | 3.2 | 17 | 4.3 | 29 | 7.3 |
| Inductance ¹⁾ | L | mH | 55 | 13.8 | 76 | 19 | 145 | 36.3 |
| Electrical time constant | T_e | ms | 4.3 | | 4.5 | 4.4 | 5 | |
| Torque constant | K_t | Nm/ A_{eff} | 17 | 8.5 | 25.6 | 12.8 | 51.1 | 25.5 |
| Back emf constant | K_u | $V_{eff}/(\text{rad/s})$ | 9.8 | 4.9 | 14.8 | 7.4 | 29.5 | 14.8 |
| Number of poles | $2p$ | — | 44 | | | | | |
| Thermal resistance | R_{th} | $^{\circ}\text{C/W}$ | 0.42 | | 0.32 | | 0.19 | |
| Thermal sensor | | | PTC SNM 120 | | | | | |
| Max. DC Bus | | V | 600 | | | | | |

All the specifications in the table (except dimensions) are in $\pm 10\%$ of tolerance at 25 °C ambient temperature

¹⁾ Line-to-line

²⁾ With error mapping

Encoder specifications

Optical, incremental:

- 5400 lines/cycle
- Index mark
- Signal output sin/cos 1V_{ss}

Optical, absolute (optional):

- EnDat

Specifications for pneumatic clamping element (optional)

- Clamping torque 330 Nm at 6 bar
- Clamping torque with additional air: 580 Nm at 6 bar
- Suitable for emergency stop due to spring preload

Flange version (optional)



Rotary Tables

TMB series

4. TMB series

4.1 Characteristics of the TMB rotary tables

Thanks to the compact design and low weight, the TMB rotary tables can be used as rotary axes in many different ways and with little construction work.

Two heights provide the optimum solution for torques of between 4.2 and 6.4 Nm. Since no gearbox is needed, there is virtually no noise during operation and no backlash. The cable connections are integrated in the housing to save space. The hollow shaft allows cables and other media to pass through with ease.

Key features:

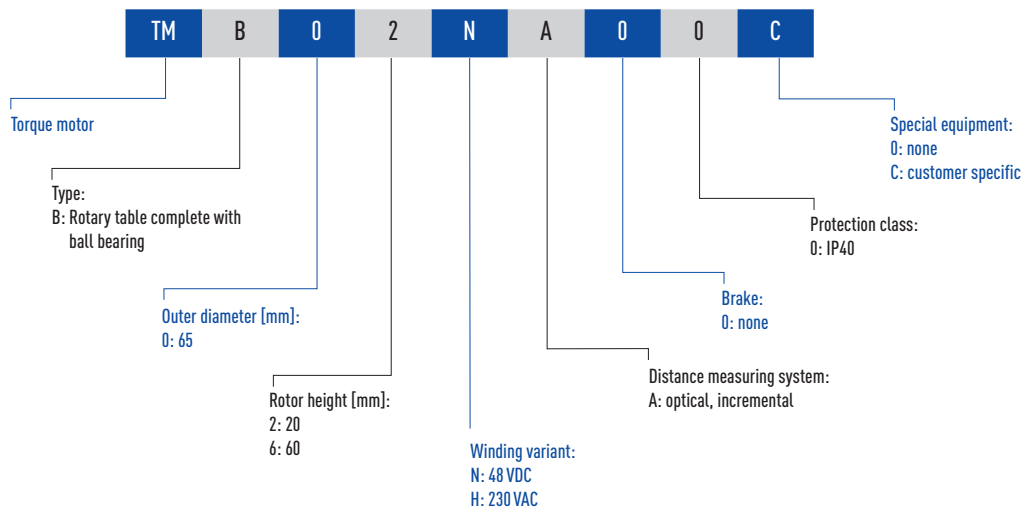
- Backlash-free and extremely dynamic
- Compact design
- Hollow shaft, 12 mm in diameter
- 65 mm outer diameter
- Integrated optical rotary encoder
- Very low running noise

Typical applications:

- Automation technology
- Pick-and-place machines



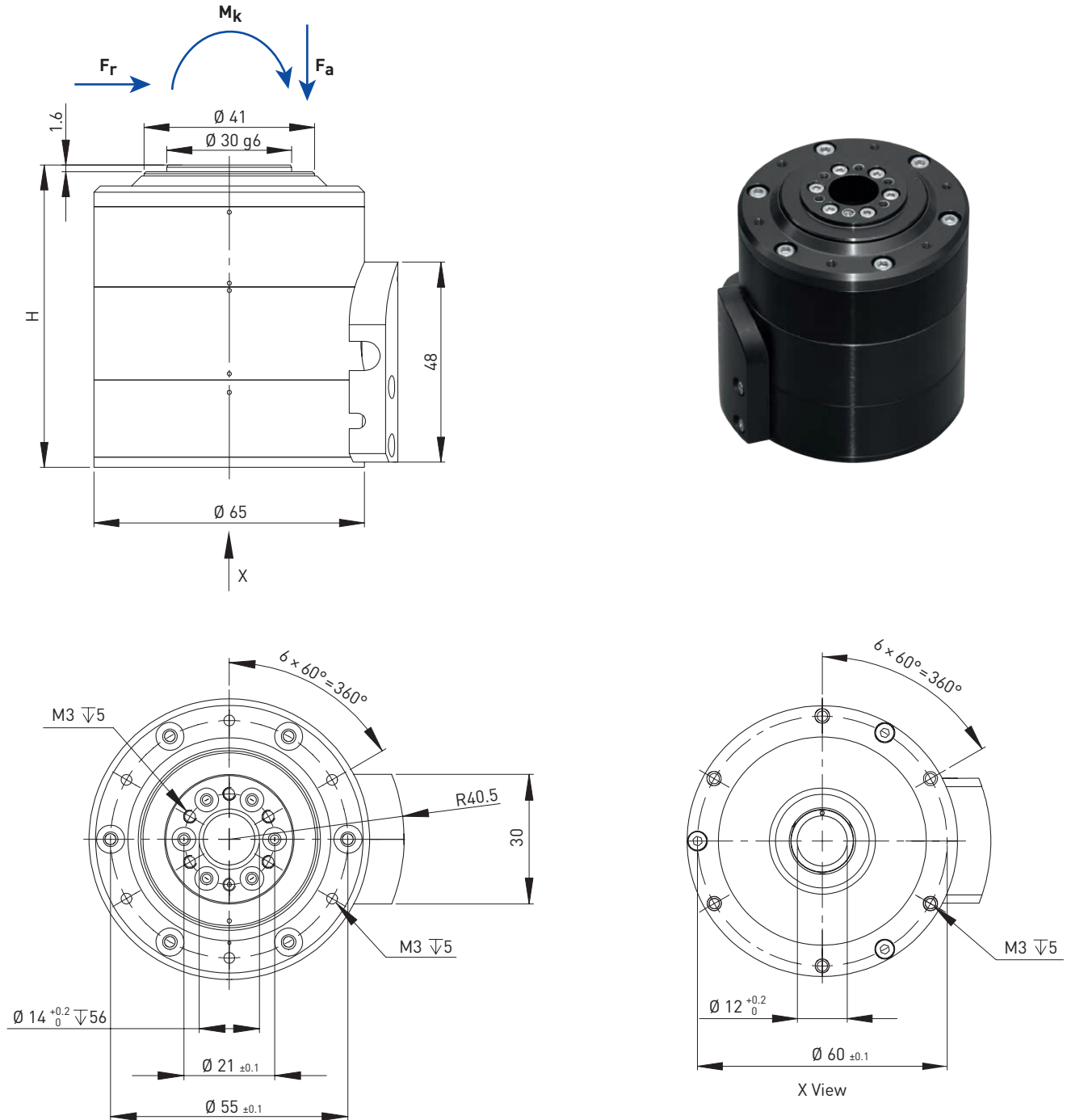
4.2 Order code for TMB rotary tables



4.3 Technical data for TMBOX

Dimensions of the TMBOX HIWIN rotary table

(For values, see Table 4.1)



Rotary Tables

TMB series, TMN series

Table 4.1 Technical data for TMB0X HIWIN rotary tables

| | Symbol | Unit | TMB02N-A00 | TMB02H-A00 | TMB06H-A00 |
|---------------------------------------|----------|-----------------------------|----------------------|------------|----------------------|
| Technical data of rotary table | | | | | |
| Peak torque (for 1 sec.) | T_p | Nm | 4.4 | 4.2 | 6.4 |
| Continuous torque | T_c | Nm | 0.9 | | 1.4 |
| Stall torque | T_s | Nm | 0.5 | | 1 |
| Inertia of rotating parts | J | kgm ² | 3.5×10^{-5} | | 9.5×10^{-5} |
| Weight | M_m | g | 650 | 960 | 1270 |
| Max. axial load | F_a | N | 150 | | |
| Max. radial load | F_r | N | 150 | | |
| Max. moment of tilt | M_k | Nm | 4 | | |
| Nominal speed (30 % duty cycle) | n | 1/min | 650 | 450 | 420 |
| Position accuracy | | arc sec | 150 | | |
| Repeating accuracy | | arc sec | 6 | | |
| Radial run-out | | mm | 0.05 | | |
| Axial run-out | | mm | 0.05 | | |
| Height | H | mm | 72.6 | | 115 |
| Protection class | | | IP40 | | |
| Technical data of motor | | | | | |
| Peak current (for 1 sec.) | I_p | A_{eff} | 34.4 | 6.5 | 9.7 |
| Continuous current | I_c | A_{eff} | 6.9 | 1.3 | 2 |
| Motor constant | K_m | Nm/ \sqrt{W} | 0.11 | | 0.2 |
| Resistance ¹⁾ | R_{25} | Ω | 1.4 | 35.3 | 10.6 |
| Inductance ¹⁾ | L | mH | 0.88 | 21.8 | 9.9 |
| Electrical time constant | T_e | ms | 0.63 | | 0.93 |
| Torque constant | K_t | Nm/ A_{eff} | 0.13 | 0.65 | 0.66 |
| Back emf constant | K_u | $V_{eff}/(\text{rad/s})$ | 0.13 | 0.65 | 0.66 |
| Number of poles | $2p$ | — | 12 | | |
| Thermal resistance | R_{th} | $^{\circ}\text{C}/\text{W}$ | 3.3 | | 2.5 |
| Thermal sensor | | | PTC SNM 125 | | |
| Max. DC Bus | | VDC | 48 | 340 | |

All the specifications in the table (except dimensions) are in $\pm 10\%$ of tolerance at 25 °C ambient temperature

¹⁾ Line-to-line

Encoder specifications type A (optical, incremental)

- 2048 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{SS}

5. TMN series

5.1 Characteristics of the TMN rotary tables

The particularly flat and light precision rotary tables of the TMN series are suited to all applications in which high rigidity and accuracy are needed along with the smallest dimensions possible. Typical areas of use include the manufacture of LEDs, solar cells and semiconductors. The zero-maintenance TMN rotary tables use precision bearings and optical encoders to achieve very high positioning and repeat accuracy.

Key features:

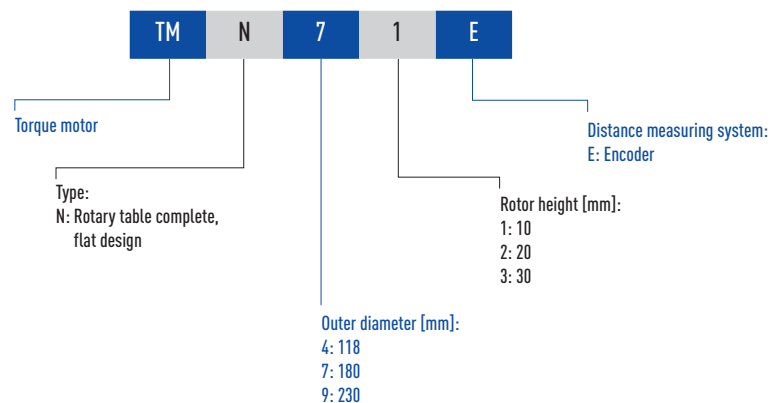
- Backlash-free and extremely dynamic
- Extremely flat design
- Integrated rotary encoder

Typical applications:

- LED manufacture and testing
- Production of solar cells
- Manufacture of semiconductor components



5.2 Order code for TMN rotary tables



Rotary Tables

TMN series

5.3 Technical data for TMN42

Dimensions of the TMN42 HIWIN rotary table

(For values, see Table 5.1)

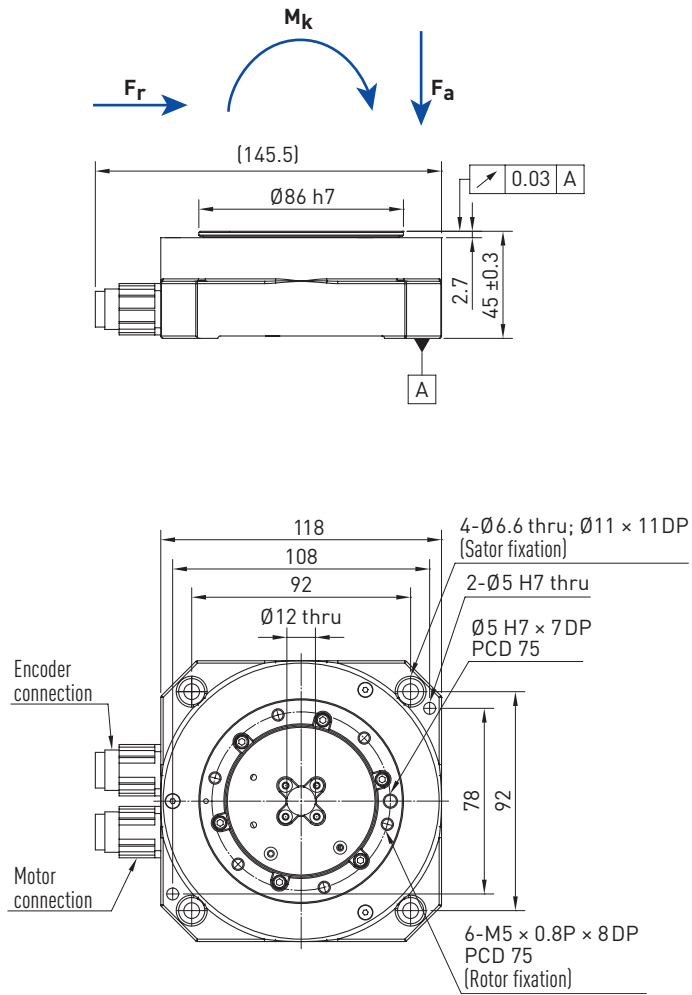


Table 5.1 Technical data for TMN42 HIWIN rotary tables

| | Symbol | Unit | TMN42 |
|---------------------------------------|----------|--------------------------|-------------|
| Technical data of rotary table | | | |
| Peak torque (for 1 sec.) | T_p | Nm | 4.2 |
| Continuous torque | T_c | Nm | 1.4 |
| Stall torque | T_s | Nm | 0.98 |
| Inertia of rotating parts | J | kgm ² | 0.003 |
| Weight | M_m | kg | 2 |
| Max. axial load | F_a | N | 600 |
| Max. radial load | F_r | N | 600 |
| Max. moment of tilt | M_k | Nm | 30 |
| Nominal speed (at 400 VAC) | n | 1/min | 700 |
| Position accuracy | | arc sec | ± 45 |
| Repeating accuracy | | arc sec | ± 2.5 |
| Radial run-out | | mm | 0.03 |
| Axial run-out | | mm | 0.03 |
| Height | H | mm | 45 |
| Protection class | | | IP40 |
| Technical data of motor | | | |
| Peak current (for 1 sec.) | I_p | A_{eff} | 4.5 |
| Continuous current | I_c | A_{eff} | 1.5 |
| Motor constant | K_m | Nm/√W | 0.4 |
| Resistance ¹⁾ | R_{25} | Ω | 4.59 |
| Inductance ¹⁾ | L | mH | 8.18 |
| Electrical time constant | T_e | ms | 1.78 |
| Torque constant | K_t | Nm/ A_{eff} | 0.97 |
| Back emf constant | K_u | $V_{eff}/(\text{rad/s})$ | 0.56 |
| Number of poles | $2p$ | — | 16 |
| Thermal resistance | R_{th} | °C/W | 4.84 |
| Thermal sensor | | | PTC SNM 100 |
| Max. DC Bus | | V | 500 |

All the specifications in the table (except dimensions) are in ± 10 % of tolerance at 25 °C ambient temperature

¹⁾ Line-to-line

Encoder specifications (optical, incremental)

- 2048 lines/cycle
- Index mark
- Signal output sin/cos 1V_{ss}

Rotary Tables

TMN series

5.4 Technical data for TMN71

Dimensions of the TMN71 HIWIN rotary table

(For values, see [Table 5.2](#))

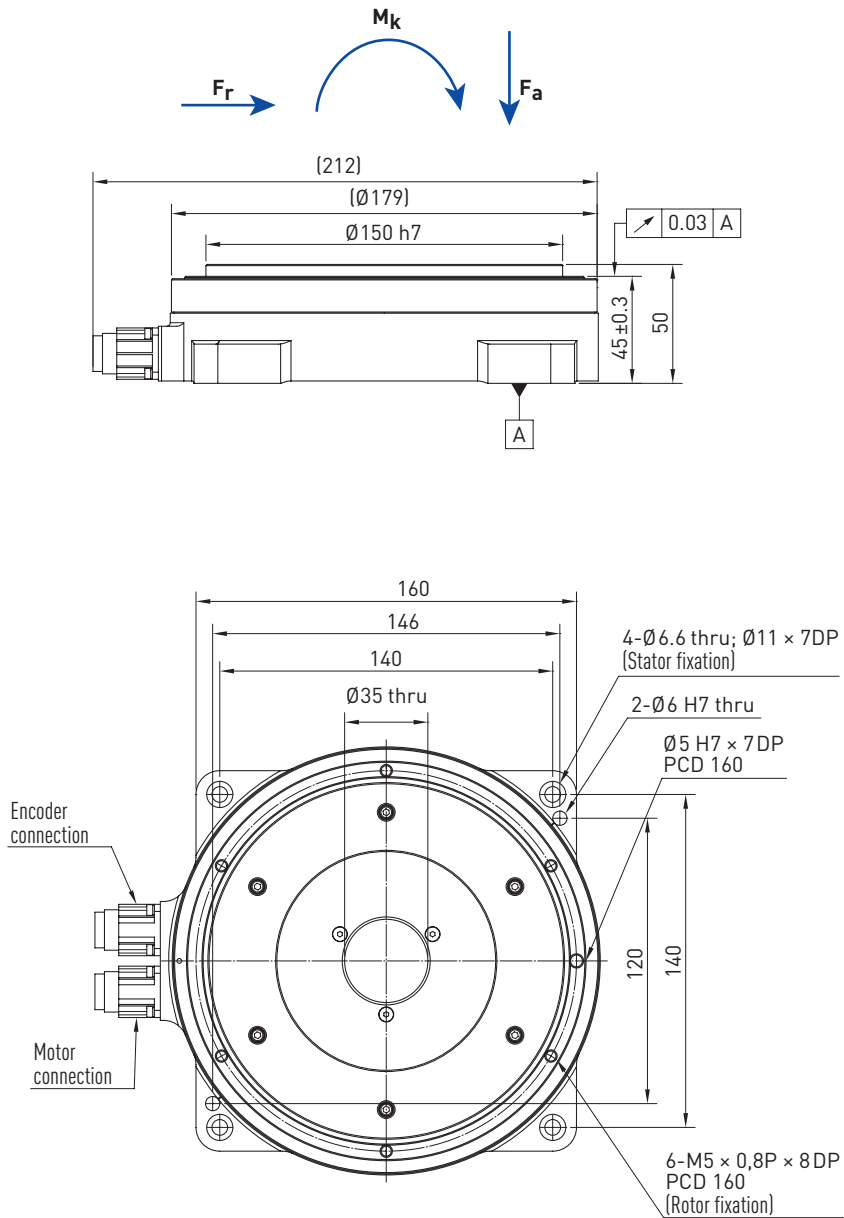


Table 5.2 Technical data for TMN71 HIWIN rotary tables

| | Symbol | Unit | TMN71 |
|---------------------------------------|----------|--------------------------|-------------|
| Technical data of rotary table | | | |
| Peak torque (for 1 sec.) | T_p | Nm | 11.1 |
| Continuous torque | T_c | Nm | 3.7 |
| Stall torque | T_s | Nm | 2.59 |
| Inertia of rotating parts | J | kgm ² | 0.008 |
| Weight | M_m | kg | 3.5 |
| Max. axial load | F_a | N | 1000 |
| Max. radial load | F_r | N | 1000 |
| Max. moment of tilt | M_k | Nm | 50 |
| Nominal speed (at 400 VAC) | n | 1/min | 600 |
| Position accuracy | | arc sec | ± 45 |
| Repeating accuracy | | arc sec | ± 2.5 |
| Radial run-out | | mm | 0.03 |
| Axial run-out | | mm | 0.03 |
| Height | H | mm | 50 |
| Protection class | | | IP40 |
| Technical data of motor | | | |
| Peak current (for 1 sec.) | I_p | A_{eff} | 10.2 |
| Continuous current | I_c | A_{eff} | 3.4 |
| Motor constant | K_m | Nm/√W | 0.6 |
| Resistance ¹⁾ | R_{25} | Ω | 2.22 |
| Inductance ¹⁾ | L | mH | 9.02 |
| Electrical time constant | T_e | ms | 4.1 |
| Torque constant | K_t | Nm/ A_{eff} | 1.09 |
| Back emf constant | K_u | $V_{eff}/(\text{rad/s})$ | 0.63 |
| Number of poles | $2p$ | — | 16 |
| Thermal resistance | R_{th} | °C/W | 1.95 |
| Thermal sensor | | | PTC SNM 100 |
| Max. DC Bus | | V | 500 |

All the specifications in the table (except dimensions) are in ± 10 % of tolerance at 25 °C ambient temperature

¹⁾ Line-to-line

Encoder specifications (optical, incremental)

- 2048 lines/cycle
- Index mark
- Signal output sin/cos 1V_{ss}

Rotary Tables

TMN series

5.5 Technical data for TMN93

Dimensions of the TMN93 HIWIN rotary table

(For values, see [Table 5.3](#))

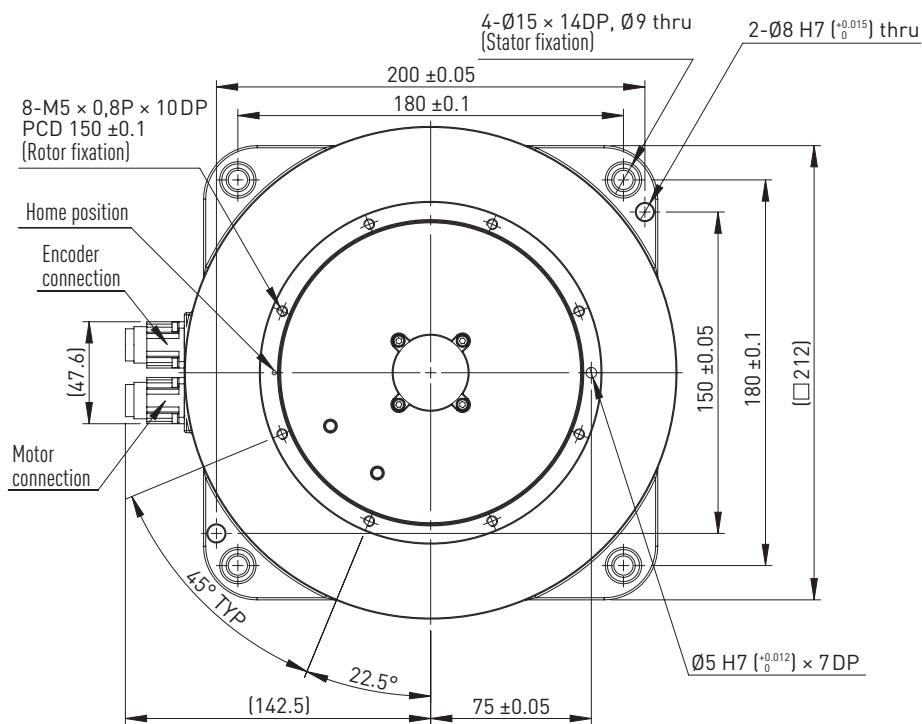
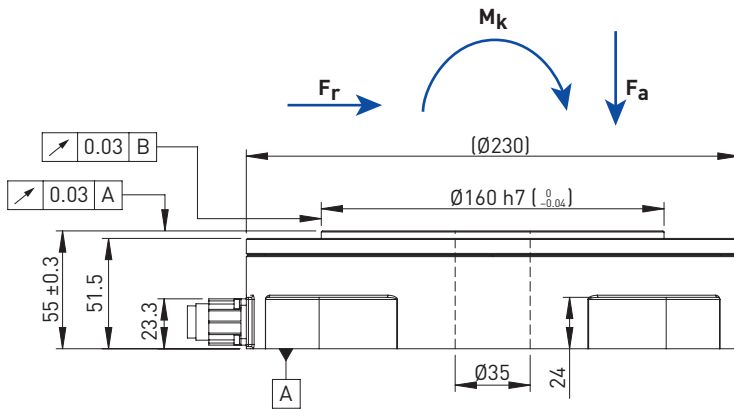


Table 5.3 Technical data for TMN93 HIWIN rotary tables

| | Symbol | Unit | TMN93 |
|---------------------------------------|----------|--------------------------|-------------|
| Technical data of rotary table | | | |
| Peak torque (for 1 sec.) | T_p | Nm | 39.6 |
| Continuous torque | T_c | Nm | 13.2 |
| Stall torque | T_s | Nm | 9.24 |
| Inertia of rotating parts | J | kgm ² | 0.012 |
| Weight | M_m | kg | 7.5 |
| Max. axial load | F_a | N | 1000 |
| Max. radial load | F_r | N | 1000 |
| Max. moment of tilt | M_k | Nm | 50 |
| Nominal speed (at 400 VAC) | n | 1/min | 500 |
| Position accuracy | | arc sec | ± 45 |
| Repeating accuracy | | arc sec | ± 2.5 |
| Radial run-out | | mm | 0.03 |
| Axial run-out | | mm | 0.03 |
| Height | H | mm | 55 |
| Protection class | | | IP40 |
| Technical data of motor | | | |
| Peak current (for 1 sec.) | I_p | A_{eff} | 10.2 |
| Continuous current | I_c | A_{eff} | 3.4 |
| Motor constant | K_m | Nm/√W | 1.5 |
| Resistance ¹⁾ | R_{25} | Ω | 4.3 |
| Inductance ¹⁾ | L | mH | 23.2 |
| Electrical time constant | T_e | ms | 5.4 |
| Torque constant | K_t | Nm/ A_{eff} | 3.9 |
| Back emf constant | K_u | $V_{eff}/(\text{rad/s})$ | 2.25 |
| Number of poles | $2p$ | — | 22 |
| Thermal resistance | R_{th} | °C/W | 1.01 |
| Thermal sensor | | | PTC SNM 100 |
| Max. DC Bus | | V | 500 |

All the specifications in the table (except dimensions) are in ± 10 % of tolerance at 25 °C ambient temperature

¹⁾ Line-to-line

Encoder specifications (optical, incremental)

- 3600 lines/cycle
- Index mark
- Signal output sin/cos 1V_{ss}

Rotary Tables

TMA series

6. TMA series

6.1 Characteristics of the TMA rotary tables

The rotary tables of the TMA series with air bearings were developed especially for applications with high synchronism and precision. The running tolerances have been reduced to a minimum.

The rotary table thereby achieves a positioning accuracy of 20 arcsec and a repeat accuracy of 2 arcsec.

Key features:

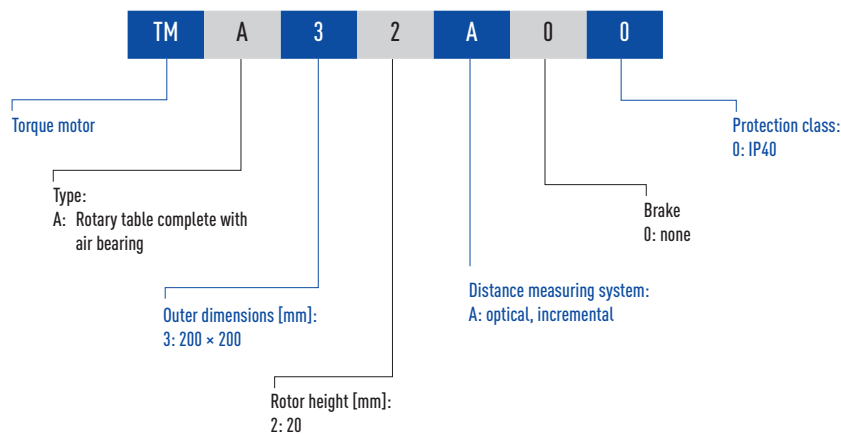
- Backlash-free and extremely dynamic
- Air bearings
- High accuracy and high synchronism
- Integrated optical rotary encoder

Typical applications:

- Measuring technology
- Test machines



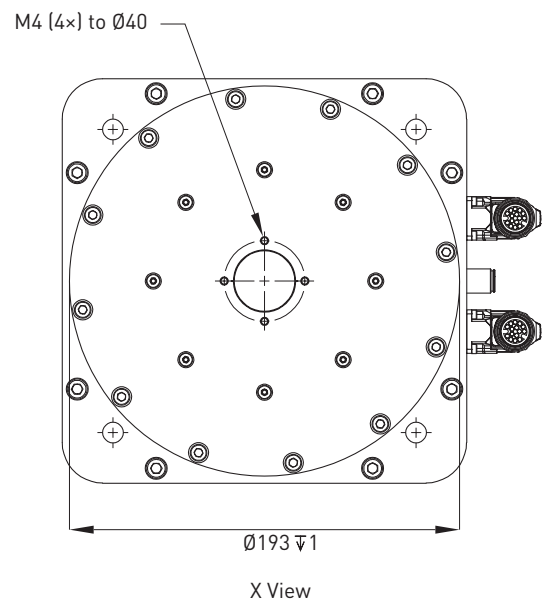
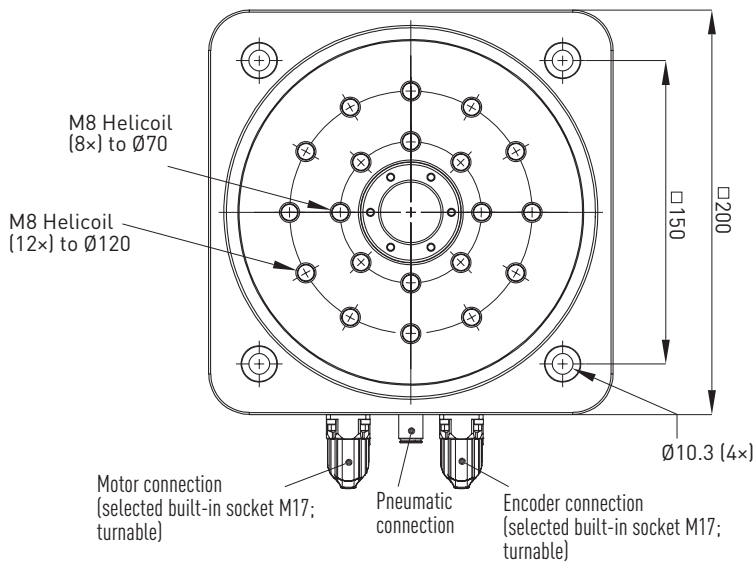
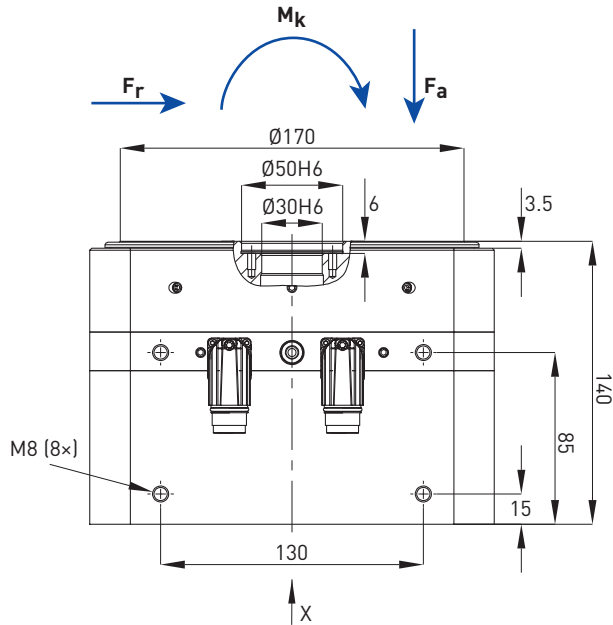
6.2 Order code for TMA rotary tables



6.3 Technical data for TMA32

Dimensions of the TMA32 HIWIN rotary table

(For values, see Table 6.1)



Rotary Tables

TMA series

Table 6.1 Technical data for TMA32 HIWIN rotary tables

| | Symbol | Unit | TMA32 |
|---------------------------------------|----------|--------------------------|-------------|
| Technical data of rotary table | | | |
| Peak torque (for 1 sec.) | T_p | Nm | 27 |
| Continuous torque | T_c | Nm | 11 |
| Stall torque | T_s | Nm | 8 |
| Inertia of rotating parts | J | kgm ² | 0.019 |
| Weight | M_m | kg | 16 |
| Max. axial load | F_a | N | 2500 |
| Max. radial load | F_r | N | 2500 |
| Max. moment of tilt | M_k | Nm | 70 |
| Rigidity of axial bearing | | N/ μ m | 350 |
| Rigidity of radial bearing | | N/ μ m | 125 |
| Resistance to tilting | | Nm/ μ rad | 0.58 |
| Nominal speed (at 400 VAC) | n | 1/min | 1000 |
| Position accuracy | | arc sec | ± 20 |
| Repeating accuracy | | arc sec | ± 2 |
| Radial run-out | | mm | 0.002 |
| Axial run-out | | mm | 0.002 |
| Operating pressure | | bar | 5 |
| Air consumption | v_n | Nl/min | 18 |
| Height | H | mm | 140 |
| Protection class | | | IP40 |
| Technical data of motor | | | |
| Peak current (for 1 sec.) | I_p | A_{eff} | 8 |
| Continuous current | I_c | A_{eff} | 3.0 |
| Motor constant | K_m | Nm/ \sqrt{W} | 1.0 |
| Resistance ¹⁾ | R_{25} | Ω | 2.9 |
| Inductance ¹⁾ | L | mH | 10.0 |
| Electrical time constant | T_e | ms | 3.9 |
| Torque constant | K_t | Nm/ A_{eff} | 3.5 |
| Back emf constant | K_u | $V_{eff}/(\text{rad/s})$ | 1.6 |
| Number of poles | 2p | — | 22 |
| Thermal resistance | R_{th} | $^{\circ}\text{C/W}$ | 0.7 |
| Thermal sensor | | | PTC SNM 100 |
| Max. DC Bus | | VDC | 600 |

All the specifications in the table (except dimensions) are in $\pm 10\%$ of tolerance at 25 $^{\circ}\text{C}$ ambient temperature

¹⁾ Line-to-line

Encoder specifications (optical, incremental)

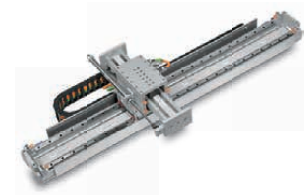
- 9000 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{ss}



Linear Guideways



Ballscrews



Linear Motor Systems



Linear Axes with Ballscrews



Linear Actuators



Ball Bearings



Linear Motor Components



Rotary Tables



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