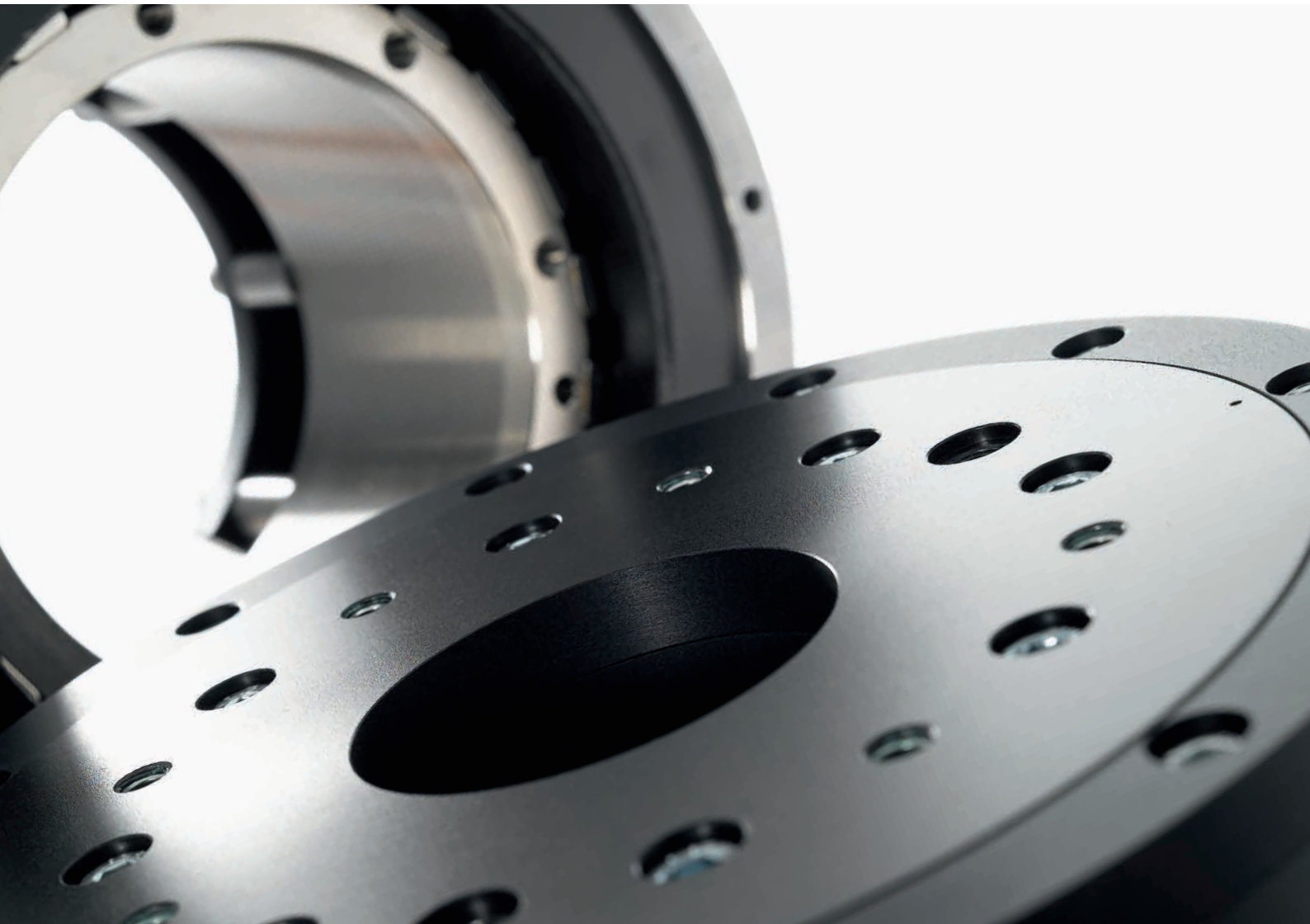


HIWIN[®]

Motion Control & Systems



Rotary Tables

Motors, Drives & Accessories

Rotary Tables

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.

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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 22](#)

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



HIWIN rotary tables TMN

[Page 25](#)

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



HIWIN rotary tables TMA

[Page 32](#)

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

Rotary Tables

Sample applications, HIWIN rotary tables TMS

2. Sample applications

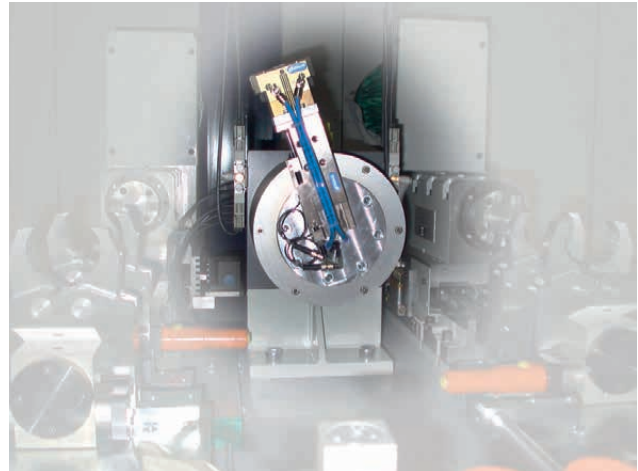
2.1 HIWIN rotary tables optimise transport processes

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 positioning measurement 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



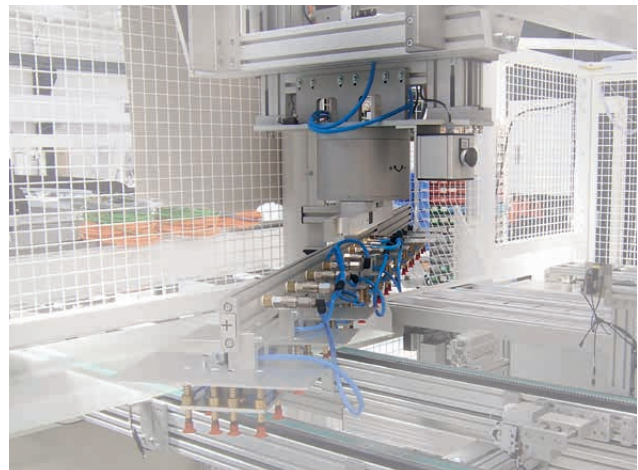
2.2 HIWIN rotary table in glass plate handling

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. HIWIN rotary tables TMS

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:

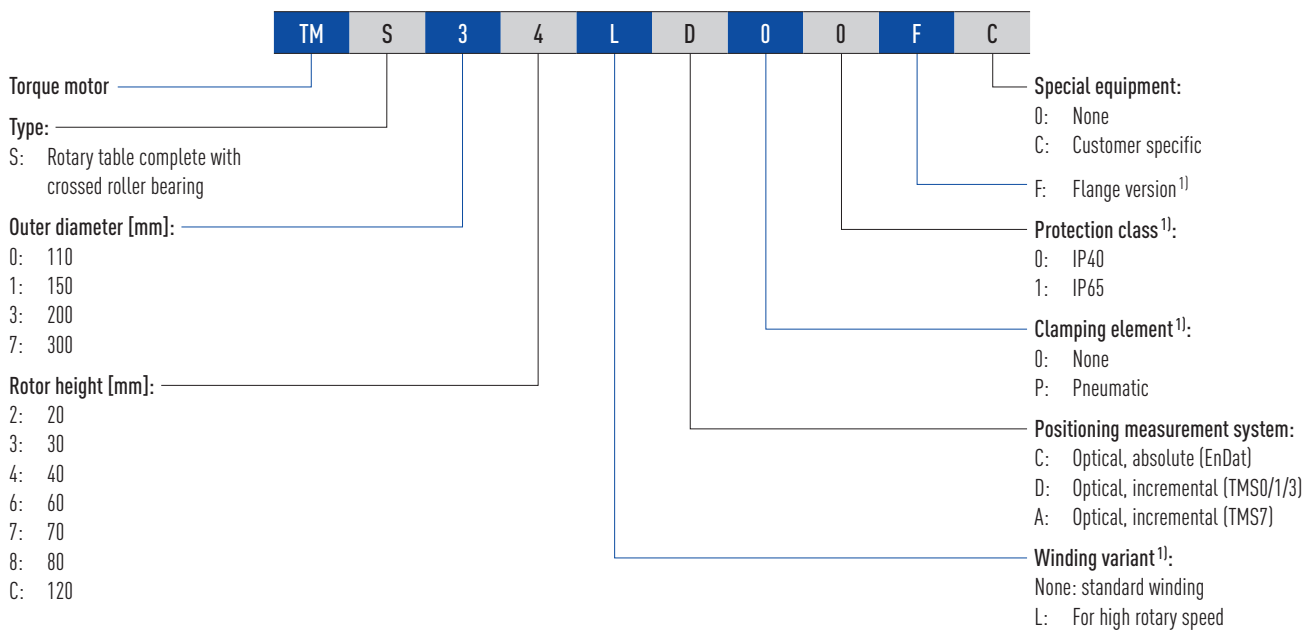
- Backlash-free and extremely dynamic
- Brush-less and high-torque
- Integrated optical rotary encoder
- With pneumatic clamping as an option
- P65 as an option
- Flange version as an option
- Absolute positioning measurement system as an option (EnDat 2.2, Siemens DRIVE-CLiQ, Sick HIPERFACE, Fanuc or Mitsubishi interface)

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

Rotary Tables

HIWIN rotary tables TMS

3.3 Technical data for TMS

3.3.1 Technical data for TMS0

Torque-speed curves (DC bus voltage: 560 VDC)

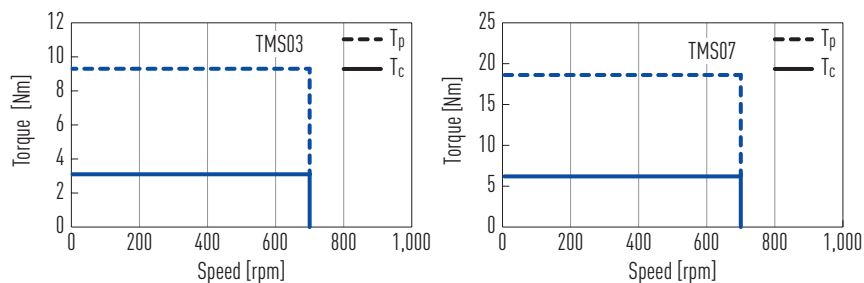


Table 3.1 Technical data for TMS0 HIWIN rotary tables

	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	3,700	
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	± 45/± 10 ²⁾	
Repeating accuracy		arc sec	± 3	
Radial run-out		mm	0.03 (optional 0.015)	
Axial run-out		mm	0.03 (optional 0.005)	
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/√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} / (rad/s)	0.82	1.70
Number of poles	2p		10	
Thermal resistance	R _{th}	°C/W	1.76	1.13
Thermal time constant	T _{th}	s	1,930	1,980
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 $^{\circ}C$ ambient temperature

¹⁾ Line-to-line

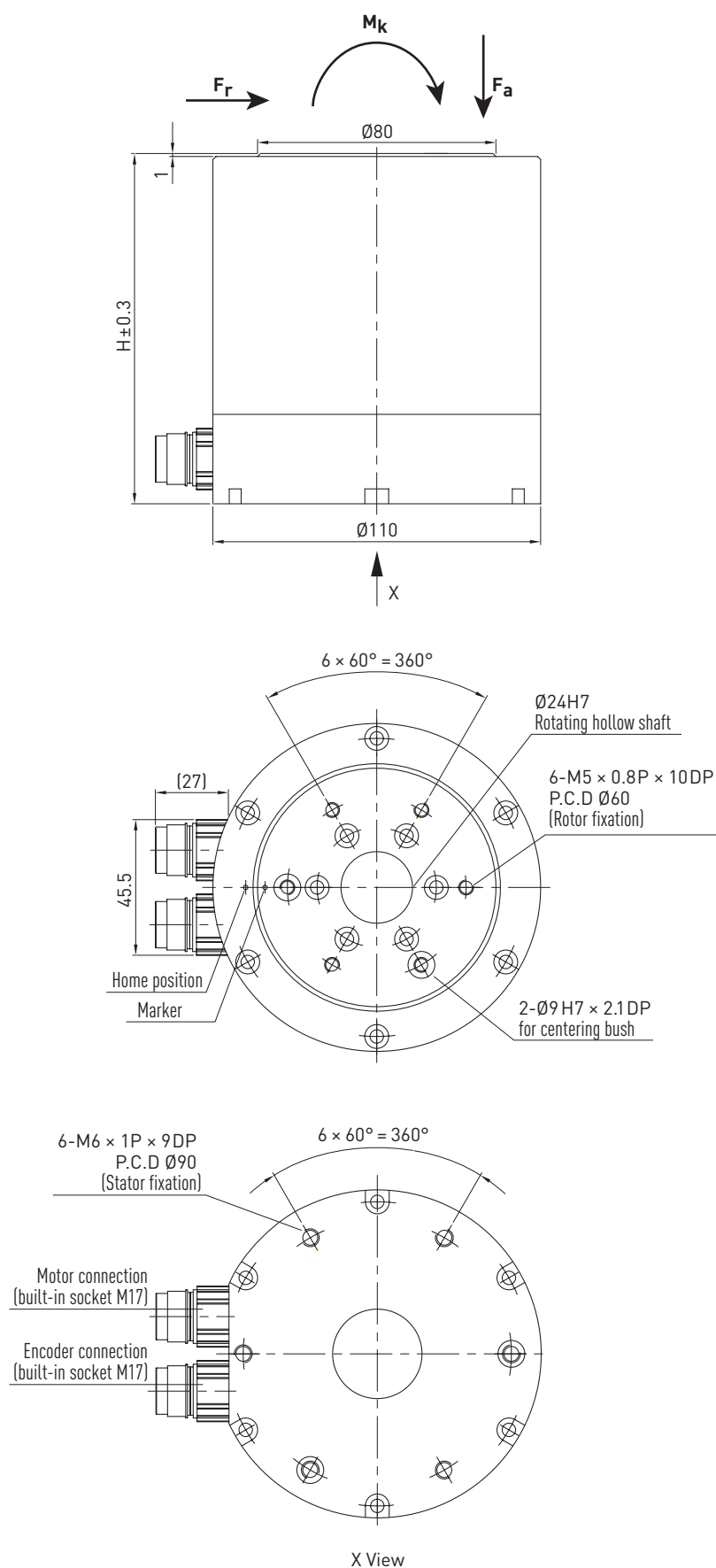
²⁾ With error mapping

Encoder type D specifications (optical, incremental)

- 5,026 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{pp}

Dimensions of the TMS0 HIWIN rotary table

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



Rotary Tables

HIWIN rotary tables TMS

3.3.2 Technical data for TMS1

Torque-speed curves (DC bus voltage: 560 VDC)

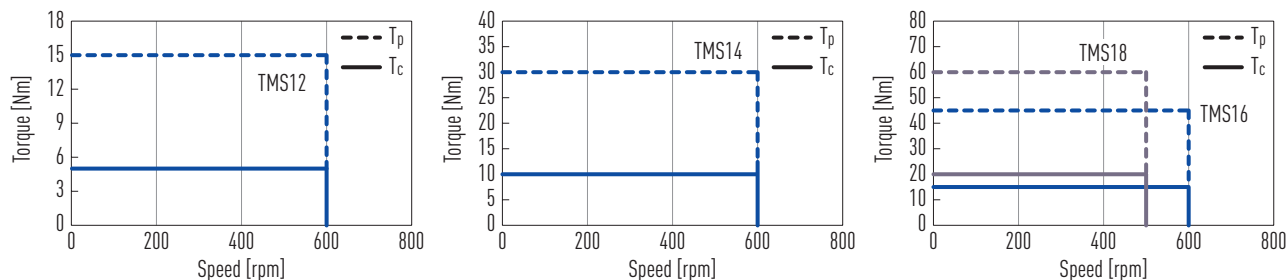


Table 3.2 Technical data for TMS1 HIWIN rotary tables

	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	3,700			
Max. radial load	F _r	N	1,700			
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	± 45/± 10 ²			
Repeating accuracy		arc sec	± 3			
Radial run-out		mm	0.03 (optional 0.015)			
Axial run-out		mm	0.03 (optional 0.005)			
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/√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} / (rad/s)	0.6	1.2	1.8	2.4
Number of poles	2p		22			
Thermal resistance	R _{th}	°C/W	1.76	0.80	0.60	0.48
Thermal time constant	T _{th}	s	2,210	2,290	2,460	2,520
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 $^{\circ}C$ ambient temperature

¹⁾ Line-to-line

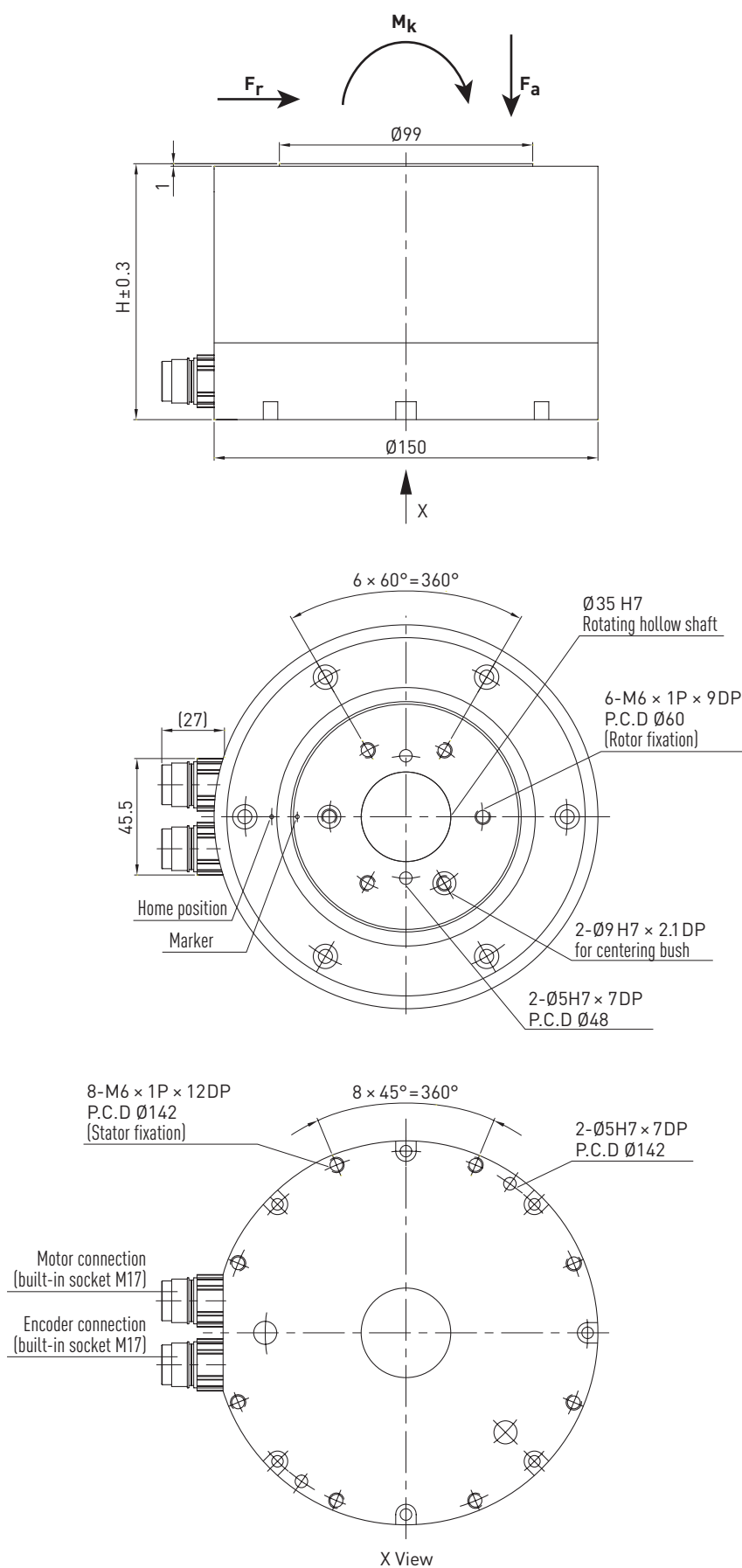
²⁾ With error mapping

Encoder type D specifications (optical, incremental)

- 7,226 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{pp}

Dimensions of the TMS1 HIWIN rotary table

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



Rotary Tables

HIWIN rotary tables TMS

3.3.3 Technical data for TMS3

Torque-speed curves (DC bus voltage: 560 VDC)

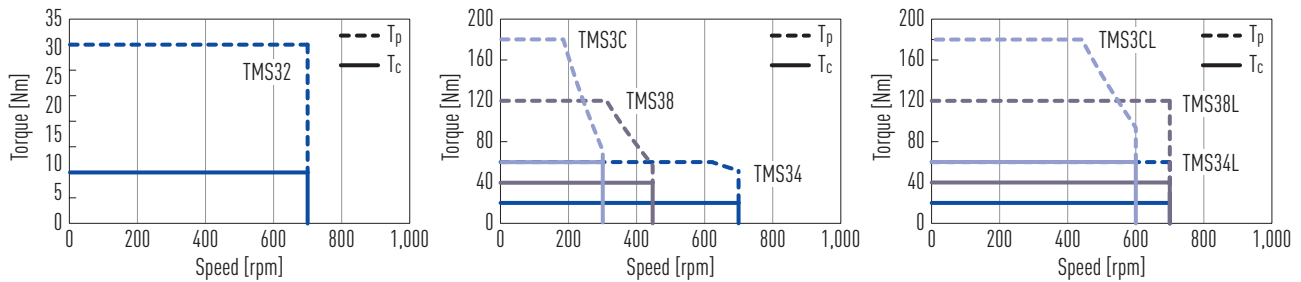


Table 3.3 Technical data for HIWIN rotary tables TMS3

	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	8,000						
Max. radial load	F _r	N	6,500						
Max. moment of tilt	M _k	Nm	240						
Nominal speed (at 400 VAC, 30 % duty cycle)	n	1/min	700	700	700	450	700	300	600
Position accuracy		arc sec	± 25/± 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	IP40 (optional IP65)					
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/√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	20.6	34.60	8.7	53.6	16.3	84.4	25.3
Electrical time constant	T _e	ms	4.1	4.6	4.6	4.5	5.4	4.9	5.9
Torque constant	K _t	Nm/A _{eff}	3	6	3	12	6	18	9
Back emf constant	K _u	V _{eff} /[rad/s]	1.5	3	1.5	6	3	9	4.5
Number of poles	2p		22						
Thermal resistance	R _{th}	°C/W	1.1	0.73		0.46		0.32	
Thermal time constant	T _{th}	s	1,980	2,020		2,130		2,170	
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 $^{\circ}C$ ambient temperature

¹⁾ Line-to-line

²⁾ With error mapping

Encoder specifications

Type D: optical, incremental (standard)

- 7,226 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{pp}

Type C: optical, absolute (optional)

- EnDat
- Motor hollow shaft diameter: 40 mm

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

Options

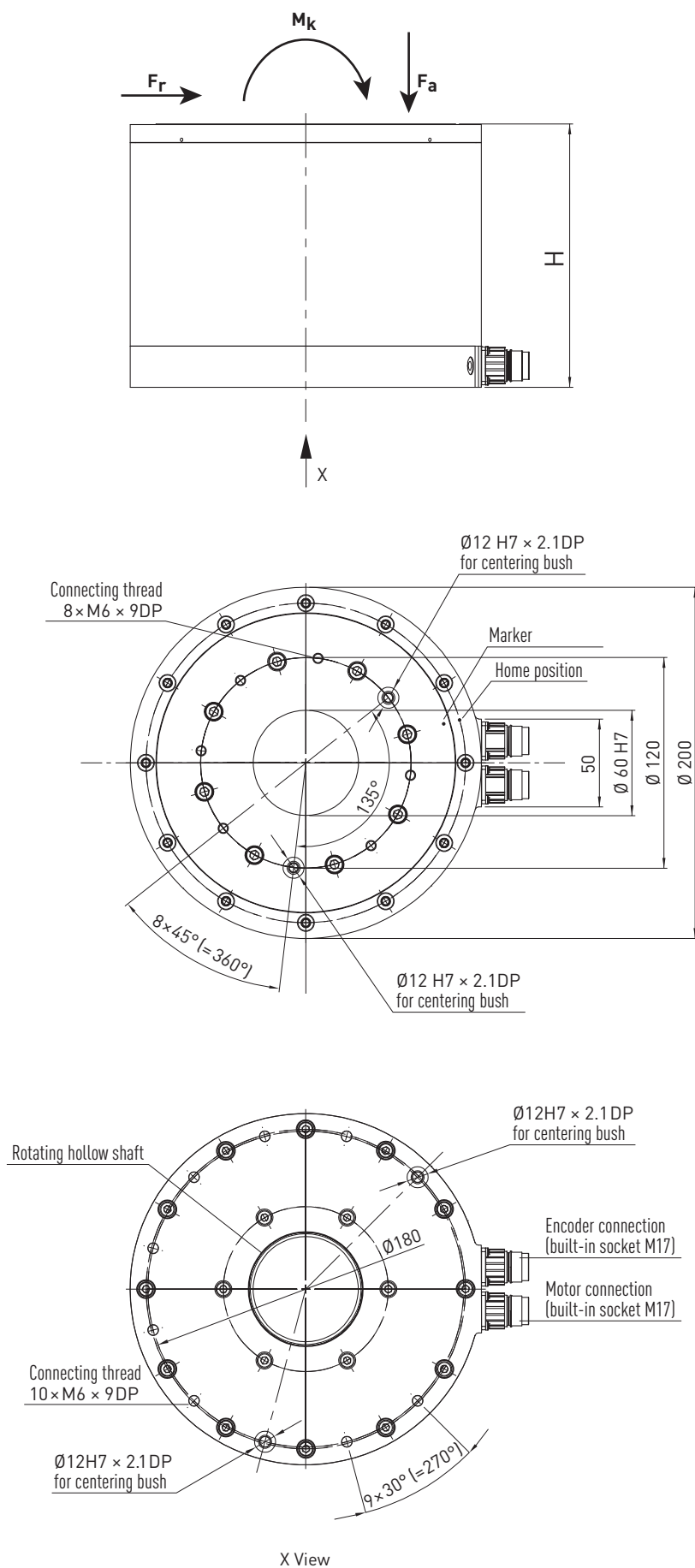
- Clamping element
- Flange version
- IP65 (except for TMS32)
- Absolute positioning measurement system (except for TMS32)

Rotary Tables

HIWIN rotary tables TMS

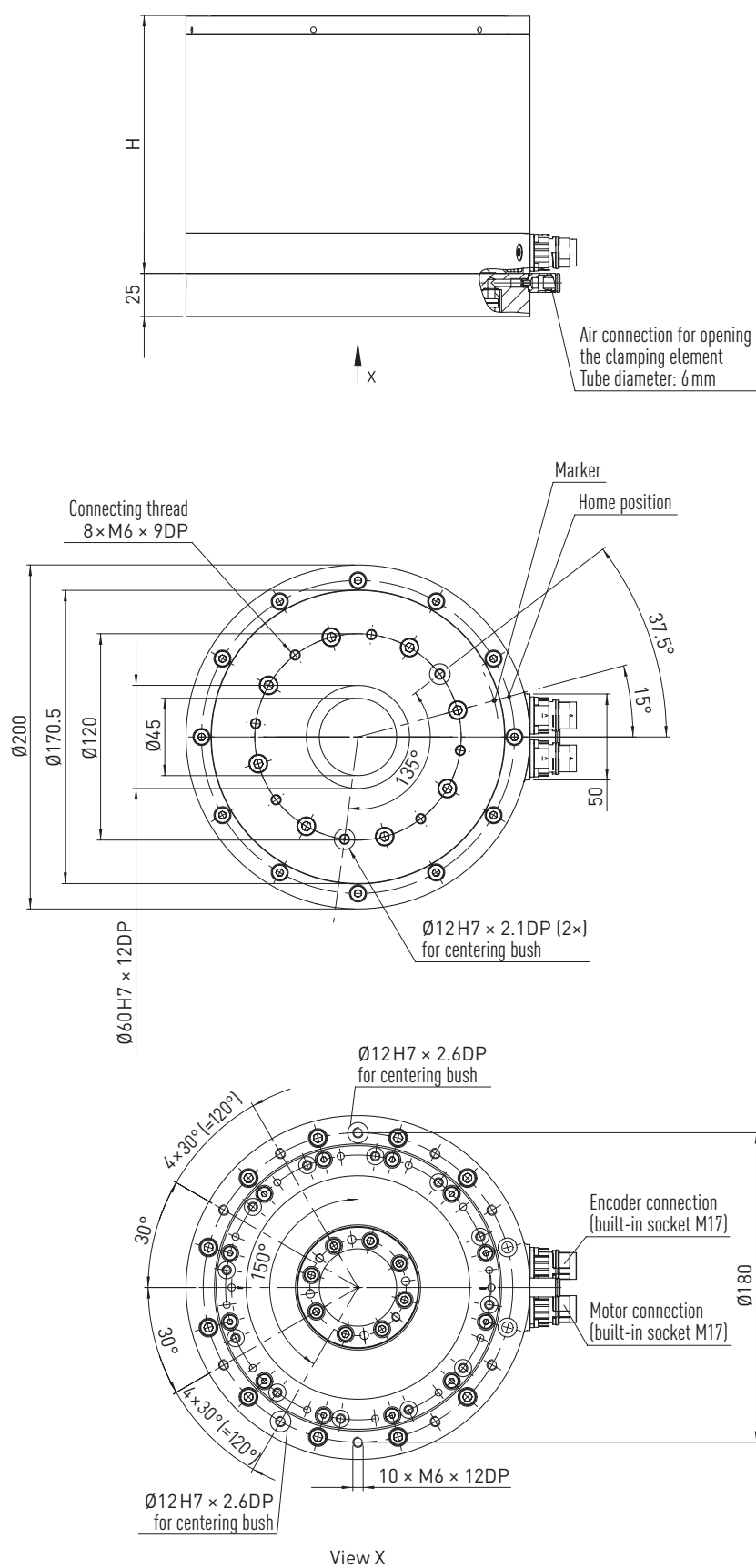
Dimensions of the TMS3 HIWIN rotary table

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



Dimensions of the TMS3 HIWIN rotary table (version with clamping element)

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



Rotary Tables

HIWIN rotary tables TMS

3.3.4 Technical data for TMS7

Torque-speed curves (DC bus voltage: 560 VDC)

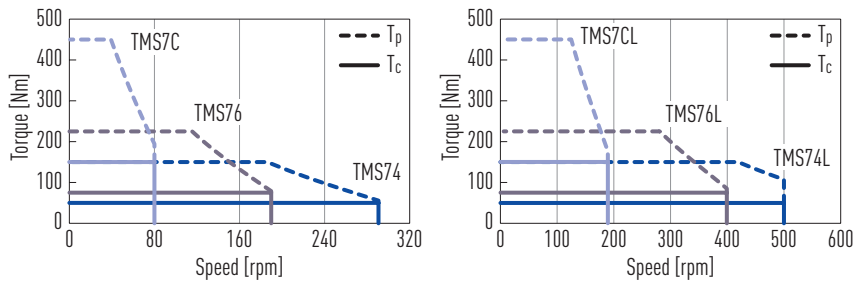


Table 3.4 Technical data for TMS7 HIWIN rotary tables

	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	8,000					
Max. radial load	F _r	N	6,500					
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	± 25/± 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 (optional IP65)					
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/√W	3.9	3.9	5.1	5.0	7.7	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	4.3	4.5	4.4	5.0	5.0
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} /(rad/s)	9.8	4.9	14.8	7.4	29.5	14.8
Number of poles	2p		44					
Thermal resistance	R _{th}	°C/W	0.42		0.32		0.19	
Thermal time constant	T _{th}	s	2,230		2,330		2,350	
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 $^{\circ}C$ ambient temperature

¹⁾ Line-to-line

²⁾ With error mapping

Encoder specifications

Type A: optical, incremental (standard)

- 5,400 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{pp}

Type C: optical, absolute (optional)

- EnDat
- Motor hollow shaft diameter: 40 mm

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

Options

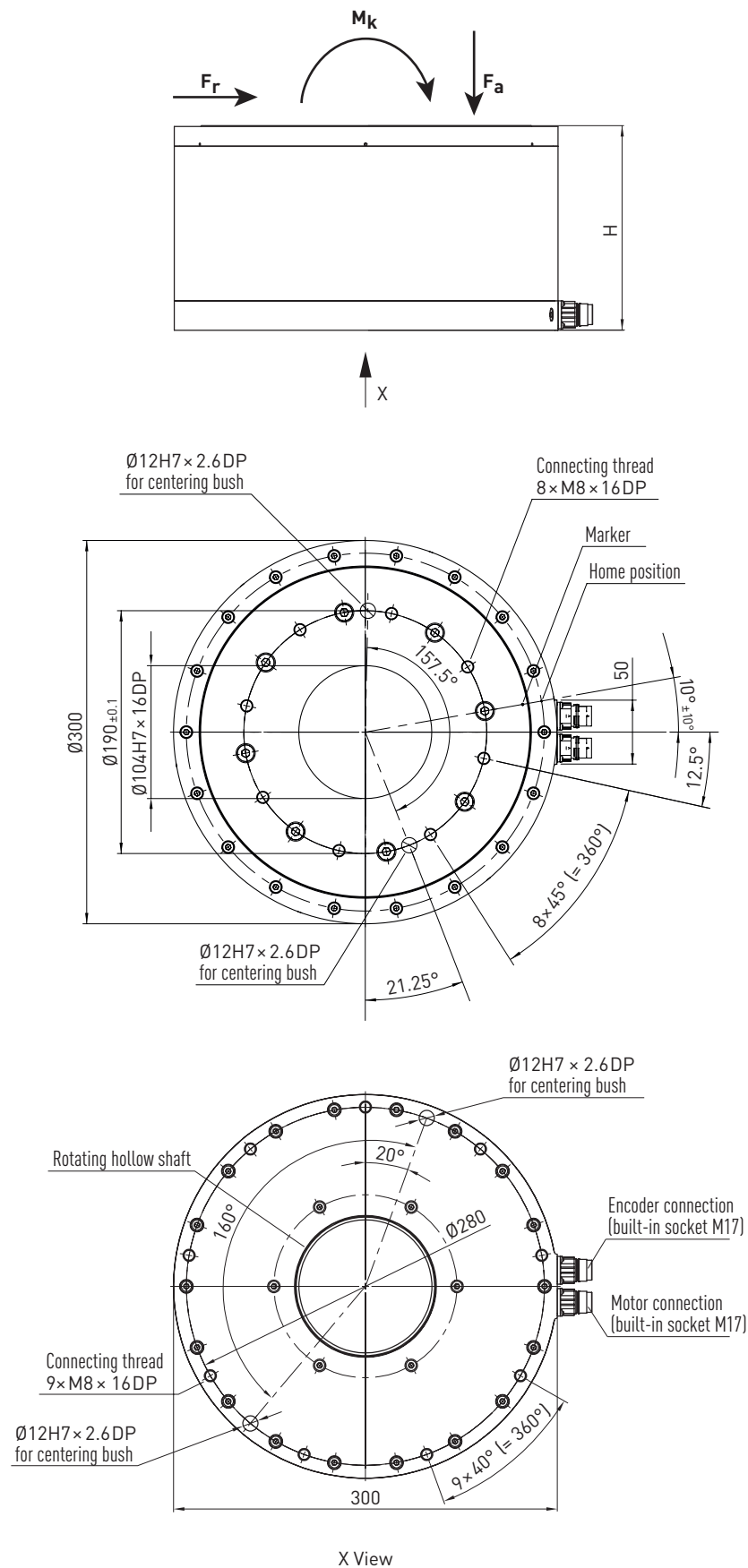
- Clamping element
- Flange version
- IP65
- Absolute positioning measurement system

Rotary Tables

HIWIN rotary tables TMS

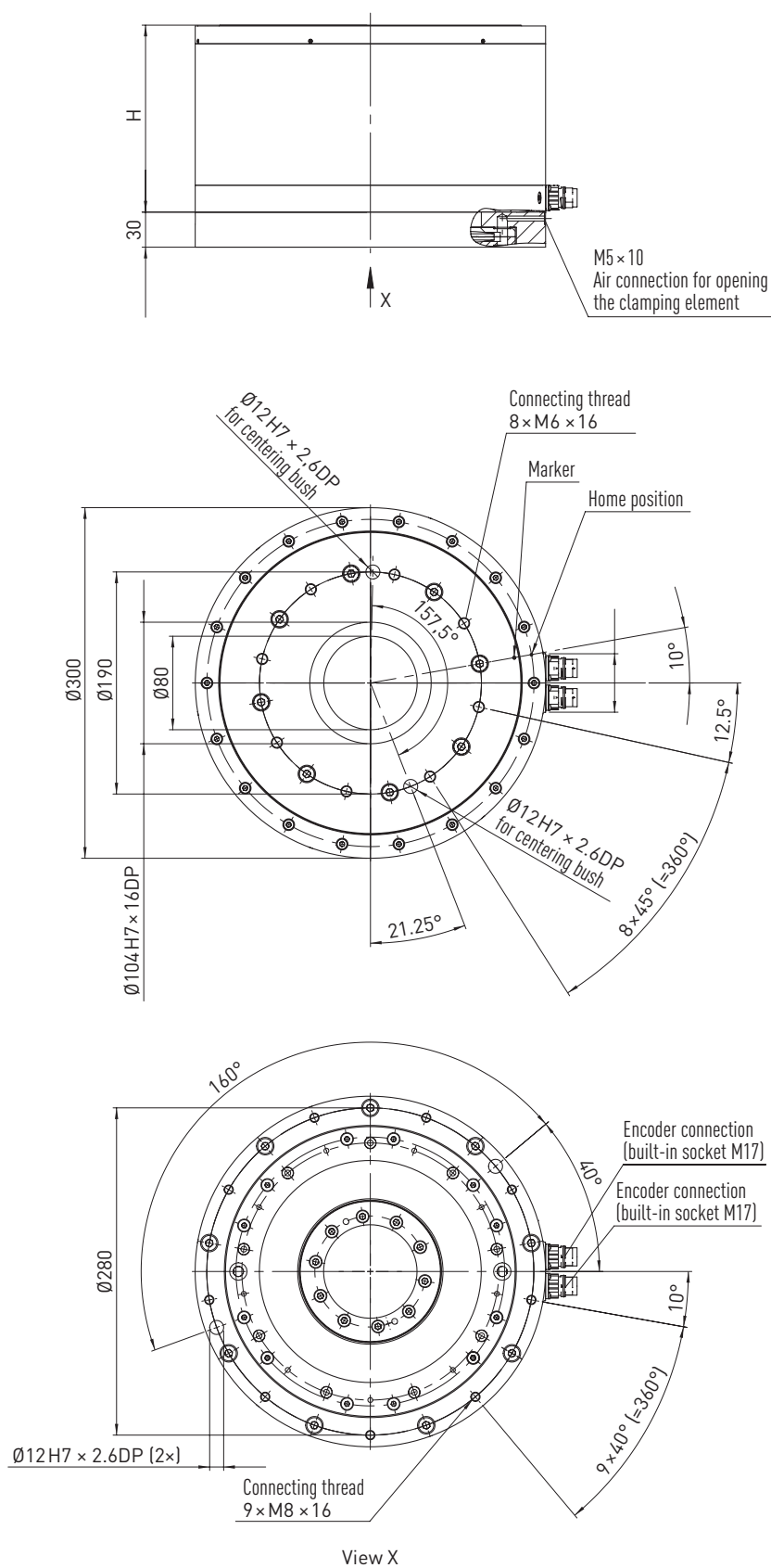
Dimensions of the TMS7 HIWIN rotary table

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



Dimensions of the TMS7 HIWIN rotary table (version with clamping element)

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



Rotary Tables

HIWIN rotary tables TMB

4. HIWIN rotary tables TMB

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:

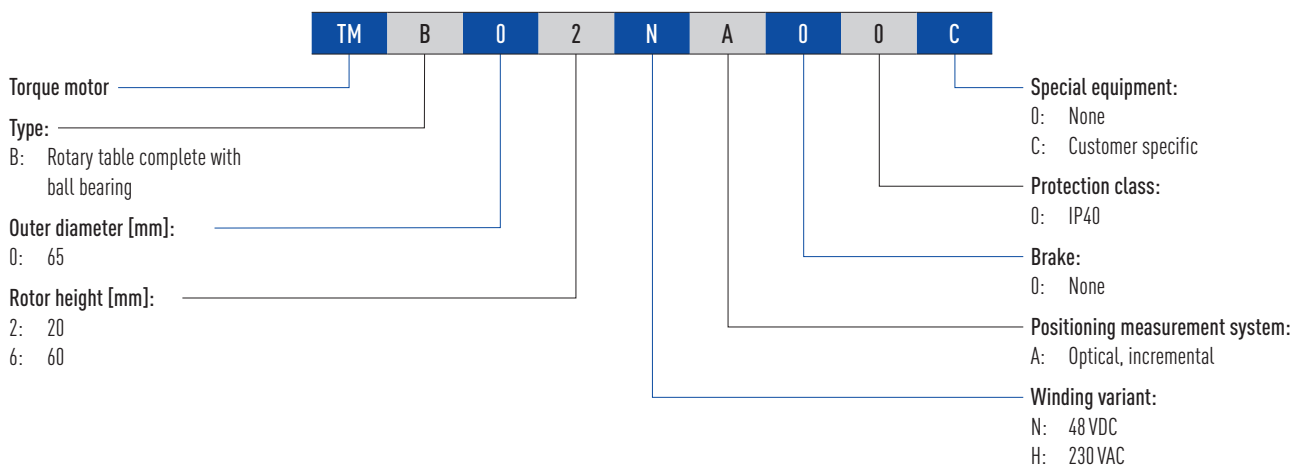
- Backlash-free and extremely dynamic
- Compact design
- Hollow shaft, 12 mm in diameter
- 65 mm outer diameter
- Integrated optical rotary encoder
- Very low running noise

Typical applications:

- Automation technology
- Pick-and-place machines



4.2 Order code for TMB rotary tables



4.3 Technical data for TMB0

Torque-speed curves (DC bus voltage: TMB02N: 48 VDC; TMB02H: 320 VDC; TMB06H: 320 VDC)

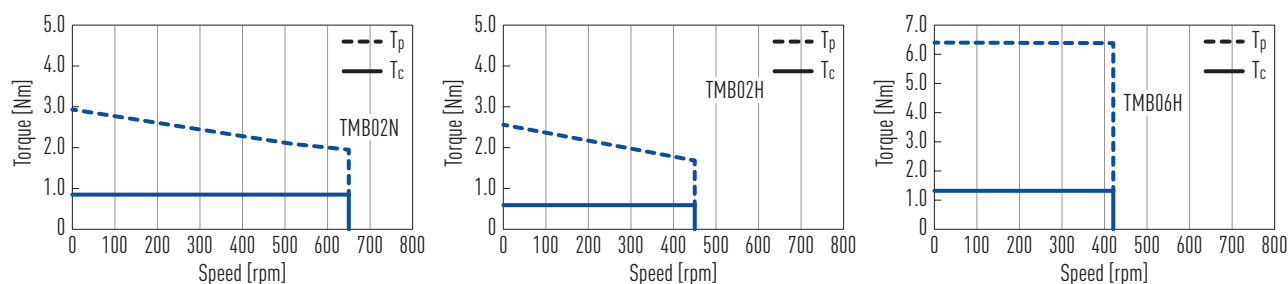


Table 4.1 Technical data for TMB0 HIWIN rotary tables

	Symbol	Unit	TMB02N-A00	TMB02H-A00	TMB06H-A00
Technical data of rotary table					
Peak torque (for 1 sec.)	T_p	Nm	3.0	2.56	6.4
Continuous torque	T_c	Nm	0.9	0.59	1.4
Stall torque	T_s	Nm	0.5	0.42	1
Inertia of rotating parts	J	kgm ²	3.5×10^{-5}		9.5×10^{-5}
Weight	M_m	g	650	960	1,270
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}	23.1	5.5	9.7
Continuous current	I_c	A_{eff}	6.9	1.26	2.0
Motor constant	K_m	Nm/ \sqrt{W}	0.11	0.10	0.2
Resistance ¹⁾	R_{25}	Ω	1.4	20.1	10.6
Inductance ¹⁾	L	mH	0.88	11.3	9.9
Electrical time constant	T_e	ms	0.63	0.56	0.93
Torque constant	K_t	Nm/ A_{eff}	0.13	0.46	0.66
Back emf constant	K_u	$V_{eff}/(rad/s)$	0.13	0.46	0.66
Number of poles	2p		12		
Thermal resistance	R_{th}	$^{\circ}C/W$	3.3		2.5
Thermal sensor			PTC SNM 125		
Max. DC Bus		V	48	340	

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

¹⁾ Line-to-line

Encoder specifications type A (optical, incremental)

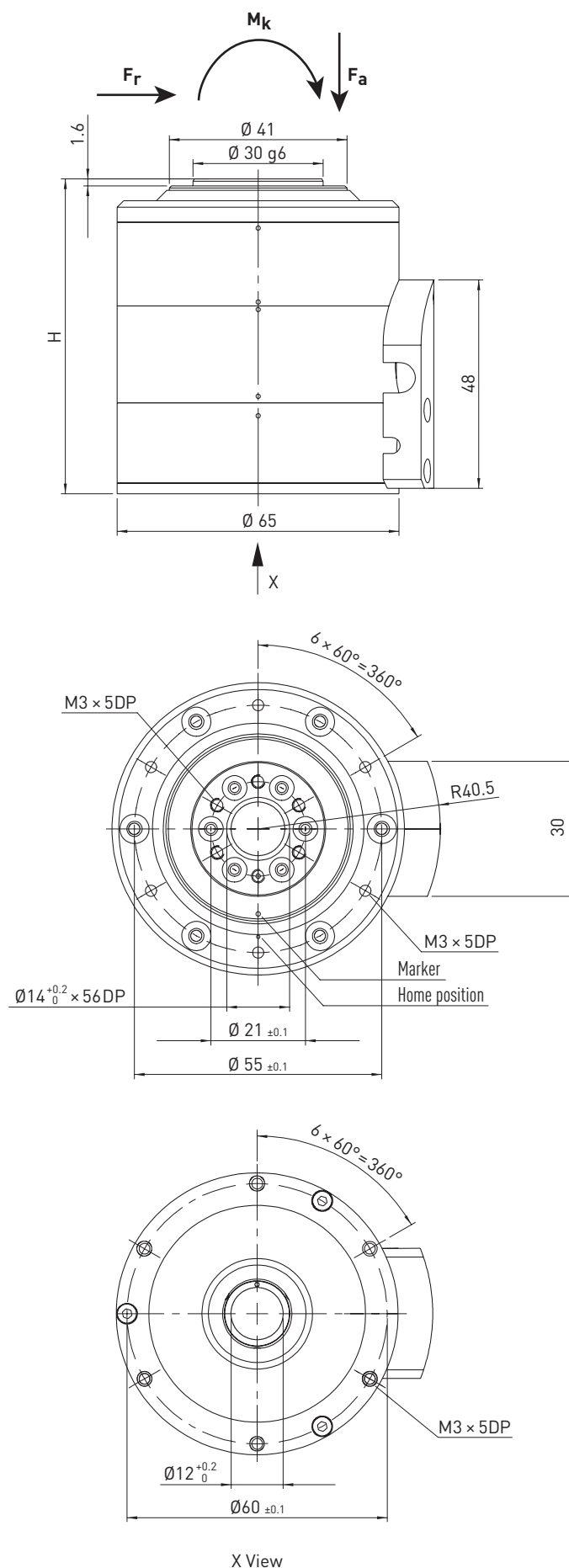
- 2,048 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{pp}

Rotary Tables

HIWIN rotary tables TMB, HIWIN rotary tables TMN

Dimensions of the TMB0 HIWIN rotary table

(For values, see [Table 4.1](#))



5. HIWIN rotary tables TMN

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:

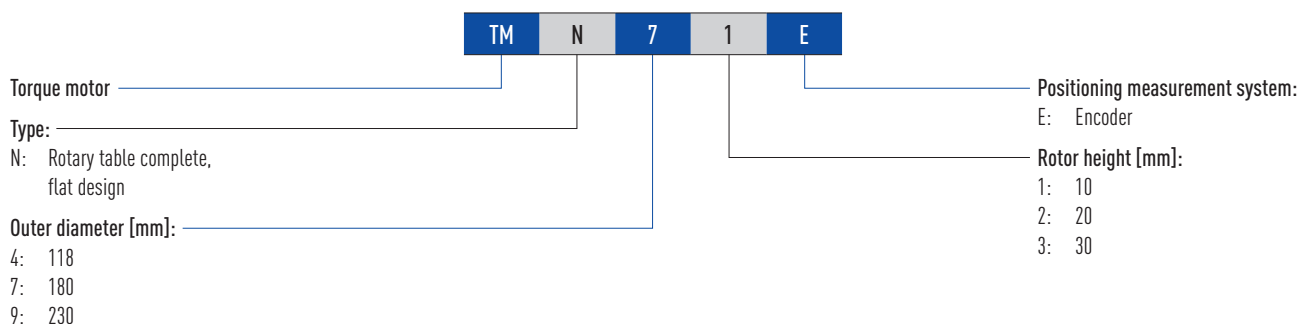
- Backlash-free and extremely dynamic
- Extremely flat design
- Integrated rotary encoder

Typical applications:

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



5.2 Order code for TMN rotary tables



Rotary Tables

HIWIN rotary tables TMN

5.3 Technical data for TMN

5.3.1 Technical data for TMN42

Torque-speed curves (DC bus voltage: 320/560 VDC)

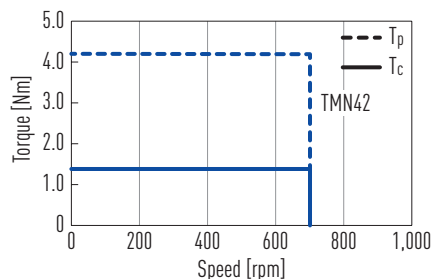


Table 5.1 Technical data for TMN42 HIWIN rotary tables

	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/ \sqrt{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	$V_{eff}/(rad/s)$	0.56
Number of poles	$2p$		16
Thermal resistance	R_{th}	°C/W	4.84
Thermal time constant	T_{th}	s	1,170
Thermal sensor			PTC SNM 100
Max. DC Bus		V	600

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

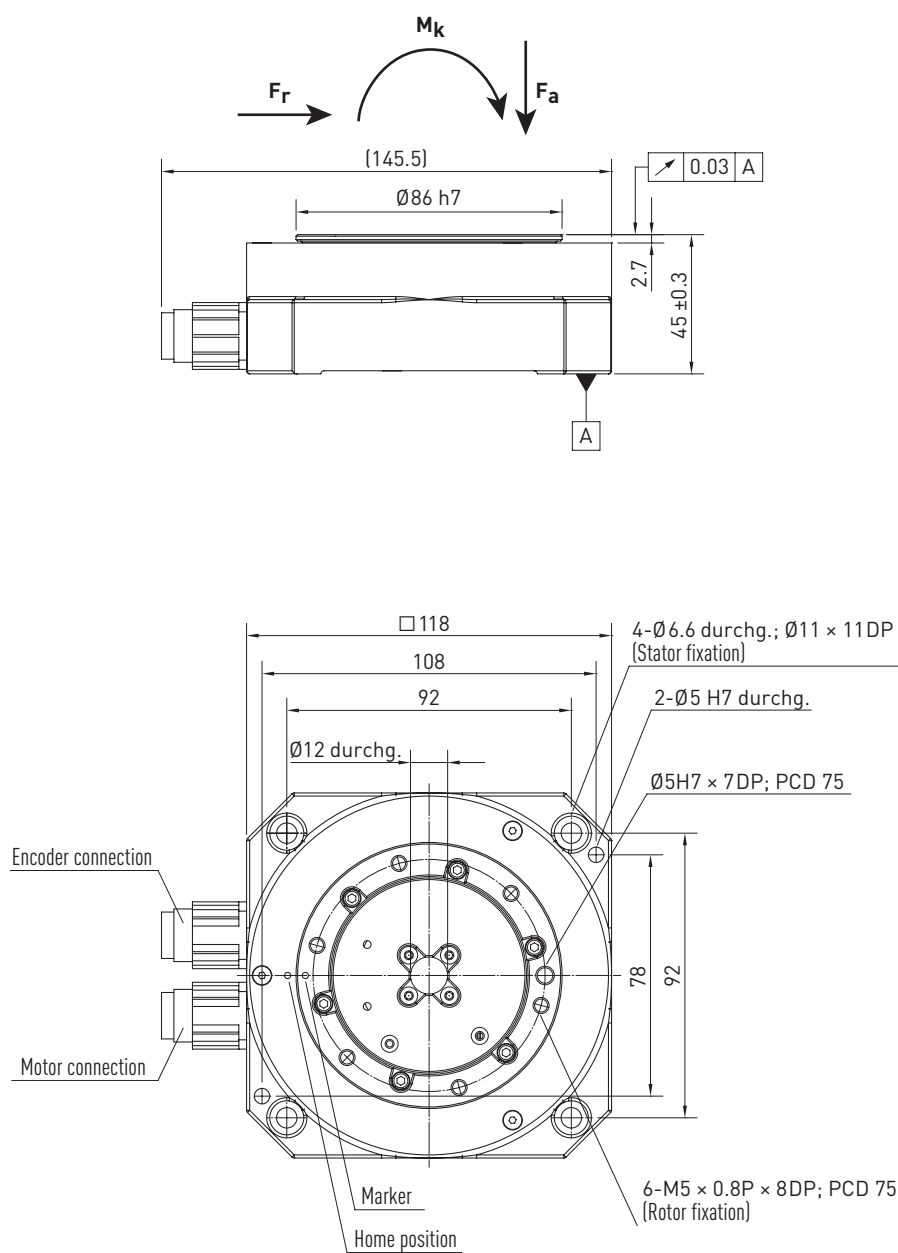
¹⁾ Line-to-line

Encoder specifications (optical, incremental)

- 2,048 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{pp}

Dimensions of the TMN42 HIWIN rotary table

(For values, see [Table 5.1](#))



Rotary Tables

HIWIN rotary tables TMN

5.3.2 Technical data for TMN71

Torque-speed curves (DC bus voltage: 320/560 VDC)

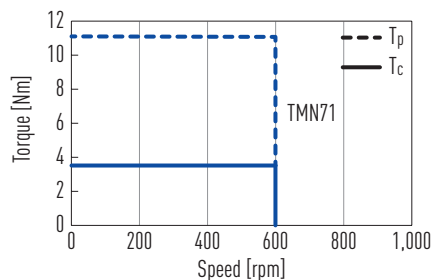


Table 5.2 Technical data for TMN71 HIWIN rotary tables

	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	1,000
Max. radial load	F_r	N	1,000
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} /rad/s	0.63
Number of poles	$2p$		16
Thermal resistance	R_{th}	°C/W	1.95
Thermal time constant	T_{th}	s	1,420
Thermal sensor			PTC SNM 100
Max. DC Bus		V	600

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

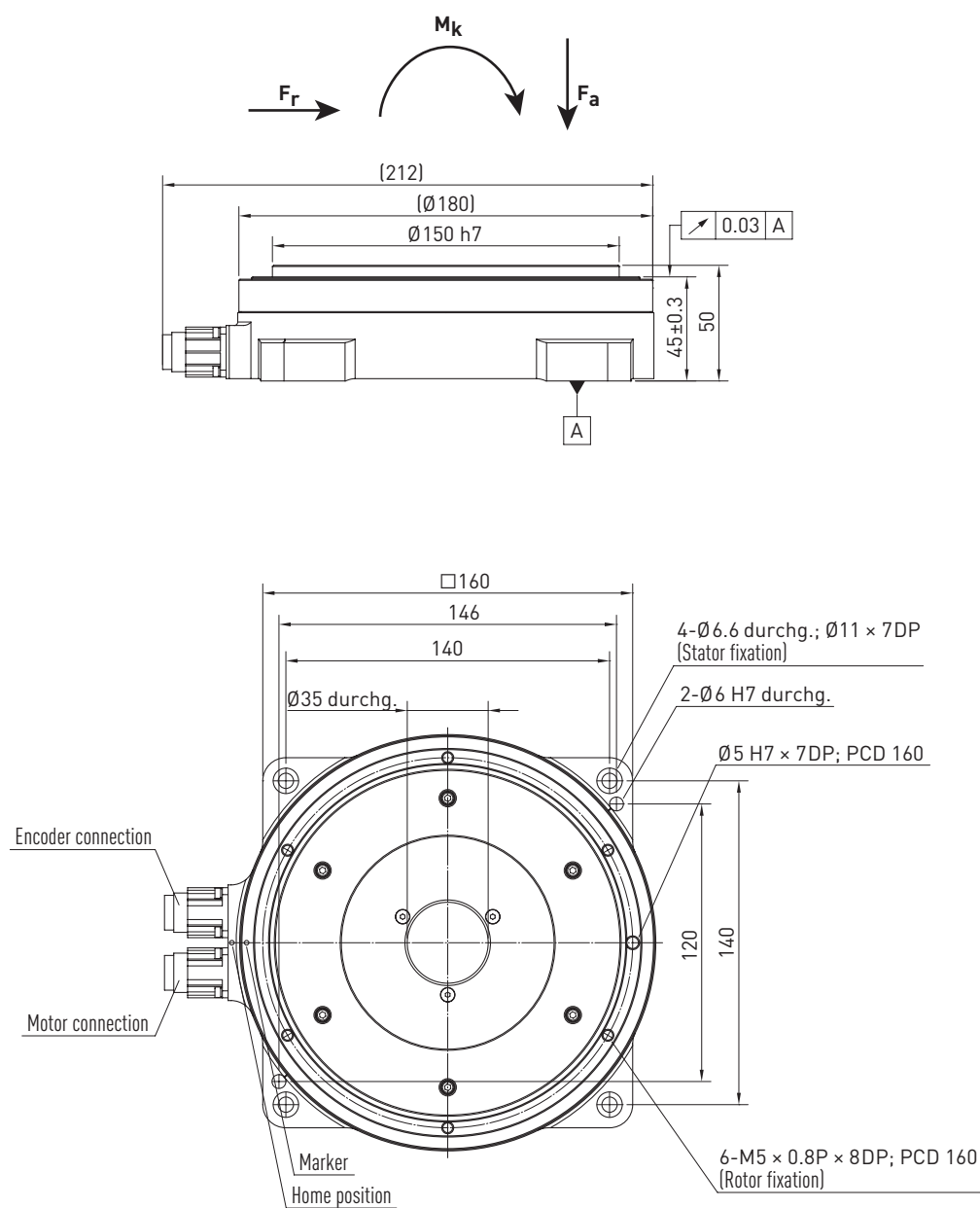
¹⁾ Line-to-line

Encoder specifications (optical, incremental)

- 2,048 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{pp}

Dimensions of the TMN71 HIWIN rotary table

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



Rotary Tables

HIWIN rotary tables TMN

5.3.3 Technical data for TMN93

Torque-speed curves (DC bus voltage: 320/560 VDC)

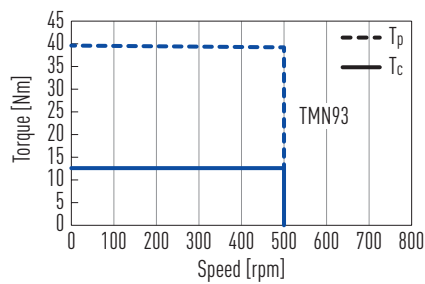


Table 5.3 Technical data for TMN93 HIWIN rotary tables

	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	1,000
Max. radial load	F_r	N	1,000
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} /rad/s	2.25
Number of poles	$2p$		22
Thermal resistance	R_{th}	°C/W	1.01
Thermal time constant	T_{th}	s	1,780
Thermal sensor			PTC SNM 100
Max. DC Bus		V	600

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

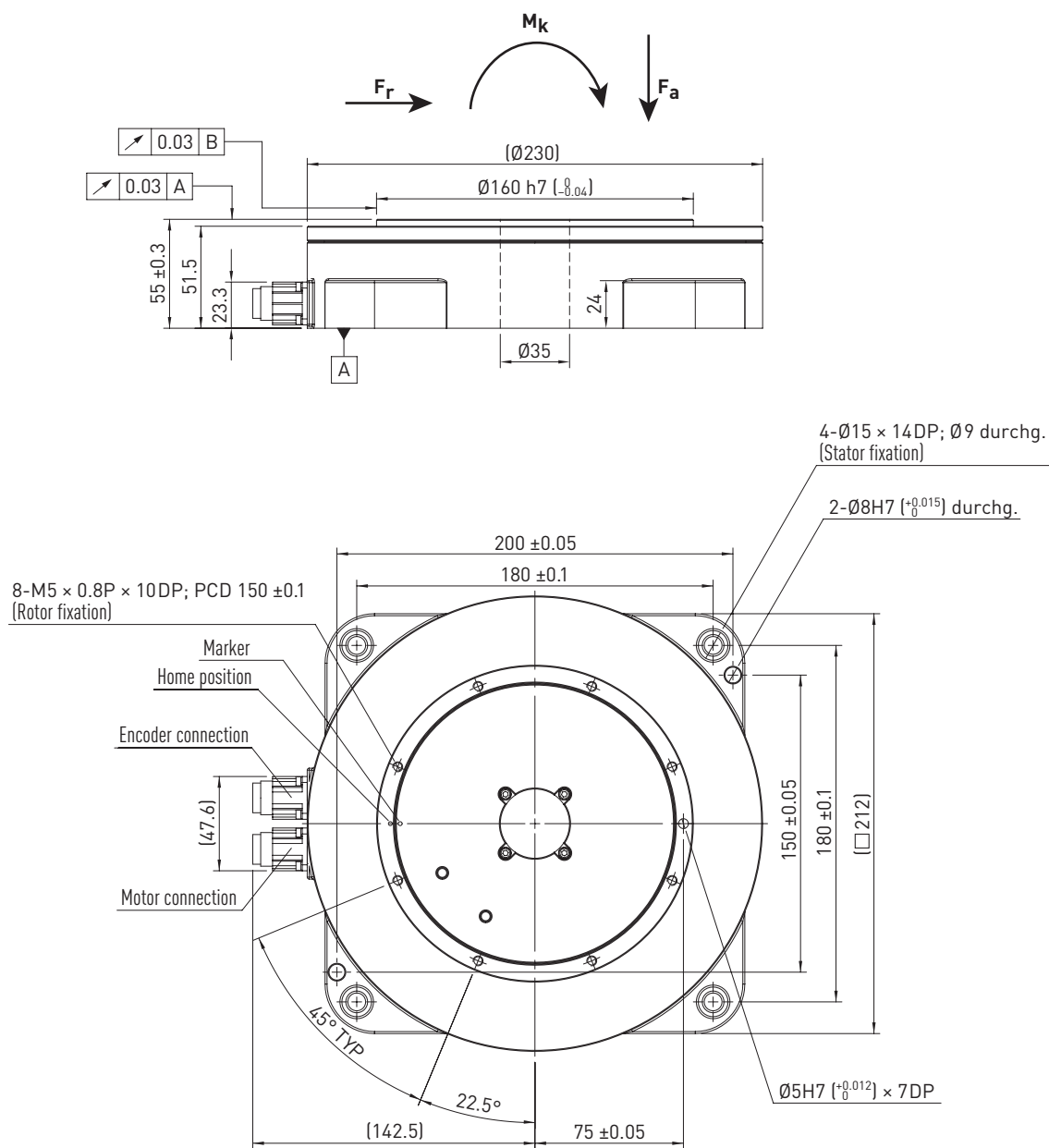
¹⁾ Line-to-line

Encoder specifications (optical, incremental)

- 3,600 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{pp}

Dimensions of the TMN93 HIWIN rotary table

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



Rotary Tables

HIWIN rotary tables TMA

6. HIWIN rotary tables TMA

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:

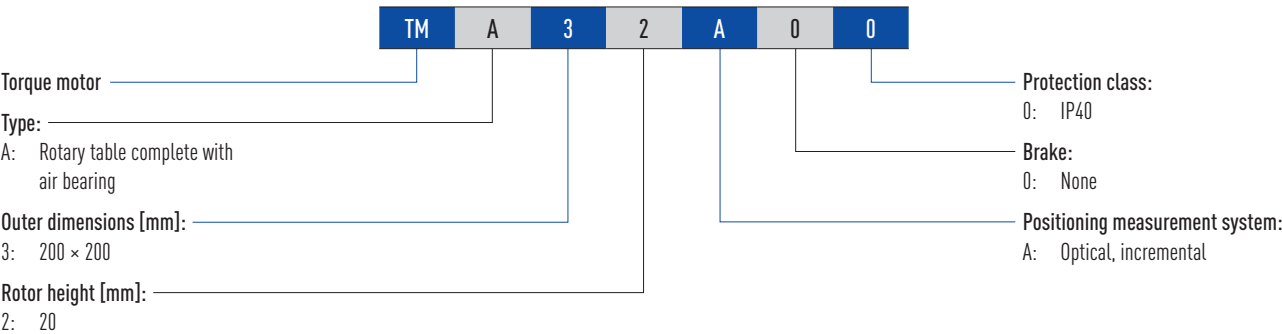
- Backlash-free and extremely dynamic
- Air bearings
- High accuracy and high synchronism
- Integrated optical rotary encoder

Typical applications:

- Measuring technology
- Test machines



6.2 Order code for TMA rotary tables



6.3 Technical data for TMA32

Torque-speed curve (DC bus voltage: 560 VDC)

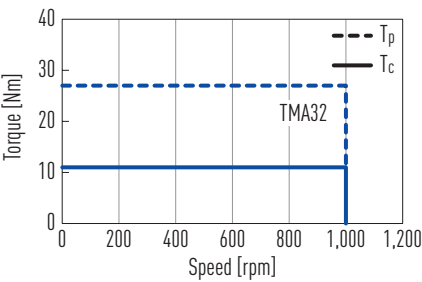


Table 6.1 Technical data for TMA32 HIWIN rotary tables

	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	2,500
Max. radial load	F_r	N	2,500
Max. moment of tilt	M_k	Nm	70
Rigidity of axial bearing		N/μm	350
Rigidity of radial bearing		N/μm	125
Resistance to tilting		Nm/μrad	0.58
Nominal speed (at 400 VAC)	n	1/min	1,000
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/√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} /rad/s	1.6
Number of poles	$2p$		22
Thermal resistance	R_{th}	°C/W	0.7
Thermal sensor			PTC SNM 100
Max. DC Bus		V	600

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)

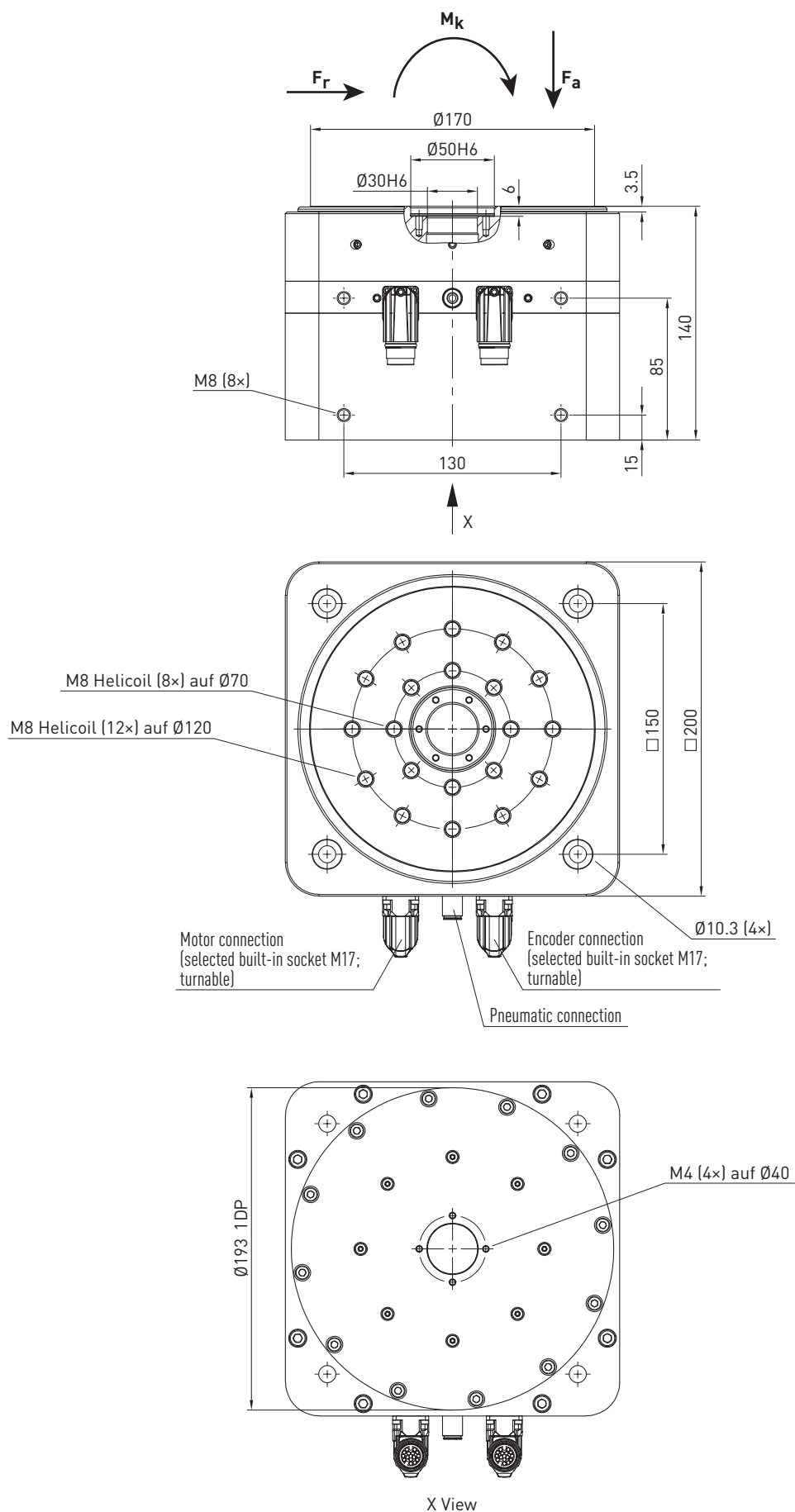
- 9,000 lines/cycle
- Index mark
- Signal output sin/cos 1 V_{pp}

Rotary Tables

HIWIN rotary tables TMA

Dimensions of the TMA32 HIWIN rotary table

(For values, see [Table 6.1](#))

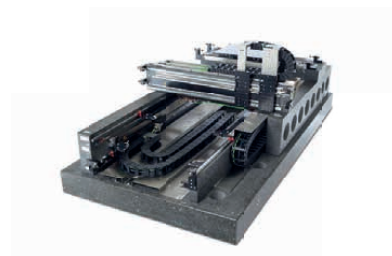




Linear Guideways



Ballscrews



Linear Motor Systems



Linear Axes



Linear Actuators



Robots



Linear Motor Components



Rotary Tables



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