

Rotary Servo Actuator



More dynamic • Shorter • Smoother

TPM⁺



TPM+

The **TPM+** rotary servo actuator serves as the perfect solution for packaging, automation and robotic applications.



The **TPM⁺** the next step in TPM **servo actuator innovation**

Unequaled dynamic performance utilizing the latest in brushless servomotor technology

- Smoother & quieter running with helical gears
- Unmatched power density in the world of servo actuation
- Design so compact it fits where others won't
- Design so sleek you'll want the servo actuators out front!



WITTENSTEIN motion control develops field bus enabled electromechanical, rotary and linear servo actuators and systems. These systems are characterized by the complete integration of the following components: motor, precision gearhead, electronics, sensor technology and software.

Servo systems from WMC are used in automation, special applications, handling systems, highly dynamic robots, machine tools and production machines.

WITTENSTEIN motion control – a company of the US WITTENSTEIN group that has established a name for itself with a variety of innovations in servo technology.

Perfect Solutions for **Packaging • Automation • Robotics**

More dynamic...

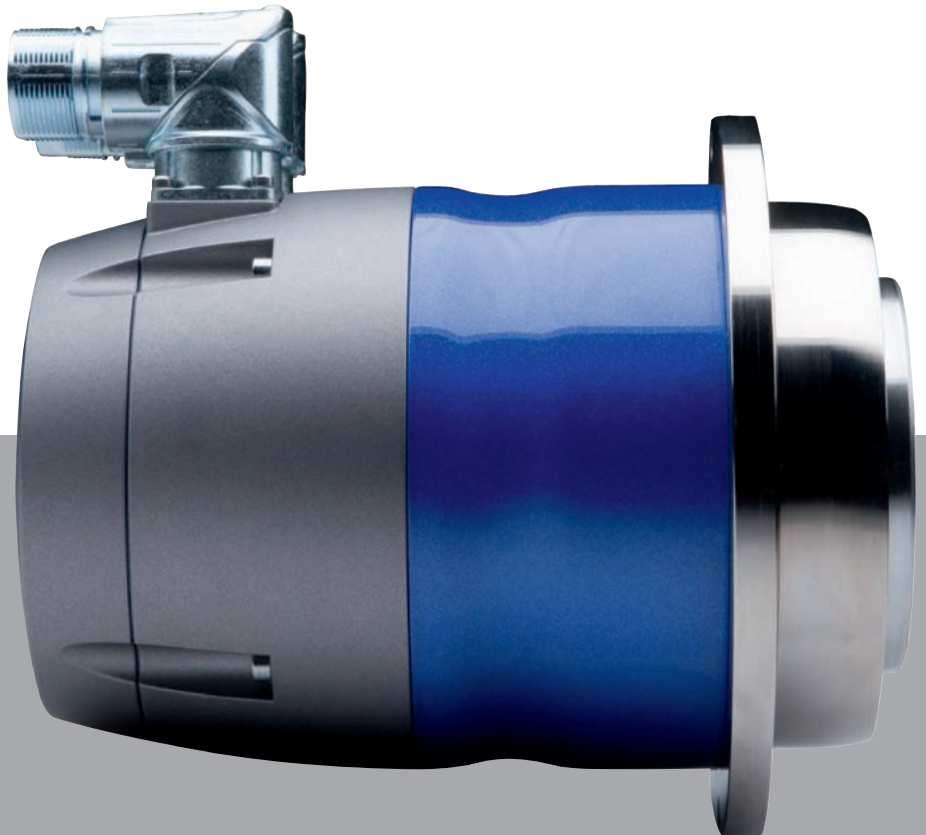
Outstanding technical characteristics due to the high rotational rigidity and the clamping hub-free integration between the motor and gear, making applications with load-to-motor inertia ratio of over 50 easily obtainable. This high allowable load-to-motor inertia ratio allows for a much smaller motor, thereby decreasing the torque used by the motor to accelerate itself. This increases efficiency and allows a natural convection cooled motor to work where a water-cooled design was once necessary.

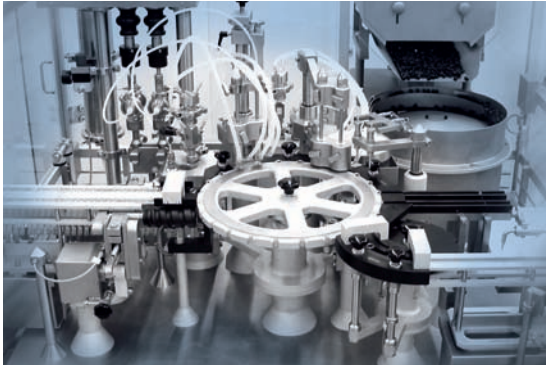
Shorter...

In the new TPM+, the planetary gear reducer and the AC servomotor are closer than ever before: the sun gear and the rotor are joined without a coupling. Through refined research, the development engineers of WITTENSTEIN have managed to create a space envelope that is further reduced by up to 20% compared to the previous TPM. The result is amazing: with the TPM+, not an inch of space is wasted. The length savings when compared with a comparable motor / gearhead are up to 50%.

Smoother...

Besides the basic equipment with resolver, the newest generation of Heidenhain and Stegmann encoders also provide noticeable technical advances. The maintenance-free permanent magnet brakes are also connected closer with the stator. The helical precision gearing provided extremely smooth and quiet operation.





Packaging Industry

Source: groninger & co. GmbH



Robotics Sources: Sigpack Systems AG

Applications

Optimal applications for the TPM+ can be found in robotics (as the driving axis in manipulator robots, swivel drives in the production of optical media and semiconductors), in automation, in packaging machines (as the drive in packing hygienic products) and woodworking and tool changer machines.



Further features at a glance:

Direct mounting of drive components (pinion, belt drive rotary indexing tables) to standard flange

Strong output bearings eliminate the need for additional bearings or supports

Ready-made cables and start up guides for over 20 servo controllers

Easy start up in minutes with quick start guides available for most servo drives

UL-model as standard

Electrical connections with time-saving bayonet fasteners

Reduced backlash to as little as 1 arcmin



The new TPM+: the new servo rotary actuator of WITTENSTEIN motion control is another example of our corporate philosophy: **"Intelligence in motion"**.

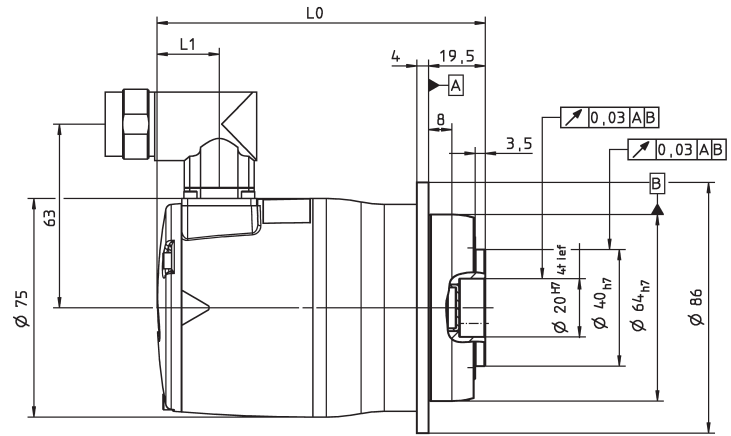
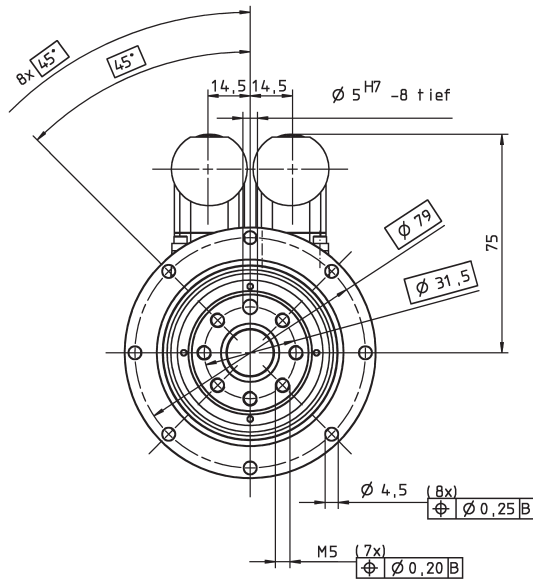
TPM +

Ratio	i	16	21	31	61	64	91
DC bus voltage	U_D V DC	560 / 320					
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B} Nm	30	32	40	32	32	32
Stall torque	T_{20} Nm	8	11	17	15	15	15
Brake Torque (optional), 100°C	T_{2BR} Nm	18	23	34	67	70	100
Max. speed	n_{2max} min ⁻¹	380	290	194	100	90	70
Peak speed for T _{2B}	n_{2B} min ⁻¹	313	265	190	100	90	70
Peak current	I_{max} A _{eff}	3.2	2.6	2.2	1.4	1.3	0.9
Stall current	I_0 A _{eff}	1.0	1.0	1.0	0.7	0.8	0.5
Moment of inertia (at motor shaft without brake with resolver)	J_2 kgm ² ·10 ⁻⁴	0.21	0.20	0.20	0.12	0.11	0.11
Torsional backlash	j_t arcmin	Standard ≤ 4 / Reduced ≤ 2					
Torsional rigidity	C_t Nm/arcmin	10	10	10	10	10	10
Tilting rigidity	C_K Nm/arcmin	–					
Max. axial force	F_{Amax} N	1630					
Max. tilting moment	M_{Kmax} Nm	91					
Weight (with resolver and brake)	m kg	2.6			2.4		
Operating noise (measured at 3000 rpm motor speed)	L_{PA} dB(A)	≤ 58					
Max. permissible housing temperature	°C	+90					
Ambient temperature	°C	0 to +40					
Protection class		IP 65					
Mounting position		Any					
Lubrication		Synthetic oil, lubricated for Life					
Insulation class		F					
Paint		Metallic blue 250 and natural cast aluminum					

For complete specifications and speed torque curves, download data sheets at www.wmc-us.com.

View A

View B



Electrical connection: mounting boxes manufactured by Intercontec, type SpeedTEC, series A and B, size 1

Without Brake

Ratio	Motor Feedback	Length	Length L1
i = 16/21/31	Resolver	128	22
	Hiperface	153	47
	EnDat	157	51
i = 61/64/91	Resolver	113	22
	Hiperface	138	47
	EnDat	142	51

With Brake

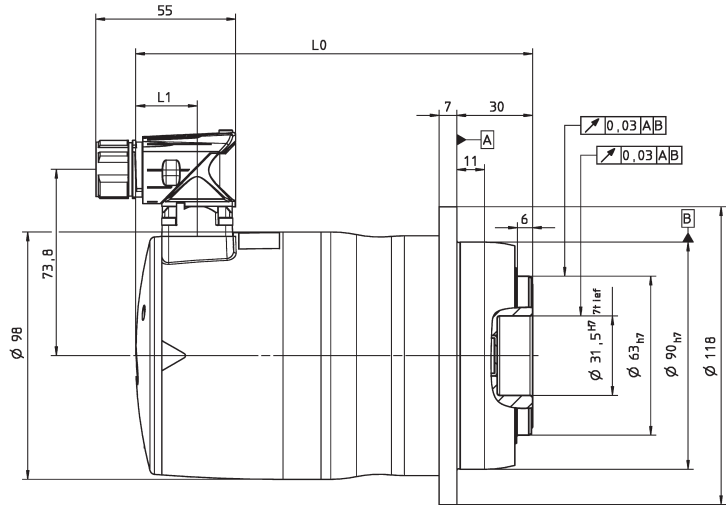
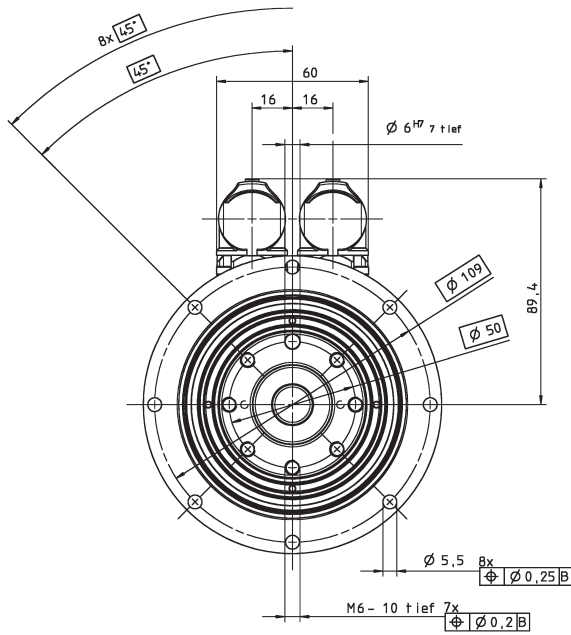
Ratio	Motor Feedback	Length	Length 1
i = 16/21/31	Resolver	165	22
	Hiperface	190	47
	EnDat	194	51
i = 61/64/91	Resolver	150	22
	Hiperface	175	47
	EnDat	179	51

Ratio	i		16	21	31	61	64	91
DC bus voltage	U_D	V DC	560 / 320					
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	57	75	100	80	80	80
Stall torque	T_{20}	Nm	13	18	27	25	24	35
Brake Holding Torque at output (optional), 100°C	T_{2BR}	Nm	18	23	34	67	70	100
Max. speed	n_{2max}	min ⁻¹	380	235	190	100	90	70
Peak speed for T _{2B}	n_{2B}	min ⁻¹	256	195	140	72	70	55
Peak current	I_{max}	A _{eff}	5.2	5.2	4.7	1.9	1.8	1.2
Stall current	I_0	A _{eff}	1.2	1.2	1.2	0.6	0.6	0.6
Moment of inertia (at motor shaft without brake with resolver)	J_2	kgm ² •10 ⁻⁴	0.39	0.39	0.39	0.22	0.22	0.22
Torsional backlash	j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1					
Torsional rigidity	C_t	Nm/arcmin	33	33	33	33	33	21
Tilting rigidity	C_K	Nm/arcmin	225					
Max. axial force	F_{Amax}	N	2150					
Max. tilting moment	M_{Kmax}	Nm	235					
Weight (with resolver and without brake)	m	kg	4.9			4.4		
Operating noise (measured at 3000 rpm motor speed)	L_{PA}	dB(A)	≤ 62					
Max. permissible housing temperature		°C	+90					
Ambient temperature		°C	0 to +40					
Protection class			IP 65					
Mounting position			Any					
Lubrication			Synthetic oil, lubricated for Life					
Insulation class			F					
Paint			Metallic blue 250 and natural cast aluminum					

For complete specifications and speed torque curves, download data sheets at www.wmc-us.com.

View A

View B



Electrical connection: mounting boxes manufactured by Intercontec, type SpeedTEC, series A and B, size 1

Without Brake

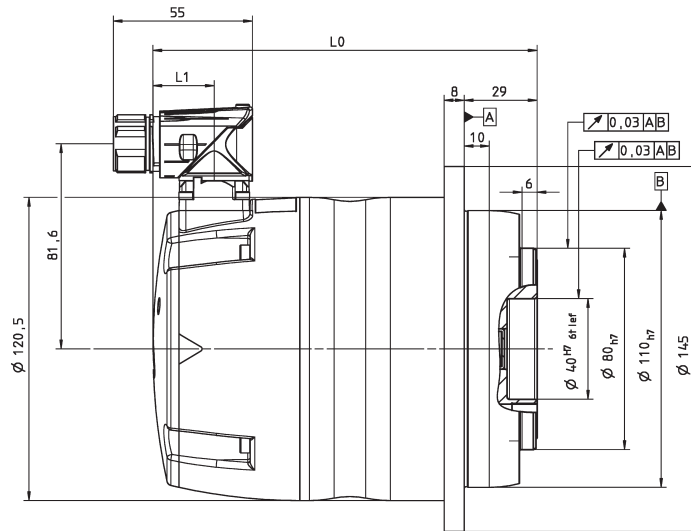
Ratio	Motor Feedback	Length	Length 1
i = 16/21/31	Resolver	157	24
	Hiperface	178	45
	EnDat	182	49
i = 61/64/91	Resolver	142	24
	Hiperface	163	45
	EnDat	167	49

With Brake

Ratio	Motor Feedback	Length	Length 1
i = 16/21/31	Resolver	180	24
	Hiperface	201	45
	EnDat	205	49
i = 61/64/91	Resolver	165	24
	Hiperface	186	45
	EnDat	190	49

Ratio	i	16	21	31	61	64	91
DC bus voltage	U_D V DC	560 / 320					
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B} Nm	182	239	300	250	250	250
Stall torque	T_{20} Nm	74	97	146	89	86	100
Brake Holding Torque at output (optional), 100°C	T_{2BR} Nm	35	46	68	134	141	200
Max. speed	n_{2max} min ⁻¹	380	290	190	100	90	70
Peak speed for T _{2B}	n_{2B} min ⁻¹	250	190	140	60	57	47
Peak current	I_{max} A _{eff}	17.0	17.0	14.4	5.9	5.6	3.8
Stall current	I_0 A _{eff}	5.6	5.6	5.6	1.9	1.9	1.5
Moment of inertia (at motor shaft without brake with resolver)	J_2 kgm ² •10 ⁻⁴	2.61	2.61	2.61	0.92	0.91	0.91
Torsional backlash	j_t arcmin	Standard ≤ 3 / Reduced ≤ 1					
Torsional rigidity	C_t Nm/arcmin	75	80	54	-	-	55
Tilting rigidity	C_K Nm/arcmin	550					
Max. axial force	F_{Amax} N	4150					
Max. tilting moment	M_{Kmax} Nm	413					
Weight (with resolver and without brake)	m kg	9.0			7.6		
Operating noise (measured at 3000 rpm motor speed)	L_{PA} dB(A)	≤ 64					
Max. permissible housing temperature	°C	+90					
Ambient temperature	°C	0 to +40					
Protection class		IP 65					
Mounting position		Any					
Lubrication		Synthetic oil, lubricated for Life					
Insulation class		F					
Paint		Metallic blue 250 and natural cast aluminum					

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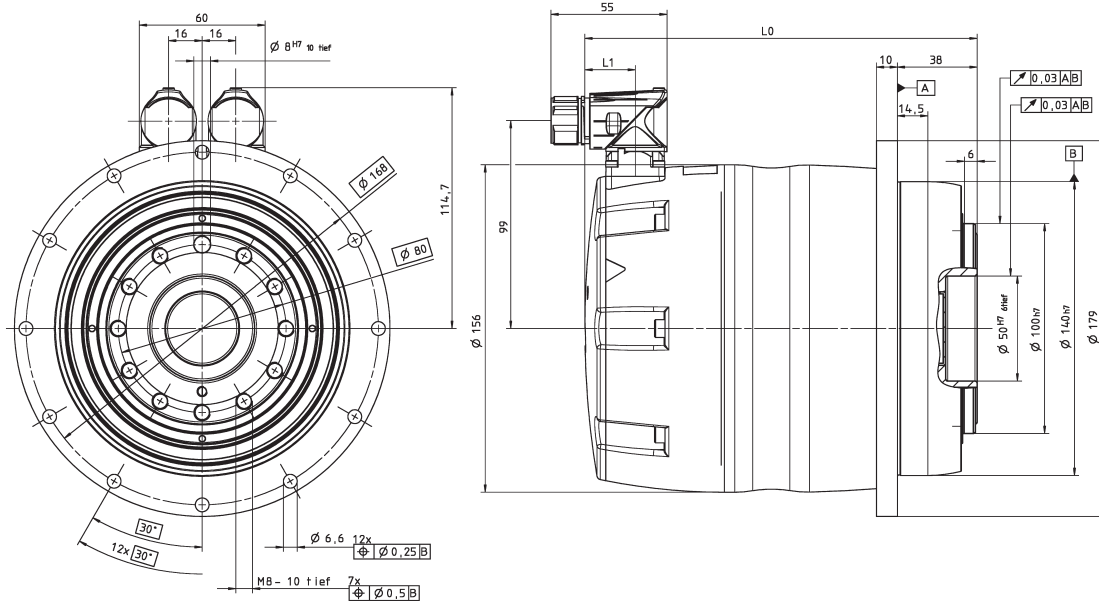


Ratio	i	16	21	31	61	64	91
DC bus voltage	U_D V DC	560 / 320					
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B} Nm	435	500	650	447	469	500
Stall torque	T_{20} Nm	169	220	336	162	154	220
Brake Holding Torque at output (optional), 100°C	T_{2BR} Nm	176	231	341	671	704	1001
Max. speed	n_{2max} min ⁻¹	310	240	160	80	80	50
Peak speed for T _{2B}	n_{2B} min ⁻¹	231	190	135	53	51	44
Peak current	I_{max} A _{eff}	40	35	30.8	12	12	8.7
Stall current	I_0 A _{eff}	12.4	12.4	12.4	3.5	3.5	3.2
Moment of inertia (at motor shaft without brake with resolver)	J_2 kgm ² ·10 ⁻⁴	9.61	9.61	9.47	2.41	2.39	2.39
Torsional backlash	j_t arcmin	Standard ≤ 3 / Reduced ≤ 1					
Torsional rigidity	C_t Nm/arcmin	170	-	-	123	-	100
Tilting rigidity	C_K Nm/arcmin	560					
Max. axial force	F_{Amax} N	6130					
Max. tilting moment	M_{Kmax} Nm	1295					
Weight (with resolver and without brake)	m kg	21.3			15.1		
Operating noise (measured at 3000 rpm motor speed)	L_{PA} dB(A)	≤ 70					
Max. permissible housing temperature	°C	+90					
Ambient temperature	°C	0 to +40					
Protection class		IP 65					
Mounting position		Any					
Lubrication		Synthetic oil, lubricated for Life					
Insulation class		F					
Paint		Metallic blue 250 and natural cast aluminum					

For complete specifications and speed torque curves, download data sheets at www.wmc-us.com.

View A

View B



Electrical connection: mounting boxes manufactured by Intercontec, type SpeedTEC, series A and B, size 1

Without Brake

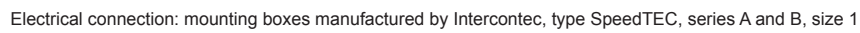
Ratio	Motor Feedback	Length	Length 1
i = 16/21/31	Resolver	232	24
	Hiperface	253	45
	EnDat	257	49
i = 61/64/91	Resolver	187	24
	Hiperface	208	45
	EnDat	212	49

With Brake

Ratio	Motor Feedback	Length	Length 1
i = 16/21/31	Resolver	256	24
	Hiperface	278	45
	EnDat	281	49
i = 61/64/91	Resolver	211	24
	Hiperface	233	45
	EnDat	236	49

Ratio	i		16	21	31	61	64	91
DC bus voltage	U_D	V DC	560 / 320					
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	660	867	1279	1300	1300	1300
Stall torque	T_{20}	Nm	208	278	418	671	672	700
Brake Holding Torque at output (optional), 100°C	T_{2BR}	Nm	176	231	341	671	704	1001
Max. speed	n_{2max}	min ⁻¹	310	240	160	80	80	55
Peak speed for T _{2B}	n_{2B}	min ⁻¹	206	157	106	68	65	52
Peak current	I_{max}	A _{eff}	70	70	70	31.3	29.8	20.9
Stall current	I_0	A _{eff}	16.3	16.3	16.3	12.4	12.4	9.1
Moment of inertia (at motor shaft without brake with resolver)	J_2	kgm²*10 ⁻⁴	13.14	13.14	12.84	9.42	9.36	9.36
Torsional backlash	j_t	arcmin	Standard ≤ 3 / Reduced ≤ 1					
Torsional rigidity	C_t	Nm/arcmin	-	-	-	-	-	400
Tilting rigidity	C_K	Nm/arcmin	1452					
Max. axial force	F_{Amax}	N	10050					
Max. tilting moment	M_{Kmax}	Nm	3064					
Weight (with resolver and without brake)	m	kg	37.1			35.9		
Operating noise (measured at 3000 rpm motor speed)	L_{PA}	dB(A)	≤ 72					
Max. permissible housing temperature		°C	+90					
Ambient temperature		°C	0 to +40					
Protection class			IP 65					
Mounting position			Any					
Lubrication			Synthetic oil, lubricated for Life					
Insulation class			F					
Paint			Metallic blue 250 and natural cast aluminum					

For complete specifications and speed torque curves, download data sheets at www.wmc-us.com.



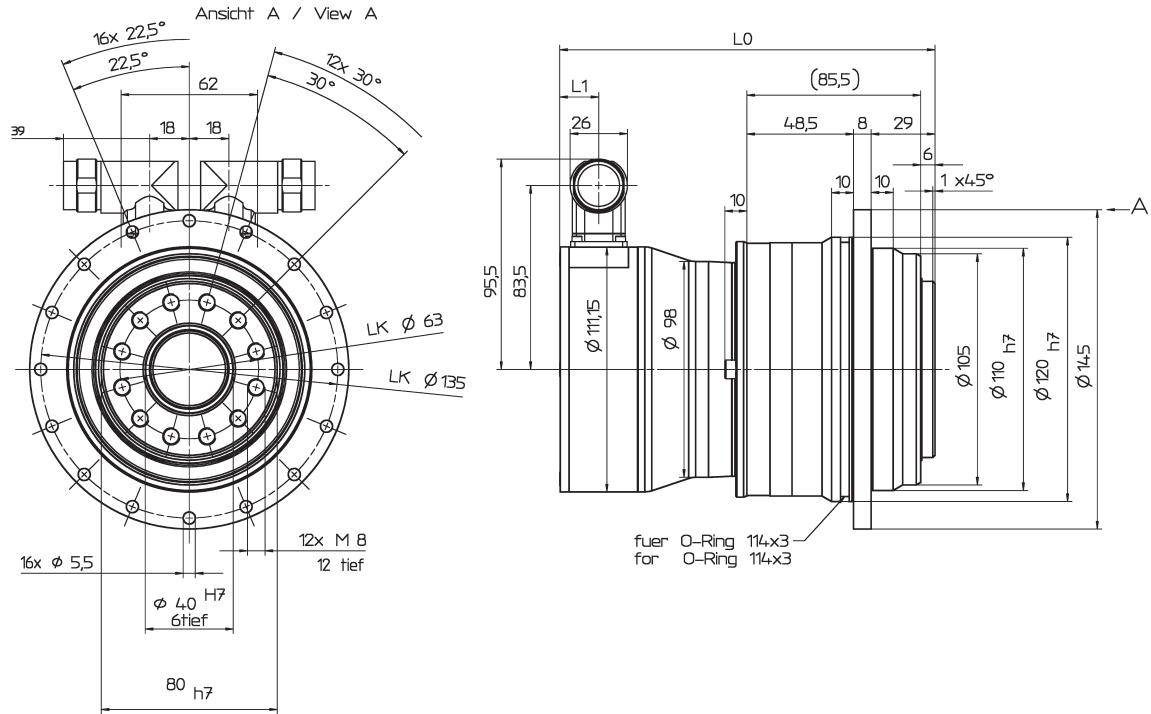
Ratio	Motor Feedback	Length	Length 1
i = 16/21/31	Resolver	283	24
	Hiperface	304	45
	EnDat	308	49
i = 61/64/91	Resolver	268	24
	Hiperface	289	45
	EnDat	293	49

Ratio	Motor Feedback	Length	Length 1
i = 16/21/31	Resolver	307	24
	Hiperface	329	45
	EnDat	332	49
i = 61/64/91	Resolver	292	24
	Hiperface	314	45
	EnDat	317	49

Ratio	i	110	220
DC bus voltage	U_D V DC	560 / 320	
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B} Nm	430	480
Stall torque	T_{20} Nm	142	260
Brake Holding Torque at output (optional), 100°C	T_{2BR} Nm	198	396
Max. speed	n_{2max} min ⁻¹	54	27
Peak speed for T_{2B}	n_{2B} min ⁻¹	38	19
Peak current	I_{max} A _{eff}	7.0	3.7
Stall current	I_0 A _{eff}	2.3	2.3
Moment of inertia (at motor shaft without brake with resolver)	J_2 kgcm ²	0.89	0.87
Torsional backlash	j_t arcmin	≤ 1	
Torsional rigidity	C_t Nm/arcmin	97	
Tilting rigidity	C_K Nm/arcmin	550	
Max. axial force	F_{Amax} N	4150	
Max. tilting moment	M_{Kmax} Nm	413	
Weight (with resolver and without brake)	m kg	8.4	
Operating noise (measured at 3000 rpm motor speed)	L_{PA} dB(A)	65	
Max. permissible housing temperature	°C	+90	
Ambient temperature	°C	+40	
Protection class		IP 64	
Mounting position		Any	
Lubrication		Synthetic oil, lubricated for Life	
Insulation class		F	
Paint		RAL 5002 (blue) or RAL 9005 (jet black)	

View A

View B



Electrical connection: mounting boxes manufactured by Intercontec, series A and B

Without Brake

Ratio	Motor Feedback	Length	Length 1
i = 110/220	Resolver	171	17.8
	Hiperface	213	62.8
	EnDat	217	64.3

With Brake

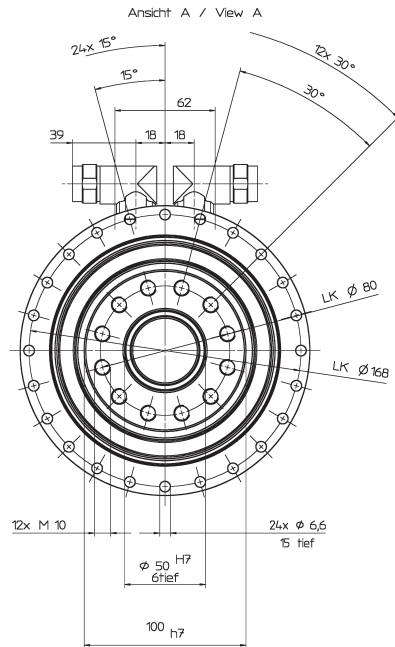
Ratio	Motor Feedback	Length	Length 1
i = 110/220	Resolver	193	39.8
	Hiperface	241.6	88.8
	EnDat	258.6	105.8

Classic TPM design with straight-toothed high torque gearhead

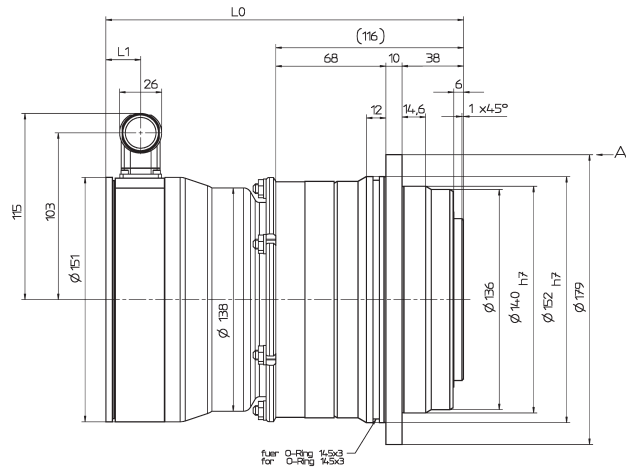
Ratio	i		110	220
DC bus voltage	U_D	V DC	560 / 320	
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm	798	950
Stall torque	T_{20}	Nm	292	583
Brake Holding Torque at output (optional), 100°C	T_{2BR}	Nm	440	880
Max. speed	n_{2max}	min ⁻¹	46	23
Peak speed for T_{2B}	n_{2B}	min ⁻¹	28	18
Peak current	I_{max}	A_{eff}	13.7	7.1
Stall current	I_0	A_{eff}	3.6	3.6
Moment of inertia (at motor shaft without brake with resolver)	J_2	kgcm ²	2.43	2.31
Torsional backlash	j_t	arcmin	≤ 1	
Torsional rigidity	C_t	Nm/arcmin	186	
Tilting rigidity	C_K	Nm/arcmin	560	
Max. axial force	F_{Amax}	N	6130	
Max. tilting moment	M_{Kmax}	Nm	1295	
Weight (with resolver and without brake)	m	kg	17.6	
Operating noise (measured at 3000 rpm motor speed)	L_{PA}	dB(A)	70	
Max. permissible housing temperature		°C	+90	
Ambient temperature		°C	+40	
Protection class			IP 64	
Mounting position			Any	
Lubrication			Synthetic oil, lubricated for Life	
Insulation class			F	
Paint			RAL 5002 (blue) or RAL 9005 (jet black)	

For complete specifications and speed torque curves, download data sheets at www.wmc-us.com.

View A



View B



Electrical connection: mounting boxes manufactured by Intercontec, series A and B

Without Brake

Ratio	Motor Feedback	Length	Length 1
i = 110/220	Resolver	221	21.5
	Hiperface	263	65
	EnDat	263	65

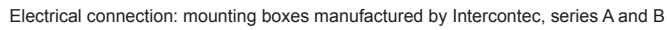
With Brake

Ratio	Motor Feedback	Length	Length 1
i = 110/220	Resolver	247	47.5
	Hiperface	292	94.5
	EnDat	310	112

Classic TPM design with straight-toothed high torque gearhead

Ratio	i		110	220
DC bus voltage	U_D V DC		560 / 320	
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B} Nm		2600	2600
Stall torque	T_{20} Nm		1309	1570
Brake Holding Torque at output (optional), 100°C	T_{2BR} Nm		1650	3200
Max. speed	n_{2max} min ⁻¹		41	21
Peak speed for T_{2B}	n_{2B} min ⁻¹		38	21
Peak current	I_{max} A _{eff}		41.4	19.2
Stall current	I_0 A _{eff}		15.3	15.3
Moment of inertia (at motor shaft without brake with resolver)	J_2 kgcm ²		10.32	9.84
Torsional backlash	j_t arcmin		≤ 1	
Torsional rigidity	C_t Nm/arcmin		550	
Tilting rigidity	C_K Nm/arcmin		1452	
Max. axial force	F_{Amax} N		10050	
Max. tilting moment	M_{Kmax} Nm		3064	
Weight (with resolver and without brake)	m kg		17.6	
Operating noise (measured at 3000 rpm motor speed)	L_{PA} dB(A)		70	
Max. permissible housing temperature	°C		+90	
Ambient temperature	°C		+40	
Protection class			IP 64	
Mounting position			Any	
Lubrication			Synthetic oil, lubricated for Life	
Insulation class			F	
Paint			RAL 5002 (blue) or RAL 9005 (jet black)	

For complete specifications and speed torque curves, download data sheets at www.wmc-us.com.



Options for our servo actuators

Holding brake

A compact permanent magnet brake is available for holding the rotor when the power is off. It is characterized by backlash-free operation, drag free when disengaged, unlimited ON time and constant torque at high operating temperatures.

Data		TPM 004 S TPM 010 S	TPM 025 S	TPM 050 S TPM 110 S
Holding Torque at 100°C	Nm	1.1	2.2	13
Supply Voltage	V DC	24+6% / -10%		
Current	A	0.42	0.38	0.71

Data		TPMA 025	TPMA 050	TPMA 110
Holding Torque at 100°C	Nm	1.8	4.0	15
Supply Voltage	V DC	24+6% / -10%		
Current	A	0.50	0.55	1.10

Temperature Sensors

To help protect the motor coil from overheating, a variety of sensors are available:

Standard: PTC – Positive temperature coefficient thermistor, Type STM160

KTY – Linear temperature coefficient thermistor, Type KTY 84-130

Cables

Matching signal and power cables are available for all tested servo controllers. Lengths of cable are 5, 10, 15, 20, 25, 30, 40 and 50 meters. Cables are made to the highest quality:

- Suitable for cable tracks, with flexible wires in accordance with DIN VDE 0295, class 6
- Oil and fire proof
- Free of halogen, silicon and CFC

Feedback systems

Various feedback systems are available for positioning and speed encoding.

Standard: Resolver 2-pole, 1 sin/cos-period per revolution

Optional: Incremental encoder, 1Vss, 2048 S/R
EnDat single turn, 512 S/R
EnDat multi turn, 512 S/R, 8192 R
Hiperface single turn, 128 S/R
Hiperface multi turn, 128 S/R, 4096 R

Servo controllers

The TPM+ actuator can be operated with a variety of servo controllers. The following table details servo controllers which have already been tested with the TPM+.

On request, you will receive a brief start-up guide with all the relevant data and parameters for your specific servo controller.

Overview of tested servo controllers for the TPM⁺

Manufacturer	Model	TPM(A) size					Feedback signal				Temperature sensor		DC bus current		Cable Designation
		004	010	025	050	110	Resol-ver	Incre-mental	EnDat	Hiper-face	PTC	KTY	320V DC	560V DC	
AMK	AMKAYSN KU	x	x	x	x	x	x	—	x	x	x		x	x	AMKKU_
Baldor	Flex + II	x	—	—	—	—	x	—	x	—	—	—	x	—	BALFL2
Bosch	EcoDrive 03	—	x	x	x	x	x	—	x	—	x	—	x	x	BRCED3
	DIAX 04	—	x	x	x	x	x	—	x	—	x	—	x	x	BRCD04
	IndraDrive	x	x	x	x	x	x	—	x	x	x	x	x	x	BRCIND
B & R	AcoPos	x	x	x	x	x	x	—	x	—	x	x	—	x	BURACO
Control Technique	UniDrive SP	x	x	x	x	x	x	—	x	x	x	—	—	x	CT_SP_
Danaher motion	Servostar 600	x	x	x	x	x	x	—	x	x	x	—	x	x	DANSR6
	Servostar 400	x	x	x	x/—	—	x	—	x	x	x	—	x	x	DANSR4
	Servostar 300	x	x	x	x/—	—	x	—	x	x	x	—	x	x	DANSR3
ESR Pollmeier	Trio /MidiDrive Digital	x	x	x	x	x	x	—	x	x	x	—	x	x	ESRTRD
ELAU	PacDrive MC-4	x	x	x	x	x	—	—	—	x	x	—	x	x	ELAMC4
Parker	Compax	x	x	x	x	x	x	—	—	x	x	—	x	x	PARCO_
	Compax 3	x	x	x	x	x	x	—	—	x	x	—	x	x	PARCO3
KEB	Combivert S4	x	x	x	x	x	x	x	—	—	x	—	x	x	KEBS4_
	Combivert F5-Servo	x	x	x	x	x	x	x	x	x	x	—	x	x	KEBF5S
	Combivert F5-A Servo	x	x	x	x	x	x	—	—	—	x	—	x	x	KEBF5A
Lenze	Global Drive 93xxx	x	x	x	x	x	x	—	—	x	x	x	—	x	LENG93
	Global Drive 94xx	x	x	x	x	x	x	—	—	x	x	x	x	x	LENG94
	ECS Servosystem	x	x	x	x	x	x	—	—	x	x	x	x	x	LENECS
NUM	MDLU 3	x	x	x	x	x	—	—	—	x	x	—	—	x	NUMMD3
Siemens	SimoDrive 611U	x	x	x	x	x	x	x	x	—	—	x	—	x	SIESDU
	SimoDrive 611D	x	x	x	x	x	—	x	x	—	—	x	—	x	SIESDD
	Master Drive MC	x	x	x	x	x	x	x	x	—	x	x	—	x	SIEMC_
	Sinamics	x	x	x	x	x	x	x	x	—	—	x	—	x	SIESIN

* These drives / cables were current at time of publication. As we are continually expanding our compatibility, please visit us at www.wmc-us.com for the most up-to-date information.

Ordering key TPM+

123456789012345678901234567890

T P M

010S-091R-6P B1-064A-W1-000

Actuator type

TPM

Size

004
010
025
050
110

Grease filled

S = Standard UL
G = Greased version (optional)

Ratio

016
021
031
061
064
091

Feedback system

R = Resolver 2-pole
I = Incremental encoder, optical (Sine/Cosine)
S = Singleturn absolute encoder, EnDat
M = Multiturn absolute encoder, EnDat
N = Singleturn absolute encoder, Hiperface
K = Multiturn absolute encoder, Hiperface

DC bus voltage

5 = 320V
6 = 560V

Temperature sensor

P = PTC
K = KTY

Brake

B = with brake
O = without brake

Backlash

1 = Standard
0 = Reduced

Motor size & stator length

Cannot be selected, determined automatically by the ratio (see TPM+ motor matrix)

Electrical connection

W = Right-angle connectors standard
G = Straight connectors (optional)

Pin configuration

1 = Standard

TPM+ motor matrix

	i = 16, 21, 31	i = 61, 64, 91
TPM 004	053B	053A
TPM 010	064B	064A
TPM 025	094C	094A
TPM 050	130D	130A
TPM 110	130E	130D

Ordering key TPMA

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0
T	P	M	A	0	1	0	-	1	1	0	M	-	6	0	0	K	-	B	P	1	-	0	6	0	I	F	S	T	D

Actuator type
TPMA

Size
025
050
110

Ratio
110
220

Feedback system
R = Resolver 2-pole
I = Incremental encoder, optical
S = Singleturn absolute encoder, EnDat
M = Multiturn absolute encoder, EnDat
N = Singleturn absolute encoder, Hiperface
K = Multiturn absolute encoder, Hiperface

DC bus voltage
320 = 320V
600 = 560V

Temperature sensor
P = PTC
K = KTY
N = NTC

Brake
BP = with brake
OH = without brake

Backlash
1 = Standard
0 = Reduced

Stator length
Cannot be selected, determined automatically by the ratio (see TPMA motor matrix)

Electrical connection
STD = Right-angle connectors
SEG = Straight connectors (optional)

Specification
Industrial version, class F insulation

Motor matrix
TPMA

	i = 110, 220
TPMA 025	015
TPMA 050	015
TPMA 110	060

Cable ordering code for TPM+

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0												
C A B - S E T							- M		- S I E S D U							- D 0 1 5 0						- S		- L 0 5 0 0																	
Wiring harness consisting of - Power cable - Signal cable Assembled at both ends							Feedback system R = Resolver 2-pole I = Incremental encoder, optical S = Singleturn absolute encoder, EnDat M = Multiturn absolute encoder, EnDat N = Singleturn absolute encoder, Hiperface K = Multiturn absolute encoder, Hiperface							Assembly, controller end SIESDU = Siemens Simodrive 61U etc...see controller table Specification in right column							Cable diameter D0150 = 1.5mm ² for TPM 004, TPM 010, TPM 025, TPM 050 i ≥ 61 D0250 = 2.5mm ² for TPM 050 i ≤ 31, TPM 110							Assembly motor end S = Connector							Length L0500 = 5m L1000 = 10m L1500 = 15m L2000 = 20m L2500 = 25m L3000 = 30m L4000 = 40m L5000 = 50m						

Questions?

Do you have questions regarding this product or any other of our various product offerings? Please call us at **(630) 540-5300** or visit us online at **www.wmc-us.com**.

