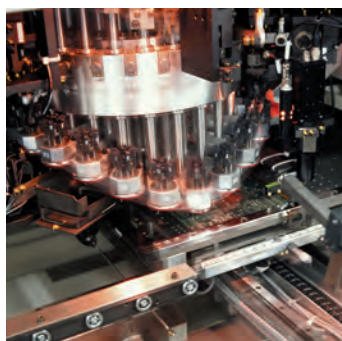
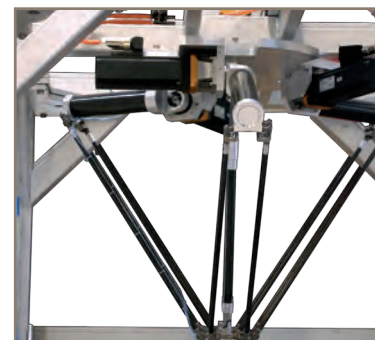


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Single Cable Servo Drive System

SME Motors and TPD-M Drives with Hiperface DSL® Feedback



ENGINEERING YOUR SUCCESS.

Autoryzowany dystrybutor Parker:

ARA
 PNEUMATIK

53-012 Wrocław tel. 71 364 72 82
 ul. Wyścigowa 38 fax 71 364 72 83
 www.arapneumatik.pl





WARNING – USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
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Single Cable Servo Drive System

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- the global leader in motion and control technologies

A world class player on a local stage

Global Product Design

Parker Hannifin has more than 40 years experience in the design and manufacturing of drives, controls, motors and mechanical products. With dedicated global product development teams, Parker draws on industry-leading technological leadership and experience from engineering teams in Europe, North America and Asia.

Local Application Expertise

Parker has local engineering resources committed to adapting and applying our current products and technologies to best fit our customers' needs.

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Worldwide Manufacturing Locations

Europe

Littlehampton, United Kingdom
Dijon, France
Offenburg, Germany
Milan, Italy

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North America

Rohnert Park, California
Irwin, Pennsylvania
Wadsworth, Ohio
Charlotte, North Carolina
New Ulm, Minnesota



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Local Manufacturing and Support in Europe

Parker provides sales assistance and local technical support through a network of dedicated sales teams and authorized technical distributors throughout Europe.

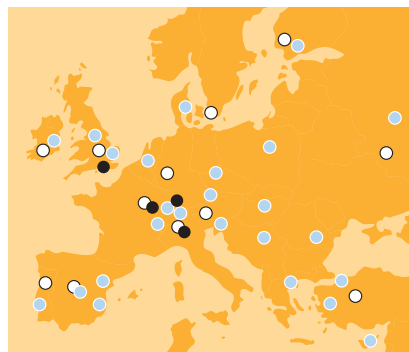
For contact information, please refer to the Sales Offices on the back cover of this document or visit www.parker.com



Milan, Italy



Littlehampton, UK



- Manufacturing
- Parker Sales Offices
- Distributors



Dijon, France

Single Cable Servo Drive System

SME Motors and TPD-M Drives with Hiperface DSL[®] feedback

General Overview

Description

The Single Cable Servo Drive System from Parker is a combination of the low inertia servo motor SME and the triple axis servo drive TPD-M based on the Hiperface DSL[®] digital feedback technology. The encoder feedback communication is fully integrated into the motor power cable and thus no separate feedback cable between drive and motor is required.

The new feedback system is a purely digital encoder communication protocol with exceptional performance. The absolute position determination, a resolution of up to 20 bit per turn, as well as 4096 maximum rotations, is unique in it's class.

The System is completed by the multi-axis servo drive TPD-M which represents one of the most compact solutions on the market giving the possibility of controlling up to three single cable SME servo motors with one 50 mm drive module.

Therefore, the Single Cable Servo Drive System from Parker is a bespoke solution to provide machine builders with lower cabling and installation cost and the possibility to reduce control panel size and machine footprint.

Feedback-Features

- One cable connection between drive and motor instead of two
- No need for separate feedback cable and connector
- Fully digital and interference-free communication
- Synchronous, bidirectional, multi-channel
- Easy setup and reduced wiring

Applications

- Packaging Machinery
- Material Handling
- Machine Tools
- Robotics
- Paper & Converting



TPD-M triple axis servo drive connected to SME motors via Hiperface DSL[®] interface: One cable per servo motor instead of two.

Technical Characteristics - Overview

TPD-M

TPD Axis	Continuous current [A _{rms}]	Peak current A (≤ 2 s)
3 axis	2 + 2 + 2	4 + 4 + 4
	8 + 5 + 5	16 + 10 + 10
2 axis	2 + 2	4 + 4
	5 + 5	10 + 10
	8 + 8	16 + 16
1 axis	5/10/15/30	10/20/30/60

SME Single Cable Servo Motors

Motor Type	Permanent magnets synchronous servomotor
Rotor Design	Rotor with surface rare earth magnets
Power Range	0.2...5.3 kW
Torque Range	0.5...17 Nm
Speed Range	0...7500 min ⁻¹

Single Cable Servo Drive System

Traditional vs. Single Cable Servo Drive System Solution

The difference

The difference between the traditional solution and the latest Single Cable Servo Drive System is immediately obvious and makes this an extremely cost effective and also reliable solution. First notice the simplicity provided by the Single Cable Servo Drive System, due to the fact that the feedback communication is fully integrated into the motor power cable, but then see how complexity and the costs of the system are significantly reduced and the performances increased, due to the following benefits:

Quick and simple wiring

With less cables and connectors, machine setup is much more straight forward.

Reduced wiring costs

The opportunity of having a single cable, offers machine builders significant savings on costs for cables and connectors.

Reliable system

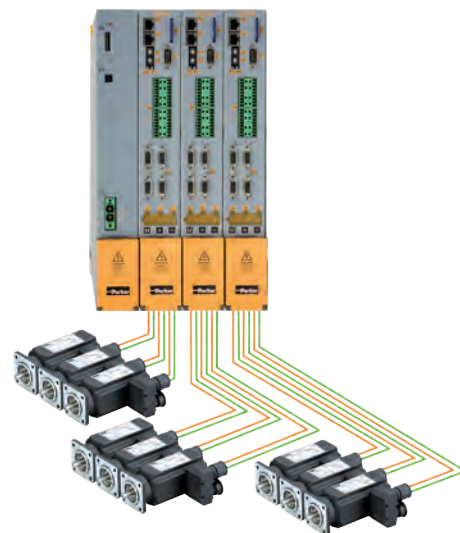
The reduced number of connections reduces the potential points of failure.

Efficient feedback control

Being fully digital, the performance of the motor feedback is very accurate.



Single Cable Servo Drive Solution



Traditional Solution

Low Inertia Servo Motors - SME

Product Overview

Description

The SME Series of highly-dynamic brushless servo motors have been design to combine the cuttingedge technology of Parker Hannifin products with extremely high performance.

Thanks to the innovative “salient pole” technology, the motor’s dimensions are considerably reduced with significant advantages in terms of specific torque, overall dimensions and dynamic performance. Compared to traditional-technology brushless servo motors, the specific torque is approximately 30 % higher, overall dimensions are considerably reduced and, consequently rotor inertias are extremely low. Thanks to the high quality of Neodymium-Iron-Boron magnets, and also the encapsulation method used to fasten them to the shaft, the SME motors can achieve very high acceleration and withstand high overloads without risk of demagnetisation or detachment of the magnets.

Specific applications for the SME Series include all types especially those for the packaging and handling industry, and all those applications where very high dynamic performances and very low inertias are required.

Features

- Single Cable solution (Hiperface DSL® feedback)
- Further Feedback support: Resolver, Hiperface and EnDat interface, Hall sensors, rotary and linear encoders
- Customised windings/voltages
- Increased Inertia option
- Multiple connection options

Application

- Packaging Machinery
- Food & Beverage
- Pharma
- Material Handling
- Material Forming
- Factory Automation
- In-Plant Automotive
- Robotics
- Printing
- Servo Hydraulic Pumps



Technical Characteristics - Overview

Motor Type	Permanent magnets synchronous servomotor
Rotor Design	Rotor with surface rare earth magnets
Power Range	0.2...5.3 kW
Torque Range	0.35...17 Nm
Speed Range	0...7500 min ⁻¹
Mounting	Flange with smooth holes
Shaft End	Plain keyed shaft Plain smooth shaft (option)
Cooling	Natural ventilation
Protection Level (IEC60034-5)	IP64 IP65 (option)
Feedback sensor	Encoder Hiperface DSL® (option S5, S6)
Other options	Brake Thermal protection (PTC) Increased inertia
Marking	CE / UL
Voltage Supply	230 / 400 VAC other voltage under request
Temperature Class	Class F
Connections	Single rotatable connector

Technical Characteristics

Technical Characteristics*

230 VAC supply voltage

Model	Size	Stall ⁽¹⁾		Nominal ⁽¹⁾			Peak ⁽¹⁾	Inertia		Ke ^{(2) (3)}	Kt ^{(2) (3)}
		Torque	Current	Torque	Speed	Current	Torque	No brake	With brake		
		T_{065} (T_{105}) [Nm]	I_{065} [A]	T_{n065} [Nm]	n [min ⁻¹]	I_{n065} [A]	T_{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
SM_60 30 0.55	60	0.55 (0.68)	0.7	0.50	3000	0.66	1.7	18	30.5	0.44	0.76
SM_60 45 0.55			1.0	0.39	4500	0.74				0.30	0.53
SM_60 60 0.55			1.4	0.24	6000	0.60				0.23	0.40
SM_60 16 1.4		1.4 (1.7)	0.95	1.35	1600	0.91	4.4	30	42.5	0.85	1.48
SM_60 30 1.4			1.73	1.20	3000	1.50				0.47	0.81
SM_60 45 1.4			2.37	1.00	4500	1.69				0.34	0.59
SM_60 60 1.4			2.98	0.80	6000	1.70				0.27	0.47
SM_60 75 1.4			3.85	0.15	7500	0.41				0.21	0.36
SM_82 10 03		82	3 (3.7)	1.2	2.9	1000	1.2	9	140	183	1.43
SM_82 16 03	1.8			2.9	1600	1.7	0.96				1.66
SM_82 30 03	3.1			2.7	3000	2.8	0.55				0.96
SM_82 33 03	3.5			2.4	3300	2.8	0.49				0.85
SM_82 45 03	4.7			2.2	4500	3.4	0.37				0.64
SM_82 60 03	6.1			1.5	6000	3.1	0.28				0.49
SM_82 75 03	7.5			0.6	7500	1.6	0.23				0.40
SM_100 16 06	100	6 (9)	3.7	5.8	1600	3.6	18	336	440	0.92	1.60
SM_100 30 06			5.9	5.0	3000	4.9				0.59	1.02
SM_100 45 06			9.4	3.5	4500	5.5				0.37	0.64
SM_100 55 06			11.8	2.6	5500	5.1				0.29	0.51
SM_100 75 06			14.7	0.6	7500	1.5				0.24	0.41
SM_115 16 10	115	10 (12.5)	6.0	9.0	1600	5.4	32	900	1000	0.96	1.66
SM_115 30 10			10.5	8.0	3000	8.4				0.55	0.95
SM_115 40 10			14.7	7.6	4000	11.2				0.39	0.68
SM_115 54 10			18.2	7.1	5400	12.9				0.32	0.55
SM_142 18 15	142	15 (19)	9.7	13.3	1800	8.6	47	1400	1600	0.89	1.54
SM_142 30 15			16.0	12.5	3000	13.4				0.54	0.94

* Data referred only to Single Cable Servo Motor System

⁽¹⁾ Data referred to motor mounted on a steel flange in horizontal position with dim. 200x230x20 mm (for SM_60,82), dim. 200x270x20 mm (for SM_100,115,142). Stall torques refer to motor turning at 100 min⁻¹

⁽²⁾ Data measured at 20 °C. When "hot" consider 5 % derating

⁽³⁾ Tolerance data ±10 %

400 VAC power supply

Model	Size	Stall ⁽¹⁾		Nominal ⁽¹⁾			Peak ⁽¹⁾	Inertia		Ke ^{(2) (3)}	Kt ^{(2) (3)}
		Torque	Current	Torque	Speed	Current	Torque	No brake	With brake		
		T_{065} (T_{105}) [Nm]	I_{065} [A]	T_{n065} [Nm]	n [min ⁻¹]	I_{n065} [A]	T_{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
SM_60 30 1.4	60	1.4 (1.7)	0.95	1.2	3000	0.81	4.4	30	42.5	0.81	1.48
SM_60 45 1.4			1.37	1.0	4500	0.98				0.59	1.02
SM_60 60 1.4			1.73	0.8	6000	0.99				0.68	0.81
SM_60 75 1.4			2.15	0.15	7500	0.23				0.38	0.65
SM_82 30 03	82	3 (3.7)	1.8	2.7	3000	1.6	9	140	183	0.96	1.66
SM_82 45 03			2.7	2.2	4500	2.0				0.64	1.11
SM_82 56 03			3.1	1.6	5600	1.7				0.55	0.96
SM_82 60 03			3.5	1.7	6000	2.0				0.49	0.85
SM_82 75 03			4.4	0.6	7500	0.9				0.39	0.68
SM_100 30 06	100	6 (9)	3.7	5.0	3000	3.1	18	336	440	0.92	1.60
SM_100 45 06			5.6	3.5	4500	3.3				0.62	1.07
SM_100 56 06			5.9	2.5	5600	2.4				0.59	1.02
SM_100 75 06			9.4	0.6	7500	0.9				0.37	0.64
SM_115 20 10	115	10 (12.5)	4.5	9.0	2000	4.06	32	900	1000	1.28	2.22
SM_115 30 10			6.0	8.0	3000	4.82				0.96	1.66
SM_115 40 10			8.0	7.6	4000	6.05				0.73	1.26
SM_115 56 10			10.5	6.0	5600	6.30				0.55	0.95
SM_142 20 15	142	15 (19)	6.4	13.0	2000	5.5	47	1400	1600	1.36	2.35
SM_142 30 15			9.7	12.5	3000	8.1				0.89	1.54
SM_142 45 15			14.4	10.9	4500	10.5				0.60	1.04
SM_142 56 15			16.0	9.2	5600	9.8				0.54	0.94
SM_170 10 36	170	available on request									
SM_170 27 36		available on request									

⁽¹⁾ Data referred to motor mounted on a steel flange in horizontal position with dim. 200x230x20 mm (for SM_60,82), dim. 200x270x20 mm (for SM_100,115,142). Stall torques refer to motor turning at 100 min⁻¹

⁽²⁾ Data measured at 20 °C. When "hot" consider 5 % derating

⁽³⁾ Tolerance data ±10 %

STANDARDS

In compliance with: 73/23/CEE and 93/68/CEE

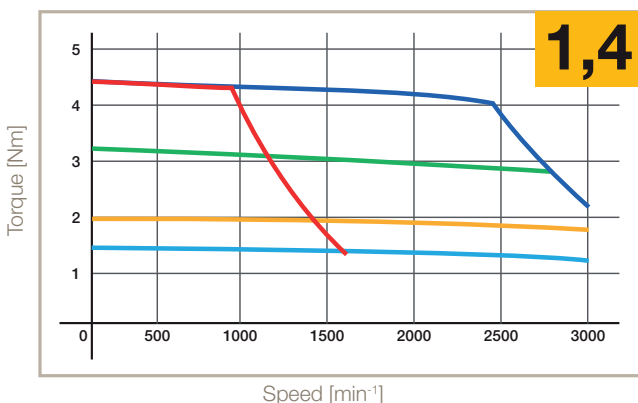
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- EN60034-5
- EN60034-5/A1
- EN60034-9
- EN60034-14

Marked  Marked 

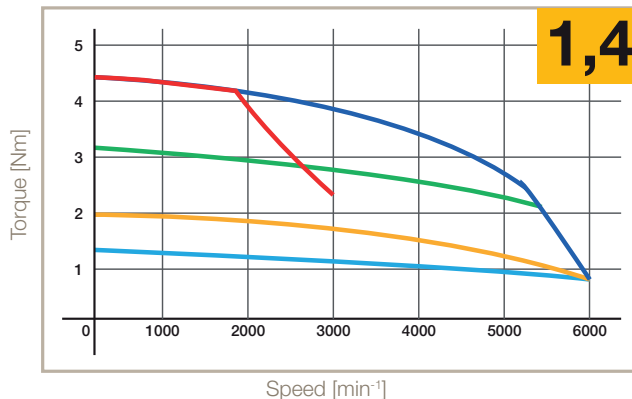
Speed Torque Curves

SME60

1600 min⁻¹ 230 V - 3000 min⁻¹ 400 V

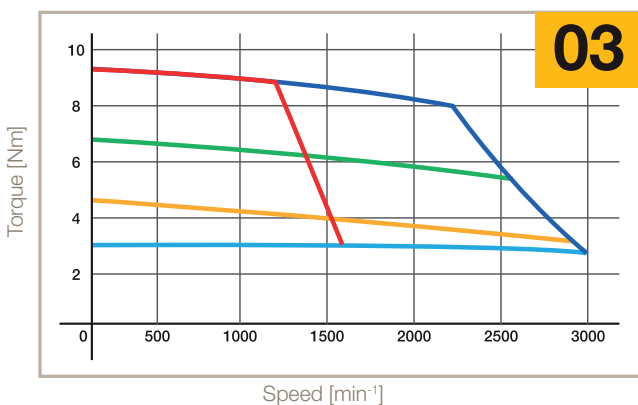


3000 min⁻¹ 230 V - 6000 min⁻¹ 400 V

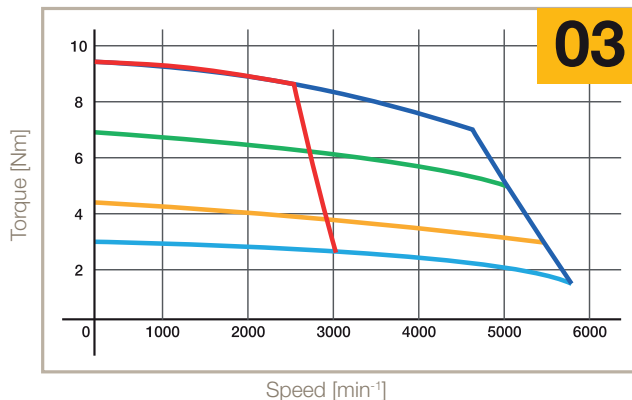


SME82

1600 min⁻¹ 230 V - 3000 min⁻¹ 400 V

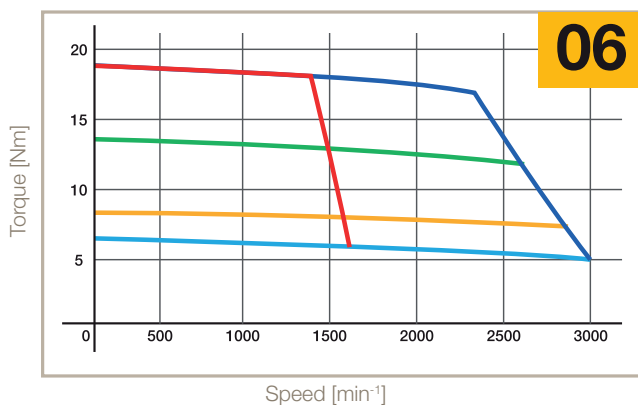


3000 min⁻¹ 230 V - 5600 min⁻¹ 400 V

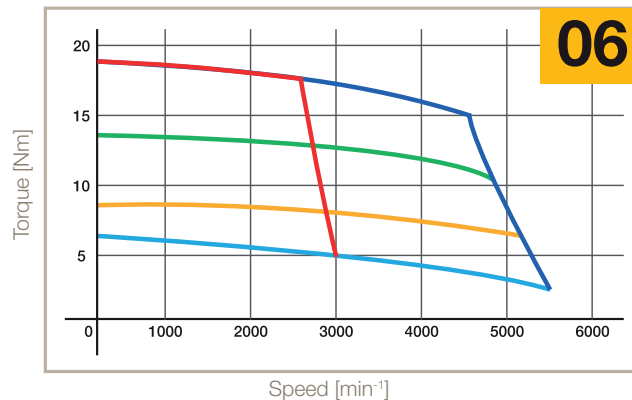


SME100

1600 min⁻¹ 230 V - 3000 min⁻¹ 400 V



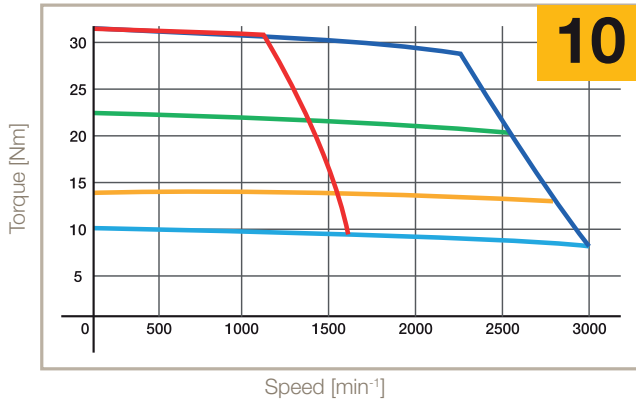
3000 min⁻¹ 230 V - 5600 min⁻¹ 400 V



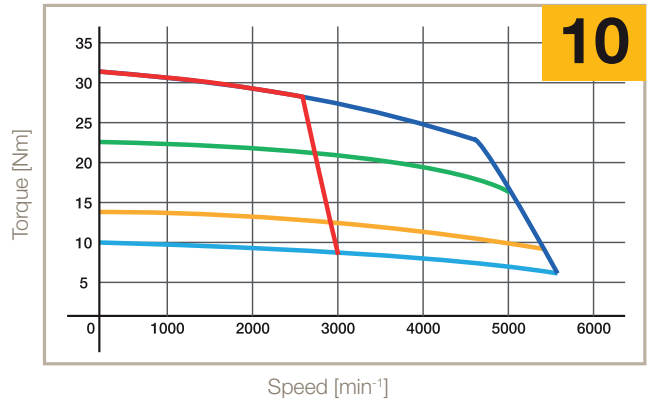
- S1 65 K, ΔT
- S3 10 %, 5 min, 400 V
- S3 50 %, 5 min
- S3 10 %, 5 min, 230 V
- S3 50 %, 5 min
- S3 20 %, 5 min

SME115

1600 min⁻¹ 230 V - 3000 min⁻¹ 400 V

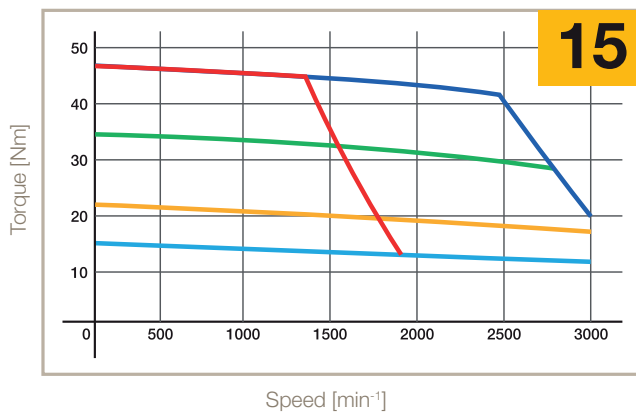


3000 min⁻¹ 230 V - 5600 min⁻¹ 400 V

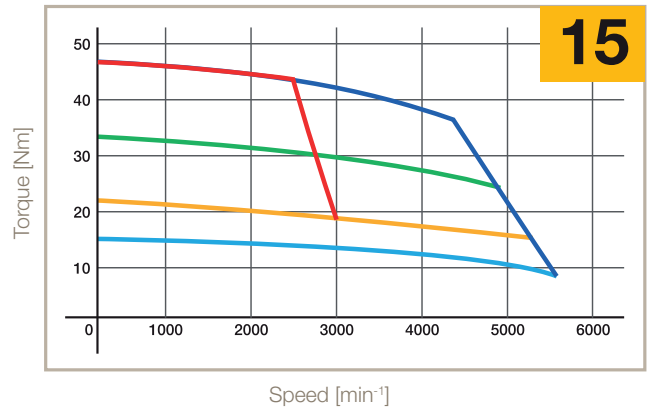


SME142

1800 min⁻¹ 230 V - 3000 min⁻¹ 400 V

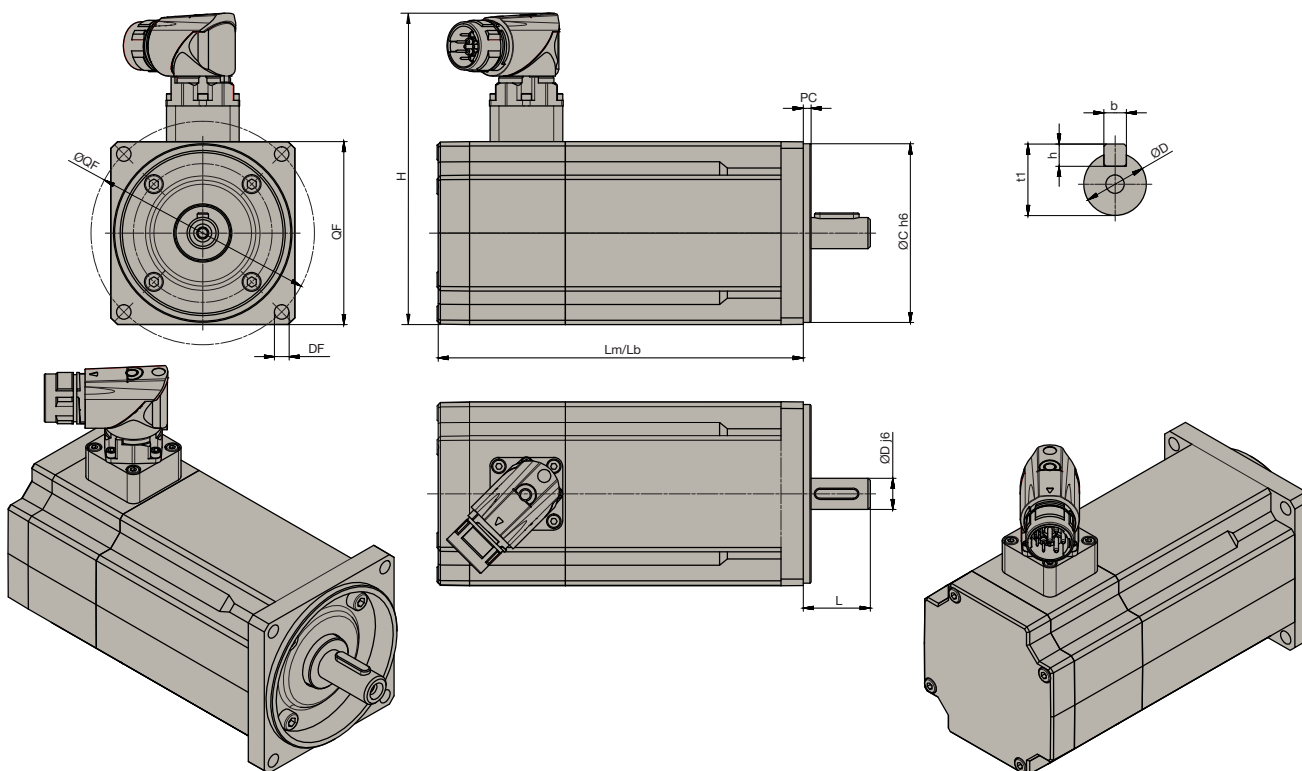


3000 min⁻¹ 230 V - 5600 min⁻¹ 400 V



- S1 65 K, ΔT
- S3 10 %, 5 min, 400 V
- S3 50 %, 5 min
- S3 10 %, 5 min, 230 V
- S3 50 %, 5 min
- S3 20 %, 5 min

Dimensions



Dimensions [mm]

Motors Size	LM LB	Weight [kg]	DxL	bxh	t1	VxZ	H	C	F	DF	G	PC	QF	Order Code QF		
SME	60	0.55	88	-	9x20	3x3	10.2	-	111.5	40	63	5.5	74	-	60	8
			137	1	11x23	4x4	12.5	M4x10		60	75	6	90	2.5	70	5
		1.4	129.5	1.5	9x20	3x3	10.2	M4x10		40	63	5.5	74	2.5	60	8
			161		11x23	4x4	12.5			60	75	6	90	2.5	70	5
	82	03	159	3.6	11x23 ⁽²⁾	4x4	12.5	140	60	75	6	90	3.5	70	7	
			202		14x30	5x5	16		80	100	6.5	112	3.5	82	8	
		163.5	3.6	11x23 ⁽²⁾	6x6	21.5	M4x12		95	115	9	135	3.5	100	5	
	206.5	14x30		5x5	16	M5x12.5	95	115	9	135	3.5	100	5			
	100	06	191.5	4.7	19x40	6x6	21.5	157.5	80	100	7	135	3.5	100	8	
			238.5		24x50	8x7	27		M6x16	95	115	9	135	3.5	100	5
	115	10	220	7.7	19x40	6x6	21.5	172	95	115	9	156	3.5	115	9	
					24x50	8x7	27		M6x16	95	130	9	156	3.5	115	8
					28x60	8x7	31		M8x19	110	130	9	156	3.5	130	7
					28x60	8x7	31		M10x22	130	165	11	196.5	3.5	145	5
142	15	243	13	19x40	6x6	21.5	199	130	165	11	192.5	3.5	142	5		
293	24x50	8x7		27	M6x16	28x60									8x7	31

LM: motor's length without brake and with resolver
LB: motor's length with brake and resolver
DxL: Shaft
bxh: Key
T1: Overall shaft height
VxZ: Shaft hole depth
H: height

C: Center
DF: Fixing holes
QF: Mounting flange
F: Pitch circle diameter
G: Diagonal Dimension
PC: Centre Depth

⁽¹⁾ not available with flange 7
⁽²⁾ only for torque <2 Nm

Options

Parker SME family motors are available with standard and custom options to adapt motor on your application. If the option for your application is not listed, please consult our technical department.

Holding Brake

All SME motors are available with option holding brake.

The fail-safe (supply voltage 24 VDC $\pm 10\%$) holding brake is incorporated in the motor at the opposite side of the front flange and is applied when there is no voltage present. Because of the power loss caused by the brake, torque values must be reduced by 5 %. The holding brakes shall be used with the motor at a standstill and not for dynamic braking. For normal uses, they are maintenance free brakes.

Motor	Voltage [V]	Current [A]	Torque @20 °C [Nm]	Added Length [mm]	Added Weight [kg]	Added Inertia [kgmm ²]
SME60	24	0.34	2.2	31.5	0.3	12.5
SME82	24	0.5	5	45.5	0.7	43
SME100	24	0.67	11	47	0.6	104
SME115	24	0.67	11	45	2	100
SME142	24	0.75	22	50	3	200

Hiperface DSL® Feedback

SME (one cable) motors are available with encoder Hiperface DSL® feedback, with two different typology:

- Hiperface DSL® absolute encoder Single Turn
- Hiperface DSL® encoder Multi Turn

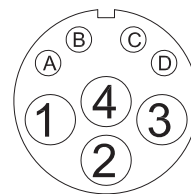
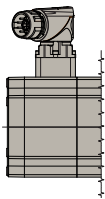
Code	S5	S6
Type	Optical	
Turn	Single	Multi
Resolution per revolutions	18 bits	
Available memory space	8192 bytes	
Positions per revolutions	262 144	
Distinguishable revolutions	1	4096
System accuracy differential	$\pm 40''$	
Power supply	7...12 VDC	
Max. speed [min ⁻¹]	6000	
Temperature	-20°C...+105°C	
Safety integrity level	SIL2 (IEC 61508), SILCL2 (IEC 62061)	

Medium Inertia

Where the application needs different values of inertia, SME can provide a standard adder.

Motor	Added inertia [kgmm ²]	Added length [mm]	Added weight [kg]
SME60	29	31.5	0.32
SME82	270	43	0.91
SME100	284	47	0.68
SME115	900	45	2.28
SME142	690	50	2.49

Layout and Connectors



	Hyperface DSL® Connector (IZ)
SME60	Yes
SME82	Yes
SME100	Yes
SME115	Yes
SME142	Yes

Pin	
1	U
2	GND
3	V
4	W
A	Brake +
B	Brake -
C	Signal +
D	Signal -

Association Motors/Drives

230 VAC Supply Voltage

Motor	Rated Speed [min ⁻¹]	Stall Current [A]	TPD-M
230 VAC supply voltage			
SME60 30 0.55	3000	0.7	TPD-M02...
SME60 45 0.55	4500	1	TPD-M02...
SME60 60 0.55	6000	1.4	TPD-M02...
SME60 16 1.4	1600	0.95	TPD-M02...
SME60 30 1.4	3000	1.73	TPD-M02...
SME60 45 1.4	4500	2.37	TPD-M05...
SME60 60 1.4	6000	2.98	TPD-M05...
SME60 75 1.4	7500	3.85	TPD-M05...
SME82 10 03	1000	1.2	TPD-M02...
SME82 16 03	1600	1.8	TPD-M02...
SME82 30 03	3000	3.1	TPD-M05...
SME82 33 03	3300	3.5	TPD-M05...
SME82 45 03	4500	4.7	TPD-M05...
SME82 60 03	6000	6.1	TPD-M08...
SME82 75 03	7500	7.5	TPD-M08...
SME100 16 06	1600	3.7	TPD-M05...
SME100 30 06	3000	5.9	TPD-M08...
SME100 45 06	4500	9.4	TPD-M10...
SME100 55 06	5500	11.8	TPD-M15...
SME100 75 06	7500	14.7	TPD-M15...
SME115 16 10	1600	6	TPD-M08...
SME115 30 10	3000	10.5	TPD-M10...
SME115 40 10	4000	14.7	TPD-M15...
SME115 54 10	5400	18.2	TPD-M30...
SME142 18 15	1800	9.7	TPD-M10...
SME142 30 15	3000	16	TPD-M30...

400 VAC Supply Voltage

Motor	Rated Speed [min ⁻¹]	Stall Current [A]	TPD-M
400 VAC supply voltage			
SME60 30 1.4	3000	0.95	TPD-M02..
SME60 45 1.4	4500	1.37	TPD-M02..
SME60 60 1.4	6000	1.73	TPD-M02..
SME60 75 1.4	7500	2.15	TPD-M05..
SME82 30 03	3000	1.8	TPD-M02..
SME82 45 03	4500	2.7	TPD-M05..
SME82 56 03	5600	3.1	TPD-M05..
SME82 60 03	6000	3.5	TPD-M05..
SME82 75 03	7500	4.4	TPD-M05..
SME100 30 06	3000	3.7	TPD-M05..
SME100 45 06	4500	5.6	TPD-M08..
SME100 56 06	5600	5.9	TPD-M08..
SME115 20 10	2000	4.5	TPD-M05..
SME115 30 10	3000	6.0	TPD-M08..
SME115 40 10	4000	8.0	TPD-M08..
SME115 56 10	5600	10.5	TPD-M15..
SME142 20 15	2000	6.4	TPD-M08..
SME142 30 15	3000	9.7	TPD-M10..
SME142 45 15	4500	14.4	TPD-M15..
SME142 56 15	5600	16	TPD-M30..

Order Code

Motor Series SME

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Order example	SME	A	60	30	1.4	5	11		IZ		64	S6		M		2

1 Type Of Motor (mandatory field)	SME	Standard Motor with Encoder
2 Brake Option		No Brake Option (empty field)
	A	Motor with Holding Brake (brakes when the supply voltage is 0)
3 Motor Frame Size (mandatory field)	60	Torque range 0,55...1.4 Nm
	82	Torque 3 Nm
	100	Torque range 6 Nm
	115	Torque range 10 Nm
	142	Torque range 15...17 Nm
	170	Torque range 36...60 Nm (Provisional data)
4 Winding (mandatory field)	nn	min ⁻¹ (x100)
5 Motor Torque (mandatory field)	nn	Torque [Nm]
6 Flange (mandatory field)	5	B5 Flange
	7	Only for Frame 82 and 115
	8	Only for Frame 60, 82, 100 and 115
	9	Only for Frame 115
	A B C	Special Flange
7 Shaft (mandatory field)	11	11x23 mm for size 60
	14	14x30 mm for size 82
	19	19x40 mm for size 82/100/115/142
	24	24x50 mm for size 100/115/142
	28	28x60 mm for size 115/142
	A*	Special shaft under request
8 Key Shaft option		Shaft with Key (empty field)
	S	Shaft without key
9 Layout - Connectors (mandatory field)	IZ	Single connector rotatable (Feedback included)
10 Female connectors option		With Female / flying connectors (empty field)
	W	Without Female / flying connectors
11 Protection Degree (mandatory field)	64	IP64
	65	IP65
12 Feedback	S5	32768spr Single Turn Hiperface DSL® Encoder Feedback SIL2
	S6	32768spr x 4096 Multi Turn Hiperface DSL® Encoder Feedback SIL2
13 Option Resolver		Standard Resolver (empty field)
14 Option Inertia		Standard Inertia (empty field)
	M	Medium Inertia available without selected A in field 2
15 Special Option		No Special Option (empty field)
	1Bxx	Motor with 2-side output shaft, where xx is the diameter of second shaft
16 Voltage	0A	24 V
	0B	34 V
	0C	48 V
	0D	50 V
	0E	60 V
	0F	72 V
	0G	74 V
	0	80 V
	0H	96 V
	1A	108-110 V
	1D	120 V
	1B	125 V
	1C	150 V
	1	180 V
	2	220-230 V
	2A	222 V
	2B	200 V
	3	330 V
	4	380-400 V
	4A	425 V
	4C	460 V
	4B	490 V

Order Code

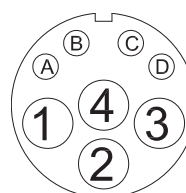
Motor Cable for Hiperface DSL®

	1	2	3	4	5	6	7
Order example	CAVODSL	1,5x	3	PM-	TPD-	A00-	C

1 Cable	CAVODSL	Motor Cable for Single Cable Servo Drive System based on Hiperface DSL®
2 Section [mm²]	1,5x	1,5 mm ²
	2,5x	2,5 mm ²
	4x, 6x, 10x, 25x	4 mm ² , 6 mm ² , 10 mm ² , 25 mm ²
3 Length [m]	1, ...	Length in metre (max. 50 m)
4 Application Type	PM-	Moving Application
5 Drive Type	TPD-	TPD Drive
6 Option	...	Special customer drawing Internal table code
7 Connector	C	Mating connector Mating connector in the motor package

Connector for Hiperface DSL®

Code	Description
CONMOT2IZF	Speedtec Female Connector
CONMOT2IZM	Speedtec Male Connector



Triple Axis Servo Drive - TPD-M

Product Overview

Description

TPD-M is a multi axis drive system with each power module can supplying up to three servo motors. The base configuration consists of a common dc bus supply (PSU) and multiples TPD-M modules, connected through a common dc bus.

The modules are available as one, two or three axis versions, making the system very flexible.

The TPD-M drive has been specifically designed for the Packaging OEM market but it can also be used in many other centralized automation structures which incorporate a large number of servo axes offering significant advantages.



Features

- **New feedback system for single cable servo motors (Hiperface DSL®)**
Reduced cabling; only one cable connection between drive & motor
- **The most compact multi-axis servo drive on the market**
- **Quick and simple wiring**
- **One, two or three axis versions combined in one housing**
- **Removable SD card**
- **Common DC bus connection for energy exchange between drives**
- **Further Feedback support:**
Resolver, Hiperface and EnDat interface, Hall sensors, rotary and linear encoders
- **Fieldbus: CANopen - standard, EtherCAT - option**

Motion control functionality is performed by means of EtherCAT Real Time CoE (CAN over Ethernet) communication, CAN / CANopen DS402 communication.

Application

- **Packaging Machinery**
- **Food & Beverage**
- **Material Handling**
- **Material Forming**
- **Factory Automation**
- **Robotics**

Technical Characteristics - Overview

TPD Axis	Continuos current [A _{rms}]	Peak current [A] (≤ 2 s)
3 axis	2 + 2 + 2	4 + 4 + 4
	8 + 5 + 5	16 + 10 + 10
2 axis	2 + 2	4 + 4
	5 + 5	10 + 10
	8 + 8	16 + 16
1 axis	5/10/15/30	10/20/30/60

Technical Characteristics

Technical Characteristics

TPD-M

Type	Unit	3 axis	
		2 + 2 + 2	8 + 5 + 5
Rated Output Current	[A _{rms}]	2 + 2 + 2	8 + 5 + 5
Peak Output Current (≤ 2 s)	[A]	4 + 4 + 4	16 + 10 + 10
Maximum Continuous Module Output Current	[A]	6	16 ⁽¹⁾
Maximum DC Voltage Supply	[VDC]	750	

Type	Unit	2 axis			1 axis	
		2 + 2	5 + 5	8 + 8	15	30
Rated Output Current	[A _{rms}]	2 + 2	5 + 5	8 + 8	15	30
Peak Output Current (≤ 2 s)	[A]	4 + 4	10 + 10	16 + 16	30	60
Maximum Continuous Module Output Current	[A]	4	10	16	15	30
Maximum DC Voltage Supply	[VDC]	750				

⁽¹⁾ The max continuous module current is clamped to 16 A

PSUP - Power Supply Unit

Mains Supply

Power Supply Type	Unit	PSUP10			PSUP20			PSUP30 ⁽²⁾		
Input Voltage		*230...480 VAC ±10 % 50...60 Hz (Rated voltage 3*400 VAC)								
Output Voltage		325...680 VDC ±10 %								
Supplied Voltage	[VAC]	230	400	480	230	400	480	230	400	480
Output Power	[kVA]	6	10	10	12	20	20	18	30	30
Peak Output Power (<5 s)	[kVA]	12	20	20	24	40	40	34	60	60

Control Supply

Rated Input Voltage		24 VDC ±10 %								
Maximum Ripple		1 V _{pkpk}								
Supply Current	[A]	PSUP10D6: 0,2 A			PSUP20D6: 0,3 A			PSUP30D6: 0,3 A		

⁽²⁾ Operation of the PSUP30 only with line choke.

Environmental Characteristics

Type	TPD-M	PSUP
Operating Temperature	0...+40 °C	
Storage Temperature	-25 °C...+55 °C	
Shipping Temperature	-25 °C...+70 °C	
Product Enclosure Rating	IP20 (only in closed electrical cabinet) UL open type equipment	
Altitude	1000 m ASL. Derate output current by 1.5 % per 100 m to a maximum of 2000 m	
Operating Humidity	Class 3K3 - Maximum 85 % non-condensing	
Storage Humidity	Class 1K3 - Maximum 95 % non-condensing	
Shipping Humidity	Class 2K3 - Maximum 95 % at 40 °C	
Operating Vibration	IEC60068-2-6 10...57 Hz width 0.075 mm 57...150 Hz accel. 9.81 m/s ²	

TPD-M Features

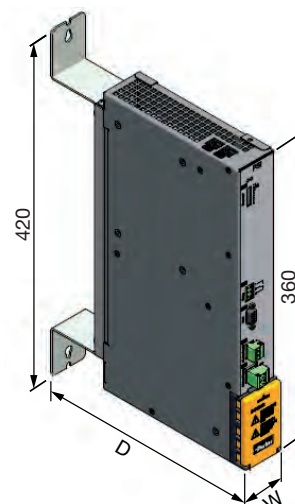
Communication	<ul style="list-style-type: none"> • via USB port
Networks and Bus Systems	<ul style="list-style-type: none"> • CANopen, 20...1000kbit/s, SDO1, PDO1...PDO4 • EtherCAT, 100Mbit/s, 1 cycle time • Via Gateway <ul style="list-style-type: none"> • Profibus • DeviceNet
Inputs / Outputs	<ul style="list-style-type: none"> • 4 digital input, • 2 digital output, • 1 analog input • 1 analog output for each axes. • 1 incremental encoder input, • 1 incremental encoder output • Additional I/O <ul style="list-style-type: none"> • 3 digital input 12bit, • 2 incremental encoder input, • 2 incremental encoder output • Auxiliary Encoder <ul style="list-style-type: none"> • 1 in input for each axes • 1 in output
Supported Feedback	<ul style="list-style-type: none"> • Encoder Hiperface DSL®
Programming / Configuration	<ul style="list-style-type: none"> • PicoPLC • MotionWiz with Oscilloscope function, real time and debugging features • Removable SD card for <ul style="list-style-type: none"> • Software upgrades • Parameter storage • Application memory
Technology Functions	<ul style="list-style-type: none"> • Torque control • Speed control • Position control • Electronic gearbox • Camming
Safety Functions (STO)	<ul style="list-style-type: none"> • 1 Safety Torque Off circuit for 3 axis module • 2 independent Safety Torque Off circuit for 2 axis module • 1 Safety Torque Off circuit for 1 axis module

Standards & Conformance - EMC Compatibility

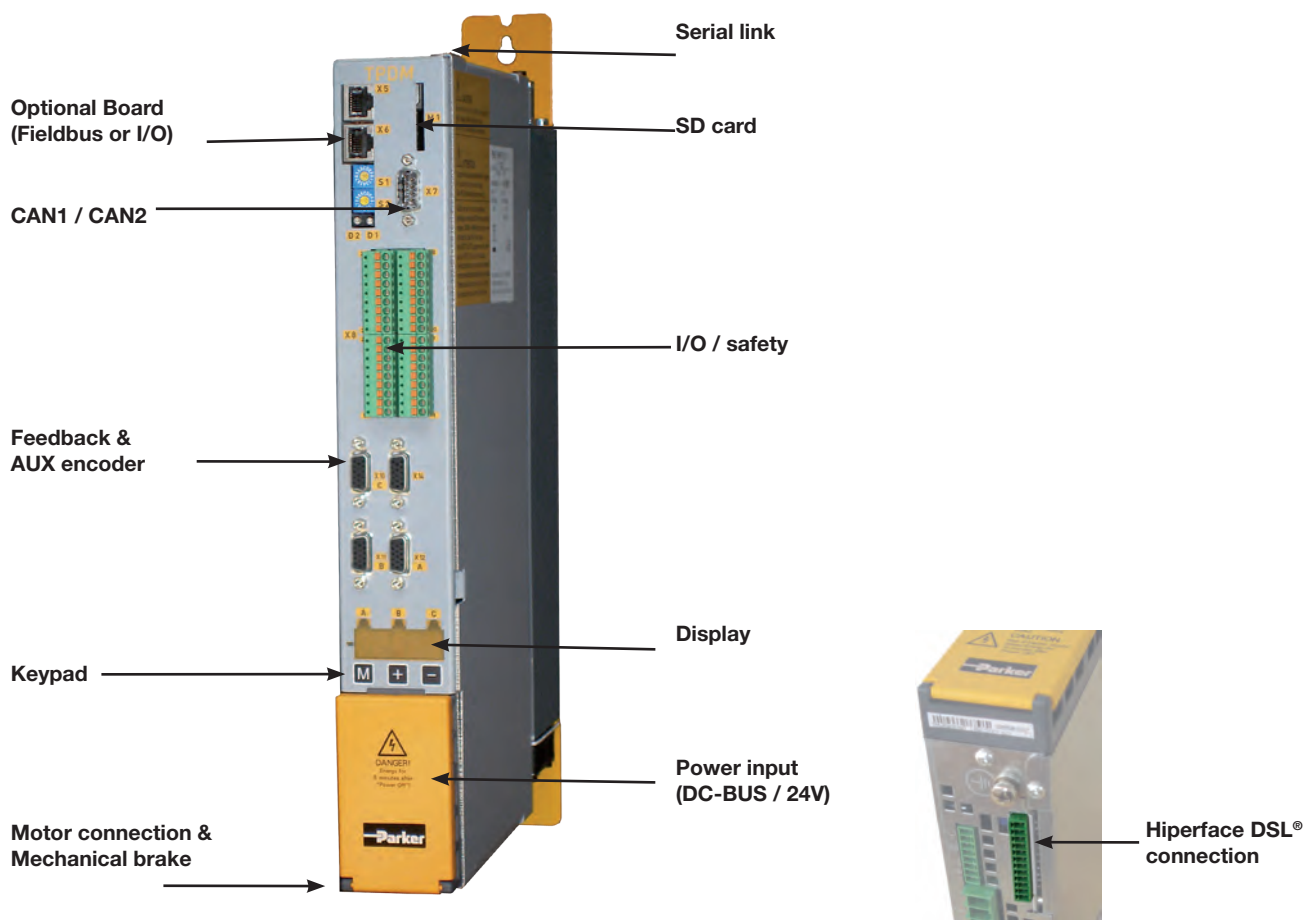
2006/95/EC	Low voltage directive
EN 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 61800-5-1	Adjustable speed electrical power drive systems - safety requirements, thermal and energy
UL508C	(USA) Power Conversion Equipment
2004/108/EC	EMC directive
EN 61800-3	Adjustable speed electrical power drive systems - Part 3: EMC product standard including specific test method

Dimensions

Type	W [mm]	D [mm]	Weight [kg]
TPD-M 1/2/3 axes	50	270	4.3
TPD-M single axis 30 A	100	270	8.6
PSUP10	50	270	3.6
PSUP20 / PSUP30	100	270	5.4



Connector Layout



TPD-M bottom view

Configuration Software - MotionWiz

MotionWiz is free of charge downloadable configuration software that allows users to configure and optimise the TPD-M series with a few easy clicks of the mouse.

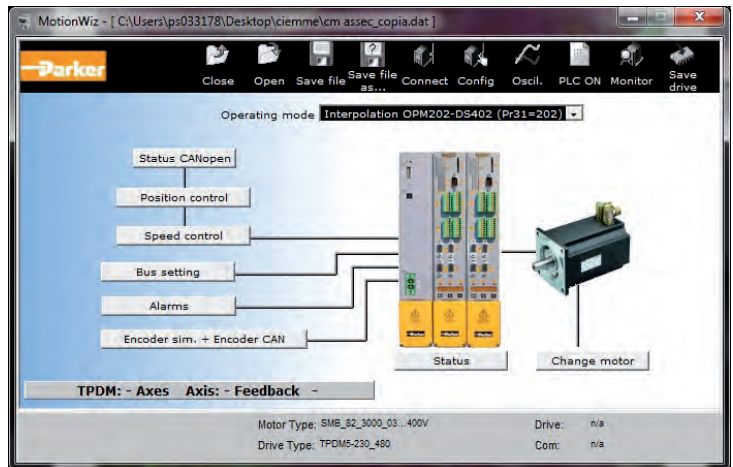
MotionWiz features an intuitive, easy and simple to use Windows® style environment to aid installation, optimisation and diagnostic use.

MotionWiz permits operation in both "on line" mode, directly in the controller, and in "offline" mode, remotely on the PC before downloading to the controller.

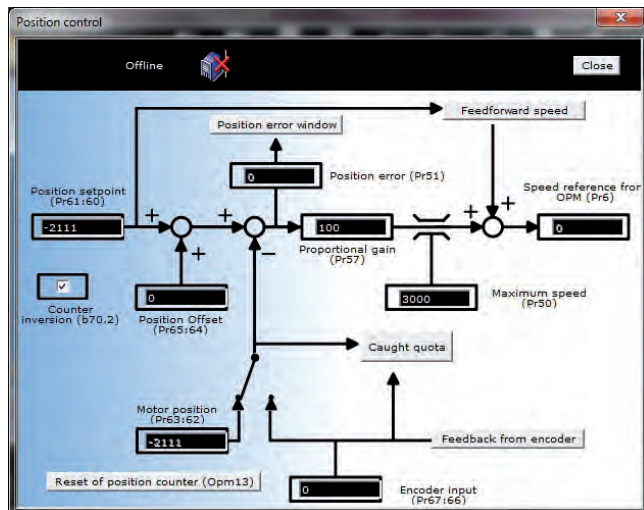
To simplify the configuration of systems with a large number of similar axes but with different motion profiles, MotionWiz allows users to copy the configuration from one application to another.

Inside the MotionWiz configurator is a database containing the technical characteristics of the full range of Parker motors and drives.

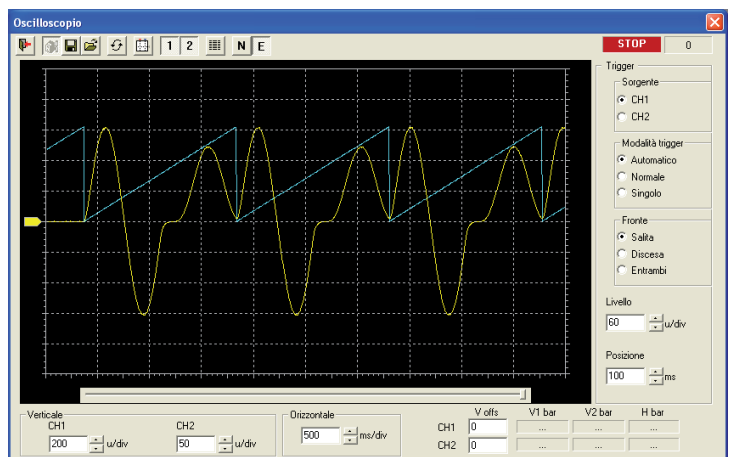
MotionWiz can be downloaded at www.parker.com/eme/tpdm



MotionWiz: General settings



MotionWiz: Position control



MotionWiz Oscilloscope: Real speed & torque trends

Order Code

TPD-M System

	1	2	3	4	5	6	7
Order example	TPD	M	02 02 02	D	L	E5	G

1 Drive Family	TPD	Triple Power Drive
2 Axes	M	Multi Axis
3 Drive Size	02 02 02	3 axis 2 A + 2 A + 2 A
	08 05 05	3 axis 8 A + 5 A + 5 A
	02 02	2 axis 2 A + 2 A
	05 05	2 axis 5 A + 5 A
	08 08	2 axis 8 A + 8 A
	5	single axis 5 A
	10	single axis 10 A
	15	single axis 15 A
	30	single axis 30 A
4 Fieldbus	D	CANopen
5 Feedback system	Empty field	Resolver
	E	EnDat / Incremental / Sinc encoder
	H	Incremental encoder + Hall sensors
	L	DSL feedback
6 Option board	Empty field	No option
	E5	EtherCAT option board
	E7	Analogic expansion board
7 Accessories	G	Fixing shield

Mains module: PSUP

	1	2	3	4	5
Order example	PSU	P	10	D6	USB M00

1 Device family	PSU	Power module
2 Device typ	P	Power module
3 Nominal power; supply voltage	10 D6	10 kW; 400 VAC (3-phase)
	20 D6	20 kW; 400 VAC (3-phase)
	30 D6	30 kW; 400 VAC (3-phase) ¹⁾
4 Interface	USB	USB connection
5 Options	M00	no additional supplement

¹⁾ Operation of the PSUP30 only with line choke.
Required line choke for the PSUP30: 0.45 mH / 55 A

We offer the following line chokes:

LCG-0055-0.45 mH (WxDxH: 180 mmx140 mmx157 mm; 10 kg)

LCG-0055-0.45 mH-UL (with UL certification)

(WxDxH: 180 mmx170 mmx157 mm; 15 kg)

Capacitor module

	1	2
Order example	PSC	023 M00

1 Accessories	PSC	Capacitor module
2 Type	023 M00	23 µF no additional supplement
	047 M00	47 µF no additional supplement
	068 M00	68 µF no additional supplement

Mains filter for PSUP

	1	2
Order example	NFI	03/01

1 Accessories	NFI	Mains filter
2 Type	03/01	for PSUP10 Reference axis combination 3 x 480 V 25 A 6 x 10 m motor cable length
	03/02	for PSUP10 Reference axis combination 3 x 480 V 25 A 6 x 50 m motor cable length
	03/03	for PSUP20, PSUP30 Reference axis combination 3 x 480 V 50 A 6 x 50 m motor cable length

Braking resistors

	1	2
Order example	BRM	05/01

1 Accessories	BRM	Braking resistor
2 Type	13/01	30 Ω / 0.5 kW _{cont.} for PSUP10D6, for PSUP20D6 (2x30Ω parallel)
	14/01	15 Ω / 0.5 kW _{cont.} for PSUP10D6 (2 x 15 Ω in series) for PSUP20, PSUP30
	12/01	18 Ω / 4.5 kW _{cont.} for PSUP30

Motor output choke

For disturbance suppression when the motor connecting cables are long.

	1	2
Order example	MDR	01/04

1 Accessories	MDR	Motor output choke (for TPD-M >20 m motor cable)
2 Type	01/01	up to 16 A rated motor current
	01/02	up to 30 A rated motor current
	01/04	up to 6.3 A rated motor current

Other Accessories

Order Code	Description
Motionwiz	Programming Software
Exp-Ground	Fixing shield assembly
USBTODRIVE	USB to RS232/422 converter with cable

Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374.



AEROSPACE

Key Markets

- Aircraft engines
- Business & general aviation
- Commercial transports
- Land-based weapons systems
- Military aircraft
- Missiles & launch vehicles
- Regional transports
- Unmanned aerial vehicles

Key Products

- Flight control systems & components
- Fluid conveyance systems
- Fluid metering delivery & atomization devices
- Fuel systems & components
- Hydraulic systems & components
- Inert nitrogen generating systems
- Pneumatic systems & components
- Wheels & brakes



CLIMATE CONTROL

Key Markets

- Agriculture
- Air conditioning
- Food, beverage & dairy
- Life sciences & medical
- Precision cooling
- Processing
- Transportation

Key Products

- CO² controls
- Electronic controllers
- Filter driers
- Hand shut-off valves
- Hose & fittings
- Pressure regulating valves
- Refrigerant distributors
- Safety relief valves
- Solenoid valves
- Thermostatic expansion valves



ELECTROMECHANICAL

Key Markets

- Aerospace
- Factory automation
- Food & beverage
- Life science & medical
- Machine tools
- Packaging machinery
- Paper machinery
- Plastics machinery & converting
- Primary metals
- Semiconductor & electronics
- Textile
- Wire & cable

Key Products

- AC/DC drives & systems
- Electric actuators
- Controllers
- Gantry robots
- Gearheads
- Human machine interfaces
- Industrial PCs
- Inverters
- Linear motors, slides and stages
- Precision stages
- Stepper motors
- Servo motors, drives & controls
- Structural extrusions



FILTRATION

Key Markets

- Food & beverage
- Industrial machinery
- Life sciences
- Marine
- Mobile equipment
- Oil & gas
- Power generation
- Process
- Transportation

Key Products

- Analytical gas generators
- Compressed air & gas filters
- Condition monitoring
- Engine air, fuel & oil filtration & systems
- Hydraulic, lubrication & coolant filters
- Process, chemical, water & microfiltration filters
- Nitrogen, hydrogen & zero air generators



FLUID & GAS HANDLING

Key Markets

- Aerospace
- Agriculture
- Bulk chemical handling
- Construction machinery
- Food & beverage
- Fuel & gas delivery
- Industrial machinery
- Mobile
- Oil & gas
- Transportation
- Welding

Key Products

- Brass fittings & valves
- Diagnostic equipment
- Fluid conveyance systems
- Industrial hose
- PTFE & PFA hose, tubing & plastic fittings
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects



HYDRAULICS

Key Markets

- Aerospace
- Aerial lift
- Agriculture
- Construction machinery
- Forestry
- Industrial machinery
- Mining
- Oil & gas
- Power generation & energy
- Truck hydraulics

Key Products

- Diagnostic equipment
- Hydraulic cylinders & accumulators
- Hydraulic motors & pumps
- Hydraulic systems
- Hydraulic valves & controls
- Power take-offs
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects



PNEUMATICS

Key Markets

- Aerospace
- Conveyor & material handling
- Factory automation
- Food & beverage
- Life science & medical
- Machine tools
- Packaging machinery
- Transportation & automotive

Key Products

- Air preparation
- Compact cylinders
- Field bus valve systems
- Grippers
- Guided cylinders
- Manifolds
- Miniature fluidics
- Pneumatic accessories
- Pneumatic actuators & grippers
- Pneumatic valves and controls
- Rodless cylinders
- Rotary actuators
- Tie rod cylinders
- Vacuum generators, cups & sensors



PROCESS CONTROL

Key Markets

- Chemical & refining
- Food, beverage & dairy
- Medical & dental
- Microelectronics
- Oil & gas
- Power generation

Key Products

- Analytical sample conditioning products & systems
- Fluoropolymer chemical delivery fittings, valves & pumps
- High purity gas delivery fittings, valves & regulators
- Instrumentation fittings, valves & regulators
- Medium pressure fittings & valves
- Process control manifolds



SEALING & SHIELDING

Key Markets

- Aerospace
- Chemical processing
- Consumer
- Energy, oil & gas
- Fluid power
- General industrial
- Information technology
- Life sciences
- Military
- Semiconductor
- Telecommunications
- Transportation

Key Products

- Dynamic seals
- Elastomeric o-rings
- EMI shielding
- Extruded & precision-cut, fabricated elastomeric seals
- Homogeneous & inserted elastomeric shapes
- High temperature metal seals
- Metal & plastic retained composite seals
- Thermal management

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192-141211N1

June 2012

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