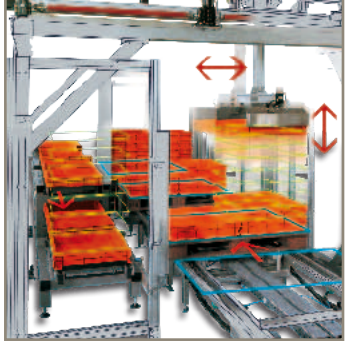
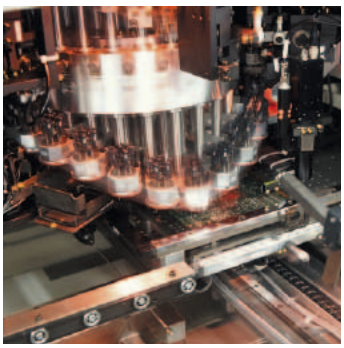
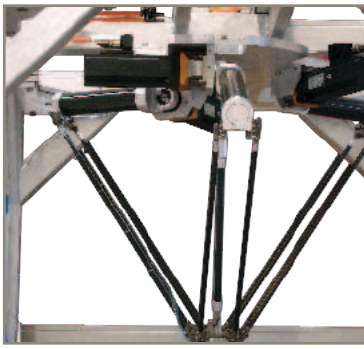


aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Single Cable Servo Drive System

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



Parker

ENGINEERING YOUR SUCCESS.

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Single Cable Servo Drive System

Parker Hannifin

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

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Electromechanical Worldwide Manufacturing Locations

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

Asia
Wuxi, China
Chennai, India

North America
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Irwin, Pennsylvania
Charlotte, North Carolina
New Ulm, Minnesota

Offenburg, Germany

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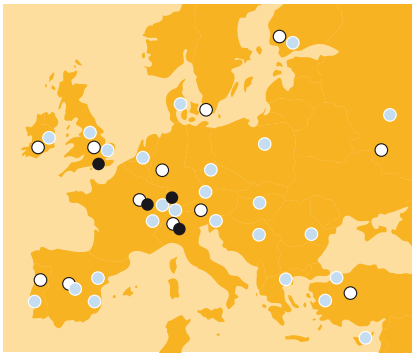
Parker provides sales assistance and local technical support through a network of dedicated sales teams and authorized technical distributors throughout Europe.

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



Electromechanical 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	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

SME Single Cable Servo Motors

Motor Type	Permanent magnets synchronous servomotor
Rotor Design	Rotor with surface rare earth magnets
Power Range	0.2...9.4 kW
Torque Range	0.5...60 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:

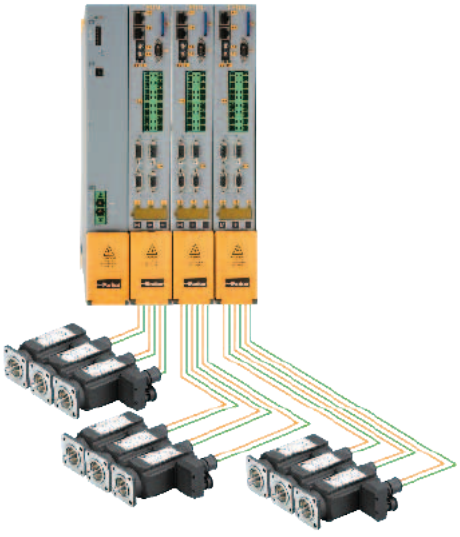
Quick and simple wiring
With less cables and connectors, machine setup is much more straight forward.

Reduced wiring costs
The opportunity of having a single cable, offers machine builders significative 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

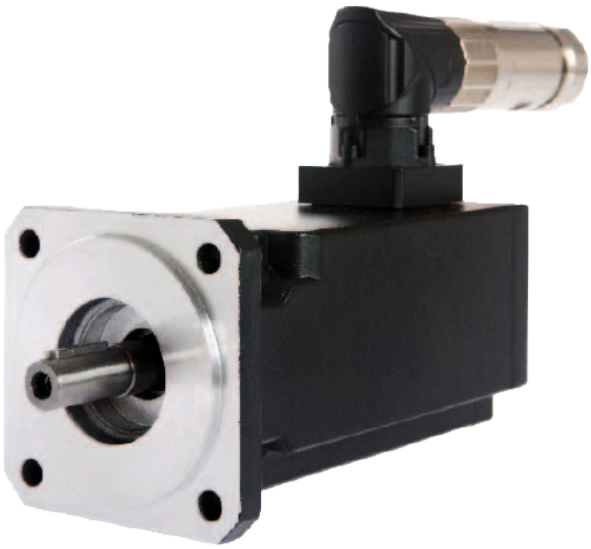
The SME Series of highly-dynamic brushless servo motors have been design to combine the cuttingedge technology of Parker Hannifin products with extremely high performance.
Thanks to the innovative “salient pole” technology, the motor’s dimensions are considerably reduced with significant advantages in 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 encapslutation 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 detachement 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...9.4 kW
Torque Range	0.5...60 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) Torque	Inertia		Ke (2) (3)	Kt (2) (3)
		Torque	Current	Torque	Speed	Current		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	2.48
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
SM_170 11 35	170	35	13.3	30	1100	11.4	111	2900	4500	1.52	2.6
SM_170 16 35			20	28	1600	11				1.03	1.8
SM_170 30 35			29	26	2500					0.69	1.2

* Data referred only to Single Cable Servo Motor System
(1) Data referred to motor mounted on a steel flange in horizontal position with resolver and without brake. Stall torques refer to motor turning at 100 min^{-1}
(2) Data measured at 20 °C. When "hot" consider -0.09 %/K derating
(3) Manufacturing tolerance ±10 %

400 VAC power supply

Model	Size	Stall (1)		Nominal (1)			Peak (1) Torque	Inertia		Ke (2) (3)	Kt (2) (3)
		Torque	Current	Torque	Speed	Current		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_142 10 17		17 (21)	3.5	16.4	1000	3.4	54			2.83	4.90
SM_142 30 17			9.6	14.0	3000	8.1				1.02	1.77
SM_142 56 17			15.8	10.6	5600	9.8				0.62	1.08
SM_170 10 35	170	35	6.8	31	1000	6.1	111	2900	4500	2.95	5.1
SM_170 20 35			13.3	27	2000	10.3				1.52	2.6
SM_170 27 35			18	22	2700	11				1.15	2.0
SM_170 30 35			20	19	3000					1.03	1.8
SM_170 10 60		60	11.7	53	1000	10.4	190	5800	7400	2.95	5.1
SM_170 20 60			22.6	44	2000	16.6				1.53	2.7
SM_170 30 60			35.7	30	3000	17.9				0.97	1.7

(1) Data referred to motor mounted on a steel flange in horizontal position with resolver and without brake. Stall torques refer to motor turning at 100 min^{-1}
(2) Data measured at 20 °C. When "hot" consider -0.09 %/K derating
(3) Manufacturing tolerance data ±10 %

STANDARDS

In compliance with: 2006/95 EC

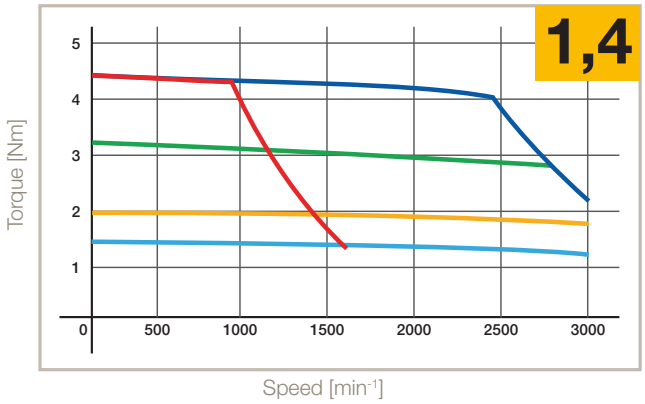
- EN60034-1
- EN60034-5
- EN60034-5/A1

Marked CE **Marked** c UL us (except SM_170)

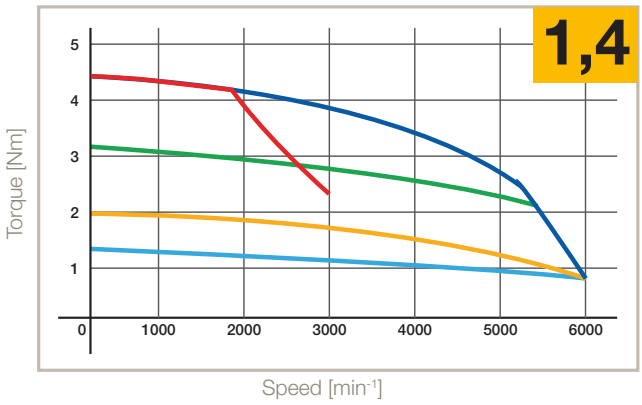
Speed Torque Curves

SME60

1600 min^{-1} 230 V - 3000 min^{-1} 400 V

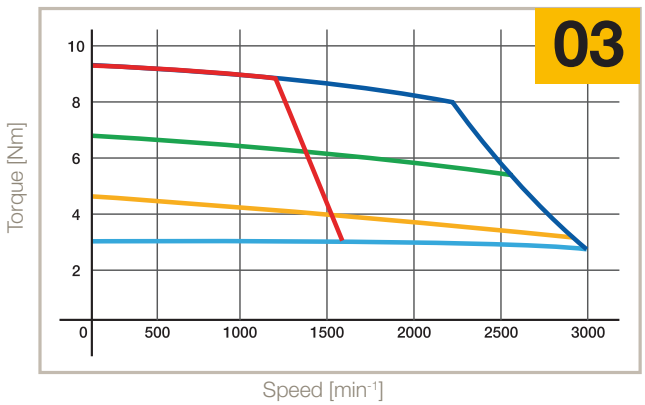


3000 min^{-1} 230 V - 6000 min^{-1} 400 V

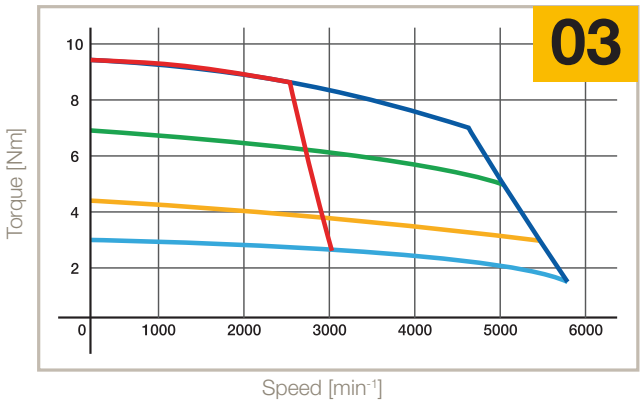


SME82

1600 min^{-1} 230 V - 3000 min^{-1} 400 V

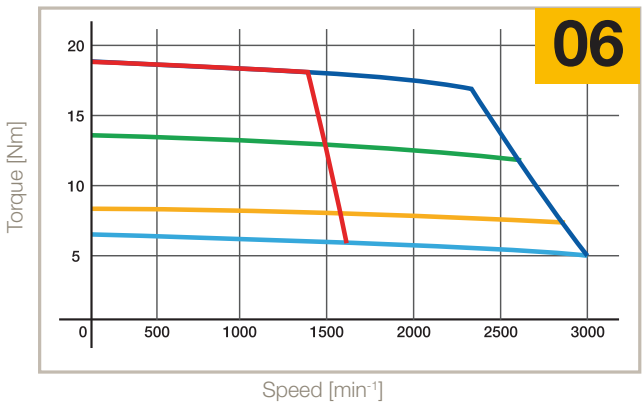


3000 min^{-1} 230 V - 5600 min^{-1} 400 V

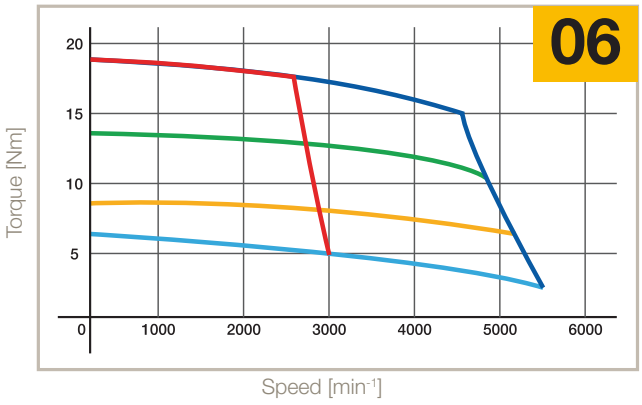


SME100

1600 min^{-1} 230 V - 3000 min^{-1} 400 V



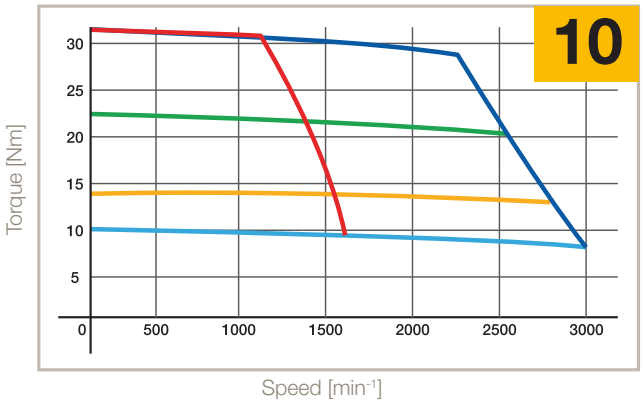
3000 min^{-1} 230 V - 5600 min^{-1} 400 V



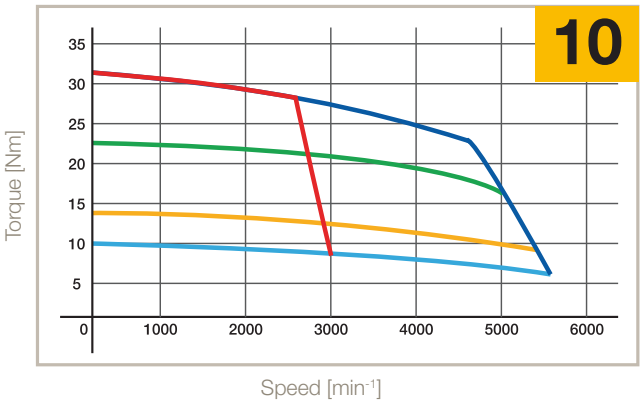
S1 65 K, ΔT
S3 10 %, 5 min, 400 V
S3 50 %, 5 min
S3 10 %, 5 min, 230 V
S3 50 %, 5 min
S3 20 %, 5 min

SME115

1600 min^{-1} 230 V - 3000 min^{-1} 400 V

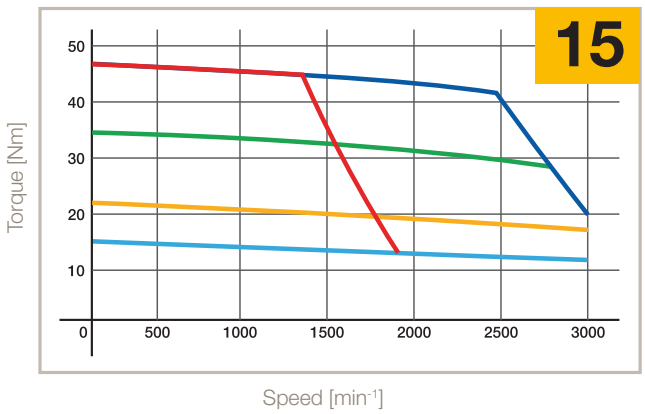


3000 min^{-1} 230 V - 5600 min^{-1} 400 V

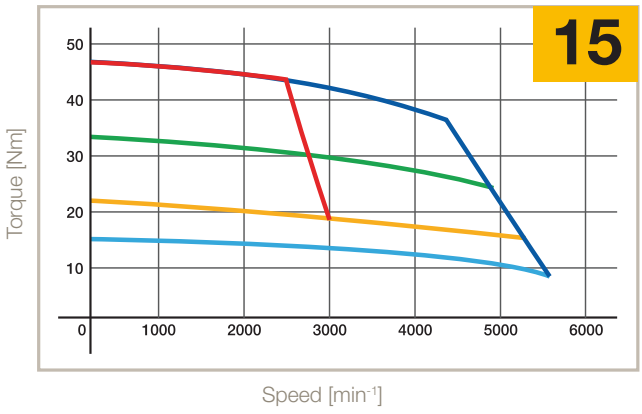


SME142

1800 min^{-1} 230 V - 3000 min^{-1} 400 V

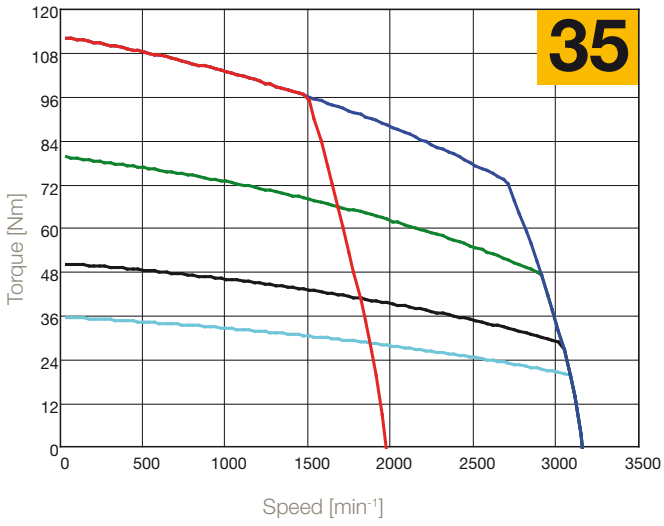


3000 min^{-1} 230 V - 5600 min^{-1} 400 V

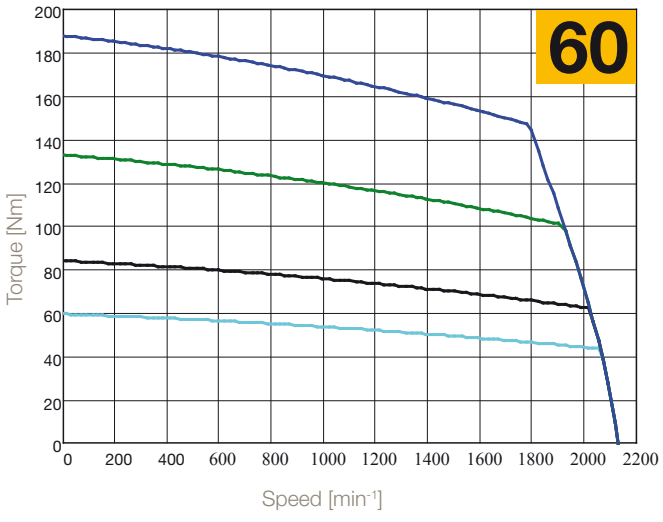


SME170

1600 min^{-1} 230 V - 3000 min^{-1} 400 V

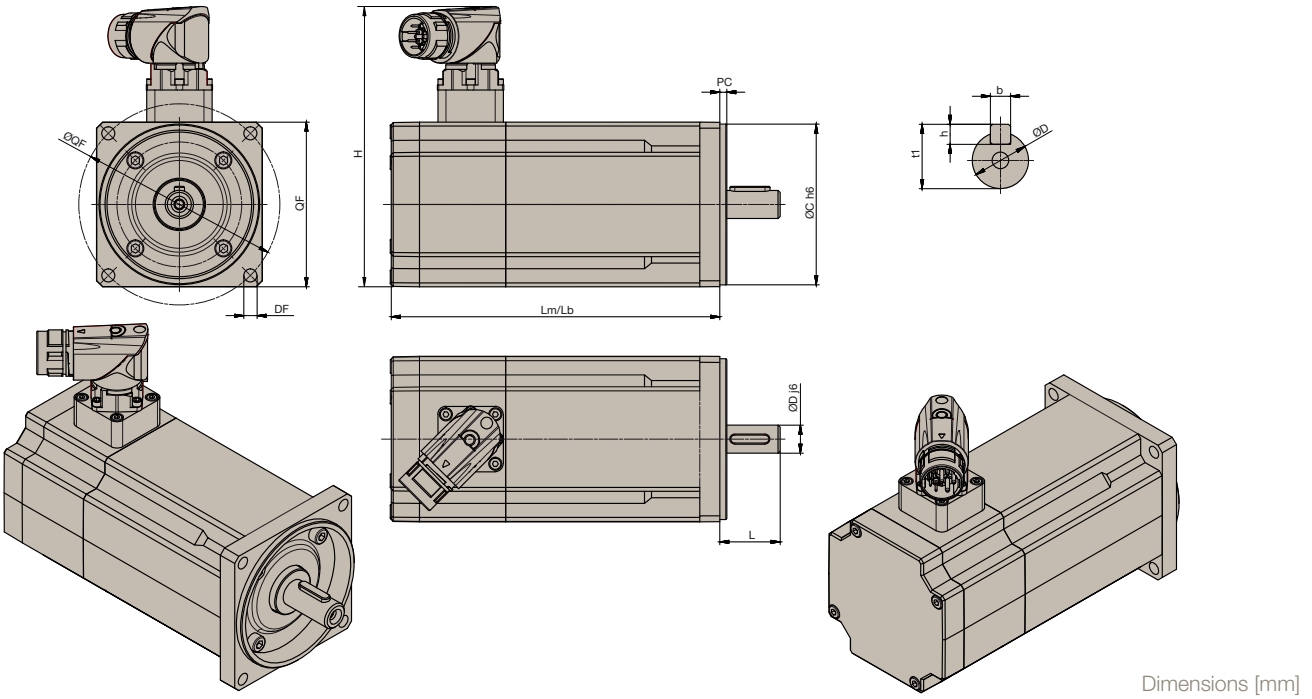


2000 min^{-1} 400 V



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	ØQF	DF	PC	QF	Order Code QF
SME	60	0,55	91.2 137	1 1.3	9x20 11x23	3x3 4x4	10.2 12.5	- M4x10	118 Layout 2I	40	63	5.5	2.5	60	8
										60	75	6	2.5	70	5
		1,4	129.5 161	1.5 1.8	9x20 11x23	3x3 4x4	10.2 12.5	- M4x10		40	63	5.5	2.5	60	8
										60	75	6	2.5	70	5
	82	03	159 202	3.6 4.3	11x23[2] 14x30	4x4 5x5	12.5 16	M4x10 M5x12.5	140 Layout 2I	60	75	6	2.5	70	7
			163.5 206.5	3.6 4.3	11x23[2] 14x30 19x40[1]	4x4 5x5 6x6	12.5 16 21.5	M4x10 M5x12.5 M6x16		80	100	6.5	3.5	82	8
										95	115	9	3.5	100	5
	100	06	191.5 238.5	4.7 5.3	19x40 24x50	6x6 8x7	21.5 27	M6x16 M8x19	157.5 Layout 2I	80	100	7	3.5	100	8
										95	115	9	3.5	100	5
	115	10	220 265	7.7 9.7	19x40 24x50 28x60	6x6 8x7 8x7	21.5 27 31	M6x16 M8x19 M10x22	157.5 Layout 2I	95	115	9	3.5	115	9
										95	130	9	3.5	115	8
										110	130	9	3.5	130	7
										130	165	11	3.5	145	5
	142	15	243 293	13 16	19x40 24x50 28x60	6x6 8x7 8x7	21.5 27 31	M6x16 M8x19 M10x22	185 Layout 2I	130	165	11	3.5	142	5
	170	35	306	30	38x80	10x8	41	M12x32	212.3 Layout 2I	180	215	14	4	170	5
		60	409	50	38x80	10x8	41	M12x32	212.3 Layout 2I	180	215	14	4	170	5

LM: Motor's length without brake and with resolver
LB: Motor's length with brake and resolver
DxL: Shaft diameter x shaft lenght
bxh: Key dimension
t1: Overall shaft height
VxZ: Shaft hole depth

C: Centering
H: Height
DF: Fixing holes
ØQF: Interaxis hole
QF: Mounting flange
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 ±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 [kgmm²]
SME60	24	0.34	2.2	31.5	0.3	12.5
SME82	24	0.5	5	43	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
SME170	24	7.67	70	-	2	1600

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

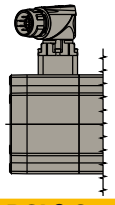
Code	S5	S6
Type	Optical	
Turn	Single	Multi
Resolution per revolutions	18 bits	
Available memory space	8192 bytes	
Positions per revolutions	262 144	
Distinguishable revolutions	1	4096
System accuracy differential	±40”	
Power supply	7...12 VDC	
Max. speed [min^{-1}]	6000	
Temperature	-20°C...+105°C	
Safety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

Medium Inertia

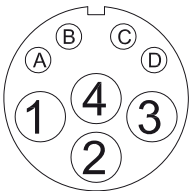
Where the application needs different values of inertia, SME can provide a standard adder.

Motor	Added inertia [kgmm²]	Added lenght [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
SME170	consult Parker	consult Parker	consult Parker

Layout and Connectors



	Hiperface DSL® Connector (IZ)
SME60	Yes
SME82	Yes
SME100	Yes
SME115	Yes
SME142	Yes
SME170	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…
SME170 11 35	1100	13.3	TPD-M15…
SME170 16 35	1600	20	TPD-M30…
SME170 25 35	2500	29	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..
SME170 10 35	1000	6.8	TPD-M08..
SME170 20 35	2000	13.3	TPD-M15..
SME170 27 35	2700	18	TPD-M30..
SME170 30 35	3000	20	TPD-M30..
SME170 10 60	1000	11.7	TPD-M15..
SME170 20 60	2000	22.6	TPD-M30..
SME170 30 60	3000	35.7	n.a.

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 35…60 Nm
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
	38	38x80 mm for size 170
	A*	Special shaft under request
8	**Key Shaft option**	
	empty field	Shaft with key
	S	Shaft without key
9	**Layout - Connectors (mandatory field)**	
	IZ	Single connector rotatable (Feedback included)
10	**Female connectors option**	
	empty field	With Female / flying connectors
	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**	
	empty field	Standard Resolver
14	**Option Inertia**	
	empty field	Standard Inertia
	M	Medium Inertia available without selected A in field 2
15	**Special Option**	
	empty field	No Special Option
	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

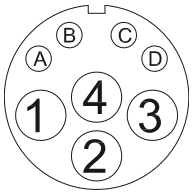
Motor Cable for Hiperface DSL®

	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 mm²
	2,5x	2,5 mm²
	4x, 6x, 10x, 25x	4 mm², 6 mm², 10 mm², 25 mm²
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

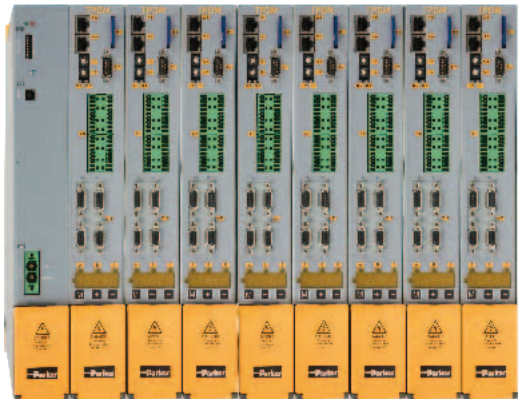


Triple Axis Servo Drive - TPD-M

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, makings 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		3 axis	
	Unit	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		2 axis			1 axis	
	Unit	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	
	• via USB port
Networks and Bus Systems	

	• CANopen, 20...1000kbit/s, SDO1, PDO1...PDO4
	• EtherCAT, 100Mbit/s, 1 cycle time
	• Via Gateway
	  • Profibus
	  • DeviceNet

Inputs / Outputs	

	• 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
	  • 3 digital input 12bit,
	  • 2 incremental encoder input,
	  • 2 incremental encoder output
	• Auxiliary Encoder
	  • 1 in input for each axes
	  • 1 in output

Supported Feedback	
	• Encoder Hiperface DSL®
Programming / Configuration	

	• PicoPLC
	• MotionWiz with Oscilloscope function, real time and debugging features
	• Removable SD card for
	  • Software upgrades
	  • Parameter storage
	  • Application memory

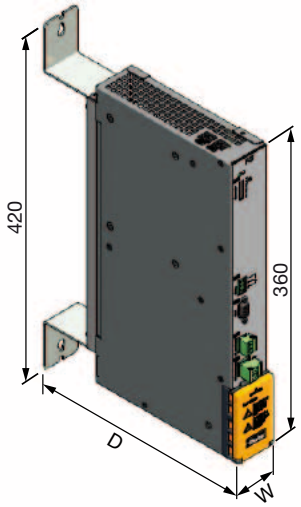
Technology Functions	
	• Torque control • Speed control • Position control • Electronic gearbox • Camming
Safety Functions (STO)	
	• 1 Safety Torque Off circuit for 3 axis module • 2 independent Safety Torque Off circuit for 2 axis module • 1 Safety Torque Off circuit for 1 axis module

Standards & Conformance - EMC Compatibility

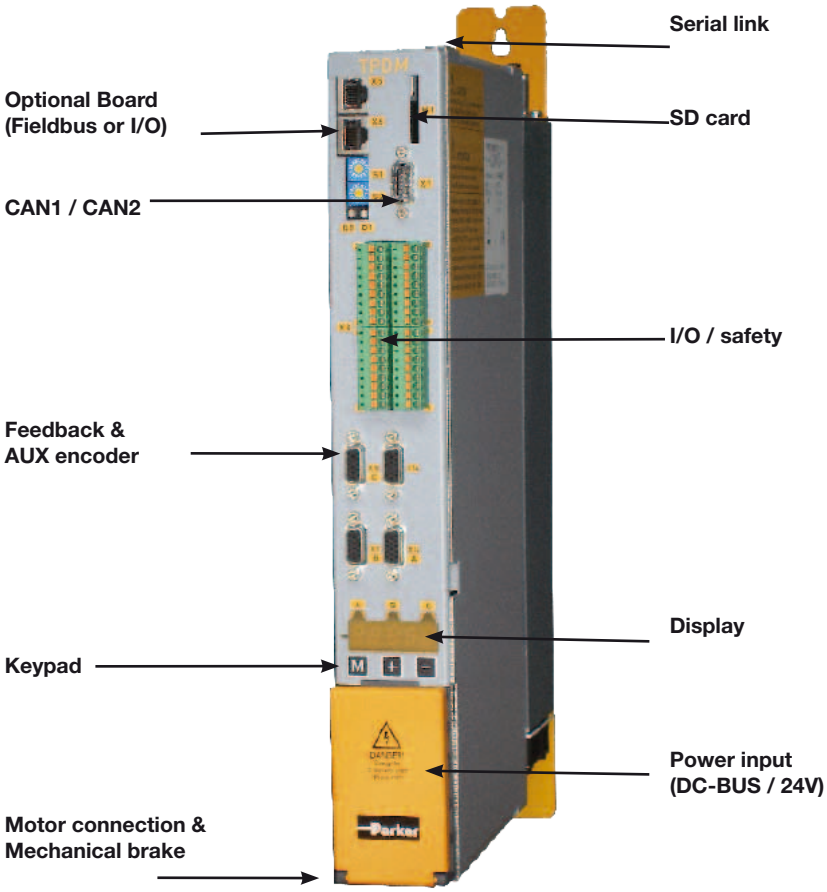
2006/95/EC	Low voltage directive
EN 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 61800-5-1	Adjustable speed electrical power drive systems - safety requirements, thermal and energy
UL508C	(USA) Power Conversion Equipment
2004/108/EC	EMC directive
EN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

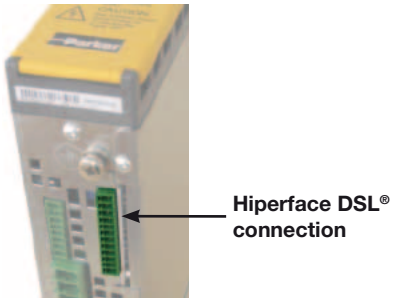
Dimensions

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.

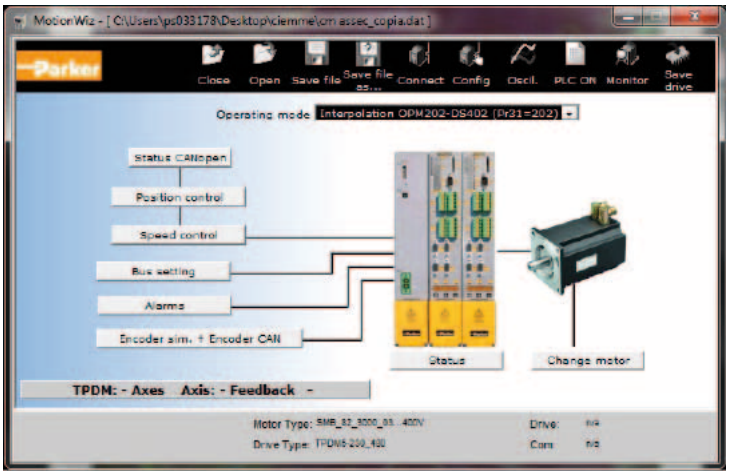
MotionWiz features an intuitive, easy and simple to use Windows® style environment to aid installation, optimisation and diagnostic use.

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.

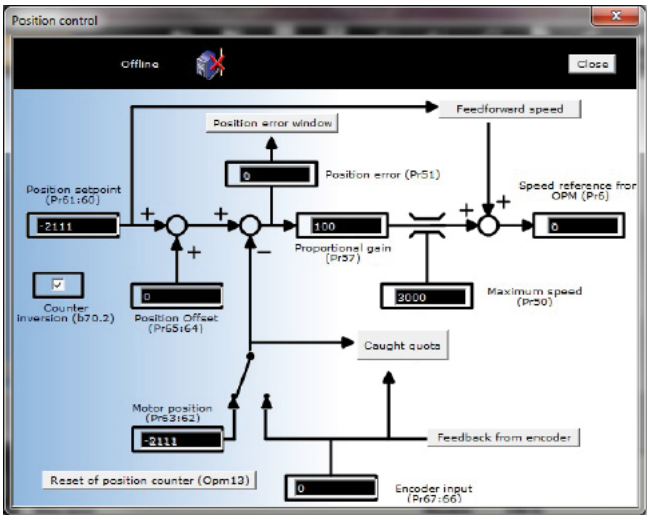
To simplify the configuration of systems with a large number of similar axes but with different motion profiles, MotionWiz allows users to copy the configuration from one application to another.

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

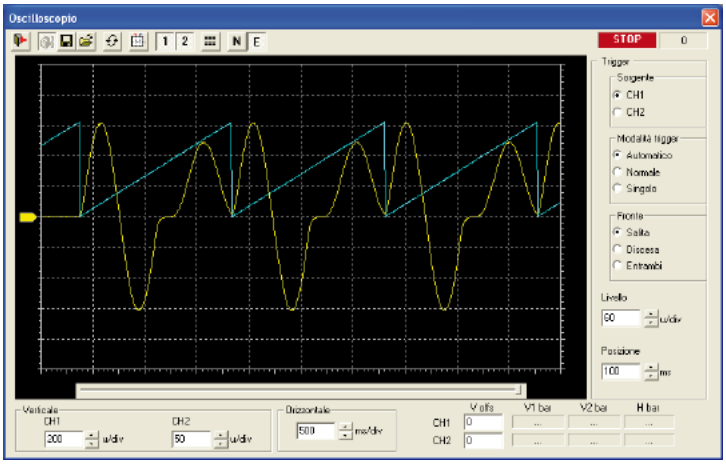
MotionWiz can be downloaded at www.parker.com/eme/tpdm



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

Aftermarket services
Commercial transports
Engines
General & business aviation
Helicopters
Launch vehicles
Military aircraft
Missiles
Power generation
Regional transports
Unmanned aerial vehicles

Key Products

Control systems & actuation products
Engine systems & components
Fluid conveyance systems & components
Fluid metering, delivery & atomization devices
Fuel systems & components
Fuel tank inerting systems
Hydraulic systems & components
Thermal management
Wheels & brakes

Climate Control

Key Markets

Agriculture
Air conditioning
Construction Machinery
Food & beverage
Industrial machinery
Life sciences
Oil & gas
Precision cooling
Process
Refrigeration
Transportation

Key Products

Accumulators
Advanced actuators
CO_2 controls
Electronic controllers
Filter driers
Hand shut-off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves

Electromechanical

Key Markets

Aerospace
Factory automation
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, gantry robots & slides
Electrohydrostatic actuation systems
Electromechanical actuation systems
Human machine interface
Linear motors
Stepper motors, servo motors, drives & controls
Structural extrusions

Filtration

Key Markets

Aerospace
Food & beverage
Industrial plant & equipment
Life sciences
Marine
Mobile equipment
Oil & gas
Power generation & renewable energy
Process
Transportation
Water Purification

Key Products

Analytical gas generators
Compressed air filters & dryers
Engine air, coolant, fuel & oil filtration systems
Fluid condition monitoring systems
Hydraulic & lubrication filters
Hydrogen, nitrogen & zero air generators
Instrumentation filters
Membrane & fiber filters
Microfiltration
Sterile air filtration
Water desalination & purification filters & systems

Fluid & Gas Handling

Key Markets

Aerial lift
Agriculture
Bulk chemical handling
Construction machinery
Food & beverage
Fuel & gas delivery
Industrial machinery
Life sciences
Marine
Mining
Mobile
Oil & gas
Renewable energy
Transportation

Key Products

Check valves
Connectors for low pressure fluid conveyance
Deep sea umbilicals
Diagnostic equipment
Hose couplings
Industrial hose
Mooring systems & power cables
PTFE hose & tubing
Quick couplings
Rubber & thermoplastic hose
Tube fittings & adapters
Tubing & plastic fittings

Hydraulics

Key Markets

Aerial lift
Agriculture
Alternative energy
Construction machinery
Forestry
Industrial machinery
Machine tools
Marine
Material handling
Mining
Oil & gas
Power generation
Refuse vehicles
Renewable energy
Truck hydraulics
Turf equipment

Key Products

Accumulators
Cartridge valves
Electrohydraulic actuators
Human machine interfaces
Hybrid drives
Hydraulic cylinders
Hydraulic motors & pumps
Hydraulic systems
Hydraulic valves & controls
Hydrostatic steering
Integrated hydraulic circuits
Power take-offs
Power units
Rotary actuators
Sensors

Pneumatics

Key Markets

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

Key Products

Air preparation
Brass fittings & valves
Manifolds
Pneumatic accessories
Pneumatic actuators & grippers
Pneumatic valves & controls
Quick disconnects
Rotary actuators
Rubber & thermoplastic hose & couplings
Structural extrusions
Thermoplastic tubing & fittings
Vacuum generators, cups & sensors

Process Control

Key Markets

Alternative fuels
Biopharmaceuticals
Chemical & refining
Food & beverage
Marine & shipbuilding
Medical & dental
Microelectronics
Nuclear Power
Offshore oil exploration
Oil & gas
Pharmaceuticals
Power generation
Pulp & paper
Steel
Water/wastewater

Key Products

Analytical Instruments
Analytical sample conditioning products & systems
Chemical injection fittings & valves
Fluoropolymer chemical delivery fittings, valves & pumps
High purity gas delivery fittings, valves, regulators & digital flow controllers
Industrial mass flow meters/ controllers
Permanent no-weld tube fittings
Precision industrial regulators & flow controllers
Process control double block & bleeds
Process control fittings, valves, regulators & manifold valves

Sealing & Shielding

Key Markets

Aerospace
Chemical processing
Consumer
Fluid power
General industrial
Information technology
Life sciences
Microelectronics
Military
Oil & gas
Power generation
Renewable energy
Telecommunications
Transportation

Key Products

Dynamic seals
Elastomeric o-rings
Electro-medical instrument design & assembly
EMI shielding
Extruded & precision-cut, fabricated elastomeric seals
High temperature metal seals
Homogeneous & inserted elastomeric shapes
Medical device fabrication & assembly
Metal & plastic retained composite seals
Shielded optical windows
Silicone tubing & extrusions
Thermal management
Vibration dampening

Parker Worldwide

Europe, Middle East, Africa

AE – United Arab Emirates, Dubai
Tel: +971 4 8127100
parker.me@parker.com

AT – Austria, Wiener Neustadt
Tel: +43 (0)2622 23501-0
parker.austria@parker.com

AT – Eastern Europe,
Wiener Neustadt
Tel: +43 (0)2622 23501 900
parker.easteurope@parker.com

AZ – Azerbaijan, Baku
Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/LU – Belgium, Nivelles
Tel: +32 (0)67 280 900
parker.belgium@parker.com

BG – Bulgaria, Sofia
Tel: +359 2 980 1344
parker.bulgaria@parker.com

BY – Belarus, Minsk
Tel: +375 17 209 9399
parker.belarus@parker.com

CH – Switzerland, Etoy
Tel: +41 (0)21 821 87 00
parker.switzerland@parker.com

CZ – Czech Republic, Klecany
Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst
Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup
Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid
Tel: +34 902 330 001
parker.spain@parker.com

FI – Finland, Vantaa
Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve
Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Athens
Tel: +30 210 933 6450
parker.greece@parker.com

HU – Hungary, Budaörs
Tel: +36 23 885 470
parker.hungary@parker.com

IE – Ireland, Dublin
Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IT – Italy, Corsico (MI)
Tel: +39 02 45 19 21
parker.italy@parker.com

KZ – Kazakhstan, Almaty
Tel: +7 7273 561 000
parker.easteurope@parker.com

NL – The Netherlands, Oldenzaal
Tel: +31 (0)541 585 000
parker.nl@parker.com

NO – Norway, Asker
Tel: +47 66 75 34 00
parker.norway@parker.com

PL – Poland, Warsaw
Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal, Leca da Palmeira
Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest
Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow
Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Spånga
Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

SK – Slovakia, Banská Bystrica
Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto
Tel: +386 7 337 6650
parker.slovenia@parker.com

TR – Turkey, Istanbul
Tel: +90 216 4997081
parker.turkey@parker.com

UA – Ukraine, Kiev
Tel +380 44 494 2731
parker.ukraine@parker.com

UK – United Kingdom, Warwick
Tel: +44 (0)1926 317 878
parker.uk@parker.com

ZA – South Africa, Kempton Park
Tel: +27 (0)11 961 0700
parker.southafrica@parker.com

North America

CA – Canada, Milton, Ontario
Tel: +1 905 693 3000

US – USA, Cleveland
Tel: +1 216 896 3000

Asia Pacific

AU – Australia, Castle Hill
Tel: +61 (0)2-9634 7777

CN – China, Shanghai
Tel: +86 21 2899 5000

HK – Hong Kong
Tel: +852 2428 8008

IN – India, Mumbai
Tel: +91 22 6513 7081-85

JP – Japan, Tokyo
Tel: +81 (0)3 6408 3901

KR – South Korea, Seoul
Tel: +82 2 559 0400

MY – Malaysia, Shah Alam
Tel: +60 3 7849 0800

NZ – New Zealand, Mt Wellington
Tel: +64 9 574 1744

SG – Singapore
Tel: +65 6887 6300

TH – Thailand, Bangkok
Tel: +662 186 7000-99

TW – Taiwan, Taipei
Tel: +886 2 2298 8987

South America

AR – Argentina, Buenos Aires
Tel: +54 3327 44 4129

BR – Brazil, Sao Jose dos Campos
Tel: +55 800 727 5374

CL – Chile, Santiago
Tel: +56 2 623 1216

MX – Mexico, Toluca
Tel: +52 72 2275 4200

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EMEA Product Information Centre
Free phone: 00 800 27 27 5374
(from AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, IE, IL, IS, IT, LU, MT, NL, NO, PL, PT, RU, SE, SK, UK, ZA)
US Product Information Centre
Toll-free number: 1-800-27 27 537
www.parker.com

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