



HIGH TORQUE SERIES DL4 SERVO SYSTEMS - WITH AIR AND LIQUID COOLING

EN





- Weaving
- Knitting
- Finishing

Extrusion

Handling

Foils

Injection molding

Blow forming

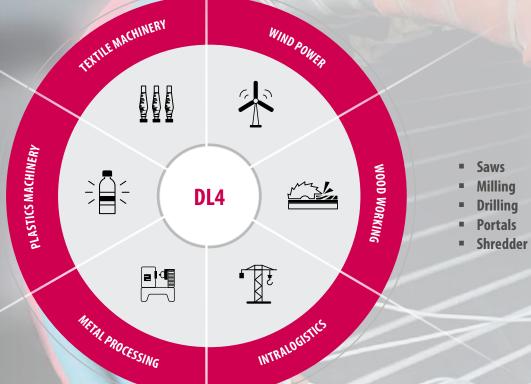
- Pitch systems
- Yaw systems
- Auxiliary equipment

Stacker cranes

Tower cranes

Transportation

Lifts and escalators



- Bending
- Cutting
- Grinding
- Lathes
- Milling
- Die casting
- Pressing
- Drilling

DL4 motors stand for the highest dynamics and maximum flexibility in the connection of the machine design. The use of rare earth permanaent magnets ensures a high energy density — the design of the magnetic circuit for sinusoidal voltages combines low ripple torque with high overload without danger of demagnetization.





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WATER COOLED VERSION DL4-LC

The new water-cooled variant uses optimal thermal conditions and thus combines the properties of the highest power density, the best overload with high reserves. This results into about 25% higher torque compared to the forced ventilated versions.



SERVO SYSTEMS

In combination with the servo inverter series KEB COMBIVERT F6, as well as assembled encoder / motor cables, powerful Drive systems are created, that perfectly match optimal properties of speed and torque charasteristics, as well as provide high efficiency and easy startup.

More details of the DRIVE CONTROLLER portfolio are described in the catalogue COMBIVERT F6.



FEATURES

AUTOMATION & DRIVES SOLUTIONS

KEB

MOTOR STANDARDS

Design	IM B5
	according to CEI EN 60034-7 (1993)
Protection	IP 54
	according to CEI EN 60034-5-(2001)
Shaft	with keyway
	balancing with half key CEI 2-23 (1993)
	special shaft (on request)
Encoder systems	Resolver
	Hiperface SRS50 - 16 bit
	Hiperface SRM50 - 16 bit /Multiturn - 12 bit
	without encoder (SCL-operation)
Thermal design	ISO KI. F
	/ dTmax=105K, according to CEI -EN 60034-1 (2000)
Winding	ISO KI. H — according to CEI 2-3 (2000)
Nominal voltage	400 V
No. of poles	8
Thermal protection	nPT 1000
Cooling	CS = self cooled version - IC 410
	motor without servo-ventilation
	$CF = forced\ ventilation - IC\ 416$
	servo-ventilated motor, according to CEI EN 60034-6-(1997)
	1 ph. 230V AC - connection on clipboard in the terminal box
	LC = liquid cooled
Bearings	lubricated for life
Operating position	any
Colour	black RAL 9005

MOTOR OPTIONS

Foot/ Flange mounted version IM B3 / IM B35
IP 65 — without ventilation (with shaft seal ring D-side)
without keyway
Grade of balancing: G 2.5 in accordance with ISO 1940-1 (1993)
Safety Resolver
Hiperface SRS50 - 16 bit - safety
Hiperface SRM50 - 16 bit /Multiturn - 12 bit- safety
Holding brake 24V DC
Permanent magnet (SE, SF)
Spring applied (SG)
Additional inertia

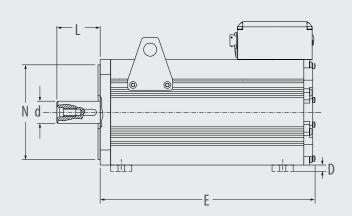
ACCESSORIES

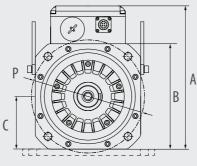
Encoder cables
Resolver 00S6L50 - 10xx (xx = 1 ... 50 m)Hiperface 00S6L55 - 10xx (xx = 1 ... 50 m)Connection: Speedtec plug M23

Motor cable 2.5mm²

00S4619 - 00xx (xx = 1 ... 50 m) Connection: Speedtec plug M23 (for SE/ ... /CS) Terminal box (from SE/.../CF)

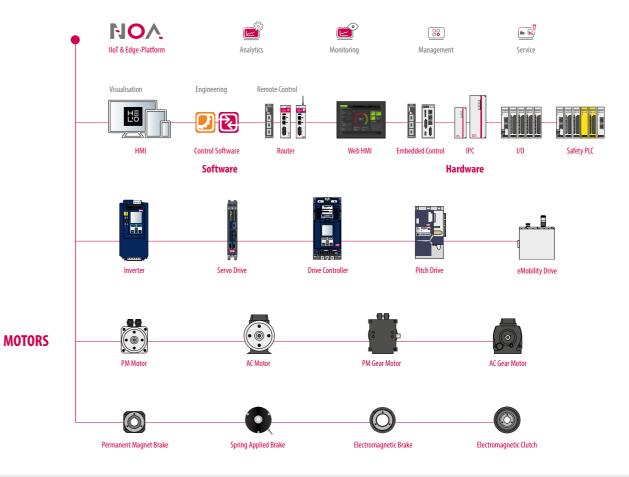
Motor cable 4mm² (on request)





SYSTEM SOLUTIONS - EVERYTHING FROM A SINGLE SOURCE

The DL4 servo motors extend the extensive product portfolio of KEB Automation. Your advantage: From HMIs and controls to frequency converters and motors to brakes, you will find ideally coordinated components at KEB. Realize your individual requirements with an attractive price-performance ratio, central contacts and optimized drive performance.



PART NUMBER SERVO MOTORS

11 DIGIT CODE DL4



Configuration Code

Specific versions and samples of motors are described with a configuration.

Part number is 00SM000-CMAT -followed by an EXECUTION-CODE for DL4. f.e: SE - L2 CS SP15 FKN BRN ENC01 OP00



TECHNICAL DATA **DL 4**

AIR COOLED VERSION

		MOTOR													BRAKE		DIMENSIONS										
	LENGTH	COOLING	T_{d0}	T _N	P _N	T _{max}	I _{d0}	I _N	l max	n _N	J	J _z	m	T _{NBr}	J _{br}	m _{Br}	Α	В	C	D	E _{without brake}	E with brake	ø d	L	ø N	ø P	
SIZE	LEN	9	[Nm]	[Nm]	[kW]	[Nm]	[A]	[A]	[A]	[min ⁻¹]	[kgcm²]	[kgcm²]	[kg]	[Nm]	[kgcm²]	[kg]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
	12	CS	12	10.2/10/9.8	1.6/2.1/3.1	23.8/23.5/23.3	3.7 / 4.9 / 7.2	3.4/4.4/6.2	8.6 / 11 / 16		8.52		11.9				194				245	295					
	L2	CF	15.4	14.6 / 14 / 12.6	2.3/2.9/4	28.5 / 28.2 / 28	5/6.5/9.4	4.9 / 6.1 / 8	10.3 / 13.2 / 19.2		0.32		14				224				340	390		50		ı	
	L4	CS	22	20.5 / 20 /w 16.5	3.2/4.2/5.2	44.3 / 45.9 / 45.9	6.6/9/13.4	6.4/8.5/10.3	14.9 / 21.1 / 30.9	1500/2000/3000	15.1		16.6				194				300	350	24 _{j6}			ı	
SE	L4	CF	31	29/28/24	4.6 / 5.9 / 7.5	53.2/55/55	9.3 / 12.7 / 18.6	9/11.9/15	17.9 / 25.3 / 37.1		15.1	14**	19.1	32	5.9	2.7(CS)	224	142/158*	80	9	395	445	SW: 28,	SW: 60	130.,	165	
	16	CS	30	27.5 / 25.6 / 20	4.3 / 5.4 / 6.3	68.2 / 69.6 / 68.8	9.2 / 12.4 / 18.2	8.8 / 11 / 12.5	23.6/32.4/46.4		21.7	14	21.3	32	3.9	3.2(CF)	194	142/130	00	9	355	405	j6		130 _{j6}	103	
	L6	CF	42	39/37.5/33	6.1 / 7.9 / 10.4	81.9 / 83.5 / 82.6	12.9 / 17.4 / 25.3	12.5 / 16.1 / 20.6	28.3 / 38.8 / 55.7		21.7		24.3				224				450	500				ı	
	L8	CS	39	33.5 / 30.4 / 22.2	5.3 / 6.4 / 7	91.7	12 / 15.9 / 23.5	10.8 / 12.9 / 13.9	32 / 42.2 / 61.8		28.27		26				194				410	460	20	60		ı	
	LO	CF	54	49 / 47 / 39	7.7 / 9.8 / 12.3	100.1	16.8 / 22.1 / 32.5	15.8 / 20 / 24.3	38.4/50.6/74.2		20.27		29.5				224				505	555	28 _{j6}	00		<u> </u>	
_	L2	CS	33	31.5 / 30.5 / 29.5	3.3 / 6.4 / 9.3	82.3 / 82 / 82.2	6.7 / 14.8 / 20.2	6.7 / 14.3 / 18.8	18.4 / 40.4 / 55.1	1000/2000/3000	49	40	30				272				259	379				ı	
	LZ	CF	45	42.7 / 42 / 43	4.5 / 8.8 / 13.5	93.5 / 93.1 / 93.4	9.3 / 20.5 / 27.9	9.1 / 19.7 / 27.4	21.9 / 48.1 / 65.6		47		37				296				353	473				1	
	L4	CS	60	56/51/44	5.9 / 10.7 / 13.8	154.3 / 154 / 154.6	13.6 / 25.6 / 40.9	13.1 / 22.4 / 30.9	37.9 / 71 / 114		89		43				272				333	453				ı	
SF	L4	CF	89	87/85/80	9.1 / 17.8 / 25.1	203.4 / 203.6 / 204.5	20.2 / 37.9 / 60.7	20.4 / 37.3 / 56.1	52.4 / 98.3 / 157		50**	50**	49	130	60	11(CS)	296		112	12/20*	428	548	42 _{k6}	82	180.,	215	
31	L6	CS	82	72 / 62 / 53	7.5 / 13 / 16.7	223.6 / 223.1 / 223.3	17 / 37.3 / 46.6	15.3 / 29 / 31	49.9 / 110 / 137			30	54	150	00	13(CF)	272			12/20	408	528	SW: 38,,	SW: 80	16	213	
	LO	CF	130	124 / 118 / 111	13 / 24.7 / 34.9	280.1 / 280 / 280.4	26.9 / 59.1 / 73.9	26.4 / 55.2 / 64.9	65.6 / 144 / 180		120		64				296				502	622					
	L8	CS	102	90 / 76.3 / 65	9.4 / 16 / 20.4	271.5 / 270.7 / 271.1	21.7 / 43.5 / 58	19.7 / 33.5 / 38	62.4 / 125 / 166		167		68				272				483	703				ı	
	LO	CF	163	154 / 144 / 137	16.1 / 30.2 / 43	373.5 / 373.5 / 373.8	34.7 / 69.5 / 92.7	33.8 / 63.2 / 80.1	90.2 / 180 / 241		10/		78				296				577	697					
	L2	CS ^(*)	100(153)	93 / 76 / 60	9.7 / 15.9 / 18.8	147.4	21.6 / 40.5 / 54	21.6/33.1/34.8	38.3 / 71.9 / 95.8		224		75]		20/55)	361				340	475				ı	
	LZ	CF	145	143 / 125 / 117	15 / 26.2 / 34.3	267.1	31.3 / 58.7 / 78.3	33.2 / 54.4 / 67.9	69.5 / 130.3 / 173.7		227		89	350	149	39(CS) 43(CF)	389				470	605			1	ı	
	L4	CS ^(*)	182(270)	150 / 113 / 45	15.7 / 23.7 / 14.1	258.8	36.8/73.7/98.2	32.7 / 49.2 / 26.1	63.1 / 126.2 / 168.3		401		109	- 700	לדו	+3(Cl)	361				447	582				ı	
SG		CF	310	290/260/230	30.4 / 54.5 / 67.4	543.9 / 558.6 / 526.3	62.8 / 127.3 / 161.9	63.1 / 110.2 / 133.5	132.6 / 265.2 / 342.2	1000/2000/2800	401		126				389	264/292*	132/146*	18/14*	577	712	48 _{k6}	110	250,,	300	
30	L6	CS ^(*)	270(400)	205 / 115 / 0	21.5 / 24.1 / 0	386/386/378.4	58.3 / 97.2 / 143	47.6 / 44.5 / 0	100.4 / 167.3 / 251		577		143				361	204/292 132/	132/ 140	10/ 14	554	689		110	250 _{j6}	300	
	LU	CF	440	395/350/300	41.4 / 73.3 / 88	736.8 / 736.8 / 657.9	95 / 158.3 / 237.5	91.7 / 135.5 / 174.2	191.6 / 319.4 / 427.8				164		205	40(CS) 44(CF)	389				684	819				ı	
	L8	CS ^(*)	340(493)	270 / 130 / 0	28.3 / 27.2 / 0	464.9 / 464.9 / 455.8	68.8 / 137.7 / 183.5	58.8 / 56.6 / 0	113.4 / 226.7 / 302.3		753		177	700	203		361				661	796				ı	
	LO	CF	580	530 / 470 / 320	55.5 / 98.4 / 93.8	964.9 / 833.3 / 771.9	117.4 / 239.3 / 313.1	115.4 / 204.7 / 185.8	235.3 / 406.4 / 501.9		133		203		İ		389				791	926					

(*) Data for S3-operation 40%- 1min. CS = self cooled CF = forced ventilation

** Option: Additional Inertia

* Motor version CF

SW: special shaft

LIQUID COOLED VERSION

			MOTOR											BRAKE		DIMENSIONS												
SIZE	LENGTH	OLING	T _{d0}	T_{N}	P _N	T _{max}	I _{d0}	I _N	l _{max}	n _N	JL	Q	m	T _{NBr}	J _{br}	m _{Br}	A	В	C	D	E without brake	E with brake	ø d	L	øN	ø P		
		Ö	[Nm]	[Nm]	[KW]	[Nm]	[A]	[A]	[A]	[min ⁻¹]	[kgcm²]	[L/min]	[kg]	[Nm]	[kgcm²]	[kg]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		
	L2			167	17.4		47	48	85	1000		224 6	83	350	149	39(CS) 43(CF)	365											
			185	157	29.6	290	82	79	149	1800	224										413	548						
				145	39.5		132	116	227	2600									132				48 _{k6}					
	L4		_	350	36.7	590	97	90	168	1000				330									SW: 55 _{k6}					
			385	330	62.2		170	149	288	1800	401	8	115					270			520	655		110	250 _{i6}			
SG		LC		310	84.4		227	187	355	2600										18						300		
				510	53.4		126	118	196	1000																		
	L6		555	480	90.5	810	209	185	327	1800	577	10	147			40(CS)					606	741						
				445	121.2		314	257	505	2600				700	205	44(CF)				-			55 _{k6}					
	L8		770	720	75.4	1100	188	181	287	1000	753	12	180			TT(CI)					709	844						
			735	685	129.1	1100	314	301	501	1800	/33	12									/09	044						



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Automation with Drive

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