

Brushless DC-Servomotors

191 mNm

For combination with
 Gearheads:
 38A, 44/1
 Encoders:
 IE3-1024(L), 40B
 Drive Electronics:
 Speed Controller, Motion Controller

Series 4490 ... B

	4490 H	024 B	036 B	048 B	
1 Nominal voltage	U_N	24	36	48	Volt
2 Terminal resistance, phase-phase	R	0,237	0,445	0,720	Ω
3 Output power ¹⁾	$P_2 \text{ max.}$	201	201	200	W
4 Efficiency	$\eta \text{ max.}$	86	86	86	%
5 No-load speed	n_0	9 550	10 450	11 000	rpm
6 No-load current (with shaft \varnothing 6,0 mm)	I_0	0,554	0,432	0,354	A
7 Stall torque	M_{H1}	2 406	2 637	2 758	mNm
8 Friction torque, static	C_0	3,65	3,65	3,65	mNm
9 Friction torque, dynamic	C_v	$1,0 \cdot 10^{-3}$	$1,0 \cdot 10^{-3}$	$1,0 \cdot 10^{-3}$	mNm/rpm
10 Speed constant	k_n	401	292	231	rpm/V
11 Back-EMF constant	k_E	2,495	3,422	4,335	mV/rpm
12 Torque constant	k_M	23,83	32,68	41,40	mNm/A
13 Current constant	k_I	0,042	0,031	0,024	A/mNm
14 Slope of n-M curve	$\Delta n / \Delta M$	4,0	4,0	4,0	rpm/mNm
15 Terminal inductance, phase-phase	L	76	143	236	μH
16 Mechanical time constant	τ_m	5	5	5	ms
17 Rotor inertia	J	130	130	130	gcm^2
18 Angular acceleration	$\alpha \text{ max.}$	185	203	212	$\cdot 10^3 \text{ rad/s}^2$
19 Thermal resistance	R_{th1} / R_{th2}	1,35 / 3,94			K/W
20 Thermal time constant	τ_{w1} / τ_{w2}	29 / 1 756			s
21 Operating temperature range		- 30 ... +125			$^{\circ}\text{C}$
22 Shaft bearings		ball bearings, preloaded			
23 Shaft load max.:					
– radial at 3 000/10 000 rpm (13,5 mm from mounting flange)		103 / 66			N
– axial at 3 000/10 000 rpm (push-on only)		45 / 30			N
– axial at standstill (push-on only)		135			N
24 Shaft play:					
– radial	\leq	0,015			mm
– axial	\parallel	0			mm
25 Housing material		aluminium, black anodized			
26 Weight		750			g
27 Direction of rotation		electronically reversible			
Coil connection		Δ Delta-circuit			

Recommended values - mathematically independent of each other

28 Speed up to ²⁾	$n_e \text{ max.}$	16 000	16 000	16 000	rpm
29 Torque up to ^{1) 2)}	$M_e \text{ max.}$	191,8	191,9	191,1	mNm
30 Current up to ^{1) 2)}	$I_e \text{ max.}$	8,62	6,29	4,95	A

¹⁾ at 10 000 rpm

²⁾ thermal resistance R_{th2} by 55% reduced

Note:

The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 55% reduced).

The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



