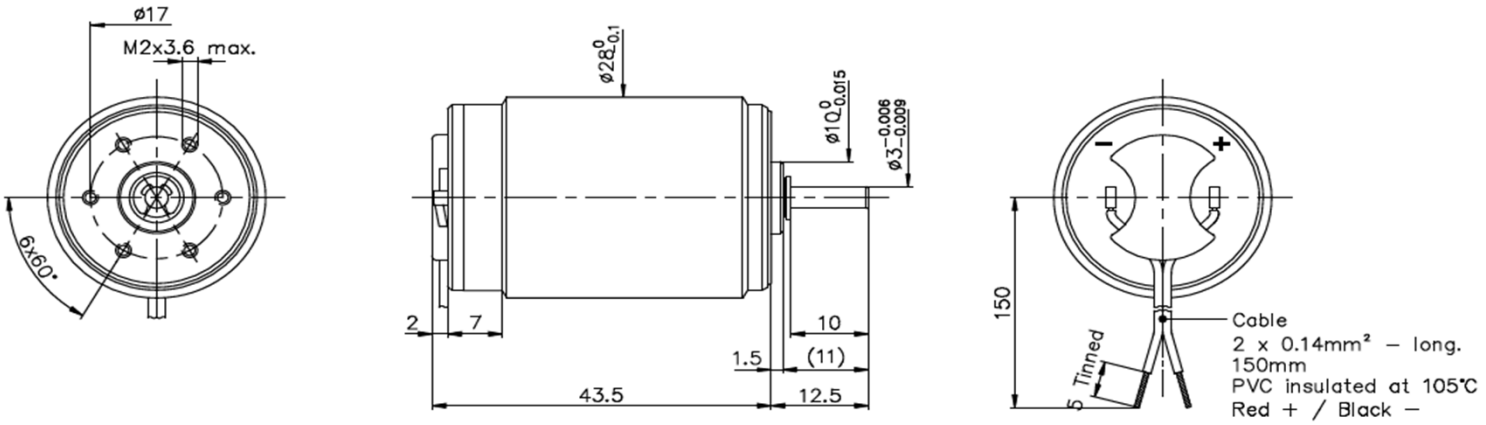
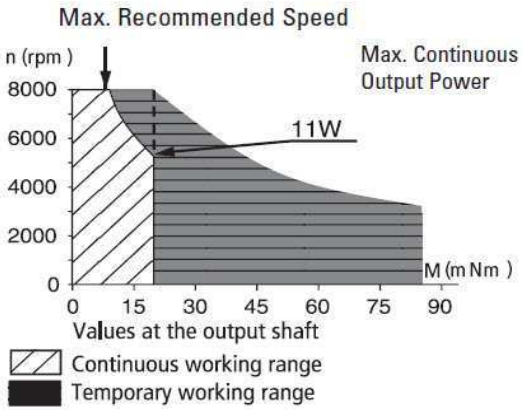


28L28 **** .49

Electrical Data	****	219	416E	413E	410E	
1 Nominal Voltage	V	12	24	28	36	Volt
2 No-Load Speed	n_0	5,300	5,590	5,325	5,000	rpm
3 No-Load Current	I_0	22.0	11.0	9.0	6.6	mA
4 Terminal Resistance	R	6.0	19.5	33.0	71.0	Ω
5 Output Power	$P_{2max.}$	9.6	10.0	9.3	9.0	W
6 Stall Torque	mNm	43 (6.09)	50 (7.09)	32 (4.54)	34 (4.82)	mNm (oz-in)
7 Efficiency	$\eta_{max.}$	80	82	80	78	%
8 Max continuous speed	$n_{e\ max.}$	8,000	8,000	8,000	8,000	rpm
9 Max continuous torque	$M_{e\ max.}$	19.9 (2.98)	21 (2.98)	19.4 (2.75)	18.5 (2.62)	mNm (oz-in)
10 Max continuous current	$I_{e\ max.}$	0.95	0.53	0.40	0.28	A
11 Back-EMF Constant	k_E	2.24	4.26	5.20	7.10	mV/rpm
12 Torque Constant	k_M	21.40	40.70	49.70	67.80	mNm/A
13 Motor Regulation	R/k^2	13.0	12.0	13.2	15.20	10^3/Nms
14 Friction Torque	T_F	0.47 (0.07)	0.45 (0.07)	0.45 (0.07)	0.45 (0.07)	mNm (oz-in)
15 Rotor Inductance	L	0.50	2.40	3.20	5.20	mH
16 Mechanical Time Constant	τ_m	13.5	21.0	17.8	16.7	ms
17 Rotor Inertia	J	10.40	17.50	13.50	11.00	$g.cm^2$
18 Thermal Resistance (rotor/body)	R_{th1} / R_{th2}	5 /12	5 /12	5 /12	5 /12	°C/W
19 Thermal Time Constant (rotor/stator)	τ_{w1}/t_{w2}	13/760	13/760	13/760	13/760	°C/W
20 Operating Temperature Range:	motor	-30°C to 85°C (-22°F to 185°F)				°C (°F)
	rotor	100°C (212°F)				°C (°F)
21 Shaft Load max.:		With sleeve bearings				
at 3,000 rpm (5mm from bearing)	-radial	6.0 (21.6)				N (oz)
at 3,000 rpm	-axial	250 (899.2)				N (oz)
22 Shaft play:	-radial	<0.018 (0.0007)				mm (inch)
	-axial	0.15 (0.0059)				mm (inch)
23 Weight	g	125 (4.41)				g (oz)

Execution			
Gearbox	**Single Shaft**	**Double Shaft for E9**	**HEDS**
	28L28	**28L18**	**28L18**
R22	164	317	Contact Us
M22	164	317	Contact Us
R32	49	315	Contact Us
K27	Contact Us	317	Contact Us



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