

TYPE TEST REPORT

Report No. : IE3-90L-2 2.2KW 14102001

Product Type Name	IE3-90L-2 Three Phase Asynchronous Motor			Ser.No.	
Rated Output	2.2 kW	Rated Voltage	400 V	Rated Current	4.3 A
Rated Speed	2890 r/min	Rated Frequency	50Hz	Insulation Class	F
Duty	S1	Protection Class	IP55	Connection	Y
Product Standard	IEC60034-1	Testing Standard	IEC60034-2-1	Production Date	
Test Item	Eligibility Value		Test Value	Test Result	
	Standard	Tolerance			
1. Stator resistance at 20°C	Ω		3.8454		
2. No load current	A		1.44		
3. No load current deviation	%		2.9		
4. No load input power	W		100.9		
5. Locked rotor current	A		35.69		
6. Locked current/Rated current			8.77		
7. Locked torque	N.m		28.24		
8. Locked torque/Rated torque			3.88		
9. Full load current	A		4.07		
10. Rated torque	N.m		7.28		
11. Max. torque	N.m		25.00		
12. Max. torque/Rated torque			3.43		
13. Full load speed ratio	r/min		2884.1		
14. Iron loss(at Rated voltage)	W		64.8		
15. Mechanical loss(at Rated speed)	W		22.8		
16. Stator winding loss	W		111.6		
17. Rotor winding loss	W		97.7		
18. Other loss	W		54.6		
19. Total loss	W		356.1		
20. Output power	W		2200		

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	Standard	Tolerance			
21. Input power	W		2556.11		
22. Full load efficiency	%		86.07		
23. Full Load power factor			0.906		
24. Stator winding temp.rise	K		36.8		
25. Bearing temperature	°C		45		
26. Coolant temperature	°C		22.3		
27. Insulation resistance warmly to frame	MΩ		500		
28. High voltage test	V min	1760	Pass	Passed	
29. Vibration	mm/s		1.3		
30. Noise	dB(A)		64		
31. Rotation Direction		Clockwise	Right	Passed	
32. H.V. impulse test between winding	V	2600	Pass	Passed	
33. Over speed test 2min 1.2n		No abnormal	No abnormal	Passed	
34. Over Torque test 15s 2.2Tn		No abnormal	No abnormal	Passed	
35. Over current test 2min 1.5In		No abnormal	No abnormal	Passed	
Testing Conclusion					
Remark					
Tested by		Checked by		Formed	

three-phase induction motor type test report

Amb Temp: 22.9°C

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test time:

Modle: IE3-90L-2
NO.:
Rated f: 50Hz

Rated U: 400V
Rated I: 4.3A
Rated P: 2.2kW

Rated η : 85.90%
Cos ϕ : 0.85
Rated speed: 2890r/min

InsClass: F
Connect: Y
Poles: 2

Resistance test

Rac(Ω): 3.8970

Rbc(Ω): 3.8980

Rab(Ω): 3.8950

Ravg(Ω): 3.8967
115°C R (Ω): 5.2997
25°C R (Ω): 3.9369

Shell Temp(°C): 23.4
Amb Temp(°C): 22.34

No load test

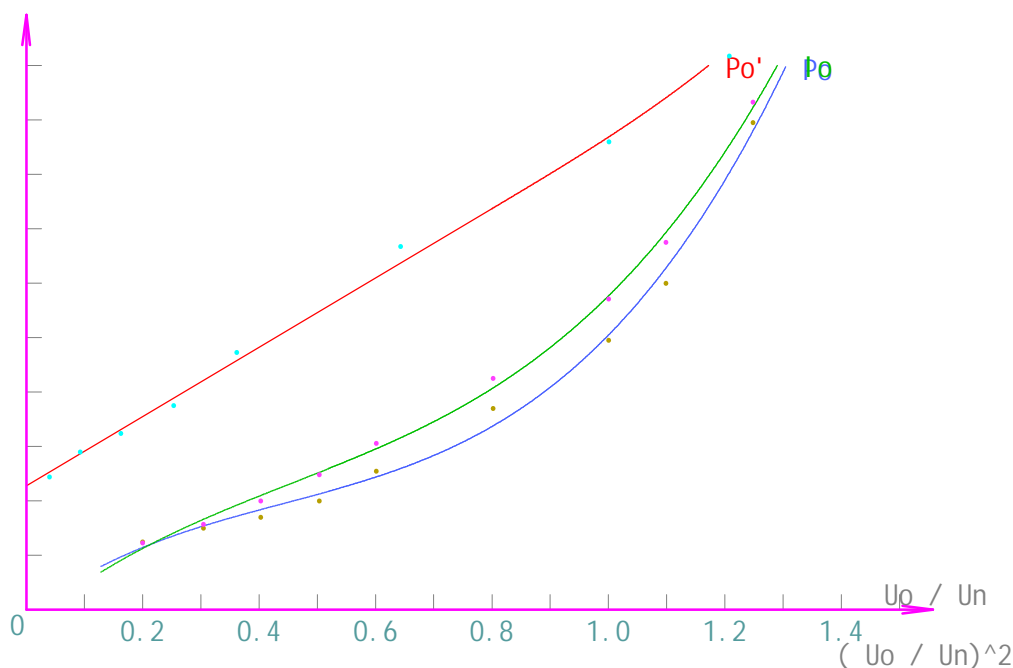
U*	U (V)	I (A)	Po(kW)	Po' (kW)	Pcu(kW)	WindingT(°C)
1.25	499.3	2.33	0.1790	0.1442	0.0348	46.95
1.10	439.6	1.69	0.1200	0.1018	0.0182	46.95
1.00	400.2	1.43	0.0990	0.0860	0.0130	46.89
0.80	320.8	1.06	0.0740	0.0668	0.0072	46.92
0.60	240.6	0.76	0.0510	0.0473	0.0037	46.92
0.50	201.3	0.62	0.0400	0.0375	0.0025	46.89
0.40	161.2	0.50	0.0340	0.0324	0.0016	46.89
0.30	121.8	0.39	0.0300	0.0290	0.0010	46.07
0.20	80.0	0.31	0.0250	0.0244	0.0006	46.01

Thermal R(Ω): 4.2220
Io(A): 1.44
Pm(kW): 0.0228

Shell Temp(°C): 38.6
Io(kW): 0.1009
Pfe(kW): 0.0648

No Load Characteristic Curve

Io A	Po kW	Po' kW
2.50	0.20	0.10
2.25	0.18	0.09
2.00	0.16	0.08
1.75	0.14	0.07
1.50	0.12	0.06
1.25	0.10	0.05
1.00	0.08	0.04
0.75	0.06	0.03
0.50	0.04	0.02
0.25	0.02	0.01



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check:

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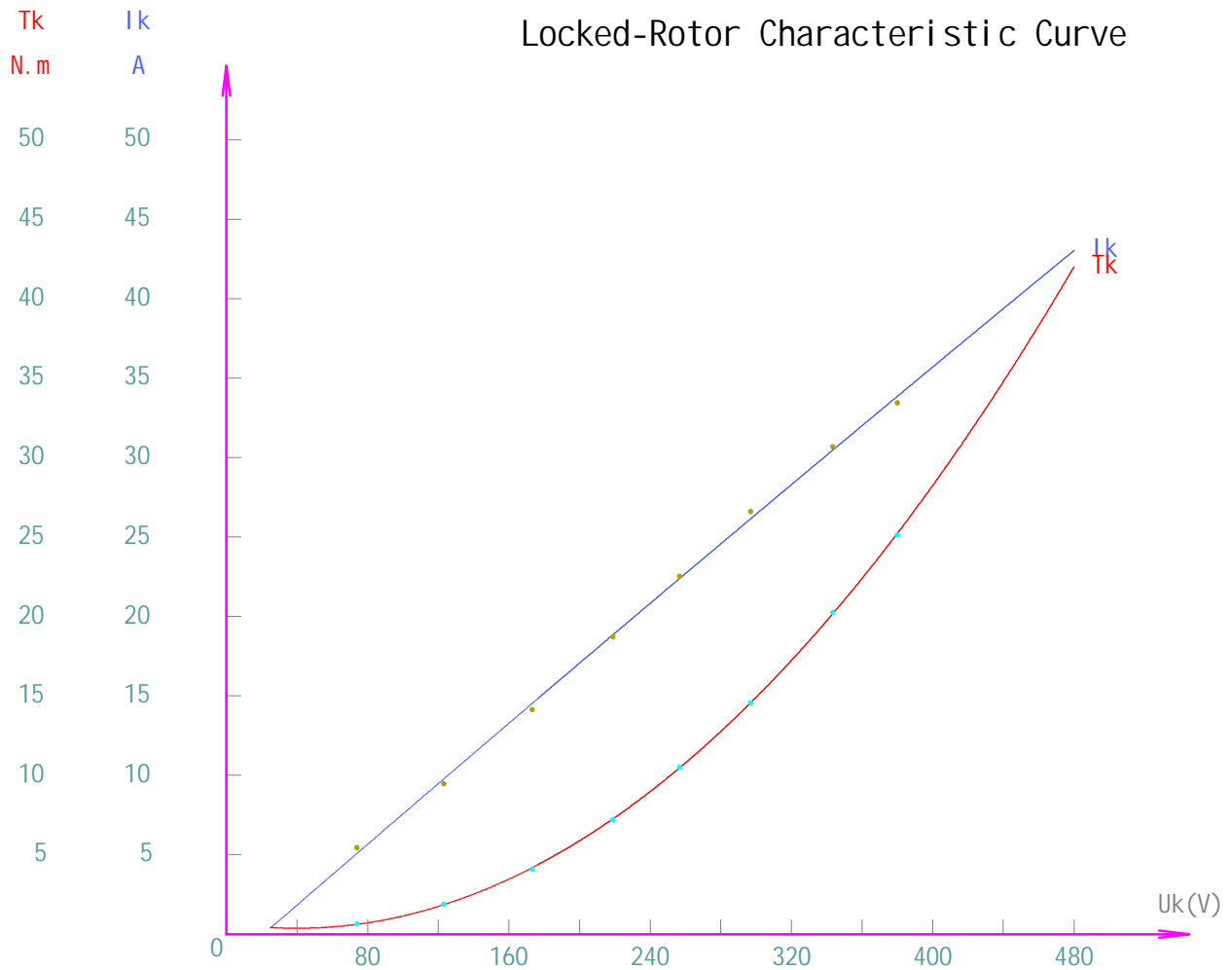
InsClass: F
Connect: Y
Poles: 2

Locked-rotor Test

U(V)	I(A)	P1(KW)	Tor(N.m)
379.9	33.44	16.9200	25.14
343.4	30.68	13.5900	20.26
296.9	26.61	9.7450	14.57
256.6	22.53	6.8700	10.52
218.8	18.73	4.6600	7.22
173.1	14.14	2.6350	4.10
123.2	9.48	1.1800	1.89
73.9	5.45	0.3910	0.65

I_k (A): 35.69
T_k(N.m): 28.24
P_k(kW): 18.56

I_k/I_n: 8.77
T_k/T_n: 3.88



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test time:

Modle: IE3-90L-2
NO.:
Rated f: 50Hz

Rated U: 400V
Rated I: 4.3A
Rated P: 2.2kW

Rated η : 85.90%
Cos ϕ : 0.85
Rated speed: 2890r/min

InsClass: F
Connect: Y
Poles: 2

Load Test

P1(kW)	U(V)	I (A)	s(r/min)	Tor (N.m)	windingT(°C)
4.1390	400.5	6.45	2798.0	11.430	42.17
3.3180	403.3	5.19	2845.0	9.200	42.44
2.5910	403.2	4.13	2882.0	7.310	42.96
1.9610	401.9	3.27	2912.0	5.530	43.24
1.4110	400.7	2.55	2938.0	3.830	43.20
0.7510	402.3	1.85	2969.0	1.830	42.66
0.5040	400.5	1.68	2980.0	1.090	42.28
0.1060	400.0	1.42	0.0	0.000	48.39

P2(kW)	Pcu(kW)	Pal (kW)	Ps(kW)	Ss(%)	η (%)	Cos ϕ
3.3592	0.2806	0.2742	0.1374	7.23	81.16	0.925
2.7891	0.1815	0.1702	0.0896	5.54	84.06	0.916
2.2297	0.1151	0.1015	0.0571	4.21	86.06	0.898
1.7108	0.0723	0.0572	0.0331	3.14	87.24	0.860
1.2343	0.0440	0.0288	0.0163	2.21	87.48	0.796
0.6290	0.0231	0.0073	0.0041	1.11	83.75	0.583
0.0000	0.0000	0.0000	0.0000	0.00	0.00	0.000
0.0000	0.0000	0.0000	0.0000	0.00	0.00	0.000

r: 0.957

A: 1.022

B: 2.982

θ_s (°C): 61.8

150% rated power:

I (A): 6.31
Pcu(kW): 0.3165
 η (%): 81.56

P1(kW): 4.0460
Pal (kW): 0.2401
Cos ϕ : 0.926

Ss (%): 6.55
Ps(kW): 0.1316
P2(kW): 3.30

125% rated power:

I (A): 5.12
Pcu(kW): 0.2084
 η (%): 83.91

P1(kW): 3.2774
Pal (kW): 0.1527
Cos ϕ : 0.924

Ss (%): 5.08
Ps(kW): 0.0878
P2(kW): 2.75

100% rated power:

I (A): 4.07
Pcu(kW): 0.1319
 η (%): 86.07

P1(kW): 2.5561
Pal (kW): 0.0912
Cos ϕ : 0.906

Ss (%): 3.86
Ps(kW): 0.0546
P2(kW): 2.20

75% rated power:

I (A): 3.17
Pcu(kW): 0.0797
 η (%): 87.66

P1(kW): 1.8822
Pal (kW): 0.0489
Cos ϕ : 0.858

Ss (%): 2.81
Ps(kW): 0.0304
P2(kW): 1.65

50% rated power:

I (A): 2.40
Pcu(kW): 0.0457
 η (%): 87.61

P1(kW): 1.2555
Pal (kW): 0.0212
Cos ϕ : 0.756

Ss (%): 1.85
Ps(kW): 0.0136
P2(kW): 1.10

25% rated power:

I (A): 1.76
Pcu(kW): 0.0247
 η (%): 81.33

P1(kW): 0.6762
Pal (kW): 0.0052
Cos ϕ : 0.554

Ss (%): 0.89
Ps(kW): 0.0025
P2(kW): 0.55

Load Characteristic Curve

Report No. : IE3-90L-2 2.2KW 14102001
 Model : IE3-90L-2
 Rated Output: 2.2 kW
 Ser.No. :

When P2 = 2.2 kW ,
 I1 = 4.07 A
 P1 = 2.5561 kW
 Sref = 3.86 %
 η = 86.07 %
 Cos ϕ = 0.906

cos ϕ	η	Sref	P1	I1
	%	%	kW	A
1.0	100	5.0	5.0	5.0
0.9	90	4.5	4.5	4.5
0.8	80	4.0	4.0	4.0
0.7	70	3.5	3.5	3.5
0.6	60	3.0	3.0	3.0
0.5	50	2.5	2.5	2.5
0.4	40	2.0	2.0	2.0
0.3	30	1.5	1.5	1.5
0.2	20	1.0	1.0	1.0
0.1	10	0.5	0.5	0.5

