

TYPE TEST REPORT

Report No. : IE3-180L-4 22KW 14052001

Product Type Name	IE3-180L-4 Three Phase Asynchronous Motor			Ser.No.	
Rated Output	22 kW	Rated Voltage	400 V	Rated Current	39.7 A
Rated Speed	1475 r/min	Rated Frequency	50Hz	Insulation Class	F
Duty	S1	Protection Class	IP55	Connection	△
Product Standard		Testing Standard	GB1032-2012	Production Date	
Test Item		Test Value		Test Result	
1. Stator resistance at 20°C	Ω	0.1973			
2. No load current	A	15.16			
3. No load current deviation	%	2.6			
4. No load input power	W	602.4			
5. Locked rotor current	A	315.00			
6. Locked current/Rated current		7.90			
7. Locked torque	N.m	302.37			
8. Locked torque/Rated torque		2.13			
9. Full load current	A	39.88			
10. Rated torque	N.m	142.22			
11. Max. torque	N.m	472.82			
12. Max. torque/Rated torque		3.32			
13. Full load speed ratio	r/min	1477.2			
14. Iron loss(at Rated voltage)	W	416.9			
15. Mechanical loss(at Rated speed)	W	114.4			
16. Stator winding loss	W	555.0			
17. Rotor winding loss	W	373.4			
18. Other loss	W	187.5			
19. Total loss	W	1644.6			
20. Output power	W	22000			

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Test Item	Test Value	Test Result
21. Input power	W	23644.63
22. Full load efficiency	%	93.04
23. Full Load power factor		0.856
24. Stator winding temp.rise	K	40.8
25. Bearing temperature	°C	68
26. Coolant temperature	°C	21.6
27. Insulation resistance warmly to frame	MΩ	500
28. High voltage test	V min	Pass Passed
29. Vibration	mm/s	1.2
30. Noise	dB(A)	67
31. Rotation Direction		Right Passed
32. H.V. inpulse test between winding	V	Pass Passed
33. Over speed test 2min 1.2n		No abnormal Passed
34. Over Torque test 15s 2.2Tn		No abnormal Passed
35. Over current test 2min 1.5In		No abnormal Passed
Testing Conclusion		
Remark		
Tested by	Checked by	Formed

three-phase induction motor type test report

Amb Temp: 22.4°C

report NO.: IE3-180L-4 22KW 14052001

test time:

Modle: IE3-180L-4
NO.:
Rated f: 50Hz

Rated U: 400V
Rated I: 39.7A
Rated P: 22kW

Rated η : 93.00%
Cos ϕ : 0.86
Rated speed: 1475r/min

InsClass: F
Connect: Δ
Poles: 4

Resistance test

Rac(Ω): 0.1983

Rbc(Ω): 0.1981

Rab(Ω): 0.1977

Ravg(Ω): 0.1980
115°C R (Ω): 0.2701
25°C R (Ω): 0.2007

Shell Temp(°C): 20.9
Amb Temp(°C): 21.60

No load test

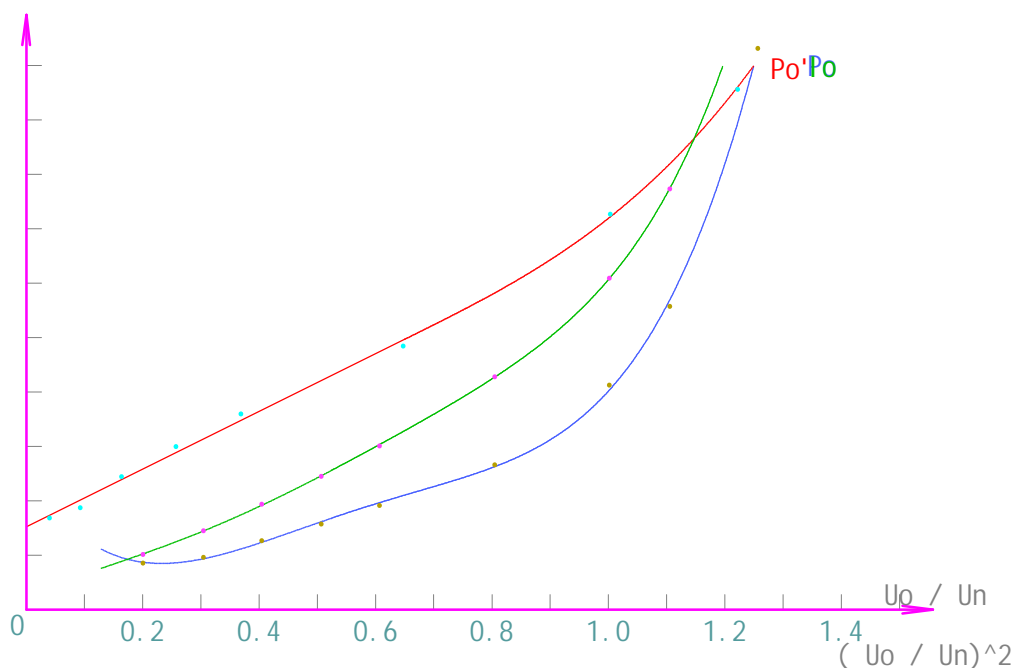
U*	U (V)	I (A)	Po(kW)	Po' (kW)	Pcu(kW)	WindingT(°C)
1.26	502.6	30.16	1.5470	1.2572	0.2898	40.17
1.11	442.2	19.33	0.8360	0.7170	0.1190	40.23
1.00	400.6	15.23	0.6190	0.5451	0.0739	40.23
0.80	321.9	10.71	0.4000	0.3635	0.0365	40.32
0.61	242.8	7.54	0.2880	0.2699	0.0181	40.32
0.51	202.8	6.14	0.2370	0.2250	0.0120	40.38
0.40	161.9	4.85	0.1910	0.1835	0.0075	40.38
0.30	121.7	3.64	0.1450	0.1408	0.0042	40.38
0.20	80.2	2.55	0.1290	0.1269	0.0021	40.20

Thermal R(Ω): 0.2122
Io(A): 15.16
Pm(kW): 0.1144

Shell Temp(°C): 34.7
Io(kW): 0.6024
Pfe(kW): 0.4169

No Load Characteristic Curve

Io A	Po kW	Po' kW
25.0	1.50	0.750
22.5	1.35	0.675
20.0	1.20	0.600
17.5	1.05	0.525
15.0	0.90	0.450
12.5	0.75	0.375
10.0	0.60	0.300
7.5	0.45	0.225
5.0	0.30	0.150
2.5	0.15	0.075



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Load Test

P1(kW)	U(V)	I (A)	s(r/min)	Tor (N.m)	windingT(°C)
36.7700	398.9	60.86	1462.0	218.400	40.82
30.0900	399.9	50.09	1470.0	178.800	42.05
23.8800	401.1	40.17	1477.0	142.500	42.76
18.1000	400.7	31.72	1483.0	106.400	43.14
12.2400	402.3	23.93	1489.0	71.000	43.51
6.3900	398.1	17.71	1494.0	35.200	43.57
0.6680	400.1	15.23	1500.0	0.800	43.11
0.6390	401.2	15.26	0.0	0.000	40.73

P2(kW)	Pcu(kW)	Pal (kW)	Ps(kW)	Ss(%)	η (%)	Cos ϕ
33.5222	1.2904	0.9717	0.4543	2.77	91.17	0.874
27.7532	0.8741	0.6272	0.3041	2.18	92.23	0.867
22.2124	0.5621	0.3814	0.1928	1.67	93.02	0.856
16.8979	0.3506	0.2130	0.1072	1.23	93.36	0.822
11.3694	0.1995	0.0923	0.0475	0.79	92.89	0.734
5.7126	0.1092	0.0254	0.0115	0.43	89.40	0.523
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: 0.916

A: 0.010

B: 397.610

θ s(°C): 65.8

150% rated power:

I (A): 59.88
Pcu(kW): 1.4527
 η (%): 91.27

P1(kW): 36.1563
Pal (kW): 0.8512
Cos ϕ : 0.872

Ss (%): 2.48
Ps(kW): 0.4393
P2(kW): 33.00

125% rated power:

I (A): 49.60
Pcu(kW): 0.9967
 η (%): 92.27

P1(kW): 29.8040
Pal (kW): 0.5623
Cos ϕ : 0.867

Ss (%): 1.98
Ps(kW): 0.2993
P2(kW): 27.50

100% rated power:

I (A): 39.88
Pcu(kW): 0.6442
 η (%): 93.04

P1(kW): 23.6446
Pal (kW): 0.3427
Cos ϕ : 0.856

Ss (%): 1.52
Ps(kW): 0.1875
P2(kW): 22.00

75% rated power:

I (A): 31.06
Pcu(kW): 0.3909
 η (%): 93.38

P1(kW): 17.6704
Pal (kW): 0.1847
Cos ϕ : 0.821

Ss (%): 1.10
Ps(kW): 0.1028
P2(kW): 16.50

50% rated power:

I (A): 23.49
Pcu(kW): 0.2236
 η (%): 92.76

P1(kW): 11.8583
Pal (kW): 0.0805
Cos ϕ : 0.729

Ss (%): 0.72
Ps(kW): 0.0442
P2(kW): 11.00

25% rated power:

I (A): 17.50
Pcu(kW): 0.1241
 η (%): 89.14

P1(kW): 6.1703
Pal (kW): 0.0217
Cos ϕ : 0.509

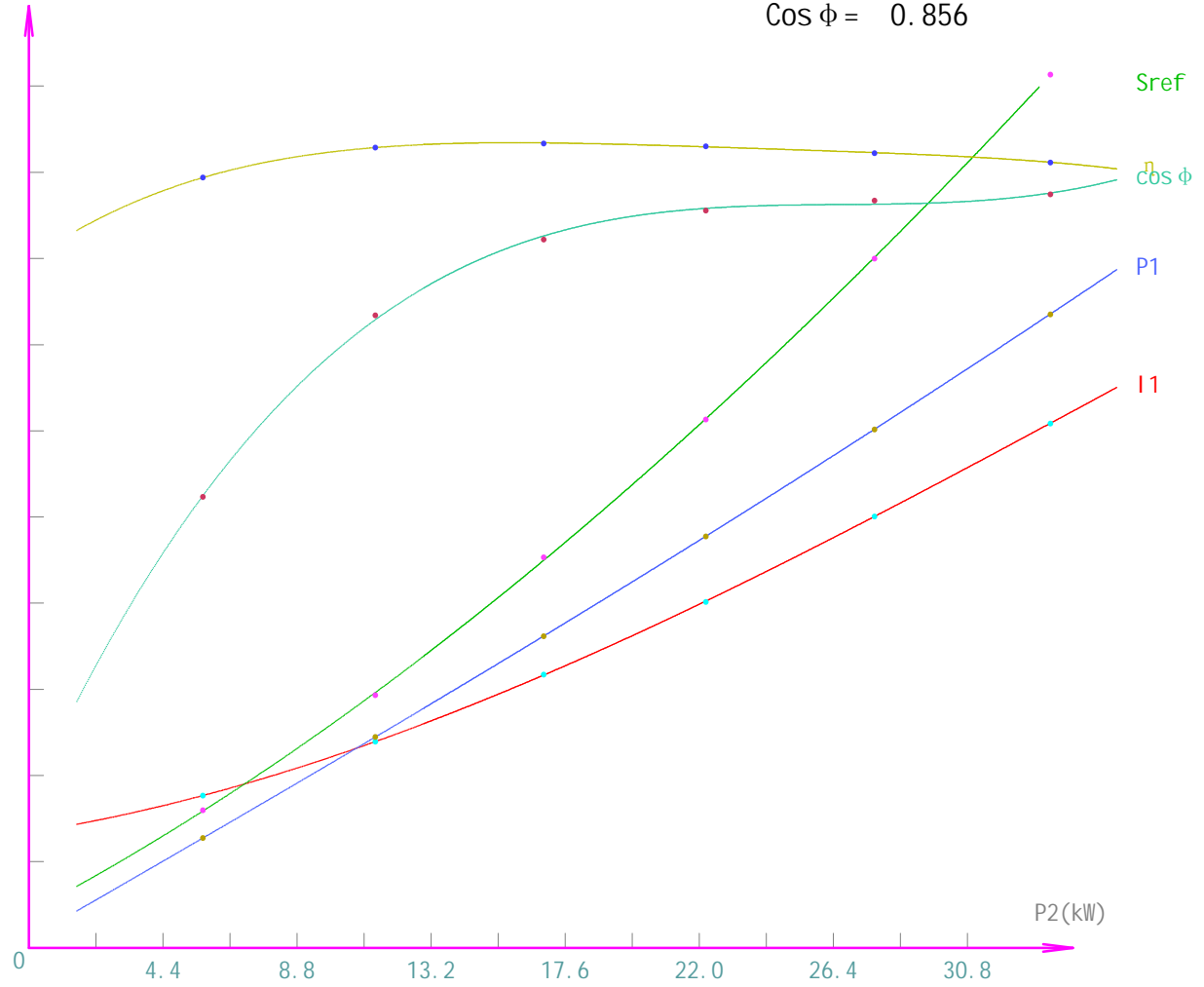
Ss (%): 0.39
Ps(kW): 0.0106
P2(kW): 5.50

Load Characteristic Curve

Report No. : IE3-180L-4 22KW 14052001
 Model : IE3-180L-4
 Rated Output: 22 kW
 Ser.No. :

When P2 = 22 kW ,
 I1 = 39.88 A
 P1 = 23.6446 kW
 Sref = 1.52 %
 η = 93.04 %
 Cos ϕ = 0.856

cos ϕ	η %	Sref %	P1 kW	I1 A
1.0	100	2.50	50	100
0.9	90	2.25	45	90
0.8	80	2.00	40	80
0.7	70	1.75	35	70
0.6	60	1.50	30	60
0.5	50	1.25	25	50
0.4	40	1.00	20	40
0.3	30	0.75	15	30
0.2	20	0.50	10	20
0.1	10	0.25	5	10



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InsClass: F
Connect: Δ
Poles: 4

Locked-rotor Test

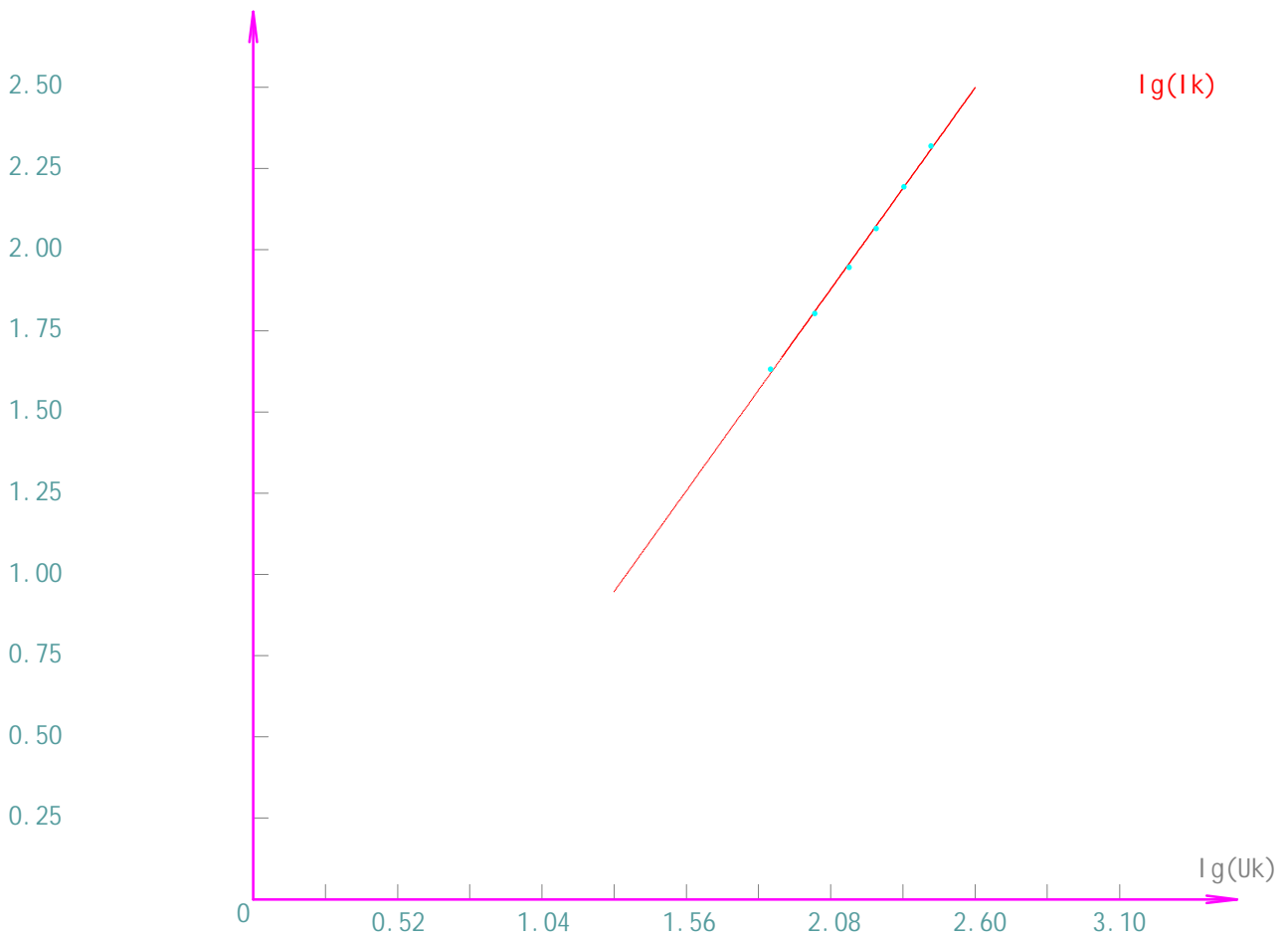
U(V)	I (A)	P1(KW)	Tor(N.m)
276.7	208.52	37.8500	132.50
221.5	156.17	21.3150	79.10
175.8	116.31	11.8400	46.70
140.5	88.17	6.8220	26.90
105.7	63.57	3.5660	13.90
73.2	42.91	1.6280	6.60

I_k (A): 315.00
T_k(N.m): 302.37
P_k(kW): 79.15

I_k/I_n: 7.90
T_k/T_n: 2.13

I_g(I_k)

Locked-Rotor Characteristic Curve



test:

check: