

# TYPE TEST REPORT

Report No. : IE3-112M-6 2.2KW 14103101

Product Type Name	IE3-112-6 Three Phase Asynchronous Motor			Ser.No.	
Rated Output	2.2 kW	Rated Voltage	400 V	Rated Current	5.1 A
Rated Speed	970 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		Test Value		Test Result	
1. Stator resistance at 20°C	Ω	3.8542			
2. No load current	A	3.26			
3. No load current deviation	%	2.0			
4. No load input power	W	165.0			
5. Locked rotor current	A	31.62			
6. Locked current/Rated current		6.09			
7. Locked torque	N.m	58.01			
8. Locked torque/Rated torque		2.66			
9. Full load current	A	5.19			
10. Rated torque	N.m	21.83			
11. Max. torque	N.m	66.88			
12. Max. torque/Rated torque		3.06			
13. Full load speed ratio	r/min	962.5			
14. Iron loss(at Rated voltage)	W	81.2			
15. Mechanical loss(at Rated speed)	W	15.7			
16. Stator winding loss	W	185.1			
17. Rotor winding loss	W	88.7			
18. Other loss	W	36.1			
19. Total loss	W	406.9			
20. Output power	W	2200			

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Test Item		Test Value	Test Result
21. Input power	W	2606.86	
22. Full load efficiency	%	84.39	
23. Full Load power factor		0.725	
24. Stator winding temp.rise	K	42.9	
25. Bearing temperature	°C	57	
26. Coolant temperature	°C	22.7	
27. Insulation resistance warmly to frame	MΩ	500	
28. High voltage test	V min	Pass	Passed
29. Vibration	mm/s	1.1	
30. Noise	dB(A)	62	
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: °C      report NO.: IE3-112M-6 2.2KW 14103101      test time:

Modle: IE3-112-6	Rated U: 400V	Rated $\eta$ : 84.30%	InsClass: F
NO.:	Rated I: 5.1A	Cos $\phi$ : 0.74	Connect: Y
Rated f: 50Hz	Rated P: 2.2kW	Rated speed: 970r/min	Pol es: 6

## Resistance test

Rac( $\Omega$ ): 3.8980      Rbc( $\Omega$ ): 3.8970      Rab( $\Omega$ ): 3.8990

Ravg( $\Omega$ ): 3.8980      Shell Temp( $^{\circ}$ C): 22.9  
 115 $^{\circ}$ C R ( $\Omega$ ): 5.2935      Amb Temp( $^{\circ}$ C): 22.73  
 25 $^{\circ}$ C R ( $\Omega$ ): 3.9323

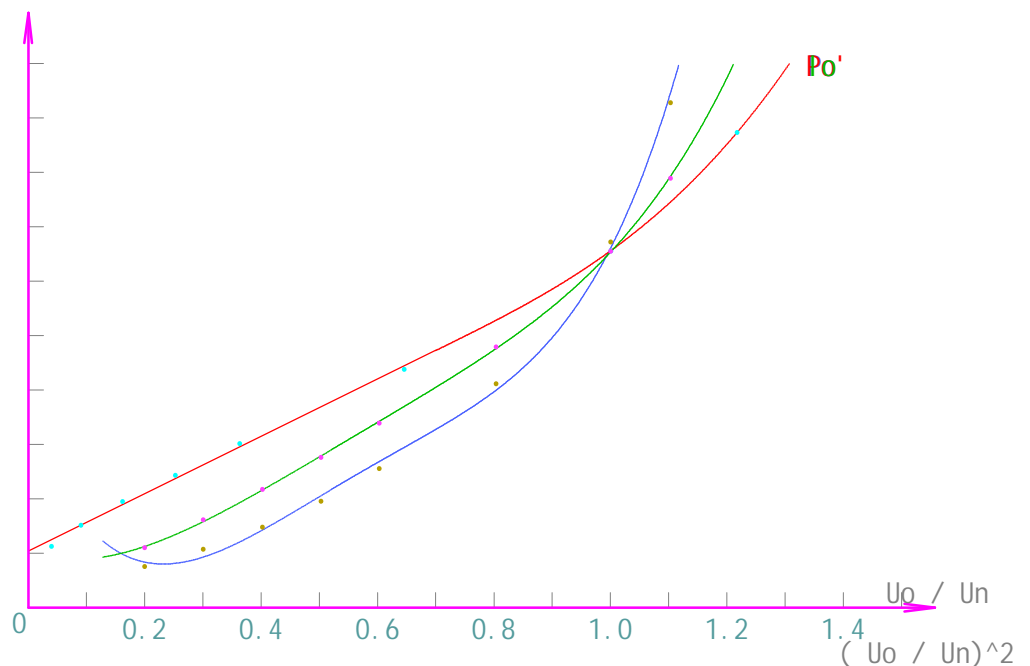
## No load test

U*	U (V)	I (A)	Po(kW)	Po' (kW)	Pcu(kW)	WindingT( $^{\circ}$ C)
1.25	501.0	5.49	0.4260	0.2304	0.1956	50.82
1.10	441.3	3.95	0.2320	0.1310	0.1010	50.82
1.00	400.2	3.28	0.1680	0.0983	0.0697	51.23
0.80	321.4	2.40	0.1030	0.0658	0.0372	51.23
0.60	241.1	1.70	0.0640	0.0453	0.0187	51.38
0.50	201.0	1.38	0.0490	0.0366	0.0124	51.38
0.40	160.9	1.09	0.0370	0.0293	0.0077	51.16
0.30	120.2	0.81	0.0270	0.0227	0.0043	51.16
0.20	80.0	0.55	0.0190	0.0170	0.0020	50.51

Thermal R( $\Omega$ ): 4.2500      Shell Temp( $^{\circ}$ C): 43.6  
 Io(A): 3.26      Io(kW): 0.1650  
 Pm(kW): 0.0157      Pfe(kW): 0.0812

## No Load Characteristic Curve

Io	Po	Po'
A	kW	kW
5.0	0.250	0.150
4.5	0.225	0.135
4.0	0.200	0.120
3.5	0.175	0.105
3.0	0.150	0.090
2.5	0.125	0.075
2.0	0.100	0.060
1.5	0.075	0.045
1.0	0.050	0.030
0.5	0.025	0.015



test:

check:

# three-phase induction motor type test report

Amb Temp: 22.7°C

report NO.: IE3-112M-6 2.2KW 14103101

test time:

Modle: IE3-112-6  
NO.:  
Rated f: 50Hz

Rated U: 400V  
Rated I: 5.1A  
Rated P: 2.2kW

Rated  $\eta$ : 84.30%  
Cos  $\phi$ : 0.74  
Rated speed: 970r/min

InsClass: F  
Connect: Y  
Poles: 6

## Locked-rotor Test

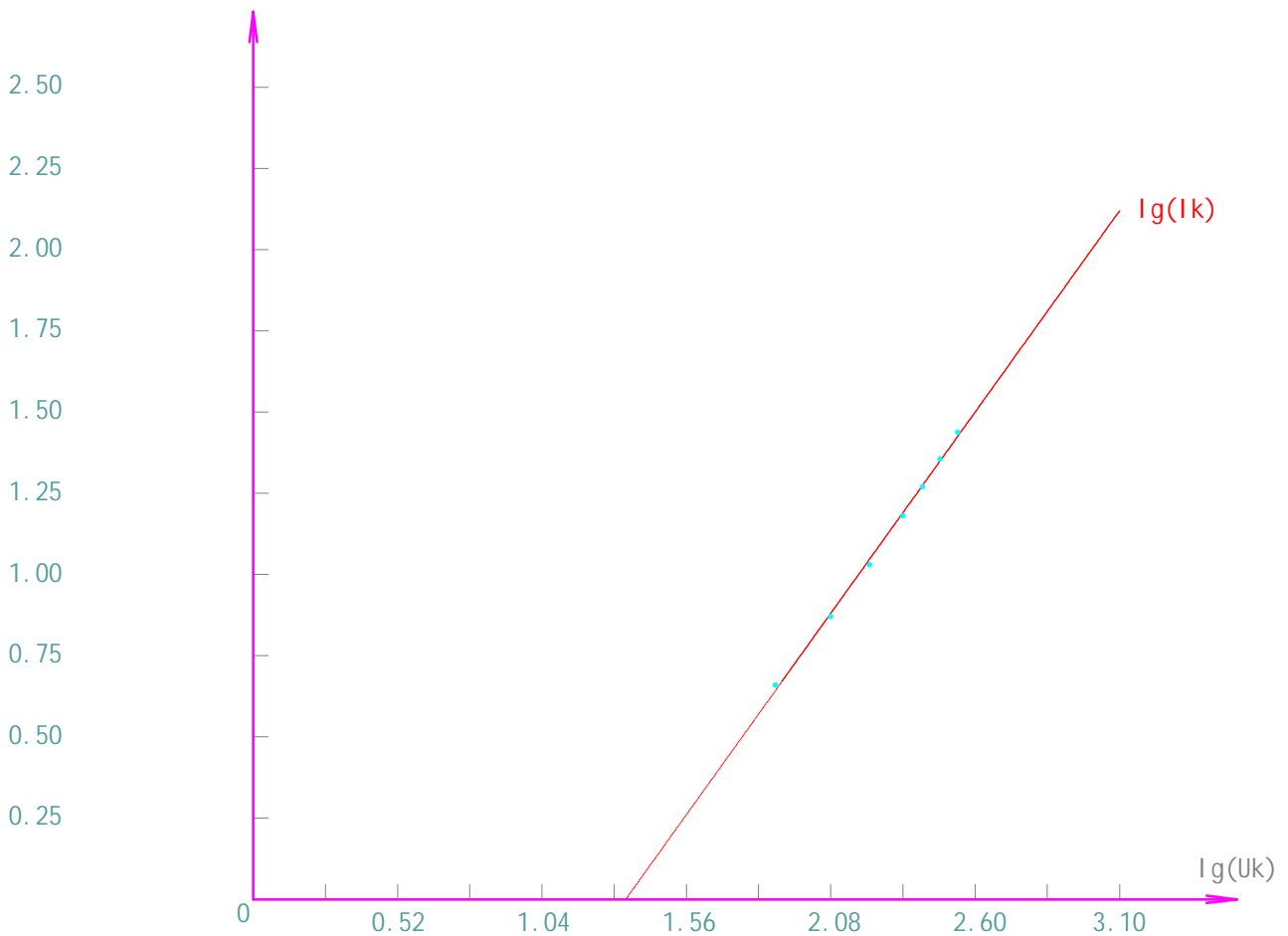
U(V)	I(A)	P1(KW)	Tor(N.m)
345.7	27.41	9.5450	43.58
298.6	22.67	6.5100	30.69
257.7	18.67	4.4500	20.16
219.7	15.17	2.9550	13.15
166.5	10.74	1.4950	6.47
120.6	7.42	0.7190	3.13
76.2	4.57	0.2740	1.20

I<sub>k</sub> (A): 31.62  
T<sub>k</sub>(N.m): 58.01  
P<sub>k</sub>(kW): 12.40

I<sub>k</sub>/I<sub>n</sub>: 6.09  
T<sub>k</sub>/T<sub>n</sub>: 2.66

I<sub>g</sub>(I<sub>k</sub>)

Locked-Rotor Characteristic Curve



test:

check:

# three-phase induction motor type test report

Amb Temp: 22.7°C

report NO.: IE3-112M-6 2.2KW 14103101

test time:

Modle: IE3-112-6  
NO.:  
Rated f: 50Hz

Rated U: 400V  
Rated I: 5.1A  
Rated P: 2.2kW

Rated  $\eta$ : 84.30%  
Cos  $\phi$ : 0.74  
Rated speed: 970r/min

InsClass: F  
Connect: Y  
Poles: 6

## Load Test

P1(kW)	U(V)	I (A)	s(r/min)	Tor (N.m)	windingT(°C)
4.0800	401.8	7.30	937.0	33.770	61.77
3.3620	401.8	6.23	950.0	28.140	62.80
2.7000	400.8	5.32	961.0	22.710	63.27
1.9340	401.1	4.38	973.0	16.200	62.80
1.3560	401.5	3.81	982.0	11.070	62.20
0.7390	402.1	3.41	991.0	5.380	60.87
0.2350	402.5	3.28	999.0	0.610	58.96
0.1700	401.6	3.29	0.0	0.000	50.57

P2(kW)	Pcu(kW)	Pal (kW)	Ps(kW)	Ss(%)	$\eta$ (%)	Cos $\phi$
3.2973	0.3666	0.2337	0.0855	6.43	80.82	0.803
2.7854	0.2670	0.1534	0.0594	5.09	82.85	0.775
2.2739	0.1944	0.0961	0.0387	3.96	84.22	0.731
1.6384	0.1317	0.0473	0.0197	2.75	84.71	0.636
1.1284	0.0999	0.0216	0.0092	1.84	83.22	0.511
0.5546	0.0800	0.0053	0.0022	0.92	75.04	0.311
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: 0.996

A: 0.075

B: -7.663

$\theta$  s(°C): 67.9

150% rated power:

I (A): 7.31  
Pcu(kW): 0.4240  
 $\eta$  (%): 80.81

P1(kW): 4.0835  
Pal (kW): 0.2255  
Cos  $\phi$ : 0.807

Ss (%): 6.30  
Ps(kW): 0.0857  
P2(kW): 3.30

125% rated power:

I (A): 6.17  
Pcu(kW): 0.3024  
 $\eta$  (%): 82.94

P1(kW): 3.3158  
Pal (kW): 0.1445  
Cos  $\phi$ : 0.776

Ss (%): 4.93  
Ps(kW): 0.0578  
P2(kW): 2.75

100% rated power:

I (A): 5.19  
Pcu(kW): 0.2141  
 $\eta$  (%): 84.39

P1(kW): 2.6069  
Pal (kW): 0.0866  
Cos  $\phi$ : 0.725

Ss (%): 3.75  
Ps(kW): 0.0361  
P2(kW): 2.20

75% rated power:

I (A): 4.39  
Pcu(kW): 0.1532  
 $\eta$  (%): 84.75

P1(kW): 1.9468  
Pal (kW): 0.0464  
Cos  $\phi$ : 0.640

Ss (%): 2.71  
Ps(kW): 0.0199  
P2(kW): 1.65

50% rated power:

I (A): 3.79  
Pcu(kW): 0.1141  
 $\eta$  (%): 82.97

P1(kW): 1.3258  
Pal (kW): 0.0200  
Cos  $\phi$ : 0.505

Ss (%): 1.77  
Ps(kW): 0.0088  
P2(kW): 1.10

25% rated power:

I (A): 3.41  
Pcu(kW): 0.0923  
 $\eta$  (%): 74.95

P1(kW): 0.7338  
Pal (kW): 0.0050  
Cos  $\phi$ : 0.311

Ss (%): 0.89  
Ps(kW): 0.0021  
P2(kW): 0.55

## Load Characteristic Curve

Report No. : IE3-112M-6 2.2KW 14103101  
 Model : IE3-112-6  
 Rated Output: 2.2 kW  
 Ser.No. :

When P2 = 2.2 kW ,  
 I1 = 5.19 A  
 P1 = 2.6069 kW  
 Sref = 3.75 %  
 $\eta$  = 84.39 %  
 Cos  $\phi$  = 0.725

$\cos \phi$	$\eta$	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

