

TYPE TEST REPORT

Report No. : IE3-132M1-6 4KW 14101601

| Product Type Name | IE3-132M1-6 Three Phase Asynchronous Motor | | | Ser.No. | |
|-------------------------------------|--|------------------|--------------|------------------|-------|
| Rated Output | 4 kW | Rated Voltage | 400 V | Rated Current | 9.0 A |
| Rated Speed | 970 r/min | Rated Frequency | 50Hz | Insulation Class | F |
| Duty | S1 | Protection Class | IP55 | Connection | △ |
| 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 | | 1.8697 | | |
| 2. No load current | A | | 5.29 | | |
| 3. No load current deviation | % | | 1.9 | | |
| 4. No load input power | W | | 238.5 | | |
| 5. Locked rotor current | A | | 66.12 | | |
| 6. Locked current/Rated current | | | 7.37 | | |
| 7. Locked torque | N.m | | 105.35 | | |
| 8. Locked torque/Rated torque | | | 2.69 | | |
| 9. Full load current | A | | 8.97 | | |
| 10. Rated torque | N.m | | 39.14 | | |
| 11. Max. torque | N.m | | 137.84 | | |
| 12. Max. torque/Rated torque | | | 3.52 | | |
| 13. Full load speed ratio | r/min | | 976.0 | | |
| 14. Iron loss(at Rated voltage) | W | | 125.4 | | |
| 15. Mechanical loss(at Rated speed) | W | | 26.9 | | |
| 16. Stator winding loss | W | | 264.2 | | |
| 17. Rotor winding loss | W | | 102.8 | | |
| 18. Other loss | W | | 74.7 | | |
| 19. Total loss | W | | 601.7 | | |
| 20. Output power | W | | 4000 | | |

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| Test Item | Eligibility Value | | Test Value | Test Result | |
|---|-------------------|-------------|-------------|-------------|--|
| | Standard | Tolerance | | | |
| 21. Input power | W | | 4601.69 | | |
| 22. Full load efficiency | % | | 86.92 | | |
| 23. Full Load power factor | | | 0.740 | | |
| 24. Stator winding temp.rise | K | | 37.8 | | |
| 25. Bearing temperature | °C | | 54 | | |
| 26. Coolant temperature | °C | | 21.9 | | |
| 27. Insulation resistance warmly to frame | MΩ | | 500 | | |
| 28. High voltage test | V min | 1760 | Pass | Passed | |
| 29. Vibration | mm/s | | 1.1 | | |
| 30. Noise | dB(A) | | 54 | | |
| 31. Rotation Direction | | Clockwise | Right | Passed | |
| 32. H.V. inpulse 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 | |
| 36.(Method B) r | | | 0.9368 | | |
| 37.(Method B) A | | | 0.0505 | | |
| 38.(Method B) B | | | 45.1364 | | |
| Testing Conclusion | | | | | |
| Remark | | | | | |
| Tested by | | Checked by | | Formed | |

three-phase induction motor type test report

Amb Temp: 23.33°C

report NO.: IE3-132M1-6 4KW 14101601

test time:

Modle: IE3-132M1-6
NO.:
Rated f: 50Hz

Rated U: 400V
Rated I: 9.0A
Rated P: 4kW

Rated η : 86.80%
Cos ϕ : 0.74
Rated speed: 970r/min

InsClass: F
Connect: Δ
Poles: 6

Resistance test

Rac(Ω): 1.8810

Rbc(Ω): 1.8830

Rab(Ω): 1.8780

Ravg(Ω): 1.8807
115°C R (Ω): 2.5619
25°C R (Ω): 1.9031

Shell Temp(°C): 21.5
Amb Temp(°C): 21.93

No load test

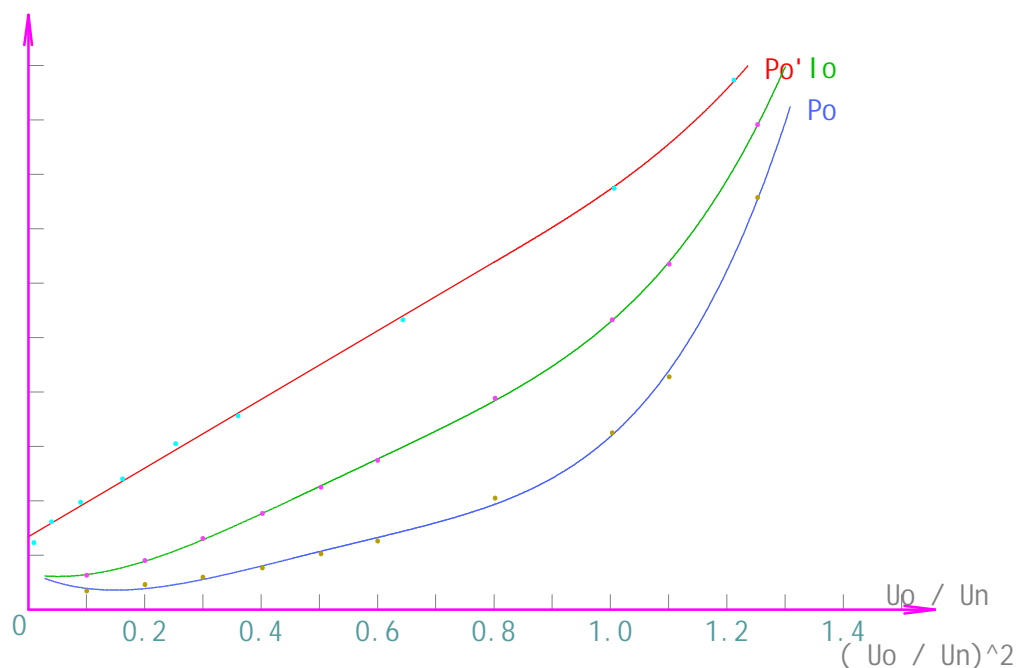
| U* | U (V) | I (A) | Po(kW) | Po' (kW) | Pcu(kW) | WindingT(°C) |
|------|-------|-------|--------|----------|---------|--------------|
| 1.25 | 501.1 | 8.92 | 0.5680 | 0.3189 | 0.2491 | 50.37 |
| 1.10 | 440.3 | 6.35 | 0.3210 | 0.1946 | 0.1264 | 50.37 |
| 1.00 | 401.3 | 5.33 | 0.2440 | 0.1549 | 0.0891 | 50.89 |
| 0.80 | 320.9 | 3.89 | 0.1540 | 0.1066 | 0.0474 | 50.89 |
| 0.60 | 240.1 | 2.75 | 0.0950 | 0.0713 | 0.0237 | 51.15 |
| 0.50 | 201.2 | 2.25 | 0.0770 | 0.0611 | 0.0159 | 51.15 |
| 0.40 | 161.0 | 1.77 | 0.0580 | 0.0482 | 0.0098 | 51.06 |
| 0.30 | 120.0 | 1.31 | 0.0450 | 0.0396 | 0.0054 | 51.06 |
| 0.20 | 80.2 | 0.91 | 0.0350 | 0.0324 | 0.0026 | 50.48 |
| 0.10 | 40.1 | 0.64 | 0.0260 | 0.0247 | 0.0013 | 50.48 |

Thermal R(Ω): 2.0440
Io(A): 5.29
Pm(kW): 0.0269

Shell Temp(°C): 42.6
Io(kW): 0.2385
Pfe(kW): 0.1254

No Load Characteristic Curve

| Io | Po | Po' |
|----|-------|------|
| A | kW | kW |
| 10 | 0.750 | 0.20 |
| 9 | 0.675 | 0.18 |
| 8 | 0.600 | 0.16 |
| 7 | 0.525 | 0.14 |
| 6 | 0.450 | 0.12 |
| 5 | 0.375 | 0.10 |
| 4 | 0.300 | 0.08 |
| 3 | 0.225 | 0.06 |
| 2 | 0.150 | 0.04 |
| 1 | 0.075 | 0.02 |



test:

check:

three-phase induction motor type test report

Amb Temp: 21.9°C

report NO.: IE3-132M1-6 4KW 14101601

test time:

Modle: IE3-132M1-6
NO.:
Rated f: 50Hz

Rated U: 400V
Rated I: 9.0A
Rated P: 4kW

Rated η : 86.80%
Cos ϕ : 0.74
Rated speed: 970r/min

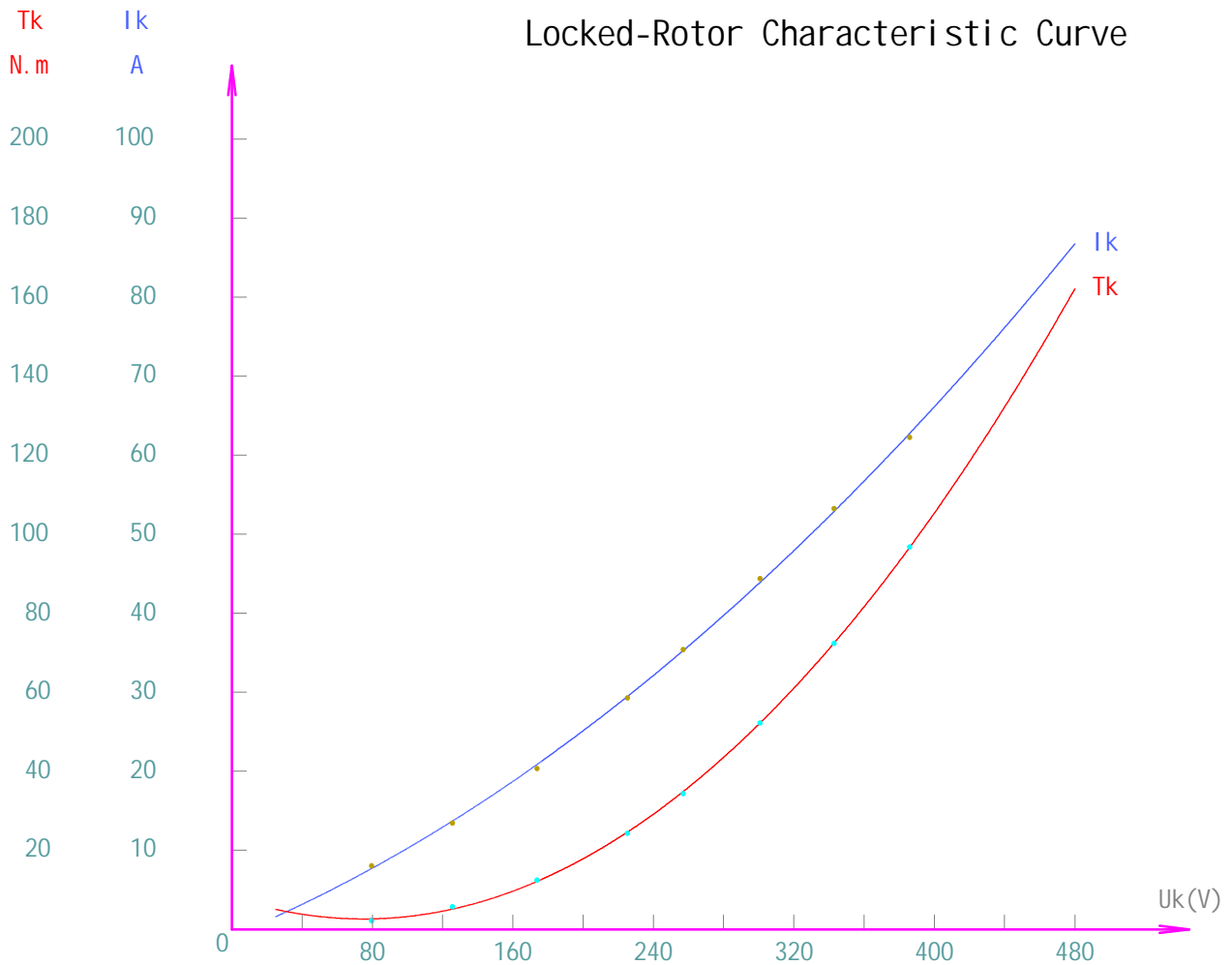
InsClass: F
Connect: Δ
Poles: 6

Locked-rotor Test

| U(V) | I(A) | P1(KW) | Tor(N.m) |
|-------|-------|---------|----------|
| 386.0 | 62.27 | 23.4200 | 96.80 |
| 342.8 | 53.23 | 16.9800 | 72.40 |
| 300.8 | 44.38 | 11.7800 | 52.30 |
| 257.0 | 35.40 | 7.6190 | 34.40 |
| 225.2 | 29.29 | 5.2580 | 24.40 |
| 173.7 | 20.39 | 2.6170 | 12.50 |
| 125.5 | 13.48 | 1.1670 | 5.80 |
| 79.5 | 8.08 | 0.4270 | 2.20 |

I_k (A): 66.12
T_k(N.m): 105.35
P_k(kW): 23.89

I_k/I_n: 7.37
T_k/T_n: 2.69



test:

check:

three-phase induction motor type test report

Amb Temp: 21.9°C

report NO.: IE3-132M1-6 4KW 14101601

test time:

| | | | |
|--------------------|---------------|-----------------------|-------------------|
| Modle: IE3-132M1-6 | Rated U: 400V | Rated η : 86.80% | InsClass: F |
| NO.: | Rated I: 9.0A | Cos ϕ : 0.74 | Connect: Δ |
| Rated f: 50Hz | Rated P: 4kW | Rated speed: 970r/min | Poles: 6 |

Load Test

| P1(kW) | U(V) | I (A) | s(r/min) | Tor (N.m) | windingT(°C) |
|--------|-------|-------|----------|-----------|--------------|
| 7.2040 | 401.0 | 13.05 | 959.0 | 60.100 | 53.53 |
| 5.9180 | 401.8 | 10.86 | 968.0 | 49.400 | 54.45 |
| 4.7340 | 400.9 | 9.18 | 975.0 | 39.600 | 56.09 |
| 3.5720 | 402.6 | 7.75 | 982.0 | 29.700 | 56.58 |
| 2.3880 | 400.9 | 6.45 | 988.0 | 19.500 | 56.52 |
| 1.3130 | 401.1 | 5.62 | 994.0 | 9.700 | 56.04 |
| 0.2740 | 400.1 | 5.29 | 1000.0 | 0.200 | 54.37 |
| 0.2420 | 400.6 | 5.31 | 0.0 | 0.000 | 51.58 |

| P2(kW) | Pcu(kW) | Pal (kW) | Ps(kW) | Ss(%) | η (%) | Cos ϕ |
|--------|---------|----------|--------|-------|------------|------------|
| 6.0316 | 0.5608 | 0.2761 | 0.1832 | 4.24 | 83.73 | 0.795 |
| 5.0756 | 0.3881 | 0.1781 | 0.1238 | 3.30 | 85.77 | 0.783 |
| 4.1137 | 0.2775 | 0.1109 | 0.0797 | 2.56 | 86.90 | 0.743 |
| 3.1170 | 0.1980 | 0.0598 | 0.0449 | 1.84 | 87.26 | 0.661 |
| 2.0533 | 0.1369 | 0.0261 | 0.0194 | 1.23 | 85.99 | 0.533 |
| 1.0452 | 0.1040 | 0.0067 | 0.0049 | 0.61 | 79.61 | 0.336 |
| 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: 0.937

A: 0.051

B: 45.136

θ s(°C): 62.8

150% rated power:

| | | |
|-------------------|--------------------|----------------|
| I (A): 12.95 | P1(kW): 7.1485 | Ss (%): 4.06 |
| Pcu(kW): 0.6449 | Pal (kW): 0.2593 | Ps(kW): 0.1808 |
| η (%): 83.93 | Cos ϕ : 0.797 | P2(kW): 6.00 |

125% rated power:

| | | |
|-------------------|--------------------|----------------|
| I (A): 10.75 | P1(kW): 5.8421 | Ss (%): 3.15 |
| Pcu(kW): 0.4442 | Pal (kW): 0.1661 | Ps(kW): 0.1204 |
| η (%): 85.59 | Cos ϕ : 0.784 | P2(kW): 5.00 |

100% rated power:

| | | |
|-------------------|--------------------|----------------|
| I (A): 8.97 | P1(kW): 4.6017 | Ss (%): 2.40 |
| Pcu(kW): 0.3095 | Pal (kW): 0.0998 | Ps(kW): 0.0747 |
| η (%): 86.92 | Cos ϕ : 0.740 | P2(kW): 4.00 |

75% rated power:

| | | |
|-------------------|--------------------|----------------|
| I (A): 7.56 | P1(kW): 3.4273 | Ss (%): 1.75 |
| Pcu(kW): 0.2197 | Pal (kW): 0.0539 | Ps(kW): 0.0415 |
| η (%): 87.53 | Cos ϕ : 0.654 | P2(kW): 3.00 |

50% rated power:

| | | |
|-------------------|--------------------|----------------|
| I (A): 6.45 | P1(kW): 2.3190 | Ss (%): 1.16 |
| Pcu(kW): 0.1597 | Pal (kW): 0.0236 | Ps(kW): 0.0188 |
| η (%): 86.24 | Cos ϕ : 0.519 | P2(kW): 2.00 |

25% rated power:

| | | |
|-------------------|--------------------|----------------|
| I (A): 5.57 | P1(kW): 1.2767 | Ss (%): 0.57 |
| Pcu(kW): 0.1190 | Pal (kW): 0.0059 | Ps(kW): 0.0042 |
| η (%): 78.32 | Cos ϕ : 0.331 | P2(kW): 1.00 |

Load Characteristic Curve

Report No. : IE3-132M1-6 4KW 14101601
 Model : IE3-132M1-6
 Rated Output: 4 kW
 Ser.No. :

When P2 = 4 kW ,
 I1 = 8.97 A
 P1 = 4.6017 kW
 Sref = 2.40 %
 η = 86.92 %
 Cos ϕ = 0.740

| cos ϕ | η % | Sref % | P1 kW | I1 A |
|------------|-------------|-----------|----------|---------|
| 1.0 | 100 | 5.0 | 5.0 | 15.0 |
| 0.9 | 90 | 4.5 | 4.5 | 13.5 |
| 0.8 | 80 | 4.0 | 4.0 | 12.0 |
| 0.7 | 70 | 3.5 | 3.5 | 10.5 |
| 0.6 | 60 | 3.0 | 3.0 | 9.0 |
| 0.5 | 50 | 2.5 | 2.5 | 7.5 |
| 0.4 | 40 | 2.0 | 2.0 | 6.0 |
| 0.3 | 30 | 1.5 | 1.5 | 4.5 |
| 0.2 | 20 | 1.0 | 1.0 | 3.0 |
| 0.1 | 10 | 0.5 | 0.5 | 1.5 |

