

DATA SHEET

Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15838974

| | | | |
|---------------------|--------------------|-----------------------------|-------------------------|
| Frame | : 250S/M | Cooling method | : IC411 - TEFC |
| Insulation class | : F | Mounting | : B5T |
| Duty cycle | : S1 | Rotation ¹ | : Both |
| Ambient temperature | : -20 °C to +40 °C | Starting method | : Direct On Line |
| Altitude | : 1000 m.a.s.l | Approx. weight ³ | : 500 kg |
| Protection degree | : IP55 | Moment of inertia (J) | : 1.05 kgm ² |
| Design | : N | | |

| | | | |
|--------------------------|-------------|-------------|------------|
| Output | 55 kW | 55 kW | 55 kW |
| Poles | 4 | 4 | 4 |
| Frequency | 50 Hz | 50 Hz | 50 Hz |
| Rated voltage | 380/660 V | 400/690 V | 415 V |
| Rated current | 103/59.3 A | 98.7/57.2 A | 97.5 A |
| L. R. Amperes | 742/427 A | 760/441 A | 800 A |
| LRC | 7.2 | 7.7 | 8.2 |
| No load current | 36.0/20.7 A | 39.0/22.6 A | 42.0 A |
| Rated speed | 1480 rpm | 1482 rpm | 1484 rpm |
| Slip | 1.33 % | 1.20 % | 1.07 % |
| Rated torque | 355 Nm | 355 Nm | 354 Nm |
| Locked rotor torque | 240 % | 270 % | 300 % |
| Pull up torque | 200 % | 230 % | 255 % |
| Breakdown torque | 270 % | 300 % | 330 % |
| Service factor | 1.00 | 1.00 | 1.00 |
| Noise level ² | 64.0 dB(A) | 64.0 dB(A) | 64.0 dB(A) |
| Locked rotor time (hot) | 16 s | 16 s | 15 s |
| Locked rotor time (cold) | 29 s | 29 s | 27 s |
| Efficiency (%) | 50% | 94.5 | 94.0 |
| | 75% | 94.6 | 94.6 |
| | 100% | 94.6 | 94.6 |
| Power Factor | 50% | 0.73 | 0.60 |
| | 75% | 0.82 | 0.78 |
| | 100% | 0.86 | 0.83 |

| | | | |
|----------------------|------------------|---------------|--|
| Bearing type | Drive end | Non drive end | Foundation loads |
| | 6314-C3 | 6314-C3 | |
| Lubrication interval | 14000 h | 14000 h | Max. compression : 13966 N |
| Lubricant amount | 27 g | 27 g | Load type :- |
| Lubricant type | MOBIL POLYREX EM | | Load torque :- |
| | | | Load inertia (J=GD ² /4) :- |

Notes
See notes on page 2.

This revision replaces and cancel the previous one, which must be eliminated.
 (1) Looking the motor from the shaft end.
 (2) Measured at 1m and with tolerance of +3dB(A).
 (3) Approximate weight, subject to be changed after manufacturing process.
 (4) At 100% of full load.

These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.

| | | | | | |
|--------------|-----------------|--|------|------------|------|
| Rev. | Changes Summary | | Rev. | Checked | Date |
| Performed by | dang | | | 1230957077 | |
| Checked by | AUTOMATICO | | | Page | Rev. |
| Date | 11/11/2021 | | | 1 / 7 | 0 |

DATA SHEET

Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15838974

Thermal protection

| ID | Application | Type | Quantity | Sensing Temperature |
|----|-------------|----------------------|-----------|---------------------|
| 1 | Winding | Thermistor - 2 wires | 1 x Phase | 155°C |

Space heater information
Voltage: 110-127/200-240 V
Output: 46-62/46-66 W

Notes

| | | | | |
|-----------|---------------|---------------|-----------|----------------|
| Standards | Specification | : IEC 60034-1 | Vibration | : IEC 60034-14 |
| | Test | : IEC 60034-2 | Tolerance | : IEC 60034-1 |
| | Noise | : IEC 60034-9 | | |

This revision replaces and cancel the previous one, which must be eliminated.
(1) Looking the motor from the shaft end.
(2) Measured at 1m and with tolerance of +3dB(A).
(3) Approximate weight, subject to be changed after manufacturing process.
(4) At 100% of full load.

These are average values based on tests with sinusoidal power supply, subject to the tolerances stipulated in IEC 60034-1.

| Rev. | Changes Summary | | Rev. | Checked | Date |
|--------------|-----------------|--|------|------------|------|
| Performed by | dang | | | 1230957077 | |
| Checked by | AUTOMATICO | | | Page | Rev. |
| Date | 11/11/2021 | | | 2 / 7 | 0 |

THERMAL LIMIT CURVE

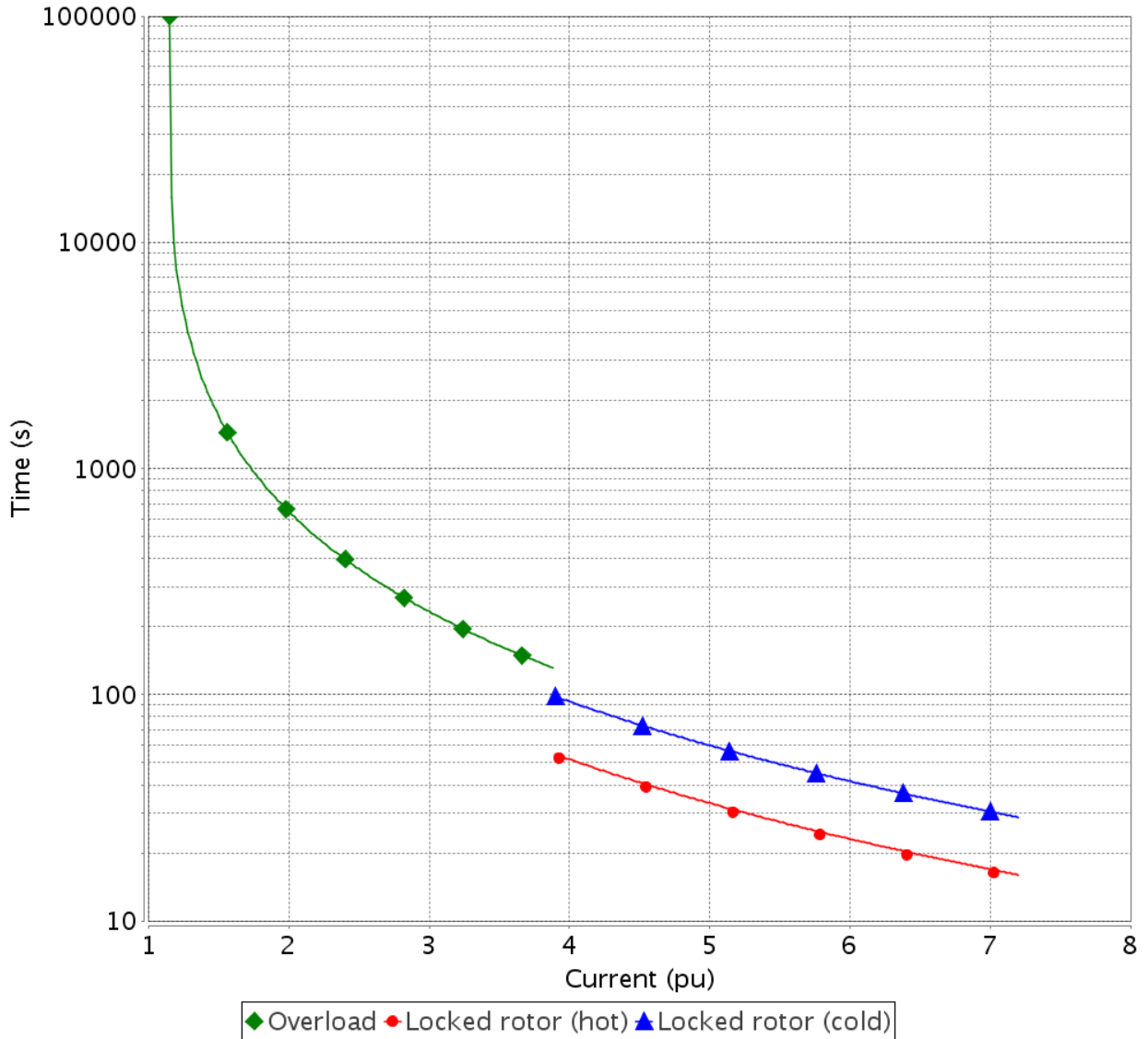
Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage

Product code : 15838974



Performance : 55 kW 380/660 V 50 Hz 4P 250S/M

| | | | |
|---------------------|--------------|-----------------------|-------------------------|
| Rated current | : 103/59.3 A | Moment of inertia (J) | : 1.05 kgm ² |
| LRC | : 7.2 | Duty cycle | : S1 |
| Rated torque | : 355 Nm | Insulation class | : F |
| Locked rotor torque | : 240 % | Service factor | : 1.00 |
| Breakdown torque | : 270 % | Temperature rise | : 80 K |
| Rated speed | : 1480 rpm | Design | : N |
| Heating constant | : 31.2 min | | |
| Cooling constant | : 93.6 min | | |

| Rev. | Changes Summary | | Rev. | Checked | Date |
|--------------|-----------------|--|------|---------|------|
| | | | | | |
| Performed by | dang | | | | |
| Checked by | | | | Page | Rev. |
| Date | 11/11/2021 | | | 3 / 7 | 0 |

LOAD PERFORMANCE CURVE

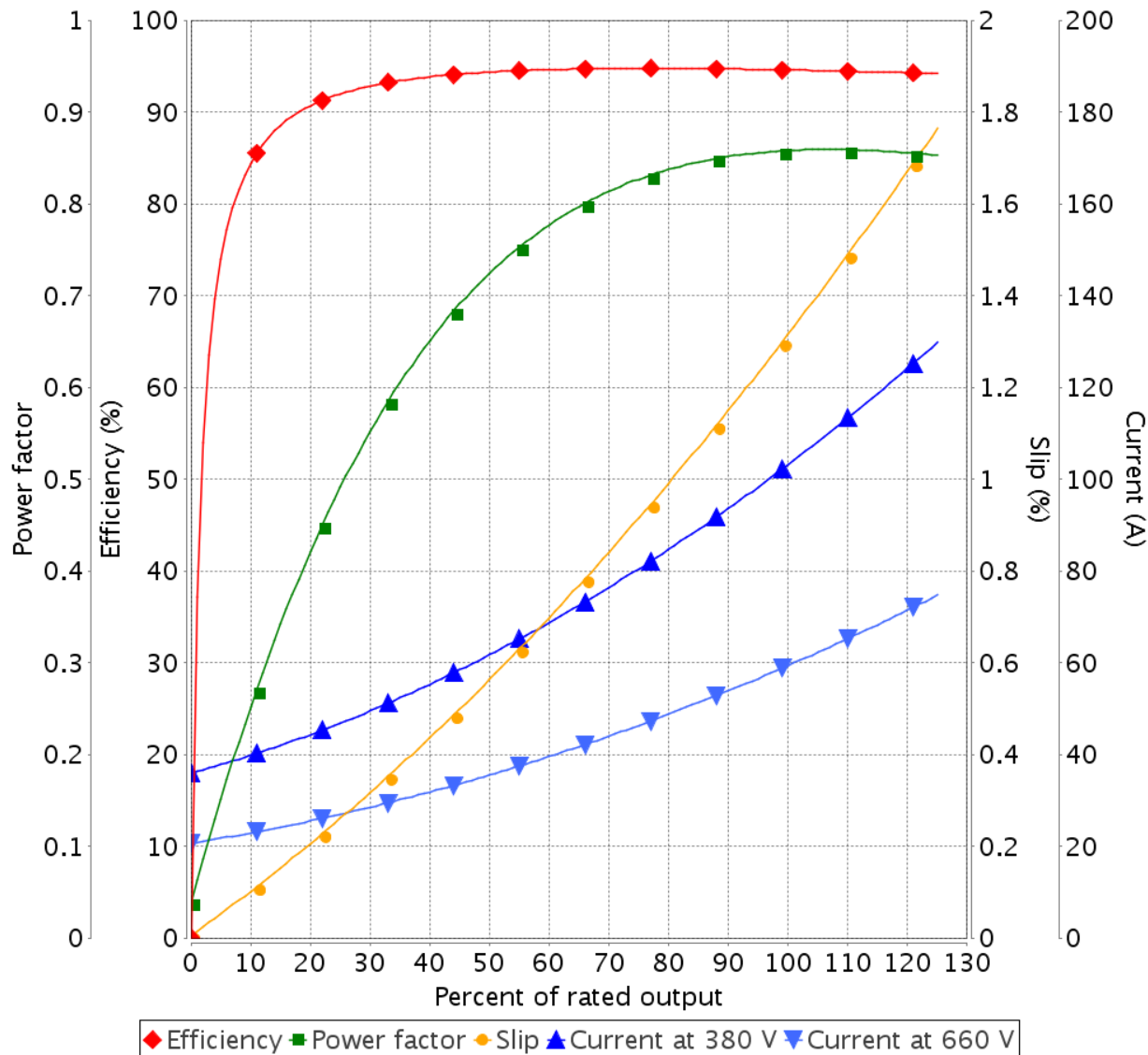
Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage

Product code : 15838974



Performance : 55 kW 380/660 V 50 Hz 4P 250S/M

Rated current : 103/59.3 A
 LRC : 7.2
 Rated torque : 355 Nm
 Locked rotor torque : 240 %
 Breakdown torque : 270 %
 Rated speed : 1480 rpm

Moment of inertia (J) : 1.05 kgm²
 Duty cycle : S1
 Insulation class : F
 Service factor : 1.00
 Temperature rise : 80 K
 Design : N

| Rev. | Changes Summary | | Rev. | Checked | Date |
|--------------|-----------------|--|------|---------|------|
| Performed by | dang | | | | |
| Checked by | | | | Page | Rev. |
| Date | 11/11/2021 | | | 4 / 7 | 0 |

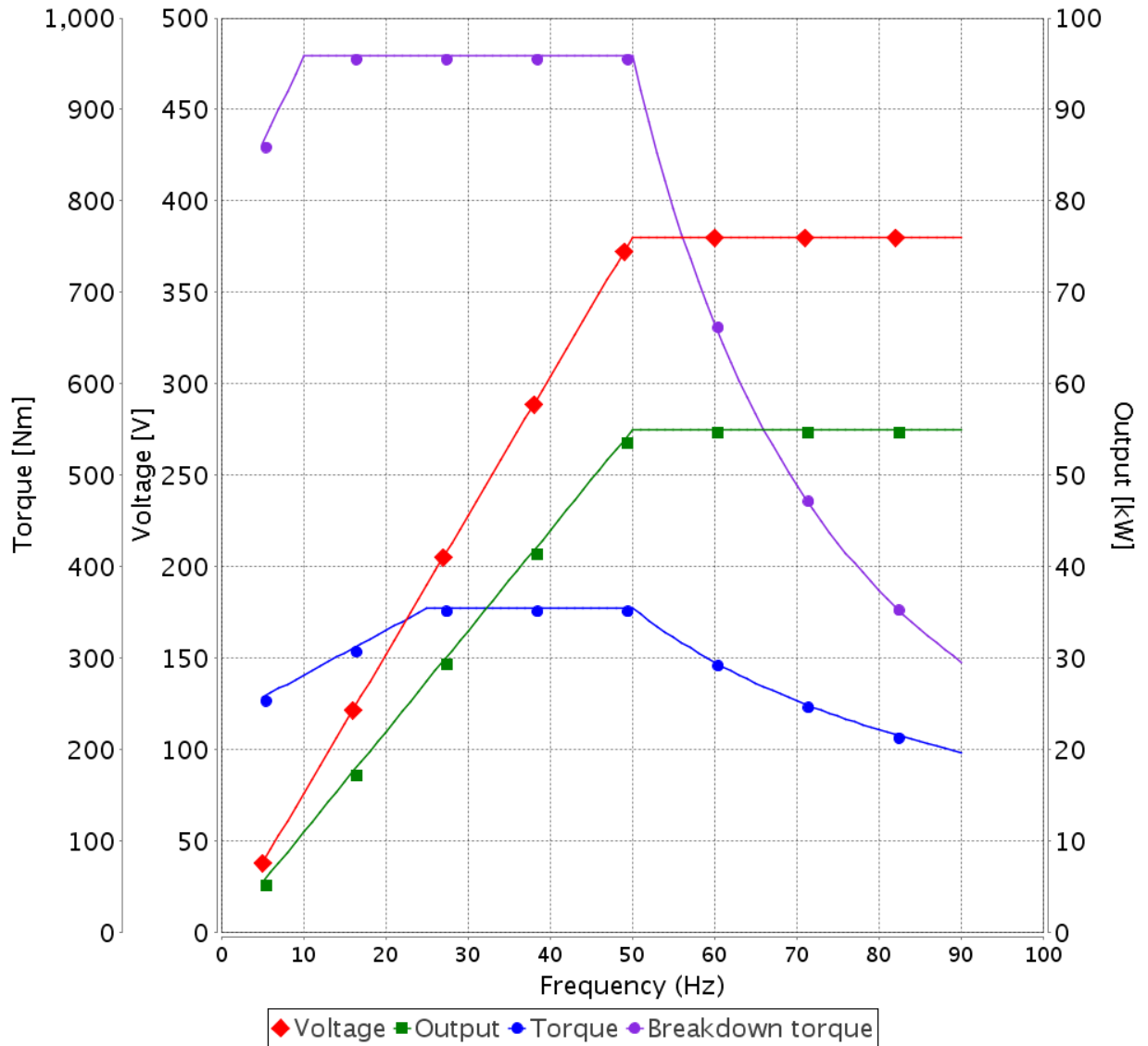
VFD OPERATION CURVE

Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15838974



Performance : 55 kW 380/660 V 50 Hz 4P 250S/M

| | | | |
|---------------------|--------------|-----------------------|-------------------------|
| Rated current | : 103/59.3 A | Moment of inertia (J) | : 1.05 kgm ² |
| LRC | : 7.2 | Duty cycle | : S1 |
| Rated torque | : 355 Nm | Insulation class | : F |
| Locked rotor torque | : 240 % | Service factor | : 1.00 |
| Breakdown torque | : 270 % | Temperature rise | : 80 K |
| Rated speed | : 1480 rpm | Design | : N |

| | |
|--------------------------|----------|
| Voltage Peak Phase-Phase | = 1600.0 |
| dV/dt | = 5200.0 |
| Rise time | = 0.1 |

| Rev. | Changes Summary | | Rev. | Checked | Date |
|--------------|-----------------|--|------|---------|------|
| | | | | | |
| Performed by | dang | | | Page | Rev. |
| Checked by | | | | 5 / 7 | 0 |
| Date | 11/11/2021 | | | | |

TORQUE AND CURRENT VS SPEED CURVE

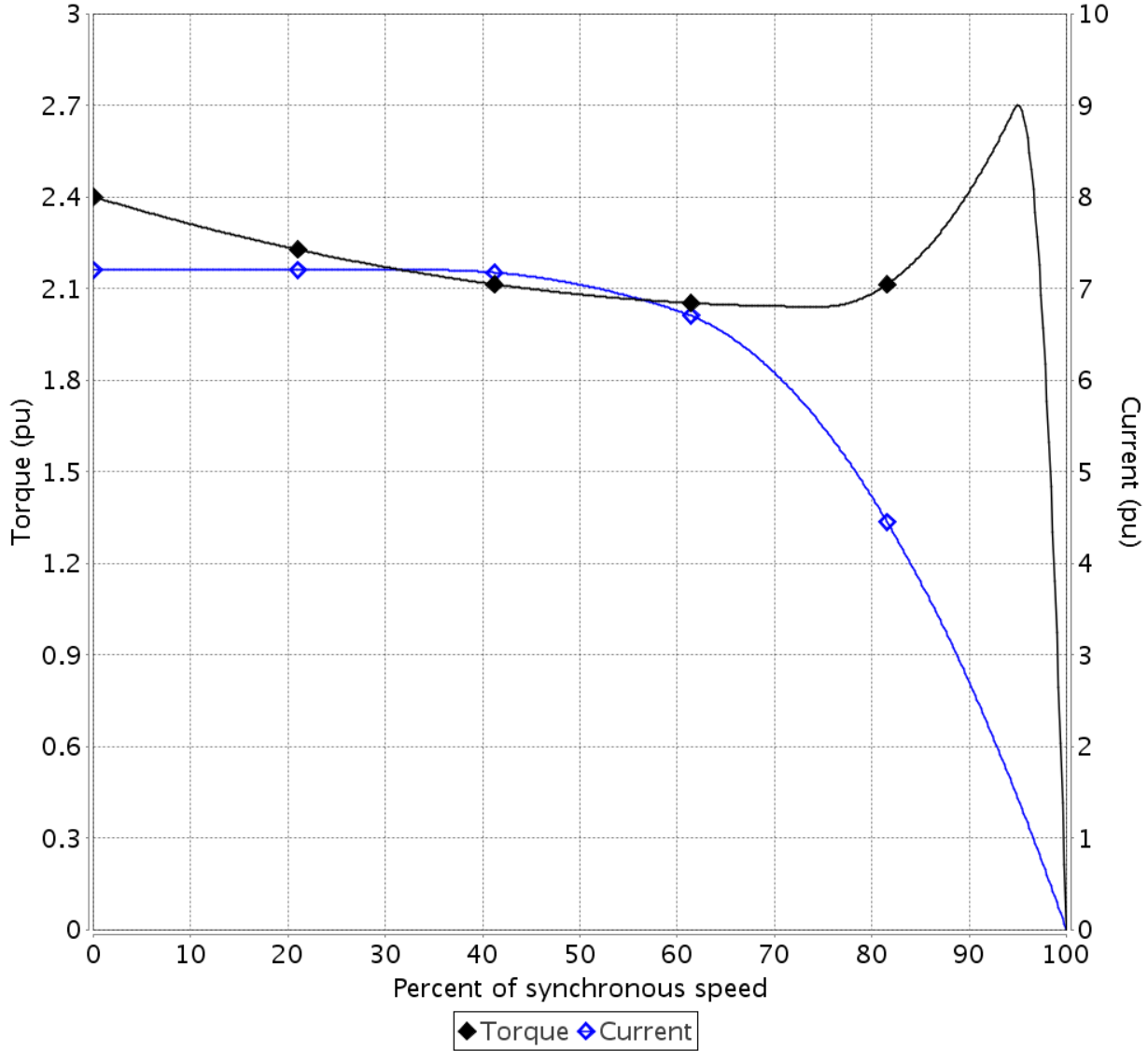
Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage

Product code : 15838974



Performance : 55 kW 380/660 V 50 Hz 4P 250S/M

| | | | |
|---------------------|--------------|-----------------------|-------------------------|
| Rated current | : 103/59.3 A | Moment of inertia (J) | : 1.05 kgm ² |
| LRC | : 7.2 | Duty cycle | : S1 |
| Rated torque | : 355 Nm | Insulation class | : F |
| Locked rotor torque | : 240 % | Service factor | : 1.00 |
| Breakdown torque | : 270 % | Temperature rise | : 80 K |
| Rated speed | : 1480 rpm | Design | : N |

Locked rotor time 100% : 16 s (hot) 29 s (cold)

Load inertia (J=GD²/4) : 1.05 kgm²

| Rev. | Changes Summary | Rev. | Checked | Date |
|--------------|-----------------|------------|---------|------|
| | | | | |
| Performed by | dang | 1230957077 | | |
| Checked by | AUTOMATICO | | | |
| Date | 11/11/2021 | | | |
| | | Page | Rev. | |
| | | 6 / 7 | 0 | |

EQUIVALENT CIRCUIT

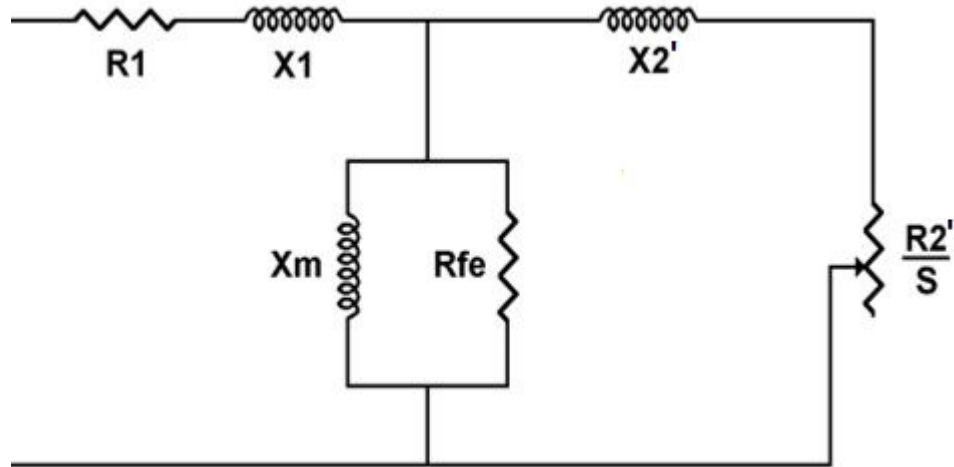
Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage

Product code : 15838974



| Rated | | | |
|------------|-------------------------------|------------|----------------------------|
| R1 | 0.1063 omhs / 0.0405 p.u. | X1 | 0.5162 omhs / 0.1966 p.u. |
| R2' | 0.0586 omhs / 0.0223 p.u. | X2' | 0.7283 omhs / 0.2774 p.u. |
| Rfe | 639.5494 omhs / 243.5915 p.u. | Xm | 15.4571 omhs / 5.8873 p.u. |

| Locked rotor | | | |
|--------------|-------------------------------|------------|----------------------------|
| R1 | 0.1201 omhs / 0.0457 p.u. | X1 | 0.4016 omhs / 0.1530 p.u. |
| R2' | 0.2227 omhs / 0.0848 p.u. | X2' | 0.3944 omhs / 0.1502 p.u. |
| Rfe | 519.6370 omhs / 197.9193 p.u. | Xm | 17.7522 omhs / 6.7615 p.u. |

| | | | |
|--------------|-------------|-----------------|---------------------------|
| T"do | 0.6550 s | X/R | 5.0267 p.u. |
| T"d | 0.0326 s | RS | 0.0286 omhs / 0.0109 p.u. |
| Ta | 0.0160 s | X"d = Xs | 0.7960 omhs / 0.3032 p.u. |
| Zbase | 2.6255 omhs | X2(-) | 0.5559 omhs / 0.2117 p.u. |

All parameters reflected to stator side.
Per phase values, for T connection.
Resistances at 20.0 °C, reactances at rated voltage and frequency.

| | | | |
|-------|----------------------------|----------|-----------------------------------|
| R1 | : Stator resistance | T"do | : Open circuit AC time constant |
| R2' | : Rotor resistance | T'd | : Short circuit AC time constant |
| Rfe | : Core loss resistance | Ta | : Short circuit DC time constant |
| X1 | : Stator leakage reactance | X/R | : X/R ratio |
| X2' | : Rotor leakage reactance | RS | : Supplementary losses resistance |
| Xm | : Magnetizing reactance | X"d = Xs | : Subtransient reactance |
| Zbase | : Base impedance | X2(-) | : Negative sequence reactance |

| Rev. | Changes Summary | | Rev. | Checked | Date |
|--------------|-----------------|--|-------|---------|------|
| Performed by | dang | | Page | Rev. | |
| Checked by | | | 7 / 7 | 0 | |
| Date | 11/11/2021 | | | | |