

**DATA SHEET****Three Phase Induction Motor - Squirrel Cage**

Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15824772

Frame	: 100L	Cooling method	: IC411 - TEFC
Insulation class	: F	Mounting	: B3T
Duty cycle	: S1	Rotation <sup>1</sup>	: Both
Ambient temperature	: -20 °C to +40 °C	Starting method	: Direct On Line
Altitude	: 1000 m.a.s.l	Approx. weight <sup>3</sup>	: 35.0 kg
Protection degree	: IP55	Moment of inertia (J)	: 0.0064 kgm <sup>2</sup>
Design	: N		

Output	3 kW	3 kW	3 kW
Poles	2	2	2
Frequency	50 Hz	50 Hz	50 Hz
Rated voltage	220/380 V	230/400 V	240/415 V
Rated current	10.4/6.02 A	10.2/5.85 A	9.98/5.77 A
L. R. Amperes	78.0/45.1 A	81.4/46.8 A	84.8/49.0 A
LRC	7.5	8.0	8.5
No load current	4.40/2.55 A	4.96/2.85 A	5.45/3.15 A
Rated speed	2905 rpm	2915 rpm	2920 rpm
Slip	3.17 %	2.83 %	2.67 %
Rated torque	9.87 Nm	9.83 Nm	9.82 Nm
Locked rotor torque	220 %	240 %	260 %
Pull up torque	185 %	200 %	220 %
Breakdown torque	300 %	330 %	360 %
Service factor	1.00	1.00	1.00
Noise level <sup>2</sup>	67.0 dB(A)	67.0 dB(A)	67.0 dB(A)
Locked rotor time (hot)	10 s	9 s	9 s
Locked rotor time (cold)	18 s	16 s	16 s
Efficiency (%)	50%	85.5	84.5
	75%	86.5	86.5
	100%	87.1	87.2
Power Factor	50%	0.71	0.64
	75%	0.82	0.76
	100%	0.87	0.83

Bearing type	Drive end	Non drive end	Foundation loads	
	6206-ZZ	6205-ZZ		Max. traction
Lubrication interval	-	-	Max. compression	: 1064 N
Lubricant amount	-	-	Load type	: -
Lubricant type	MOBIL POLYREX EM		Load torque	: -
			Load inertia (J=GD <sup>2</sup> /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.

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### Thermal protection

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

### Space heater information

Voltage: 110-127 V

Output: 9.2-12 W

### Notes

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

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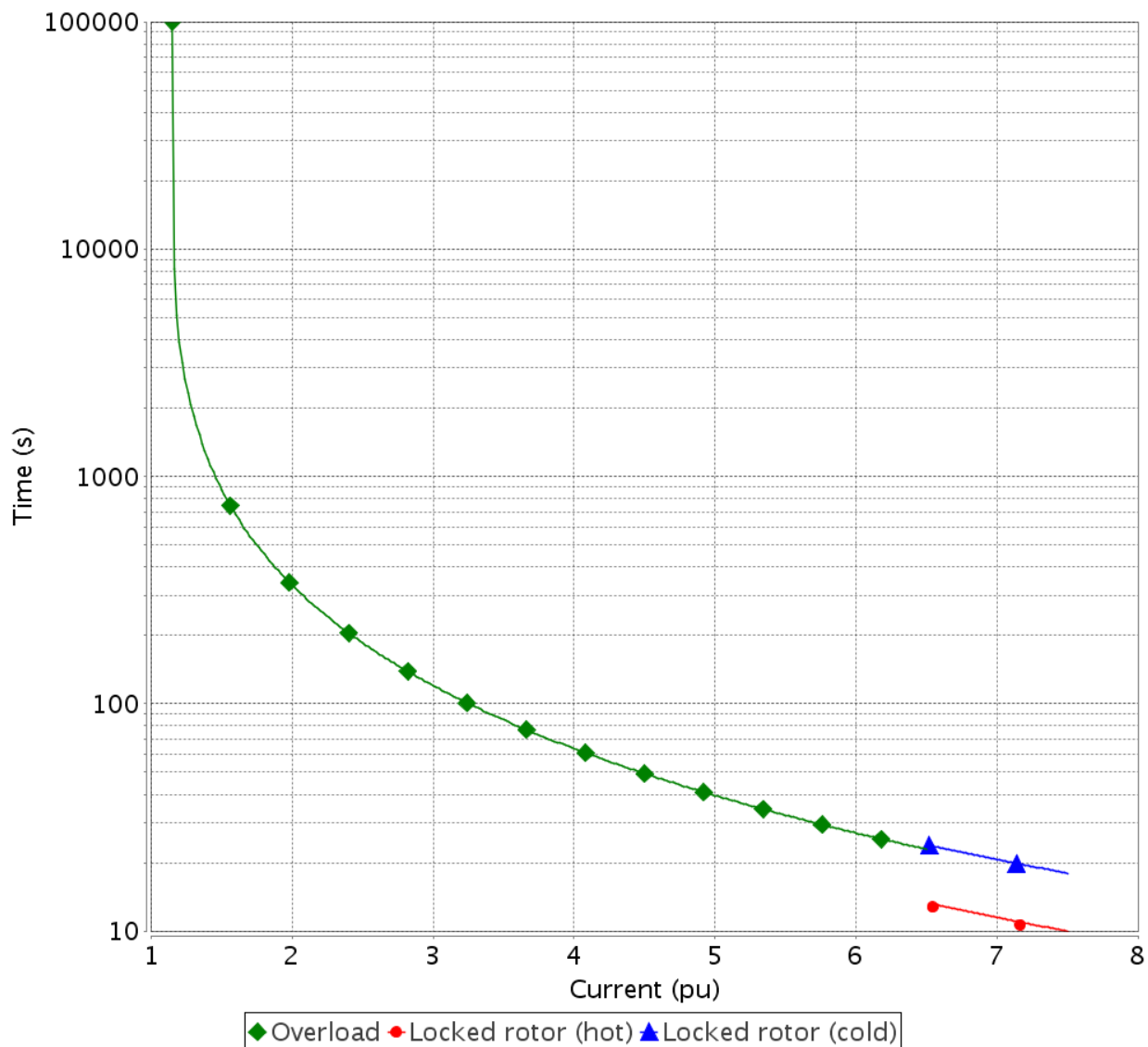
# THERMAL LIMIT CURVE

## Three Phase Induction Motor - Squirrel Cage



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Performance : 3 kW 220/380 V 50 Hz 2P 100L

Rated current	: 10.4/6.02 A	Moment of inertia (J)	: 0.0064 kgm <sup>2</sup>
LRC	: 7.5	Duty cycle	: S1
Rated torque	: 9.87 Nm	Insulation class	: F
Locked rotor torque	: 220 %	Service factor	: 1.00
Breakdown torque	: 300 %	Temperature rise	: 80 K
Rated speed	: 2905 rpm	Design	: N
Heating constant	: 16.1 min		
Cooling constant	: 48.3 min		

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# LOAD PERFORMANCE CURVE

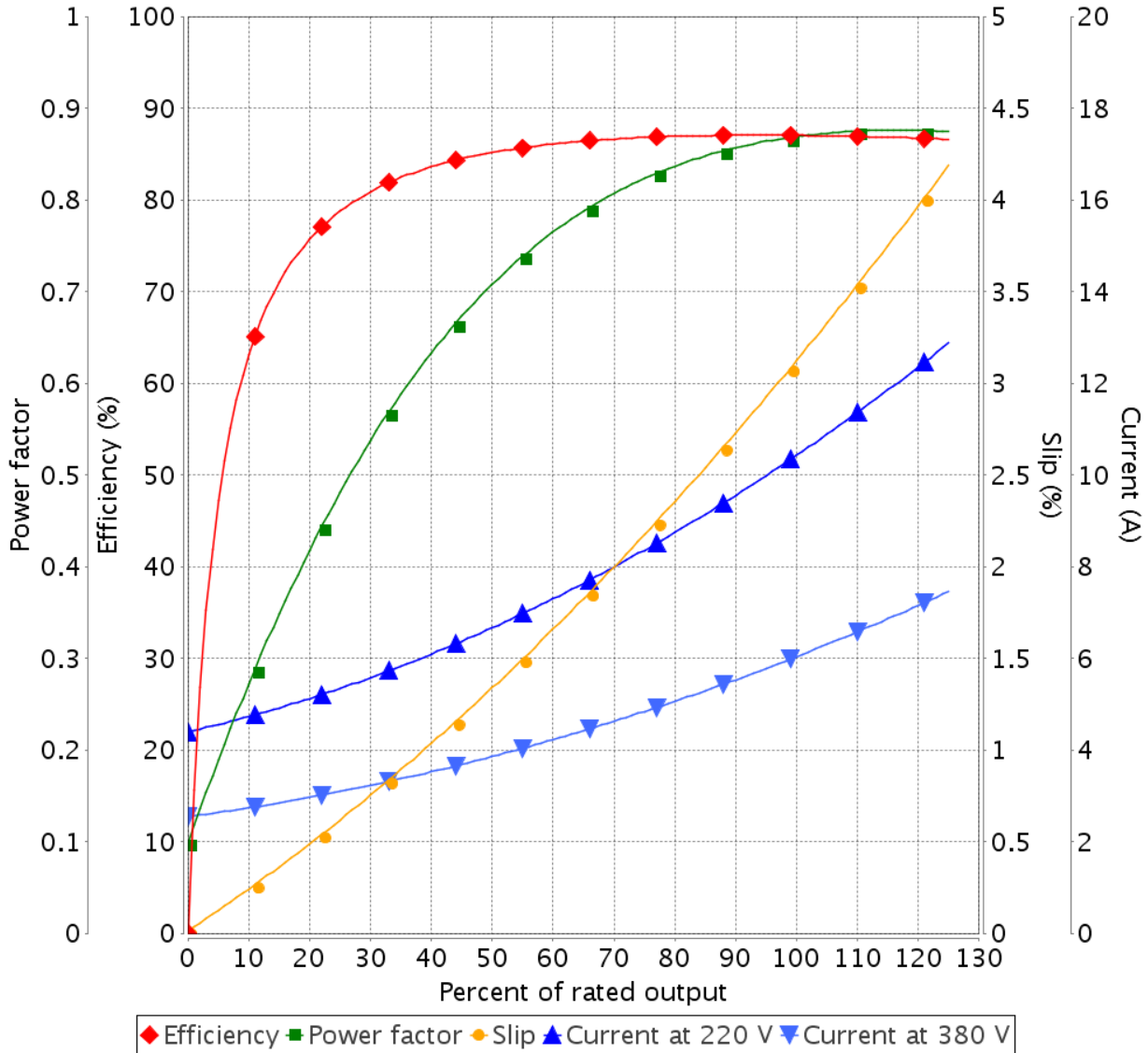
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Performance : 3 kW 220/380 V 50 Hz 2P 100L

Rated current : 10.4/6.02 A  
 LRC : 7.5  
 Rated torque : 9.87 Nm  
 Locked rotor torque : 220 %  
 Breakdown torque : 300 %  
 Rated speed : 2905 rpm

Moment of inertia (J) : 0.0064 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

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# VFD OPERATION CURVE

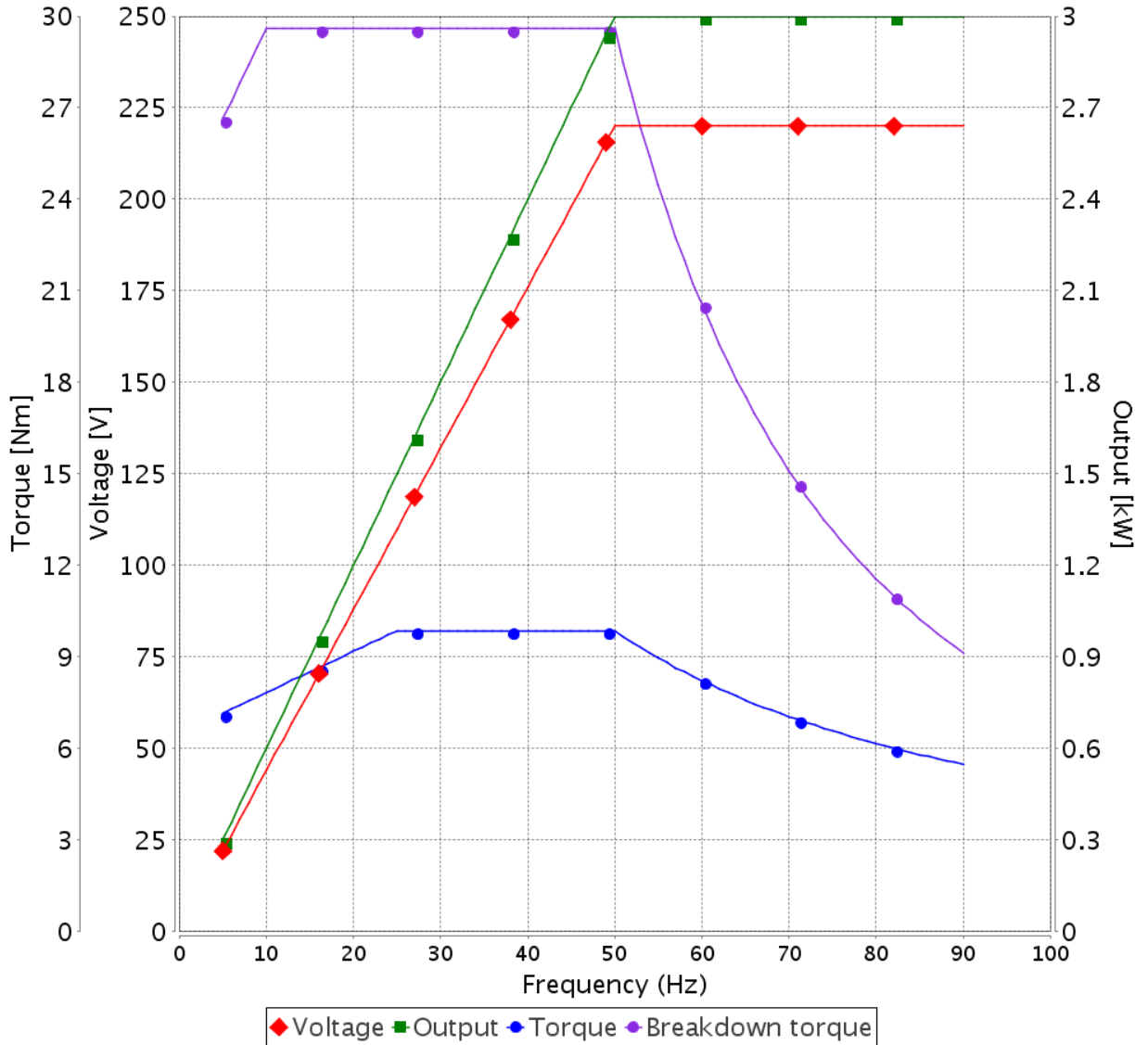
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Performance : 3 kW 220/380 V 50 Hz 2P 100L

Rated current : 10.4/6.02 A  
 LRC : 7.5  
 Rated torque : 9.87 Nm  
 Locked rotor torque : 220 %  
 Breakdown torque : 300 %  
 Rated speed : 2905 rpm

Moment of inertia (J) : 0.0064 kgm<sup>2</sup>  
 Duty cycle : S1  
 Insulation class : F  
 Service factor : 1.00  
 Temperature rise : 80 K  
 Design : N

Voltage Peak Phase-Phase = 2000.0  
 dV/dt = 6500.0  
 Rise time = 0.1

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# TORQUE AND CURRENT VS SPEED CURVE

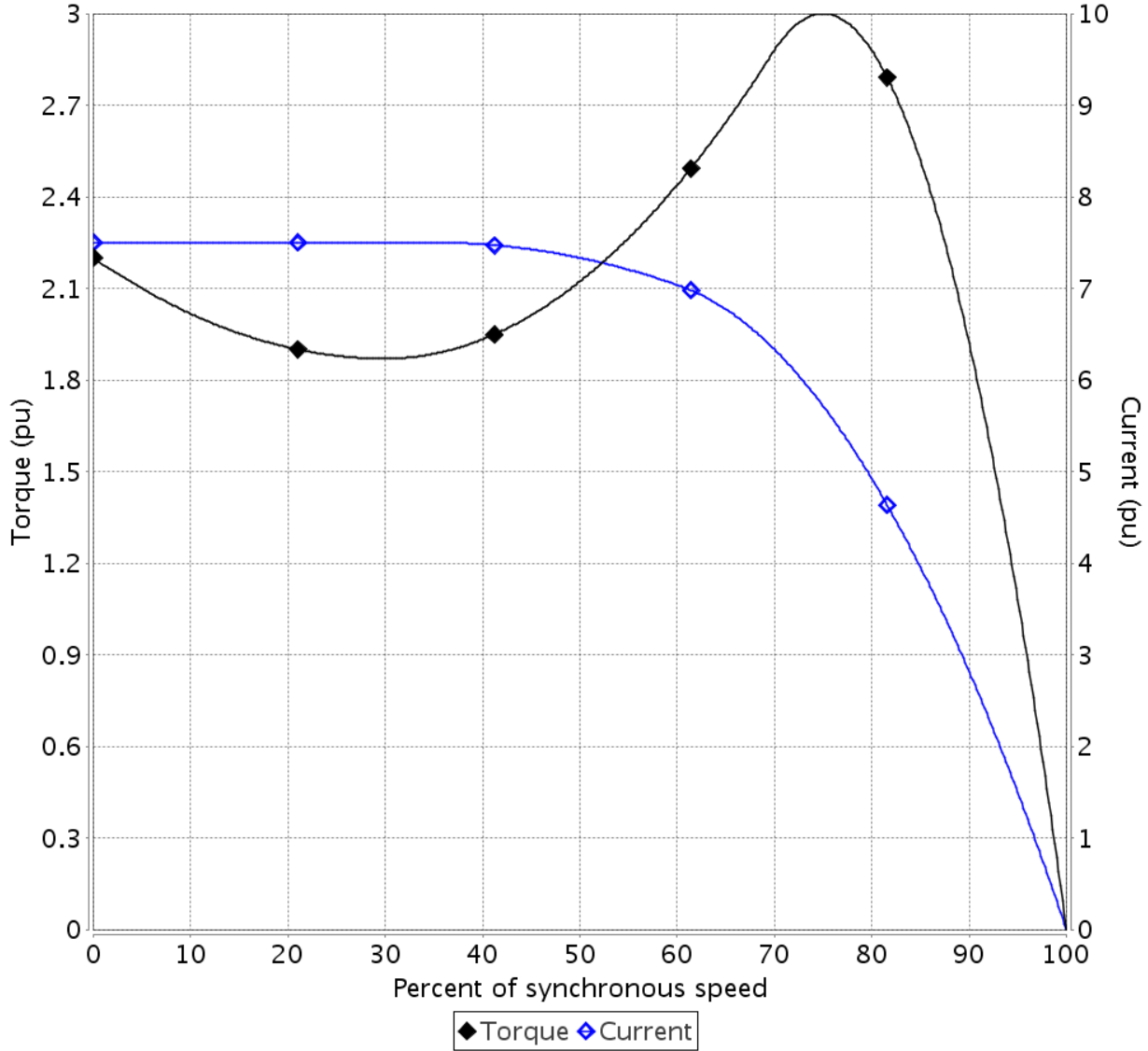
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Performance : 3 kW 220/380 V 50 Hz 2P 100L

Rated current : 10.4/6.02 A

LRC : 7.5

Rated torque : 9.87 Nm

Locked rotor torque : 220 %

Breakdown torque : 300 %

Rated speed : 2905 rpm

Moment of inertia (J) : 0.0064 kgm<sup>2</sup>

Duty cycle : S1

Insulation class : F

Service factor : 1.00

Temperature rise : 80 K

Design : N

Locked rotor time 100% : 10 s (hot) 18 s (cold)

Load inertia (J=GD<sup>2</sup>/4) : 0.0064 kgm<sup>2</sup>

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# EQUIVALENT CIRCUIT

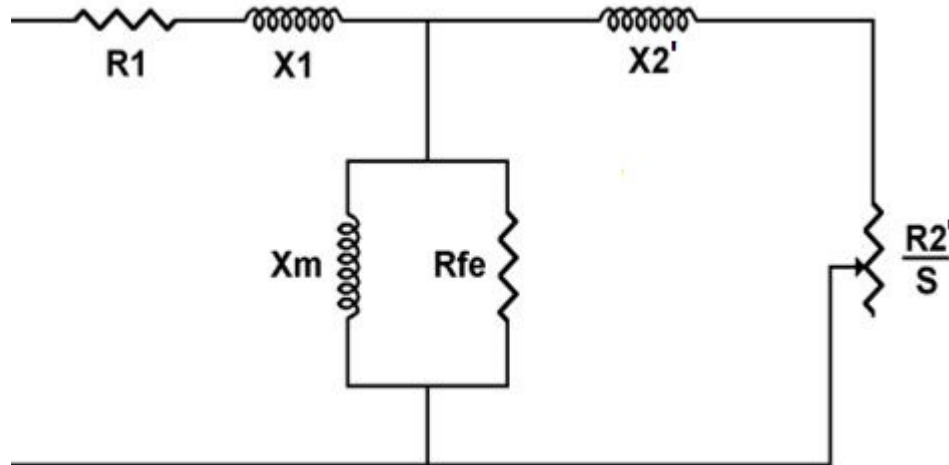
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Rated			
<b>R1</b>	0.5912 omhs / 0.0366 p.u.	<b>X1</b>	0.6706 omhs / 0.0416 p.u.
<b>R2'</b>	0.2688 omhs / 0.0167 p.u.	<b>X2'</b>	0.7438 omhs / 0.0461 p.u.
<b>Rfe</b>	554.3790 omhs / 34.3624 p.u.	<b>Xm</b>	24.3573 omhs / 1.5098 p.u.

Locked rotor			
<b>R1</b>	0.7751 omhs / 0.0480 p.u.	<b>X1</b>	0.6017 omhs / 0.0373 p.u.
<b>R2'</b>	0.3329 omhs / 0.0206 p.u.	<b>X2'</b>	0.2946 omhs / 0.0183 p.u.
<b>Rfe</b>	503.2085 omhs / 31.1907 p.u.	<b>Xm</b>	33.1392 omhs / 2.0541 p.u.

<b>T"do</b>	0.2312 s	<b>X/R</b>	1.1545 p.u.
<b>T"d</b>	0.0083 s	<b>RS</b>	0.0679 omhs / 0.0042 p.u.
<b>Ta</b>	0.0037 s	<b>X"d = Xs</b>	0.8963 omhs / 0.0556 p.u.
<b>Zbase</b>	16.1333 omhs	<b>X2(-)</b>	0.4134 omhs / 0.0256 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

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