

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

Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15839265

Frame	: 180M	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	: 191 kg
Protection degree	: IP55	Moment of inertia (J)	: 0.1740 kgm ²
Design	: N		

Output	18.5 kW	18.5 kW	18.5 kW
Poles	4	4	4
Frequency	50 Hz	50 Hz	50 Hz
Rated voltage	380/660 V	400/690 V	415 V
Rated current	36.1/20.8 A	35.2/20.4 A	34.7 A
L. R. Amperes	253/145 A	264/153 A	278 A
LRC	7.0	7.5	8.0
No load current	14.5/8.35 A	16.0/9.28 A	17.5 A
Rated speed	1470 rpm	1470 rpm	1475 rpm
Slip	2.00 %	2.00 %	1.67 %
Rated torque	120 Nm	120 Nm	120 Nm
Locked rotor torque	270 %	300 %	330 %
Pull up torque	230 %	255 %	280 %
Breakdown torque	290 %	320 %	350 %
Service factor	1.00	1.00	1.00
Noise level ²	61.0 dB(A)	61.0 dB(A)	61.0 dB(A)
Locked rotor time (hot)	13 s	13 s	13 s
Locked rotor time (cold)	23 s	23 s	23 s
Efficiency (%)	50%	92.2	91.8
	75%	92.6	92.6
	100%	92.6	92.6
Power Factor	50%	0.69	0.61
	75%	0.79	0.73
	100%	0.84	0.80

Bearing type	Drive end	Non drive end	Foundation loads	Max. traction	: 5076 N
	6311-C3	6211-C3		Max. compression	: 6950 N
Lubrication interval	20000 h	20000 h	Load type	: -	
Lubricant amount	18 g	11 g	Load torque	: -	
Lubricant type	MOBIL POLYREX EM		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.

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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: 110-127/200-240 V
Output: 32-43/32-46 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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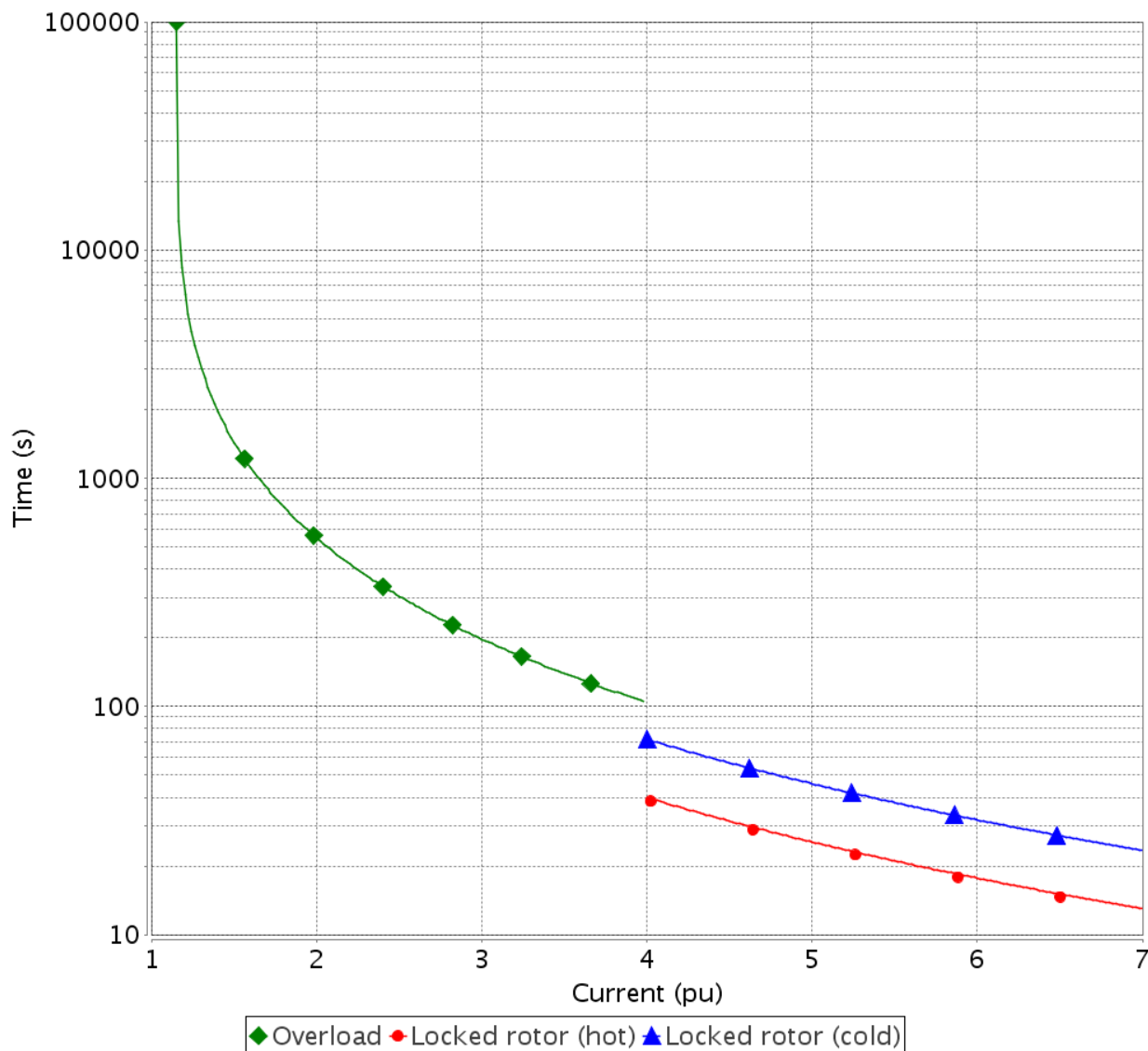
THERMAL LIMIT CURVE

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Performance : 18.5 kW 380/660 V 50 Hz 4P 180M

Rated current	: 36.1/20.8 A	Moment of inertia (J)	: 0.1740 kgm ²
LRC	: 7.0	Duty cycle	: S1
Rated torque	: 120 Nm	Insulation class	: F
Locked rotor torque	: 270 %	Service factor	: 1.00
Breakdown torque	: 290 %	Temperature rise	: 80 K
Rated speed	: 1470 rpm	Design	: N
Heating constant	: 26.4 min		
Cooling constant	: 79.2 min		

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LOAD PERFORMANCE CURVE

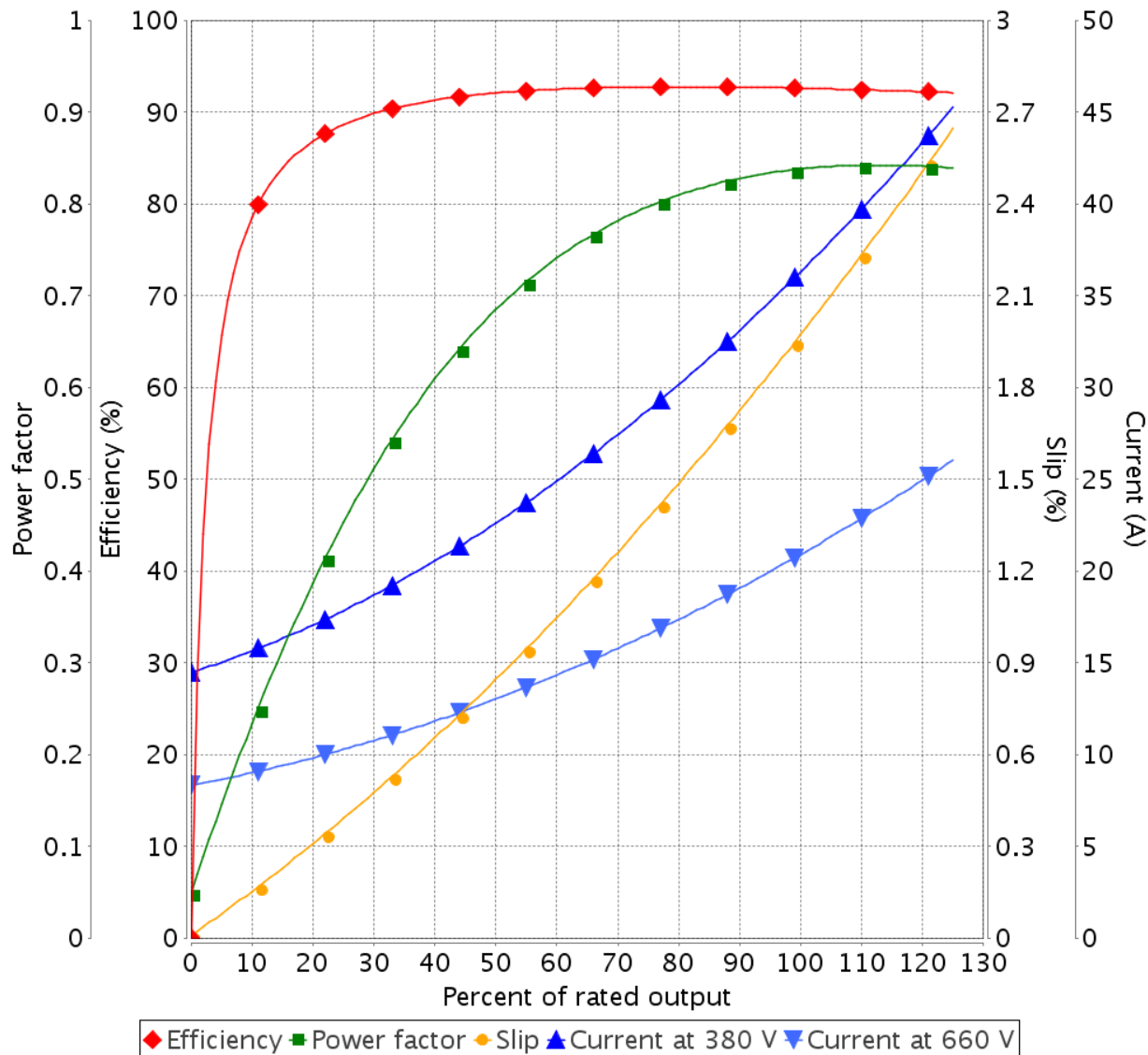
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 LRC : 7.0
 Rated torque : 120 Nm
 Locked rotor torque : 270 %
 Breakdown torque : 290 %
 Rated speed : 1470 rpm

Moment of inertia (J) : 0.1740 kgm²
 Duty cycle : S1
 Insulation class : F
 Service factor : 1.00
 Temperature rise : 80 K
 Design : N

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VFD OPERATION CURVE

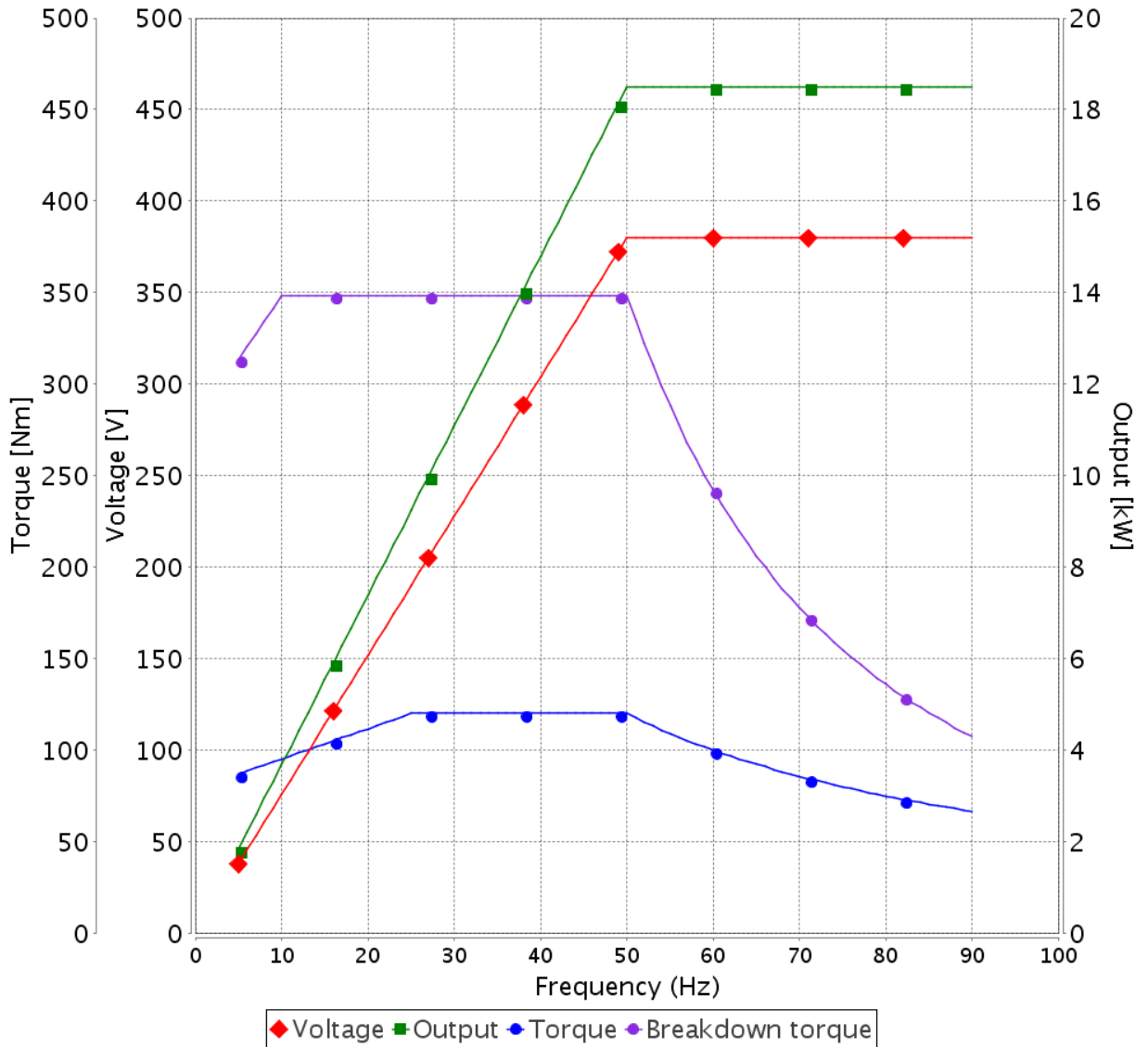
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 Rated speed : 1470 rpm

Moment of inertia (J) : 0.1740 kgm²
 Duty cycle : S1
 Insulation class : F
 Service factor : 1.00
 Temperature rise : 80 K
 Design : N

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

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TORQUE AND CURRENT VS SPEED CURVE

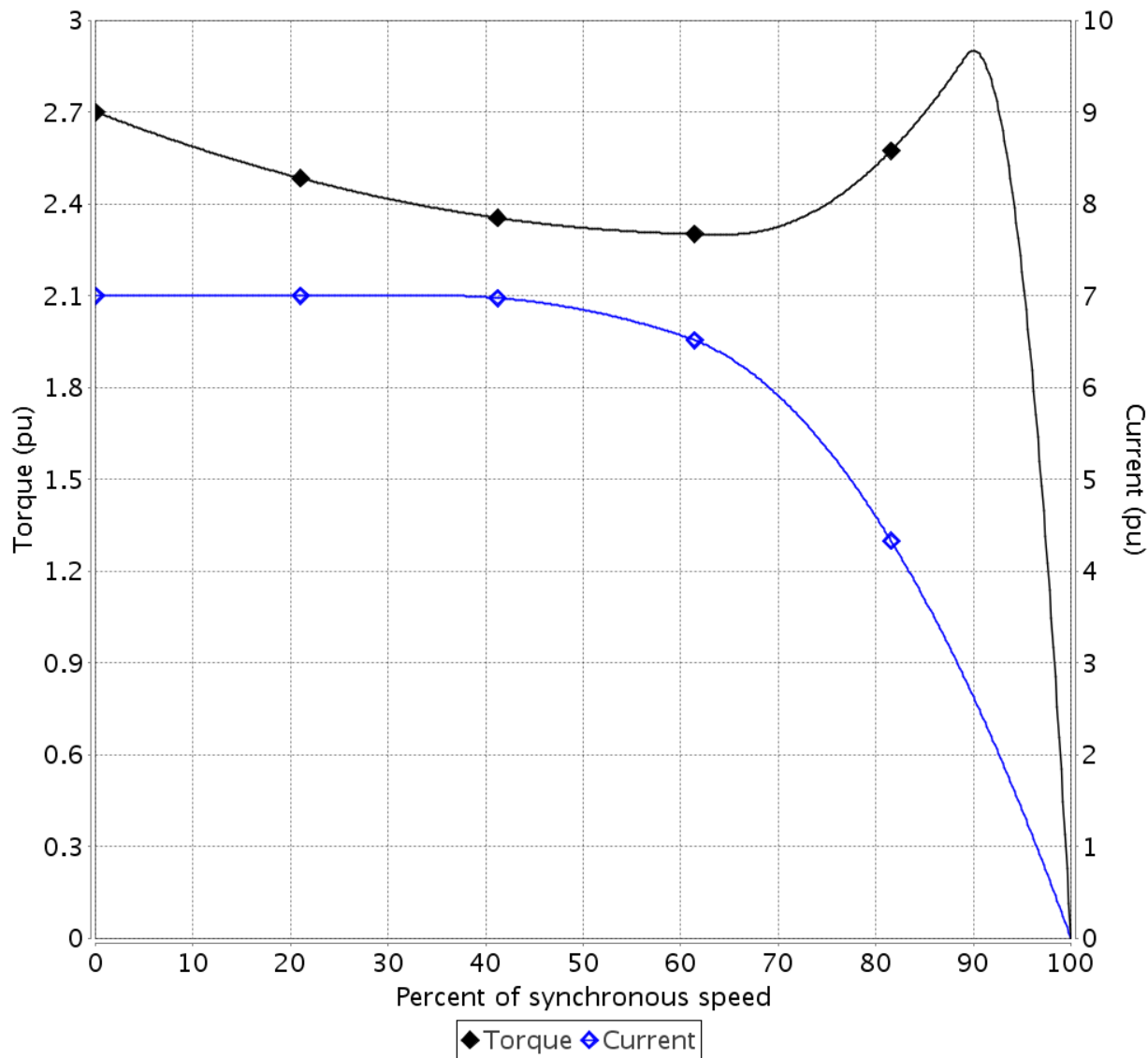
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LRC : 7.0

Rated torque : 120 Nm

Locked rotor torque : 270 %

Breakdown torque : 290 %

Rated speed : 1470 rpm

Moment of inertia (J) : 0.1740 kgm²

Duty cycle : S1

Insulation class : F

Service factor : 1.00

Temperature rise : 80 K

Design : N

Locked rotor time 100% : 13 s (hot) 23 s (cold)

Load inertia (J=GD²/4) : 0.1740 kgm²

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EQUIVALENT CIRCUIT

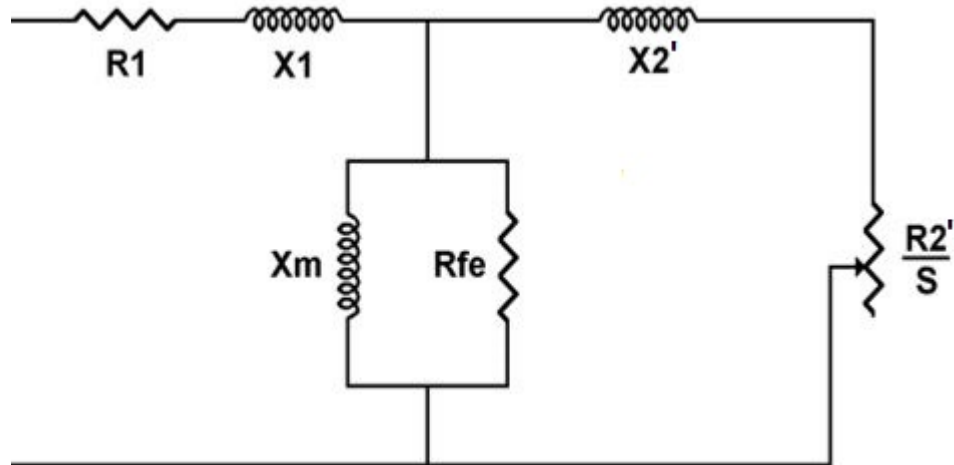
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Rated			
R1	0.3772 omhs / 0.0483 p.u.	X1	1.2509 omhs / 0.1603 p.u.
R2'	0.2873 omhs / 0.0368 p.u.	X2'	2.0929 omhs / 0.2681 p.u.
Rfe	1162.5500 omhs / 148.9418 p.u.	Xm	37.8752 omhs / 4.8524 p.u.

Locked rotor			
R1	0.4270 omhs / 0.0547 p.u.	X1	0.9675 omhs / 0.1240 p.u.
R2'	0.7724 omhs / 0.0990 p.u.	X2'	1.2328 omhs / 0.1579 p.u.
Rfe	1000.8590 omhs / 128.2265 p.u.	Xm	44.6710 omhs / 5.7231 p.u.

T''do	0.3197 s	X/R	3.8708 p.u.
T''d	0.0180 s	RS	0.1104 omhs / 0.0141 p.u.
Ta	0.0123 s	X''d = Xs	2.2003 omhs / 0.2819 p.u.
Zbase	7.8054 omhs	X2(-)	1.7347 omhs / 0.2222 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
 R2' : Rotor resistance
 Rfe : Core loss resistance
 X1 : Stator leakage reactance
 X2' : Rotor leakage reactance
 Xm : Magnetizing reactance
 Zbase : Base impedance

T''do : Open circuit AC time constant
 T''d : Short circuit AC time constant
 Ta : Short circuit DC time constant
 X/R : X/R ratio
 RS : Supplementary losses resistance
 X''d = Xs : Subtransient reactance
 X2(-) : Negative sequence reactance

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