

# DATA SHEET

## Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15833969

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>	: 31.5 kg
Protection degree	: IP55	Moment of inertia (J)	: 0.0090 kgm <sup>2</sup>
Design	: N		

Output	2.2 kW	2.2 kW	2.2 kW
Poles	4	4	4
Frequency	50 Hz	50 Hz	50 Hz
Rated voltage	220/380 V	230/400 V	240/415 V
Rated current	8.22/4.76 A	8.03/4.62 A	7.89/4.56 A
L. R. Amperes	60.8/35.2 A	62.7/36.0 A	64.7/37.4 A
LRC	7.4	7.8	8.2
No load current	3.80/2.20 A	4.17/2.40 A	4.50/2.60 A
Rated speed	1430 rpm	1435 rpm	1440 rpm
Slip	4.67 %	4.33 %	4.00 %
Rated torque	14.7 Nm	14.6 Nm	14.6 Nm
Locked rotor torque	310 %	350 %	380 %
Pull up torque	260 %	295 %	320 %
Breakdown torque	290 %	340 %	370 %
Service factor	1.00	1.00	1.00
Noise level <sup>2</sup>	53.0 dB(A)	53.0 dB(A)	53.0 dB(A)
Locked rotor time (hot)	18 s	18 s	18 s
Locked rotor time (cold)	32 s	32 s	32 s
Efficiency (%)	50%	87.2	85.7
	75%	87.1	86.8
	100%	86.7	87.2
Power Factor	50%	0.62	0.55
	75%	0.75	0.68
	100%	0.81	0.77

Bearing type	Drive end	Non drive end	Foundation loads	
	6206-ZZ	6205-ZZ		Max. traction
Lubrication interval	-	-	Max. compression	: 1504 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.

Rev.	Changes Summary	Rev.	Checked	Date
Performed by	dang	1230920055		
Checked by	AUTOMATICO	Page	Rev.	
Date	11/11/2021	1 / 7	0	

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

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Rev.	Changes Summary	Rev.	Checked	Date
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Date	11/11/2021	2 / 7	0	

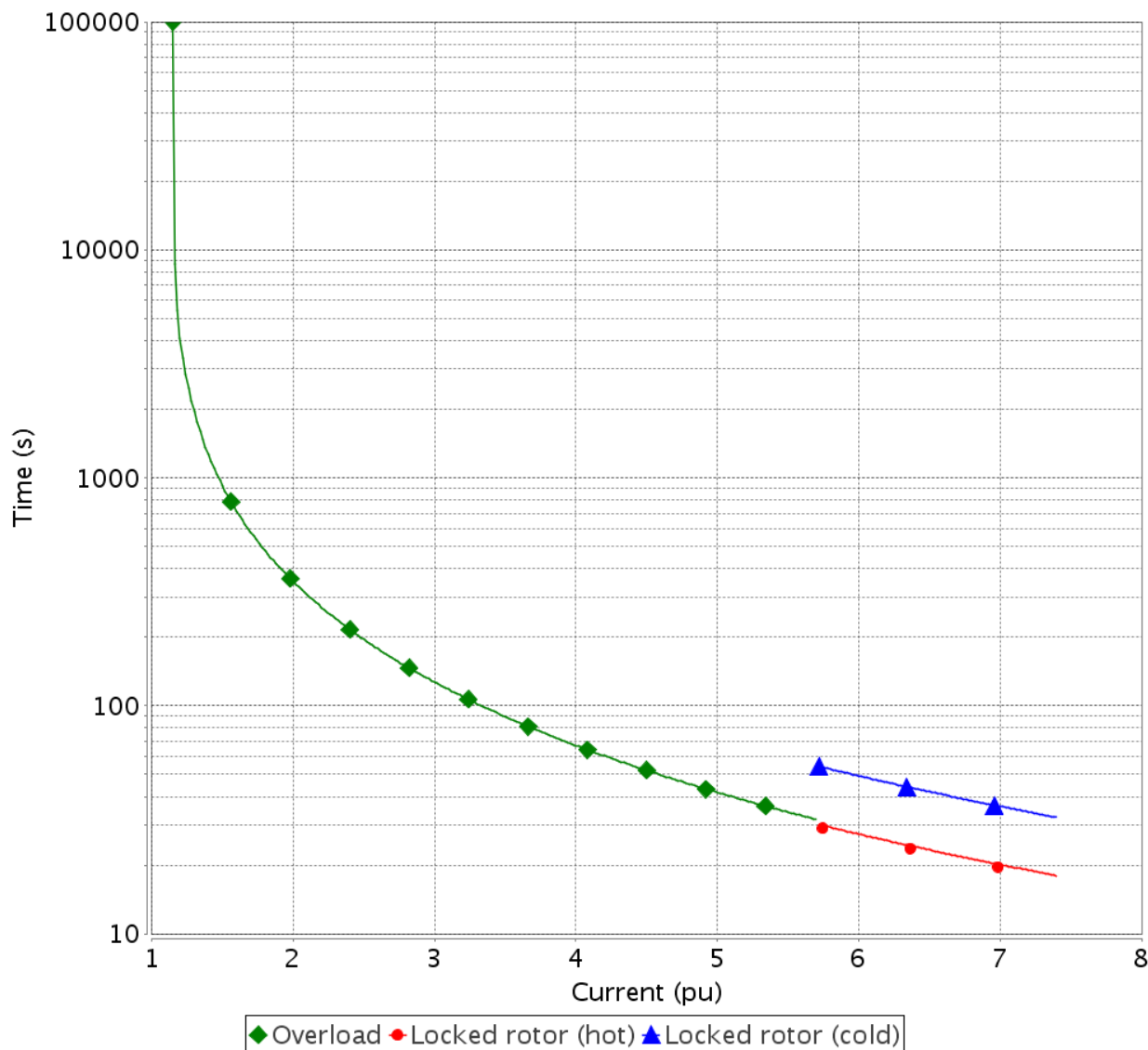
# THERMAL LIMIT CURVE

## Three Phase Induction Motor - Squirrel Cage



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Performance : 2.2 kW 220/380 V 50 Hz 4P 100L

Rated current	: 8.22/4.76 A	Moment of inertia (J)	: 0.0090 kgm <sup>2</sup>
LRC	: 7.4	Duty cycle	: S1
Rated torque	: 14.7 Nm	Insulation class	: F
Locked rotor torque	: 310 %	Service factor	: 1.00
Breakdown torque	: 290 %	Temperature rise	: 80 K
Rated speed	: 1430 rpm	Design	: N
Heating constant	: 17.0 min		
Cooling constant	: 51.0 min		

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

# LOAD PERFORMANCE CURVE

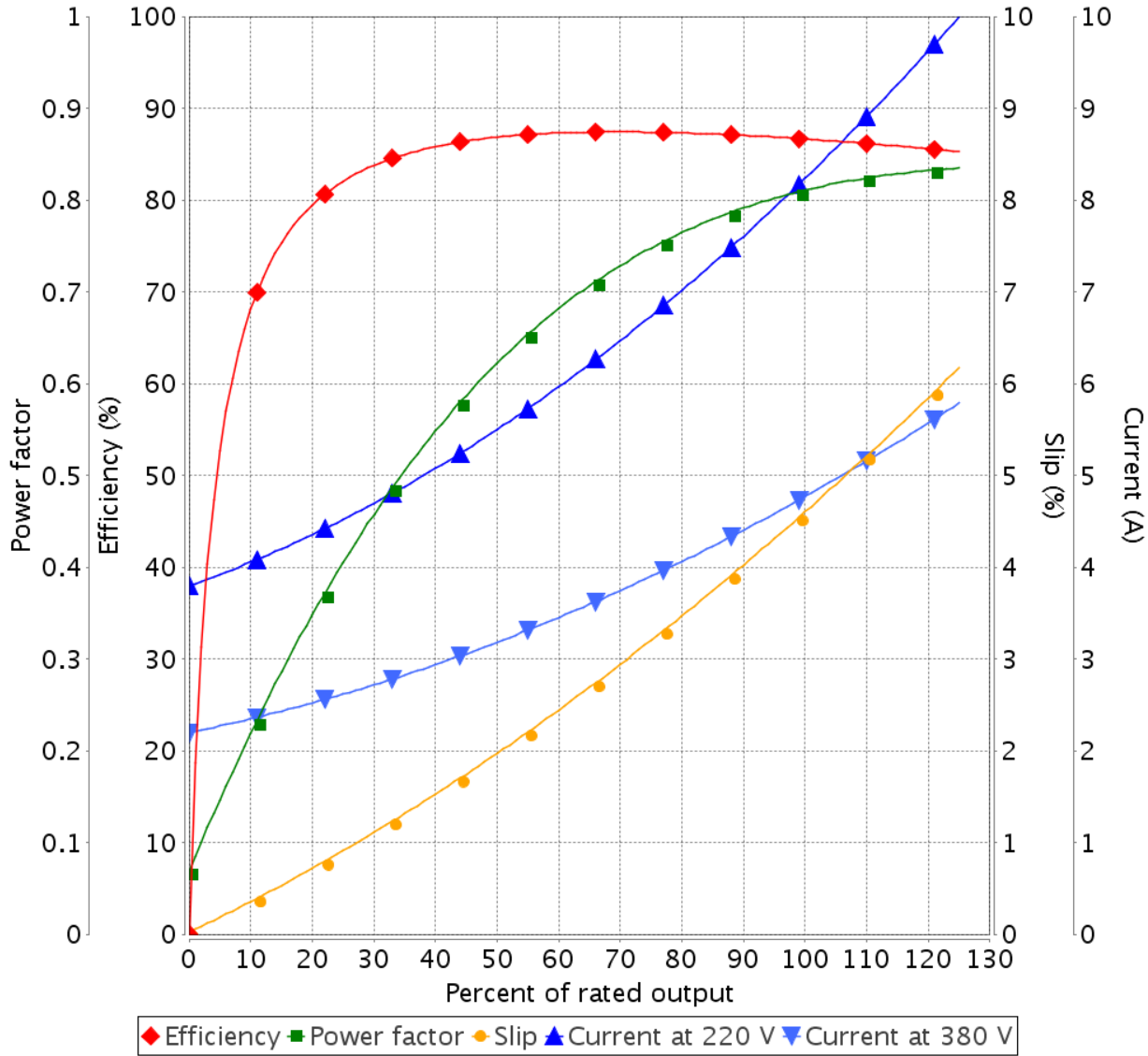
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Performance : 2.2 kW 220/380 V 50 Hz 4P 100L

Rated current : 8.22/4.76 A  
 LRC : 7.4  
 Rated torque : 14.7 Nm  
 Locked rotor torque : 310 %  
 Breakdown torque : 290 %  
 Rated speed : 1430 rpm

Moment of inertia (J) : 0.0090 kgm<sup>2</sup>  
 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

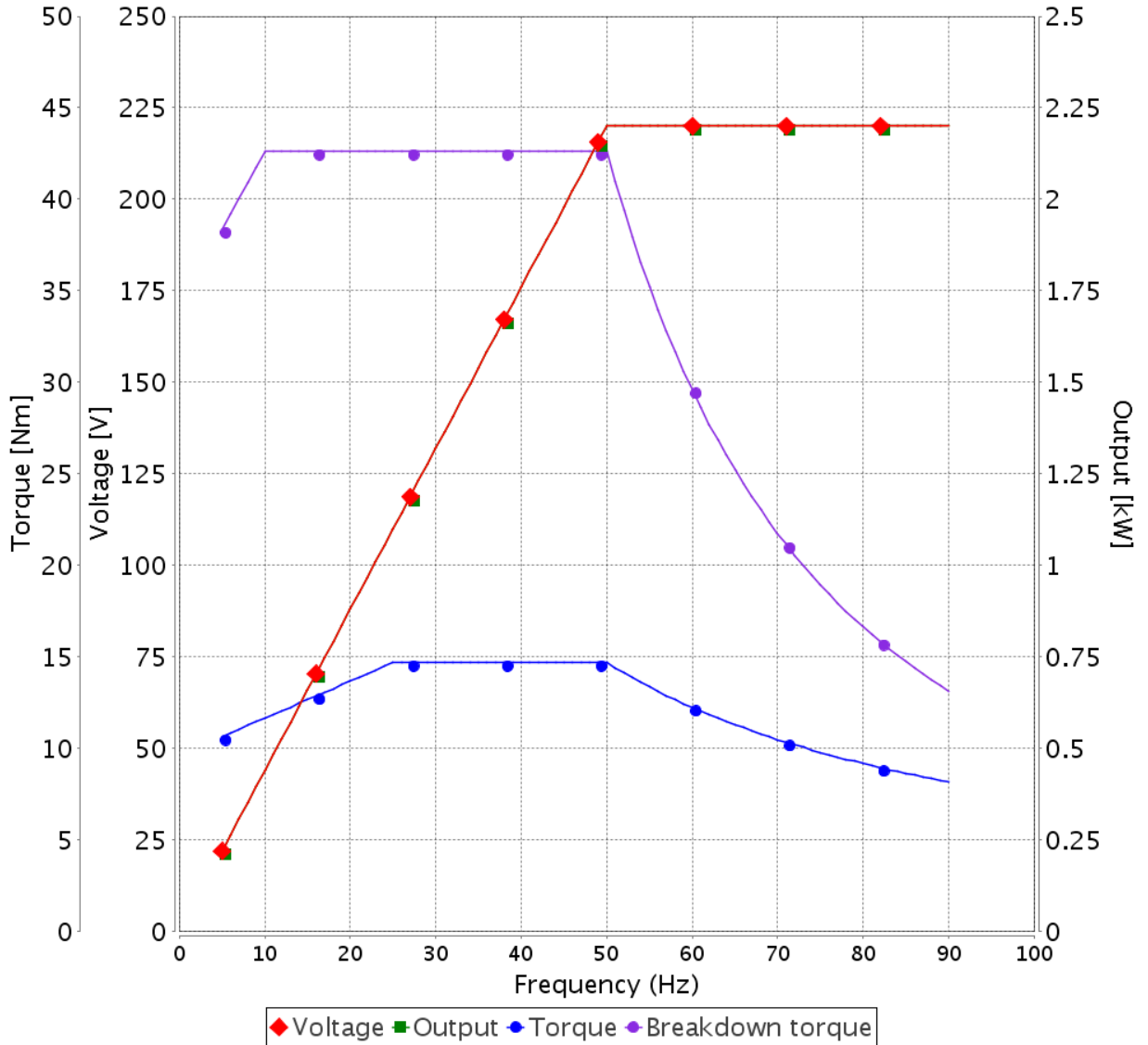
# VFD OPERATION CURVE

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 LRC : 7.4  
 Rated torque : 14.7 Nm  
 Locked rotor torque : 310 %  
 Breakdown torque : 290 %  
 Rated speed : 1430 rpm

Moment of inertia (J) : 0.0090 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

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

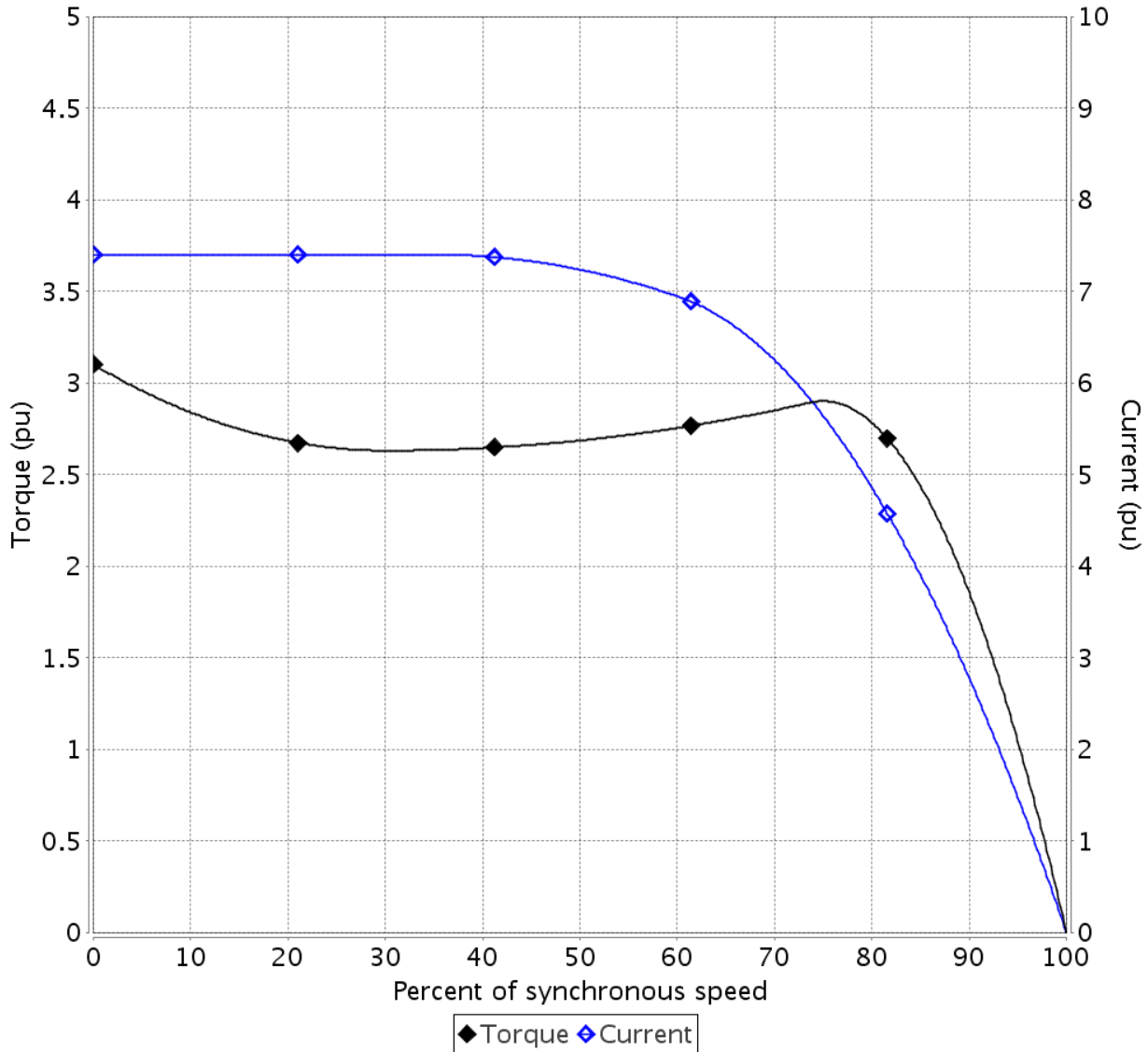
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Performance : 2.2 kW 220/380 V 50 Hz 4P 100L

Rated current : 8.22/4.76 A

Moment of inertia (J) : 0.0090 kgm<sup>2</sup>

LRC : 7.4

Duty cycle : S1

Rated torque : 14.7 Nm

Insulation class : F

Locked rotor torque : 310 %

Service factor : 1.00

Breakdown torque : 290 %

Temperature rise : 80 K

Rated speed : 1430 rpm

Design : N

Locked rotor time 100% : 18 s (hot) 32 s (cold)

Load inertia (J=GD<sup>2</sup>/4) : 0.0090 kgm<sup>2</sup>

Rev.	Changes Summary		Rev.	Checked	Date
Performed by	dang		1230920055		
Checked by	AUTOMATICO		Page	Rev.	
Date	11/11/2021		6 / 7	0	

# EQUIVALENT CIRCUIT

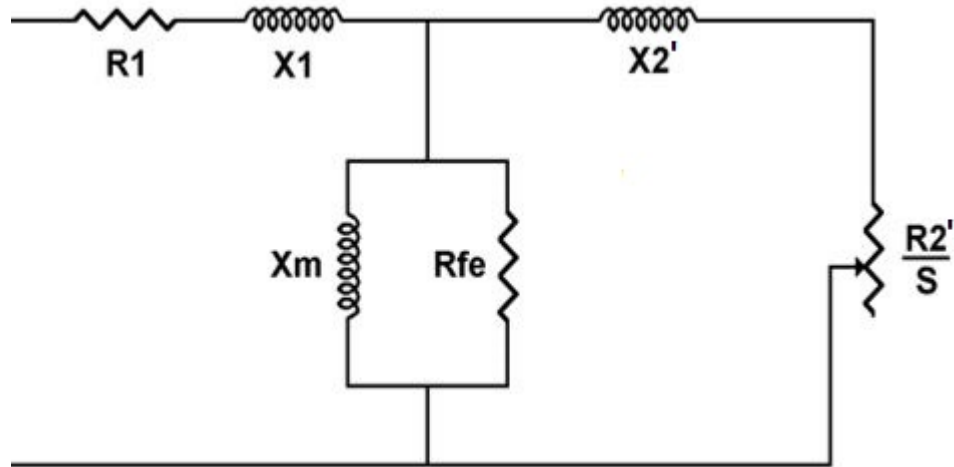
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Rated			
<b>R1</b>	1.7592 omhs / 0.0268 p.u.	<b>X1</b>	3.8341 omhs / 0.0584 p.u.
<b>R2'</b>	1.7222 omhs / 0.0262 p.u.	<b>X2'</b>	5.1882 omhs / 0.0790 p.u.
<b>Rfe</b>	2259.3040 omhs / 34.4215 p.u.	<b>Xm</b>	88.0186 omhs / 1.3410 p.u.

Locked rotor			
<b>R1</b>	1.9897 omhs / 0.0303 p.u.	<b>X1</b>	2.4439 omhs / 0.0372 p.u.
<b>R2'</b>	2.2307 omhs / 0.0340 p.u.	<b>X2'</b>	1.8795 omhs / 0.0286 p.u.
<b>Rfe</b>	1921.3050 omhs / 29.2719 p.u.	<b>Xm</b>	106.8711 omhs / 1.6282 p.u.

<b>T''do</b>	0.1456 s	<b>X/R</b>	2.1013 p.u.
<b>T''d</b>	0.0069 s	<b>RS</b>	0.5713 omhs / 0.0087 p.u.
<b>Ta</b>	0.0058 s	<b>X''d = Xs</b>	4.3233 omhs / 0.0659 p.u.
<b>Zbase</b>	65.6364 omhs	<b>X2(-)</b>	2.6268 omhs / 0.0400 p.u.

All parameters reflected to stator side.  
 Per phase values, for Y 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				