

DATA SHEET

Three Phase Induction Motor - Squirrel Cage



Customer : QUANTUM CONTROLS

Product line : W22 - IE3 Premium Efficiency Multivoltage Product code : 15833920

Frame	: 180M	Cooling method	: IC411 - TEFC
Insulation class	: F	Mounting	: B3T
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
	6311-C3	6211-C3	
Lubrication interval	20000 h	20000 h	Max. compression : 6950 N
Lubricant amount	18 g	11 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.

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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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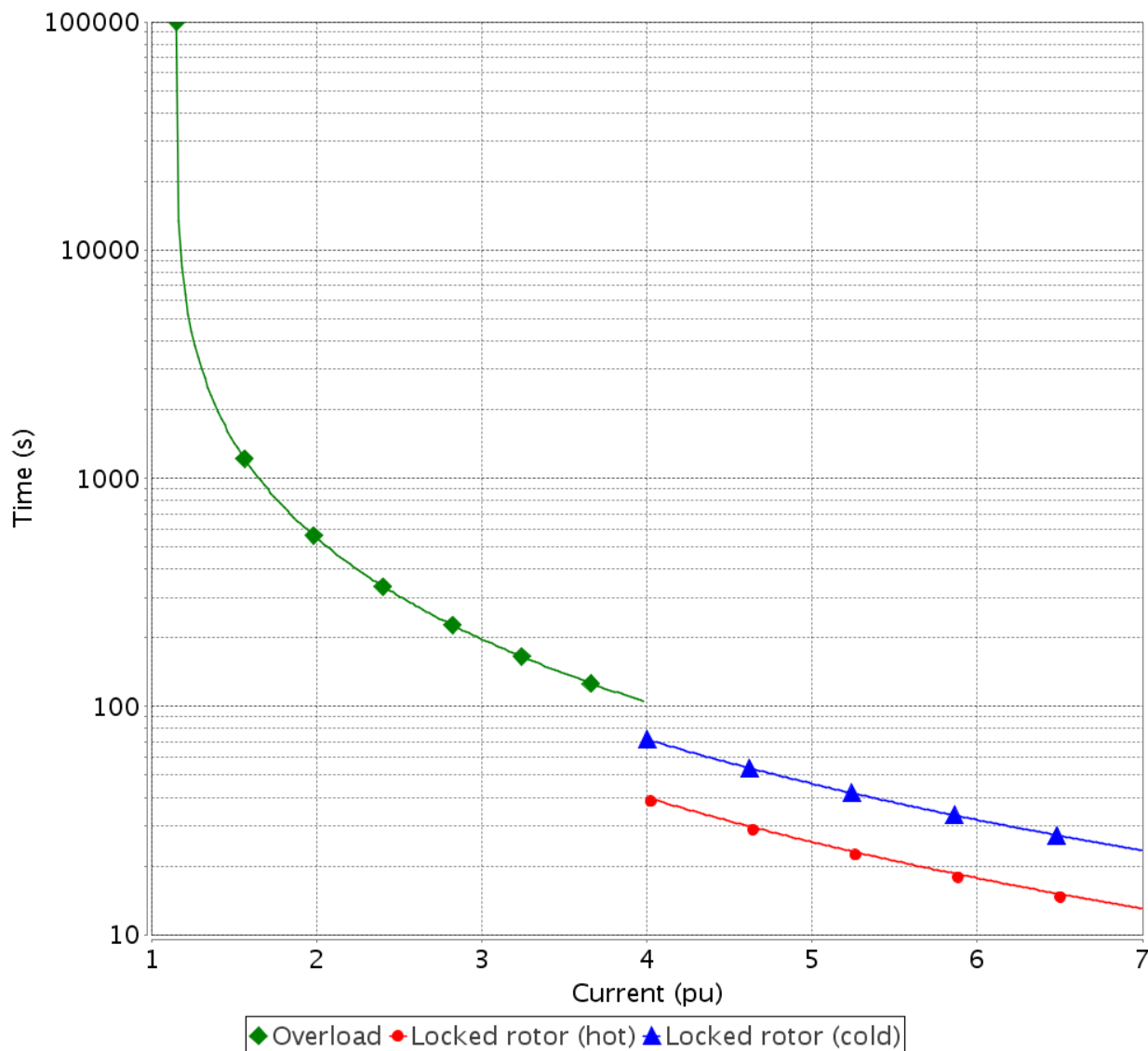
THERMAL LIMIT CURVE

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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

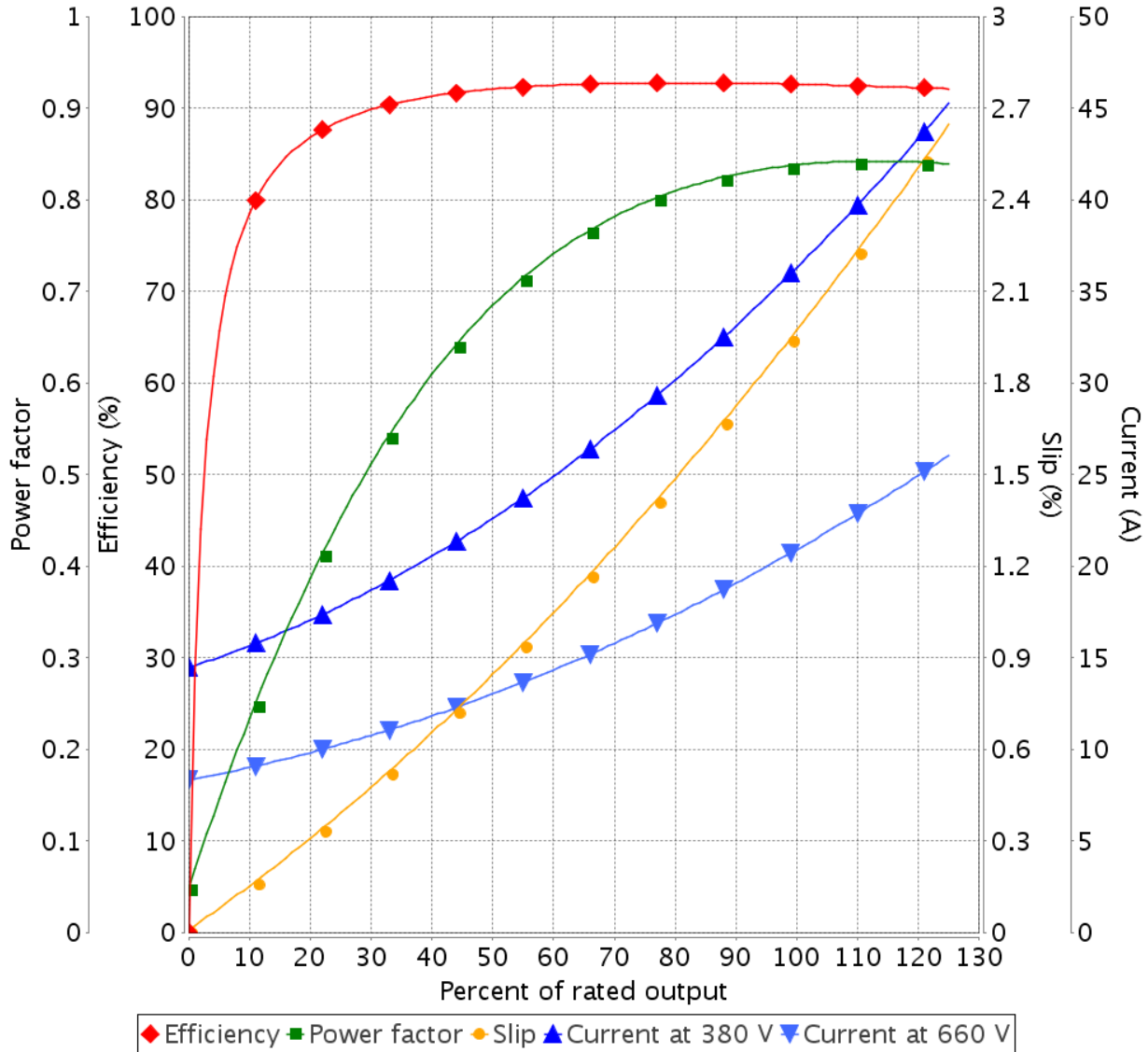
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 Breakdown torque : 290 %
 Rated speed : 1470 rpm

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

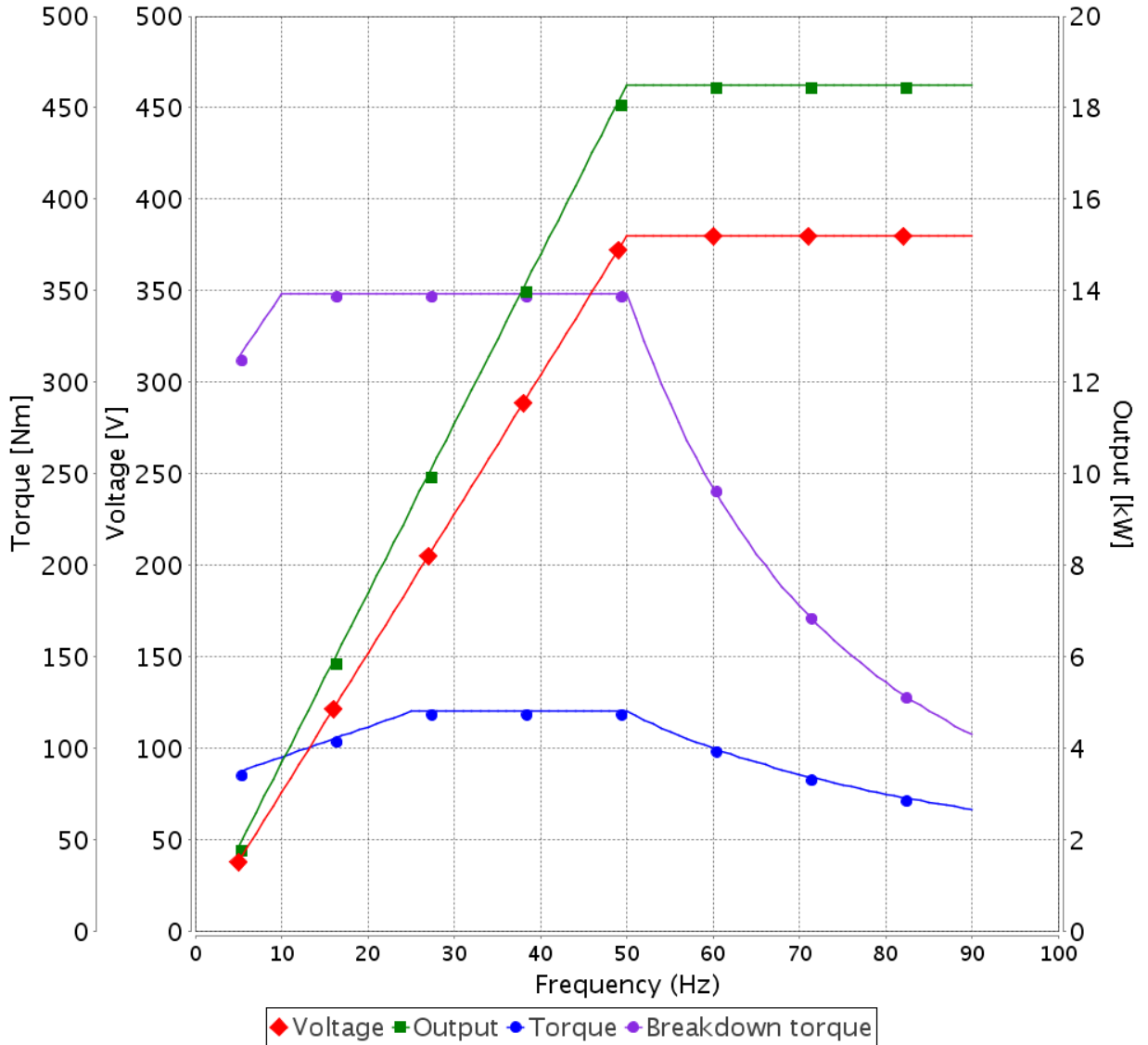
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 Rated speed : 1470 rpm

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

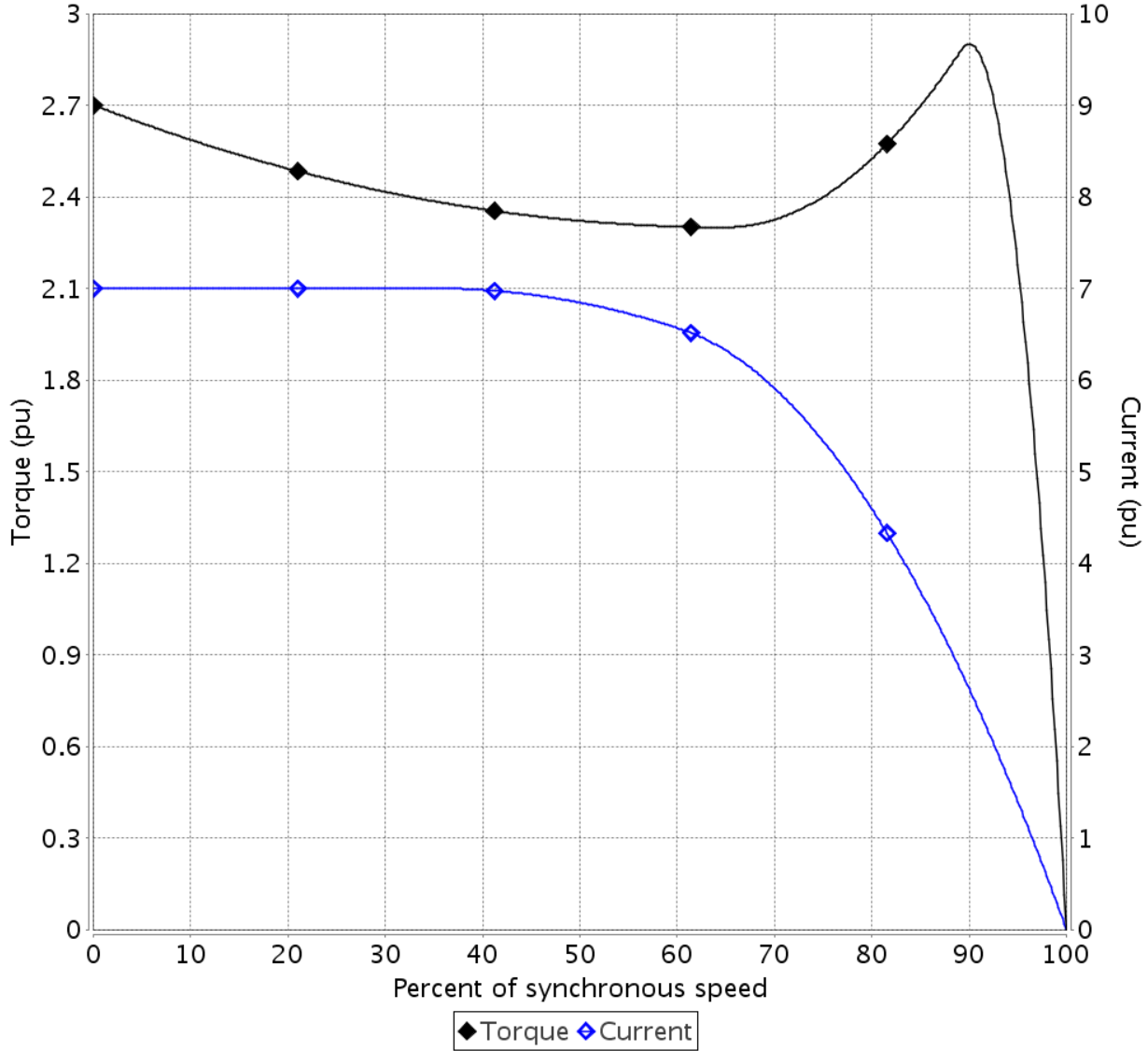
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 Breakdown torque : 290 %
 Rated speed : 1470 rpm

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

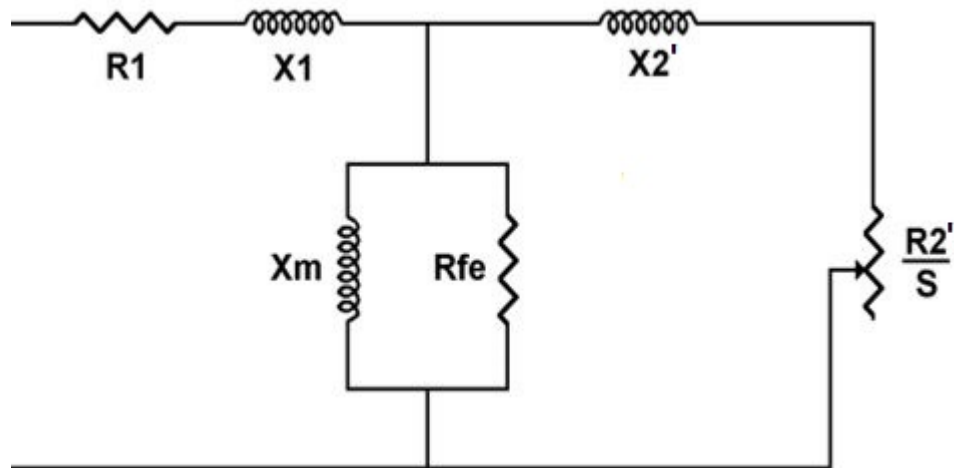
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Rated			
R1	0.3772 omhs / 0.0483 p.u.	X1	1.2509 omhs / 0.1603 p.u.
R2'	0.2873 omhs / 0.0368 p.u.	X2'	2.0929 omhs / 0.2681 p.u.
Rfe	1162.5500 omhs / 148.9418 p.u.	Xm	37.8752 omhs / 4.8524 p.u.

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	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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