

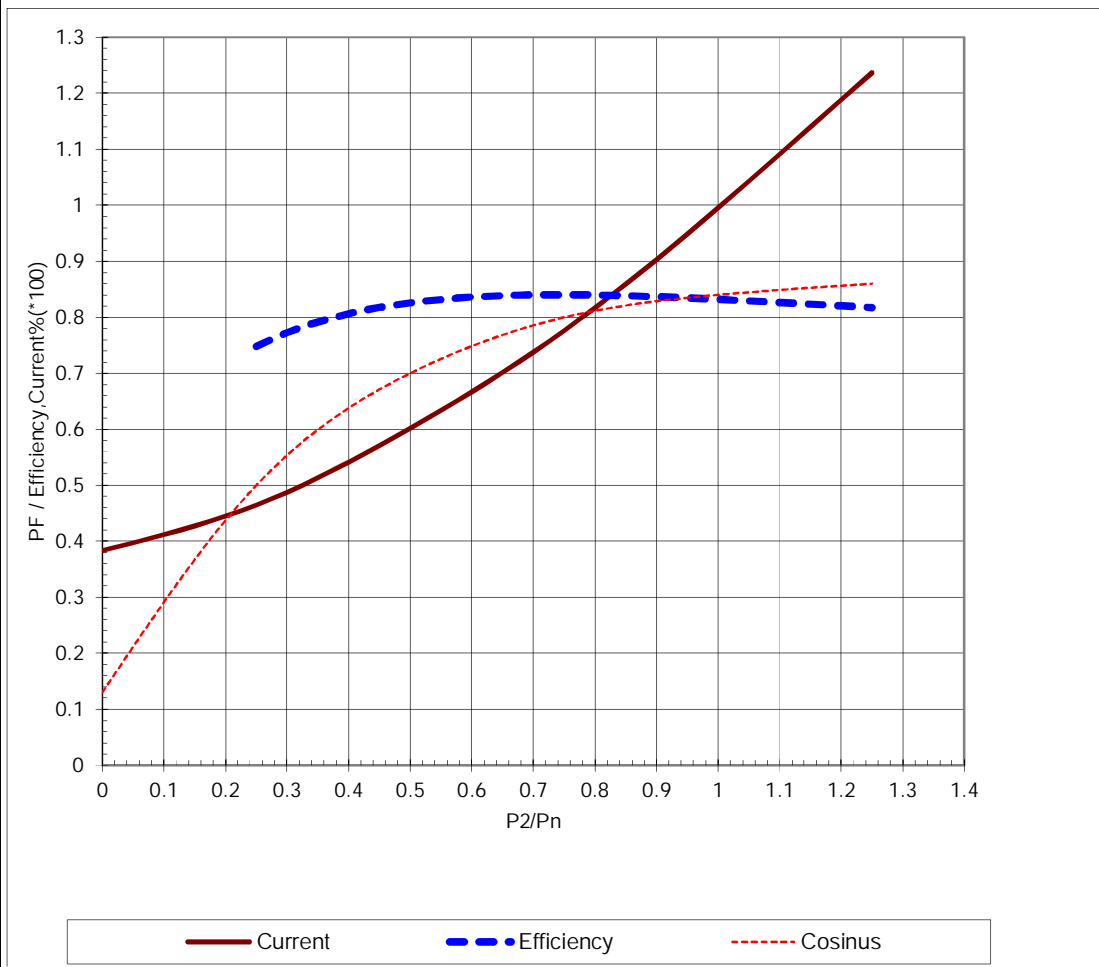


ABB Motors and Generators		Technical Data Sheet				
Department/Author		Project	Location		Item name	
Our ref.		Rev/Changed by	Date of issue	Saving ident	Pages	
		A	1/16/2019	untitled.xls	1(3)	
No.	Definition	Data	Unit	Remarks		
1	Product	<b>TEFC, 3-phase, squirrel cage induction motor</b>				
2	Product code	<b>3GBA 091 510-BDCIN</b>			Calc. ref.	3GZH021009-14
3	Type/Frame	<b>M2BAX 90LA 2</b>				
4	Mounting	<b>IM3001, B5(flange)</b>				
5	Rated output P <sub>N</sub>	<b>2.2</b>	kW			
6	Service factor	<b>1</b>				
7	Type of duty	<b>S1 100%</b>				
8	Rated voltage U <sub>N</sub>	<b>415</b>	VD	+10, -10 %		
9	Rated frequency f <sub>N</sub>	<b>50</b>	Hz	+5, -5 %		
10	Rated speed n <sub>N</sub>	<b>2878</b>	r/min			
11	Rated current I <sub>N</sub>	<b>4.4</b>	A			
12						
13	Starting current I <sub>s</sub> /I <sub>N</sub>	<b>7</b>				
14	Nominal torque T <sub>N</sub>	<b>7.3</b>	Nm			
15	Locked rotor torque T <sub>S</sub> /T <sub>N</sub>	<b>2.5</b>				
16	Maximum torque T <sub>max</sub> /T <sub>N</sub>	<b>3.1</b>				
17						
18						
Load characteristics		Load %	Current A	Efficiency %	Power factor	
19	PLL determined from residual loss	100	4.4	83.2 / IE2	0.84	
20		75	3.4	84	0.8	
21		50	2.6	82.6	0.7	
22						
23	Thermal withstand time hot	<b>6</b>	s			
24	Thermal withstand time cold	<b>13</b>	s			
25	Insulation class / Temperature class	<b>F / B</b>				
26	Ambient temperature	<b>50</b>	°C			
27	Altitude	<b>1000</b> m.a.s.l.				
28	Degree of protection	<b>IP55</b>				
29	Cooling system	<b>IC411 self ventilated</b>				
30	Bearing DE/NDE	<b>6205-2Z/C3 - 6204-2Z/C3</b>				
31	Sound pressure level (LP dB(A) 1m)	<b>68</b>	dB(A)	at no-load		
32	Moment of inertia J = ¼ GD <sup>2</sup>	<b>0.00274</b>	kg·m <sup>2</sup>			
33	Position of terminal box	<b>Top</b>				
34	Direction of rotation	<b>Bi-directional</b>				
35	Weight of rotor	<b>4</b>	kg			
36	Total weight of motor	<b>23</b>	kg			
37						
38						
39						
40						
41						
42						
43						
44						
45						
Ex-motors						
46						
47						
48						
Option Variant Codes / Definition						
49						
50						
51						
52						
Remarks:						
Data based on situation 8/8/2016						

All performance values are subject to IS/IEC tolerances


<b>ABB Motors and Generators</b>	<b>Load Curves</b>		
	Project	Location	
Department/Author	Customer name	Customer ref.	Item name <b>1.00001</b>
Our ref.	Rev/Changed by <b>A</b>	Date of issue <b>1/16/2019</b>	Saving ident <b>untitled.xls</b>
Pages <b>2(3)</b>	Product <b>TEFC, 3-phase, squirrel cage induction motor</b>		
Type/Frame	<b>M2BAX 90LA 2</b>	Calc. ref.	<b>3GZH021009-14</b>
Product code	<b>3GBA 091 510-BDCIN</b>		
Rated output P <sub>N</sub>	<b>2.2 kW</b>		
Type of duty	<b>S1 100%</b>		

Voltage (V)	<b>415</b>	Current I <sub>N</sub> (A)	<b>4.4</b>	Power factor at P <sub>N</sub>	<b>0.84</b>
Frequency (Hz)	<b>50</b>	Speed (r/min)	<b>2878</b>	Efficiency (%) at P <sub>N</sub>	<b>83.2</b>



Data based on situation 8/8/2016

All data subject to tolerances in accordance with IS/IEC 60034-1 : 2004


ABB Motors and Generators	Starting Curves			
	Project	Location		
Department/Author	Customer name	Customer ref.		Item name <b>1.00001</b>
Our ref.	Rev/Changed by <b>A</b>	Date of issue <b>1/16/2019</b>	Saving ident <b>untitled.xls</b>	Pages <b>3(3)</b>
Type of product	<b>TEFC, 3-phase, squirrel cage induction motor</b>			
Type/Frame	<b>M2BAX 90LA 2</b>	Calc. ref.	<b>3GZH021009-14</b>	
Product code	<b>3GBA 091 510-BDCIN</b>	Frequency (Hz)	<b>50</b>	
Rated output P <sub>N</sub>	<b>2.2 kW</b>	Rated current I <sub>N</sub>	<b>4.4</b>	<b>A</b>
Type of duty	<b>S1 100%</b>			
J <sub>motor</sub> (kgm <sup>2</sup> )	<b>0.0027</b>	Voltage (V) 100%	<b>415</b>	Voltage (V) <b>415V(100%)</b>
J <sub>load</sub> (kgm <sup>2</sup> )		T <sub>start</sub> /T <sub>N</sub>	<b>2.5</b>	T <sub>start</sub> /T <sub>N</sub> <b>2.5</b>
Speed (r/min)	<b>2878</b>	Starting time (s)	<b>0.1</b>	Starting time (s)
T <sub>N</sub> (Nm)	<b>7.3</b>	Speed (r/min)		Speed (r/min)
T <sub>load</sub> (Nm)		I <sub>s</sub> /I <sub>N</sub>	<b>7</b>	I <sub>s</sub> /I <sub>N</sub> <b>7</b>
		T <sub>max</sub> /T <sub>N</sub>	<b>3.1</b>	T <sub>max</sub> /T <sub>N</sub> <b>3.1</b>

The graph plots torque ratios (Ts/Tn) and current ratios (Is/In) against speed in r/min. The x-axis ranges from 0 to 3250 r/min. The left y-axis (Ts/Tn) ranges from 0 to 4.5, and the right y-axis (Is/In) ranges from 0 to 9. Two sets of curves are shown: one for 415V (solid lines) and one for 415V(100%) (dashed lines). The torque curves (TMotorUn and TMotorU2) show a peak around 2000 r/min. The current curves (IMotorUn and IMotorU2) show a peak around 1750 r/min.

Speed (r/min)	T <sub>MotorUn</sub> 415V (Ts/Tn)	T <sub>MotorU2</sub> 415V(100%) (Ts/Tn)	I <sub>MotorUn</sub> 415V (I <sub>s</sub> /I <sub>N</sub> )	I <sub>MotorU2</sub> 415V(100%) (I <sub>s</sub> /I <sub>N</sub> )
0	2.5	2.5	7.0	7.0
500	2.4	2.4	6.5	6.5
1000	2.5	2.5	6.0	6.0
1500	2.8	2.8	5.5	5.5
2000	3.1	3.1	5.0	5.0
2500	2.5	2.5	4.0	4.0
3000	0.0	0.0	0.0	0.0

Data based on situation 8/8/2016  
All data subject to tolerances in accordance with IS/IEC 60034-1 : 2004

<b>ABB Motors and Generators</b>	<b>Thermal Withstand Curve</b>		
	Project	Location	
Department/Author	Customer name	Customer ref.	Item name <b>1.00001</b>
Our ref.	Rev/Changed by <b>A</b>	Date of issue <b>1/16/2019</b>	Saving ident <b>untitled.xls</b>
Pages <b>5(3)</b>			
Type of product	<b>TEFC, 3-phase, squirrel cage induction motor</b>		
Type/Frame	<b>M2BAX 90LA 2</b>	Calc. ref.	3GZH021009-14
Product code	<b>3GBA 091 510-BDCIN</b>	Frequency (Hz)	<b>50</b>
Rated output P <sub>N</sub>	<b>2.2 kW</b>	Rated current I <sub>N</sub>	<b>4.4 A</b>
Type of duty	<b>S1 100%</b>		
J <sub>motor</sub> (kgm <sup>2</sup> )	<b>0.0027</b>	Voltage (V) 100%	<b>415</b>
J <sub>load</sub> (kgm <sup>2</sup> )		Voltage (V)	<b>415V(100%)</b>
Speed (r/min)	<b>2878</b>	T <sub>start</sub> /T <sub>N</sub>	<b>2.5</b>
T <sub>N</sub> (Nm)	<b>7.3</b>	Starting time (s)	<b>0.1</b>
T <sub>load</sub> (Nm)		Speed (r/min)	
		I <sub>s</sub> /I <sub>N</sub>	<b>7</b>
		T <sub>max</sub> /T <sub>n</sub>	<b>3.1</b>

Starting Time [s]

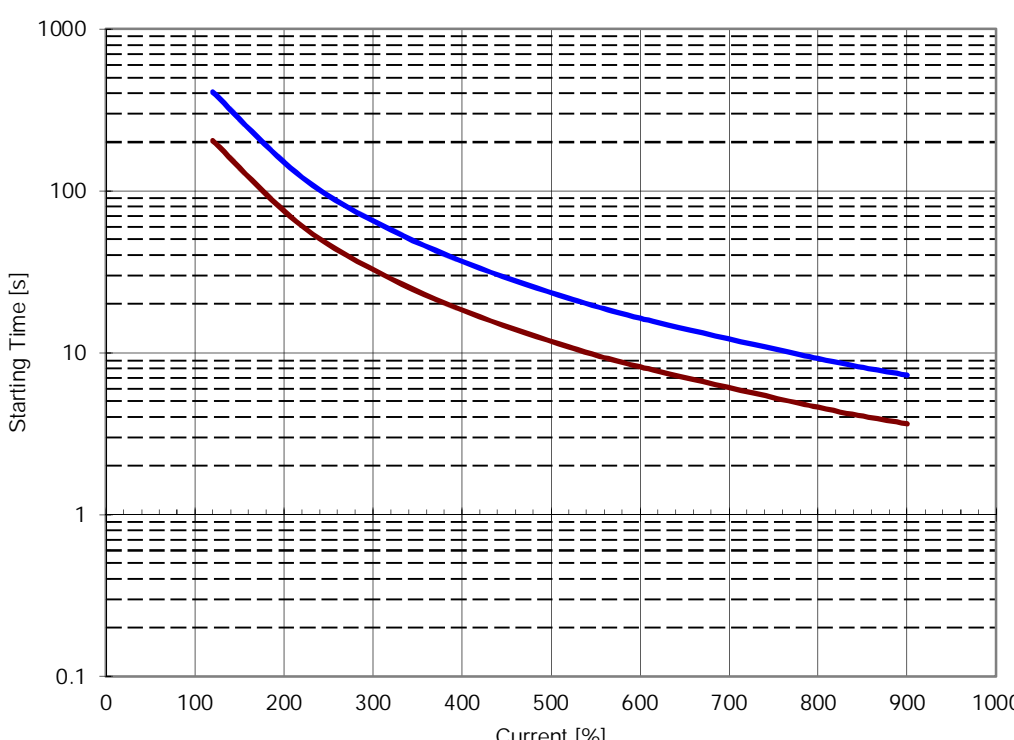
1000

100

10

1

0.1



— Running Hot      — Running Cold

Data based on situation 8/8/2016

All data subject to tolerances in accordance with IS/IEC 60034-1 : 2004