


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 222 220-BDCIN</b>			Calc. ref.	3GZH021022-3
3	Type/Frame	<b>M2BAX 225SMB 4</b>				
4	Mounting	<b>IM3001, B5(flange)</b>				
5	Rated output P <sub>N</sub>	<b>45</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>1478</b>	r/min			
11	Rated current I <sub>N</sub>	<b>81.5</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>291</b>	Nm			
15	Locked rotor torque T <sub>S</sub> /T <sub>N</sub>	<b>2.2</b>				
16	Maximum torque T <sub>max</sub> /T <sub>N</sub>	<b>2.9</b>				
17						
18						
Load characteristics		Load %	Current A	Efficiency %	Power factor	
19	PLL determined from residual loss	100	<b>81.5</b>	<b>93.1 / IE2</b>	<b>0.83</b>	
20		75	<b>62.8</b>	<b>93.5</b>	<b>0.8</b>	
21		50	<b>47.6</b>	<b>92.6</b>	<b>0.71</b>	
22						
23	Thermal withstand time hot	<b>15</b>	s			
24	Thermal withstand time cold	<b>24</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>6313-2Z/C3 - 6210-2Z/C3</b>				
31	Sound pressure level (LP dB(A) 1m)	<b>79</b>	dB(A)	at no-load		
32	Moment of inertia J = ¼ GD <sup>2</sup>	<b>0.4314</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>98</b>	kg			
36	Total weight of motor	<b>304</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 9/19/2015						

All performance values are subject to IS/IEC tolerances


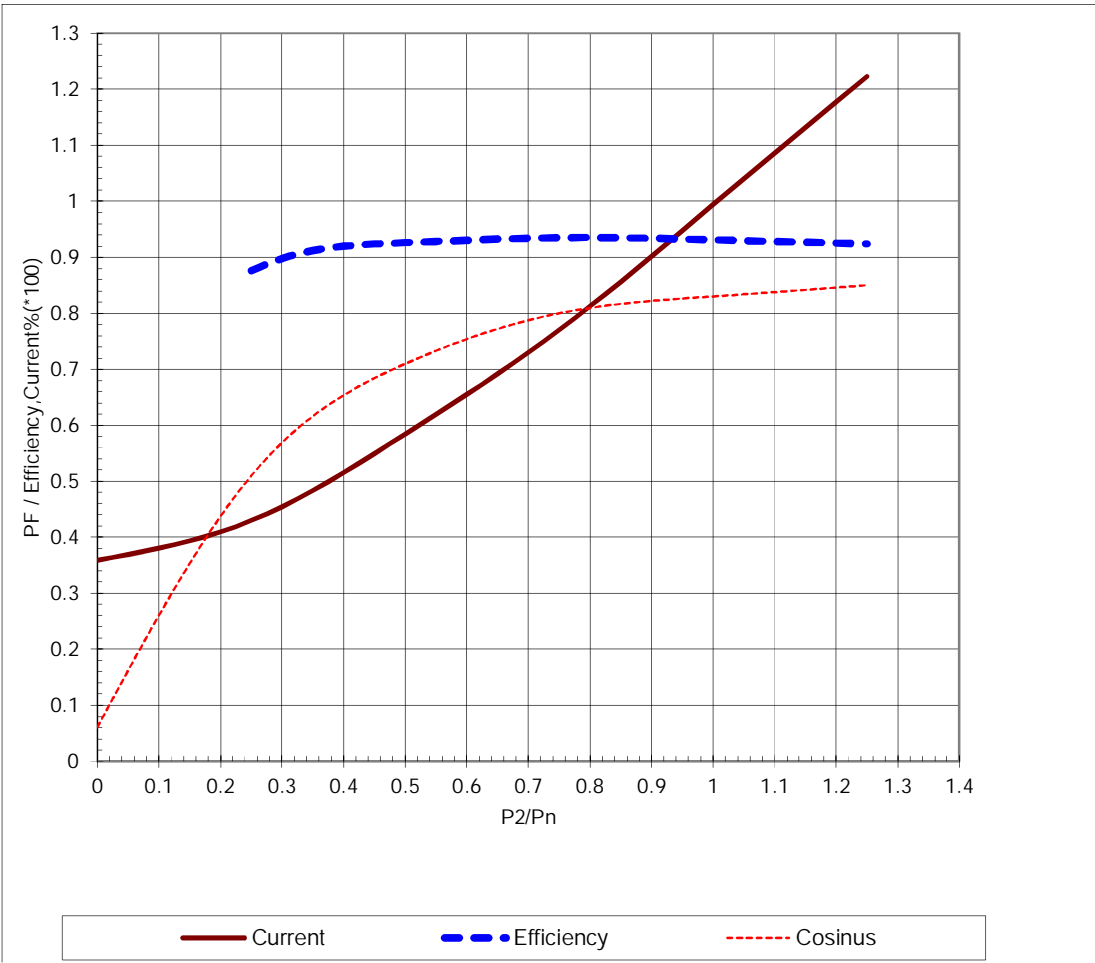

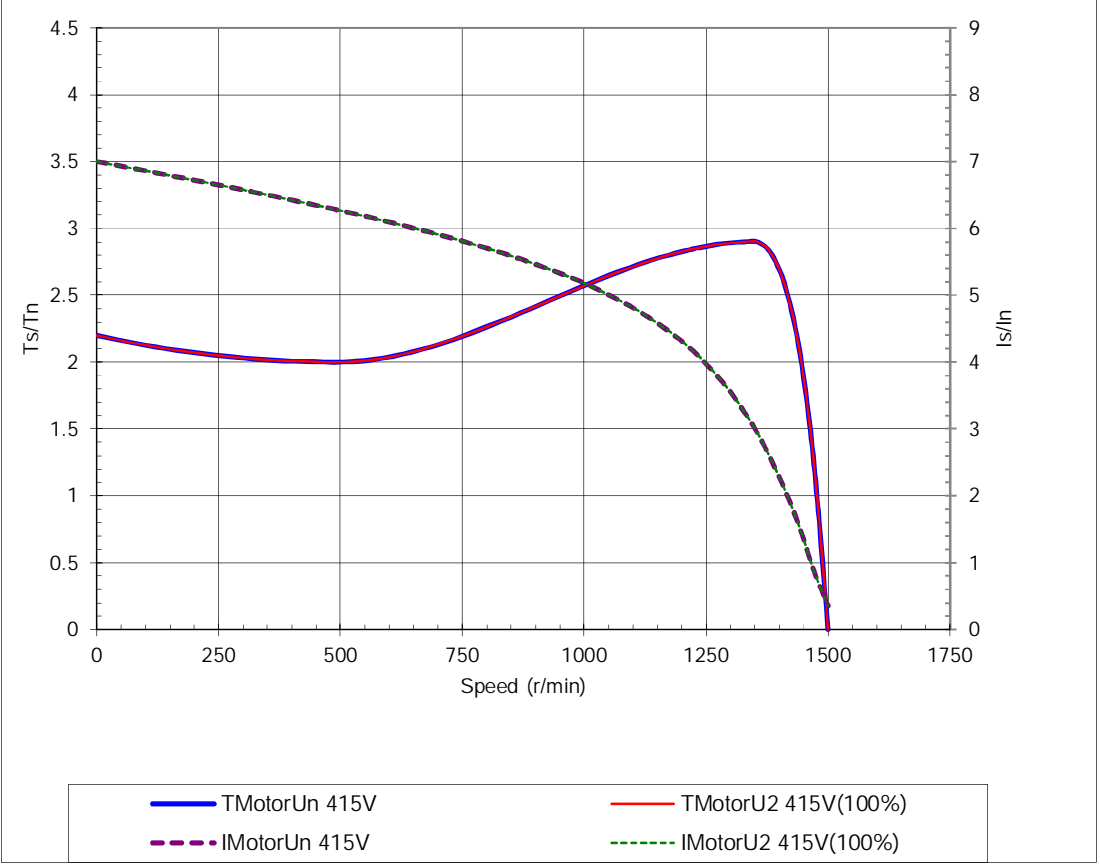

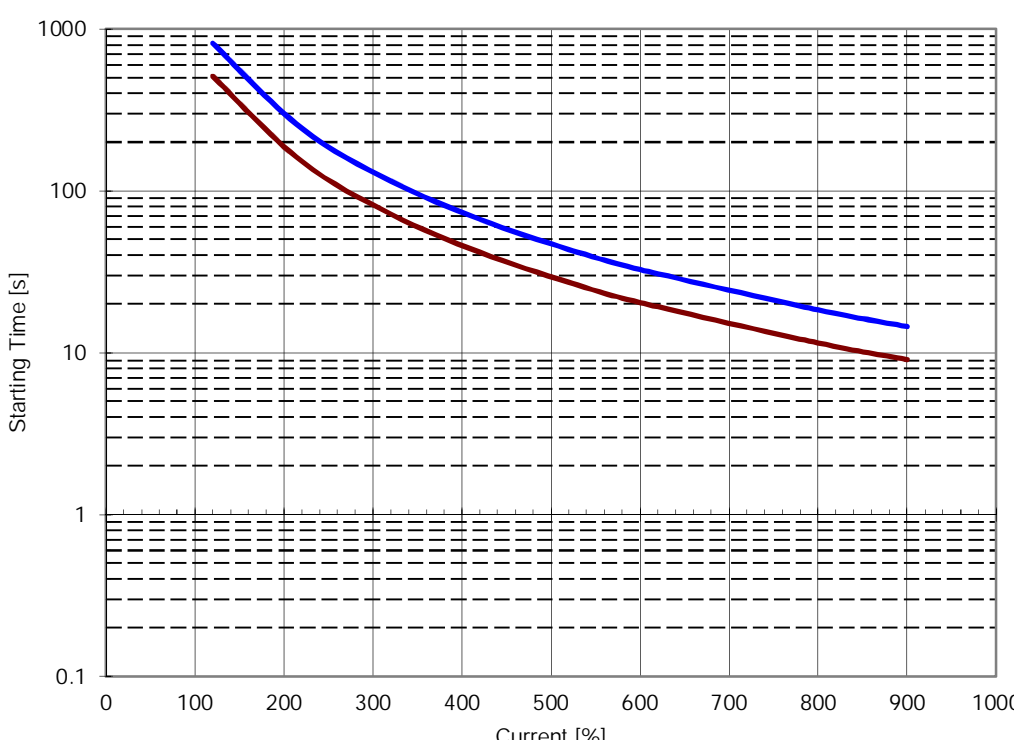
<b>ABB Motors and Generators</b>	<b>Load Curves</b>		
	Project	Location	
Department/Author	Customer name	Customer ref.	Item name <b>1.00001</b>
Our ref.	Rev/Changed by <b>A</b>	Date of issue <b>1/16/2019</b>	Saving ident <b>untitled.xls</b>
Pages <b>2(3)</b>	Product <b>TEFC, 3-phase, squirrel cage induction motor</b>		
Type/Frame	<b>M2BAX 225SMB 4</b>	Calc. ref.	<b>3GZH021022-3</b>
Product code	<b>3GBA 222 220-BDCIN</b>		
Rated output P <sub>N</sub>	<b>45 kW</b>		
Type of duty	<b>S1 100%</b>		
Voltage (V)	<b>415</b>	Current I <sub>N</sub> (A)	<b>81.5</b>
Frequency (Hz)	<b>50</b>	Speed (r/min)	<b>1478</b>
		Power factor at P <sub>N</sub>	<b>0.83</b>
		Efficiency (%) at P <sub>N</sub>	<b>93.1</b>
			
<p>Data based on situation 9/19/2015</p> <p style="text-align: center;">All data subject to tolerances in accordance with IS/IEC 60034-1 : 2004</p>			

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 225SMB 4</b>	Calc. ref.	<b>3GZH021022-3</b>	
Product code	<b>3GBA 222 220-BDCIN</b>	Frequency (Hz)	<b>50</b>	
Rated output P <sub>N</sub>	<b>45 kW</b>	Rated current I <sub>N</sub>	<b>81.5</b>	<b>A</b>
Type of duty	<b>S1 100%</b>			
J <sub>motor</sub> (kgm <sup>2</sup> )	<b>0.43</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>2.2</b>	T <sub>start</sub> /T <sub>N</sub> <b>2.2</b>
Speed (r/min)	<b>1478</b>	Starting time (s)	<b>0.1</b>	Starting time (s)
T <sub>N</sub> (Nm)	<b>291</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>2.9</b>	T <sub>max</sub> /T <sub>N</sub> <b>2.9</b>
 <p>The graph plots torque (T<sub>s</sub>/T<sub>N</sub> and T<sub>load</sub>) and current (I<sub>s</sub>/I<sub>N</sub>) against speed (r/min). The x-axis ranges from 0 to 1750 r/min. The left y-axis (T<sub>s</sub>/T<sub>N</sub>) ranges from 0 to 4.5. The right y-axis (I<sub>s</sub>/I<sub>N</sub>) ranges from 0 to 9. The legend indicates four curves: T<sub>MotorUn</sub> 415V (solid blue), T<sub>MotorU2</sub> 415V(100%) (solid red), I<sub>MotorUn</sub> 415V (dashed purple), and I<sub>MotorU2</sub> 415V(100%) (dashed green). The torque curves show a peak around 1478 r/min, and the current curves show a peak around 1478 r/min.</p>				
Data based on situation 9/19/2015				
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 225SMB 4</b>	Calc. ref.	<b>3GZH021022-3</b>	
Product code	<b>3GBA 222 220-BDCIN</b>	Frequency (Hz)	<b>50</b>	
Rated output P <sub>N</sub>	<b>45 kW</b>	Rated current I <sub>N</sub>	<b>81.5</b>	<b>A</b>
Type of duty	<b>S1 100%</b>			
J <sub>motor</sub> (kgm <sup>2</sup> )	<b>0.43</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>2.2</b>	T <sub>start</sub> /T <sub>N</sub> <b>2.2</b>
Speed (r/min)	<b>1478</b>	Starting time (s)	<b>0.1</b>	Starting time (s)
T <sub>N</sub> (Nm)	<b>291</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>2.9</b>	T <sub>max</sub> /T <sub>n</sub> <b>2.9</b>



The graph plots Starting Time [s] on a logarithmic y-axis (0.1 to 1000) against Current [%] on a linear x-axis (0 to 1000). Two curves are shown: a red line for 'Running Hot' and a blue line for 'Running Cold'. Both curves show that starting time decreases as current increases. The 'Running Cold' curve is consistently higher than the 'Running Hot' curve.

Current [%]	Starting Time [s] (Running Hot)	Starting Time [s] (Running Cold)
100	~40	~80
200	~15	~30
300	~10	~20
400	~7	~15
500	~5	~12
600	~4	~10
700	~3.5	~9
800	~3	~8
900	~2.5	~7

Data based on situation 9/19/2015  
All data subject to tolerances in accordance with IS/IEC 60034-1 : 2004