

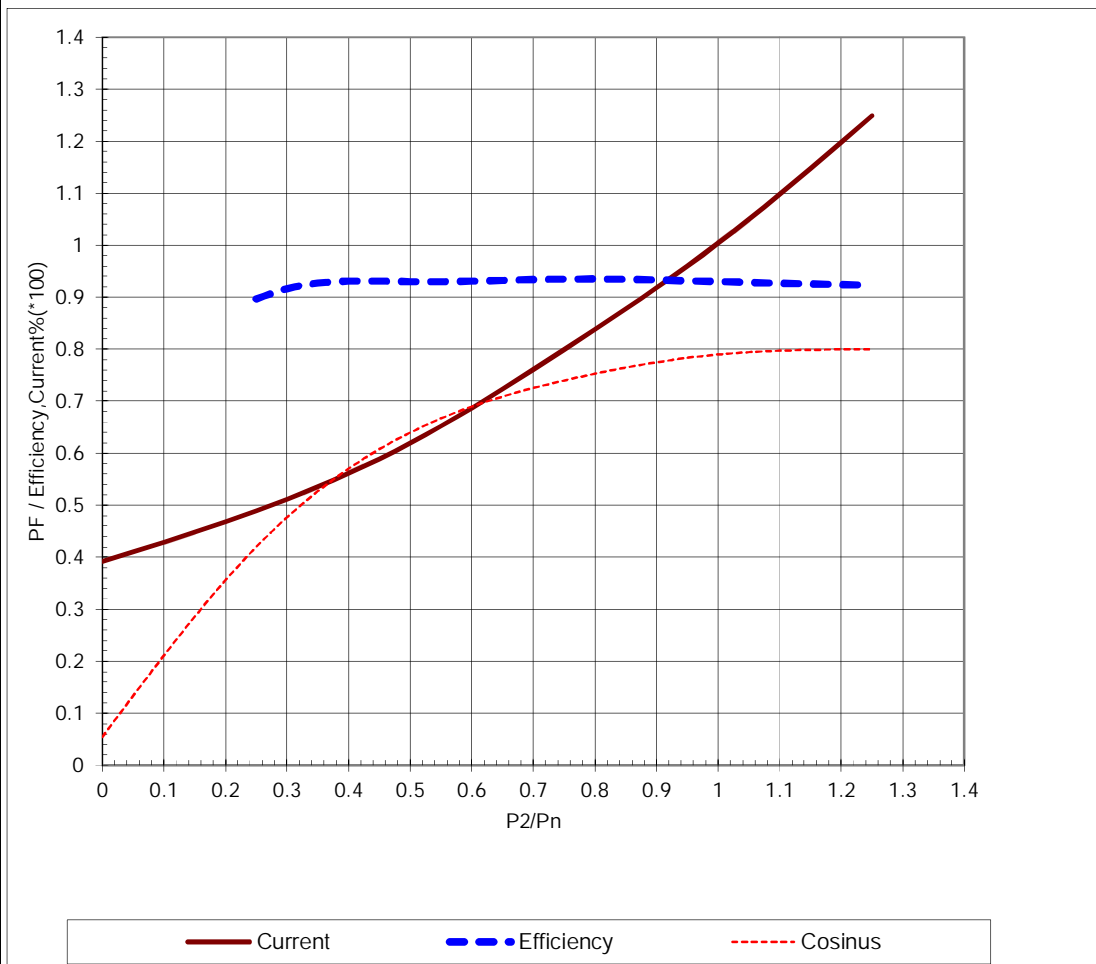


ABB Motors and Generators		Technical Data Sheet				
Project		Location				
Department/Author		Customer name		Customer ref.		
Our ref.		Rev/Changed by <b>A</b>		Date of issue <b>1/18/2019</b>		
		Saving ident <b>untitled.xls</b>		Item name <b>1.00001</b>		
				Pages <b>1(3)</b>		
No.	Definition	Data	Unit	Remarks		
1	Product	<b>TEFC, 3-phase, squirrel cage induction motor</b>				
2	Product code	<b>3GBA 182 420-ADDIN</b>		Calc. ref.	3GZH021018-17	
3	Type/Frame	<b>M2BAX 180MLB 4</b>				
4	Mounting	<b>IM1001, B3(foot)</b>				
5	Rated output P <sub>N</sub>	<b>22</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>1475</b>	r/min			
11	Rated current I <sub>N</sub>	<b>41.5</b>	A			
12						
13	Starting current I <sub>s</sub> /I <sub>N</sub>	<b>7.5</b>				
14	Nominal torque T <sub>N</sub>	<b>142</b>	Nm			
15	Locked rotor torque T <sub>S</sub> /T <sub>N</sub>	<b>2.9</b>				
16	Maximum torque T <sub>max</sub> /T <sub>N</sub>	<b>3.5</b>				
17						
18						
Load characteristics		Load %	Current A	Efficiency %	Power factor	
19	PLL determined from residual loss	<b>100</b>	<b>41.5</b>	<b>93.0 / IE3</b>	<b>0.79</b>	
20		<b>75</b>	<b>33.2</b>	<b>93.5</b>	<b>0.74</b>	
21		<b>50</b>	<b>25.7</b>	<b>93</b>	<b>0.64</b>	
22						
23	Thermal withstand time hot	<b>11</b>	s			
24	Thermal withstand time cold	<b>17</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>6310-2Z/C3 - 6209-2Z/C3</b>				
31	Sound pressure level (LP dB(A) 1m)	<b>72</b>	dB(A)	at no-load		
32	Moment of inertia J = ¼ GD <sup>2</sup>	<b>0.243</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>61</b>	kg			
36	Total weight of motor	<b>205</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 9/18/2015						

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>1/18/2019</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 180MLB 4</b>	Calc. ref.	<b>3GZH021018-17</b>
Product code	<b>3GBA 182 420-ADDIN</b>		
Rated output P <sub>N</sub>	<b>22</b>	kW	
Type of duty	<b>S1 100%</b>		

Voltage (V)	<b>415</b>	Current I <sub>N</sub> (A)	<b>41.5</b>	Power factor at P <sub>N</sub>	<b>0.79</b>
Frequency (Hz)	<b>50</b>	Speed (r/min)	<b>1475</b>	Efficiency (%) at P <sub>N</sub>	<b>93</b>



Data based on situation 9/18/2015

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


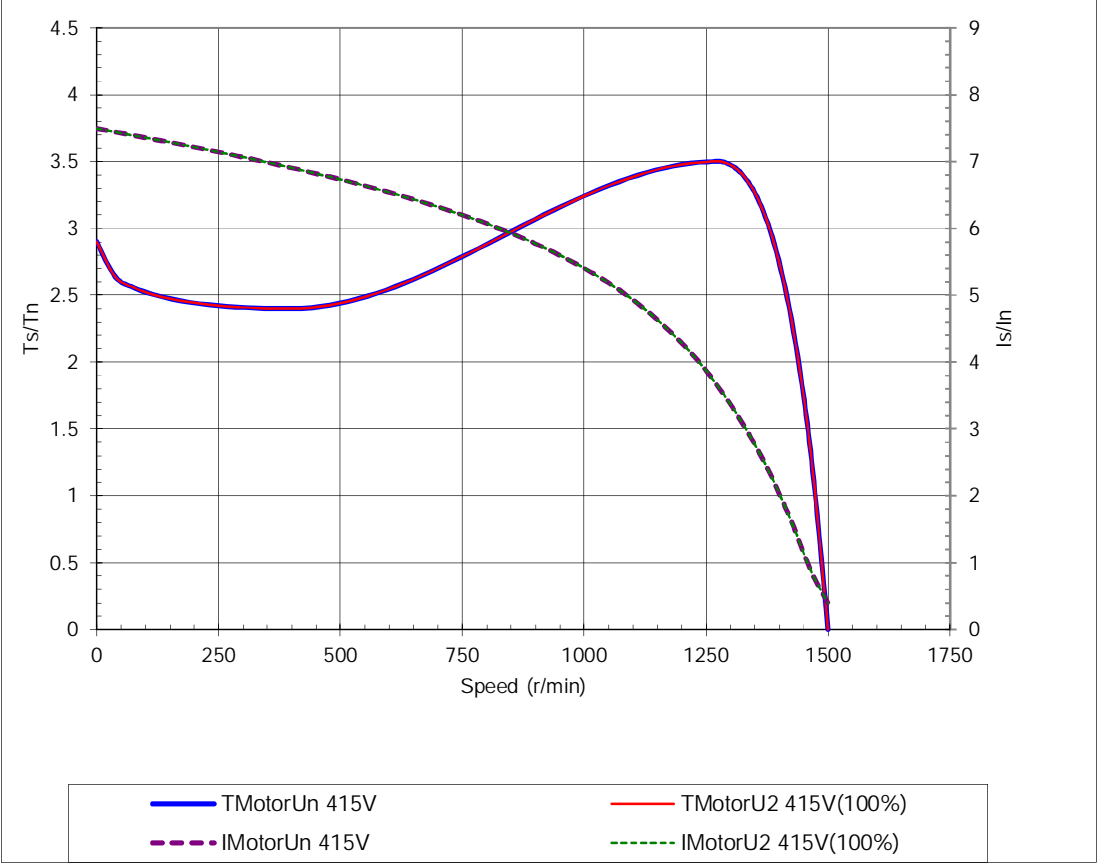

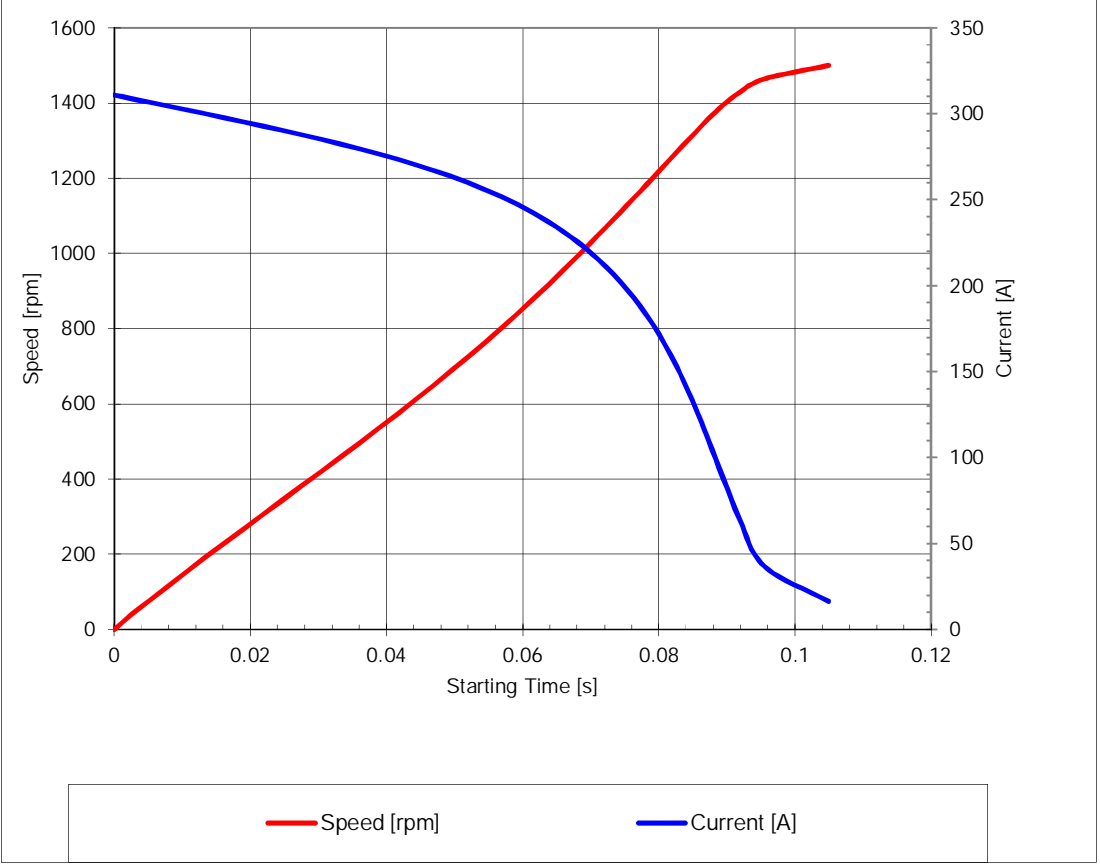

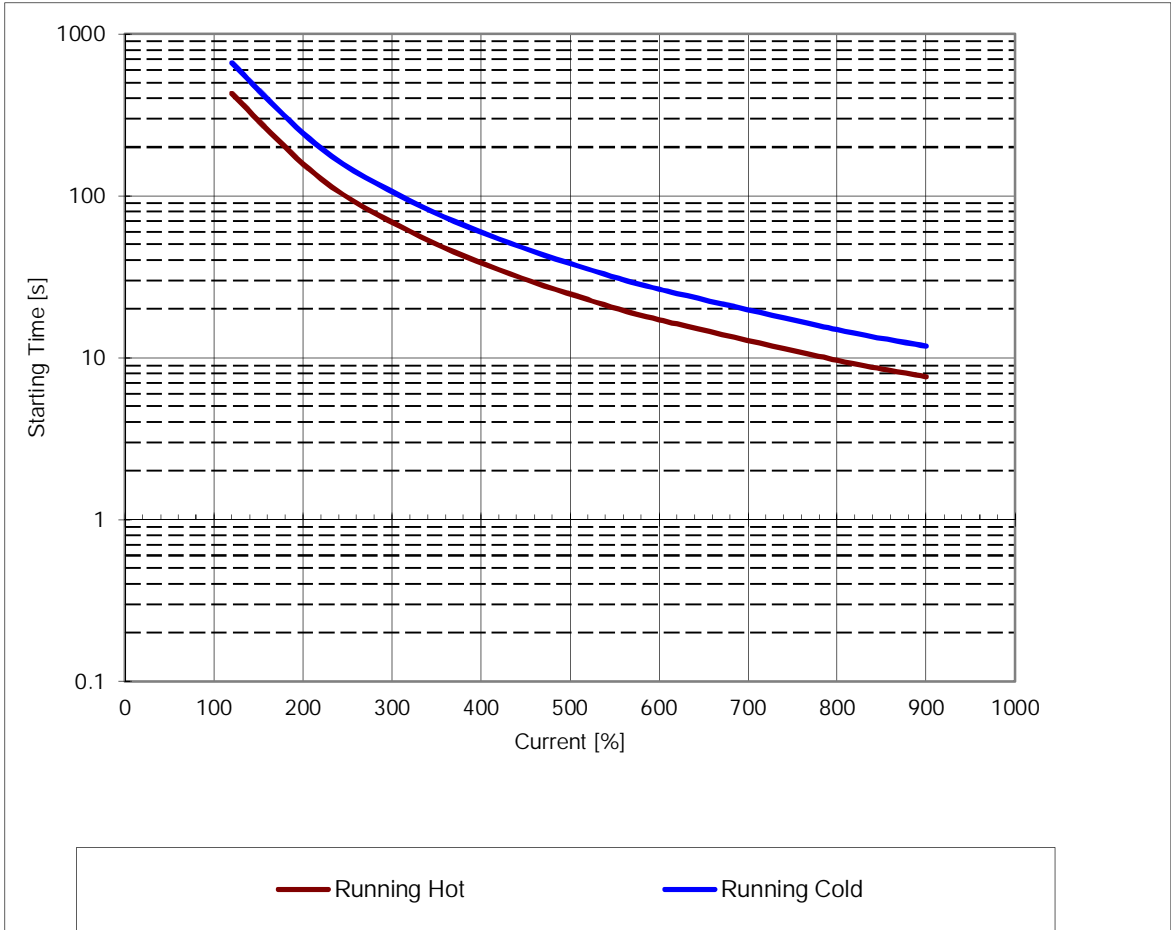
<b>ABB Motors and Generators</b>	<b>Starting Curves</b>			
	Project	Location		
Department/Author	Customer name	Customer ref.		Item name <b>1.00001</b>
Our ref.	Rev/Changed b	Date of issue	Saving ident	Pages
	<b>A</b>	<b>1/18/2019</b>	<b>untitled.xls</b>	<b>3(3)</b>
Type of product	<b>TEFC, 3-phase, squirrel cage induction motor</b>			
Type/Frame	<b>M2BAX 180MLB 4</b>	Calc. ref.	<b>3GZH021018-17</b>	
Product code	<b>3GBA 182 420-ADDIN</b>	Frequency (Hz)	<b>50</b>	
Rated output P <sub>N</sub>	<b>22 kW</b>	Rated current I <sub>N</sub>	<b>41.5</b>	<b>A</b>
Type of duty	<b>S1 100%</b>			
J <sub>motor</sub> (kgm <sup>2</sup> )	<b>0.24</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>2.9</b>	T <sub>start</sub> /T <sub>N</sub> <b>2.9</b>
Speed (r/min)	<b>1475</b>	Starting time (s)	<b>0.1</b>	Starting time (s)
T <sub>N</sub> (Nm)	<b>142</b>	Speed (r/min)		Speed (r/min) <b>939</b>
T <sub>load</sub> (Nm)		I <sub>s</sub> /I <sub>N</sub>	<b>7.5</b>	I <sub>s</sub> /I <sub>N</sub> <b>7.5</b>
		T <sub>max</sub> /T <sub>N</sub>	<b>3.5</b>	T <sub>max</sub> /T <sub>N</sub> <b>3.5</b>
 <p>The graph plots torque ratios (Ts/Tn and Tload/Tn) and current ratios (Is/In) against speed in r/min. The x-axis ranges from 0 to 1750 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. Four curves are shown: TMotorUn 415V (solid blue), TMotorU2 415V(100%) (solid red), IMotorUn 415V (dashed purple), and IMotorU2 415V(100%) (dashed green). The TMotorU2 curve peaks at approximately 3.5 around 1250 r/min. The IMotorU2 curve starts at approximately 3.8 at 0 r/min and decreases to 0 at 1500 r/min.</p>				
Data based on situation 9/18/2015				
All data subject to tolerances in accordance with IS/IEC 60034-1 : 2004				

ABB Motors and Generators	Current & Speed Vs Time			
	Project	Location		
Department/Author	Customer name	Customer ref.		Item name <b>1.00001</b>
Our ref.	Rev/Changed b	Date of issue	Saving ident	Pages <b>4(3)</b>
	<b>A</b>	<b>1/18/2019</b>	<b>untitled.xls</b>	
Type of product	<b>TEFC, 3-phase, squirrel cage induction motor</b>			
Type/Frame	<b>M2BAX 180MLB 4</b>	Calc. ref.	<b>3GZH021018-17</b>	
Product code	<b>3GBA 182 420-ADDIN</b>	Frequency (Hz)	<b>50</b>	
Rated output $P_N$	<b>22 kW</b>	Rated current $I_N$	<b>41.5</b>	<b>A</b>
Type of duty	<b>S1 100%</b>			
$J_{motor}$ (kgm <sup>2</sup> )	<b>0.24</b>	Voltage (V) 100%	<b>415</b>	Voltage (V) <b>415V(100%)</b>
$J_{load}$ (kgm <sup>2</sup> )		$T_{start}/T_N$	<b>2.9</b>	$T_{start}/T_N$ <b>2.9</b>
Speed (r/min)	<b>1475</b>	Starting time (s)	<b>0.1</b>	Starting time (s)
$T_N$ (Nm)	<b>142</b>	Speed (r/min)		Speed (r/min) <b>939</b>
$T_{load}$ (Nm)		$I_s/I_N$	<b>7.5</b>	$I_s/I_N$ <b>7.5</b>
		$T_{max}/T_n$	<b>3.5</b>	$T_{max}/T_n$ <b>3.5</b>
				
<p>Data based on situation 9/18/2015</p> <p>All data subject to tolerances in accordance with IS/IEC 60034-1 : 2004</p>				

<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 b Date of issue <b>A 1/18/2019</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 180MLB 4</b>	Calc. ref.	3GZH021018-17
Product code	<b>3GBA 182 420-ADDIN</b>	Frequency (Hz)	<b>50</b>
Rated output P <sub>N</sub>	<b>22 kW</b>	Rated current I <sub>N</sub>	<b>41.5 A</b>
Type of duty	<b>S1 100%</b>		

J <sub>motor</sub> (kgm <sup>2</sup> )	<b>0.24</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>2.9</b>	T <sub>start</sub> /T <sub>N</sub>	<b>2.9</b>
Speed (r/min)	<b>1475</b>	Starting time (s)	<b>0.1</b>	Starting time (s)	
T <sub>N</sub> (Nm)	<b>142</b>	Speed (r/min)		Speed (r/min)	<b>939</b>
T <sub>load</sub> (Nm)		I <sub>s</sub> /I <sub>n</sub>	<b>7.5</b>	I <sub>s</sub> /I <sub>n</sub>	<b>7.5</b>
		T <sub>max</sub> /T <sub>n</sub>	<b>3.5</b>	T <sub>max</sub> /T <sub>n</sub>	<b>3.5</b>



Data based on situation 9/18/2015

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