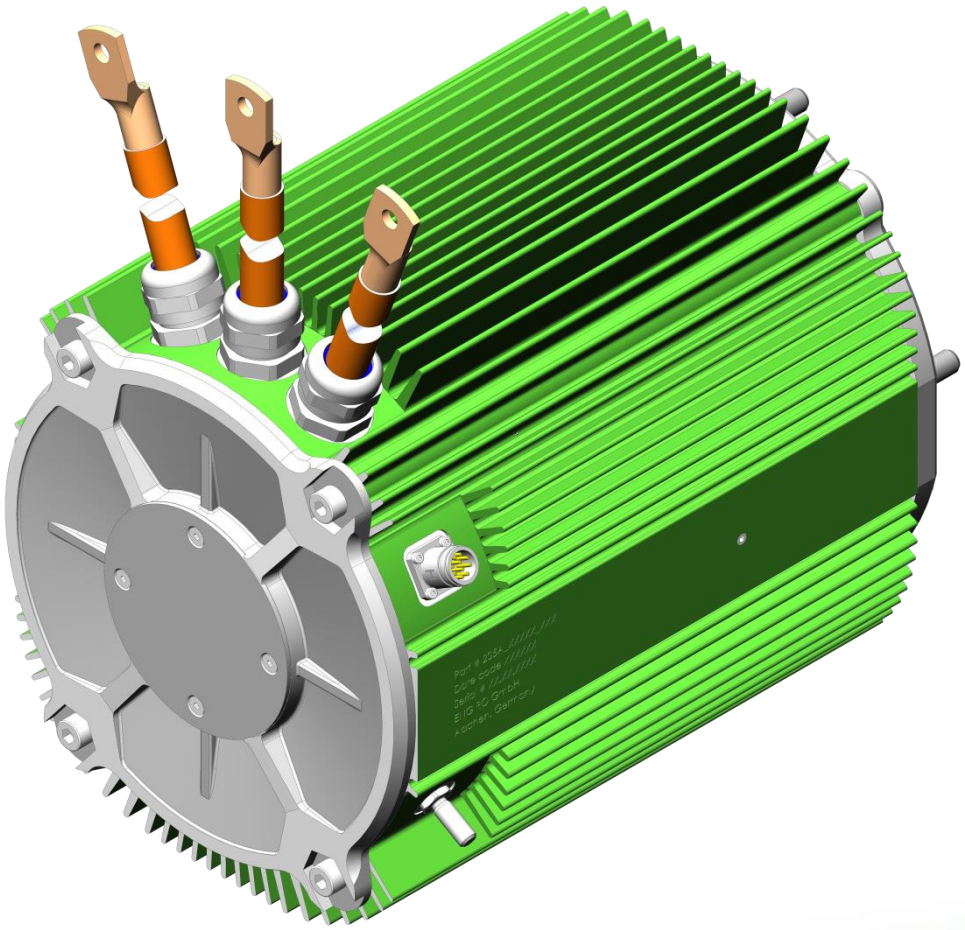
205A-08011-ABC

air-cooled motor / generator with 17 kW (48 V) / 27 kW (96 V) continuous power

This datasheet refers to art.no.: see page 2



KEY FEATURES

- permanent magnet synchronous machine
- air-cooled
- high peak power for motor applications
- convincing cost-benefit ratio
- recommended voltage range from 48 V to 200 V
- delivery with controller possible

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Table of Content

Note:

On September 1st , 2024, **we transferred our ERP systems to SAP**. Due to this change, **we are altering our current part numbers**. To see how our article numbers and motor naming scheme has changed, please consider the conversion table below:

Article Number Conversion				
Part. No.	**Old Part. No.**	**Flange**	**Shaft**	**Position Sensor**
4785584	205A_08011_SSE	S1	S1	E
4706287	205A_08011_HGE	H1	G1	E
4793002	205A_08011_JHE	J1	H1	E
4793003	205A_08011_HDE	H1	D1	E

To be noted:

The information in this technical data sheet is based on our current knowledge and experience. Due to the wide range of possible influences during application, they do not exempt the processor and user from carrying out their own tests and trials. Although the suitability for a specific application can be estimated from our information, a legally binding assurance is by no means possible. Depending on the individual case, we recommend consultation with us. Any industrial property rights and applicable laws must be observed by the recipient of our products on his own responsibility.

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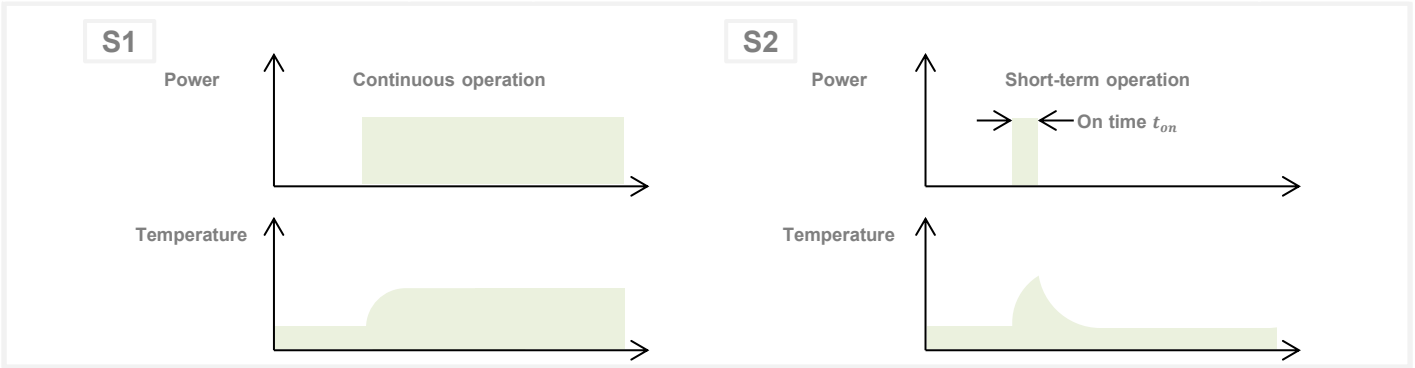
Operating Range 48 V

Characteristic Operating Points[1]					
		S1	S2	S2	
Feasible operation time	t_{on}	continuous	15 min	60 sec	
Torque [2]	T	72	92	171	Nm
Power [2]	P	17	21	25	kW
Speed	n	2210	2210	1410	rpm
Phase RMS-current (AC) [3]	I_{rms}	363	474	910	A
Battery current (DC) [3]	I_{DC}	390	515	754	A
Battery voltage (DC)	U_{DC}	48	48	48	V
Electric frequency	f_{el}	148	148	94	Hz
Efficiency	η_{tot}	89	87	73	%
Power factor	$cos(\varphi)$	0.94	0.88	0.76	

Cooling			
Cooling medium		air	
Air flow rate		6	m/s
Cooling air temperature		20	°C
Cooling definition		1 (see image 1.1 in chapter “Additional Data”)	

Maximum Operating Range			
Torque [2] [4]	T_{max}	171 @ 1410 rpm	Nm
Power [2] [4]	P_{max}	25 @ 1410 rpm	kW
Speed [5]	n_{max}	8000	rpm
Phase RMS-current (AC) [3] [4]	$I_{rms,max}$	910	A
Battery current (DC) [3] [4]	I_{max}	754	A
Battery voltage (DC)	U_{max}	200	V
Electric frequency	f_{el}	533	Hz



1) Temperature limitations according to the chapter “Additional Data”
2) Torque rating is dependent on rotor temperature
3) The cables must not exceed a temperature of 140 °C at any time. Temperature and service life depend on the installation condition.
4) Peak rating for max. 60 sec on time
5) Higher speeds available upon request. A detailed discussion of the functional safety concept of the vehicle is required.

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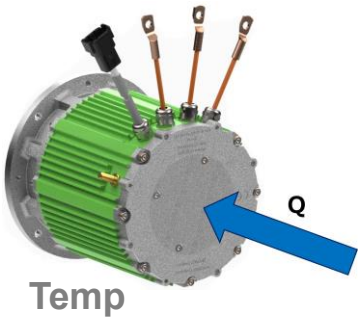
Operating Range 48 V

S1 Operating Points Based on Cooling					
U_{nom} = 48 V		S1	S1	S1	
Cooling definition (see below)		1	1	1	-
Minimal flow rate	Q	3	9	6	m/s
Maximum ambient temperature	T_{amb}	20	20	60	°C
Torque	T	66	79	60	Nm
Speed	n	2213	2213	2213	rpm
Power	P	15	18	14	kW
Phase RMS-current (AC) [1]	I_{rms}	336	418	304	A
Battery current (DC) [1]	I_{DC}	354	439	320	A
Maximal motor temperature	T_{mot}	145	160	140	°C

1) The cables must not exceed a temperature of 140 °C at any time.

Cooling definition 1



Temperature sensors are placed on the surface of the green part of the housing.

Image 1.1

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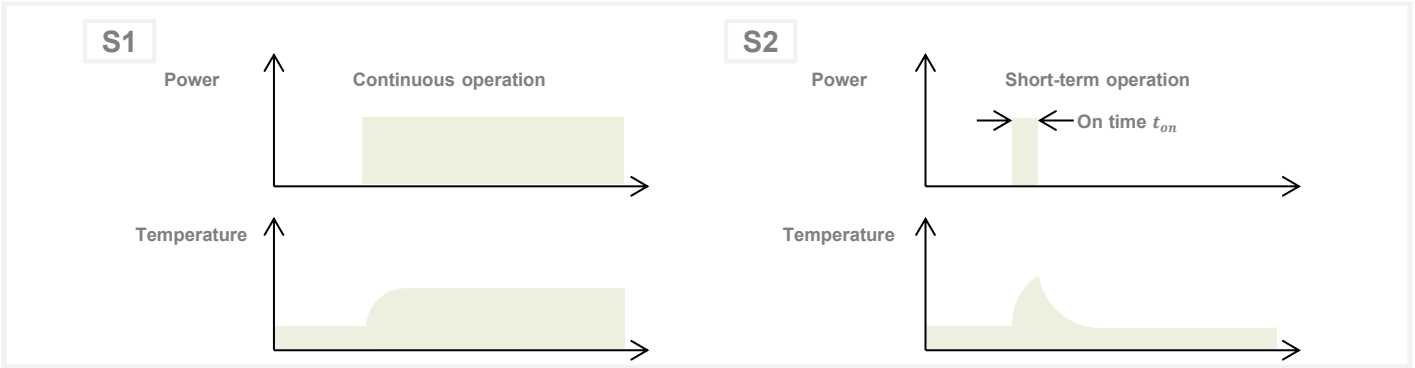
Operating Range 96 V

Characteristic Operating Points[1]					
		S1	S2	S2	
Feasible operation time	t_{on}	continuous	15 min	30 sec	
Torque [2]	T	56	82	132	Nm
Power [2]	P	27	40	51	kW
Speed	n	4720	4720	3700	rpm
Phase RMS-current (AC) [3]	I_{rms}	282	418	645	A
Battery current (DC) [3]	I_{DC}	303	459	608	A
Battery voltage (DC)	U_{DC}	96	96	96	V
Electric frequency	f_{el}	314	314	246	Hz
Efficiency	η_{tot}	94	91	88	%
Power factor	$cos(\varphi)$	0.93	0.93	0.91	

Cooling			
Cooling medium		air	
Air flow rate		6	m/s
Cooling air temperature		20	°C
Cooling definition		1 (see image 1.1 in chapter “Additional Data”)	

Maximum Operating Range			
Torque [2] [4]	T_{max}	132 @ 3700 rpm	Nm
Power [2] [4]	P_{max}	51 @ 3700 rpm	kW
Speed [5]	n_{max}	8000	rpm
Phase RMS-current (AC) [3] [4]	$I_{rms,max}$	645	A
Battery current (DC) [3] [4]	I_{max}	608	A
Battery voltage (DC)	U_{max}	200	V
Electric frequency	f_{el}	533	Hz



1) Temperature limitations according to the chapter “Additional Data”
2) Torque rating is dependent on rotor temperature
3) The cables must not exceed a temperature of 140 °C at any time. Temperature and service life depend on the installation condition.
4) Peak rating for max. 30 sec on time
5) Higher speeds available upon request. A detailed discussion of the functional safety concept of the vehicle is required.

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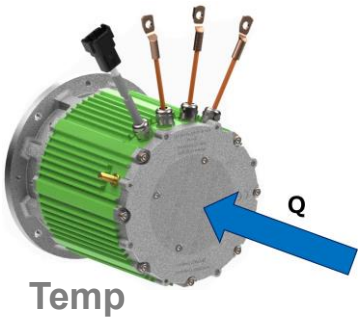
Operating Range 96 V

S1 Operating Points Based on Cooling					
U_{nom} = 96 V		S1	S1	S1	
Cooling definition (see below)		1	1	1	-
Minimal flow rate	Q	3	9	6	m/s
Maximum ambient temperature	T_{amb}	20	20	60	°C
Torque	T	45	61	42	Nm
Speed	n	4717	4717	4717	rpm
Power	P	22	30	21	kW
Phase RMS-current (AC) [1]	I_{rms}	232	315	218	A
Battery current (DC) [1]	I_{DC}	245	339	228	A
Maximal motor temperature	T_{mot}	135	150	140	°C

1) The cables must not exceed a temperature of 140 °C at any time.



Temperature sensors are placed on the surface of the green part of the housing.

Image 1.1

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Additional Data

ENGIRO HYDAC INTERNATIONAL

Electrical Data					
Number of phases				3	
Number of pole pairs				4	
Maximum stationary short circuit current [1]				545 A (RMS) @ 20 °C @ ≥ 1400 rpm	
Maximal efficiency				94	%
T/I constant ($I<I_{nom}$)				0.198	Nm/A_{rms}
U/n constant (AC) at temperature 20 °C	rms:	13.37	peak:	21.45	V/(1000rpm)
Ke constant (AC) at temperature 20 °C	rms:	0.13	peak:	0.2	$V/(rad*s^{-1})$
Additional Data					
Weight (w/o cables)				33 (S1S1, J1H1) , 34 (H1G1, H1D1)	kg
Rotor moment of inertia				0.0151 (S1S1), 0.0153 (H1G1, J1H1, H1D1)	$kg*m^2$
Allowed range of ambient temperature				-20 … +85	°C
Maximal motor temperature 48 V / 96 V				152 / 144	°C
Maximal surface temperature				100	°C
Maximum operating altitude				4000	m N.N.
Temperature monitoring				KTY 84-130	
Connectors					
Power terminals				3 x 50mm² cables with M8 cable lugs	
Length power cables				2000 mm	
Weight power cables				3.3 kg	
Signal connectors				1x Hummel 10 Pin Connector, M16	
Certifications					
Type approval				CE, EN 60034	
Salt mist				ISO 9227	
Protection grade				ISO 20653 IP6K9K [2]	
Vibrations				ISO 16750-3	
Customs tariff number				8501 5230	

1) Simulated
2) Please note that the IP6K9K rating is only valid if the machine is installed with suitable cable glands and an appropriate sealed interface at the drive side of the motor (flange and/or shaft). Please contact ENGIRO for further questions.

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Available Type Variants

ENGIRO HYDAC INTERNATIONAL

Available Type Variants			
Flange	**Shaft**	**Pos. sensor**	**Weight (kg)**
S1 Standard with 4xM10x35 threaded stud	**S1** Cylindrical shaft with keyway Ø 28mm	**E** Encoder	≈ 33 kg
H1 Ø200 mm centering shoulder with hydraulic pump adapter for SAE J744 101-2 - Ø101,6 mm centering hole	**G1** Hollow shaft with internal splines ANSI B 92.1 / 13T	**E** Encoder	≈ 34 kg
J1 Hydraulic Pump SAE J744 82-2 - Ø82,55 mm centering hole	**H1** Hollow shaft with internal splines ANSI B 92.1 9T 16/32DP 30°	**E** Encoder	≈ 33 kg
H1 Ø200 mm centering shoulder with hydraulic pump adapter for SAE J744 101-2 - Ø101,6 mm centering hole	**D1** Hollow shaft with internal splines ANSI B 92.1 15T 16/32DP30°	**E** Encoder	≈ 34 kg

Other individual combinations are also possible on request.

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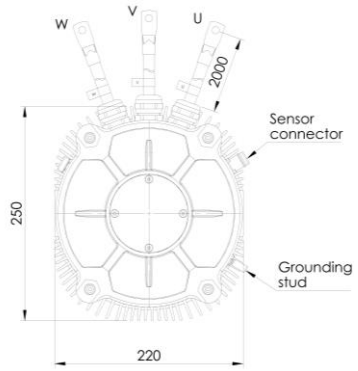
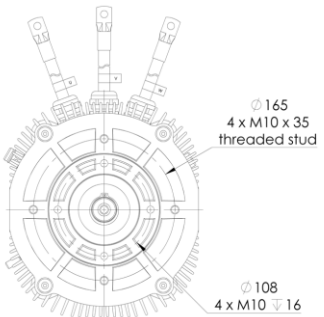
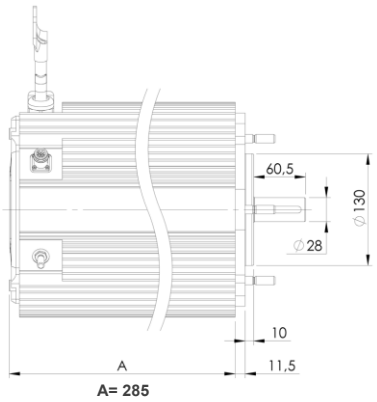
Technical Drawings

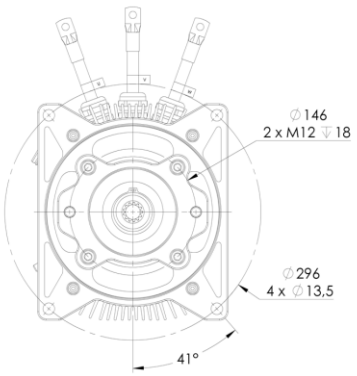


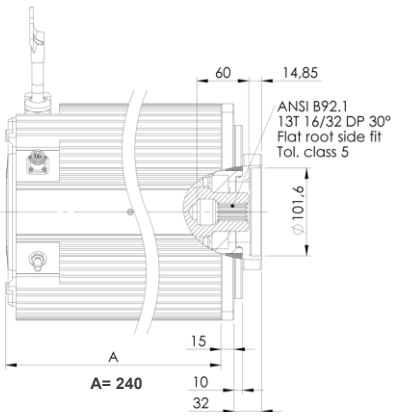
Flange S1
Shaft S1

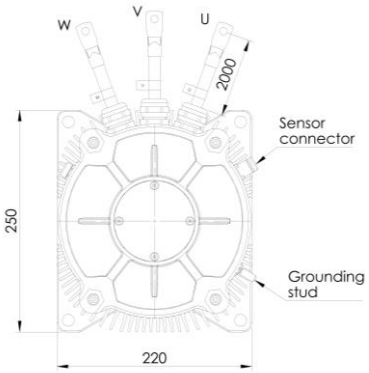




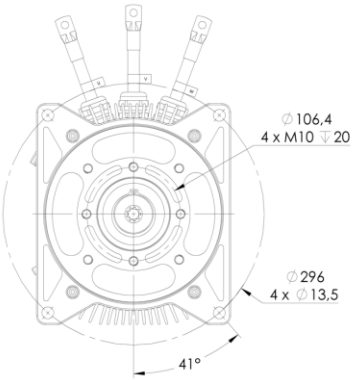
Flange H1
Shaft G1

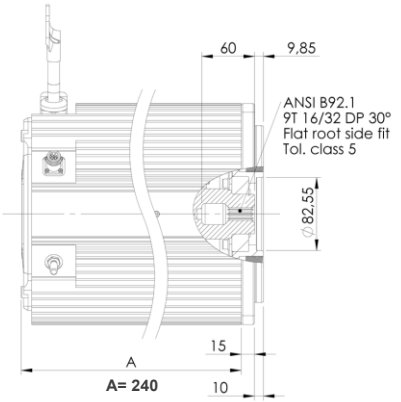




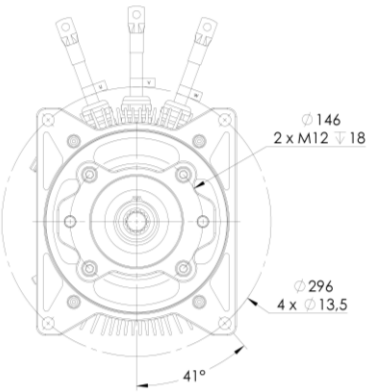


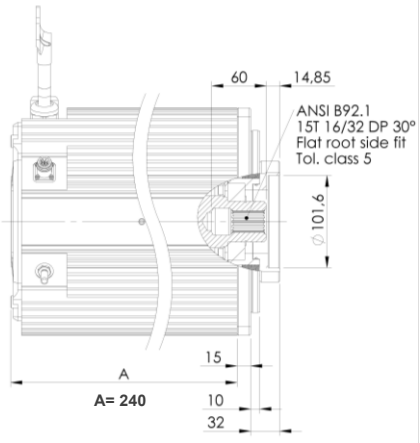
Flange J1
Shaft H1





Flange H1
Shaft D1





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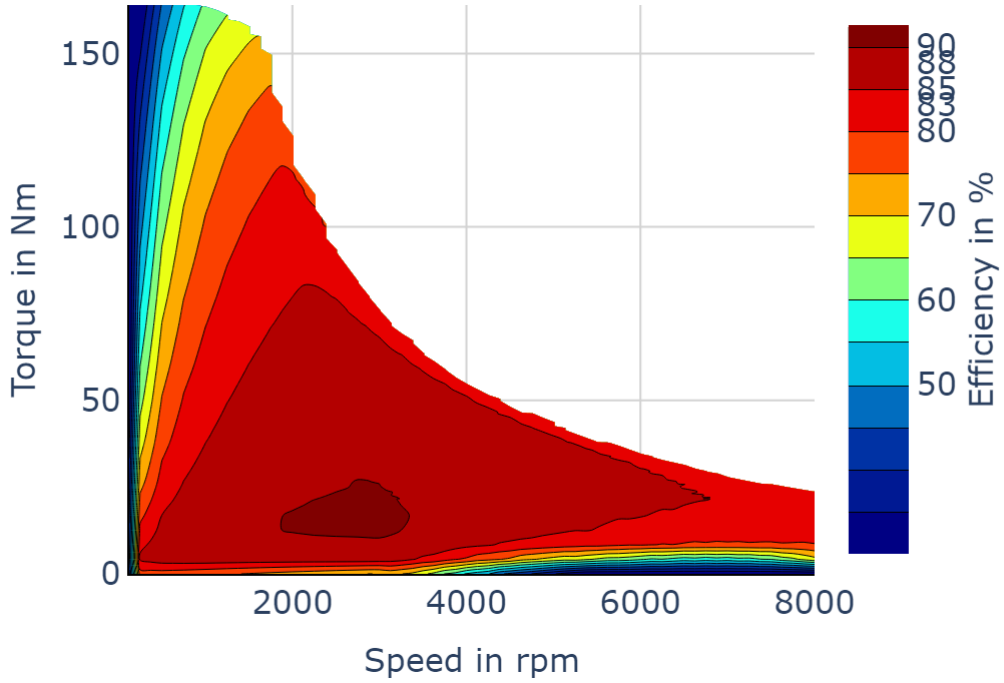
48 V

Simulated Efficiency of Motor Application

(electric machine only; U_{nom} = 48 V)

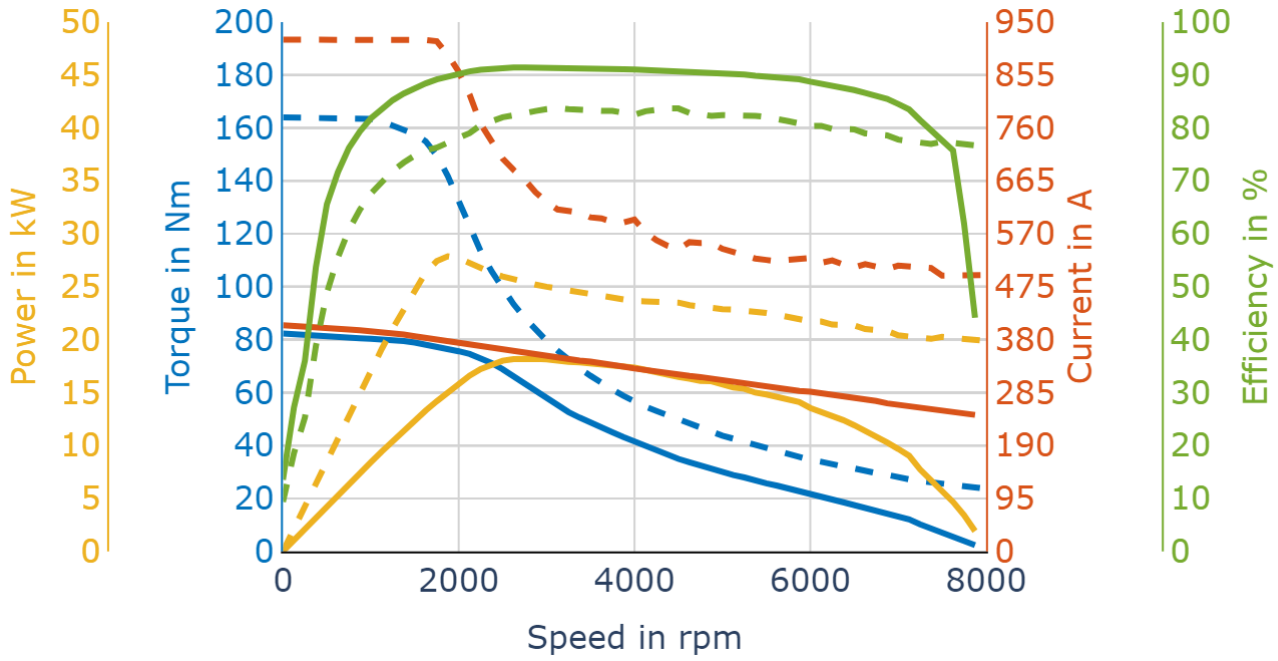


48 V

Simulated Characteristic Motor Parameters

solid lines: S1 continuous; dashed lines: S2 (60 sec) maximum

(cooling as specified in chapter “Additional Data”)



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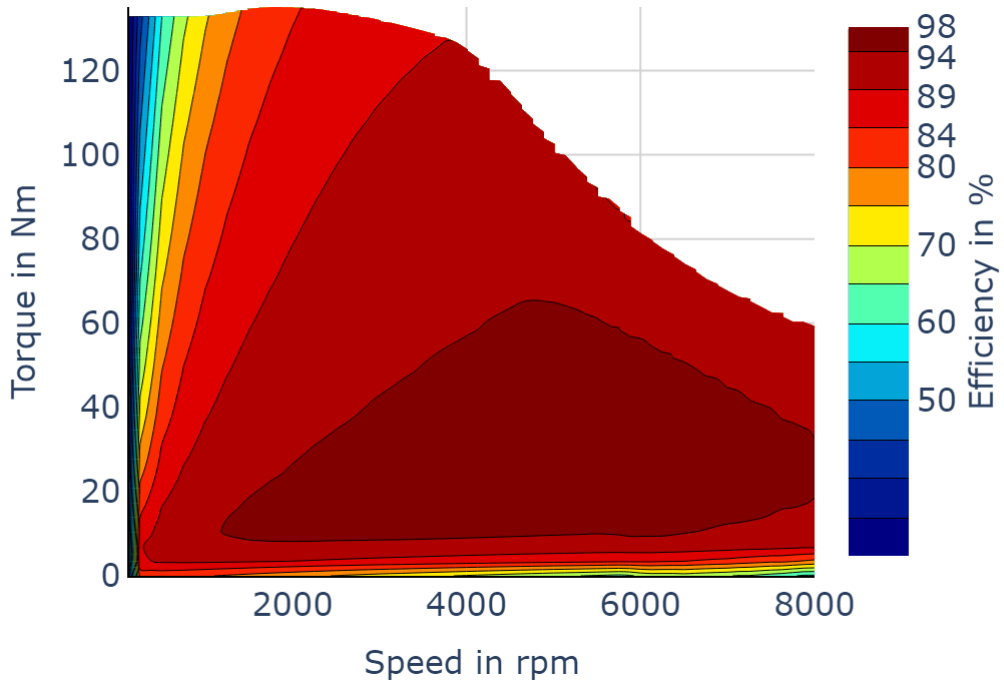
Performance Plots 96 V

96 V

Simulated Efficiency of Motor Application

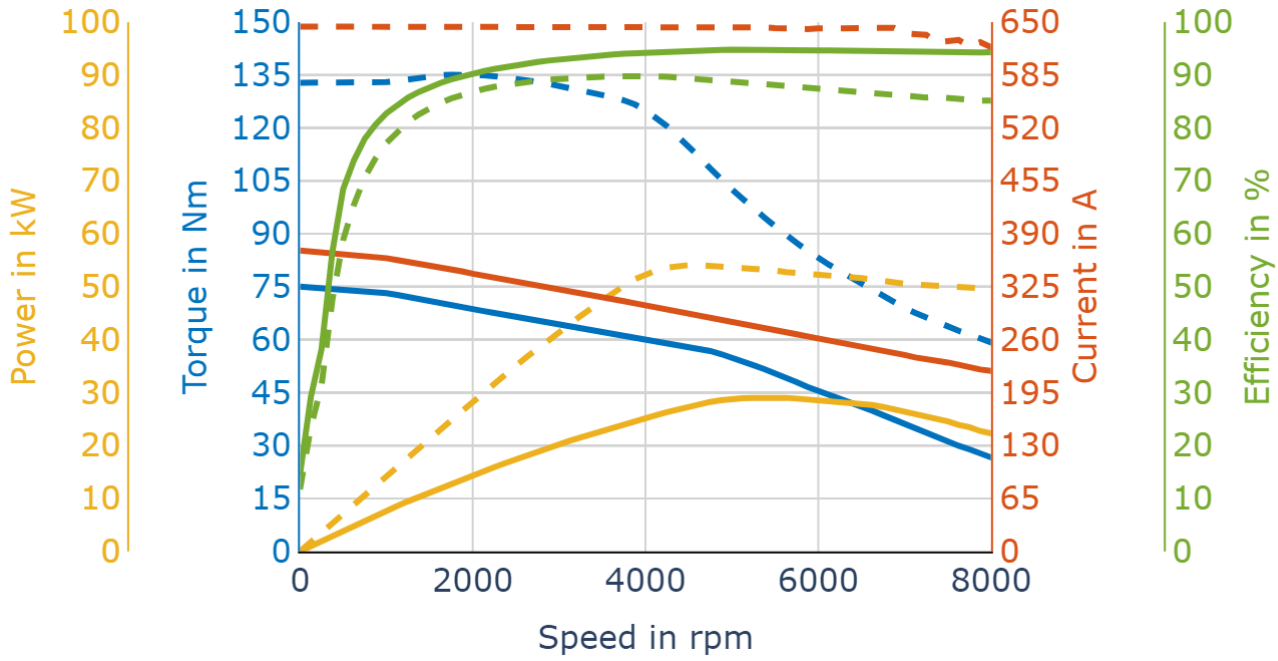
(electric machine only; U_{nom} = 96 V)



96 V

Simulated Characteristic Motor Parameters

solid lines: S1 continuous; dashed lines: S2 (30 sec) maximum
(cooling as specified in chapter “Additional Data”)



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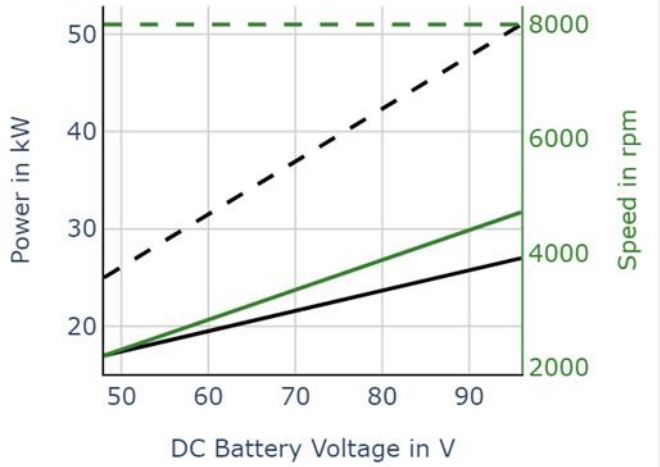
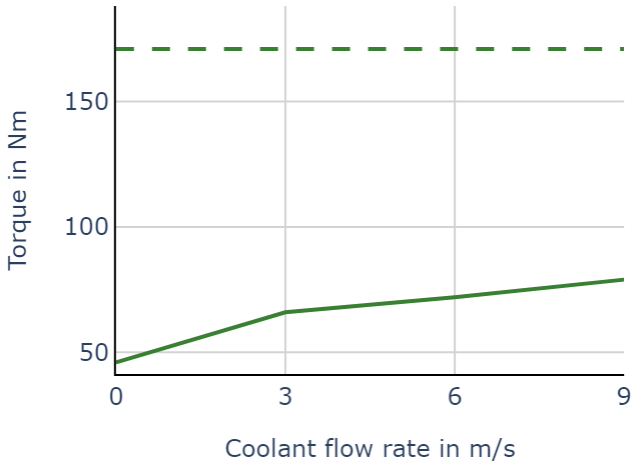
Additional Characteristics 48 V

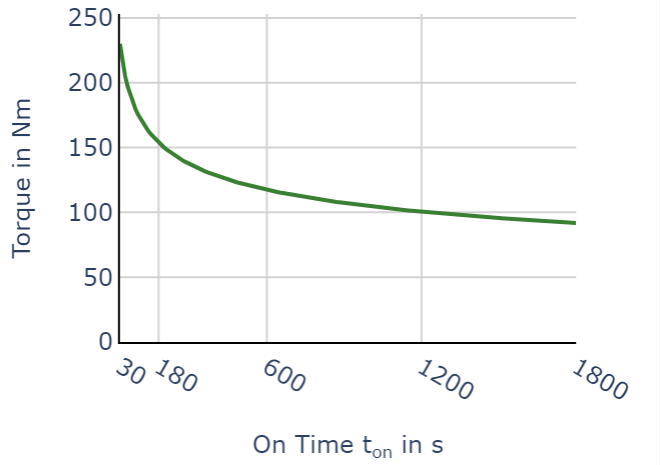
Power and Corner Speed
over Battery Voltage[1)]
(20 °C Cooling Air Temperature & 6 m/s Air Flow Rate)



Available Torque
at Different Air Flow Rates[1)]
(20 °C Cooling Air Temperature)



Torque over Feasible Maximum On Time, S2
Operation Cycles
(20 °C Cooling Air Temperature, 6 m/s Air Flow Rate)



1) solid lines: continuous; dashed lines: maximum;

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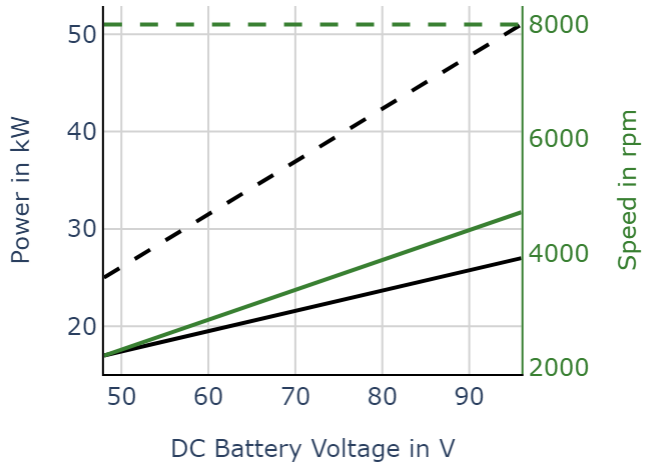
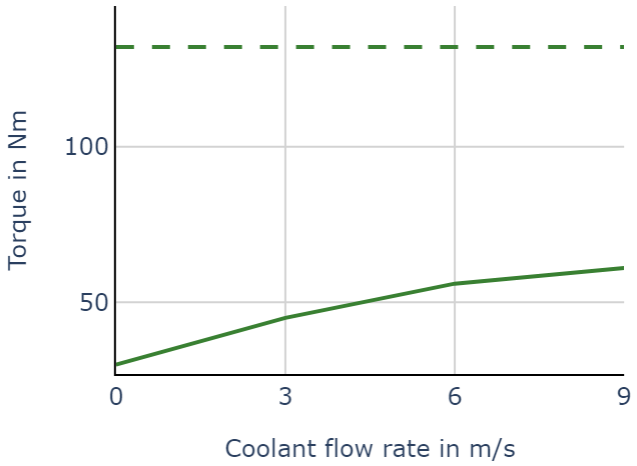
Additional Characteristics 96 V

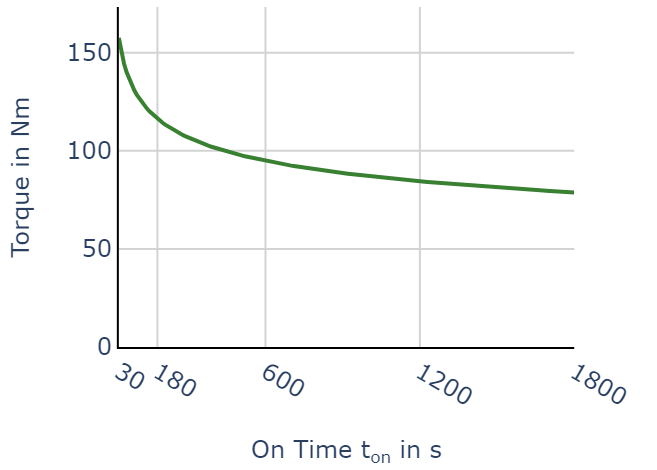
Power and Corner Speed
over Battery Voltage[1)]
(20 °C Cooling Air Temperature & 6 m/s Air Flow Rate)



Available Torque
at Different Air Flow Rates[1)]
(20 °C Cooling Air Temperature)



Torque over Feasible Maximum On Time, S2
Operation Cycles
(20 °C Cooling Air Temperature, 6 m/s Air Flow Rate)



1) solid lines: continuous; dashed lines: maximum;

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