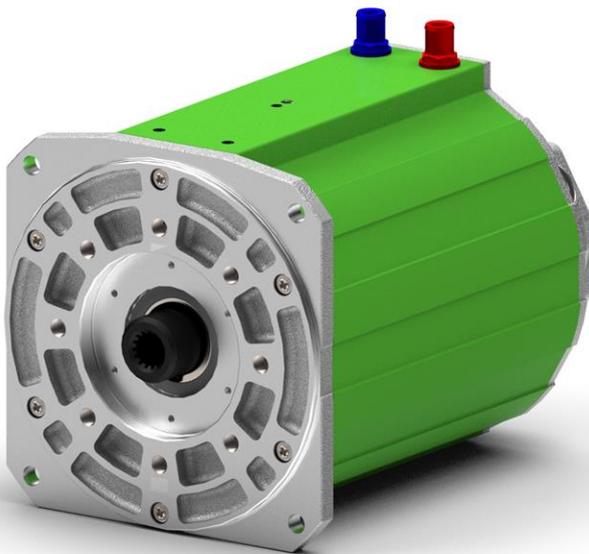


# 205W-12006-ABC

water-cooled motor / generator with 34 kW continuous power



Article-No.: 2073 + 2164

Article-Name: ENGIRO 60V / 1000A controller + cooling plate set

## KEY FEATURES

- permanent magnet synchronous machine
- water-cooled
- convincing cost-benefit ratio
- recommended voltage range from 48V to 200V
- delivery with controller possible

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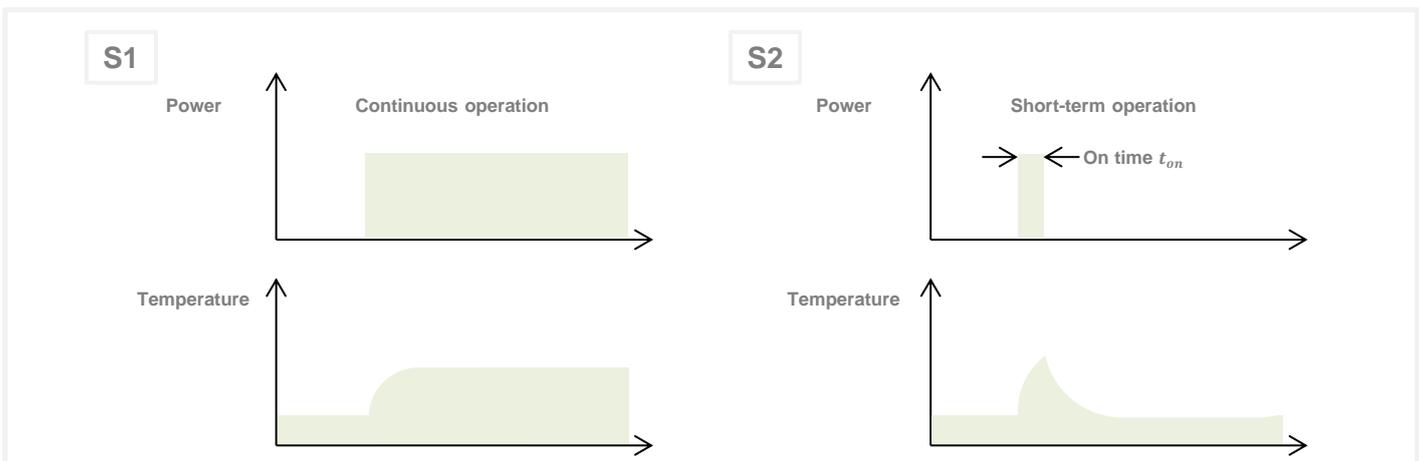
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**Characteristic Operating Points<sup>1)</sup>**

		S1	S2	S2	
Feasible operation time	$t_{on}$	continuous	15 min	30 sec	
Torque	$T$	134	134	176	Nm
Power	$P$	34	34	41	kW
Speed	$n$	2400	2400	2200	rpm
Phase rms-current (AC)	$I_{rms}$	790	790	1000	A
Battery current (DC)	$I_{nom}$	806	806	984	A
Battery voltage (DC)	$U_{nom}$	48	48	48	V
Electric frequency	$f_{el}$	160	160	147	Hz
Efficiency	$\eta_{tot}$	89	89	89	%
Power factor	$\cos(\varphi)$	0.83	0.83	0.76	
Cooling	specified on page 5				

**Maximum Operating Range**

Torque	$T_{max}$	176 @ 2200 rpm <sup>2)</sup>			Nm
Power	$P_{max}$	43 @ 3000 rpm			kW
Speed	$n_{max}$	8000			rpm
Phase rms-current (AC)	$I_{rms,max}$	1000 <sup>3) 4)</sup>			A
Battery current (DC)	$I_{max}$	1000 <sup>3) 4)</sup>			A
Battery voltage (DC)	$U_{max}$	75			V
Electric frequency	$f_{el}$	533			Hz

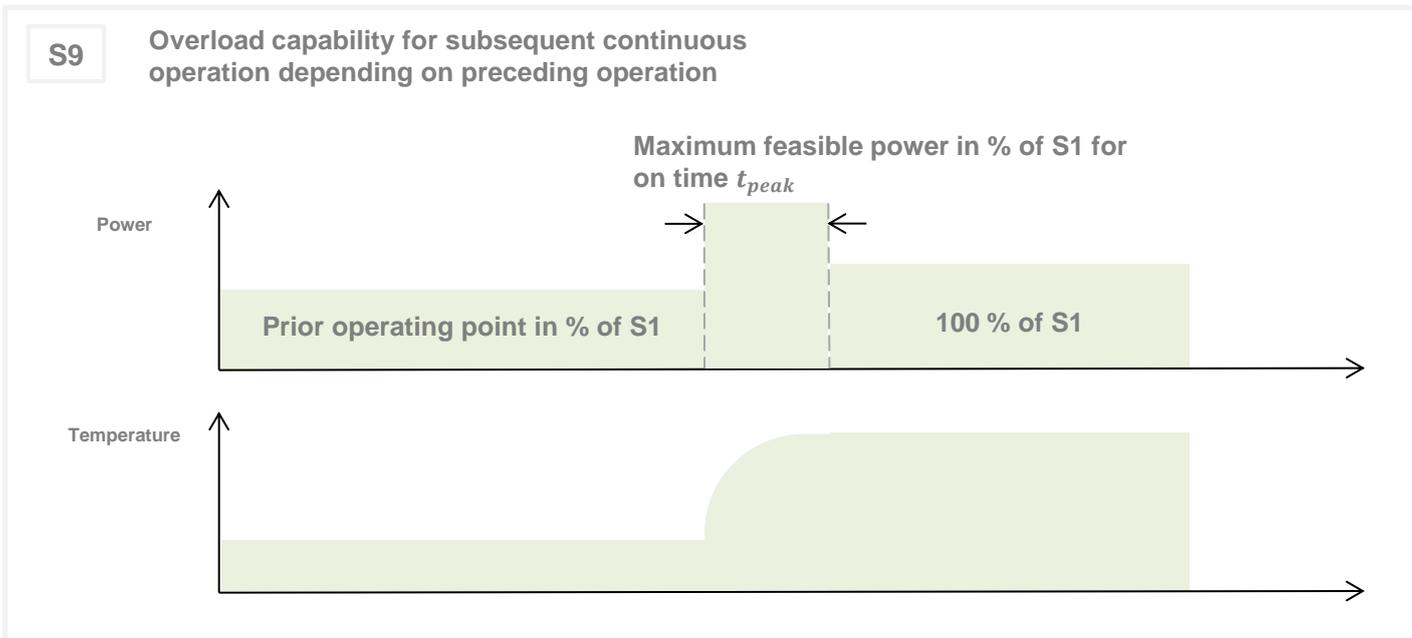


- 1) Defined Range only valid for a power factor of 1 at DC input
- 2) Torque rating is dependent on rotor temperature
- 3) The cables must not exceed a temperature of 140 °C at any time. Temperature and service life depend on the installation condition.
- 4) Peak rating for max. 60 seconds on time

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**S9 Operating Points<sup>1)</sup>**  
**Maximum Feasible Power in % of S1**

$U_{nom} = 48\text{ V}$		Prior operating point in % of S1				
		0 %	25 %	50 %	75 %	100 %
On time $t_{peak}$	30 s	125%	120%	110%	110%	100%
	180 s	110%	100%	100%	100%	100%
	420 s	105%	100%	100%	100%	100%



1) Theoretical rounded assumption

Electrical Data			
Number of phases	2 x 3 <sup>1)</sup>		
Number of pole pairs	4		
Maximal efficiency	90 %		
T/I constant (I<I <sub>nom</sub> )	0.166 Nm/A <sub>rms</sub>		
U/n constant (AC) at temperature 30°C	rms:	10.9	peak: 17.6 V/(1000rpm)
Ke constant (AC) at temperature 30°C	rms:	0.026	peak: 0.042 V/(rad*s <sup>-1</sup> )

Additional Data			
Rotor moment of inertia	0.0209 kg*m <sup>2</sup>		
Allowed range of ambient temperature	-20 ... +85 °C		
Maximal motor temperature	140 °C		
Temperature monitoring	1 x KTY84-130		
Cooling	Advised medium (OAT Coolants)	water/glycol - 50/50 <ul style="list-style-type: none"> <li>▪ TL 774-D/F</li> <li>▪ VIN 878389</li> <li>▪ MAN 324 SNF</li> <li>▪ MTL 5048</li> </ul>	
	Flow rate	8 l/min	
	Inlet temperature	45 °C	
	Pressure drop	< 0.2 bar	
	Maximum inlet pressure	2 bar	
	Cooling channel volume	1.04 l	

Connectors	
Power terminals	6 x M25 cable gland
Signal connectors	1x Hummel 10 Pin Connector, M16
Cooling connectors	2 x ¾" / 19 mm

Certifications	
Type approval	CE, EN 60034
Environmental	ISO 9227
Protection grade	IP6K9K <sup>2)</sup>
Vibrations	Prepared for ISO 16750-3
Customs tariff number	8501 5230

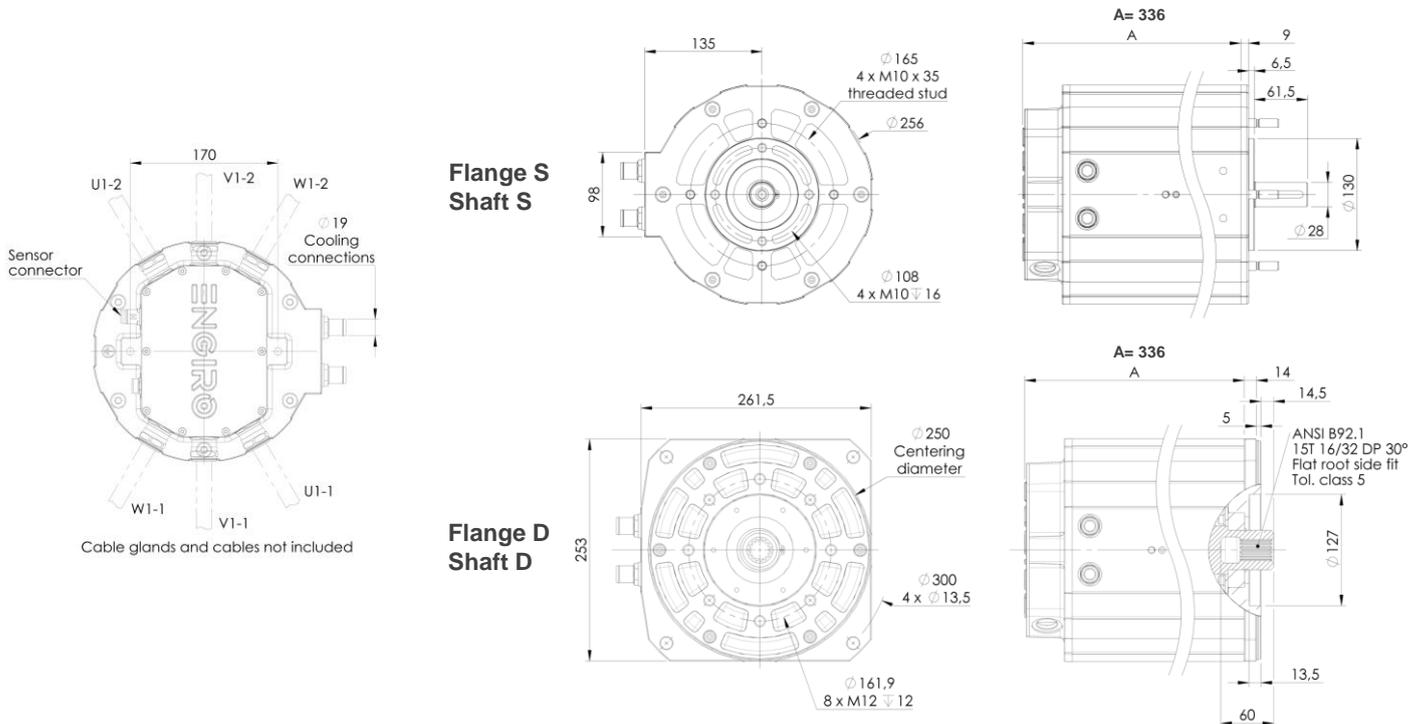
- 1) The phase cables for this motor are connected in parallel. The phase rms current on page 3 is the sum from both cables
- 2) Please note that the IP6K9K rating is only valid if the machine is installed with suitable cable glands and an appropriate sealed interface at the drive side of the motor (flange and/or shaft). Please contact ENGIRO for further questions.

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Shaft and Flange Combinations for 205W-12006-ABC		Flange (A)	
		S (Standard)	D (Flange for fan without insert)
Shaft (B)	S (Cylindrical shaft with keyway $\varnothing$ 28mm)	● (~48 kg)	
	D (hollow shaft with internal splines ANSI B 92.1)		● (~50 kg)
Position Sensor (C)		E: Sin/cos Encoder	

Other individual combinations are also possible on request.

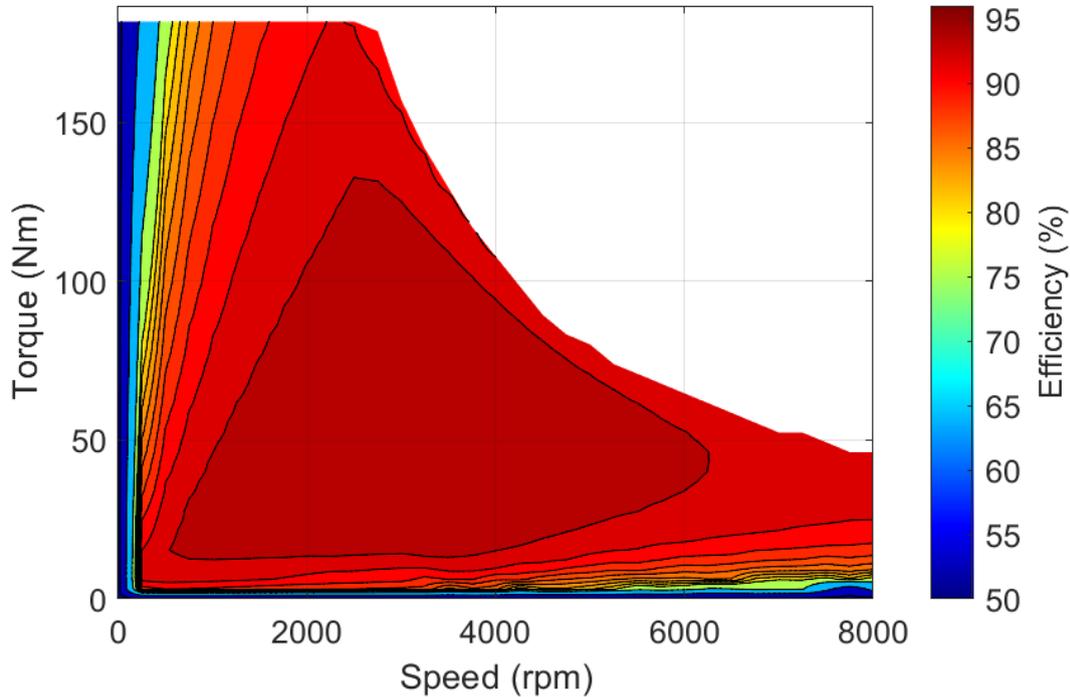
## Technical Drawings



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## Simulated Efficiency of Motor Application

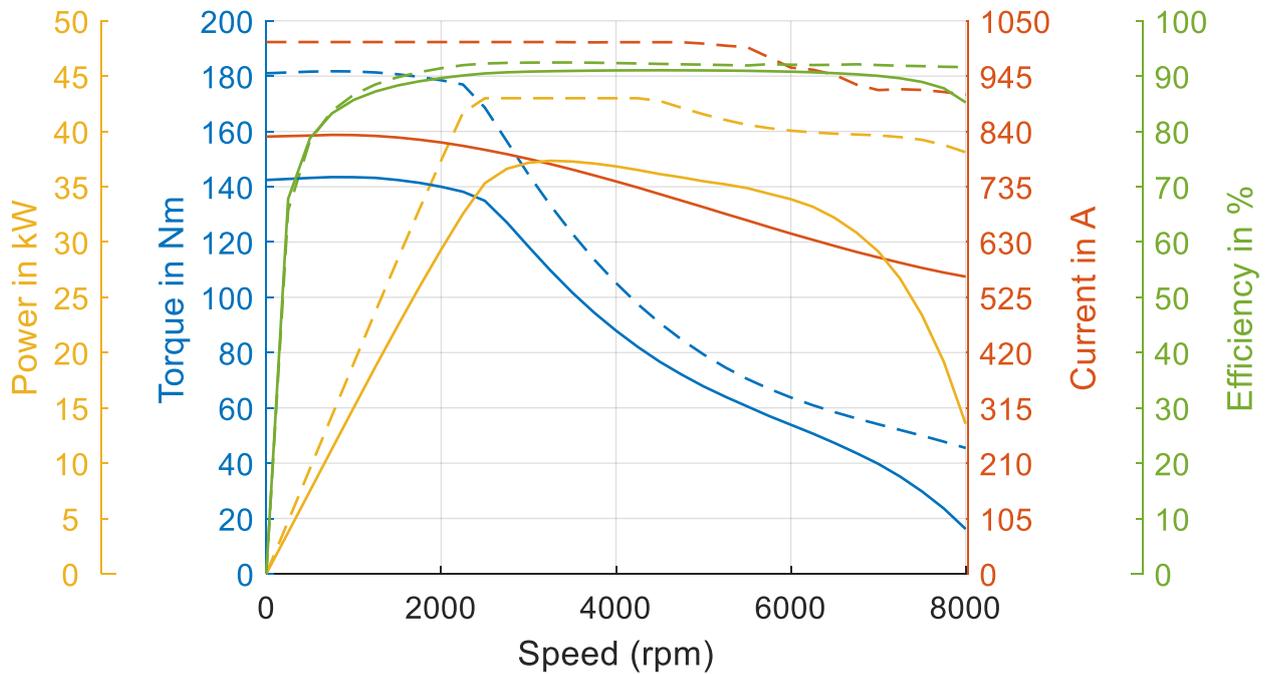
(electric machine only;  $U_{nom} = 48\text{ V}$ )



## Simulated Characteristic Motor Parameters

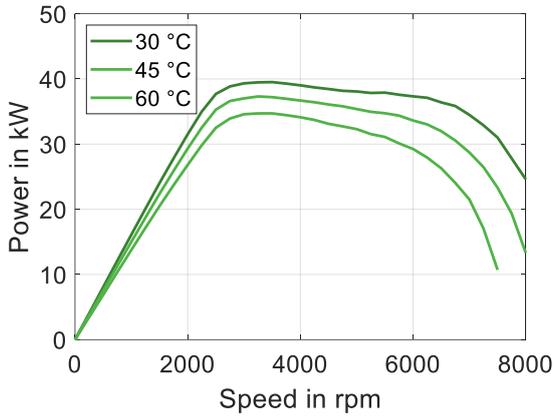
$U_{nom} = 48\text{ V}$

solid lines: continuous; dashed lines: maximum;

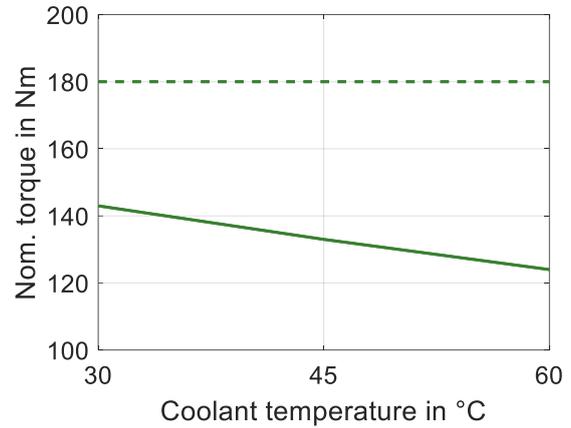


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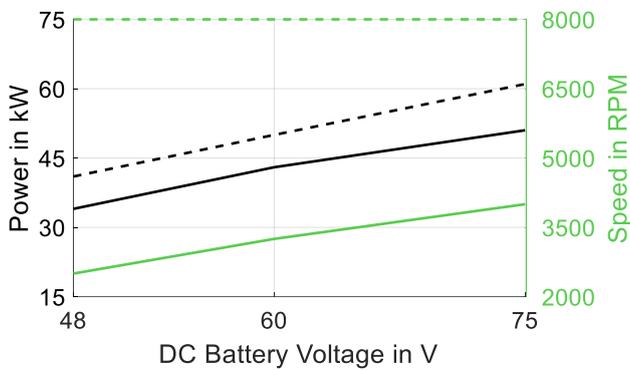
Simulated nominal power at different coolant temperatures -  $U_{nom} = 48\text{ V}$



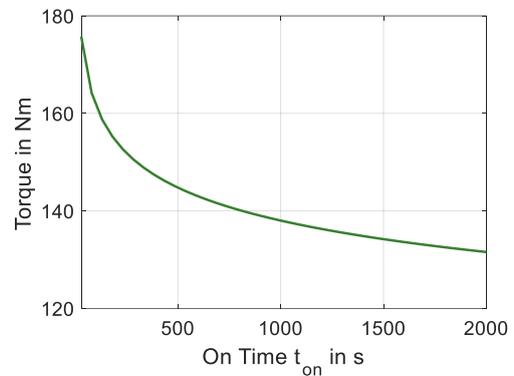
Available torque at different coolant temperatures<sup>1)</sup>



Simulated power and speed over battery voltage<sup>1)</sup>



Torque over feasible maximum on time, S2 operation cycles (45°C coolant temperature)



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

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