

# 205A-04016-ABC

air-cooled motor / generator with up to 13 kW continuous power



#### **KEY FEATURES**

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

Hc

#### 205A-04016-ABC

Page: 2 Version: 001

### **Table of Content**



Section	Page
Technical Data Machine	3
Technical Drawings Machine	4
Characteristics Machine 96V	5
Technical Data Inverter Set 96V	6

Page: 3

Version: 001

### Technical Data Machine



Torque		Naminal Aparation (C	1 000ling 00 or	socifical balas	w\		
Power	T		T, cooling as sp	becilied belov	v)	00	Mari
Speed         n <sub>con</sub> 5720         pmp           Phase ms-current         I <sub>non</sub> 156         A           Battery voltage (DC)         U <sub>non</sub> 96         V           Electric frequency         I <sub>nopos</sub> 381         Hz           Maximal Values (S2, 10s, cooling as specified below)           Torque         T <sub>mos</sub> 95         Nm           Power         P <sub>mos</sub> 42         kW           Phase ms-current         I <sub>max</sub> 200         V           Speed         n <sub>max</sub> 8000         rpm           Electric frequency         I <sub>n0</sub> max         533         Hz           Electrical Data           Number of phases         3         Maximal efficiency         96         %           Maximal efficiency         96         %         Mn/A <sub>mos</sub> 10,14         Nm/A <sub>mos</sub> Maximal efficiency         98         %         Mn/A <sub>mos</sub> 10,00         Nm/A <sub>mos</sub> 10,00 <td></td> <td></td> <td></td> <td colspan="3"></td> <td></td>							
Phase rms-current         foom         156         A           Battery voltage (DC)         Urom         96         V           Electric frequency         faccon         381         Hz           Power factor         cos(φ)         0.75           Maximal Values (S2, 10s, cooling as specified below)           Torque         T <sub>max</sub> 95         Nm           Power         P <sub>max</sub> 42         kW           Phase rms-current         f <sub>max</sub> 781         A           Battery voltage (DC)         Umax         200         V           Speed         n <sub>max</sub> 8000         rpm           Electric frequency         f <sub>max</sub> 8000         rpm           Electrical Data           Number of pole pairs         4         4           Maximal elicitioncy         596         %           7// constant (I         596         %           Maximal elicitioncy         596         %           7// constant (AC)         rms: 9,1         peak: 0,31         V/(root*           Rotor moment of inertia         0,002         peak: 0,031         V/(root*           Rotor moment of inertia							
### Description of the property of the proper							
Electric frequency							
Power factor							
Maximal Values (S2, 10s, cooling as specified below)   Torque							Hz
Prower	Power factor			0.75			
Power		Maximal Values (S2, 10	0s, cooling as s	pecified belo	w)		
Phase rms-current $I_{max}$ 781 A Battery voltage (DC) $I_{max}$ 200 V Speed $I_{max}$ 8000 rpm Electric frequency $I_{el, max}$ 8000 rpm $I_{el, max}$ 8000 r	Torque	$T_{max}$				95	Nm
Battery voltage (DC)         Umax         200         V           Speed         nmax         8000         pm           Electric frequency         fet max         533         Hz           Electrical Data           Number of phases         3         S           Number of pole pairs         4         Maximal efficiency         96         %           T/I constant (I <inon)< td="">         0.14         Nm/Amm         Nm/Amm</inon)<>	Power	$P_{max}$				42	kW
Speed   Pamax   Speed   Pamax   Speed   Spee	Phase rms-current	$I_{max}$				781	А
Electric frequency   I	Battery voltage (DC)	$U_{max}$		200			V
Electrical Data           Number of phases         3           Number of pole pairs         4           Maximal efficiency         >96         %           7/I constant (I <i<sub>nom)         0.14         Nm/A<sub>mm</sub>           U/n constant (AC)         rms:         9.1         peak:         12.9         √/(1000 Mg/m²)           Additional Data           Weight (w/o cables)         20         kg           Rotor moment of inertia         0.009         kg*m²           Protection category         IP65         IP65           Maximal motor temperature         120         °C           Allowed ambient temperature         -20 45°l         °C           Cooling (medium, flow rate, inlet temperature, pressure)         air, 18 m/s, ≤ 45°C         Temperature monitoring         1 x KTY84-130           Type approval         CE, EN 60034         Customs tariff number         8501 5230           Connectors           Power terminals         3 x 50mm² cables with M8 cable lugs           Weight power cables         3.3         kg           Length power cables         2         m</i<sub>	Speed	$n_{max}$		8000			rpm
Number of plases       3         Number of pole pairs       4         Maximal efficiency       >96       %         7/I constant (I <i<sub>nom)       0.14       Nm/A<sub>mm</sub>         U/n constant (AC)       rms:       9.1       peak:       12.9       V/(1000 M)         K<sub>c</sub> constant (AC)       rms:       0.022       peak:       0.031       V/(rad*s         Additional Data         Weight (w/o cables)       20       kg         Rotor moment of inertia       0.009       kg*m²         Protection category       IP65       Naximal motor temperature       120       °C         Allowed ambient temperature       20 45¹¹       °C       °C         Cooling (medium, flow rate, inlet temperature, pressure)       air, 18 m/s, ≤ 45°C       °C         Temperature monitoring       1 x KTY84-130       °C         Type approval       CE, EN 60034       °C         Customs tariff number       8501 5230         Connectors         Power terminals       3 x 50mm² cables with M8 cable lugs         Weight power cables       3,3       kg         Length power cables       2       m</i<sub>	Electric frequency	f <sub>el, max</sub>				533	Hz
Number of pole pairs       4         Maximal efficiency       >96 %         7/I constant (I <i<sub>nom)       0.14 Nm/A<sub>nm</sub>         UIn constant (AC)       rms:       9.1 peak:       12.9 V/(1000 Nm/A<sub>nm</sub>         Additional Data         Weight (w/o cables)       20 kg         Rotor moment of inertia       0.009 kg*m²         Protection category       IP65         Maximal motor temperature       120 °C         Allowed ambient temperature       -20 45¹¹ °C         Cooling (medium, flow rate, inlet temperature, pressure)       air, 18 m/s, ≤ 45°C         Temperature monitoring       1 x KTY84-130         Type approval       CE, EN 60034         Customs tariff number       8501 5230         Connectors         Power terminals       3 x 50mm² cables with M8 cable lugs         Weight power cables       3.3 kg         Length power cables       2 m</i<sub>		Ele	ctrical Data				
Maximal efficiency         >96         %           T/I constant (I < I <sub>nom</sub> )         0.14         Nm/A <sub>rm</sub> U/n constant (AC)         rms:         9.1         peak:         12.9         V/(1000 constant (AC)           Additional Data           Weight (w/o cables)         20         kg           Rotor moment of inertia         0.009         kg*m²²           Protection category         IP65         Callowed ambient temperature         **C           Allowed ambient temperature         20         *C           Cooling (medium, flow rate, inlet temperature, pressure)         air, 18 m/s, ≤ 45°C         **C           Temperature monitoring         1 x KTY84-130         **C           Type approval         CE, EN 60034         **C           Customs tariff number         8501 5230         **           Power terminals         3 x 50mm² cables with M8 cable lugs         **           Weight power cables         3.3         kg           Length power cables         2         m	Number of phases					3	
T/I constant ( $I < I_{nom}$ )       0.14 Nm/A <sub>mm</sub> Nm/A <sub>mm</sub> U/n constant (AC)       rms:       9.1 peak:       12.9 V/(1000 peak)       V/(1000 peak)       12.9 V/(1000 peak)       V/(1000 peak						4	
Win constant (AC)       rms:       9.1 peak:       12.9 V/(1000 peak:       12.9 peak:       0.031 V/(rad*s)         Additional Data         Weight (w/o cables)       20 kg       20 kg       20 kg*m²       20 kg*m²       20 kg*m²       20 color peak:       20 kg       20 kg*m²       20 color peak:       20 kg       20 kg*m²       20 color peak:       20 kg       20 kg       20 color peak:       20 kg       20 kg*m²       20 color peak:       20 kg       20 kg       20 color peak:       20 kg       20 kg       20 color peak:       20 kg       20 kg       20 color peak:       20 kg       20 color peak:       20 kg       20 color peak:				>96			%
Additional Data         Weight (w/o cables)       20 kg         Rotor moment of inertia       0.009 kg*m²         Protection category       IP65         Maximal motor temperature       120 °C         Allowed ambient temperature       -20 45¹¹ °C         Cooling (medium, flow rate, inlet temperature, pressure)       air, 18 m/s, ≤ 45°C         Temperature monitoring       1 x KTY84-130         Type approval       CE, EN 60034         Customs tariff number       8501 5230         Connectors         Power terminals       3 x 50mm² cables with M8 cable lugs         Weight power cables       3.3 kg         Length power cables       2 m	T/I constant (I <i<sub>nom)</i<sub>			0.14	Nm/A <sub>rms</sub>		
Additional Data           Weight (w/o cables)         20 kg           Rotor moment of inertia         0.009 kg*m²           Protection category         IP65           Maximal motor temperature         120 °C           Allowed ambient temperature         -20 45¹¹ °C           Cooling (medium, flow rate, inlet temperature, pressure)         air, 18 m/s, ≤ 45°C           Temperature monitoring         1 x KTY84-130           Type approval         CE, EN 60034           Customs tariff number         8501 5230           Connectors           Power terminals         3 x 50mm² cables with M8 cable lugs           Weight power cables         3.3 kg           Length power cables         2 m			12.9	V/(1000rpm			
Weight (w/o cables)         20 kg           Rotor moment of inertia         0.009 kg*m²           Protection category         IP65           Maximal motor temperature         120 °C           Allowed ambient temperature         -20 45¹¹ °C           Cooling (medium, flow rate, inlet temperature, pressure)         air, 18 m/s, ≤ 45°C           Temperature monitoring         1 x KTY84-130           Type approval         CE, EN 60034           Customs tariff number         8501 5230           Connectors           Power terminals         3 x 50mm² cables with M8 cable lugs           Weight power cables         3.3           Length power cables         2	K <sub>e</sub> constant (AC)			0.031	V/(rad*s <sup>-1</sup> )		
Rotor moment of inertia $0.009 \text{ kg}^*\text{m}^2$ Protection category IP65  Maximal motor temperature $120 \text{ °C}$ Allowed ambient temperature $-20 \dots 45^{11} \text{ °C}$ Cooling (medium, flow rate, inlet temperature, pressure) air, $18 \text{ m/s}$ , $\leq 45^{\circ}\text{C}$ Temperature monitoring $1 \times \text{KTY84-130}$ Type approval CE, EN 60034  Customs tariff number $85015230$ Connectors  Power terminals $3 \times 50 \text{mm}^2$ cables with M8 cable lugs Weight power cables $3.3 \text{ kg}$ Length power cables $2 \text{ m}$		Ado	litional Data				
Protection category  Maximal motor temperature  Allowed ambient temperature  Allowed ambient temperature  Cooling (medium, flow rate, inlet temperature, pressure)  Temperature monitoring  1 x KTY84-130  Type approval  Customs tariff number  Connectors  Power terminals  3 x 50mm² cables with M8 cable lugs  Weight power cables  Length power cables  2 m	Weight (w/o cables)				kg		
Protection category  Maximal motor temperature  Allowed ambient temperature  Allowed ambient temperature  Cooling (medium, flow rate, inlet temperature, pressure)  Temperature monitoring  1 x KTY84-130  Type approval  Customs tariff number  Connectors  Power terminals  3 x 50mm² cables with M8 cable lugs  Weight power cables  Length power cables  2 m							kg*m²
Allowed ambient temperature  -20 45¹) °C  Cooling (medium, flow rate, inlet temperature, pressure)  Temperature monitoring  1 x KTY84-130  Type approval  Customs tariff number  Connectors  Power terminals  3 x 50mm² cables with M8 cable lugs  Weight power cables  3 x 50mm² cables with M8 cable lugs  Length power cables  2 m	Protection category						
Cooling (medium, flow rate, inlet temperature, pressure)  Temperature monitoring  1 x KTY84-130  Type approval  Customs tariff number  Connectors  Power terminals  3 x 50mm² cables with M8 cable lugs  Weight power cables  Length power cables  2 m	Maximal motor temperature			120			°C
Temperature monitoring 1 x KTY84-130  Type approval Ce, EN 60034  Customs tariff number 8501 5230  Connectors  Power terminals 3 x 50mm² cables with M8 cable lugs  Weight power cables 3.3 kg  Length power cables 2 m							°C
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Weight power cables  3.3 kg  Length power cables  2 m	Power terminals			3 x 50mm² o	ahles with M	8 cable lugs	
Length power cables 2 m					ka		
Signal connectors M16 10 Din	Signal connectors					M16, 10 Pin	

1) other range on request

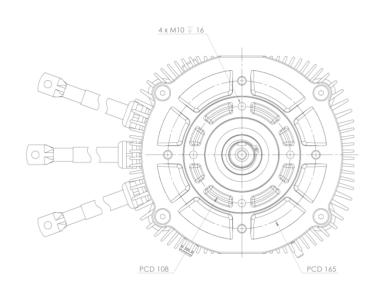
Page: 4

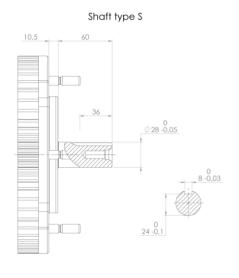
Version: 001

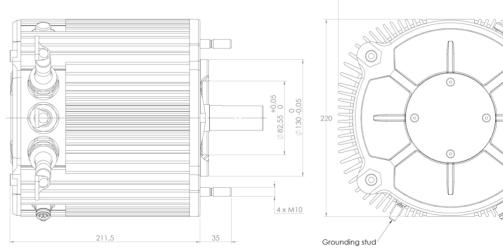
## **Technical Drawings**

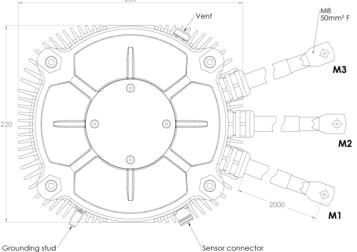


Available Type Variants					
type number	A: flange	B: shaft	C: position sensor		
205A-04016-	S: standard	S: cylindrical shaft with keyway	E: sin/cos encoder		
			N: none		







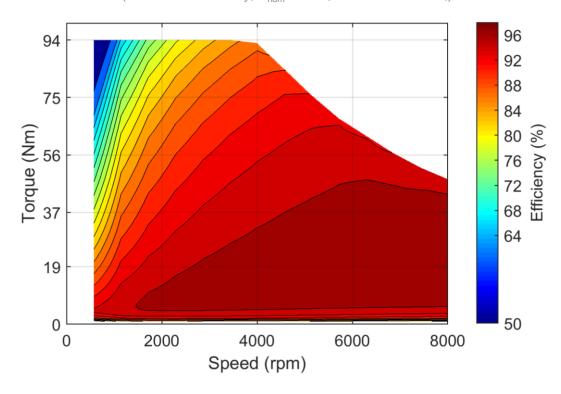


Page: 5 Version: 001

### **Characteristics Machine**



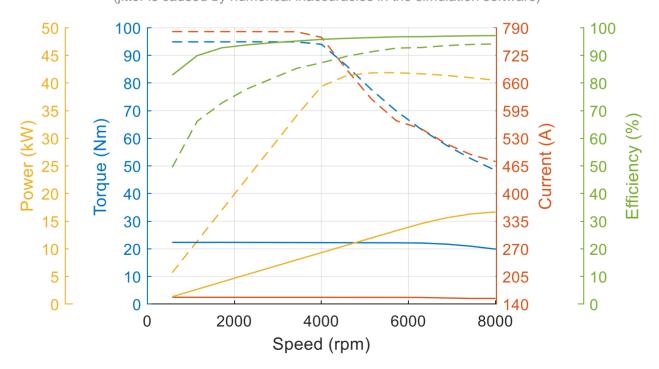
# Simulated Efficiency of Motor Application (electric machine only; $U_{nom} = 96 \text{ V}$ ; machine at 100 °C;)



### Simulated Characteristic Motor Parameters

 $U_{\text{nom}} = 96 \text{ V}$ 

solid lines: continuous; dashed lines: maximum; (jitter is caused by numerical inaccuracies in the simulation software)



Page: 6

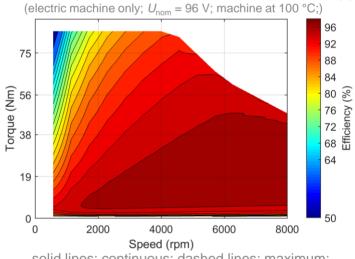
Version: 001

## Technical Data Inverter Set



	Nominal O	peration Drive Set (S1)	
Torque	$T_{nom}$	22	Nm
Power	$P_{nom}$	13	kW
Speed	$n_{\text{nom}}$	5720	rpm
Phase rms-current	$I_{nom}$	156	А
Battery voltage (DC)	$U_{nom}$	96	V
Electric frequency	$f_{el, {\sf nom}}$	381	Hz
Power factor	cos(φ)	0.75	
	Maximal Val	ues Drive Set (S2, 1-10s)	
Torque	$T_{max}$	86	Nm
Power	$P_{max}$	41	kW
Phase rms-current	I <sub>max</sub>	660	А
Battery voltage (DC)	$U_{max}$	96	V
Speed	$n_{\max}$	8000	rpm
Electric frequency	f <sub>el, max</sub>	553	Hz

#### Simulated Efficiency and Motor Characteristic of Motor Application



solid lines: continuous; dashed lines: maximum; (jitter is caused by numerical inaccuracies in the simulation software) Efficiency (%) Power (kW) Speed (rpm)