

## **210D0029 Motor MMA 80-8-60-C...-...-W2 V1.2**

Parameter	Unit	Value
		<b>230 V</b>
Power	[kW]	5.2
Torque (rated @ 100°C*)	[Nm]	11,5
Torque (rated @ 120°C*)	[Nm]	16.5
Torque (max @ 100°C*) (60 sec.)	[Nm]	21.5
Torque (max @ 120°C*) (30 sec.)	[Nm]	21.5
Speed (rated)	[rpm]	3000
Speed (max)	[rpm]	3800
Freq.	[Hz]	400
Pole pairs		8
Current (rated) @ rated torque 120°C*	[ARMS]	19.8
Current (max) @ max torque	[ARMS]	26.1
Motor voltage (rated phase to phase)	[VRMS]	<b>230</b>
DC-link voltage	[V]	≥ 325
<b>Phase:</b>		
k <sub>E</sub>	[VRMS/krpm]	33.8
R <sub>Ph,20</sub>	[Ohm]	0.21
L <sub>d</sub>	[mH]	0.9
L <sub>q</sub>	[mH]	0.95
<b>Line to line:</b>		
k <sub>E,LL</sub>	[VRMS/krpm]	58.5
R <sub>LL,20</sub>	[Ohm]	0.42
L <sub>LL,d</sub>	[mH]	1.8
L <sub>LL,q</sub>	[mH]	1.9
Connection		Y
Moment of inertia	[kgm <sup>2</sup> ]	0.0020
Weight	[kg]	8.6
Protection class		IP67
Thermal class		H
Thermal protection		PTC (Pt1000 on request)
Cooling type		Water cooled
rated (motor coolant)	[l/min]	6
Pressure drop @ rated flow rate	[bar]	0.015
Coolant		Water/Ethylenglycol 50/50 or hydraulic oil
Coolant max temperature	[°C]	60
Rotational direction**		Clockwise

\*Winding temperature



Performance data were determined with a thermally decoupled engine and a coolant temperature of 60°C at 6 l/min (water/Ethylenglycol 50/50)



In order to run the motor, a frequency inverter capable of conducting **sensorless control** for permanent magnet motors is needed, because the motor has no own position sensor or encoder.



\*\*The rotational direction is defined according to DIN-EN60034-8 (looking on the motor shaft).

## Electrical Connection/Wiring Diagram

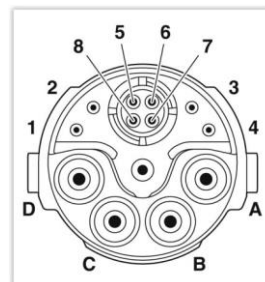
Power line parameters:

Parameter	Value / Werte
Nominal Voltage	IEC U0/U: 600/1000 V; UL & CSA: 1000 V
Conductor stranding	Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
Conductor Type*	4x2.5mm <sup>2</sup> + 2x0.5mm <sup>2</sup> with tinned copper screen braiding
Further Specifications	Oil-resistant, EMC-compliant, PVC/PUR outer sheath (RAL 2003 for eMobility) The outer shell must correspond the relevant requirements of the standards for the vehicle

\*It is recommended to use a cable where the signal lines are shielded separately from the power lines

Motor Connector:

- Phoenix Contact Hybrid connector (male)  
SH-8EPC58AAC00S
- SPEEDCON interlock
- M23
- Diameter power contacts and PE = 2 mm
- Diameter signal contacts = 1 mm



The following motor cable connections (looking at the frontside of the motor connector) have to be observed for the correct rotational direction:

- |                     |  |
|---------------------|--|
| A → not connected   | Signal pin 1 → Temperature monitoring switch minus |
| B → Motor phase "U" | Signal pin 2 → not connected                       |
| C → Motor phase "V" | Signal pin 2 → not connected                       |
| D → Motor phase "W" | Signal pin 4 → Temperature monitoring switch plus  |
| Center pin → PE     |  |



For the correct rotational direction, the motor phases have to be connected in the following Way:

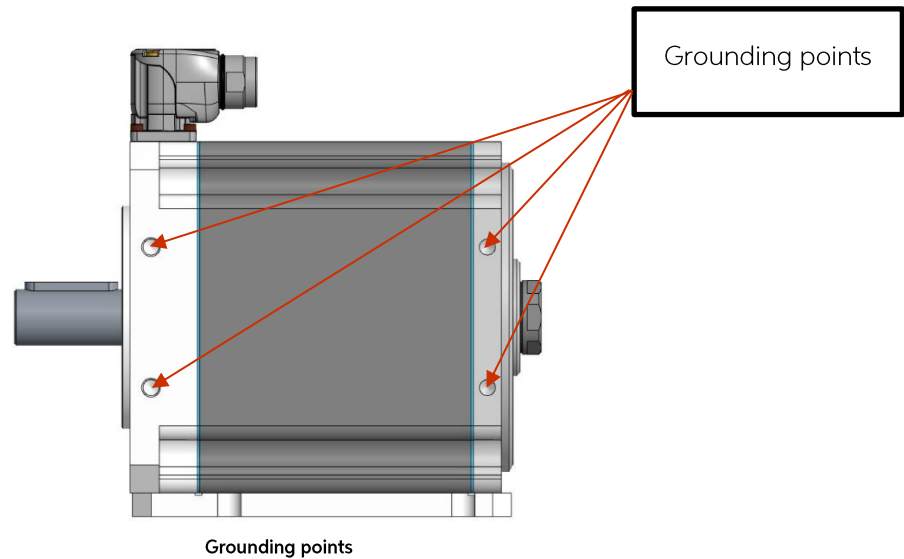
U	L1
V	L2
W	L3



The normal rotational direction of the used motor is clockwise as defined in DIN-EN60034-8 (looking on the motor shaft).

Electric motor grounding:

Even if the motor unit has a PE connection inside the motor connector, which should be connected via the motor cable to the inverter, the motor has to be grounded to the vehicle chassis.



Use any of the motor grounding points to connect a ribbon cable between motor and chassis.