

42D00216 Data sheet MMA100-5-FA1 (34 V_{AC} / 48 V_{DC} & 68 V_{AC} / 96 V_{DC}) water cooled



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1.1 Characteristic operating points @ 34 V_{AC} / 48 V_{DC}

Parameter		Unit	Operation Mode		
			S1	S2	S2
Feasible operation time	t _{on}		continuous	60 s	10 s
Torque	T	[Nm]	108.6	150	200
Power	P	[kW]	17	15.7	21
Speed	n	[rpm]	1500	1000	1000
Phase Current	I _{rms}	[A]	352	515	785
Line-Line Voltage	U _{rms}	[V]	33.9	29.2	28.8
Rated Battery Voltage	U _{DC}	[V]	48	48	48
Electric frequency	f _{el}	[Hz]	125	83.33	83.33
Efficiency	η	[%]	91.9	83	75

- Recommended Inverter (for shown operating points): L30 450-650-60
- Performance data were determined with a thermally decoupled engine and a coolant temperature of 60°C at 10 l/min (Water/Ethylenglycol 50/50)

1.2 Characteristic operating points @ 68 V_{AC} / 96 V_{DC}

Parameter		Unit	Operation Mode		
			S1	S2	S2
Feasible operation time	t _{on}		continuous	60 s	10 s
Torque	T	[Nm]	80	175	205
Power	P	[kW]	24.8	46.4	54.2
Speed	n	[rpm]	3000	2500	2500
Phase Current	I _{rms}	[A]	255	650	915
Line-Line Voltage	U _{rms}	[V]	66	68	68
Rated Battery Voltage	U _{DC}	[V]	96	96	96
Electric frequency	f _{el}	[Hz]	250	208	208
Efficiency	η	[%]	95.8	89	84

- Recommended Inverter (for shown operating points): L30 450-650-120
- Performance data were determined with a thermally decoupled engine and a coolant temperature of 60°C at 10 l/min (Water/Ethylenglycol 50/50)

2 Electrical data

Parameter	Unit	Value
Phase:		
k_E	[V _{RMS} /krpm]	19.88
k_T	[Nm/A]	0.32
$R_{Ph,20}$	[Ohm]	0.0025
L_d	[mH]	0.04
L_q	[mH]	0.05
Connection		Y

3 Additional data

Max. Speed	[rpm]	6000
Moment of inertia	[kgm ²]	0.007
Weight	[kg]	28.7
Protection class		IP67
Thermal class		H
Maximum motor temperature	[°C]	170
S1 motor temperature	[°C]	140
Thermal monitoring		PT1000
Cooling type		Water cooled
Min flow rate (motor coolant)	[l/min]	10
Rated flow rate (motor coolant)	[l/min]	10
Max flow rate (motor coolant)	[l/min]	30
Pressure drop @ rated flow rate	[bar]	0.02
Coolant		Water/Ethylenglycol 50/50
Max. cooling pressure (motor coolant)	[bar]	3
Coolant max temperature	[°C]	60

For specific details, motor geometry and dimensions please see additional information in interface drawing or product selection guide. If not available please contact customer support under support@moteg.de.

4 Efficiency map @ 34 V_{AC} / 48 V_{DC}

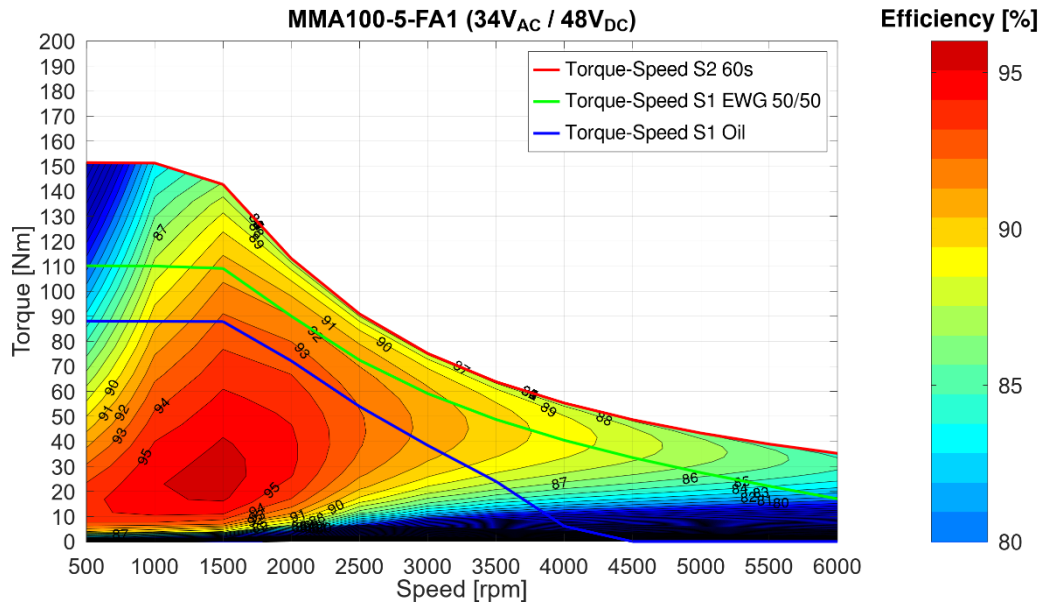
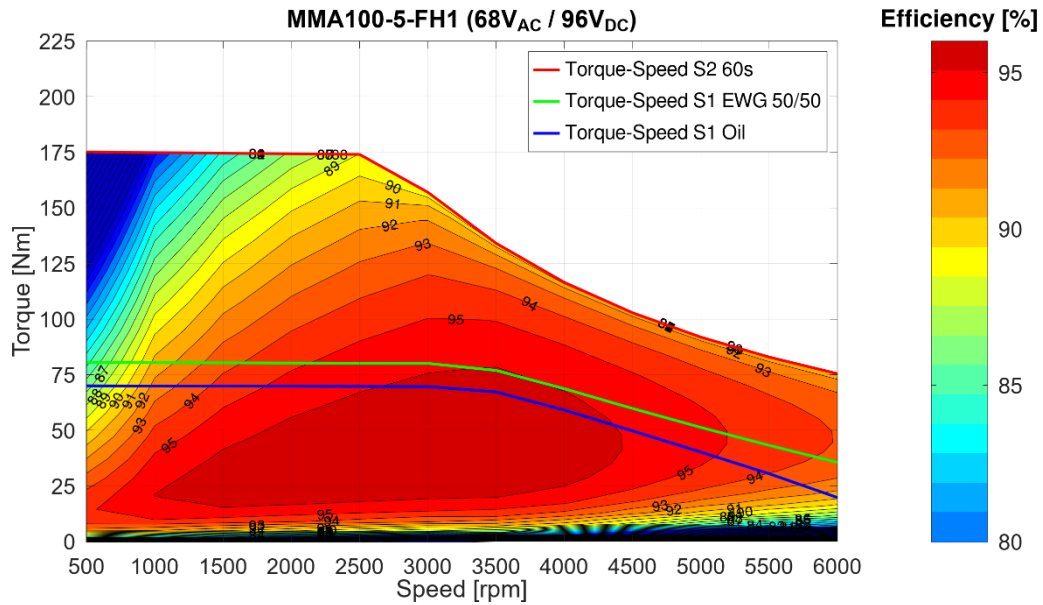


Figure 1 Efficiency map and Torque Speed curves

- o Recommended Inverter (for shown efficiency map): Emsiso L30 450-650-60
- o Performance data were determined with S1-temperatures with $U_{DC} = 48$ V, with a thermally decoupled engine and a coolant temperature of 60°C at 10 l/min (Water/Ethylenglycol 50/50)

5 Efficiency map @ 68 V_{AC} / 96 V_{DC}



- o Recommended Inverter (for shown efficiency map): Emsiso L30 450-650-120
- o Performance data were determined with S1-temperatures with U_{DC} = 96 V, with a thermally decoupled engine and a coolant temperature of 60°C at 10 l/min (Water/Ethylenglycol 50/50)

6.1 Specified characteristics (according to DIN EN 60349-4) @ 34 V_{AC} / 48 V_{DC}

Simulation of curves at 150°C average winding temperature and 100°C magnet temperature

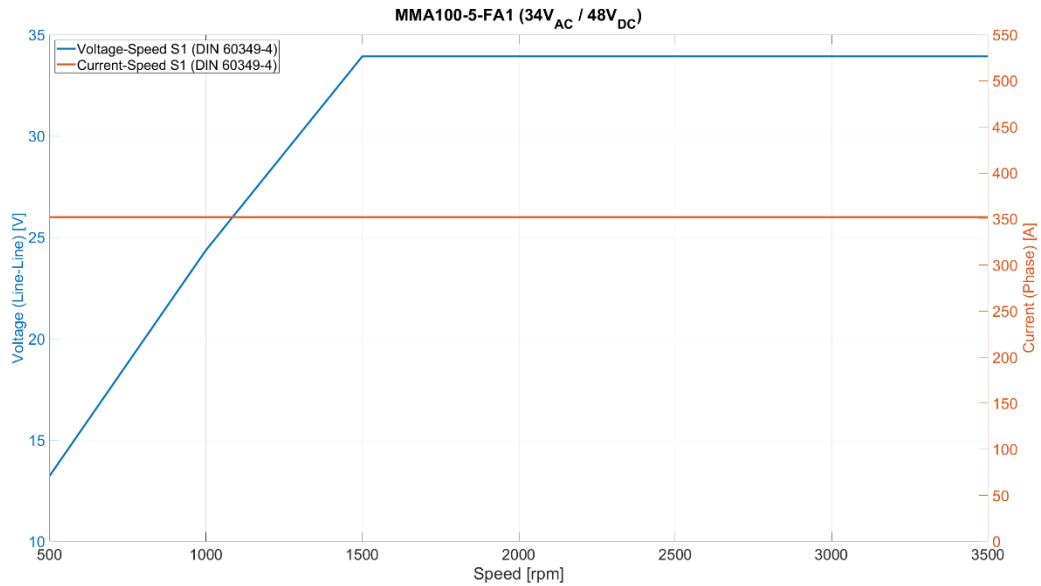


Figure 3 Phase voltage and current over speed (DIN EN 60349-4)

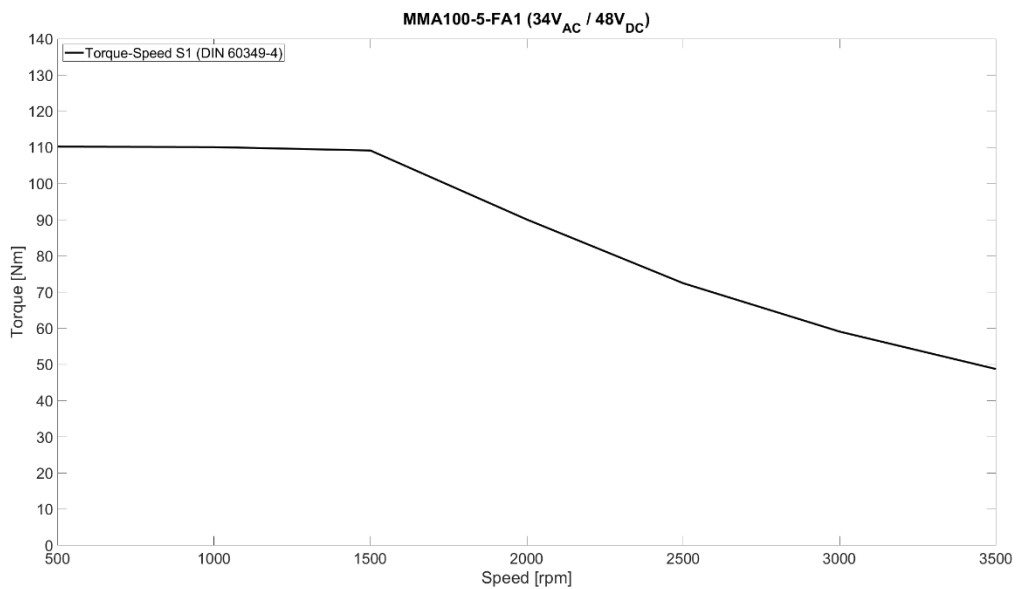


Figure 4 Torque-Speed curve S1 (DIN EN 60349-4)

6.2 Specified characteristics (according to DIN EN 60349-4) @ 68 V_{AC} / 96 V_{DC}

Simulation of curves at 150°C average winding temperature and 100°C magnet temperature

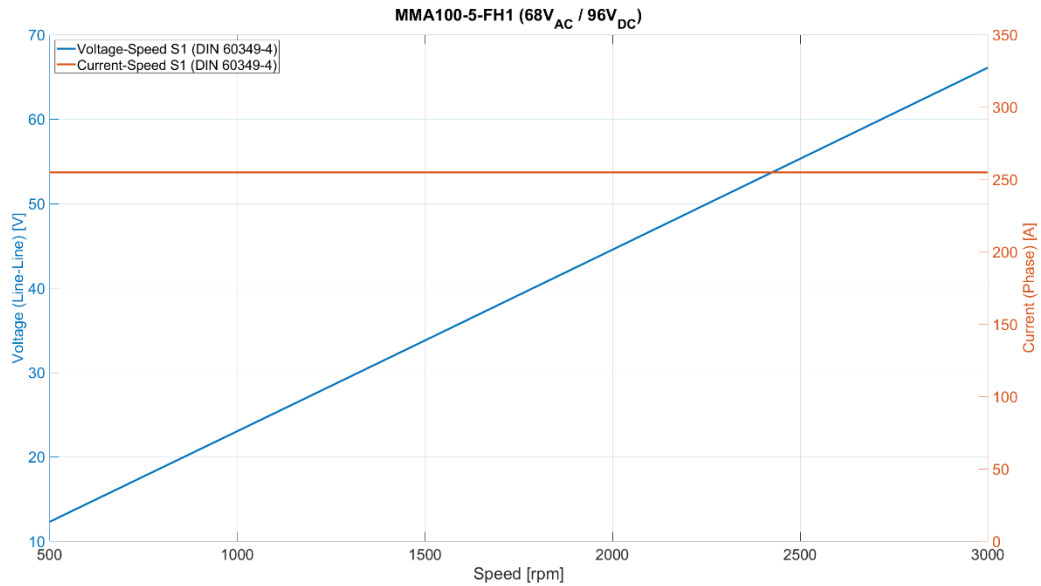


Figure 5 Phase voltage and current over speed (DIN EN 60349-4)

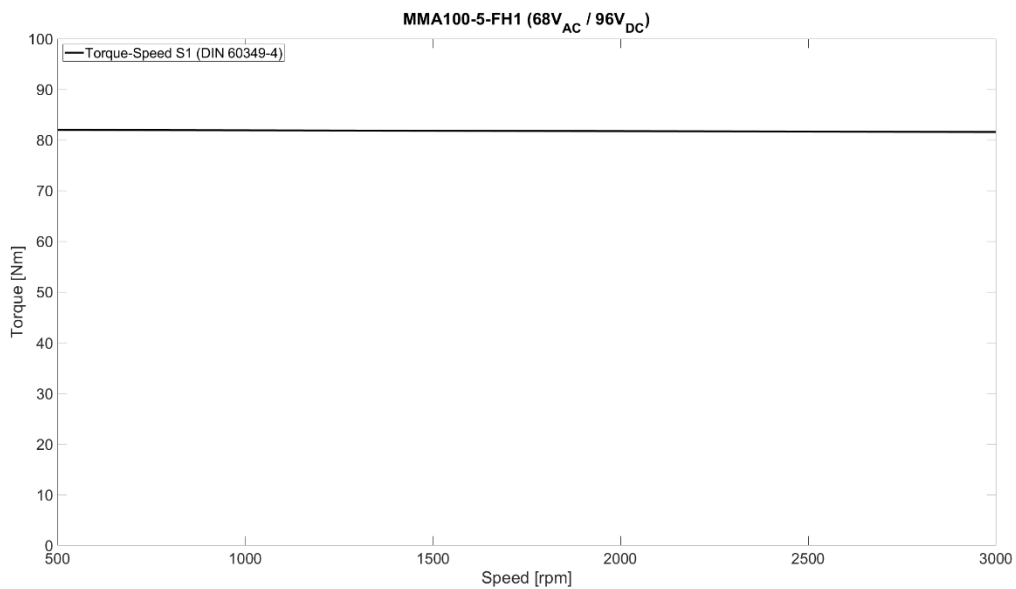


Figure 6 Torque-Speed curve S1 (DIN EN 60349-4)