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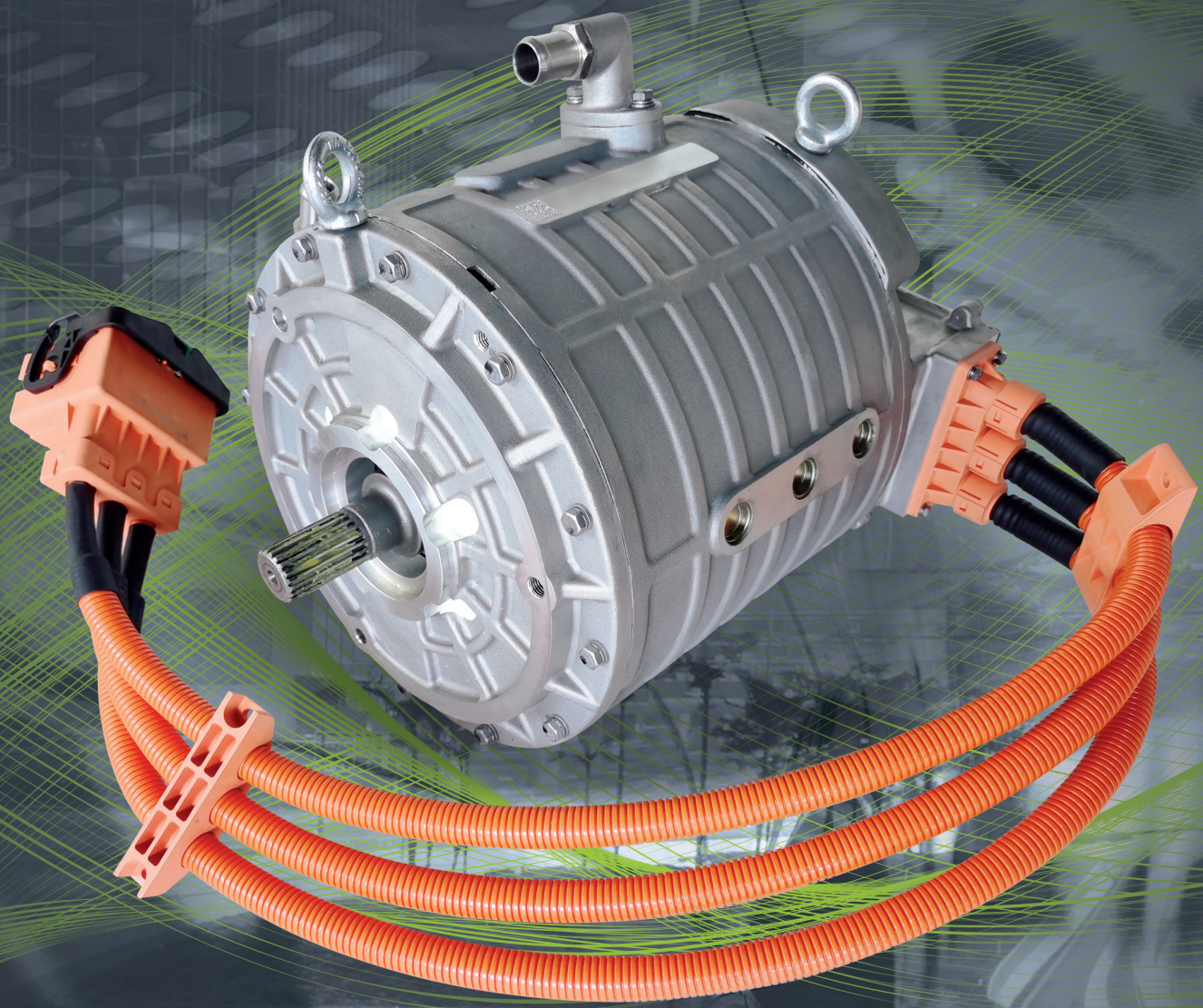


MWM 55kW Motor Drive

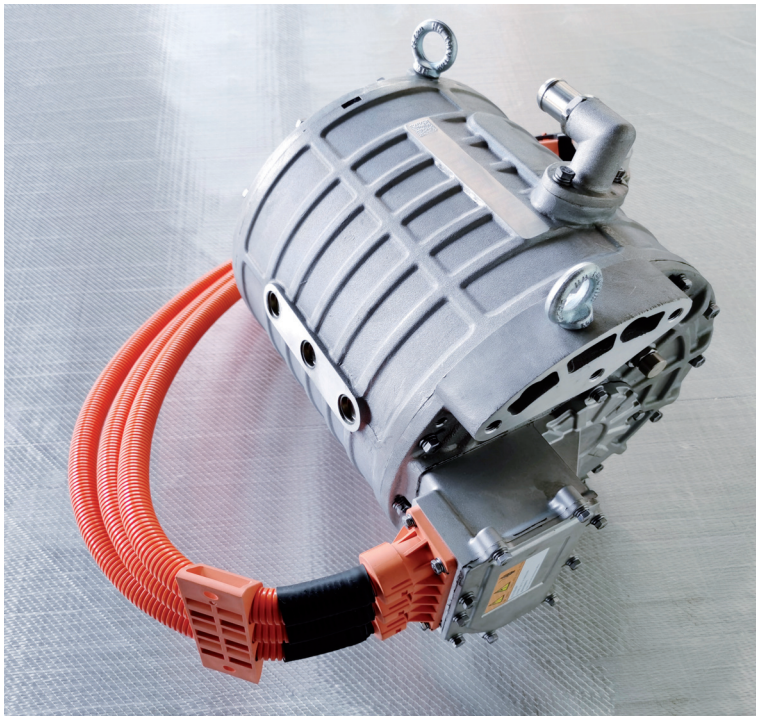
High Energy Efficiency, High Power & High Reliability

MWM 55kW Motor Drive

The drive motor assembly referred to in this paper includes: drive motor and threephase line assembly (can be increased according to customer needs). The drive motor is PMSM (Permanent Magnet Synchronous Motor). The driving motor is a water-cooled structure, and the water jacket has an inlet and outlet pipe, and a cooling system is shared with the MCU, and the cooling flow is 8~10 l/min.

The drive motor and the MCU high voltage are connected by a three-phase line plug-in (specific manufacturers and models can be changed according to customer requirements).

The low voltage signal of the drive motor is an 8 pin plug-in, which includes: 6 pin resolver position signal, 2 pin (1 way) temperature sensor signal.



Application range

Applicable to new energy A00 class passenger cars, micro-trucks, micro-vans and other logistics vehicles.

Basic information

Index	Parameter	Remark
Bus voltage (V)	321.2	
Rated power (kW)	25	
Peak power (kW)	55	
Rated torque (Nm)	80	
Peak torque (Nm)	175	
Peak speed (performance, rpm)	9000	
Dimensions	Approx. diameter 272×L318	Adjusted according to user needs
Weight (kg)	<45	Adjusted according to user needs

Warning: All the parameter list in this document are standard substance, any value set out of this range need calibration by MWM.

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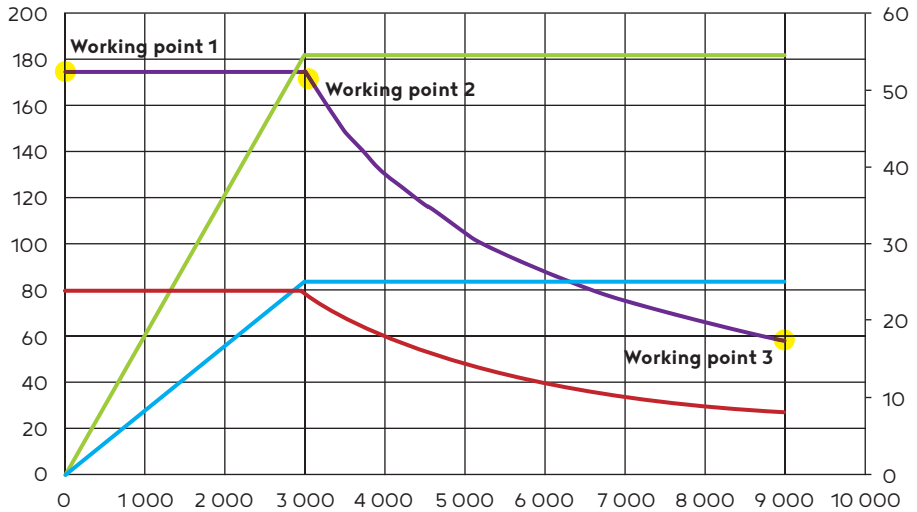
Drive motor performance parameters

Index	Parameter	Remark
Bus voltage (V)	321.2	
Operating voltage range	240~415	
Full performance voltage operating range	290~410	
Rated power (kW)	25	
Peak power (kW)	55	
Rated torque (Nm)	80	
Peak torque (Nm)	175	
Rated speed (performance, rpm)	3000	
Peak speed (performance, rpm)	9000	
Peak speed (performance, rpm)	9500	
Highest speed (mechanical, rpm)	10800	2 min
N-T characteristics	See the figure	
Rotational direction	Acceleration and regeneration during advancement: clockwise	Looking from the output shaft toward the rear of the motor
Cooling method	Water cooling	
Insulation class	H	
Temperature protection limit	135°C power reduction, 145°C protection	
Efficient interval	Efficiency >85% High efficiency zone: >75%	
Dimensions (mm)	<Ø272×L318	
Weight (kg)	motor <45	
Power density (kW/kg)	2.3 (peak power/peak)	

N-T external characteristic curve of the motor



Working point 1:
Stall time 5S

Working point 2:
Peak torque/peak power working time: 1 min

Working point 3:
Maximum speed/rated power working time - temperature balance

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Environmental requirements

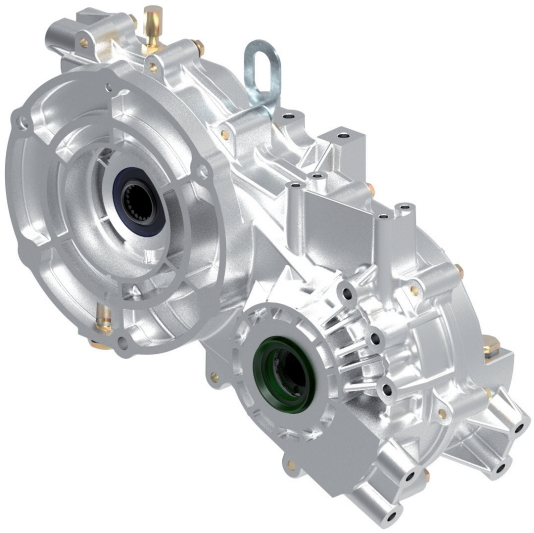
Item	Content	Remark
Storage temperature range	-40°C~105°C	
Working temperature range	-40°C~85°C (External cooling water temperature is lower than 65 ° C)	
Humidity	0~95%	
Altitude	Normal use below 2000 m Conditions of use above 2000 m	
Sealing level	IP67 (does not include the front drive, the plugin is installed in place)	

Motor cooling requirements

The cooling mode adopted by the driving motor is liquid cooling, and the inlet and outlet pipes are distributed in different positions of the water jacket. The outer diameter of the inlet and outlet pipes is Ø20mm, the inner diameter is Ø16mm, and the motor cooling flow rate is 8~10 l/min. The outline of the cooling water pipe of the motor is shown in the outline drawing.

Item	Content	Remark
Cooling specification	Flow: 8~10l/min Maximum water pressure: 250kPa Water temperature: below 65°C Pressure loss: 15kPa or less (rated flow)	

Matched reducer
Reduction Ratio = 1:7.88



25kW Gearbox (reducer)

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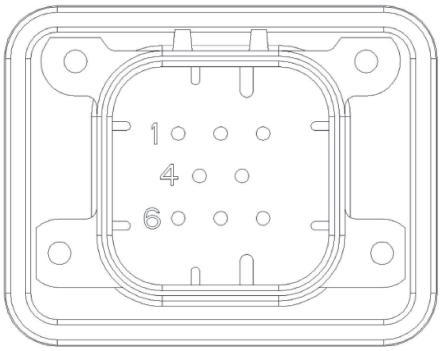
Motor interface definition

Drive motor low voltage connector

Resolver signal socket (model TE 776276-1)



Drive motor resolver signal plug pin definition table

Pin	Function	Rated current	Imin	Imax	Type	Wire cross-sectional area	Wire color	Remark
1	EXTP_R1	0.3	/	0.5	analog	0.5mm²	red	resolver excitation positive signal, double twist
2	EXTP_R2	0.3	/	0.5	analog	0.5mm²	black	resolver excitation negative signal, double twist
3	EXTP_S1	0.3	/	0.5	analog	0.5mm²	white	resolver sinusoidal positive signal, double twist
4	EXTP_S3	0.3	/	0.5	analog	0.5mm²	blue	resolver sinusoidal negative signal, double twist
5	EXTP_S2	0.3	/	0.5	analog	0.5mm²	yellow	resolver cosine positive signal, double twist
6	EXTP_S4	0.3	/	0.5	analog	0.5mm²	green	resolver cosine negative signal, double twist
7	EXTAN_MOTOR_TEMP_1	0.1	/	0.2	analog	0.5mm²	brown	temperature sensor, positive signal
8	EXTGND_MOTOR_TEMP_1	0.1	/	0.2	analog	0.5mm²	brown	temperature sensor, negative signal

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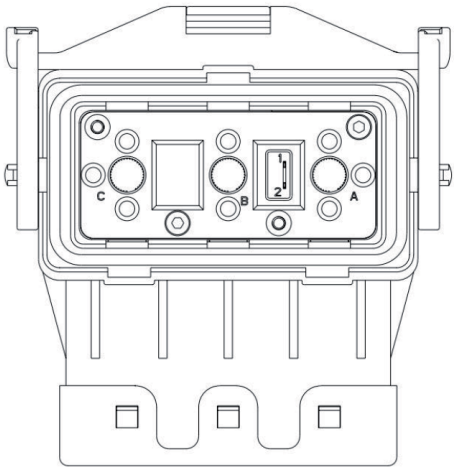
Motor interface definition

Drive three-phase line connector

Drive motor three-phase line plug-in



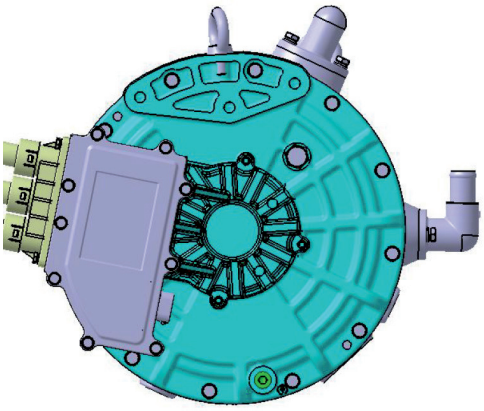
Motor Controller Three-Phase Output Plug-in Definition Table

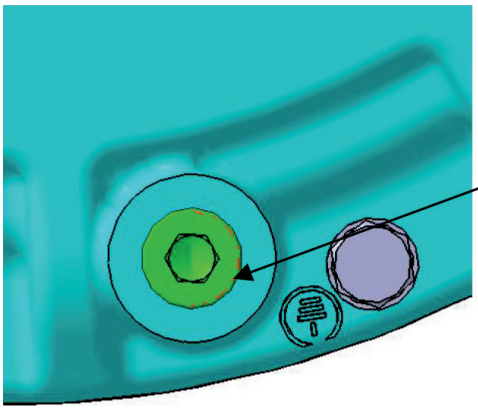
Plug-in model	Pin	Function	Rated current	Imin	Imax	Type	Wire cross section
HVILM3S(150A)-90	A	Motor U phase	93	/	215	AC	35 mm^2
	B	Motor V phase	93	/	215	AC	35 mm^2
	C	Motor W phase	93	/	215	AC	35 mm^2

Motor interface definition

Necessary Safety Ground

After the drive motor is assembled in the vehicle, it must be connected to the vehicle in a soft connection. Therefore, the motor must have a safety ground. The safety ground of this drive motor is placed on the rear end cover of the drive motor. The recommended safety ground wire is 16 mm^2.





Grounding bolt
Q2180810B

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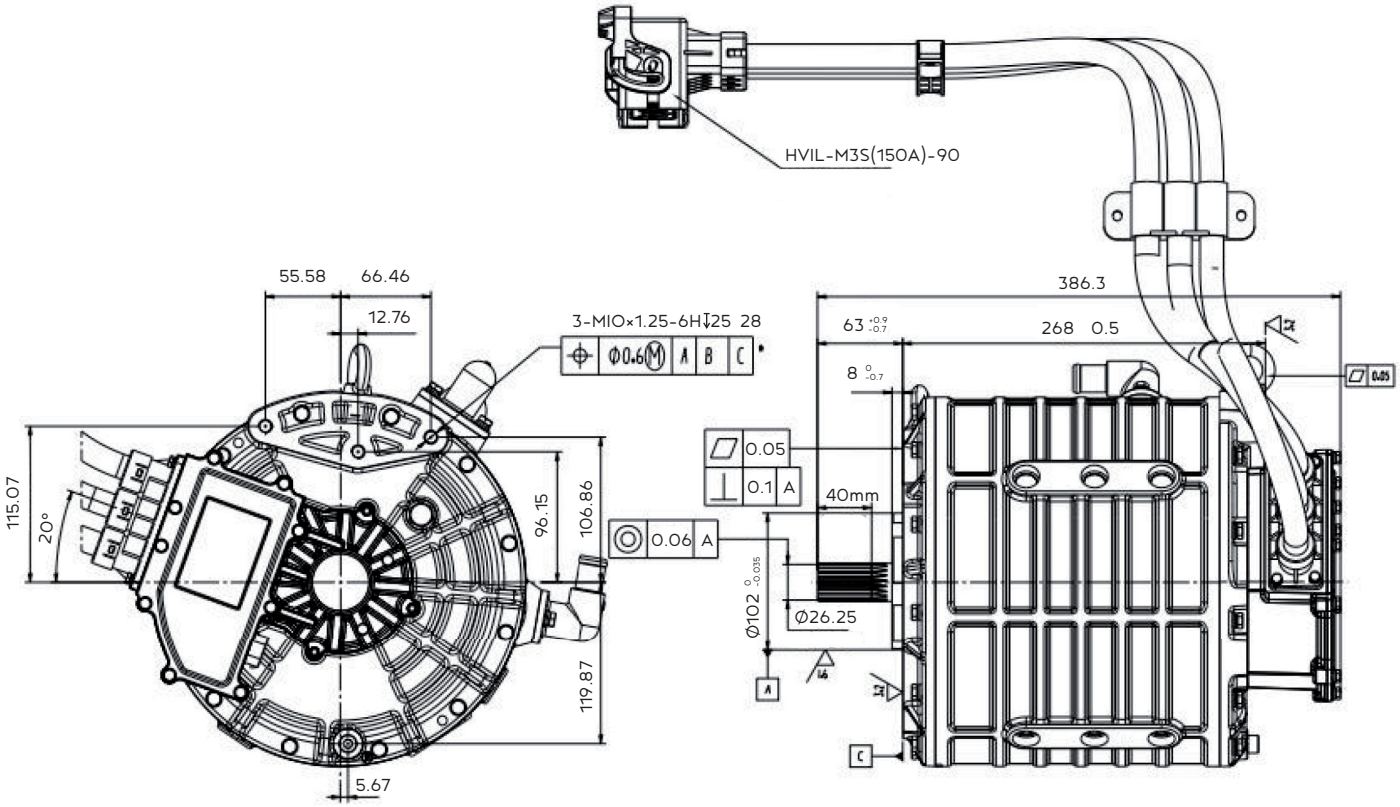
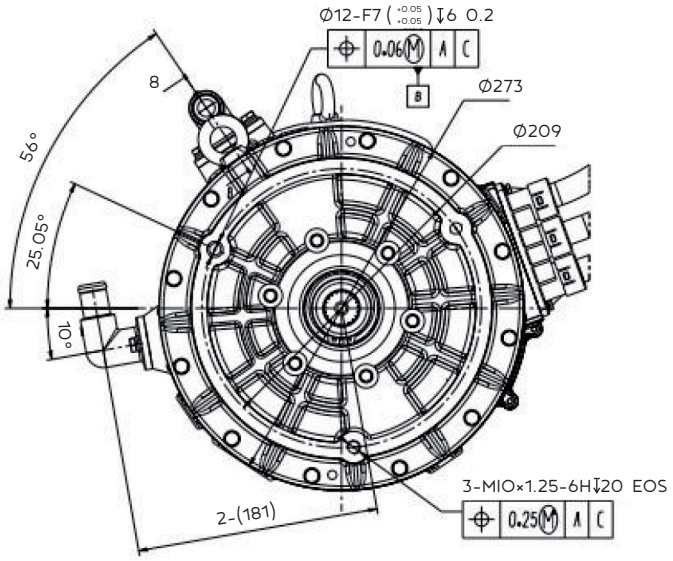
Dimensional drawing of the motor





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