

# Motor-Inverter Package for eBus Applications

## AMXE250S + HES580



### Product highlights

Highly efficient propulsion package with 3-Level Inverter, which reduces harmonic motor losses up to 75%. This package comes with a high torque- and power-dense motor due to permanent magnet technology.

- First 3-Level Inverter for eBus applications in the market
- Most motor friendly drive for long motor lifetimes due to 3-level technology and smooth voltage rise
- Up to 12% less motor losses on typical drive cycles compared to 2-level Inverter
- High torque capability of PM Motor for excellent performance

		Cont	Peak	Vmax	30 min
<b>Traction motor performance<sup>1</sup></b>	<b>RMS value</b>		<b>15s</b>	<b>15s</b>	
DC link	V	750	750	750	750
Power	kW	147	283	242	157
Phase to phase voltage	V	530	493	530	530
Current in the stator	A	168	476	318	187
Frequency	Hz	150	90	350	150
Rotation speed	rpm	1500	900	3500	1500
Torque	Nm	936	3000	661	1000

Performance Data	Data
OS1: DC Voltage range full perf.	400 - 850 V
Operating ambient temperature	-20 °C ... +65 °C (-40°C as motor option available)
Protection class	IP65, IP67
Electrical Loads	ISO16750-2
Mechanical Loads	Shock: Up to 50 g (ISO 16750-3 4.2.2)
Chemical Loads	ISO16750-5
Climatic Loads	ISO16750-4

### Cooling Characteristics

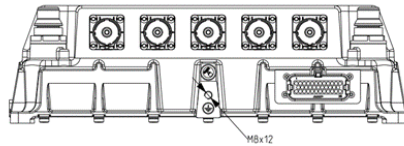
Coolant mixture	Water with glycol 40-60%. Nominal 50%. Derating required above 50% glycol content.
Coolant inlet temperature	Max 65 °C
Volume flow rate	5-30 lpm. Nominal 20 lpm. Derating required for flow rates below 20 lpm.
Max coolant pressure	2 bar
Max pressure drop	< 500 mbar (@50% glycol, 65C, 20 lpm) Motor < 350 mbar (@50% glycol, 65C, 20 lpm) Inverter

<sup>1</sup>Specifications are valid with volume flow rate 20 lpm, 50%/50% water and glycol mixture, and in 40 °C ambient temperature unless stated otherwise. Actual performance will vary with drive cycle, cooling and installation details.

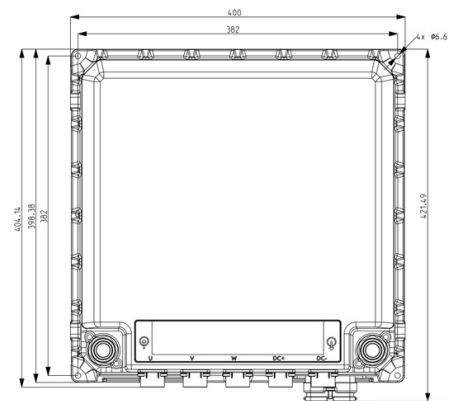
Interfaces	
HV connector	Amphenol PowerLok 1POS, 500 series (Standard) Shielded Cable glands (3x) (Motor option)
LV connector	Harting HAN Q 21 pins (Motor) TE Connectivity Ampseal 35 pin (Inverter)
Communication	CAN SAE J1939
Supply Voltage <sup>-</sup>	24 V
Shaft	DIN 5480 W60 × 1.25 × 46 × 9p
ISO26262 Functional Safety <sup>2</sup>	
ASIL C	Safe Torque
ASIL C	Safe Speed
ASIL B	Torque / Speed Feedback

EMC	
Regulation	ECE R10
Cond. Emission HV/LV	CISPR25, Class 3
Additional Characteristics Motor	
Mechanical overspeed	4000 rpm
Insulation class	Class H (IEC 60085)
Speed/position sensor	Resolver (available as variant code) Kitas 2171-50 Speed sensor (available as variant code)
Temperature sensors	PT100 and NTC 2-wire in winding
KITAS sensor	Included

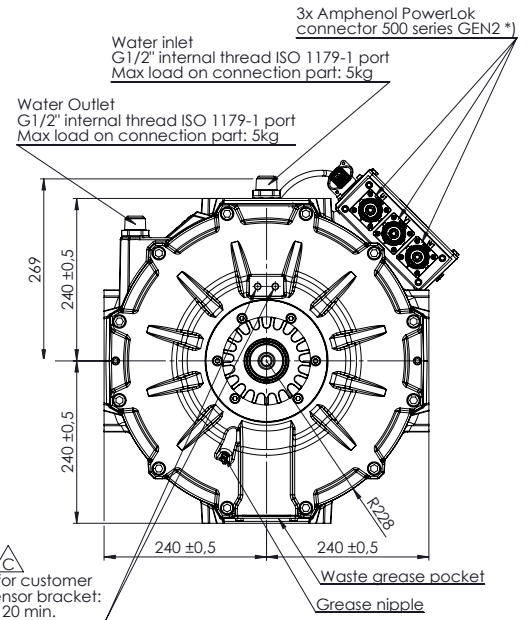
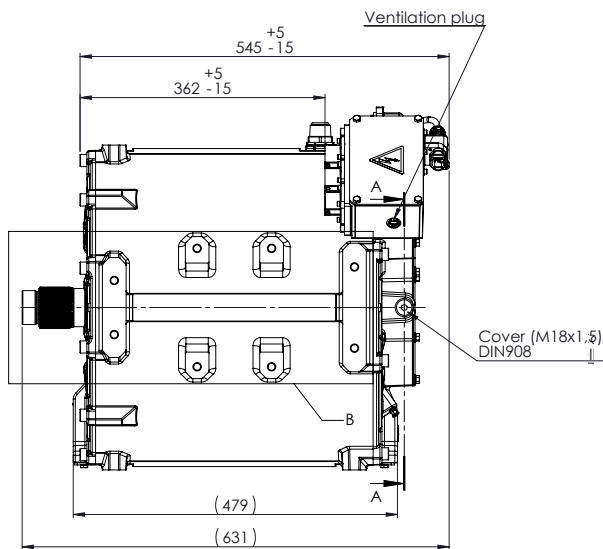
— Inverter  
Dimensional drawing



Weight Inverter 20 kg



— Motor  
Dimensional drawing



AC	E	HD	H	L	Weight (kg)
500	76	563	240	500	< 300

<sup>2</sup> Designed according to ISO 26262 – listed are the specified safety goals and safety levels for these functions

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