

HES580 Traction Inverter

Motor friendliest and high efficient drive in the market



ABB offers with the HES580-3L the motor friendliest drive in the market. Through its **3-level topology**, harmonic motor losses are reduced up to 75% compared to a 2-level converter. This leads to the best overall efficiency for a motor drive system. In combination with IGBT technology, voltage stress on the winding is minimal, which guarantees long winding and long motor lifetime.

1 Cooling Water / Ambient Temperature

Inverter Performance Data	Data
Phase current standard current version	300Arms
Phase current high current version	400Arms
Peak phase current (60s, see diagram)	500Arms
Nominal DC Voltage	800V
OS1: DC Voltage range full perf.	400 - 850V
OS2: DC Voltage range lim. perf.	380 - 870V
OS4: DC Voltage trip	<380V or > 870V
DC-link ripple voltage acc. ISO21498	< 40Vpp
Efficiency	98.5% ... 99.0%
Topology	3 Level
Switching frequency range	1kHz ... 12kHz
Environmental Data	
OS1: Temp. range full perf. ¹⁾	-40°C ... +65 °C
OS2: Temp. range lim. perf. ¹⁾	+65°C ... +85 °C
Max. altitude	5'000m a.s.l.
IP Class	IP67
Mechanical Loads	ISO16750-3
Electrical Loads	ISO16750-2
Chemical Loads	ISO16750-5
Climatic Loads	ISO16750-4
Cooling	
Thermal management	Liquid cooled
Cooling medium	Water / glycol (50/50)
Rated flow rate	20 l/min
Nom. pressure drop, 65 °C	< 350 mbar
Max. pressure cooling circuit	2 bar
Connection / Interface	Thread G3/4"

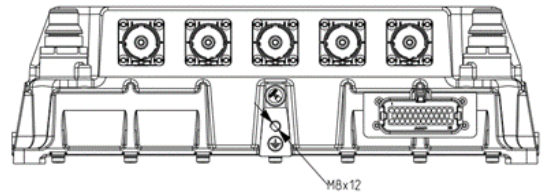
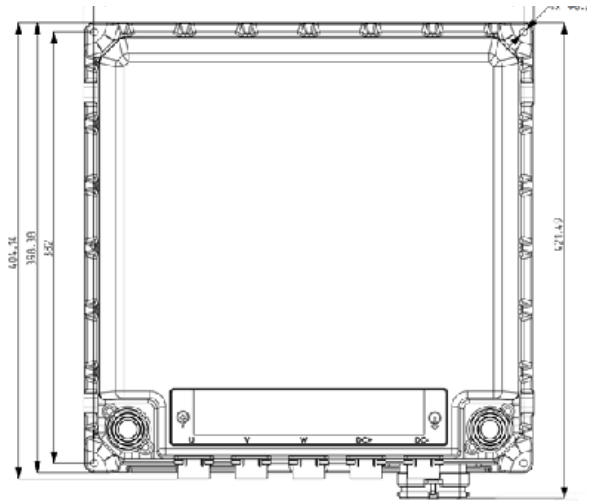
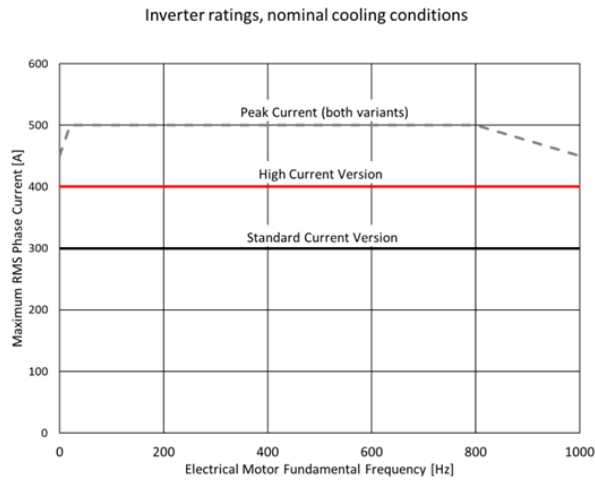
Mechanical data		
Weight (w/o coolant)	20.0 kg +/- 0.2 kg	
Dimensions	400 x 412 x 119 mm	
HV power connectors		
- Inverter variant	standard	high
- Amphenol PowerLok™	300	500
- Max cable cross section	70mm²	120mm²
Keying	U, V, X, W, Y	
Recommended screened cable		
Huber Suhner, Radox 50mm²	84 096 257	
Huber Suhner, Radox 70mm²	84 100 298	
Huber Suhner, Radox 95mm²	84 100 299	
Huber Suhner, Radox 120mm²	84 103 410	
Earth connection	M8 cable lug	
LV signal connector		
Type	TE Connectivity Ampseal 35pin	
Nom. Supply voltage	24V	
Supply line designed acc.	ISO 7637-2	
Sensor Inputs	Resolver, Temp, IO's	
Resolver	TS2255N202E185/E374, TS2640N762E64	
Excitation voltage	7 - 10Vrms	
Excitation frequency	10kHz	
Input impedance	> 750hm	

— 2 Designed according to ISO 26262 – listed are the specified safety goals and safety levels for these functions

Control + Parametrization	
Motor types	PMSM
Motor control	Vector Control with SVM
Control Modes	Torque / Speed
Comm. Interface	PT-CAN
Protocols	CAN SAE J1939
Basic Protection Functions	
Motor Phase current	Overcurrent, Short Circuit
Temperature	Inverter overtemperature, Motor overtemperature
Voltage	DC-link overvoltage
Speed	Motor overspeed
ISO26262 Functional Safety ²⁾	
ASIL C	Safe Torque
ASIL C	Safe Speed
ASIL B	Torque / Speed Feedback

EMC	
Regulation	ECE R10
Cond. Emission HV / LV	CISPR25, Class 3
Electrical Safety	
Passive Discharge	< 60Vdc, 2min
Active Discharge	< 60Vdc, 5s
Cdc (nominal value)	900µF
Cy (total nominal value)	188nF
Electrical insulation (IEC 60664-1)	
Over voltage category	OV2
Rated insulation voltage	1000 V
Rated impulse voltage (BI)	2.5 kV
Test voltage, AC 50Hz	1.5 kV/ 10sec
IT system on vehicle level requires an insulation monitor	

— Dimensional drawing



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